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Original

Influence of self-esteem and attention on the academic performance of ESO and FPB students☆

Sandra Cid-Sillero[a], Eider Pascual-Sagastizabal[b], and Juan-Ignacio Martínez-de-Morentin[c]

[a] *Instituto Municipal de Formación Profesional Básica de Ermua-Mallabia, Área de Desarrollo Local, Ayuntamiento de Ermua (Bizkaia), Spain*
[b] *Dpto. de Procesos Psicológicos Básicos y su Desarrollo, Universidad del País Vasco, UPV/EHU, San Sebastian, Spain*
[c] *Dpto. Psicología Evolutiva y de la Educación, Universidad del País Vasco, UPV/EHU, San Sebastian, Spain*

A B S T R A C T

The present study analyzes the influence that the self-esteem and attention of ESO and FPB students have on their academic performance. We worked with a sample of 336 students of 3rd and 4th of ESO and 1st and 2nd of FPB. The attention capacity of the students and self-esteem were analyzed. The academic performance was evaluated through the grades obtained after the course was completed. The results reveal that the cognitive abilities of the students seem to have a direct influence on their academic performance. That is to say, those students who have a better executive performance usually obtain better marks. In addition, self-esteem seems to play a moderating role between cognitive skills and academic performance, that is, interaction attention*self-esteem helps to better explain academic performance, but only in FPB students.

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Influencia de la autoestima y la atención en el rendimiento académico del alumnado de la ESO y FPB

R E S U M E N

El presente estudio analiza la influencia que tienen la autoestima y la atención del alumnado de ESO y FPB en su rendimiento académico. Se trabaja con una muestra de 336 estudiantes de 3º y 4º de la ESO y 1º y 2º de FPB. Se analizan la capacidad de atención del alumnado y su autoestima. El rendimiento académico se evalúa a través de las calificaciones obtenidas una vez finalizado el curso. Los resultados revelan que la atención del alumnado parece tener una influencia directa sobre su rendimiento académico. Es decir, aquellos que presentan un mejor desempeño ejecutivo suelen obtener mejores calificaciones. Además, la autoestima parece desempeñar un rol moderador entre las habilidades cognitivas y el rendimiento académico, es decir, la interacción atención*autoestima ayuda a explicar mejor el rendimiento académico, pero sólo en el alumnado de FPB.

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Introduction

Within the Spanish education system, obligatory secondary education (ESO) is aimed at students aged between 12 and 16, and was implemented across this age group in the 1994–1995 school year under the general education system act of 3rd October 1990, known by its Spanish acronym of LOGSE. Its aim is to train students to carry on learning and/or to enter the job market.

The last educational reform (LOMCE, 2013) updated the model aimed at students aged between 15 and 17 who are unable to follow obligatory schooling in order to ensure that this group would stay in the education system, calling the model *Formación Profesional Básica* (Basic Vocational Training, or FPB). Despite this measure, recent studies such as that by Sarceda, Santos, and Sanjuán (2017) state that this training is not achieving its basic aim of keeping

students within the education system. The common challenge in the educational field is to reduce academic failure at school.

This paper presents, on the basis of previous studies, the concept of attention, self-esteem and academic performance and the way these are differentiated by gender and course. Also the relationship between these three variables.

Executive functions

Historically, various authors have attempted to define executive functions. Banich (2004) defines executive functions as those abilities that coordinate the organisation of behaviour, considering and analysing the success of the strategies used to solve problems. García-Molina, Enseñat-Cantallops, Tirapu-Ustárroz, and Roig-Rovira (2009) define them as cognitive processes that allow the monitoring and regulation of behaviours for a purpose.

Attention: concept and differences by gender and course

Among executive functions, attention merits special consideration. It represents the fundamental pillar upon which all learning rests (Fernández-Castillo & Gutiérrez, 2009). The different functions of attention, staying alert and sensory information, are carried out by different networks of neural areas. According to Portellano and García Alba (2014), to carry out any cognitive process a filter must first be created between the stimuli reaching the nervous system; they further state that the structure of attention is not unitary but multimodal and hierarchical. Thus, in performing a particular sensory, cognitive or motor activity, attention facilitates information processing by selecting which stimuli are pertinent. In the words of these authors, ̈The attention process consists of selective vocalisation towards a particular stimulus, filtering, discarding and inhibiting the desired information" (p. 67).

There are different studies analysing selective attention by gender. Differences between boys and girls have been found in selective attention, with girls displaying increased costs in visual selective attention tasks where there is an invalid signal, in comparison with boys, who benefit from this kind of signal (Merritt et al., 2007). This shows the possible qualitative difference in the way boys and girls respond to a selective attention task (Merritt et al., 2007). Likewise, differences are found according to gender with regard to using attention techniques and strategies, with girls using these more than boys (Tejedor, González-González, & García-Señorán, 2008).

