



# Resilience and social support as predictors of life satisfaction in preadolescents: a gender analysis

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## Abstract

Resilience and social support are variables related to life satisfaction. Nonetheless, these relationships could be different for boys and girls. This study aimed to analyze the links among life satisfaction, resilience (novelty seeking, emotional regulation and future positive orientation) and social support in early adolescents by exploring possible gender differences. In this study, 552 adolescents aged 10–13 years (52% girls) participated. The results showed stronger positive correlations between life satisfaction and novelty seeking in boys, and positive correlations between life satisfaction and emotional regulation only for girls. Social support was a significant predictor of life satisfaction for both genders, but some resilience dimensions showed differences in their predictive capacity according to gender. Emotional regulation and future positive orientation were predictors of life satisfaction, but only for girls, while novelty seeking was a predictor of life satisfaction for boys. These results highlight the importance of maintaining a gender perspective in research on life satisfaction in early adolescence, and the need to consider gender differences in interventions to enhance their positive development.

**Keywords** Resilience · Social support · Life satisfaction · Gender differences · Early adolescence

## Introduction

The first stage of adolescence, early adolescence, extends from ages 10 to 13 (Steinberg, 2016). During this developmental stage, adolescents undergo significant changes in almost all areas of their lives, including biological, cognitive, affective, and social functioning (Bailen et al., 2019; Bukowski et al., 2019; Crone & Fuligni, 2020; Lacroix et al., 2022). Their cognitive development allows them to increase their skills and self-regulation capacity (Bukowski et al., 2019). In the social context, parents-adolescent relationships transform and there are more arguments and disagreements about day-to-day matters (Branje, 2018), while the relationships of friendship will become increasingly more intimate, revealing, and caring (Bukowski et al., 2019).

All these numerous changes have been related to less life satisfaction during adolescence, being this reduction more pronounced than at any other time throughout adulthood (Orben et al., 2022). According to Proctor (2022, p. 2) “Research findings also demonstrate that global life satisfaction tends to decline slightly with the onset and progression of adolescence and that these findings are similarly supported by international research”. During early adolescence, developmental changes occur (hormonal and morphological

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changes linked to puberty, alterations in sleep patterns, difficulties in regulation emotions, changes in the importance and nature of relationships with peers and alterations in self-concept) which may be partly responsible for the onset of several forms of mental disorder that are characterized by increased emotionality and social sensitivity (Rapee et al., 2019). A recent study shows how the young people are at increased risk of mental health problems between the ages of 11 and 14, particularly girls (Yoon et al., 2023).

Nevertheless, it is important that research on adolescence, especially on early adolescence, does not focus only on problematic behaviors and psychological disorders, but also a perspective focused on positive variables it is necessary. At this regard, life satisfaction is an interesting variable since it is an important indicator of well-being (Martela & Sheldon, 2019). Life satisfaction refers to the evaluative judgment through which people evaluate the quality of their life according to their own criterion and globally, and this constitutes a basic cognitive component of subjective well-being (Proctor et al., 2017). Although many studies have analyzed the adaptation difficulties of adolescents (e.g., Ajou, 2023; Cava et al., 2021; Todorov et al., 2023), it is also important to know which variables can increase both their well-being and life satisfaction (Oliva et al., 2020). In addition, possible gender differences should be analyzed (Oliva et al., 2020). In the meta-analysis by Chen et al. (2020) similar life satisfaction levels were observed in boys and girls, but with a slight difference that favored boys and male adolescents depending on the geographical region, type of population, age, and the construct measures of life satisfaction. The recent study by Orben et al. (2022) found less life satisfaction for girls than for boys. However, this difference did not continue into adulthood. Chen et al. (2020) highlighted the considerable changes that have occurred in recent decades in the social status of women in different nations and cultures, and the need to more deeply explore the variables that influence life satisfaction in males and females.

