ANALYSIS OF MOTIVATION, EMOTIONAL INTELLIGENCE AND PERCEPTION OF AUTONOMY SUPPORT IN HIGH SCHOOL STUDENTS IN PHYSICAL EDUCATION CLASSES. DIFFERENCES BY SEX AND AGE

ANÁLISIS DE LA MOTIVACIÓN, INTELIGENCIA EMOCIONAL Y PERCEPCIÓN DE APOYO A LA AUTONOMÍA EN ESTUDIANTES DE EDUCACIÓN SECUNDARIA EN LAS CLASES DE EDUCACIÓN FÍSICA. DIFERENCIAS POR SEXO Y EDAD

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Short title:
Motivation, Emotional Intelligence and Autonomy Support

How to cite this article:
Manzano-Sánchez, D., Gómez-Vázquez, S., Gómez-López, M., & Granero-Gallegos, A. (2026). Analysis of motivation, emotional intelligence and perception of autonomy support in high school students in Physical Education classes. Differences by sex and age. *Cultura, Ciencia y Deporte, 21*(67), 2241. https://doi.org/10.12800/ccd.v21i67.2241

Received: 17 June 2024 / **Accepted:** 14 July 2025

Abstract

The aim of the study was to analyze differences in the perception of teacher autonomy support in Physical Education classes, motivation, and emotional intelligence based on gender and age among a group of secondary school students. The sample consisted of 1,069 students (522 boys) aged between 12 and 18 years (*M* = 14.55; *SD* = 1.54). To collect data, participants completed the Learning Climate questionnaire to Physical Education, the Sport Motivation Scale-II motivation questionnaire, and the Trait Meta-Mood Scale emotional intelligence questionnaire, all validated in Spanish. The results showed that autonomy support was positively related to motivation. Girls exhibited lower motivation levels than boys, less emotional clarity and repair, and a greater need for emotional attention compared to boys. Regarding age, no significant differences were found within the secondary school stage, although younger students showed higher extrinsic motivation and less dependence on emotional attention. This highlights the need to work on aspects that promote motivation and autonomy, particularly among girls.

Keywords: Adolescence, emotion, education, fun, interest.

Resumen

Los objetivos del presente estudio fueron averiguar la relación entre la percepción del apoyo a la autonomía por parte del docente en las clases de Educación Física, motivación e inteligencia emocional en los estudiantes de secundaria, y analizar si existen diferencias en función del sexo y la edad. La muestra estuvo compuesta por 1069 estudiantes (522 chicos) de entre 12 y 18 años (*M* = 14.55; *DT* = 1.54). Para la recopilación de los datos, los participantes respondieron a los cuestionarios denominados Cuestionario de apoyo a la autonomía en Educación física; Escala de Motivación Deportiva II; y la Escala de metaconocimientos sobre estados emocionales, todos ellos validados al español. Los resultados reflejaron que el apoyo a la autonomía se relacionó con la motivación de forma positiva. Las chicas tuvieron valores inferiores de motivación que los chicos, una menor claridad y reparación emocional, y una mayor necesidad de atención emocional que los chicos. Según la edad, no existen grandes diferencias dentro de la etapa de secundaria, destacándose que los más jóvenes tienen una mayor motivación extrínseca y una menor dependencia de la atención emocional. De ahí, la necesidad de trabajar aspectos que fomenten la motivación y la autonomía, especialmente con las chicas.

Palabras clave: Adolescencia, educación, emoción, diversión, interés.

Introduction

In the educational field, motivation is a key element in the teaching-learning process, since it is influenced not only by cognitive factors but also by motivational and emotional ones. Hence, the study of both factors has become a challenge for 21st-century education and, although motivation and its theories have been widely studied in Physical Education (PE) classes, unfortunately, its relationship with emotional intelligence (EI) has been scarcely investigated to date, even knowing that the characteristics of this subject regarding the high interest shown by students make it ideal for addressing this relationship. Moreover, the literature has demonstrated that both motivation and EI are susceptible to being trained and improved in the educational environment.

