



## Empathy, self-esteem and satisfaction with life in adolescent

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### Abstract

During school years, emotional skills play a relevant role in the way students face challenges and academic demands, especially in such a key stage for life as adolescence, during which adult personality is configured. During this stage, students undergo different emotional and motivational stages related to learning, which play a crucial role in their personal and academic development. This study aims to analyse the relationship between empathy, self-esteem and satisfaction with life in an ex post facto descriptive design. The study comprised a sample of 1117 adolescent students, both male ( $N=603$ ; 53.98%) and female ( $N=514$ ; 46.01%) with ages ranging from 12 to 18 years ( $M=14.40$ ;  $DT=1.59$ ). The instruments used were the *Basic Empathy Scale* (BES), *Self-Esteem Scale* (RSE) and the *Satisfaction With Life Scale* (SWLS). The results revealed significant correlations between the empathy, self-esteem and satisfaction with life variables, and significant differences between genders. In addition, self-esteem was found to play a mediating role between empathy and satisfaction with life. It is concluded that self-esteem plays a crucial role in adolescent students, and the importance of encouraging adaptive behaviours in the school environment for the adequate personal development of adolescents is emphasised.



### Keywords

Adolescent; Empathy; Satisfaction with life; Self-esteem; Students

### 1. Introduction

The school years involve numerous changes and challenges, and students must deploy their personal skills to cope with a wide variety of potentially stressing and hard-to-handle situations, particularly if the necessary tools and strategies are lacking, which can lead to physical and psychological conditions (Pengpid & Peltzer, 2019).

Emotional skills can play a central role in the way these situations are faced, promoting adaptive behaviours, leading to the students' wellbeing and even to the improvement of their academic performance (Cerci & Dumludag, 2019). In adolescence, a key stage for the construction of personal identities, emotional skills also depend on the resources available and personal context (Livingstone & Isaacowitz, 2018).

Furthermore, we should not forget that children live within changing contexts and societies that demand adaptive and maladaptive behaviors in which the social context in which they live plays a fundamental role. We define adaptive behavior as the set of conceptual, social, and practical skills that the individual has learned and that allow him to respond to the circumstances of daily life. By non-adaptive behavior, we understand socially annoying or disturbing behaviors that prevent or reduce the possibilities of adaptation to the environment, as well as the development of new academic and social behaviors. Therefore, other social issues related to poverty, discrimination or equal opportunities among all people are relevant and will mark not only their personal development but also act as key factors that may affect their academic development (Morales, Rodríguez, & García, 2020).

## 2. Empathy:

One of the most important intraindividual variables in terms of emotional skills is empathy, understood as the ability to put oneself in someone else's position, and to understand their perspective and feelings (González, Álvarez, & Fernández, 2015). In adolescence, empathy is an important construct for understanding and cooperation among peers, owing to the multiple bidirectional interactions that take place in educational centres. Empathy consists of these three basic components: (a) the perception of the situation of the other; (b) the interiorisation of the situation of the other; and, (c) the assumption of the situation of the other as one's own; in a process that ultimately aims to know and understand the situation and experience of the other (Micó, Cava, & Buelga, 2019).

Research on empathy describes it as a multidimensional construct, which includes emotional, cognitive, situational and dispositional dimensions (Tur-Porcar, Llorca, Malonda, Samper, & Mestre, 2016). The emotional dimension of empathy is related to concern and compassion for another, in what could be defined as the emotional response to another's feelings. The cognitive dimension is reflected in the ability to understand another's point of view, and identify with their experience. The emotional and cognitive dimensions are interdependent in their response to another's problems (Bautista, Vera, Tánori, & Valdés, 2016). The dispositional dimension refers to the relatively stable tendency to perceive another's emotions vicariously, and the situational dimension relates to the degree of vicarious emotional experience undergone by a person in a given setting (Rodrigues, Teixeira, Alves, & Rodrigues, 2019).