It is important to also stress that adolescents' higher or lower life satisfaction very much depends on their specific personal and social resources (Cava et al., 2014; Proctor et al., 2009). Not all adolescents have the same resources to handle this important stage, and the quantity of these resources will determine, to a great extent, their better or worse adaptation. In relation to this matter, one of the main social resources for adolescents is the support that they perceive from their social network. Social support has been defined as a set of emotional, material, and informational contributions that individuals perceive or receive from the different members of their social environment (Rodríguez-Fernández et al., 2021). For adolescents, being aware that the bond with their parents is adequate, perceiving that they

are part of a group of friends, having someone trustworthy to express their emotions, problems or hardships and knowing that they are accepted by their social context, are variables strongly linked to their life satisfaction (Azpiazu et al., 2021). Currently, this social support can be given and received both offline and online, due to the great relevance of virtual context in adolescents' social relationships (Cava et al., 2023; Dienlin & Johannes, 2020). Regarding gender differences, Tifferet (2020) obtained in their meta-analysis, carried out with a sample of 30 studies, that females give ( $d=0.36$ ) and receive ( $d=0.14$ ) more social support than males, regardless of this support being offline or online. This result may be related to the study by Zhang et al. (2018) in which it was observed gender differences in reacting to stress. In this study, the results showed that male adolescents used both resilience and perceived social support as resources to cope with stress, especially resilience, while female adolescents used perceived social support more to reduce anxiety caused by stress.

Furthermore, not only social support can contribute to improving life satisfaction in early adolescence, but also resilience may play a relevant role (Khalid, 2021). Resilience is defined as a person's ability to cope with and recover from a difficult or adverse experience, and adaptively return to almost the same emotional well-being level, or even come out stronger (Noble & McGrath, 2008). Following the model proposed by Oshio et al. (2003), resilience integrates three basic dimensions: novelty seeking, emotional regulation and future positive orientation. Novelty seeking refers to the capacity to show an interest in and concern about a wide range of events. When people are resilient, they are also more prepared to seek out new experiences and opportunities and to take reasonable risks to achieve their goals. Risk taking may mean certain setbacks and rejections, but it also creates more success opportunities and feeling more confident in oneself (Noble & McGrath, 2008). It is important to note that this risk-taking is within a reasonable range and is not about taking dangerous risks, such as substance abuse, but about risking doing new things, trying new ways to solve problems, or putting new ideas into practice. Emotional regulation is a trait of those people who remain calm and control their internal emotions. According to Sánchez-Álvarez et al. (2019), it is the skill to regulate own and others' emotions by moderating negative emotions and intensifying positive ones. This regulation refers to the processes by which individuals respond, handle, and modify emotional experiences to fulfill individual goals and to satisfy environmental demands (Morrish et al., 2018). According to the study carried out with adolescents by Sanchis-Sanchis et al. (2020), girls show better emotional regulation strategies when they experience sadness, anxiety, and anger than boys. The study by Garaigordobil (2020)

also observed how female adolescents (aged 12–17 years) showed better emotional attention capacity than boys, but no gender differences were confirmed in emotional understanding and emotional regulation.

Finally, the third dimension in the model proposed by Oshio et al. (2003) is the future positive orientation. This dimension is not only related to the degree to which people optimistically perceive their own future, but also to their behaviors to make their dreams come true and achieve their goals. Those people with more resilient capacities have a more positive orientation toward themselves, the natural environment and the future, and this perception can help them to better cope with negative biological and psycho-emotional stressors, thus increasing their well-being and reducing their depressive feelings (Kelifa et al., 2021). Gender differences on this specific dimension have not been previously analyzed. Nevertheless, Sun and Stewart (2012) found that girls were more prone to show higher levels of communication, empathy, and help-seeking related to their future goals and aspirations. Girls also reported more positive connections with parents, teachers and adults in the community, with classmates and outside school, and experienced more autonomy.

In short, resilience could be an essential element to predict life satisfaction in this developmental stage. An early adolescent with a high level of resilience could cope better with a stressful event, showing greater ability to accept difficult and unchanging situations and being able to better regulate their emotions to find a solution. All developmental changes associated with adolescence are normative stressors that could be better handled by adolescents with high resilience levels.

Previous studies have related both social support and resilience to adolescent's life satisfaction, although very few studies have focused on early adolescence (Khalid, 2021). Furthermore, the role played by resilience and social support to predict life satisfaction in early adolescence could be different for boys and girls. Girls' puberty changes start earlier, they establish different relationships with friends, and the way they identify and express their emotions with peers, their parents and their teachers also differ. So, it is important to explore gender differences in life satisfaction and in the variables that impact it. To our knowledge, there are no previous studies that have jointly analyzed the predictive capacity of social support and resilience (including the three dimensions of the Oshio model: novelty seeking, emotional regulation and positive future orientation) in early adolescents' life satisfaction. In addition, gender differences in the predictive capacity of these variables have also not been explored. More knowledge about possible gender differences in these variables might be relevant to develop more

efficient intervention strategies to address favoring positive development and life satisfaction in early adolescents.