The concept of motivation refers to the process that directs people toward the goal of an activity, initiating and maintaining it. According to the literature, a lack of motivation is one of the main causes leading students to stop performing physical activity (PA). In this educational environment of PE classes, Self-Determination Theory (SDT) is the most used conceptual model to understand the effects of motivation. This theory adopts a multidimensional perspective of motivation, in which the regulation of behavior toward an activity can be classified on a continuum varying based on the degree of self-determined motivation.

According to Brière et al. (1995), intrinsic motivation implies practicing an activity without the expectation of receiving external rewards, that is, engaging in an activity for the simple pleasure obtained from doing it. Thus, at a less self-determined level, we find extrinsic motivation, which focuses on performing an activity to obtain external results, such as rewards, avoiding punishments, or achieving recognition and approval. Within this, four degrees of self-determination are distinguished. From highest to lowest degree would be integrated regulation, which appears when a task is in line with a person's values and is included in their lifestyle. This is followed by identified regulation, appearing when a person values the personal benefits a task can provide, such as practicing PA because it is good for health. Next is introjected regulation, referring to performing an activity due to an internal obligation or cause. This is followed by external regulation, which is the least self-determined of all types of extrinsic motivation and occurs when behavior is controlled by external incentives, such as practicing PA to impress friends. Finally, at the opposite extreme, would be the lack of motivation or amotivation.

On the other hand, we find the concept of autonomy support, based on the principles of the aforementioned SDT, which plays a fundamental role in adolescents' performance and learning process in classes, as it grants them the possibility to activate their cognition during the teaching process through student decision-making. This concept refers to the interpersonal behavior of teachers so that their students identify, internalize, and develop their internal motivational resources. Thus, SDT differentiates at least two types of teaching interpersonal styles in the classroom: an autonomy-supportive style and a controlling style. When a teacher favors learning climates that support autonomy, students improve their intrinsic and autonomous motivation, unlike students who perceive greater control over their behavior, which reduces their motivation. Furthermore, a strong correlation has been found between the lack of autonomy support and student amotivation in PE classes. These results reflect that when students are denied the ability to make decisions and control their own learning, there is a greater likelihood they will lose interest and motivation during the teaching-learning process. Hence the importance of promoting and fostering student autonomy in the classroom to maintain their motivation and commitment to learning.

Another factor involved in this learning process is Emotional Intelligence (EI), which could be defined as the ability to recognize our own feelings and those of others, motivate ourselves, and properly manage relationships with others and ourselves. Thus, motivation and EI are different concepts but have a close relationship in the socio-educational field. Motivation drives a person to act with a specific purpose, and EI plays a crucial role in achieving that purpose, as people with good emotional skills are less prone to frustration, which can improve the achievement of their proposed goals. Goleman (1995) argues that a key competence of EI is the ability to motivate oneself in any activity performed. In this sense, emotional skills can contribute to increasing the student's intrinsic motivation to perform school tasks.

However, there are few studies relating teacher autonomy support to adolescents' motivational and emotional aspects, and no research has been found establishing this relationship while also considering sex or age within the secondary education stage.

The objectives of the present study were to find out the relationship between the perception of teacher autonomy support in Physical Education classes, motivation, and emotional intelligence in secondary school students, and to analyze whether differences exist based on sex and age. Therefore, it is hypothesized that students who perceive greater teacher autonomy support will have higher levels of intrinsic and identified motivation (more internal regulation) and lower external motivation and amotivation, as well as greater emotional intelligence. In turn, the group of boys is expected to have higher external motivation and lower emotional

Material and Methods

Research Design

An observational, descriptive, and cross-sectional study was conducted following the methodological guidelines of Thomas et al. (2015), based on an analysis of data obtained through questionnaires. This design is appropriate for identifying characteristics, patterns, and associations between variables at a specific point in time, without intervening or manipulating variables, which is characteristic of observational studies. The choice of this design is supported by the scientific consensus available in recommended reporting guidelines. Specifically, this approach is consistent with the recommendations for observational studies contained in the STROBE guidelines (Strengthening the Reporting of Observational Studies in Epidemiology). These guidelines emphasize the need to clearly describe the study design, data collection method, and statistical analysis to ensure transparency and reproducibility of the work (Von Elm et al., 2008).