In school settings, empathy has been positively correlated with other psychological and/or academic variables, such as resilience (Coppari et al., 2018, Hess, 2018, Pintado and Cruz, 2017); self-esteem (Cañete and Díaz, 2019, Siguenza et al., 2019); personal relationships in the classroom (Micó et al., 2019); and achievement-related intrinsic motivations and orientations (Hernández et al., 2019, Musitu et al., 2019), in the same trend of adaptive behaviours; the relationship with other variables such as academic performance (Zorza, Marino, & Acosta, 2019), academic engagement and commitment (Lee, Lee, & Kim, 2018), and even cyber-bullying (Palacio, 2020) is less clear.

The scientific literature generally agrees that women present higher levels of empathy than men, as well as on the increase in empathy with age (Cáceres and López, 2018, Gómez and Durán, 2020, Smith et al., 2019).

## 3. Self-esteem

For its part, self-esteem is one of most widely studied self-referential variables in adolescents, and it is regarded as one of the most important in terms of learning. Self-esteem is an intrapersonal assessment of features and skills (Orth & Robins, 2019). According to Lars and Ferguson (2020) self-esteem is constituted by two main dimension: personal valuation (a person's assessment with regard to their self-concept) and personal capacity assessment (a person's realistic expectations concerning their ability to carry out their duties efficiently).

As such, self-esteem is a variable that enables a person to undertake actions, successfully or otherwise, in their immediate context, and plays a role in the individual's personal development (Giri, 2020). Adolescence is the period in which self-assessment faces the greatest difficulties, and is widely accepted that this can have an effect on the personal and academic development of students (Batsiou, Bournoudi, Antoniou, & Tokmakidis, 2020).

Scientific literature on self-esteem in adolescents links with to numerous psychological/academic variables, such as greater motivation (Wheeler, 2020); academic commitment (Duru & Balkis, 2017); ability to strike friendly relationships (Price, Drabick, & Ridenour, 2019); and even academic performance (D'Mello, Monteiro, & Pinto, 2018); as well as other psychological variables conducive to intrapersonal skills and wellbeing (Kang et al., 2020, Satici, 2019).

## 4. Satisfaction with life:

Finally, satisfaction with life consists in a comprehensive and global evaluation of a person's most immediate context. Diener (2000) establishes the main features of subjective wellbeing as follows: (1) it is constructed through personal experiences and their assessment; (2) it incorporates positive valuations, not simply the absence of negative ones; and, (3) it includes a comprehensive valuation of a person's life. In this way, satisfaction with life responds to the cognitive component which, together with the emotional one (positive and negative affects), constitute the subjective wellbeing construct (Diener, 2000). Following this, satisfaction with life is the subjective evaluation of positive and negative aspects, leading to a global valuation of personal satisfaction (Diener, 2000).

The importance of studying and promoting life satisfaction lies in its benefits on intra- and interpersonal functioning. In addition, it has shown an inverse relationship with depressive symptoms or gender dysphoria (Rabito & Rodríguez, 2016). However, those who are

extremely dissatisfied show greater vulnerability to aggressive behavior, suicidal ideation, risky sexual behavior, substance use, and physical problems (Huebner & Diener, 2008). Therefore, it is especially interesting to study life satisfaction in students, since it is a period in which coping with new demands affects the perception and assessment that students make of themselves. It is possible to infer that the existence of different sources of stress during this difficult stage, coping with new situations, causing their life satisfaction to be reduced (Novoa & Barra, 2015).

The scientific literature on satisfaction with life has traditionally focused on psychological and social risks, and this variable is regarded as being a valuable tool to predict certain pathological states, the ability to cope with stressing situations and patterns of behaviour (Lupano & Castro, 2019). In any case, few studies deal with satisfaction with life in adolescents, as most existing studies focus on adult populations (Gadermann, Guhn, & Zumbo, 2012).

## 5. Objectives and hypothesis:

Therefore, as pointed out by Vizoso and Arias (2018), more studies are needed to better understand psychological and academic variables, and to foster the correct personal and academic development of students during their school years, reducing the chances of school dropout.