The studies of differences in selective attention among ESO (obligatory secondary education) and FPB students show that the latter display greater difficulties with selective attention than the former, due to difficulty in processing information and/or generic learning difficulty (Fernández-Castillo & Gutiérrez, 2009; Martínez González & Álvarez, 2005).

Self-concept/self-esteem: concept and differences by gender and course

Shavelson, Hubner, and Stanton (1976) mark the turning point in research into self-concept. The dominant view up to then had been one-dimensional. On the basis of empirical evidence, these authors propose a hierarchical, multi-faceted view of self-concept, stressing that it is organised and structured, but also hierarchical, stable and increasing in multi-facetedness with age and experience. Thus, Shavelson et al. (1976) define self-concept as ä person's perception of himself. These perceptions are formed through his experience with his environment, and are influenced especially by environmental reinforcements and significant others. ̈ (p. 411). This perception implies both descriptive and evaluative aspects. The hierarchical structure they propose has general self-concept at the top, while the lower levels represent specific perceptions about

academic and non-academic self-concept; the latter component is in turn made up of three spheres: physical self-concept, emotional self-concept and social self-concept.

There are different terms to refer to self-concept: self-image, self-awareness and so on. However, the most widely-used are self-concept and self-esteem. Though these have been used as synonyms (Fleming & Courtney, 1984), self-concept alludes to the idea each person has of themselves, while self-esteem is the appreciation each person has of themselves. This paper opts to use the term self-esteem as its object of study, as it is the evaluative dimension of self-concept.

During early adolescence there are different factors that can influence self-esteem, i.e., as boys and girls mature on cognitive and social terms they are able to assess their own strengths and weaknesses more realistically and become aware of how comparisons are made with their peers in class (Esnaola, Revuelta, Ros, & Sarasa, 2017). In this respect, self-esteem is a relevant indicator in understanding students' behaviour, as the person acts and performs not on the basis of their abilities, but on the basis of what they believe they are (Gutiérrez & Gonçalves, 2013). Harter (1990) defines global self-esteem as the different values that one places on the I as a person.

Most of the studies on global self-concept analysed show a higher score for boys than girls (Amezcua & Pichardo, 2000; Carmona, Gómez, & Ortega, 2010; Droguett, 2011). However, when it comes to analysing academic self-concept the results are mixed. On the one hand, there are differences in favour of boys (De Fraine, Van Damme, & Onghena, 2007; Young & Mroczek, 2003) while on other occasions the results indicate a higher score for girls (Matalinares et al., 2005). Analysing this academic self-concept, girls show higher scores in verbal self-concept, while boys score higher for mathematical self-concept (Esnaola, Elosua, & Freeman, 2018). Girls score higher for family self-concept (Amezcua & Pichardo, 2000). There are few empirical studies of personal self-concept. Most of the research indicates that boys have a higher perception than girls (Goñi, 2009; Goñi, Fernández-Zabala, & Infante, 2012). The same is the case with emotional self-concept (Carmona et al., 2010).

On the other hand, analysing the self-esteem variable by courses, studies show that the academic self-esteem factor appears as the weakest in a high percentage of students in the first year of FPB, increasing during the second year. Scores for emotional self-esteem are low, though this is not the case for family and social self-esteem, where scores are moderately high (Nieto, 2017). No conclusive data exist for global self-esteem by courses as FPB was only implemented recently. Regarding the personal self-concept dimension, measuring it has only been proposed recently (Goñi, 2009; Goñi, Madariaga, Axpe, & Goñi, 2011), for which reason there are not many empirical studies of this dimension differentiated by course. According to Martínez-Domínguez (2011), while FPB students are highly diverse, the vast majority have schooling issues with regard to basic learning for life, as well as feelings of rejection of studying, meaning their self-esteem as learners is damaged.

Academic performance: concept and differences by gender and course

Over the years there has been increasing interest in the factors that directly influence students' academic performance, especially those of a cognitive, family, social and emotional nature. There is evidence for some variables that are important to academic performance, such as self-esteem and attention (Álvarez et al., 2015; Vázquez, Noriega, & García, 2013). According to Carbajo (2014), low academic performance means failure to acquire the skills, abilities and content determined for each stage of education.

