



Article

Influence of Psychological Variables in Adolescence: The Mediating Role of Self-Esteem in the Relationship between Self-Efficacy and Satisfaction with Life in Senior High School Students

Pablo Usán Supervía ¹, Carlos Salavera Bordás ^{1,*}, Joel Juarros Basterretxea ^{1,*} and Cecilia Latorre Cosculluela ²

¹ Department of Psychology and Sociology, University of Zaragoza, Pedro Cerbuna n°12, 50009 Zaragoza, Spain; pusan@unizar.es

² Department of Education Sciences, University of Zaragoza, Valentín Cardenera n°4, 22003 Huesca, Spain; clatorre@unizar.es

* Correspondence: salavera@unizar.es (C.S.B.); joeljuarros@unizar.es (J.J.B.)

Abstract: Background: During the school years, many contextual and academic scenarios ensue that demand students mobilise their intrapersonal and social abilities. The way these situations are faced will determine the future personality of teenage students. This study aims to analyse the relationship between self-esteem and self-efficacy and the possible mediating role of satisfaction with life in secondary school students. Methods: The study comprises 816 participants, both male (N = 426; 52.20%) and female (N = 390; 47.89%) from 11 private and public secondary schools. The instruments used are the Academic Self-Efficacy Scale (ASES), the Rosenberg Self Esteem Scale (RSES) and the Satisfaction With Life Scale (SWLS). Results: The results reveal a gender difference in terms of self-esteem and significant correlations between the three constructs under consideration. Self-esteem is found to play a mediating role between self-efficacy and life satisfaction. Conclusion: The study reveals that self-esteem has significant influence in self-efficacy and life satisfaction in adolescents and in the mediating role that self-esteem plays in the relationship between the other two constructs. This emphasises the importance of building self-esteem towards the personal and psychological development of students.

Keywords: self-efficacy; self-esteem; life satisfaction; adolescents; students



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1. Introduction

During the school years, students undergo numerous challenges, academic and otherwise, in their everyday lives (Sarrionandia 2022), challenges that expose each person's personality traits (Monsivais et al. 2022). Some of these challenges are easy to overcome, but others pose a test to the individual's intrapersonal skills (Ness et al. 2021).

Adolescence is also a key period in which students must fully mobilise their coping strategies to improve their personal and academic development (Palacios 2019), leading to adaptive behaviours that result in positive personal and academic development, or non-adaptive behaviours that can undermine this development and even determine their adult personality (Morales Vives et al. 2020), resulting in school dropout in the most extreme instances (Barreno Freire et al. 2019).

Although most students go through this period without major developmental issues, others can suffer problems leading to lack of academic motivation and commitment to the school institution, low engagement with school tasks, social cohesion, and even stress and anxiety (Verhoeven et al. 2019).

As such, the interrelated study of the different psychological variables at a time of change, such as adolescence, is extremely important for the personal and academic development of students (Wang et al. 2021).

Bandura (2006) defined self-efficacy as self-belief in the ability to achieve positive results in learning settings by activating forward thinking, which can anticipate possible scenarios and outcomes and direct action accordingly (Bandura 2006). Self-efficacy is one of the most widely studied variables in academic settings, which demonstrates its prominent role in the way students face their school demands (Yavuzalp and Bahcivan 2020).

In this way, self-efficacious people can organise their personal and academic time autonomously, monitor their activities using metacognitive learning strategies, reflect on their intellectual achievements and handle their own skills proactively (González et al. 2020).

In academic settings, self-efficacy comprises belief in the ability to achieve academic goals and is built on self-control, vicarious experience, social persuasion and physiological states, along with family and teaching support (Schukajlow et al. 2019). Self-efficacy contributes to learning symbolic processes that generate self-trust (Dominguez-Lara and Fernández-Arata 2019), that is, the development of social, cognitive, behavioural and emotional abilities helps to elevate self-efficacy, which determine the possible success of failure of the actions undertaken (Sánchez and García 2017).