In this context, and given the lack of specific studies that relate the variables stated above, the main aim of this study is to analyse the relationship between empathy, self-esteem and satisfaction with life in adolescent students.

Three main hypotheses are put forward:

(Hypothesis 1) Self-esteem is positively correlated with empathy and satisfaction with life, in a line of adaptive behaviour;

(Hypothesis 2) There are significant gender differences in terms of empathy, self-esteem and satisfaction with life;

(Hypothesis 3) Self-esteem plays a mediating role between empathy and satisfaction with life.

## 6. Method

### 6.1. Sample

The sample comprised 1117 adolescent students, both male ( $N=603$ ; 53.98%) and female ( $N=514$ ; 46.01%) with ages ranging from 12 to 18 years ( $M=14.40$ ;  $DT=1.59$ ) belonging to 9 public secondary schools in the province of Zaragoza (Spain). The schools were chosen by simple random sampling. Inclusion criteria were the ability to read in perfect Spanish to make sure that they could understand the questionnaire. Incomplete questionnaires were discarded and students with cognitive disorders who could not fully understand the questionnaire were excluded. The research responds to a descriptive ex post facto design (Ato, López, & Benavente, 2013).

### 6.2. Instruments

In order to establish the level of empathy among students, the Basic Empathy Scale (BES) (Jolliffe & Farrington, 2006), translated and adapted for Spanish adolescents by Oliva et al. (2011) was used; the scale measures empathy through 9 items that target cognitive (e.g. 'When someone is feeling 'down' I can usually understand how he/she feels') and emotional (e.g. 'I become sad when I see other people crying') variables in a 5-point Likert scale ranging from 'Strongly agree' (1) and 'strongly disagree' (5). The Spanish version of the questionnaire yields a Cronbach's alpha value of 0.77, and 0.81 in our study.

In order to establish the participants' self-esteem, Rosenberg's Self-Esteem Scale (RSE) (Rosenberg, Schooler, Schoenbach, & Rosenberg, 1995), validated and adapted for Spanish students by Martín, Núñez, Navarro, and Grijalva (2007), was used. This unifactorial scale comprises 10 items that measure self-esteem in academic settings (e.g. 'I take a positive attitude towards myself') in a 5-point Likert scale ranging from 'Strongly agree' (1) and 'strongly disagree' (5). The questionnaire yields a Cronbach's alpha value of 0.79, and 0.80 in our study.

Finally, in order to measure satisfaction with life Diener, Emmons, Larsen, and Griffin (1985) Satisfaction With Life Scale (SWLS), translated and validated for Spanish students by Pons, Atienza, Balaguer, and García-Merita (2000) was used. The scale comprises five items that measure satisfaction with life (e.g. 'In most ways my life is close to my ideal'), in a 5-point Likert scale ranging from 'Strongly agree' (1) and 'strongly disagree' (5). The questionnaire yields a Cronbach's alpha value of 0.84, and 0.86 in our study.

### 6.3. Protocol

Before the study was undertaken, the cooperation of the schools was sought, and both the participants and their parents/tutors signed an informed consent form. All students and parents/tutors were informed of the nature of the study, and participation was voluntary, in full accordance with the guidelines set out in the Declaration of Helsinki (Mundial, 2000). The protocol was examined and endorsed by the Ethics Committee of OPIICS (S46\_20R) belonging to Psychology and Sociology Department, University of Zaragoza.

### 6.4. Data analysis

First, descriptive data were undertaken in order to establish the sociodemographic profile of participants. Afterwards, correlations between the variables were established, processed and analysed with the aid of statistical software IBM SPSS v26.0. A cluster analysis was also carried out with the objective of creating groupings by similarity, in groups or sets, so that the members of the same group have similar characteristics; that is, significant groups of the study sample that share similar characteristics of the constructs studied in our research. Finally, the MACRO tool in SPSS v26.0 was used to establish the indirect effect of self-esteem in the relationship between empathy and life satisfaction by bootstrapping (10000 runs) through a mediation analysis, with the objective of explaining how self-esteem produces or does not produce a certain effect on the relationship between empathy and life satisfaction. For all the operations, a  $p \leq 0.05$  level of significance was adopted, with a 95% confidence level.