According to Córdoba, García, Luengo, Vizuete and Feu (2011), academic performance among adolescents and secondary students is higher in females than males because girls tend to display greater intrinsic and extrinsic motivation. FPB students are characterised by having academic difficulties, in many cases because they often had negative experiences in their obligatory schooling (Salvà-Mut, Nadal-Cavaller, & Melià-Barceló, 2016). These authors point out in their study that the most common causes of FPB students not continuing their studies are the academic difficulties they encounter, the influence of friends, ease of finding jobs and the poor perception of qualifications in terms of possible job options.

The relationship between self-esteem, attention and academic performance

For Parra, Oliva, & Sánchez-Queija (2004) there is a positive link between the marks gained by students and their global self-esteem. This link is stronger in girls, less so in boys. In this way, positive global self-esteem influences cognitive and metacognitive strategies. According to Muelas (2013), students with poor academic performance suffer significant losses in their personal self-esteem and this has a direct influence in terms of failure at school. Some research, such as that by Martín, Carbonero, and Román (2012), argues that one of the most important functions of self-concept/self-esteem is to regulate behaviour through self-assessment and self-awareness. This is proven in that when students are confident of their qualities and have high expectations they get better results.

Moreover, on a cognitive level, studies like that by Casas (2013) reveal that there is a link between academic performance and attention capacity. These suggest that secondary students with the best marks are those that make most use of cognitive and metacognitive strategies (Valle et al., 2010). ESO students with high selective attention have higher levels of reading and writing skills than the rest (González-Castro, Álvarez, Núñez, González-Pineda, & Álvarez, 2008), resulting in better academic performance. Tejedor et al. (2008) stress that attention factors in learning strategies favour the achievement of higher academic performance among secondary students.

The study by Fonseca, Rodríguez, and Parra (2016) reveals a significant correlation between academic performance and attention, proving the predictive effect of the executive functions in global academic performance (Reyes, Barreyro, & Injoque-Ricle, 2015). When working on attention in adolescence, self-esteem is one of the factors to be taken into account. Students with low attention levels also show lower levels of personal self-esteem (Capdevila-Brophy, Artigas-Pallarés, & Obiols-Llandrich, 2006).

In the light of the above, the aims of this paper are as follows: (1) to study attention capacity, self-esteem and academic performance by gender among secondary ESO and FPB students (2) to analyse the relationship between attention, self-esteem and academic performance in the two courses and (3) to elucidate how the interaction between attention and self-esteem predicts the academic performance of ESO and FPB students.

Method

Participants

The sample for the study consisted of 336 young people aged from 14 to 19 from six schools in the Basque Country autonomous region, three of them state schools and three state-assisted. The distribution of the sample was as follows: ESO (188 participants) and FPB (148 participants).

Table 1
Reliabilities for the self-esteem test for adolescents

	α	Ω	Composite reliability	Average variance extracted
General self-esteem	.85	.90	.87	.49
Personal self-esteem	.81	.89	.95	.56
Academic self-esteem	.67	.74	.83	.43
Family self-esteem	.76	.84	.97	.53
Emotional self-esteem	.57	.63	.76	.44

The schools were selected by convenience sampling. Of these, four are FPB schools in the 1 st and 2nd year (44% of students) and two ESO, 3rd and 4th year (56% of students). A total of 198 boys (58.9%) and 138 girls (41.1%) took part. In this sample, the four FPB schools worked with have the following specialisations, each specialisation being made up of a group of between 10 and 15 subjects; FPB Durango: maintenance, renovation, joinery, cookery, gardening, electricity, welding; FPB Mendibil: cookery, hairdressing and IT; FPB Markina: cookery, maintenance and renovation; and FPB Ermua: hairdressing, automotive and machining. As regards the age of the participants, 22.8% were 14 years old, 28.2% were 15, 22.2% 16, 17.6% 17, 8.4% 18 and 0.6% 19 years old. The average age of the participants was 15.62 (*SD* = 1.27).
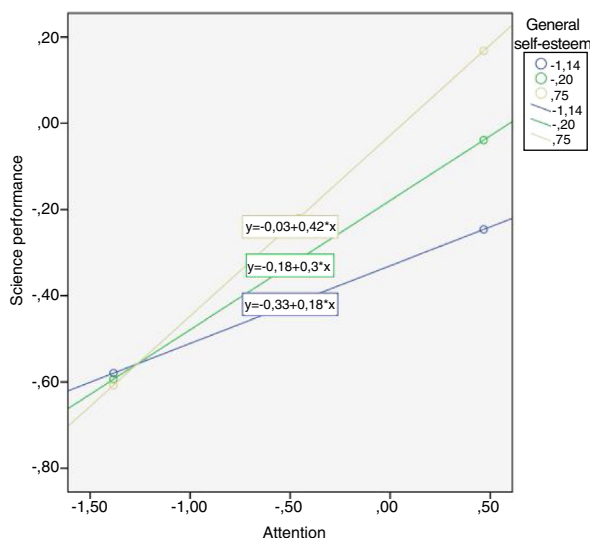
Instruments

Thurstone and Yela (2012) standard *Face-R* test was used to assess *attention*. This test measures perceptive and attentional aptitudes through 60 graphic items consisting of schematic drawings of faces with basic strokes. The task to be performed consists of determining which of the three faces presented in each element is different from the other two. It can be used with a group in a very short time, about three minutes. The test has a very high reliability: $r_{xx'}$ = .96 if calculated using the two-halves method and a McDonald Ω = .98.

