



Motivational climate in Physical Education and its effect on self-concept: a correlation analysis in primary school

Clima motivacional en Educación Física y su efecto sobre el autoconcepto: análisis de correlación en educación primaria

Authors

Guillermo Moreno-Rosa ¹
Carmen África del Pino-Morales ²
Carlos Javier López-Gutiérrez ¹
Manuel Castro-Sánchez ¹

¹ University of Granada (Spain)
² Reyes Católicos Primary School –
Provincial Directorate of Education
(Melilla, Spain)

Corresponding author:
Guillermo Moreno-Rosa
gmoreno@ugr.es

Received: 16-07-25
Accepted: 25-02-26

How to cite in APA

Moreno-Rosa, G., del Pino-Morales, C. A., López-Gutiérrez, C. J., & Castro-Sánchez, M. (2026). Motivational climate in Physical Education and its effect on self-concept: a correlation analysis in primary school. *Retos*, 78, 478-491. <https://doi.org/10.47197/retos.v78.117155>

Abstract

Introduction: Physical Education is a powerful tool for promoting students' holistic development, integrating physical, social, and emotional growth. The positive development of self-concept and motivational climate is a key factor in achieving this goal.

Objective: To explore the connection between motivational climate and self-concept among Primary School students.

Methodology: The study involved 347 Spanish primary school students (53.6% girls; $M_{age} = 10.55$, $SD = 0.97$). The PMCSQ-2 and AF-5 questionnaires were used to assess both variables. A bivariate correlation analysis was conducted to examine the degree of association between motivational climate and self-concept.

Results: A positive correlation was found between task climate and global self-concept, as well as its academic, social, and physical dimensions. Conversely, no significant correlation was found between ego climate and global self-concept. However, significant negative correlations were identified with the social, family, and physical dimensions.

Discussion: In line with previous research, this study's results indicate that a task-oriented climate is associated with greater enjoyment and a more positive learning environment, which, in turn, supports stronger self-concept development.

Conclusions: Findings suggest that a task-oriented climate in Physical Education is positively associated with self-concept and its physical, academic, and social dimensions in primary school students. In contrast, an ego-oriented environment shows no significant association with global self-concept but is related to lower scores in the family, social, and emotional dimensions.

Keywords

Children; motivational climate; Physical Education; primary school; self-concept

Resumen

Introducción: La Educación Física es una herramienta poderosa para promover el desarrollo holístico del alumnado, integrando el crecimiento físico, social y emocional. El desarrollo positivo del autoconcepto y del clima motivacional son factores clave para alcanzar esta meta.

Objetivo: Explorar la relación entre el clima motivacional y el autoconcepto en alumnos de educación primaria.

Metodología: El estudio incluyó a 347 alumnos españoles de educación primaria (53.6% niñas; $M = 10.55$, $SD = 0.97$). Se administraron los cuestionarios PMCSQ-2 y AF-5 para evaluar ambas variables. Se realizó un análisis de correlación bivariada para evaluar el grado de asociación entre el clima motivacional y el autoconcepto.

Resultados: Se encontró correlación positiva entre el clima tarea y el autoconcepto, así como en las dimensiones académica, social y física. Sin embargo, no se hallaron correlaciones significativas entre el clima ego y el autoconcepto general. No obstante, se observaron correlaciones negativas significativas con las dimensiones social, familiar y física del autoconcepto.

Discusión: En consonancia con investigaciones previas, los resultados de este estudio indican que un clima tarea se asocia con un mayor disfrute y un ambiente de aprendizaje más positivo, lo que corresponde a un desarrollo favorable del autoconcepto.

Conclusiones: Los hallazgos sugieren que un clima tarea en Educación Física se relaciona positivamente con el autoconcepto y sus dimensiones física, académica y social en estudiantes de Primaria. Por el contrario, el clima ego no muestra asociación significativa con el autoconcepto general, pero se vincula con puntuaciones más bajas en las dimensiones familiar, social y emocional.

Palabras clave

Autoconcepto; clima motivacional; Educación Física; educación primaria; niños

Introduction

Among the main objectives of Physical Education (PE) is to promote the development of healthy habits and lifestyles (Gallotta et al., 2024), as well as the holistic development – physical, cognitive, social, and emotional – of the student (Mustafa et al., 2024). In the primary education stage, PE assumes particular relevance as one of the main educational settings where students engage in social interactions, face motor challenges, and develop perceptions of their own competence and self-worth. In this regard, the literature has highlighted that PE not only contributes to motor development but also is significantly associated with key psychosocial variables related to students' motivation and well-being (Flores-Piñero et al., 2024; Leisterer & Jekauc, 2019; Tambalis et al., 2019; Viciano et al., 2019). To achieve these outcomes, it is crucial to prioritise the needs and interests of students, even above the PE curriculum itself (Casey, 2017); paying particular attention to the motivational climate (MC) encouraged in the classroom and to the messages, feelings, and emotions perceived by students during PE lessons (Adank et al., 2024).

From the perspective of educational psychology, the Achievement Goal Theory (AGT) has become one of the most widely used theoretical frameworks for explaining students' motivation in achievement contexts (Ames, 1992). This theory posits that perceptions of success and the structure of tasks play a decisive role in students' motivational, emotional, and behavioural patterns. In the context of PE, AGT has been widely applied to analyse how the MC established by teachers influences students' engagement, motivation, and experiences during lessons (García-Calvo et al., 2005; Moreno-Murcia et al., 2012), which can be primarily task-oriented (TC) or ego-oriented climate (EC). TC is characterised by valuing effort, personal improvement, cooperation, and active participation of all students, whereas an EC emphasises social comparison, rivalry, and unequal recognition based on performance (Castro-Sánchez et al., 2019a; Marjanović et al., 2019). Scientific evidence has shown that perceiving a TC is associated with more adaptive motivational patterns in PE, such as higher enjoyment, greater engagement in assigned tasks, and more positive attitudes towards physical activity (Chanal et al., 2019; Ntoumanis & Biddle, 1999). In contrast, perceiving an EC has been associated with less adaptive experiences, characterised by increased pressure to perform, greater concern with peer comparison, and lower satisfaction with practice (Chen, 2015). The adoption of different states of involvement is a crucial factor in shaping cognitive, emotional, and behavioural outcomes (Cuevas-Campos et al., 2013; Huhtiniemi et al., 2019). At the same time, it presents a significant challenge for PE teachers, who often struggle to help students perceive the TC they are trying to cultivate through their teaching interventions (Deliligka et al., 2020). According to García-Calvo et al. (2005), creating a TC in PE classes is challenging due to the traditional emphasis on performance, which often promotes competition among students and rewards only the most skilled. This conventional approach can negatively impact the perceptions and emotions of other students (Ames, 1992), influencing their behaviour, SC, and self-esteem. The MC cultivated by teachers in the classroom influences the socio-affective relationships that develop among peers (Fernández-Rio et al., 2014), highlighting the role of physical activity as a preventive factor against developing aggressive or violent behaviours in students (Flores-Piñero et al., 2024). Teaching interventions should focus on fostering a TC by implementing instructional strategies that support student development across all personal domains, while also encouraging cooperation and autonomy (Chen, 2015). Recent studies in PE have reinforced this evidence, highlighting the role of the MC as a key variable for emotional well-being and the quality of students' educational experiences (Fernández-Rio et al., 2014; Fierro-Suero et al., 2021).

