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The moderation role of self-efficacy on the relationship between transformational leadership and enjoyment in physical educational students

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ABSTRACT

Background: Enjoyment in physical education classes is recognized as a key factor in fostering a positive relationship with physical activity. Its significance as a component for sports participation is emphasized.

Purpose: This study investigates the moderating role of self-efficacy in the relationship between the transformational leadership of physical education teachers and students' enjoyment during classes. The hypothesis is that students' perceived self-efficacy moderates this relationship.

Methods: An associative and explanatory approach was employed. The study involved 429 adolescents (205 boys, 224 girls) aged 14–16 from the province of Málaga, Spain. Data was collected using three questionnaires: the Transformational Teaching Questionnaire to assess the teacher's transformational leadership, the Motor Self-Efficacy Scale to measure students' motor self-efficacy, and the Intrinsic Satisfaction in Sport Instrument to evaluate students' enjoyment in physical education classes.

Results: The findings revealed a positive relationship between teachers' transformational leadership and students' enjoyment in physical education classes. Moreover, students' motor self-efficacy was found to moderate this relationship: Specifically, the positive effect of transformational leadership on enjoyment was more pronounced among students with low self-efficacy, whereas the effect was less evident among students with high self-efficacy.

Discussion: The study concludes that transformational leadership influences students' enjoyment in physical education classes, but its impact is moderated by students' perceived self-efficacy. These results emphasize the importance of training physical education teachers in transformational leadership strategies to improve students' experiences, fostering active and healthy lifestyles from adolescence into adulthood.

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Enjoyment; self-efficacy; transformational leadership; physical education; adolescence

Introduction

Perceived enjoyment during physical activity is one of the most relevant factors for maintaining physical activity practice (Sánchez García et al. 2025). Enjoyment is an essential component of intrinsic motivation, referring to engaging in an activity for the pleasure and satisfaction it provides, rather than for external rewards (Manzano León et al. 2022). It is proposed as a relevant factor during classes. By fostering enjoyment in the class, the goal is to make students feel engaged during the development of these activities (Wardani et al. 2020). When a student perceives a class as stimulating, it is highly likely that they will feel motivated to pay attention, develop an interest in learning, and, importantly, be proactive in applying what they have learned in class to other areas of their life (Ommering et al. 2020; Popovska Nalevska and Kuzmanovska 2020). In the context of Physical Education classes, several authors have noted that enjoyment plays a particularly important role (Chen et al. 2020; Rhodes and Kates 2015). Enjoyment can affect individual perceptions of physical activity, reinforcing it when perceived as interesting or enjoyable, or avoiding it when perceived as unpleasant, uninteresting, or boring, influencing exercise engagement and the adoption of an active and healthy lifestyle in the future (Engels and Freund 2020; Teixeira et al. 2021). If Physical Education students have a positive experience with physical activity, it could generate a sense of enjoyment related to physical activity, potentially leading to the formation of healthy habits and the relationship students develop with physical activity throughout their lives (Wintle 2022).

Thus, when students enjoy Physical Education classes, they may feel motivated to actively participate, experiment with different sports and activities, and overcome physical challenges. This intrinsic motivation fosters a positive attitude toward physical activity, making it seen as a source of fun and well-being rather than an obligation (Méndez Giménez, Cecchini Estrada, and García Romero 2020). When students have pleasant and successful experiences in the physical activity context, a positive association is created. This can translate into a greater willingness to engage in physical activities outside the school environment (Engels and Freund 2020). In the medium to long term, students who adopt a positive view and enjoy physical activity are more likely to maintain these habits into adulthood (Sánchez García et al. 2025). This can lead to better physical and mental health, reduced risk of chronic diseases, and improved quality of life (Padial Ruz et al. 2020). As a step toward promoting enjoyment during Physical Education classes, it is essential to understand the factors influencing adolescents' perceptions of enjoyment.

Recently, various innovative approaches have emerged in the literature that can explain the relationship between enjoyment and future exercise intention. For example, the Affect and Health Behavior Framework (AHBF; Stevens et al. 2020), which categorizes the affective correlates and determinants (such as enjoyment) into four groups, thus helping to better understand the variables that influence healthy behavior. Similarly, the Affective-Reflective Theory (ART; Brand and Ekkekakis 2018), which proposes that both physical inactivity and exercise can be explained through a dual-process theory perspective, emphasizing automatic associations with pleasurable experiences. Another recent paradigm is the Physical Activity Adoption and Maintenance Model (PAAM; Strobach et al. 2020), based on dual-process theories. This model

identifies predictors of physical activity structured into explicit (reflective and deliberate) and implicit (affective and automatic) processes. Specifically, the PAAM model suggests that these processes directly influence physical activity and can interact with each other in various ways. For example, both the AHBF and the PAAM model propose that behavioral intention is formed through reflective processes. These processes can be indirectly influenced by affective processing, such as enjoyment (Stevens et al. 2020; Strobach et al. 2020).