For this purpose, and by bearing in mind the importance of these variables, as well as the need to pay more attention to the gender perspective in research into early adolescents' life satisfaction, this study put forward the following objectives: (1) analyze the correlations among life satisfaction, resilience (novelty seeking, emotional regulation and future positive orientation) and perceived social support separately in boys and girls; (2) examine possible differences in resilience (novelty seeking, emotional regulation and future positive orientation) and perceived social support in early adolescents (boys and girls) with different (high and low) life satisfaction levels; (3) explore the predictive capacity of resilience (novelty seeking, emotional regulation and future positive orientation) and perceived social support in life satisfaction in early adolescent boys and girls.

## Method

### Participants

A total of 552 early adolescents studying 5th and 6th grade of Primary Education in the city of Huesca (in northern Spain) participated in the present study. The Spanish educational system includes six grades of compulsory Primary Education, from age 6 (first grade) to age 11 (sixth grade), and later compulsory Secondary Education until 16-year-olds. In 5th and 6th grade of Primary Education, the students are mostly between 10 and 11 years old. However, depending on the specific month in which they have their birthday or whether they have needed to repeat an academic year, 12-year-old students, or even 13-year-olds, can also be found in sixth grade. The number of students enrolled in 5th and 6th grade in the 2020–2021 academic year in the city of Huesca was 1,220. The sample size –with a sampling error of  $\pm 4\%$ , confidence level of 97% and  $p = q = 0.5$ , ( $N = 1,220$ ), was estimated at 459 students. Of the 552 participating students, 287 were girls (52% of the total sample), 247 were boys (44.7%) and 18 (3.3%) preferred not to declare their sex. These 18 students were not included in the statistical analyzes carried out to analyze differences based on sex. The participating students attended 13 public schools in the city of Huesca, and this study is part of the “City of girls and boys” project. This is an international project that seeks to foster children's autonomy and full participation in the construction of the city. In the city of Huesca there are 13 Primary Education Schools and all of them participated in this research, although in some schools very few students participated, because they were already carrying out other specific studies linked to the “City of girls

and boys” project. The age range of the participating students was 10–13 years ( $M=10.87$ ;  $SD=0.705$ ): 30.8% of them were 10 years old, 52.5% were 11, 15.4% were 12 and 1.3% were 13. Boys’ age ( $M=10.87$ ;  $SD=0.707$ ) and girls’ age ( $M=10.87$ ;  $SD=0.712$ ) was similar.

## Instruments

### The adolescents resilience scale - ARS

(Oshio et al., 2003). This scale evaluates three essential aspects in the resilience of adolescents in this developmental stage: Novelty seeking, Emotional regulation and Future positive orientation. In the study by Oshio et al. (2003), these three subscales showed adequate reliability coefficients (Cronbach’s alpha): 0.79 for Novelty Seeking, 0.77 for Emotional Regulation, and 0.81 for Positive Future Orientation. In the present research, it was used the adaptation to Spanish language by Restrepo et al. (2011). However, since this scale has been adapted to Spanish language, but not with Spanish students, it was considered necessary to ensure that the meaning of all the items was adequately understood by Spanish early adolescents. This scale was initially administered to 20 early adolescents of 10-year-old (boys and girls), and it was detected difficulties in understanding the meaning of one item. Thus, the item “I don’t like doing unknown things” was removed in the Novelty seeking subscale because not all students understood “unknown things” in the same way. For some students it meant only “new things,” while for others it meant “things that were scary or disturbing”. Thus, the Novelty seeking subscale was composed by six items (“I have a high level of interest and curiosity”, “I seek new challenges”, “I like new things”, “I like to make discoveries about things”, “I think that difficulties are a valuable part of life experiences”, “I find starting new things boring”). These items evaluate the degree of openness shown for new challenges and different activities by students. Its reliability in the present sample was adequate, with coefficients of 0.79 (Cronbach’s alpha) and 0.78 (McDonald’s omega). The second factor, Emotional regulation, includes nine items (five inverted and four non-inverted) that measure the ability to adequately manage emotions in a way that helps with positive coping. These nine items were answered by participants in this study, but the internal consistency of this subscale with the sample of Spanish students was inadequate. Nevertheless, when considering only the inverted items its reliability was acceptable: 0.65 (Cronbach’s alpha) and 0.64 (McDonald’s omega). The five inverted items used in the present study to calculate the Emotional regulation variable were “I find it hard to forget negative experiences”, “I cannot bear difficult problems and situations”, “My behavior changes according