Within the motivational context, SC represents a key psychosocial variable associated with optimal physical, cognitive, emotional, and social functioning (Gálvez-Casas et al., 2015). It is widely regarded as one of the psychological factors exerting the greatest influence on the development of an individual's identity and personality (Huang et al., 2021; Sánchez-Zafra et al., 2019). Traditionally, SC has been understood as a unidimensional and global construct (Huang et al., 2021; Pinel-Martínez et al., 2019). However, contemporary perspectives suggest that individuals construct distinct perceptions of themselves across different areas of life, including physical, emotional, social, and affective domains (Burns et al., 2018). According to this view, global self-concept (GSC) is regarded as the outcome of a network of partial perceptions of the self (multidimensionality), structured within a hierarchical organisation (Huang et al., 2021; Marsh & Martin, 2011). In their classic review of SC research, Shavelson et al. (1976) devel-



oped the multidimensional model of hierarchical factors, suggesting that SC comprises several dimensions that are structured and organised hierarchically. Specifically, academic self-concept (ASC) describes an individual's self-perception in their capacity as a student (Kavanagh, 2020); social self-concept (SSC) is shaped by perceptions of one's role and interactions within society (Wikman et al., 2022); emotional self-concept (ESC) belongs to experiences related to managing and understanding one's emotions (Goñi et al., 2012); family self-concept (FSC) is rooted in feelings of acceptance or rejection within the family environment (Strauss et al., 2023); Lastly, physical self-concept (PSC) arises from individual assessments of their physical appearance, fitness levels, and motor competence (Sánchez-Miguel et al., 2020).

SC has been consistently associated with personality development and is regarded as a fundamental component of effective personal and social functioning (Huang et al., 2021; Marsh et al., 2019; Shavelson et al., 1976). Personal satisfaction and a sense of well-being are largely related to the quality of SC (Pinel-Martínez et al., 2019). Therefore, fostering a positive and balanced self-perception is considered essential for achieving key educational objectives in both Primary and Secondary Education, particularly the promotion of genuine socio-affective balance among students. In this context, physical activity within PE sessions plays an important role in supporting overall SC and its dimensions, as these dimensions are closely linked to favourable psychosocial outcomes (De la Torre-Cruz et al., 2019). PE constitutes a particularly relevant context for the development of SC, as it integrates motor, social, and emotional experiences that influence students' perceptions of competence, peer interactions, and self-evaluation.

Despite growing interest in studying the relationship between MC and SC, most available studies have focused on adolescent populations or later educational stages, with limited attention to primary education. Furthermore, much of the previous research has examined SC partially, primarily focusing on its physical dimension, thereby limiting the understanding of its multidimensional nature during early school years (De la Torre-Cruz et al., 2019; Ramírez-Granizo et al., 2020; Flores-Piñero et al., 2024).

This gap is particularly relevant given that primary education is a key stage for consolidating motivational patterns and constructing students' self-image. A detailed analysis of the relationship between the MC perceived in PE lessons and SC across all its dimensions can provide valuable evidence to guide teaching practices towards pedagogical approaches more consistent with students' holistic development (Mustafa et al., 2024).

In this context, the present study aims to: a) identify the predominant MC perceived by primary education students in PE classes; b) analyse the level of GSC and its academic, social, emotional, family, and physical dimensions; and c) examine the relationship between the perceived MC (TC and EC) and SC in primary education students. Accordingly, this study hypothesises that a higher prevalence of a TC climate will be positively associated with GSC and its various dimensions, whereas an EC will be negatively associated, particularly with the social, emotional, and family dimensions of SC.

Method

A cross-sectional correlational design was employed to analyse the relationships between MC in PE classes and SC, including its different dimensions, among primary education students. This design is appropriate for examining associations between psychological and educational variables at a single point in time, without aiming to establish causal relationships.

Participants

The sample consisted of 347 Spanish students (46.4% boys; 53.6% girls) aged 9 to 13 years ($M = 10.55$ years; $SD = 0.97$) from two public primary schools in the Autonomous City of Melilla, Spain. The sample was selected through non-probability convenience sampling, based on school accessibility and students' availability to participate in the study. Inclusion criteria required students to be enrolled in primary education at the time of data collection, attend PE classes regularly, and have the appropriate authorisation to participate in the study. Exclusion criteria included significant reading comprehension difficulties or limited functional proficiency in Spanish that could compromise understanding of the questionnaires. Additionally, pupils with special educational needs (e.g., ASD, ADHD, or Down syndrome) were excluded from the study.



The sample size was considered adequate for the study objectives, as it is comparable to previous research in school PE examining motivational and psychosocial variables using similar correlational designs. Furthermore, the number of participants ensured sufficient statistical power and stability of the parameter estimates for the planned analyses. However, given the use of non-probability convenience sampling and the inclusion of only two schools, the findings should be interpreted with caution and cannot be generalised to the broader population of primary education students.

Procedure

The researchers approached the management teams and PE teachers at both schools to present the project's objectives and scope, requesting their support for its implementation. Before participating, the researchers outlined the study's purpose and methodology to the participants in person, addressing any questions and ensuring an adequate understanding of the instructions. The questionnaires were administered anonymously during the official PE schedule, with classroom teachers assisting in their distribution and collection. The researchers participated in the data collection process to ensure the quality of the information, prevent duplication of subjects and data, and provide individualised monitoring throughout the collection period. Students who provided invalid response patterns, such as uniform responses, completion of the questionnaires in an excessively short time, or incomplete data, were excluded from the analysis to ensure the reliability of the results.

A statement was provided confirming that all methods adhered to the relevant ethical guidelines and regulations. Permission to participate was formally granted; prior parental authorisation was required for minors to participate. In addition, informed assent was obtained from all students before data collection. The study's details were briefly presented to the participants, and their anonymity was ensured throughout the research. They were additionally informed that the data gathered would be utilised solely for scientific research purposes.

Authorisation for this study was obtained from the Ministry of Education (registration number 201708380). The study procedures adhered to the Declaration of Helsinki guidelines for research and complied with Spanish national regulations on clinical trials (Royal Decree 1090/2015, December 4), biomedical research (Law 14/2007, July 3), and data protection (Organic Law 3/2018, December 5). Approval was also obtained from the Ethics Committee of the University of Granada (registration number 530/CEIH/2018).