Participants and Exclusion Criteria

There were *N* = 1069 secondary education students (522 boys; 547 girls) who participated, selected by convenience and accessibility, belonging to several educational centers in [Blinded for peer review], aged between 12 and 18 years (*M* = 14.55; *SD* = 1.54). The inclusion criteria were: being between 12 and 18 years old; belonging to secondary education centers; completing an informed consent form; and completing the questionnaires following the established criteria to avoid exclusion. All questionnaires that had all items completed and met the anomaly analysis specified in section 2.4 were included. It should be noted that the present study previously obtained a positive report from the Research Ethics Commission of [Blinded for peer review] (ID: 4447/2023).

Instruments

The variables under study were collected through a questionnaire, taking into account the sociodemographic character of the independent variables of age, sex, and sports practice, as well as the dependent variables presented below:

Autonomy Support. The Spanish version adapted to PE (LCQ-EF) by Granero-Gallegos et al. (2014) was used. This adaptation comes from the Learning Climate Questionnaire (LCQ; Williams & Deci, 1996), which was based on the Health-Care Climate Questionnaire (Williams et al., 1996). The questionnaire consists of 14 items to measure teacher autonomy support (e.g., "I feel able to share my feelings with my Physical Education teacher"), through a dimension called autonomy support. In the instructions, subjects are asked to indicate their degree of agreement with the items. Responses were collected on a 7-point item scale ranging from 1 (strongly disagree) to 7 (strongly agree). This scale showed high internal consistency: Cronbach's alpha (α) = .95 and ω = .95.

Motivation. The Spanish adaptation of the Sport Motivation Scale-II (SMS-II; Pelletier et al., 2013), named SMS-II-EF by Granero-Gallegos et al. (2018), was used. The instrument is composed of a total of 18 items to measure the individual level of motivation towards PE and is distributed into six dimensions (three items per dimension): intrinsic motivation (IM) (e.g., "For the pleasure I feel while doing physical-sporting activity"), integrated regulation extrinsic motivation (EM) (e.g., "Because practicing physical-sporting activity is a fundamental part of my life"), identified regulation EM (e.g., "Because physical-sporting activity is a way to develop myself"), introjected regulation EM (e.g., "Because I would feel bad if I did not participate and make an effort in class"), external regulation EM (e.g., "Because I get a reward from the people around me when I do it"), and demotivation or amotivation (e.g., "I used to participate and make an effort in class, but now I wonder if I should continue doing so"). The scale used was preceded by the introductory phrase: "I participate and make an effort in Physical Education classes...". Responses were collected on a Likert-type scale from 1 (strongly disagree) to 7 (strongly agree). In the present study, the internal consistency analysis was: intrinsic motivation, α = .67 (ω = .71); integrated regulation extrinsic motivation,

α = .74 (ω = .78); identified regulation extrinsic motivation, α = .77 (ω = .78); introjected regulation extrinsic motivation, α = .63 (ω = .67); external regulation extrinsic motivation, α = .73 (ω = .71); amotivation, α = .64 (ω = .61). Although some internal consistency values of the different factors did not reach the recommended values (>.70), given the small number of items in these subscales (three), values between .60 and .70 can be considered marginally acceptable (Taylor et al., 2008).