Empirical research suggests the relationship of self-efficacy with other psychoeducational variables, such as engagement, motivation (Conradty et al. 2020), commitment to academic tasks (Kryshko et al. 2022) and academic performance (Honicke and Broadbent 2016), as well as subjective happiness and academic wellbeing (Cobo-Rendón et al. 2020). Conversely, low self-efficacy is related to non-adaptive behaviours in academic settings, such as low engagement and commitment to school tasks (Arslantas 2021), social support and resilience (Li et al. 2018) and academic performance (Tus 2020) which can lead to psychological problems such as anxiety, stress and even depression (Bektas et al. 2021).

On the other hand, self-esteem can be defined as the assessment that a person undertakes about themselves, creating a subjective image of their skills and features, approving or disapproving of themselves (Moon and Mello 2021). The concept of self-esteem refers to an individual's evaluation or general feelings regarding the self (Rosenberg et al. 1995). Thus, self-esteem comprises two main dimensions: personal value and perception of personal skills. While the former alludes to the person's self-concept, the latter concerns real expectations about the person's ability to deal with their duties (Esteban Huaranga et al. 2022).

Self-esteem, as a key psychological construct in the process of development of individuals, influences the different contexts in which individuals find themselves in their life cycle. Academic and familiar settings, such as social institutions, play a complementary role in the construction of self-esteem, allowing adolescents to develop skills and helping them feel accepted and valued by their peers, teachers and family members (Monserrate 2022).

Self-esteem is regarded as one of the most important constructs for learning processes (Orth and Robins 2019), especially during adolescence and the new challenges that it poses to the self-evaluation of students, and attention is required to promote the students' personal and academic development (Lyyra et al. 2021).

The scientific literature on self-esteem focuses on its relationship with other psychoeducational variables. In this way, it has been argued that self-esteem is positively correlated with academic engagement (Bang et al. 2020); motivation (Wheeler 2020); resilience and self-efficacy (Liu et al. 2020); intra-familial communication (Hañari et al. 2020); and other personal variables that lead to greater wellbeing in the school setting (Kang et al. 2020) in adolescent students. Otherwise, low self-esteem has been related with low academic motivation (Masselink et al. 2018); poorer academic performance (Busalim et al. 2019); reduced self-efficacy (Darvishi et al. 2020); and even eating disorders (Colmsee et al. 2021) and depression (Zhou et al. 2020).

Finally, life satisfaction is the cognitive component of subjective wellbeing, in combination with an emotional component (positive and negative affects) (Diener 2006). According

to Diener (2000), the main features of subjective wellbeing are the following: (1) it is built over individual life experiences and their assessment; (2) it includes positive dimensions, not merely the absence of negative ones; and (3) it includes global evaluations about the person's life. From the cognitive perspective, life satisfaction is the result of the person's self-evaluation of quality of life and achievements (Diener et al. 2013). The individual assesses the positives and negatives in their life and makes a subjective and general assessment of it (Diener 2006).

According to Kjell and Diener (2021), changes in life satisfaction are generally related to changes in specific and accessible dominions, not to random contextual factors. As such, research on life satisfaction in adolescents has largely focused on determining risks to the psychological and social dimension, in order to predict pathological states and establish tools to cope with adverse events and avoid behavioural problems (Lupano Perugini and Solano 2019; Lopes and Nihei 2021; Rogowska et al. 2020). The scientific literature also relates life satisfaction to other variables, such as self-esteem (Acun 2020); social intelligence and positive affects (Rezaei and Bahadori Khosroshahi 2018); academic performance (Foroughi et al. 2022); and optimism and general wellbeing (Tavakoly Sany et al. 2021) in adolescent students.

However, research has paid considerably less attention to life satisfaction in adolescents than in adults, despite the fact that the available studies argue that the evolutive idiosyncrasy of a person is acquired in the early stages of life, and that this will remain unchanged throughout life (González et al. 2017).

Following Butler et al. (2020), it can be argued that a better understanding of psychoeducational variables is needed to foster the personal and academic development of students. In this context, the main aim of this study is to analyse the relationship between self-efficacy, self-esteem and satisfaction with life in a sample of secondary school students.

The following three research questions are put forth:

- (a) Self-efficacy, self-esteem and satisfaction with life are correlated by gender.
- (b) Self-esteem correlates with self-efficacy and self-esteem in adolescents.
- (c) Self-esteem plays a mediating role in the relationship between self-efficacy and satisfaction with life.