## 7. Results

### 7.1. Demographic variables:

The sample comprised 1117 adolescent students, both male ( $N=603$ ; 53.98%) and female ( $N=514$ ; 46.01%) with ages ranging from 12 to 18 years ( $M=14.40$ ;  $DT=1.59$ ) (Table 1).

Table 1. Socio-demographic characteristics of the sample.

		N	%
Gender	Male	603	53.98
	Female	514	46.01
Age	12years	146	13.07
	13years	212	18.97
	14years	241	21.57
	15years	252	22.56
	16years	194	17.36
	17years	67	5.99
	18years	5	1.61
Academic year	1° ESO	224	20.05
	2° ESO	307	27.48
	3° ESO	310	27.75
	4° ESO	276	24.70

### 7.2. Descriptive variables and gender differences

As illustrated by Table 2, female participants yielded higher empathy and self-esteem scores, generating a small significant effect on the self-esteem variable (Cohen's  $d=-0.307$ ). Male participants yielded higher satisfaction with life scores (Cohen's  $d=0.009$ ) (see Table 3).

Table 2. Results of descriptive variables empathy, self-esteem and satisfaction with life.

	Total		Male		Female		Cohen's d
	x	sd	x	sd	x	sd	
Empathy	2.72	0.96	2.71	1.01	2.77	0.91	-0.062
Self-Esteem	3.84	0.76	3.74	0.80	3.97	0.69	-0.307
Satisfaction with life	3.00	1.04	3.00	0.98	2.99	1.11	0.009

Table 3. Correlational analysis results for empathy, self-esteem and satisfaction with life.

	1	2	3
Empathy	1		
Self-Esteem	0.391**	1	
Satisfaction with life	0.177**	0.273**	1

	1	2	3
<b>Mean (X)</b>	2.72	3.84	3.00
<b>SD</b>	0.96	0.76	1.04
<b>Cronbach's alpha</b>	0.81	0.80	0.86

\*\*Correlation significant at 0.01 level (2-tailed).

\*Correlation significant at 0.05 level (2-tailed).

### 7.3. Correlational analysis between empathy, self-esteem and satisfaction with life

The study variables were found to be significantly correlated. Empathy was found to be more strongly correlated with self-esteem ( $r=0.391$ ) than with satisfaction with life ( $r=0.177$ ). Self-esteem and satisfaction with life were found to be positively correlated ( $r=0.273$ ).

### 7.4. Cluster analysis in significant groups of empathy, self-esteem and satisfaction with life

Afterwards, the K-means clustering method was used to distribute the sample into three significant groups (Table 4). Group 1 (N=345, 30.88%) is characterised by above average scores in all three variables, following a pattern of adaptative behaviours.

Table 4. Cluster analysis for empathy, self-esteem and satisfaction with life.

	Grupo 1 (N=345, 30.88%)		Grupo 2 (N=449, 40.19%)		Grupo 3 (N=323, 28.91%)		Sample total (N=1117, 100%)		F	Sig.
	x	sd	x	sd	x	sd	x	Sd		
<b>Empathy</b>	2.78	0.87	3.38	0.58	1.73	0.59	2.72	0.96	537.292	0.000
<b>Self-Esteem</b>	4.27	0.61	3.91	0.66	3.30	0.72	3.84	0.76	179.958	0.000
<b>Satisfaction with life</b>	4.20	0.53	2.63	0.64	2.22	0.74	3.00	1.04	909.542	0.000

The same methodology was used to carry a cluster analysis discriminating by gender. Among males (Table 5), two significant groups may be highlighted, Group 1 (N=199, 33.01%), characterised by above average scores in the variables under study, in a pattern of adaptative behaviours, and Group 2 (N=148, 24.54%), characterised by well-below average scores, in a clear patter of less adaptative practices; this is the smallest of the three groups identified.