to my moods”, “I quickly lose interest in things”, “I find it hard to control my rage”. Non-inverted items removed to calculate this variable were “I think I can control my emotions”, “I can remain calm in difficult situations”, “I make an effort to remain calm”, “I think that I don’t give up easily”. Finally, the third factor, Future positive orientation, includes five items (“I’m sure good things will happen in the future”, “I think my future will be brilliant”, “I feel positive about my future”, “I have a clear goal for my future” and “I’m making the effort to meet my future goal”), which allow measure the degree to which adolescents optimistically perceive their own future. The internal consistency of this factor in the present sample was adequate, with coefficients of 0.86 (Cronbach’s alpha) and 0.86 (McDonald’s omega). The early adolescents answered to these items using five response options: 1 (*I completely disagree*), 2 (*I disagree*), 3 (*I neither disagree nor agree*), 4 (*I agree*) and 5 (*I completely agree*).

### Satisfaction with life scale

SWLS- (Diener et al., 1985, Spanish adaptation by Atienza et al., 2000). This scale includes five items that provide a general index of satisfaction with life perceived by the adolescent (e.g., “In most ways, my life is close to ideal”), and has shown adequate reliability in previous studies with Spanish adolescents (Cronbach’s alpha=0.84, in the study by Atienza et al., 2000; and Cronbach’s alpha=0.74 in the study by Cava et al., 2014). In the present study, the Cronbach’s alpha reliability coefficient of this scale was 0.63, and McDonald’s omega coefficient was 0.60. The adolescents answered these five items with a range of responses from 1 (*I completely disagree*) and 4 (*I completely agree*).

### Social support Scale

(UCLA Loneliness Scale, Spanish adaptation by Borges et al., 2008). Adolescents’ perception of social support from their social network was measured by a subscale of UCLA Loneliness Scale, adapted by Borges et al. (2008). This scale is composed by 20 items, in two subscales: Emotional loneliness and Subjective evaluation of the social support network. This latter subscale includes nine items (e.g., How frequently do you feel that those surrounding you understand you?) and allows measure the social support perceived by adolescents in their social networks. In previous studies with Spanish adolescents this subscale showed adequate reliability: Cronbach’s alpha coefficient of 0.84 in the study by Borges et al. (2008) and 0.86 in the study by Cava et al. (2021). In the present study, its reliability according to Cronbach’s alpha coefficient was 0.89 and according to McDonald’s omega coefficient was 0.90.

The participants responded to all nine items of this subscale using four response options from 1 (*never*) to 4 (*always*).

## Procedure

First contact was made with the person in charge of the Education Area of the city of Huesca, who called all the Primary Education schools of this city ( $n = 13$ ) and explained to them the need to participate in the project. A meeting was also held with the staff of the contacted schools, which were visited. During this meeting, a letter was delivered describing the objective of this research work and the procedure that must be followed to carry it out. They also received instructions for teachers and informed consent forms for parents. Parents who agreed to their children participating in this study had a period of 10 days to send their signed consent to the school. There was no exclusion criterion and all children who had parental consent and who voluntarily wanted to do so participated. The data was collected using an online survey (Google Forms), which was completed in the classrooms by those students whose parents previously sent their signed written consent for their children's participation. In the case of students without parental consent and who, therefore, could not participate, the school proposed an alternative activity for them. A member of the research team was present in the classrooms to answer any questions. This research was approved by the Ethics Committee of the Autonomous Community of Aragón (C.I. PI21/085).