Emotional Intelligence. The version adapted to Spanish by Fernández-Berrocal et al. (2004) of the original scale called Trait Meta-Mood Scale (TMMS; Salovey et al., 1995) was used. The scale measures the level of perceived EI through 24 items, distributed in three subscales of 8 items each, which evaluate emotional attention, clarity of feelings, and emotional repair. The emotional attention subscale expresses the degree to which people notice and think about their feelings (e.g., "I pay a lot of attention to my feelings"); the emotional clarity subscale evaluates the ability to understand one's own mood (e.g., "I am clear about my feelings"); the emotional repair subscale evaluates the degree to which individuals moderate and regulate their feelings (e.g., "When I am sad, I think about all the pleasures of life"). The scale used was preceded by the introductory phrase: "Below you will find some statements about your emotions and feelings...". Responses were collected on a 5-point Likert-type scale ranging from strongly disagree (1) to strongly agree (5). In the present study, the internal consistency analysis was: emotional attention, α = .87 (ω = .88); clarity of feelings, α = .86 (ω = .84); emotional repair, α = .82 (ω = .83).

Procedure

To attend the educational centers and carry out the fieldwork, authorization was obtained from the management of each center, the School Council, and the PE teachers of the courses assigned for data collection, along with that of the students' parents through a letter explaining the research objectives and how it would be carried out, accompanied by a copy of the instrument. Prior to data collection, students were informed of the purpose of the study, its voluntary nature, the absolute confidentiality of the responses and data handling, that there were no correct or incorrect answers, and they were asked for maximum sincerity and honesty when filling it out. The instrument was self-administered with mass application during a school day and with the consensus and prior training of the interviewers. All fieldwork was carried out anonymously and always in the presence of both two interviewers and the PE subject teacher. Completion of the questionnaire required an average of approximately 20 minutes of class time, varying slightly depending on the students' age. Only those students who had the informed consent of their parents and/or guardians participated in the research.

Data Analysis

First, the data were included in the IBM SPSS statistical program, and a sample cleaning analysis was performed, where the final result was the 1069 participants who completed the entire questionnaire and were found within normal ranges using the Mahalanobis distance as a method for detecting outliers. At the same time, the reliability of the instruments was checked, and the corresponding analysis proceeded. This analysis began by checking the distribution of the sample, indicating the possibility of using parametric tests after meeting the criteria of homogeneity of variances and normality; for this study, a sample with a 95% confidence level and a 5% margin of error was necessary, totaling 384 participants, which was exceeded in the present study (n = 1069). Next, a descriptive and correlation analysis was performed using the Pearson test on the variables under study, followed by a multivariate analysis (MANOVA) on the variables obtained from the indicated questionnaires, analyzing differences based on the participants' gender and age categorized according to range (12-14 years and 15-17 years), as well as performing post-hoc tests for the multivariate analysis in the grouped sex*age interaction. The statistical package IBM SPSS v.29.0 (New York: USA) was used. Additionally, Cohen's effect was considered to check the magnitude of the differences between the studied groups. Cohen (1988) shows the effect size as small (0.2), medium (0.5), or large (0.8).

Results

Descriptive Analysis and Correlations

Prior to the analysis, Table 1 shows the sociodemographic characteristics of the sample, highlighting the homogeneity of the data with 51.2% females and 48.5% males, as well as nearly 48% of participants aged between 12 and 14 years, and 58.9% of participants who practiced sport outside of class.

Table 1

Descriptive Analysis

		n	%
Sex	Males	522	48,8%
	Females	547	51,2%
Age	12-14	511	47,8%
	15-17	558	52,2%
Sport	Yes	626	58,9%
	No	437	41,1%
Age		***Mean***	***SD***
		14.55	1.54