Table 5. Cluster analysis for empathy, self-esteem and satisfaction with life (male subsample).

	Group 1 (N=199, 33.01%)		Group 2 (N=148, 24.54%)		Group 3 (N=256, 42.45%)		Sample total (N=603, 100%)		F	Sig.
	x	sd	x	sd	x	sd	x	sd		
<b>Empathy</b>	3.07	0.86	1.41	0.46	3.19	0.63	2.71	1.01	357.544	0.000
<b>Self-Esteem</b>	4.28	0.62	3.07	0.70	3.70	0.68	3.74	0.80	139.320	0.000
<b>Satisfaction with life</b>	4.07	0.55	2.34	0.77	2.56	0.61	3.00	0.98	417.580	0.000

Among females (Table 6), Group 1 (N=164, 31.90%) characterised by well-above average scores in the variables under study, in a pattern of adaptative behaviours.

Table 6. Cluster analysis for empathy, self-esteem and satisfaction with life (female subsample).

	Group 1 (N=164, 31.90%)		Group 2 (N=165, 32.10%)		Group 3 (N=185, 35.99%)		Sample total (N=514, 100%)		F	Sig.
	X	sd	x	sd	x	sd	x	sd		
<b>Empathy</b>	3.56	0.55	2.49	0.85	2.21	0.67	2.73	0.91	174.296	0.000
<b>Self-Esteem</b>	4.13	0.61	4.24	0.57	3.58	0.67	3.97	0.69	57.534	0.000
<b>Satisfaction with life</b>	3.06	0.57	4.24	0.56	1.99	0.65	2.99	1.11	610.868	0.000

### 7.5. Mediation model effects of self-esteem in the relationship between empathy and satisfaction with life

Mediation analyses following the guidelines set out by [Tal-Or, Cohen, Tsarfati, and Gunther \(2010\)](#) were undertaken with the aid of SPSS (v. 26.0)'s macro Process 3.0 developed by [Hayes \(2018\)](#), with the aim of testing the potential mediating effect of self-esteem in the relationship between empathy and satisfaction with life.

As illustrated by [Fig. 1](#), self-esteem was found to mediate in the relationship between empathy and satisfaction with life. The results indicated an effect of empathy (VI) in the mediating variable of self-esteem of 0.65, and self-esteem to have an effect on satisfaction with life (VD) of 0.23, in both cases  $p > .001$ . Zero was not included in the bootstrap interval,  $B = 0.15$ ,  $SE = 0.03$ , 95% [CI 0.08, 0.22], so it can be argued that self-esteem mediates in a significant way in the relationship between empathy and satisfaction with life.



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Fig. 1. Mediation model for self-esteem, empathy and satisfaction with life.

These results suggest that, by itself, empathy had no significant effect on satisfaction with life (0.02,  $p < .10$ ), but once the variable self-esteem is introduced, a total effect of 0.17,  $p < .001$  is observed (direct effect + indirect effect) c the proportion of variance being explained by model  $R^2 = 0.17***$ . This suggests that self-esteem plays a mediating role between empathy and satisfaction with life.

### 8. Discussion:

The object of the study was to examine the relationship between empathy, self-esteem and satisfaction with life in adolescent students in secondary school.

Our first hypothesis stated that self-esteem is positively correlated with empathy and satisfaction with life, in a line of adaptive behaviour. This hypothesis was fully confirmed. First, correlation analysis yields clear results concerning the positive correlation between all three variables. Numerous studies report the significant relative correlation between empathy and self-esteem ([Green et al., 2018](#), [Huang et al., 2019](#)) and, to a lesser extent, between empathy and satisfaction with life ([Carrascosa and Ortega, 2018](#), [Gonçalves and Figueiredo-Braga, 2019](#)). The literature also emphasises the close connection between self-esteem and satisfaction with life ([Acun, 2020](#), [Rojas and Fallas, 2017](#)).