## Data analysis

First, the scores on the inverted items in all scales were changed (inverted), the reliability of all scales and subscales was analyzed (Cronbach's alpha and omega coefficients were calculated) and the corresponding variables were calculated. In Novelty seeking subscale one item was inverted ("I find starting new things boring"). In Emotional Regulation subscale (a dimension of the Resilience scale), all items were inverted, so that a higher score on this scale means a greater capacity for emotional regulation. Next, descriptive statistics (mean and standard deviation) were calculated for boys and girls, and possible gender differences in their means were analyzed using the Student's t-test. Correlations

(Pearson) among all studied variables (Novelty seeking, Emotional regulation, Future positive orientation, Social support and Life satisfaction) were analyzed in boys and girls, separately; and a hypothesis contrast test was performed using the Fisher  $r$  to  $z$  transformation to examine differences in these correlations according to gender. Later, possible differences between adolescents with high Life Satisfaction scores and those with low Life Satisfaction scores in the variables of Novelty seeking, Emotional regulation, Future positive orientation and Social support were analyzed. The early adolescents with scores above the  $M + 1 SD$  for Life Satisfaction (score  $> 3.85$ ;  $M = 3.29$ ;  $SD = 0.56$ ) were assigned to the High Life Satisfaction group. Those with scores below the  $M - 1 SD$  (score  $< 2.73$ ;  $M = 3.29$ ;  $SD = 0.56$ ) were assigned to the Low Life Satisfaction group. Boys and girls from both these groups (High and Low Life Satisfaction groups) were separately compared using the Student's t-test. Finally, a linear regression analysis was carried out to determine the predictive capacity of the variables Novelty seeking, Emotional regulation, Future positive orientation, Social support regarding the adolescents' Life Satisfaction. All these analyses were performed separately for boys and girls. Analyses were performed using the SPSS-28 Statistical Package (IBM Corp., Armonk, NY, USA).

## Results

Table 1 shows the means and standard deviations of all the analyzed variables for boys and girls. The Student's t-test results indicate significant gender differences in the variable Novelty seeking with a significantly higher mean score for girls ( $M = 4.23$ ;  $SD = 0.69$ ) than boys ( $M = 3.99$ ;  $SD = 0.83$ ). No significant gender differences appear for the other variables. This table also shows the correlations among the variables for boys and girls. For girls, Life satisfaction correlates positively and significantly with all the variables: Novelty seeking ( $r = .21$ ;  $p < .001$ ), Emotional Regulation ( $r = .23$ ;  $p < .001$ ), Future positive orientation ( $r = .30$ ;  $p < .001$ ) and Social support ( $r = .40$ ;  $p < .001$ ). For boys, Life satisfaction correlates positively and significantly with three variables: Novelty seeking ( $r = .47$ ;  $p < .001$ ), Future positive orientation ( $r = .37$ ;  $p < .001$ ) and

**Table 1** Means, standard deviations and correlations among variables (correlations for girls are shown over the diagonal line)

Variable	1	2	3	4	5
1. Novelty seeking	-	-.01	.53**	.19**	.21**
2. Emotional regulation	-.05	-	-.07	.04	.23**
3. Future orientation	.57**	-.14*	-	.26**	.30**
4. Social support	.36**	.11	.37**	-	.40**
5. Life satisfaction	.47**	.12	.37**	.48**	-
Mean for girls /boys	4.23/3.99	2.97/3.07	4.28/4.17	3.25/3.27	3.27/3.31
SD for boys / girls	.69/.83	.82/.89	.74/.88	.57/.56	.57/.55
Student's t-test	3.63**	-1.29	1.58	-0.82	-0.53

\*\*  $p < .001$ ; \*  $p < .05$



**Table 2** Means (and SDs) for the boys and girls with low and high life satisfaction levels

	Low life satisfaction level	High life satisfaction level	Student's t-test	<i>p</i>
<b>GIRLS</b>				
Novelty seeking	4.05 (.85)	4.46 (.65)	-2.47	.015
Emotional regulation	2.68 (.88)	3.16 (.84)	-2.53	.013
Future orientation	4.04 (.88)	4.64 (.72)	-3.42	<.001
Social support	2.90 (.68)	3.63 (.44)	-5.79	<.001
<b>BOYS</b>				
Novelty seeking	3.39 (1.09)	4.45 (.50)	-5.69	<.001
Emotional regulation	2.98 (1.04)	3.29 (.78)	-1.55	.124
Future orientation	3.71 (1.16)	4.60 (.35)	-4.75	<.001
Social support	2.86 (.74)	3.64 (.33)	-6.27	<.001

Social support ( $r=.48$ ;  $p<.001$ ), but its correlation with Emotional regulation is not significant ( $r=.12$ ;  $p>.05$ ). The correlation between Life satisfaction and Novelty seeking is significantly higher for boys than for girls ( $r=.47$  for boys;  $r=.21$  for girls;  $Z=3.40$ ;  $p<.01$ ). Thus, the association between Life satisfaction and Emotional regulation is greater for girls, and the association between Life satisfaction and Novelty seeking is greater for boys.