2. Method

Sample: The study comprised 816 students, both male (N = 426; 52.20%) and female (N = 390; 47.89%) from eleven public and private secondary schools, sitting the two last compulsory years before university or vocational training, with ages ranging from 16 to 19 years (A = 17.32; SD = 1.05). The only inclusion criterion was the ability to read and understand the Spanish questionnaires. Uncompleted and/or randomly filled questionnaires (17) and students who abandoned the test on their own and without just cause were excluded; 97.95% of the questionnaires submitted were included in the study, and 2.04% of them were excluded. The sample was selected by simple random sampling.

Measurement scales: Data collection was based on three standard questionnaires, one for each of the three constructs under analysis.

First, self-efficacy was measured with the Academic Self-efficacy Scale (ASS), validated for Spanish adolescents by García-Fernández et al. (2010). This monofactorial scale comprises ten items that evaluate self-efficacy in academic settings (e.g., "I consider myself able to successfully undertake any academic task"). Answers are expressed in a five-point Likert scale ranging from "Strongly disagree" (1) to "Strongly agree" (5). The translated and validated instrument yielded a Cronbach alpha score of 0.91 and of 0.89 in our study.

Self-esteem was measured with Rosenberg's Self-esteem Scale (RSE) (Rosenberg et al. 1995) validated and adapted to Spanish adolescents by Martín-Albo et al. (2007). This monofactorial scale comprises ten items (e.g., "In general, I am happy with myself"). Answers are expressed in a five-point Likert scale ranging from "Strongly disagree" (1) to "Strongly agree" (5). The reliability of the questionnaire in academic settings has been attested by several studies and yields a Cronbach alpha score of 0.79 and of 0.83 in our study.

Finally, self-satisfaction was measured with Satisfaction With Life Scale (SWLS) (Diener et al. 1985), translated and validated by Pons et al. (2000). The scale comprises five items that measure the general level of life satisfaction (e.g., “To date, I have achieved the important things I wanted from life”). Answers are expressed in a five-point Likert scale ranging from “Strongly disagree” (1) to “Strongly agree” (5). The reliability of the questionnaire in academic settings has been attested by several studies and yields a Cronbach alpha score of 0.84 and of 0.85 in our study.

Procedure: The study was undertaken with the cooperation of the secondary schools and the students’ parents/guardians, who signed an informed consent form. The questionnaires were completed in the classrooms under the supervision of the academic tutors and the research team. All parents/guardians were informed of the nature of the study, and participants were volunteers, following the ethical guidelines established in the Declaration of Helsinki. The protocol was also endorsed by the Ethics Committee, Departamento de Psicología y Sociología, Universidad de Zaragoza (S46_20R). Questionnaires were anonymous, and all participants could abandon the study at any stage.

Data analysis: Descriptive statistics were undertaken to establish the sociodemographic profile of the sample, with such data as gender, age, academic year and/or repeating year and descriptive statistics of self-efficacy, self-esteem and life satisfaction to check for gender differences using Cohen’s *d* test, which was used as a measure of “effect size”, based on the differences between two means, in this case, male and female. The Cohen’s *d* measures the relative strength of the differences between the means of two populations from the sample data. Pearson’s bivariate correlations between empathy, goal orientation and subjective happiness were calculated using IBM SPSS v27.0. Mediation analysis was undertaken using the SPSS v27.0’s MACRO tool by bootstrapping (10,000 runs). For all operations, a $p \leq 0.05$ level of significance was adopted, with a 95% confidence level.

3. Results

3.1. Demographic Variables

The study comprised 816 students, both male ($N = 426$; 52.20%) and female ($N = 390$; 47.89%) from eleven public and private secondary schools, sitting the two last compulsory years before university or vocational training, with ages ranging from 16 to 19 years ($A = 17.32$; $SD = 1.05$) (Table 1).

Table 1. Socio-demographic characteristics of the sample.

		N	%
Gender	Male	426	52.20
	Female	390	47.79
Age	16 years	97	11.88
	17 years	356	43.62
	18 years	327	40.07
	19 years	34	4.16
Academic year	1 BACH	418	51.22
	2 BACH	398	48.77
Type of institution	Public	524	64.21
	Private	292	35.78
Repeating year	Yes	86	10.53
	No	737	89.46

3.2. Descriptive Variables

The scores yielded by males and females (Table 2) were fairly even in terms of self-efficacy and life satisfaction, with females yielding only slightly better scores in the former and males in the latter. Females correlate higher (Sig. = 0.19) in terms of self-esteem.