On the other hand, based on the cluster analysis, it is observed that a significant proportion of the students presents well-above average scores in terms of empathy, self-esteem and satisfaction with life. No previous study that establish a close link between all three variables, let alone undertaking a cluster analysis, could be found. However, some previous studies approach the issue from a different perspective; for instance, some studies outline similar patterns of adaptive behaviours, establishing the positive correlation between empathy and self-esteem and emotional intelligence ([Pérez-Fuentes, Molero, & Gázquez, 2019](#)); academic performance ([Sa et al., 2019](#)); and, anxiety and stress prevention ([Morales et al., 2020](#)); and their negative correlation with academic burnout ([Cho & Jeon, 2019](#)), and school bullying ([Ibáñez de Maeztu, 2017](#)). Other studies relate self-esteem and satisfaction with life with other variables such as personal wellbeing ([Satici, 2019](#)); academic performance ([Eakman, Kinney, Schierl, & Henry, 2019](#)); and intrapersonal skills ([Kang et al., 2020](#)).

The second hypothesis held that there are significant gender differences in terms of empathy, self-esteem and satisfaction with life. The scores of female participants in the empathy and self-esteem variables was higher, in the latter case with a small significant effect according to Cohen's  $d$ . Numerous studies present similar results, finding higher degrees of empathy and self-esteem in women ([Bergagna and Tartaglia, 2018](#), [Cardozo et al., 2011](#), [Gómez and Durán, 2020](#), [Helwig and Ruprecht, 2017](#), [Van der Graaff et al., 2018](#)). On the other hand, gender differences in terms of satisfaction with life have been paid less attention, and the results are less clear, as some of the existing studies also take into consideration subjective wellbeing. Our results suggest that males score higher in this variable ([Kuang & Fu, 2017](#)), although other studies find the opposite ([Balkis and Duru, 2017](#), [Batz and Tay, 2018](#), [Blanca et al., 2018](#)).

Based on the results of the cluster analysis undertaken to bring all three variables together, while differentiating behaviour patterns by gender, the more self-determined male and female sub-groups yield similar scores. No previous studies bring the sample together in

clusters or groups, even less after discriminating the sample by gender, but some studies approach the issue from various perspectives. [Molero, Pérez-Fuentes, Gázquez, and Barragán \(2018\)](#), in a study that also considers the burnout variable, find high scores in self-esteem and empathy in two significant groups, in relation to other variables such as social support; [Wang et al. \(2019\)](#) undertake a lateral study to establish profiles characterised by the relationship between empathy and satisfaction with life; [Goretti, Ardian, Yuliawanti, Bethari, and Maharani \(2020\)](#) establish the relationship between empathy and self-esteem, and emphasise the predictive value of emotional regulation in this regard.

Finally, our third hypothesis held that self-esteem plays a mediating role between empathy and satisfaction with life. This hypothesis was also confirmed by the results, although the direct effects of empathy on satisfaction with life were initially found to be not significant; that is, empathy has by itself little predictive value on satisfaction with life. Previous studies have reached similar conclusions. [Garrido, Pons, Murgui, and Ortega \(2018\)](#) consider the predictive value of social support and family self-concept over satisfaction with life; [Cañero, Mónaco, and Montoya \(2019\)](#) adopt a similar argument, emphasising the predictive value of attention and emotional clarity; [Vinayak and Judge \(2018\)](#) argue that resilience can be used to predict satisfaction with life in adolescents.

At any rate, the mediating role of self-esteem between empathy and satisfaction with life is clear. Although no previous studies examine the mediating role of self-esteem in the relationship of empathy and satisfaction with life, some approach the issue in similar ways, for instance by examining the mediating role of self-esteem on satisfaction with life ([Arslan, 2019](#), [Duy and Yıldız, 2017](#), [Ruiz et al., 2018](#), [Ruvalcaba et al., 2017](#)), also incorporating other variables such as resilience, optimism and positive emotions ([Kapıkıran & Acun-Kapıkıran, 2016](#)); and parental styles ([Pérez-Fuentes et al., 2019](#)). Other studies examine the mediating role of self-esteem on the relationship between emotional variables and satisfaction with life; [Guasp, Navarro, Giménez, and Prado \(2020\)](#) refer to the mediating effect of self-esteem in the relationship between emotional clarity and regulation and satisfaction with life; [Zarei, Akbarzadeh, and Khosravi \(2019\)](#) undertake a similar study, also taking into consideration emotional attention; [Li, Han, Wang, Sun, and Cheng \(2018\)](#) also consider social support and academic performance, as well as emotional exhaustion.