Table 2 shows the means in Novelty seeking, Emotional regulation, Future positive orientation and Social support for the boys and girls with low and high Life satisfaction levels. In this table, it can be observed that those girls with low Life satisfaction obtain lower scores for Novelty seeking ( $t = -2.47$ ,  $p=.015$ ), Emotional regulation ( $t = -2.53$ ,  $p=.013$ ), Future positive orientation ( $t = -3.42$ ,  $p<.001$ ) and Social support ( $t = -5.79$ ,  $p<.001$ ) than girls with high Life satisfaction. However, for boys, no significant differences appear between those with low and high Life satisfaction levels with the variable Emotional regulation ( $t = -1.55$ ,  $p=.124$ ). The boys with low and high Life satisfaction levels significantly differ for Novelty seeking ( $t = -5.69$ ,  $p<.001$ ), Future positive orientation ( $t = -4.75$ ,  $p<.001$ ) and Social support ( $t = -6.27$ ,  $p<.001$ ). The means of these variables are significantly lower in the boys with lower Life satisfaction levels.

Finally, Table 3 provides the regression analyses results considering Life satisfaction as the dependent variable and the following predictor variables: Novelty seeking,

Emotional regulation, Future positive orientation and Social support. These analyses were carried out separately with boys and girls, and their results revealed differences in the predictor variables. Although Social support was a significant predictor variable of Life satisfaction in both girls ( $\beta=0.34$ ,  $p<.001$ ) and boys ( $\beta=0.36$ ,  $p<.001$ ), differences between girls and boys appeared on the three resilience dimensions. For boys, the only resilience dimension with a significant predictive capacity for Life satisfaction was Novelty seeking ( $\beta=0.34$ ,  $p<.001$ ) while, conversely, this dimension was not significant for girls, but the dimensions Emotional regulation ( $\beta=0.23$ ,  $p<.001$ ) and Future positive orientation ( $\beta=0.23$ ,  $p<.001$ ) were. This regression model explained 25% of variance in Life satisfaction for girls,  $F(3, 286)=32.68$ ,  $p<.001$ , and 33% of variance in this variable for boys,  $F(2, 246)=60.91$ ,  $p<.001$ .

## Discussion

The main purpose of this study was to analyze possible gender differences in the relationships among life satisfaction, resilience, and social support in early adolescents. The obtained results confirmed the existence of positive correlations between perceived social support and life satisfaction in both boys and girls. These data are in line with other previous studies, which have revealed the importance of social support in adolescence (Azpiazu et al., 2021; Cava et al., 2014; Proctor et al., 2009). During early adolescence, boys and girls who perceived support from their parents, friends and significant people in their social network felt more motivated to face the numerous challenges that life shows them and to build that inner strength that allows them to better cope with possible obstacles, which all contributes to higher life satisfaction levels (Khalid, 2021). In addition, some interesting gender differences appeared for the correlations between life satisfaction and resilience (novelty seeking, emotional regulation and future positive orientation). Despite novelty seeking and future positive orientation positively correlated with life satisfaction in both boys and girls, the correlations between novelty seeking and life satisfaction were stronger for boys. This is an interesting result, particularly if we bear in mind that boys obtained

**Table 3** Linear regression analysis. Dependent variable: life satisfaction

	Girls <sup>1</sup>				Boys <sup>2</sup>			
	$\beta$	<i>t</i>	<i>p</i>	$\beta$	<i>t</i>	<i>p</i>		
Novelty seeking	.03	.55	.580	.34	6.08	<.001		
Emotional regulation	.23	4.50	<.001	.10	1.95	.053		
Future orientation	.23	4.29	<.001	.06	0.94	.349		
Social support	.34	6.33	<.001	.36	6.38	<.001		