Similarly, Cohen's d suggested a significant effect size (Cohen's $d = -0.240$; Effect size (r) = -0.119) that appears to confirm this difference.

Table 2. Results by descriptive variable: self-efficacy, self-esteem and satisfaction with life.

	Total		Male		Female		F	Sig.	Cohen's d	Effect Size (r)
	M	SD	M	SD	M	SD				
Self-efficacy	2.75	0.97	2.73	1.02	2.76	0.91	0.109	0.741	-0.031	-0.015
Self-esteem	3.44	0.89	3.35	0.94	3.56	0.80	0.5580	0.019	-0.240	-0.119
Satisfaction with life	3.01	1.03	3.01	0.98	3.00	1.09	0.005	0.942	0.009	0.004

3.3. Correlational Analysis between Self-Efficacy, Self-Esteem and Satisfaction with Life

Table 3 presents the results of correlational analysis. The variables were found to be correlated, but in different ways. While self-esteem strongly correlates with self-efficacy ($r = 0.457$) and less so with life satisfaction ($r = 0.154$), self-efficacy and life satisfaction were also found to be correlated ($r = 0.234$).

Table 3. Correlational analysis between self-efficacy, self-esteem and satisfaction with life.

	1	2	3
Self-efficacy	1		
Self-esteem	0.457 **	1	
Satisfaction with life	0.154 **	0.234 **	1
Mean (M)	2.75	3.44	3.01
Standard derivation (SD)	0.97	0.89	1.03
Cronbach's Alpha (α)	0.89	0.83	0.85

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

3.4. Mediation Effects of Self-Esteem in the Relationship between Self-Efficacy and Satisfaction with Life

In order to establish whether self-esteem plays a mediating role in the relationship between self-efficacy and self-esteem, mediation analysis was undertaken using Hayes's (2018) MACRO tool in Process 3.0 de SPSS (v. 27), following Tal-Or et al. (2010).

As illustrated by Figure 1, self-esteem was found to play a mediating role in the relationship between the other two variables. Self-efficacy (VI) was found to have an effect on self-esteem (0.41), and self-efficacy to have an effect on life satisfaction (VD) (0.23); in both cases, $p > 0.001$. Zero was not included in the bootstrap interval, $B = 0.10$, $SE = 0.03$, 95% [CI 0.04, 0.16], which confirms the third hypothesis, which argued that self-esteem plays a mediating role in the relationship between self-efficacy and life satisfaction in adolescents. Finally, self-efficacy on its own was not found to have a direct effect on life satisfaction (0.06, $p < 0.10$), but if we incorporate self-esteem into the model as a mediating variable, the total effect is 0.16, $p < 0.001$ (direct effect + indirect effect); the proportion of the variance explained by model $R^2 = 0.15$ ***, which again proves the mediating role that self-esteem plays in the relationship between self-efficacy and life satisfaction and the importance of the construct.