Instrument

The Spanish version of the Perceived Motivational Climate in Sport Questionnaire-2 (PMCSQ-2), originally developed by Newton et al. (2000) and adapted by González-Cutre (2008), was employed to assess MC in PE. The questionnaire includes two main categories, each composed of three subscales. Specifically, ego-oriented climate (EC) includes items 2, 7, 9, 15, 18, and 27 in the punishment for mistakes (PM) subcategory; items 3, 13, 17, 22, 24, 26, and 29 in the unequal recognition (UR) subcategory; and items 6, 12, and 23 in the rivalry between group members (MGR) subcategory. Concerning task-oriented climate (TC), it comprises items 11, 21, 31, and 33 in the cooperative learning (CL) subcategory; items 1, 8, 14, 16, 20, 25, 28, and 30 in the effort/improvement (E/I) subcategory; and items 4, 5, 10, 19, and 32 in the important role of each student (IR) subcategory. The questionnaire consisted of 33 items measured on a 5-point Likert scale, ranging from 1 ("strongly disagree") to 5 ("strongly agree"). The PMCSQ-2 has previously been applied in samples of primary school children aged 10–12 years, demonstrating adequate validity and reliability in educational contexts (Castro-Sánchez et al., 2019b). The adapted PMCSQ-2 version employed in this research demonstrated satisfactory psychometric qualities, with Cronbach's alpha values of $\alpha = .90$ for EC and $\alpha = .84$ for TC. In the current research, reliability was confirmed as acceptable through the internal consistency coefficients, with values of $\alpha = .856$ for EC and $\alpha = .803$ for TC.

The Form 5 Self-Concept Questionnaire (AF-5), developed by García and Musitu (1999), is a widely recognised tool for assessing SC applicable to diverse populations ranging from childhood to adulthood. This questionnaire evaluates five dimensions of SC across 30 items: academic (ASC) (items 1, 6, 11, 16, 21, and 26); social (SSC) (2, 7, 12, 17, 22, and 27); emotional (ESC) (3, 8, 13, 18, 23, and 28); family (FSC) (4, 9, 14, 19, 24, and 29); and physical self-concept (PSC) (5, 10, 15, 20, 25, and 30). Participants responded using a 5-point Likert scale ranging from 1 (never) to 5 (always). Previous research conducted with preadolescent samples (10–12 years) has supported the construct validity and reliability of the AF-



5, confirming its suitability for school populations (García-Grau et al., 2014). The questionnaire demonstrates robust psychometric properties, with an overall Cronbach's alpha of $\alpha = 0.815$. The internal consistency coefficients obtained in this study were likewise satisfactory, showing a value of $\alpha = 0.760$.

Data analysis

Data analysis was performed using IBM® SPSS® Statistics software (version 28.0 for Windows; IBM Corp, Armonk, NY, USA). Continuous variables are reported as mean values \pm standard deviations. Data normality was assessed through skewness and kurtosis values ($\leq |2|$ and $\leq |7|$ respectively), and confirmed using the Kolmogorov–Smirnov. Homogeneity of variance was examined using Levene's test. Given the sample size and the distributional properties, parametric tests were considered appropriate.

Analyses were conducted on descriptive statistics, encompassing frequencies, percentages, means, and standard deviations (SD). Cronbach's alpha was applied to evaluate the instruments' internal consistency, with a reliability index of 95.5%. Values of $\alpha \geq 0.70$ were deemed acceptable, while higher values indicated greater reliability.

Pearson's bivariate correlations were conducted to examine the relationships between perceived motivational climate in PE classes and SC, as well as among their respective dimensions. Statistical significance was set at $p < .05$. Comparisons by sex were performed to explore potential differences between boys and girls in the variables analysed. Independent-samples Student's t-tests were applied, and when multiple comparisons were conducted, the Bonferroni correction was used to control for Type I error.

Results

Table 1 presents the descriptive statistics for MC and SC, as well as the comparisons by sex. Regarding MC, no statistically significant differences were observed between boys and girls in TC or its dimensions—CL, E/I, and IR—nor in EC and its categories—PM and UR ($p > .05$). However, a significant difference emerged in MGR ($p = .012$), with boys scoring higher ($M = 3.08$; $SD = 1.038$) than girls ($M = 2.78$; $SD = 1.112$).

Concerning SC, sex-based analysis revealed significant differences only in FSC, with higher scores reported by girls ($p < .05$). No statistically significant differences ($p > .05$) were found in the remaining SC dimensions (ASC, SSC, ESC, and PSC), where only descriptive variations were observed. Based on these findings, the relationships between global SC and perceived motivational climate in PE were subsequently examined, differentiating between TC and EC climates (Tables 2 and 3).

Table 1. Descriptive baseline characteristics of motivational climate and self-concept

Motivational Climate	Descriptive parameters	Sex				Test of Levene		T Test
		Boys		Girls		F	Sig.	Sig. (bilateral)
		M	SD	M	SD			
TC	M=3,91 (SD=0,630)	3,86	0,673	3,95	0,589	1,098	,295	,201
CL	M=3,97 (SD=0,846)	3,89	0,855	4,03	0,834	,021	,885	,120
E/I	M=3,96 (SD=0,701)	3,91	0,729	4,00	0,674	1,261	,262	,232
IR	M=3,78 (SD=0,778)	3,76	0,852	3,80	0,709	7,277	,007*	,658
EC	M=2,80 (SD=0,947)	2,87	0,819	2,73	0,871	1,445	,230	,129
PM	M=2,86 (SD=0,947)	2,87	0,973	2,85	0,926	,182	,670	,869
UR	M=2,70 (SD=1,017)	2,79	0,960	2,61	1,059	2,807	,095	,107
MGR	M=2,92 (SD=1,087)	3,08	1,038	2,78	1,112	,980	,323	,012*
GSC	M=3,93 (SD=0,434)	3,91	0,429	3,95	0,437	,823	,365	,336
ASF	M=4,04 (SD=0,678)	4,00	0,620	4,07	0,724	5,761	,017	,352
SSC	M=4,07 (SD=0,667)	4,01	0,639	4,11	0,690	,614	,434	,191
ESC	M=3,34 (SD=0,908)	3,36	0,921	3,33	0,900	,166	,684	,720
FSC	M=4,34 (SD=0,691)	4,26	0,690	4,41	0,685	,040	,841	,045*
PSC	M=3,90 (SD=0,663)	3,92	0,723	3,87	0,607	5,731	,017	,480

Note. Statistically significant differences between sexes (independent-samples t test), $p \leq .05$. TC = Task climate; CL = Cooperative learning; E/I = Effort/improvement; IR = Important role; EC = Ego climate; PM = Punishment for mistakes; UR = Unequal recognition; MGR = Member group rivalry. GSC = Global self-concept; ASC = Academic self-concept; SSC = Social self-concept; ESC = Emotional self-concept; FSC = Family self-concept; PSC = Physical self-concept.



Table 2 displays the correlations between SC and TC. The results indicate a significant positive association between GSC and TC, as well as its three dimensions ($p \leq .01$). Similarly, ASC, SSC, and PSC showed significant positive correlation with TC ($p \leq .01$). In contrast, ESC was not significantly associated with TC or its dimensions. FSC was positively correlated with TC, particularly with the E/I and IR dimensions. Overall, the associations observed between SC and TC were small to moderate in magnitude, indicating a consistent positive pattern across most SC dimensions. These results suggest that a TC climate may be meaningfully linked to more adaptive self-perceptions among students.