<sup>1</sup>  $F(3, 286)=32.68$   $p<.001$ , Adjusted  $R^2=0.25$

<sup>2</sup>  $F(2, 246)=60.91$   $p<.001$ , Adjusted  $R^2=0.33$

lower mean scores for novelty seeking. Perhaps girls generally showed more openness to novelty and, therefore, this variable did not distinguish between those with higher and lower life satisfaction levels. In boys, this variable was more relevant to determine their life satisfaction. Early adolescence is a stage of development in which many changes begin, and those adolescents who show greater openness to the new challenges associated with these changes may feel greater satisfaction with life (Azpiazu et al., 2021; Chen et al., 2020). Interestingly, this association between openness to novelty and life satisfaction might be stronger for boys. Future studies should explore if these gender differences are related to different socialization patterns in boys and girls.

We observed another interesting gender difference in the correlations between emotional regulation and life satisfaction. These variables positively correlated in girls, but not in boys. Previous studies (Sanchis-Sanchis et al., 2020) have explored differences between boys and girls in emotional expression and regulation from different biological and social perspectives. From the biological point of view, boys have been shown to have higher levels of arousal (activation) than girls in childhood, as well as to have less language ability and lower inhibitory control (Zahn-Waxler et al., 2008). From the social viewpoint, the relevance of the cultural patterns acquired through education has been stressed to explain gender differences in both expressing emotions and in attaching importance to emotional aspects (Liben & Bigler, 2002). In the social context, boys and girls learn to play gender roles, giving a greater importance to the emotional and expressive aspects associated with the feminine gender role. In this study, no differences were found between boys and girls for their emotional regulation capacity or their life satisfaction, but differences appeared in the relation between emotional regulation and life satisfaction.

Another interesting contribution of this study was the importance of analyzing different resilience dimensions, especially when exploring possible gender differences. Previous research is not conclusive about gender differences in resilience. Some studies point out greater resilience capacity for girls, while others do so for boys (Arı & Çarkıt, 2020; Koğar & Gök, 2021). Therefore, an evaluation of different resilience dimensions (Oshio et al., 2003) may help to understand how girls could be more resilient on some dimensions, and boys on others. Regarding this, the present study confirmed higher levels for novelty seeking, which is an important resilience dimension (Oshio et al., 2003), for girls, but found no gender differences for either emotional regulation or future positive orientation.

The important relation observed among resilience (novelty seeking, emotional regulation and future positive orientation), perceived social support and life satisfaction was once again confirmed when comparing the early adolescents

with high and low life satisfaction levels. Both boys and girls with high life satisfaction showed significantly higher levels for perceived social support, novelty seeking and future positive orientation than those with low life satisfaction. This result confirms that when early adolescents perceive social support because they feel cared for and loved, and that they are part of a supportive social network, they feel more satisfied with their lives (Azpiazu et al., 2021; Lagarda et al., 2022). The availability of strong social bonds and feeling trust, empathy, and acceptance in their family environment and with their peers directly favors greater life satisfaction in early adolescents (Proctor et al., 2009), and probably also indirectly improves their life satisfaction by increasing their self-esteem (Cava et al., 2014; Park et al., 2023). Furthermore, early adolescents with high life satisfaction also obtained higher scores on two relevant dimensions of the resilience: novelty seeking and future positive orientation. Resilience is fundamental for favoring life satisfaction because highly resilient people possess greater self-efficacy, are more capable of controlling and solving problems, are more optimistic and flexible, and recover from stressful situations sooner (Khalid, 2021; Lin et al., 2022). The early adolescents, both boys and girls, with higher levels of future positive orientation and more open to seeking novelty can better cope with all the changes associated with adolescence, feel more confident about themselves when facing these changes and be more satisfied with life. As pointed out by Proctor et al. (2009), consciously seeking objectives is related to satisfying needs and feeling more happiness. At this regard, it is possible that early adolescents with low life satisfaction have a less positive perspective on the future and may even reduce their personal goals and objectives by being less confident in achieving them.