In Table 2, it can be observed that skewness and kurtosis values were low for all analyzed variables (< 3). Additionally, autonomy support showed statistically significant correlations at p < .01 with all variables, increasing all motivational categories and the three dimensions of emotional regulation, while reducing amotivation (p < .05). Furthermore, it is worth noting that, within motivation, the one with the highest value was intrinsic motivation (M = 4.65; SD = 1.48), contrary to amotivation (M = 2.80; SD = 1.39). Within emotional regulation, the three categories had quite similar values ranging between a mean of 3.1 and 3.4. Moreover, all analyzed variables correlated with each other, except for introjected motivation with amotivation. Regarding the correlations, some had significant values but were not very high, such as those related to emotional attention (lower than .16, except for introjected motivation, which was .22) and for amotivation (lower than .16, except for extrinsic motivation, which was .41)

Table 2

Descriptive Results and Correlations

	M	SD	S	K	1	2	3	4	5	6	7	8	9	10
1 Autonomy Support	4.95	1.43	-0.47	-0.56		.38**	.23**	.29**	.33**	.07*	-.07*	.15**	.23**	.23*
2 Intrinsic motivation	4.65	1.48	-0.32	-0.65			,64**	.71**	.61**	.14**	-.16**	.13**	.31**	.36**
3 Integrated regulation	3.96	1.59	0.05	-0.79				.70**	.50**	.33**	-.10**	.09**	.24**	.34**
4 Identified regulation	4.54	1.57	-0.27	-0.73					.61**	.21**	-.15**	.16**	.25**	.33**
5 Introjected regulation	4.44	1.48	-0.15	-0.67						.25**	-.01	.22**	.25**	.28**
6 External regulation	2.80	1.46	0.62	-0.35							.41**	.08**	.05	.07*
7 Amotivation	2.75	1.39	0.62	-0.26								.08**	-.13**	-.12**
8 Emotional attention	3.26	0.95	-0.19	-0.55									.32**	.21**
9 Emotional clarity	3.16	0.87	-0.13	-0.55										.53**
10 Emotional repair	3.39	0.86	-0.18	-0.64										

Note. SD = Standard Deviation; A = Swekness; K = Kurtosis; * p < .05; ** p < .01.

Multivariate Analysis Based on Participants' Sex and Age

Considering the multivariate MANOVA analysis and including the variables under study (Table 3), we proceeded to differentiate teacher autonomy support, motivation, and the three dimensions of emotional regulation, based on sex and categorized age (12-14 years and 15-17 years). Homogeneity of covariance was checked using Box's test and the Pillai's Trace statistic for the analysis of multivariate effects in case the matrix assumption was not met (p < .05) (Tabachnick & Fidell, 1996; 2007). The multivariate analysis (Box, p < .001; M = 254.55; F = 1.52) revealed a significant effect at the multivariate

level for sex (Pillai's Trace F(22.00); $p < .001$) and for grouped age (Pillai's Trace, F(3.23); $p < .01$), as well as at the multivariate level for the interaction between both (Pillai's Trace, F(2.05), $p = .026$).

Table 3

Multivariate Analysis (Sex and Sport Practice)

Variables	Male		Female					12-14		15-17				
	M	SD	M	SD	F	p	d	M	SD	M	SD	F	p	d
Autonomy Support	5.02	1.40	4.89	1.47	1.78	.181	0.09	4.99	1,40	4.92	1.46	0.87	3.51	0.05
Intrinsic motivation	4.92	1.42	4.38	1.49	35.91	.000**	0.37	4.67	1,50	4.62	1.47	0.46	.496	0.03
Integrated regulation	4.42	1.52	3.53	1.54	90.90	.000**	0.58	4.04	1,54	3.89	1.64	3.06	.08*	0.09
Identified regulation	4.85	1.53	4.25	1.55	40.73	.000**	0.39	4.54	1,53	4.54	1.61	0.01	.95	0.00
Introjected regulation	4.67	1.50	4.32	1.46	7.53	.006**	0.24	4.43	1,47	4.45	1.49	0.03	.87	0.01
External regulation	2.89	1.44	2.53	1.35	41.70	.000**	0.26	2.97	1,52	2.65	1.39	14.34	.000**	0.22
Amotivation	2.71	1.40	2.78	1.37	0.64	.422	0.05	2.78	1,41	2.72	1.36	0.45	.501	0.04
Emotional attention	3.05	.96	3.46	.90	49.94	.000**	0.44	3.19	,96	3.32	.94	6.22	.013*	0.14
Emotional clarity	3.25	.86	3.06	.87	13.43	.000**	0.22	3.16	,86	3.15	.88	0.08	.778	0.01
Emotional repair	3.49	.85	3.32	.86	9.87	.002**	0.20	3.44	,86	3.36	.86	2.44	.118	0.09
Pillai's Trace													2,05*	
Multivariate F (Box's Value)													254,55**	