Table 2. Correlation between self-concept and task-oriented climate

		ASC	SSC	ESC	FSC	PSC	TC	CL	E/I	IR
GSC	Pearson Correlation	,632**	,725**	,540**	,669**	,637**	,323**	,234**	,297**	,259**
	Sig. (2-tailed)	,000	,000	,000	,000	,000	,000	,000	,000	,000
ASC	Pearson Correlation		,287**	,111*	,284**	,354**	,268**	,161**	,253**	,232**
	Sig. (2-tailed)		,000	,038	,000	,000	,000	,003	,000	,000
SSC	Pearson Correlation			,328**	,360**	,374**	,240**	,220**	,212**	,163**
	Sig. (2-tailed)			,000	,000	,000	,000	,000	,000	,002
ESC	Pearson Correlation				,250**	,074	,045	-,007	,081	,012
	Sig. (2-tailed)				,000	,171	,407	,902	,133	,819
FSC	Pearson Correlation					,255**	,211**	,131*	,190**	,193**
	Sig. (2-tailed)					,000	,000	,015	,000	,000
PSC	Pearson Correlation						,247**	,236**	,186**	,208**
	Sig. (2-tailed)						,000	,000	,000	,000
TC	Pearson Correlation							,782**	,895**	,786**
	Sig. (2-tailed)							,000	,000	,000
CL	Pearson Correlation								,569**	,463**
	Sig. (2-tailed)								,000	,000
E/I	Pearson Correlation									,528**
	Sig. (2-tailed)									,000

Note. **Correlation is significant at the $p \leq .01$ level (2-tailed). *Correlation is significant at the $p \leq .05$ level (2-tailed); GSC = Global self-concept, ASC = Academic self-concept, SSC = Social self-concept, ESC = Emotional self-concept, FSC = Family self-concept, PSC = Physical self-concept, TC = Task-oriented climate, CL = Cooperative Learning, E/I = Effort/Improvement, IR = Important Role.

Table 3 presents the correlations between SC and EC. Overall, EC was not significantly associated with ASC or PSC ($p > .05$), although the association with GSC approached statistical significance ($p = .051$), suggesting a marginal trend that should be interpreted with caution. However, GSC showed a significant negative correlation with UR ($p \leq .01$). Similarly, the social (SSC) dimension exhibited a weak but statistically significant negative association with UR ($p \leq .05$). FSC was negatively associated with EC overall and, more strongly, with UR category ($p \leq .01$). Finally, ESC showed significant negative correlations with EC, as well as with its PM and UR dimensions ($p \leq .01$), whereas no significant association was found with the MGR category ($p > .05$). In contrast to TC, the associations identified with EC were generally weak and negative, particularly in relation to UR. This pattern suggests that EC environments may be modestly associated with less favourable SC outcomes.

Table 3. Correlation between self-concept and ego-oriented climate

		ASC	SSC	ESC	FSC	PSC	EC	PM	UR	MGR
GSC	Pearson Correlation	,632**	,725**	,540**	,669**	,637**	-,105	-,061	-,139**	-,026
	Sig. (2-tailed)	,000	,000	,000	,000	,000	,051	,254	,009	,623
ASC	Pearson Correlation		,287**	,111*	,284**	,354**	-,068	-,016	-,093	-,053
	Sig. (2-tailed)		,000	,038	,000	,000	,205	,770	,083	,321
SSC	Pearson Correlation			,328**	,360**	,374**	-,080	-,027	-,106*	-,056
	Sig. (2-tailed)			,000	,000	,000	,135	,613	,048	,300
ESC	Pearson Correlation				,250**	,074	-,151**	-,165**	-,144**	-,029
	Sig. (2-tailed)				,000	,171	,005	,002	,007	,590
FSC	Pearson Correlation					,255**	-,146**	-,077	-,191**	-,057
	Sig. (2-tailed)					,000	,006	,151	,000	,291
PSC	Pearson Correlation						,086	,071	,069	,085
	Sig. (2-tailed)						,109	,187	,200	,115
EC	Pearson Correlation							,843**	,912**	,707**
	Sig. (2-tailed)							,000	,000	,000
PM	Pearson Correlation								,613**	,432**
	Sig. (2-tailed)								,000	,000
UR	Pearson Correlation									,547**
	Sig. (2-tailed)									,000

Note. **Correlation is significant at the level $p \leq .01$ (2-tailed). *Correlation is significant at the level $p \leq .05$ (2-tailed). GSC = Global self-concept, ASC = Academic self-concept, SSC = Social self-concept, ESC = Emotional self-concept, FSC = Family self-concept, PSC = Physical self-concept, EC = Ego-oriented climate, PM = Punishment for mistakes; UR = Unequal recognition; MGR = Member group rivalry.

Discussion

The present research aimed to analyse the relationship between SC and MC among primary school students. Descriptive results for both variables were examined at the beginning of the study. In this sense, the average score on the AF-5 scale reflected that most participants held a positive perception of their GSC. Among the dimensions, FSC received the highest ratings, followed by SSC, ASC and PSC dimensions. ESC was the dimension rated lowest by the students participating in the study.

These findings were consistent with those reported by García-Sánchez et al. (2013), who observed the same ranking in the assessment of SC dimensions among secondary school students. Although that study was conducted with an older population, comparisons should be interpreted cautiously due to differences in educational stage. Similarly, the results were consistent with those of Sánchez-Zafra et al. (2019), where ESC also records the lowest value, while the other four dimensions display comparable scores, with PSC being the highest. Likewise, in the study conducted by Reigal-Garrido et al. (2014), SSC and FSC emerged as the dimensions with the highest ratings, closely mirroring the outcomes of the present research.

The lower scores on the emotional dimension may have been related to contextual factors linked to emotional development, although this interpretation should be considered cautiously. Likewise, the high score of FSC observed in this study could be explained by the significant role of family among students with a religious inclination (Zurita-Ortega et al., 2018), which is consistent with the characteristics of the participants in the present research, the majority of whom identify as Muslim and Christian—religions characterised by a deeply rooted cultural emphasis on the concept of family. However, no direct measures of religious or cultural influence were included, and therefore, this explanation remains tentative.

Concerning MC in PE, TC and its categories—CL, E/I, and IR—showed higher values compared to EC and its categories. These findings were consistent with those reported by Castro-Sánchez et al. (2019a), Johnson (2015), and Ramírez-Granizo et al. (2020). In all these studies, TC and its dimensions received higher evaluations than EC and its respective categories. However, slight variations are observed in the ranking of dimensions based on the scores obtained in each study compared to those in the present research. The reason why TC and its dimensions obtained higher scores than EC and its categories may have reflected instructional practices emphasising effort and cooperation; however, this interpretation cannot be confirmed within the scope of the present design.