Regarding the resilience dimension of emotional regulation, girls with higher life satisfaction, compared to those with lower life satisfaction, showed significantly higher emotional regulation levels. Nonetheless, no differences in this variable were noted for the boys with high and low life satisfaction. Although emotional regulation has been stressed by different studies as a fundamental variable to cope with stressors (Flouri & Mavroveli, 2013; Morrish et al., 2018), and early adolescence involves numerous stressors associated with developmental changes, its relation to life satisfaction in early adolescents would only be relevant for girls. Biological maturity (hormonal and physical changes) and changes in social relationships associated with the beginning of adolescence would possibly occur earlier in girls than in boys, which could explain why girls' capacity for emotional regulation is more related to with life satisfaction in early adolescence. Furthermore, the cultural gender roles that are associated with greater expressivity of the feminine role could also be linked with these

differences. Previous studies have observed that girls use emotional regulation more when they feel sadness, anxiety and anger than boys (Sanchis-Sanchis et al., 2020). Nonetheless, future research should analyze in more depth at gender differences in the relation between emotional regulation and life satisfaction.

Finally, on the predictive capacity of perceived social support and resilience (novelty seeking, emotional regulation and future positive orientation) for early adolescents' life satisfaction, the results of this study show some interesting differences according to gender. In boys, the predictor variables of life satisfaction were perceived social support and novelty seeking, while the predictor variables for girls were perceived social support, emotional regulation and future positive orientation. That is, perceived social support came over as a significant predictor variable for both boys and girls, but the resilience dimensions that allowed early adolescents' life satisfaction to be predicted differed according to gender. For boys, whose mean scores for novelty seeking were lower than they were for girls, this variable could be key for helping them to adapt to all the changes that adolescence implies, and to also increase their life Satisfaction. For girls, whose novelty seeking level was generally higher, this variable would not be so relevant to explain their life satisfaction. Another finding for girls was that emotional aspects (emotional regulation), along with future positive orientation, were the variables that allow predict their life satisfaction. Different gender socialization patterns (Rebollo, 2010) could help to explain these differences since girls are socialized toward expressiveness and care to a greater extent than boys, whose gender socialization is focused more on instrumental and action aspects. These cultural influences could explain why emotional aspects were more relevant for girls and contributed more to their life satisfaction, including emotional aspects like paying attention to their emotions, exploring why they feel them, expressing them in their social setting and being capable of regulating them. The obtained result of greater predictive relevance of future positive orientation in life satisfaction for girls could be related to the higher levels of academic aspirations and future goals of Primary Education girls compared to boys of the same age (Sun & Stewart, 2012). Nevertheless, future research should more extensively analyze these differences.

This study has some limitations that must be considered. First, it is a cross-sectional study, which does not allow causality relations to be established among the variables. Therefore, longitudinal studies are necessary. In addition, it would be interesting to conduct longitudinal studies in the different stages of adolescence to explore how these variables evolve and if they have a different or similar impact in middle and late adolescence. Furthermore, the inclusion of specific measures to evaluate the different levels of

physical-cognitive maturity achieved by adolescents would allow us to analyze their possible relation to novelty seeking and emotional regulation. Another possible variable to include in future studies is academic performance, as it could be related to positive future orientation in early adolescents.

Despite these limitations, this study contributes interesting data about the relations among social support, resilience and life satisfaction in early adolescents, with some relevant gender differences. Although social support was a variable that predicted higher life satisfaction in boys and girls, gender differences were found in the relationships between resilience and life satisfaction. The emotional regulation capacity and future positive orientation were of more predictive importance on girls' life satisfaction, whereas novelty seeking was a more closely related variable to boys' life satisfaction. These novel results are interesting to better understand the variables that influence life satisfaction during early adolescence and to design intervention strategies to promote positive development and well-being at this stage of life, taking gender differences into account.

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**Data availability** The data presented in this study are available upon request from the Educaviva Research Team at the University of Zaragoza. Data Access requests can be made by contacting [eyllon@uni-zar.es](mailto:eyllon@uni-zar.es).

## Declarations

**Ethical approval** This study was given ethical approval by the regional government of the Autonomous Community of Aragón (C.I. PI21/085). All ethical values were followed during this study, respecting the fundamental principles of the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

**Informed consent** Written informed consent was obtained from all the parents/legal guardians of the students. Before filling out the questionnaires, students were informed that their participation was voluntary, their data would be treated anonymously, and they could leave the study at any time.

**Conflict of interest** The authors declare that they have no conflict of interest.

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