Self-esteem is assessed using the *Self-Esteem Test for Adolescents* (Caso, Hernández, & González-Montesinos, 2011). The test provides a score for different aspects of self-esteem, to be answered on a Likert-type scale (1 = strongly disagree, 5 = strongly agree). This gives a score for *general self-esteem* which is the sum of all the items that make up the scale. Also assessed were the *personal* (six items), *academic* (five items), *family* (five items) and *emotional* (four items) dimensions. The reliabilities obtained for this test and its sub-scales are shown in Table 1.

Finally, to assess *academic performance* the structure established by the Spanish ministry of education and culture for classifying subjects was taken into account. FPB has two modules associated with the common blocks called communication and society, in which students learn the subjects of Spanish language, foreign language, social sciences and second official language (if there is one); and applied science, in which students learn the subjects of mathematics applied to their personal context and learning a professional field, science applied to their personal context and learning a professional field (technology and science). In ESO, students also learn the same subjects in the field of communication and society but in applied science, unlike FPB students, as well as mathematics, technology and science, they also study physics and chemistry and/or biology and geology (which can be equivalent in curriculum terms to FPB). Therefore, in order to categorise and make the subjects in both courses comparable, subjects are classified into two areas taking into account the terminology used by the education ministry for access to intermediate-level training courses and on the basis of core or common subjects.

Finally, the *science and technology area* is made up of the subjects mathematics, physics and chemistry, while the socio-linguistic area is made up of languages (Basque, foreign language and Spanish) and

Figure 1. Moderating effect of *general self-esteem* on the relationship between *attention* and *academic performance* in science subjects for FPB students.

history. At the end of the year the marks obtained by students in final assessment reports (average mark for the different terms) are compiled.

Procedure

A statistical estimate is made of the whole sample to reach taking into account certain limitations such as possible dropouts between testing and students' final marks, as described in the *data analysis* section. On the first day the questionnaire to assess *self-esteem* is given. This test is done as a group in the classroom. On the second day, the cognitive test to measure attention is given. This test is done in a group in the computer room. Students' marks in the different subjects are provided by the centre at the end of the school year. The project is approved by the UPV/EHU Ethics Committee. The procedure followed also complies with all pertinent national legislation.

Data analysis

Before conducting the statistical analysis of all the variables in the study, they were transformed into Z-scores in order to eliminate disparity in ranges. After ascertaining that the variables did not conform to a normal distribution they were normalised using the Blom transformation in the statistical package SPSS 24, as this is one of the best transformations for asymmetrical distributions (Rodríguez-Ayán & Ruiz, 2008). Variables were normalised to mit-

igate the violation of the normality of the data in order to conduct parametric analyses.

First of all, in order to study the differences by gender, (boy-girl) and course type (ESO-FPB) in all the variables in the study, analyses of variance (ANOVA) were conducted. And the magnitude of the effect of differences was analysed using eta-squared statistics. Moreover, in order to study the relations between *academic performance*, *attention* and *self-esteem*, Pearson correlations were made by course (ESO-FPB). Finally, to analyse the effects of *attention*, the *different types of self-esteem*, the course (ESO-FPB) and their interactions in the different areas of *academic performance*, regression analyses were conducted. In order to conduct these analyses, the estimate is more than 15–20 subjects per variable in the model (Field, 2009) as this ensures the robustness of the statistical analyses carried out. Analysis of the effects of moderation was conducted using the pick-a-point approach described by Hayes (2013), which assesses the effect of attention on academic performance by estimating the effects at low (*1TD* below the mean), moderate (simple mean) and high (*1TD* above mean) levels of the dimensions of self-esteem. All the analyses were conducted using the statistical package SPSS 24.0.