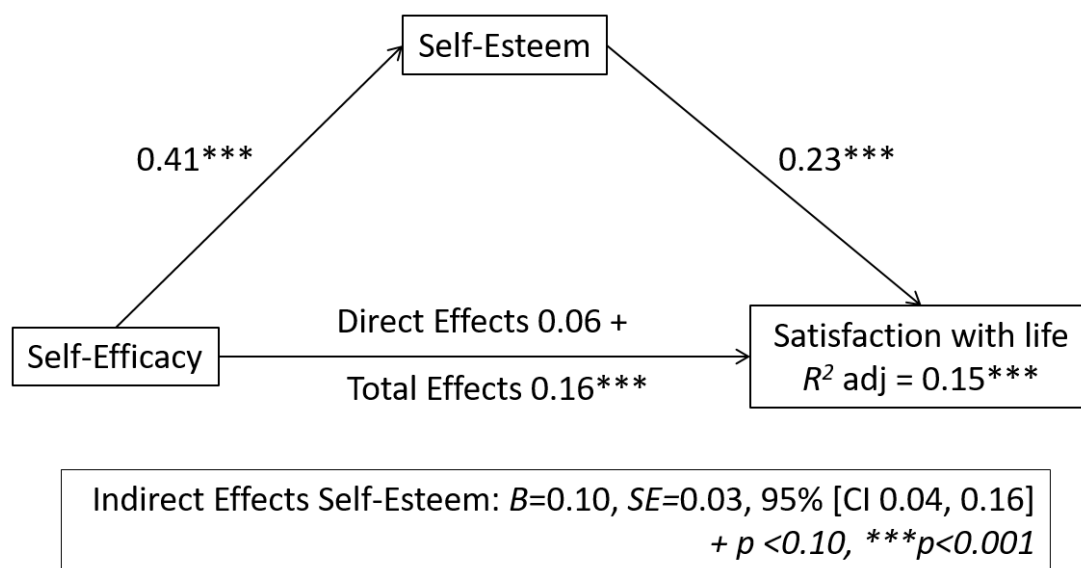


Figure 1. Mediating role of self-esteem in the relationship between self-efficacy and satisfaction with life.

4. Discussion

The aim of this study was to analyse the relationship between variables self-efficacy, self-esteem and life satisfaction in secondary school students.

The first research question argued that self-efficacy, self-esteem and life satisfaction are significantly correlated by gender differences. The hypothesis was partially confirmed. Significant differences were found in the variable self-esteem, with females yielding significantly higher scores, but not in the variables self-efficacy or life satisfaction.

In this regard, the existing literature reports contradictory results. In line with our results, [Ameen et al. \(2022\)](#) report higher scores among females, linked with other variables, such as body image and the use of social media; [Turan and Baki \(2020\)](#) point out the important role played by self-esteem in females as a predictor of attachment and social approval; [Cid-Sillero et al. \(2020\)](#) also report higher self-esteem among females, which they relate to better academic performance; [Bakhshi et al. \(2020\)](#) link higher self-esteem among females with higher academic motivation; and [Gao et al. \(2022\)](#), link this same tendency with a greater prevalence of anxiety and depression.

Wielding the opposite argument, [Mikkelsen et al. \(2020\)](#) report higher self-esteem among males, along with lower levels of loneliness, stress and quality of life; [Minev et al. \(2018\)](#) found higher self-esteem among males in relation to better academic performance; [Britwum et al. \(2022\)](#) present similar results, linked to better academic performance.

The literature also agrees with females scoring slightly better in terms of self-efficacy ([Ardura and Galán 2019](#); [Papyrina et al. 2021](#)) and males in terms of life satisfaction ([Batz and Tay 2018](#); [Faiza et al. 2022](#); [Lopes and Nihei 2021](#)).

The second research question argued that self-esteem, self-efficacy and life satisfaction in adolescents are correlated. The hypothesis was fully confirmed. Although no studies directly address the correlation between these constructs, some approaches tackle the issue from different angles, and these generally agree with our results.

On the one hand, some studies argue for the correlation between self-esteem and self-efficacy. [Tus \(2020\)](#) links this correlation to higher levels of positive self-concept and academic performance in adolescents; [Ugwuanyi et al. \(2020\)](#) relate these constructs to emotional intelligence and mathematical learning; and [Anderson and Haney \(2021\)](#) link greater creativity and reflexivity in the metacognitive process in students with greater levels of self-efficacy and self-esteem. On the other hand, some researchers have stressed the relationship between self-esteem and life satisfaction in adolescents. [Pérez-Fuentes et al. \(2019\)](#) correlate them positively with learning styles, leading to greater levels of emotional affect and communication; [Vilca-Pareja et al. \(2022\)](#) follow a similar line, relating

both constructs with emotional intelligence and resilience, as predictor variables; and [Yang et al. \(2019\)](#) use self-esteem and subjective wellbeing to predict academic performance in adolescents.

Finally, some research considers these three variables in adolescents, in relation to other variables. [Marcionetti and Rossier \(2021\)](#) point out the positive correlation between self-efficacy, self-esteem and life satisfaction in adolescents, in relation to professional adaptability, curiosity and school commitment; [Kumar and Priyadarshini \(2018\)](#) compare the relationship between the three constructs in a sample of generation 'Z' students; and [Guasp Coll et al. \(2020\)](#) draw the link between the variables under study and emotional intelligence in adolescents.