No statistical differences were found in the analysis of MC based on sex, nor in TC and its categories—CL, E/I, and IR, nor in EC and its categories—PM and UR. However, a statistical association was identified in the MGR category, with boys scoring higher than girls. These findings were consistent with those reported by Ramírez-Granizo et al. (2020), where boys demonstrated higher scores in EC than girls, with notable differences across the MGR, UR, and PM categories. Similarly, these results corresponded with the study by Breiger et al. (2015), who reported a negative correlation between EC and girls, which was not evident in boys. This difference may have been attributed to behavioural tendencies, as girls typically exhibit calmer, more cooperative, obedient, and organised behaviour (Vantieghe & Van Houtte, 2018), along with a stronger emphasis on intrinsic rewards, such as personal growth and self-improvement. In contrast, boys are typically more competitive, placing greater emphasis on winning, even demonstrating superiority over their teammates (Breiger et al., 2015). Although behavioural tendencies have been proposed in prior literature to explain such differences, the present study did not directly assess these variables; therefore, such interpretations should be approached cautiously.

When analysing SC by sex, statistically significant differences were observed only in the family dimension (FSC), with girls obtaining higher scores than boys. No significant differences emerged in the other SC dimensions. Nevertheless, girls displayed higher scores in GSC, ASC, and SSC, whereas boys showed slightly higher scores in PSC and ESC. These outcomes were consistent with previous research on simi-

larly aged populations. Specifically, Herrera-Torres et al. (2017), who studied 422 primary school students, and Amezcua-Membrilla and Pichardo-Martínez (2000), who analysed a sample of 1,235 students aged 11 to 14, found significant gender differences in FSC, with girls scoring higher than boys. On the other hand, although no association was found between the remaining dimensions of SC and sex, higher scores were observed in GSC, ASC and SSC dimensions in girls; while boys stood out in the physical and emotional dimensions, as observed in the studies conducted by Sánchez-Zafra et al. (2019). Thus, the observed differences in FSC between boys and girls can be explained by the greater acceptance that girls receive from their parents, likely due to more satisfactory behaviour within the family nucleus. This parental acceptance also plays a key role in girls obtaining higher social and academic scores, as the family significantly influences the development of a student's traits. However, this explanation cannot be confirmed, given the correlational nature of the study.

In this study, an examination of the association between SC and MC was conducted. The findings revealed the presence of various types of correlations, both positive and negative. Specifically, it was found that the global SC and its dimensions (ASC, SSC, and PSC) were positively associated with TC and its categories (CL, E/I, and IR). Similarly, FSC was also positively associated with TC and its categories E/I and IR. In contrast, negative associations were observed when examining the relationship between SC and EC. Specifically, GSC and SSC were negatively correlated with the UR category, while FSC also showed negative correlations with EC and the UR dimension. Additionally, ESC was negatively correlated with EC, as well as with the PM and UR categories. These findings were consistent with previous research, such as that developed by Castro-Sánchez et al. (2019b) and Soufi et al. (2014), where a positive correlation was obtained between TC and SC, while in the case of EC, this correlation was negative. Thus, the results were consistent with the proposed hypothesis (H1), suggesting that more task-focused children demonstrated higher levels of SC compared to schoolchildren with greater ego-involvement. The positive correlation between TC and SC and their dimensions may be attributed to the fact that greater motivational involvement in the task contributed to increased enjoyment of learning. This, in turn, fostered positive perceptions in both academic and family environments, which positively impacted the child's emotional well-being and facilitated the establishment of healthy and positive relationships with their immediate social environment. Specifically, children who demonstrated a stronger orientation towards TC also tended to exhibit a better ASC due to their higher predisposition towards effort and self-improvement, working to enhance their skills through practice (Monteiro et al., 2018). On the contrary, a greater EC was associated with higher attachment to competition and achievement (Ada et al., 2018), leading to a loss of enjoyment, demotivation, and a tendency to compare oneself with peers (Flores-Piñero et al., 2024), resulting in the release of negative emotions when academic outcomes were unfavourable. Secondly, the positive association found between FSC and TC can be attributed to the culture of effort promoted by the family, as well as to the interest in and enjoyment of learning. In this context, it is essential to highlight the significant influence of the family environment on the physical, emotional, and intellectual development of children, as it is considered their main social support (Ramírez-Granizo et al., 2020). It largely determines the behaviour of the child throughout the Primary Education stage. The family, along with the school, is recognised as the primary socialising agent (Flores-Piñero et al., 2024). Therefore, it is essential to promote curiosity, effort, and a positive attitude towards knowledge within this context. Nevertheless, given the cross-sectional and correlational design, no directional or causal inferences can be drawn; thus, this pattern should not be interpreted as evidence of a causal relationship.

When considering the emotional and social dimensions, a greater TC contributed positively to the establishment of a supportive classroom environment (Fierro-Suero et al., 2021), characterised by student interest and satisfaction, as well as positive relationships with teachers and peers. Consequently, each student develops empathy and effectively manages their emotions, both fundamental aspects for ensuring emotional well-being (Morales-Rodríguez et al., 2017). TC is associated with greater development of social relationships, whereas ego-involvement is not (Méndez-Giménez et al., 2016). In this regard, promoting social relationships grounded in cooperation, respect, shared learning, and the strengthening of interpersonal bonds is essential for students' holistic development. In contrast, EC generates competitive and comparative behaviours among peers, often resulting in situations of rivalry and even aggression (Castro-Sánchez et al., 2019b). These dynamics not only disrupt the classroom environment but

also adversely affect children's self-perception, particularly their social identity (Spilt et al., 2014). Consequently, both the child's emotional development and the establishment of a healthy and supportive socio-educational environment are adversely impacted.

Regarding PSC, the presence of a TC was positively associated with the development of PSC. In contrast, the relationship between PSC and EC appeared less robust. Taking into account that MC refers to a combination of implicit and explicit factors—such as feedback delivery, grouping approaches, assessment methods, and the structure of tasks—that shape individuals' motivation to succeed (Castro-Sánchez et al., 2019b), the promotion of a TC contributes positively to the development of PSC (Pavlović et al., 2023). This, in turn, allows for a better perception of oneself and one's level of motor competence (Utesch et al., 2018) while encouraging students to engage in more physical and sporting activities. These activities are essential for ensuring optimal physical and psychological health, as they serve as feedback for the positive construction of PSC (Moreno et al., 2008). A positive PSC provides students with greater self-confidence and, as a result, more confidence when relating to others (Flores-Piñero et al., 2024), hence the importance of promoting an optimal approach to support the development of PSC in PE classes, encourage participation in prosocial behaviours, and reduce engagement in comparative or competitive tendencies. It should be noted that the relationship between PSC and EC observed in this study appeared weaker. Therefore, longitudinal research would be necessary to clarify potential directional effects. Importantly, the absence of significant associations in some expected dimensions may have reflected contextual characteristics of the sample or developmental factors, which warranted further investigation.

This study has several limitations that must be considered when interpreting and extrapolating the results obtained. The cross-sectional correlational design did not allow causal inferences. These methodological constraints should be considered when interpreting the findings and deriving practical implications. Although the sample represented students in the last three years of Primary Education within the Autonomous City (9.46%), potential bias in the results cannot be ruled out. The findings should only be extrapolated to populations within a similar age range (10 to 12 years), and caution is advised when generalising beyond similar age ranges. Finally, the reliance on a convenience sample introduces limitations related to representativeness and the selection method. Future research should incorporate longitudinal designs and probability sampling methods to strengthen the robustness and generalisability of findings.