Results

Self-esteem, attention and academic performance by course and gender

The results show that ESO students have higher levels of *general* $F_{(1, 332)} = 13.4$, $p = .0001$, $\eta^2 = 0.04$; *personal* $F_{(1, 332)} = 7.01$, $p = .008$, $\eta^2 = 0.02$; *academic* $F_{(1, 332)} = 14.03$, $p = .0001$, $\eta^2 = 0.04$; and *family* $F_{(1, 332)} = 16.7$, $p = .0001$, $\eta^2 = 0.05$ *self-esteem* then FPB students. Furthermore, ESO students also have a greater capacity for *attention* $F_{(1, 332)} = 55.63$, $p = .0001$, $\eta^2 = 0.15$ and better performance in both the *science and technology area* $F_{(1, 332)} = 20.7$, $p = .0001$, $\eta^2 = 0.06$ and the *socio-linguistic one* $F_{(1, 332)} = 24.4$, $p = .0001$, $\eta^2 = 0.07$ (Table 2). According to the differences in the variables by gender, boys have higher *general* $F_{(1, 332)} = 5.5$, $p = .02$, $\eta^2 = 0.02$ and *personal* $F_{(1, 332)} = 14.8$, $p = .0001$; $\eta^2 = 0.04$ *self-esteem* than girls and the latter have a higher academic performance in the *socio-linguistic area* $F_{(1, 332)} = 5.7$, $p = .02$, $\eta^2 = 0.02$ than boys. There was no statistically significant effect of the interaction between gender and course in the variables studied.

The relationship between attention, self-esteem and academic performance

As shown in Table 3, for FPB students only *academic self-esteem* and *attention* capacity correlate with the two areas of *academic performance*. On the other hand, for ESO students all the dimensions

Table 2
Descriptive statistics and differences by course and gender in self-esteem, attention and academic performance
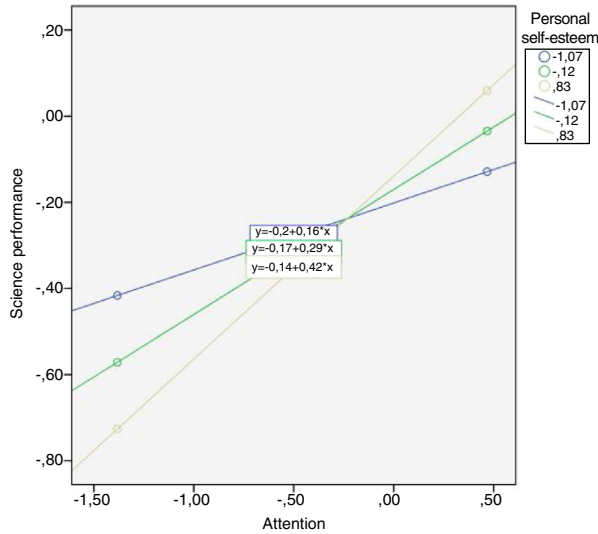
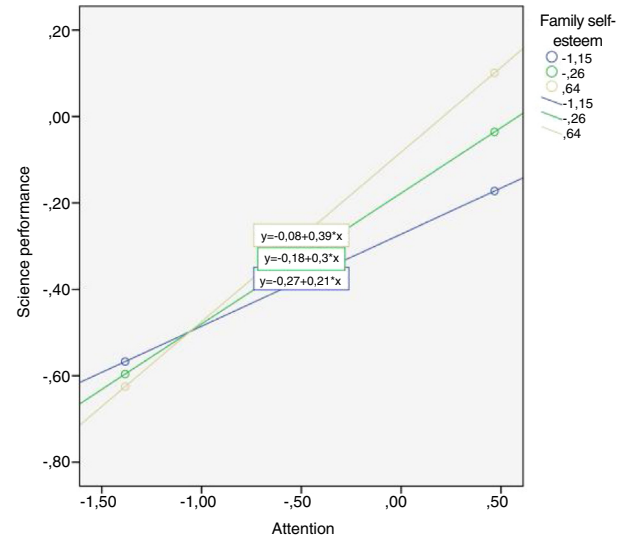| Course	Sex (N)	General self-esteem M ± SD	Personal self-esteem M ± SD	Academic self-esteem M ± SD	Family self-esteem M ± SD	Emotional self-esteem M ± SD	Attention M ± SD	Perf. Science M ± SD	Perf. Socio-Linguistic M ± SD
FPB	Boys (109)	3.85 ± .49	4.13 ± .67	3.64 ± .72	3.98 ± .72	3.36 ± .85	34.17 ± 12.34	5.46 ± 1.55	5.6 ± 1.26
	Girls (36)	3.69 ± .75	3.81 ± 1.02	3.54 ± .91	3.67 ± 1.18	3.50 ± .84	35.05 ± 11.57	5.75 ± 1.68	5.8 ± 1.56
	Total (145)	3.81 ± .57	4.05 ± .78	3.61 ± .77	3.90 ± .86	3.39 ± .85	34.38 ± 12.13	5.53 ± 1.58	5.65 ± 1.34
ESO	Boys (84)	4.10 ± .59	4.39 ± .69	3.98 ± .73	4.28 ± .87	3.47 ± .82	42.93 ± 10.29	6.37 ± 1.99	6.27 ± 1.64
	Girls (101)	3.93 ± .52	4.02 ± .72	3.88 ± .75	4.21 ± .85	3.42 ± .78	46.03 ± 9.25	6.78 ± 1.80	6.95 ± 1.63
	Total (185)	4.01 ± .57*	4.19 ± .73*	3.93 ± .74*	4.24 ± .85*	3.44 ± .79	44.59 ± 9.84*	6.59 ± 1.89*	6.64 ± 1.66*
Total	Boys (193)	3.95 ± .55*	4.24 ± .69*	3.78 ± .74	4.11 ± .79	3.41 ± .84	37.92 ± 12.27	5.85 ± 1.81	5.89 ± 1.47
	Girls (137)	3.87 ± .59	3.97 ± .81	3.79 ± .80	4.07 ± .97	3.44 ± .79	43.06 ± 11.03	6.51 ± 1.82	6.65 ± 1.69*
	Total (330)	3.92 ± .56	4.13 ± .75	3.79 ± .76	4.09 ± .87	3.42 ± .82	40 ± 12.04	6.13 ± 1.84	6.21 ± 1.61