These results emphasise the importance of the self-esteem variable in adolescent students, specifically in the relationship between empathy and satisfaction with life. The practical implications that this has on educational centres must be taken into account.

## 9. Conclusions

The findings of the study leave us with a series of conclusions. First, self-esteem is positively related to empathy and life satisfaction among adolescent students. On the other hand, from the cluster analysis, it is observed that a significant proportion of them present scores well above the mean in terms of empathy, self-esteem and life satisfaction, thus establishing an adaptive pattern. Secondly, the female participants' scores on the empathy and self-esteem variables were higher, in the latter case with a small significant effect according to Cohen's *d*, which suggests that the female gender has higher scores on these variables. Finally, as we have been able to verify, self-esteem plays a mediating role between empathy and life satisfaction which is denoted. In connection with this, as future prospects, it would be interesting to approach the role of self-esteem in students in their study with other psychological variables that may influence the personal and academic development of adolescent students. Similarly, it would be interesting to carry out longitudinal studies that would allow an assessment of the constructs studied as well as to verify their evolution in the students in the application of a specific intervention program over a period of time. At the same time, it would be interesting to consider other educational stages such as Primary Education (6–11 years) and/or University (18 years and older). Finally, other sociodemographic variables that could be taken into account could be gender, age, type of educational center, educational styles, etc.

## 10. Limitations of the study

Among the limitations of the study we can mention the cross-sectional design of the research carried out by taking the data in a single spatio-temporal moment in which the scores of the variables studied may vary from one school year to another and also within the same academic year depending on different personal and academic circumstances of the students. In turn, the educational centers surveyed respond randomly to their inclusion in the research within the educational centers available in the city by not taking a stratified and uniform sample that includes all the areas of the city with the characteristics at the sociodemographic level that may be involved such as the type of center, the characteristics of the student body, the socioeconomic and cultural differences of the families as well as other social and/or cultural issues.

## 11. Practical implications

The study may have practical implications related to the promotion of didactic strategies aimed at fostering self-esteem as a self-regulating variable of great importance according to our results. In turn, extending to empathy, the promotion of self-determined behaviors from an early age, such as the promotion of effort and dedication, school commitment, assumption of intrinsic motivations, etc., can enhance the personal and academic development of adolescent students, leading to general life satisfaction. Likewise, specific intervention programs directed by professionals in the psychological and educational fields in the promotion of the variables studied can contribute to the integral and educational formation of the student, reducing early school dropout.

Finally, the results of our research encourage the educational scientific community to continue researching in the educational field of educational psychology and, specifically, in the study of the different psychological variables that allow us to advance in the construction

of an adequate personal and academic development of school adolescents.

## 12. Ethics approval

All procedures performed in studies involving human participants were in concordance with the ethical standards of the institutional and/or national research committee and with the 2000 Helsinki declaration and its later amendments or comparable ethical standards.

Ethics were approved through OPIICS research group (S46\_17R), which included obtaining written informed consent from all participants, right to withdraw and a full debriefing at the end of the study in accordance with the Declaration of Helsinki.

Pablo Usán, Carlos Salavera y Alberto Quílez contributed to the conception and design of the work. Pablo Usán organized the sample collection and data preparation. Carlos Salavera performed the data collection, analysis, and interpretation. Alberto Quílez, Raquel Lozano and Cecilia Latorre prepared drafts of the article. Pablo Usán, Carlos Salavera, Alberto Quílez and Raquel Lozano and Cecilia Latorre critically reviewed its comprehensive content. All authors read and approved the final manuscript.

## Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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## Data availability

Data will be made available on request.

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