Conclusions

Despite a wide range of research investigating the connection between MC and SC, most studies have focused on the secondary education stage or have exclusively analysed the physical dimension of SC. Therefore, this study provides a novel and in-depth analysis of the relationship between MC promoted during PE sessions, its association with SC, and its various dimensions in primary school students. In this study, higher scores were observed in the task climate (TC) and its aspects—cooperative learning (CL), effort/improvement (E/I), and important role (IR)—than in the ego climate (EC) and its elements, such as rivalry between group members (MGR) and punishment for mistakes (PM) and unequal recognition (UR). In the analysis of MC based on gender, no statistical differences were found either in TC and its categories—CL, E/I, and IR—or in EC and its categories—PM and UR. However, a statistical association was identified in the MGR category, where boys scored higher than girls.

Regarding the correlational analysis, it was found that TC positively correlates with global self-concept (GSC) as well as its academic, social, and physical dimensions (ASC, SSC, and PSC). In contrast, EC was not significantly associated with GSC overall, although negative correlations were observed with the social, family, and physical dimensions. Importantly, the absence of significant associations in some expected dimensions may reflect contextual characteristics of the sample or developmental factors, which warrant further investigation.

Based on the observed associations in this study, PE teachers may consider guiding students' motivation towards the task to support the development of an adequate and positive SC across its various dimensions, while simultaneously ensuring enjoyment of the benefits of recreational PA, regardless of the out-



comes (Flores-Piñero et al., 2024). From this perspective, strategies that provide opportunities for students, encourage peer feedback, include deductive questions related to activities performed, and focus on personal improvement and differentiation—potentially contributing to affective learning and the strengthening of children’s self-concept (Teraoka et al., 2021)—could be facilitated through the design of a teaching-learning process based on the creation of a MC that favours a more self-determined type of motivation in students..

Acknowledgements

The authors wish to express their sincere gratitude to the teachers, school leadership teams, and students of CEIP Real and CEIP Anselmo Pardo in the Autonomous City of Melilla for their participation and collaboration in this study.

Financing

The authors received no financial support for the research, authorship, and/or publication of this article.

References

- Ada, E. N., Çetinkalp, Z. K., Altıparmak, M., & Aşıcı, F. (2018). Flow experiences in physical education classes: The role of perceived motivational climate and situational motivation. *Journal of Educational Training, 4*, 114–120. <https://doi.org/10.20448/journal.522.2018.42.114.120>
- Adank, A. M., Van Kann, D. H. H., Borghouts, L. B., Kremers, S. P. J., & Vos, S. B. (2024). That’s what I like! Fostering enjoyment in primary physical education. *European Physical Education Review, 30*(2), 250–270. <https://doi.org/10.1177/1356336X231205686>
- Ames, C. (1992). Classrooms: Goals, structures, and student motivation. *Journal of Educational Psychology, 84*, 261–271. <https://doi.org/10.1037/0022-0663.84.3.261>
- Amezcu-Membrilla, J. A., & Pichardo-Martínez, M. (2000). Diferencias de género en autoconcepto en sujetos adolescentes. *Anales de Psicología, 16*(2), 207–214. https://www.um.es/analesps/v16/v16_2/10-16_2.pdf
- Breiger, J., Cumming, S. P., Smith, R. E., & Smoll, F. (2015). Winning, motivational climate, and young athletes’ competitive experiences: Some notable sex differences. *International Journal of Sports Science & Coaching, 10*(2+3), 395–411. <https://doi.org/10.1260/1747-9541.10.2-3.395>
- Burns, R. A., Crisp, D. A., & Burns, R. B. (2018). Competence and affect dimensions of self-concept among higher education students: A factorial validation study of an academic subject-specific self-concept. *European Journal of Psychology of Education, 33*(4), 649–663. <https://doi.org/10.1007/s10212-018-0369-x>
- Casey, A. (2017). Models-based practice. In C. Ennis (Ed.), *Routledge handbook of physical education pedagogies* (pp. 54–67). Routledge.
- Castro-Sánchez, M., Zurita-Ortega, F., García-Mármol, E., & Chacón-Cuberos, R. (2019a). Motivational climate in sport is associated with life stress levels, academic performance, and physical activity engagement of adolescents. *International Journal of Environmental Research and Public Health, 16*(7), 1198. <https://doi.org/10.3390/ijerph16071198>
- Castro-Sánchez, M., Zurita-Ortega, F., García-Mármol, E., & Chacón-Cuberos, R. (2019b). Motivational climate towards the practice of physical activity, self-concept, and healthy factors in the school environment. *Sustainability, 11*(4), 1–14. <https://doi.org/10.3390/su11040999>
- Chanal, J., Cheval, B., Courvoisier, D. S., & Paumier, D. (2019). Developmental relations between motivation types and physical activity in elementary school children. *Psychology of Sport & Exercise, 43*, 233–242. <https://doi.org/10.1016/j.psychsport.2019.03.006>
- Chen, C. (2015). Incremental validity of achievement goals in predicting subjective well-being among university students. *Journal of Cognitive Education and Psychology, 14*, 38–62. <https://doi.org/10.1891/1945-8959.14.1.38>