*$p < .05$.
Perf. = Performance.

Table 3
Correlations between academic performance, attention and self-esteem in FPB students (top) and ESO students (bottom)

	General self-esteem	Personal self-esteem	Academic self-esteem	Family self-esteem	Emotional self-esteem	Attention	Science perf.	Socio-linguistic perf.
General self-esteem		.767**	.762**	.802**	.523**	−.029	.130	.126
Personal self-esteem	.772**		.507**	.513**	.083	−.136	−.045	−.035
Academic self-esteem	.767*	.515**		.445**	.255**	−.008	.235**	.214**
Family self-esteem	.792**	.476**	.419**		.313**	−.045	.077	.061
Emotional self-esteem	.616**	.186*	.357**	.431**		.160	.144	.148
Attention	.265**	.232**	.175*	.274**	.109		.323**	.351*
Science perf.	.470**	.346**	.559**	.336**	.164*	.328**		.811**
Socio-linguistic perf.	.416**	.283**	.506**	.310**	.161*	.209**	.862**	

$**p < .001$; $*p < .05$.
Perf. = Performance.

Figure 2. Moderating effect of *personal self-esteem* on the relationship between *attention* and *academic performance* in science subjects for FPB students.
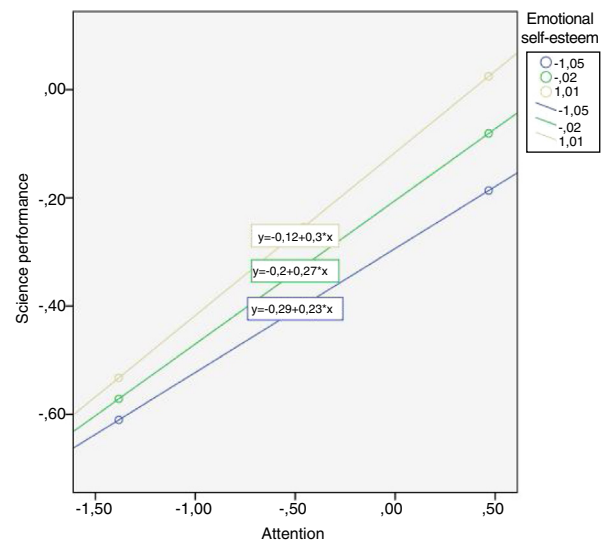

Figure 3. Moderating effect of *family self-esteem* on the relationship between *attention* and *academic performance* in science subjects for FPB students.

Figure 4. Moderating effect of *emotional self-esteem* on the relationship between *attention* and *academic performance* in science subjects for FPB students.

of *self-esteem* and also *attention* capacity correlate with both areas of *academic performance*.

Effects of the interaction between attention and self-esteem on academic performance

The resulting model for both *performance in science* (R^2 = .166; $F_{(16.318)}$ = 3.75, p = .0001) and that in the *socio-linguistic area* (R^2 = .165; $F_{(16.318)}$ = 3.72, p = .0001) is statistically significant. The regression model for academic performance in the science area (Table 4), which scores a predictive capacity of 16.6% of variance, shows a statistically significant direct effect of *attention*, a statistically significant effect of the dual interactions *general self-esteem*attention*; *family self-esteem*attention*; *emotional self-esteem*attention* and a statistically significant effect of 3-way interactions *course*general self-esteem*attention*; *course*personal self-esteem*attention*; *course*family self-esteem*attention*; *course*emotional self-esteem*attention*.