Note. *M* = Mean; *SD* = Standard Deviation; *F* = multivariate effect; *d* = Cohen size; * $p < .05$; **$P < .01$.

Regarding sex, statistically significant differences were obtained at $p < .01$ for intrinsic motivation ($F = 35.91$), integrated motivation ($F = 90.90$), identified motivation ($F = 40.73$), introjected motivation ($F = 7.53$), extrinsic motivation ($F = 41.70$), emotional attention ($F = 49.94$), emotional clarity ($F = 13.43$), and emotional repair ($F = 9.87$). In the motivational variables, all values were higher in males, as well as for emotional clarity and repair; in contrast, emotional attention was higher in females ($M = 3.05$ vs $M = 3.46$)

Taking into account the age category, differences were found only in extrinsic motivation ($F = 14.34$) at $p < .01$ and in emotional attention ($F = 6.22$) at $p < .05$, where values were lower for the younger students in emotional attention and higher regarding extrinsic motivation. That is, the younger subjects had higher values of extrinsic motivation and lower values of emotional attention.

Furthermore, regarding the sex * age category interaction, statistically significant differences were observed at the multivariate level. At the univariate level, these differences were found in integrated motivation ($F = 5.27$, $p = .022$) and approached significance in amotivation ($F = 3.32$, $p = .069$), specifically between males aged 15-17 and females aged 15-17, with males having lower amotivation values and higher integrated motivation values. This difference in integrated motivation was also observed between males aged 12-14 and females aged 15-17, with higher values in males.

Discussion

The objectives were to determine the relationship between the perception of teacher autonomy support in Physical Education classes, motivation, and emotional intelligence in secondary school students, and to analyze whether differences exist based on sex and age. In the present study, it was verified that autonomy support correlated with emotional intelligence and with more internal motivation, corroborating the initial hypothesis in the first objective. In turn, girls presented differences compared to boys, with girls having higher values of emotional attention, and boys having higher values in

motivation and in emotional clarity and repair, with no differences found according to age, which partially supports the hypothesis proposed in the present study.

Regarding the first objective, the relevance of autonomy support in stimulating motivation has been consistently supported by SDT. According to this theory, people possess an inherent inclination towards autonomy and self-regulation, which translates into greater motivation when they are provided with support for decision-making and control of their actions (Ryan & Deci, 2017). The results found revealed that the correlation of the perception of autonomy with more self-determined motivation was clear, which aligns with previous studies such as that conducted by Vansteenkiste et al. (2010), which confirmed a close link between autonomy support and intrinsic motivation, highlighting the importance of this support for the satisfaction of basic psychological needs and, consequently, for increasing engagement and academic performance in classrooms.

In the educational field, Reeve (2009) argued that creating an environment that fosters autonomy is essential to nurture meaningful and lasting learning. In turn, recent studies such as that carried out by Manzano-Sánchez and Jiménez-Parra (2022) showed how the autonomy-supportive style improved basic psychological needs and school climate. In sum, the scientific literature robustly supports the connection between autonomy support and motivation, both being part of SDT, underscoring their importance not only in the educational field but also in other aspects of life.