- Cuevas-Campos, R., García-Calvo, T., & Contreras, O. (2013). Motivational profiles in Physical Education: an approach from the 2x2 Achievement Goals Theory. *Annals of Psychology, 29*(3), 685–692. <https://doi.org/10.6018/analesps.29.3.175821>
- De la Torre-Cruz, M. J., López-Serrano, S., Ruiz-Ariza, A., & Martínez-López, E. J. (2019). Perceived parental support toward physical activity positively predicts physical self-concept in young adolescents. *Educational Psychology, 39*(7), 941–959. <https://doi.org/10.1080/01443410.2019.1620921>
- Deliligka, S., Syrmpas, I., & Bekiari, A. (2020). Motivational climate in the physical education context through the perspective of teachers and students. *The Physical Educator, 77*(1), 78–109. <https://doi.org/10.18666/TPE-2020-V77-I1-8524>
- Fernández-Rio, J., Méndez-Giménez, A., & Cecchini-Estrada, J. A. (2014). A cluster analysis on students' perceived motivational climate: Implications on psycho-social variables. *Spanish Journal of Psychology, 17*(E18), 1–13. <https://doi.org/10.1017/sjp.2014.21>
- Fierro-Suero, S., Velázquez-Ahumada, N., & Fernández-Espínola, C. (2021). La influencia del clima de aula sobre las emociones del alumnado (The influence of the classroom climate on the student's emotions). *Retos, 42*, 432–442. <https://doi.org/10.47197/retos.v42i0.87305>
- Flores-Piñero, M. d. C., Valdivia-Moral, P., Ramos-Mondejar, L., & González-Hernández, J. (2024). Motivational climate, physical self-concept, and social relationships in adolescents in physical education classes: A systematic review. *Education Sciences, 14*(2), 199. <https://doi.org/10.3390/educsci14020199>
- Gallotta, M. C., Bonavolontà, V., Zimatore, G., Curzi, D., Falcioni, L., Migliaccio, S., Guidetti, L., & Baldari, C. (2024). Academic achievement and healthy lifestyle habits in primary school children: An interventional study. *Frontiers in Psychology, 15*, 1412266. <https://doi.org/10.3389/fpsyg.2024.1412266>
- Gálvez-Casas, A., Rodríguez-García, P. L., Rosa-Guillamón, A., García-Cantó, E., Pérez-Soto, J. J., Tarraga-Marcos, L., & Tarraga-López, P. (2015). Relación entre el estatus de peso corporal y el autoconcepto en escolares. *Nutrición Hospitalaria, 31*(2), 730–736. <https://doi.org/10.3305/nh.2015.31.2.8467>
- García, F., & Musitu, G. (1999). *AF5: Autoconcepto Forma 5*. TEA.
- García-Calvo, T., Santos-Rosa Ruano, F. J., Jiménez-Castuera, R., & Cervelló-Gimeno, E. M. (2005). El clima motivacional en las clases de Educación Física: Una aproximación práctica desde la teoría de metas de logro. *Apunts. Educación Física y Deportes, 81*, 21–28. <https://www.redalyc.org/articulo.oa?id=551656964004>
- García-Grau, P., Ayora Pérez, D., Calabuig Moreno, F., & Prado-Gascó, V. J. (2014). Self-concept in preadolescence: A brief version of AF5 scale. *Motriz: Revista de Educação Física, 20*(2), 151–157. <https://doi.org/10.1590/s1980-65742014000200004>
- García-Sánchez, A., Burgueño-Menjibar, R., López-Blanco, D., & Ortega, F. B. (2013). Condición física, adiposidad y autoconcepto en adolescentes. Estudio piloto. *Revista de Psicología del Deporte, 22*(2), 453–461. Recuperado de <http://www.redalyc.org/articulo.oa?id=235128058014>
- González-Cutre, D., Sicilia-Camacho, A., & Moreno-Murcia, J. A. (2008). Modelo cognitivo-social de la motivación de logro en educación física. *Psicothema, 20*(4), 642–651.
- Goñi, E., Fernández, A., & Infante, G. (2012). El autoconcepto personal: Diferencias asociadas a la edad y al sexo. *Aula abierta, 40*(1), 39–50. <https://dialnet.unirioja.es/servlet/articulo?codigo=3791853>
- Herrera-Torres, M., Al-Lal Mohand, L., & Mohamed-Mohand, L. (2017). Rendimiento escolar y autoconcepto en educación primaria: Relación y análisis por género. *INFAD Revista de Psicología, 3*(1), Monográfico 2, 315–326. <https://doi.org/10.17060/ijodaep.2017.n1.v3.1000>
- Huang, A., Zhang, B., Li, C., Wang, D., Chen, Y., & Liu, J. (2021). Self-concept in primary school students with dyslexia: The relationship to parental rearing styles. *International Journal of Environmental Research and Public Health, 18*(19), 9718. <https://doi.org/10.3390/ijerph18189718>
- Huhtiniemi, M., Sääkslahti, A., Watt, A., & Jaakkola, T. (2019). Associations among basic psychological needs, motivation, and enjoyment within Finnish physical education students. *Journal of Sports Science and Medicine, 18*(2), 239–247. <http://www.jssm.org/hf.php?id=jssm-18-239.xml>
- Johnson, C. E. (2015). Student perceived motivational climate, enjoyment, and physical activity in middle school physical education [Unpublished doctoral thesis]. University of Kentucky.



- Kavanagh, L. (2020). Academic self-concept formation: Testing the internal/external frame of reference model, big-fish-little-pond model, and an integrated model at the end of primary school. *European Journal of Psychology of Education, 35*, 93–109. <https://doi.org/10.1007/s10212-019-00416-w>
- Law 14/2007 of 3 July on Biomedical Research. *Boletín Oficial del Estado, 159*, 28826–28848.
- Leisterer, S. & Jekauc, D. (2019). Students' Emotional Experience in Physical Education. A Qualitative Study for New Theoretical Insights. *Sports, 7*(10), 1–15. <https://doi.org/10.3390/sports7010010>
- Marjanović, M., Comoutos, N. F. Z., & Papaioannou, A. (2019). The relationships between perceived motivational climate, achievement goals and self-talk in physical education: Testing the mediating role of achievement goals and self-talk. *Motivation and Emotion, 43*(3), 592–609. <https://doi.org/10.1007/s11031-019-09760-2>
- Marsh, H. W., & Martin, A. J. (2011). Academic self-concept and academic achievement: Relations and causal ordering. *British Journal of Educational Psychology, 81*, 59–77. <https://doi.org/10.1348/000709910X503501>
- Marsh, H. W., Pekrun, R., Parker, P. D., Murayama, K., Guo, J., Dicke, T., & Arens, A. K. (2019). The murky distinction between self-concept and self-efficacy: Beware of lurking jingle-jangle fallacies. *Journal of Educational Psychology, 111*(2), 331–353. <https://doi.org/10.1037/edu0000281>
- Méndez-Giménez, A., Fernández-Rio, J., & Cecchini-Estrada, J. A. (2016). El modelo de Vallerand en adolescentes asturianos: implementación y extensión / Vallerand's model in Asturian adolescents: Implementation and development. *Revista Internacional de Medicina y Ciencias de la Actividad Física y el Deporte, 16*(64), 703–722. <https://doi.org/10.15366/rimcafd2016.64.006>
- Monteiro, D., Borrego, C. C., Silva, C., Moutão, J., Marinho, D. A., & Cid, L. (2018). Motivational climate sport youth scale: Measurement invariance across gender and five different sports. *Journal of Human Kinetics, 61*, 249–261. <https://doi.org/10.1515/hukin-2017-0124>
- Morales-Rodríguez, A. M., Morales-Rodríguez, F. M., Pérez-Mármol, J. M., & García-Pintor, B. (2017). Diferencias en empatía e inteligencia emocional en función del rendimiento académico. *European Journal of Child Development, Education and Psychopathology, 5*(1), 45–52. <https://doi.org/10.30552/ejpad.v5i1.46>
- Moreno, J. A., Cervelló, E., & Moreno, R. (2008). Importancia de la práctica físico-deportiva y del género en el autoconcepto físico de los 9 a los 23 años. *International Journal of Clinical and Health Psychology, 8*(1), 171–183. <https://www.redalyc.org/pdf/337/33780112.pdf>
- Moreno-Murcia, J. A., Cervelló-Gimeno, E., Montero-Carretero, C., Vera-Lacárcel, J. A., & García-Calvo, T. (2012). Metas sociales, necesidades psicológicas básicas y motivación intrínseca como predictores de la percepción del esfuerzo en las clases de educación física. *Revista de Psicología del Deporte, 21*(2), 215–221. <https://www.redalyc.org/articulo.oa?id=235126897001>
- Mustafa, P. S., Suherman, W. S., Sumarjo, S., Nurhidayah, D., Lufthansa, L., & Anugrah, T. (2024). Analysis of design and implementation of physical education curriculum in primary school: A literature study. *Retos, 60*, 320–331. <https://doi.org/10.47197/retos.v60.107950>
- Newton, M., Duda, J. L., & Yin, Z. (2000). Examination of the psychometric properties of the Perceived Motivational Climate in Sport Questionnaire-2 in a sample of female athletes. *Journal of Sports Sciences, 18*(4), 275–290. <https://doi.org/10.1080/026404100365018>
- Ntoumanis, N. & Biddle, S. J. (1999). A review of motivational climate in physical activity. *Journal of Sport Sciences, 17*, 643–665. <https://doi.org/10.1080/026404199365678>
- Organic Law 3/2018 of 5 December about Personal Data Protection and guarantee of digital rights. *Boletín Oficial del Estado, 294*, 119788–119857.
- Pavlović, S., Pelemiš, V., Marković, J., Dimitrijević, M., Badrić, M., Halaši, S., Nikolić, I., & Čokorilo, N. (2023). The role of motivation and physical self-concept in accomplishing physical activity in primary school children. *Sports, 11*(173). <https://doi.org/10.3390/sports11090173>
- Pinel-Martínez, C., Pérez-Fuentes, M. C., & Carrión-Martínez, J. J. (2019). Relación entre género, resiliencia y autoconcepto académico y social en la adolescencia. *Revista de Psicología y Educación, 14*(2), 112–123. <https://doi.org/10.23923/rpye2019.02.176>
- Ramírez-Granizo, I. A., Sánchez-Zafra, M., Zurita-Ortega, F., Puertas-Molero, P., González-Valero, G., & Ubago-Jiménez, J. L. (2020). Multidimensional self-concept depending on levels of resilience and the motivational climate directed towards sport in schoolchildren. *International Journal of Environmental Research and Public Health, 17*(534), 1–12. <https://doi.org/10.3390/ijerph17020534>