Moderation analyses were conducted to analyse these interactions. The sample is divided up by course (ESO or FPB) and the pick a point approach is used, estimating the effect of attention on academic performance in science at low levels (*1TD* below the mean), moderate levels (the mean) and high levels (*1TD* above the mean) of the different types of *self-esteem*. The moderating effect of *general, personal, family and emotional self-esteem* was only found in FPB students and was only significant when its value was 1 typical deviation above the mean (Figures 1–4), i.e. for FPB students the relationship between *attention* and *academic performance* in science subjects only existed when these students had high *self-esteem* (performance only rising with more *attention* when *self-esteem* is high).

For this group (FPB), the simple straight lines between *attention* and *academic performance* are B = .127, *SE* = .073 [-0.01, .27] for *general self-esteem*, B = .141, *SE* = .075 [-0.01, .29] for *personal*

Table 4
Regression model for performance in the scientific area and the socio-linguistic area

	Science performance			Socio-linguistic performance		
	Beta	t	p	Beta	t	p
General self-esteem	.147	.339	.735	−.195	−.450	.653
Personal self-esteem	−.112	−.624	.533	.030	.169	.866
Academic self-esteem	.260	1.657	.099	.328	2.086	.038
Family self-esteem	−.148	−.894	.372	−.017	−.105	.917
Emotional self-esteem	.029	.207	.836	.111	.798	.426
Attention	.242	4.089	.000**	.263	4.432	.000
GenSE*Attention	3.653	2.235	.026*	2.689	1.644	.101
PerSE*Attention	−1.074	−1.700	.090	−.646	−1.022	.308
AcSE*Attention	−1.104	−1.916	.056	−.820	−1.422	.156
FamSE*Attention	−1.345	−2.165	.031*	−1.045	−1.682	.094
EmoSE*Attention	−1.034	−1.988	.048*	−.878	−1.687	.093
Course*GenSE*Attention	−3.699	−2.363	.019*	−3.005	−1.918	.056
Course*PerSE*Attention	1.240	2.048	.041*	.915	1.509	.132
Course*AcSE*Attention	1.036	1.850	.065	.824	1.471	.142
Course*FamSE*Attention	1.306	2.245	.025*	1.103	1.895	.059
Course*EmoSE*Attention	.992	2.049	.041*	.942	1.944	.053

**p < .001; *p < .05.
GenSE. = General self-esteem; PerSE. = Personal self-esteem; AcSE. = Academic self-esteem; FamSE = Family self-esteem; EmoSE. = Emotional self-esteem.

self-esteem, B = .10, SE = .076 [-0.05, .25] for *family self-esteem* and B = - 0.635, SE = .161 [−0.96, −.31] for *emotional self-esteem*.

The regression model for *academic performance in the socio-linguistic area* (Table 4), which scores a predictive capacity of 16.5% of variance, shows a statistically significant direct effect of academic self-esteem and attention. No statistically significant interaction was found.

Discussion

At the beginning of this paper three specific aims were set, in terms of the variables to be studied: attention, self-esteem and academic performance.

The ESO students had better academic performance, higher levels of general, personal, academic and family self-esteem and greater attention capacity than the FPB students

The results yielded by this study allow us to corroborate the majority of the results of previous studies in terms of the course. Academic performance in the two areas assessed, science and technology and socio-linguistic subjects, is different depending on the course, with ESO students achieving significantly better marks in the two areas. This may be because they are influenced by the differences also found in levels of attention and self-esteem.

The results obtained indicate that ESO students have higher self-esteem than FPB students, in terms of general, personal, academic and family self-esteem. This finding is very interesting because as Gutiérrez and Gonçalves (2013) point out, people act and perform on the basis of what they think they are, not on the basis of their abilities. The fact that ESO students see themselves as more capable will foster the positive relationship suggested by Parra et al. (2004) between this general self-esteem and their marks, helping this group to get better marks. This relationship is harder to find in FPB students, who show lower levels of general, personal, academic and family self-esteem and also lower academic performance in both science and technology and socio-linguistic subjects.

As regards attention, the results yielded by this study show that attention capacity is higher among ESO students than among FPB students. Some research (Carbajo, 2014) mentions the academic difficulties of certain students who opt for FPB due to a perception of curricula in which the application of cognitive abilities to academic tasks is more limited. Among these abilities, attention is mentioned. There are studies that discuss how the level of attention influences academic performance (Casas, 2013) and how the secondary students who get the best marks are those with better cognitive abilities (Valle et al., 2010). It therefore seems logical to find that the student with greater attention capacity is also the one who gets the best marks.