On the other hand, autonomy support showed relationships with the three spheres of EI, thus corroborating studies such as that conducted by De Benito et al. (2018), where they verified the mediating role of the perception of autonomy support in the development of EI in students. All this makes it essential to know what strategies PE teachers should use to improve EI and the perception of autonomy in students. Finally, the study by Antonio-Aguirre et al. (2019) is highlighted, identifying how autonomy support not only from teachers but also from family and peers relates to better emotional states and greater EI.

Similarly, there are results from previous studies that have evidenced the existing relationship between motivation and EI. The study conducted by Domínguez-Alonso et al. (2016) reflected significant—although minimal—correlations between the different dimensions of motivation and EI, with the exception of the emotional understanding and regulation dimensions. Cera Castillo et al. (2015) demonstrated that there are significant and positive correlations between EI, identified regulation, introjected regulation, and emotional attention. Furthermore, these authors found that emotional repair was positively related to intrinsic, identified, introjected, and external motivational regulations, and negatively related to amotivation. On the other hand, emotional clarity correlated significantly and positively with introjected regulation. Furthermore, Fernández-Espínola and Almagro (2019) concluded that there are positive correlations between the different types of more self-determined motivation and EI. Likewise, a negative association was found between external regulation, amotivation, and EI. In turn, Méndez-Giménez et al. (2020) found positive—moderate/low—correlations between the different EI factors and autonomous motivation. All these results suggest that students who manage to understand their emotional state are more prone to regulating their motivation in PE classes through introjected regulation, that is, being motivated, for example, to avoid feelings of guilt and/or wanting to reduce anxiety states. While it is true that, although this motivational regulation is not very self-determined, it can have positive consequences on a person's behavior when combined with other types of more self-determined motivation, such as intrinsic motivation or identified regulation (Boiché et al., 2008). In the same sense, similar results were found in the study conducted by Vaquero-Solís et al. (2018) , where a positive association was found between emotional adaptability and IM, identified regulation, and introjected regulation, and a negative association with external regulation and amotivation. Finally, Domínguez-Alonso et al. (2016) stated that there is a significant correlation between motivation and EI with students' academic success, as well as with the social skills they develop.

Regarding the second objective, the results identified that boys had higher motivation, both intrinsic and extrinsic, along with two of the EI dimensions (clarity and emotional repair). Thus, the study by Granero-Gallegos and Gómez-López (2020) with a sample of equal characteristics and the same scale showed very similar results, with boys being more motivated than girls and having higher indices of repair and emotional clarity, while girls showed more emotional attention than them.

The justification for these findings is probably due to the fact that low levels of self-determined motivation may translate into a greater need for external attention to preserve self-esteem; furthermore, it seems that girls have greater awareness of their emotions and recognize their feelings, a key aspect in emotional attention (Granero-Gallegos & Gómez-López, 2020). This partially contrasts with other studies reflecting higher levels of emotional attention and repair in girls (Gutiérrez, 2020) , as well as interpersonal intelligence (Fierro-Suero et al., 2019; Torres-Gázquez et al., 2023) and social intelligence (Fierro-

Suero et al., 2019). Therefore, these findings remain unclear given that López-García et al. (2018) in contrast, verified that emotional repair was higher in boys, but there were no differences in the other two EI dimensions, or the study by Ferrer and Jiménez (2012), which identified that women had greater emotional attention and men greater emotional clarity, coinciding to a greater extent with the results of this study. It is therefore necessary to foster autonomy support for girls and, above all, create and reinforce more self-determined motivation in order to improve basic psychological needs due to their relationship with EI, and especially with the dimensions of emotional repair and clarity (Rico-González, 2023) , with teaching programs using, for example, pedagogical models such as the Personal and Social Responsibility Model (Manzano-Sánchez et al., 2024) or the hybridization of models (Shariati et al., 2024).