- Reigal-Garrido, R. E., Becerra-Fernández, C. A., Hernández-Mendo, A., & Martín-Tamayo, I. (2014). Relación del autoconcepto con la condición física y la composición corporal en una muestra de adolescentes. *Anales de Psicología*, 30(3), 1079–1085. <https://doi.org/10.6018/analesps.30.3.157201>
- Sánchez-Miguel, P. A., León-del-Barco, B., González-Ponce, I., Sánchez-Serrano, G., & Iglesias Gallego, D. (2020). Children's physical self-concept and body image according to weight status and physical fitness. *Sustainability*, 12(3), 782. <https://doi.org/10.3390/su12030782>
- Sánchez-Zafra, M., Zurita-Ortega, F., Ramírez-Granizo, I., Puertas-Molero, P., González-Valero, G., & Ubago-Jiménez, J. L. (2019). Niveles de autoconcepto y su relación con el uso de los videojuegos en escolares de tercer ciclo de primaria. *Journal of Sport and Health Research*, 11(1), 43–54. <https://digibug.ugr.es/handle/10481/59828>
- Shavelson, R. J., Hubner, J. J., & Stanton, J. C. (1976). Self-concept: Validation of construct interpretations. *Review of Educational Research*, 46, 407–441. <https://doi.org/10.3102/00346543046003407>
- Soufi, S., Safi, M., & Vahid, F. (2014). Development of structural model for prediction of academic achievement by global self-esteem, academic self-concept, self-regulated learning strategies and autonomous academic motivation. *Procedia - Social and Behavioral Sciences*, 114, 26–35. <https://doi.org/10.1016/j.sbspro.2013.12.651>
- Spanish Agency of Medicines and Medical Devices. (2015). Royal decree 1090/2015, of 4 December, regulating clinical trials with medicinal products, ethics committees for investigation with medicinal products and the Spanish clinical studies registry. *Boletín Oficial del Estado*, 307, 121923–121964.
- Spilt, J. L., van Lier, P. A. C., Leflot, G., Onghena, P., & Colpin, H. (2014). Children's social self-concept and internalizing problems: The influence of peers and teachers. *Child Development*, 85(3), 1248–1256. <https://doi.org/10.1111/cdev.12181>
- Strauss, A. M., Tolmen, P. S., & Bipath, K. (2023). A critical multimodal discourse analysis of drawings to ascertain identity and self-concept. *South African Journal of Childhood Education*, 13(1), a1240. <https://doi.org/10.4102/sajce.v13i1.1240>
- Tambalis, K. D., Panagiotakos, D. B., Psarra, G., & Sidossis, L. S. (2019). Concomitant Associations between Lifestyle Characteristics and Physical Activity Status in Children and Adolescents. *Journal of Research in Health Sciences*, 19(1): e00439, 1–7. <https://doi.org/10.15171/jrhs.2019.06>
- Teraoka, E., Jancer Ferreira, H., Kirk, D., & Bardid, F. (2021). Affective learning in physical education: A systematic review. *Journal of Teaching in Physical Education*, 40(3), 460–473. <https://doi.org/10.1123/jtpe.2019-0164>
- Utesch, T., Dreiskamper, D., Naul, R., & Geukes, K. (2018). Understanding physical (in-) activity, overweight, and obesity in childhood: Effects of congruence between physical self-concept and motor competence. *Scientific Reports*, 8, 5908, 1–10. <https://doi.org/10.1038/s41598-018-24139-y>
- Vantieghem, W., & Van Houtte, M. (2018). Differences in study motivation within and between genders: An examination by gender typicality among early adolescents. *Youth & Society*, 50(3), 377–404. <https://doi.org/10.1177/0044118X15602268>
- Viciano, J., Mayorga-Vega, D., Martínez-Baena, A., Hagger, M. S., Liukkonen, J., & Yli-Piipari, S. (2019). Effect of self-determined motivation in physical education on objectively measured habitual physical activity: A trans-contextual model. *Kinesiology*, 51(1), 141–149. <https://doi.org/10.26582/k.51.1.15>
- Wikman, M. W., Allodi, L. A., & Ferrer-Wreder. (2022). Self-concept, prosocial school behaviors, well-being, and academic skills in elementary school students: A whole-child perspective. *Education Sciences*, 12(5), 298. <https://doi.org/10.3390/educsci12050298>
- Zurita-Ortega, F., San Román-Mata, S., Martínez-Martínez, A., Chacón-Cuberos, R., Castro-Sánchez, M., & Puertas-Molero, P. (2018). Autoconcepto y tendencia religiosa en universitarios: Propiedades psicométricas del AF-5. *Universitas Psychologica*, 17(5), 1–12. <https://doi.org/10.11144/Javeriana.upsy17-5.atru>



Authors and translators' details:

Guillermo Moreno-Rosa
Carmen África del Pino-Morales
Carlos Javier López-Gutiérrez
Manuel Castro-Sánchez

gmoreno@ugr.es
carmenafrica.delpino@edumelilla.es
cjlopez@ugr.es
manuelcs@ugr.es

Author
Author/Translator
Author
Author