Boys have a higher level of general and personal self-esteem than girls, while the latter have better academic performance

The findings of this study corroborate the vast majority of the research results reviewed with regard to the variables studied by gender. General and personal self-esteem are higher in boys than girls, a result that coincides with various research papers (Carmona et al., 2010; Droguett, 2011; Gentile et al., 2009). Moreover, the non-existence of gender differences in academic self-esteem converges with the results of some studies (Amezcua & Pichardo, 2000; Gentile et al., 2009; Pixten, De Fraine, Van Damme, & D'Haenens, 2013).

The results of this study show higher scores for the girls in academic performance in the socio-linguistic area. This result coincides with the findings of other research (Caso & Hernández, 2007; Córdoba et al., 2011; Ghazvini & Khajehpour, 2011).

Among ESO students academic performance seems to be influenced independently by attention capacity and self-esteem

One of the main findings of this study is that ESO students seem to be positively affected by a high attention capacity, as well as the high self-esteem they display. However, these two variables were not seen to have moderating effects on performance. That is to say, for ESO students to have good academic performance all they need is a high attention capacity or else a high level of self-esteem, but not necessarily both.

If the relationship between academic self-esteem and academic performance is analysed, the results obtained show that the higher the academic self-esteem the higher the academic performance in both courses, the link being stronger among ESO students. Students who get higher marks in their reports display higher self-esteem and vice versa. In the facets of general, personal, family and emotional self-esteem, performance is not so relevant, these figures reinforcing the multi-dimensional perception of self-concept/self-esteem (García et al., 2018; Marsh & O'Mara, 2008; Shavelson et al., 1976).

The same is the case with attention. A higher attention capacity favours higher academic performance and on the other hand students with high attention capacities are the one who get higher marks. These results corroborate the findings of González-Castro et al. (2008) concerning the relationship between attention and academic performance. Attention difficulties, on the other hand, lead to lower academic performance and consequently lower self-esteem (Muelas, 2013). If the relationship analysed is the convergence between self-esteem and attention, the results obtained show that attention has a significant relationship with personal, academic and family self-esteem, but not so much with emotional self-esteem. These data corroborate the findings of studies carried out to analyse these relationships where a low attention level brings with it low self-esteem (Capdevila-Brophy et al., 2006).

Among FPB students self-esteem moderates the relationship between attention capacity and academic performance

The greatest contribution of this research lies in the analysis of moderation in terms of the three variables studied. The results obtained indicate that it is self-esteem that performs this task of moderation, but only among FPB students. That is to say, for performance in science subjects to be good in this group there must be an interaction between their attention capacity and their level of self-esteem. FPB students with a high attention capacity and also a high level of self-esteem are the ones that get the best academic results in science subjects. It would seem that, unlike ESO students, FPB students need a combination of a good level of attention and high self-esteem to achieve maximum academic performance; it is not enough for them to have one of these developed in isolation, even though the opposite is observed with ESO students. This could be one of the reasons why these students end up dropping out of ESO. To some extent, failure at school among this group might be due to this need to keep attention capacity and self-esteem at high levels so that these two variables can interact, resulting in individual academic success. To date there is little research dealing with these two factors (attention and self-esteem) together to explain academic performance, and what there is has focused on clinical populations. However, its results would tend to corroborate that these two factors converge and jointly affect academic performance (Capdevila-Brophy et al., 2006).

As long as the education system does not deal with self-esteem in the academic curriculum and include it as an integrating, inclusive educational system together with cognitive factors, it will be hard to predict academic failure and ensure that most students at secondary schools complete their obligatory education successfully.

It should be pointed out that one of the main contributions of this paper is the study of attention and self-esteem together among secondary students, including FPB students, something that has received very little attention in the literature. The findings also produce important, interesting information about what might be behind this second group and their academic performance in comparison with ESO students.

Finally, as a limitation on the study, it should be pointed out that no information was obtained about the socio-economic level of the sample studied. Moreover, the reliability determined for the emotional self-esteem sub-scale in our sample was insufficient. In addition, the sample is not representative and the data gathered must therefore be treated with caution. While they cannot be extrapolated, they should be taken into account to conduct similar studies with a much larger sample, ideally one that is representative of these groups of students. The purpose would be to discern the factors underlying academic performance and whether it is somehow possible to much more effectively and efficiently prevent the failure at school that exists today according to the Instituto Nacional de Estadística (2018).

Conflicts of interest

The authors declare that they have no conflicts of interest.

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