Regarding the age of the participants, differences were found only in emotional attention, which was higher for older students, and in extrinsic motivation, which was higher in younger students. This result could indicate that the higher the extrinsic motivation, the lower the value of emotional attention, taking into account the student's age. The study by López-García et al. (2018) should be highlighted, as emotional repair was reduced when age was lower, and there were no differences in emotional attention or emotional clarity, contrary to the results of this study. It is also worth highlighting previous research that found no relationship between age and EI (e.g., Shipley et al., 2010) and others that demonstrated that as age increased, EI generally decreased (e.g., Beadle et al., 2015; Grühn et al., 2008). Finally, mentioning the research conducted by Gutiérrez (2020), where it was found that emotional clarity and regulation had higher values the younger the participants were, deteriorating between the ages of 20 and 29, so what is done in the secondary stage could have great relevance regarding the future adulthood of young people.

As the main limitations of this study, its cross-sectional nature and the way of administering the instruments should be noted, given that the tests may have different types of biases. In turn, only one educational stage was chosen, which could have been expanded, as well as the sociodemographic horizon with other cities in the national or international territory. Additionally, the cross-sectional nature of the study does not allow for establishing causal relationships, making longitudinal studies appropriate, where intervention with different methodologies could be considered, or following up with several measurements over time. Finally, the use of qualitative data collection could be considered to contrast the results by combining with a “mixed-method” methodology.

Future lines of research could try to replicate the present study in order to continue working on the line of favoring autonomy and EI development, since there is a discrepancy in the scientific literature. In turn, intervention studies should be carried out to foster EI in classes and thus also improve students' self-determined motivation in the present and future.

Based on the results, it is recommended that, in PE classes, teachers carry out activities prioritizing students being able to make their own decisions (for example, by giving different options to perform an activity). At the same time, attention should be paid to those who have the most difficulties in classes so that they gradually manage to feel more competent and reduce their need for emotional attention.

Conclusions

Following the proposed objectives, students' perception of teacher autonomy support was positively related to all dimensions of motivation, as well as emotional regulation, making its development in PE classes of special relevance. On the other hand, girls generally had lower values of self-determined motivation than boys, which in turn translated into lower emotional clarity and repair, and a greater need for emotional attention than boys. Regarding age, there are no differences within the secondary school stage, highlighting that younger students have higher extrinsic motivation and lower dependence on emotional attention.

For all these reasons, the need to work on aspects that foster motivation and autonomy in PE classes is fundamental, especially with girls, who have a less self-determined motivational profile than boys.

Ethics Committee Statement

The study was conducted in accordance with the Declaration of Helsinki and was approved by the Research Ethics Committee of the University of Murcia (ID: 4447/2023).

Conflict of Interest Statement

The entities had no influence on the study design, data analysis, or interpretation of the results.

Funding

This research received no external funding.

Acknowledgements

This work derives from the doctoral thesis of Sebastián Gómez-Vázquez entitled "Perceived autonomy support and teachers' motivational strategies, satisfaction of basic psychological needs, fear of failure, motivation, and emotional intelligence of secondary school students in Physical Education classes", carried out within the framework of the PhD Programme in Physical Activity and Sport Sciences at the University of Murcia. The authors would like to thank the Programme management for their support during this research.

Authors' Contribution

Conceptualization M.G-L. & A.G-G.; Methodology M.G-L.; Software D.M-S.; Validation S.G-V. & D.M-S.; Formal Analysis D.M-S.; Investigation M.G-L. & S.G-V.; Resources D.M-S.; Data Curation D.M-S.; Writing – Original Draft M.G-L., D.M-S. & S.G-V.; Writing – Review & Editing M.G-L., D.M-S. & A.G-G.; Visualization M.G-L.; Supervision M.G-L. & A.G-G.; Project Administration M.G-L. All authors have read and agreed to the published version of the manuscript.

Data Availability Statement

Data are available from the corresponding author upon reasonable request mgomezlop@um.es.

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