As such, we can conclude that there is a pattern of adaptive adolescent behaviour characterised by high levels of self-efficacy, life satisfaction and self-esteem; it is important to curate these constructs towards the students' personal and academic development ([Astorga et al. 2019](#)).

The third research question argued that self-esteem plays a mediating role between self-efficacy and life satisfaction in adolescents. The hypothesis was fully confirmed, as self-esteem was found to have an effect on the other two constructs. Based on the results of mediation analysis, self-efficacy was not found to predict life satisfaction; that is, the direct effect of the former over the latter was not statistically significant.

The scientific literature in adolescents has not directly addressed the mediating role of self-esteem in the relationship between the other two constructs, but some studies approach the issue from different angles.

[Demirci et al. \(2019\)](#) report that self-esteem plays a mediating role in the relationship between personal harmony and life satisfaction; [Kong et al. \(2012\)](#) point out the mediating role that self-esteem plays in the relationship between emotional intelligence and life satisfaction in adolescents; [Poudel et al. \(2020\)](#) emphasise the importance of the relationship between self-esteem, social support and psychological wellbeing; [Wang and Kong \(2020\)](#) stress that self-esteem and resilience play a mediating role in the relationship between attention and life satisfaction; and [Duy and Yıldız \(2019\)](#) argue that this variable plays a mediating role in the relationship between optimism and life satisfaction.

These results emphasise the significance of self-esteem as a psychological variable in adolescents, which has significant practical implications in the school setting ([Krauss et al. 2020](#)) and other contexts, such as family ([Valero-Moreno et al. 2022](#)) and social relationships ([Harris and Orth 2020](#)).

5. Conclusions

The study confirms the important effect that self-esteem plays on the other constructs leading to self-determined behaviours in students, which in turn foster their personal and academic development. The mediating role that self-esteem plays on the other two constructs emphasises the need to build self-esteem in students, leading to more adaptive behaviours for coping with the different situations that they may face in the classroom and other areas of life, improving their intrapersonal skills during such an important period in the life cycle as adolescence. For its part, life satisfaction responds to the cognitive component of subjective wellbeing, and it must be taken as an end in itself in the development and performance of students in the school setting. In this way, the promotion of self-determined behaviours by teachers and professionals of psychology can have a significant effect in the levels of life satisfaction in adolescent students.

6. Limitations of the Study

The main limitation of the study rests on its lateral nature; the data were collected at a specific point in time; empathy, goal orientation and subjective happiness of adolescents can vary from year to year, and even within the same school year, as a result of changes in the students' contextual conditions and personal and family factors. The secondary schools that entered the study were chosen randomly, and the sample is not representative of the

wider economic, social, educational and family set-up. In addition, the fact of focusing on dispositional variables, discarding others of a psychosocial nature, such as the sense of identification with the school (Di Battista et al. 2023), trust, justice and social identification (Di Battista et al. 2014) as well as sexual-minority and gender issues (Salvati and Koc 2022), among many others, may be another limitation of the study, underestimating the role of variables related to the broader social context of the students.

7. Future Studies

Future studies should include other psychological variables and even broader behavioural patterns in adolescents. Similarly, the focused study of the sociodemographic variables will provide additional data to establish significant differences between groups. It would be interesting to carry out longitudinal studies to examine the evolution of the target constructs over time, and even to implement active programmes to promote these constructs. Similarly, academic performance should also be taken into consideration. Finally, extending the study to other educational stages, including primary school (6–11 years) and secondary education (12–16 years) would allow us to establish if the relationships found in this study persist over time or a replaced by others.

8. Practical Implications

This research can help design strategies to help students towards more adaptive behaviours, such as the promotion of effort and motivation to make them more efficacious in their academic tasks, more resilient and with better self-esteem. This could also contribute to reducing school dropout rates and improve academic performance and general wellbeing. Active programmes directed by professionals of psychology can also contribute to this goal. These results are but a first step, which encourages us to continue investigating the psychology of adolescents and building strategies to help them in their personal, social and emotional development.

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