Another relevant aspect that has been shown to influence pleasurable experiences during Physical Education classes is the importance of the teacher's role in ensuring that students enjoy physical activity (Leo et al. 2022). Specifically, better results are achieved when the teacher employs a transformational interaction style (Castillo et al. 2020; Pérez Torralba et al. 2022). Transformational leadership not only aims to impart knowledge and skills but also to inspire and motivate students, creating a dynamic and positive learning environment through: Idealized influence refers to when the teacher embodies the values and mission of the class, serving as a role model through their personal achievements, integrity, and behavior. For example, a teacher who demonstrates commitment to physical activity and ethical behavior inspires students to adopt these same values, building respect and trust as students look up to them as a model (Sosik, Potosky, and Jung 2002). Inspirational motivation is when the teacher creates a clear and appealing vision for the class, inspiring students to work together toward common goals. For instance, a teacher might say, 'Together, we can all improve our skills and achieve something great', fostering a sense of collective purpose and motivation (Sosik, Potosky, and Jung 2002).

Intellectual stimulation involves the teacher encouraging students to make their own decisions and think creatively when solving problems. An example would be a teacher challenging students to come up with their own strategies to improve their performance in a game, creating an environment where students feel confident in exploring new solutions. Finally, individualized consideration happens when the teacher attends to the unique needs of each student, offering personalized support. For example, if a teacher notices a student struggling with an exercise, they might provide additional guidance or alternative methods to help them succeed. By focusing on the holistic development of each student, teachers foster autonomy, intrinsic motivation, and a love for learning (Van Oord 2013). In this way, transformational leadership contributes to enhancing the perception of motor self-efficacy, which is the belief in one's own ability to perform tasks and achieve physical goals (Ninković and Knežević Florić 2018). Additionally, self-efficacy also contributes to the perception of enjoyment in Physical Education, defined as the perception of one's own motor skill ability (Monacis et al. 2022). Students who enjoy physical activity and perceive themselves as motorically effective are more likely to believe in their abilities to participate and excel in physical activities (Monacis et al. 2022). This self-efficacy can extend to other areas of their lives, fostering a proactive attitude toward health and overall well-being.

Various studies have shown that students who feel competent and capable of performing physical activities tend to enjoy the classes more and participate with greater enthusiasm (Gil-Arias et al. 2020). When students have low self-efficacy, that is, when they do not feel competent in their motor skills, the teacher's transformational leadership becomes an important factor in ensuring enjoyment in class (Castillo et al. 2020;

Pendergast et al. 2022). In these cases, the teacher's ability to motivate, support, and adapt physical activities to meet the students' needs and abilities could make the difference between a positive and a negative experience (Leo et al. 2022). On the other hand, when students have high self-efficacy, the teacher's interaction style, while still important, takes a back seat in terms of influencing enjoyment. These students, feeling confident in their abilities, tend to enjoy the classes regardless of the teacher's teaching style (Leo et al. 2022; Xiong et al. 2020).

Present study

However, the relationship between the teacher's transformational leadership and students' enjoyment during Physical Education class is not so simple, as other variables may influence this relationship. Although the role of the Physical Education teacher is important, there are variables that are central to the perception of enjoyment in Physical Education classes, such as the perception of motor competence. Thus, following Bandura (1986, 1993), it would be consistent to think that if adolescents consider that they have the necessary skills to face tasks in Physical Education, they will carry out the activities in these classes with greater confidence and enjoyment. Therefore, motor self-efficacy would be considered an essential variable in this context, as a measure to analyze how adolescents perceive themselves in this context. Besides, Bandura (1986, 1993) emphasized the interaction between personal dispositions and context. According to this theory, human behavior is determined through the interactions between the environment and the personal variables of everyone (Bandura 1986, 1993). Therefore, it is considered that this personal disposition could interact with the influence that the Physical Education teacher exerts on the enjoyment of Physical Education students.

Although existing literature highlights the positive effects of transformational leadership, there remains that may condition this relationship. In particular, it has not been explored how students' personal characteristics, such as motor self-efficacy, may act as a moderating variable that either strengthens or weakens this impact. Therefore, studying this moderating effect could help us understand how the teacher's role influences student enjoyment. Particularly in a psychosocial context, it is interesting to evaluate how situational and dispositional variables interact, which could modify the direction or intensity of the relationships. Furthermore, while this interaction has not yet been explored in the context of physical education, evidence from other physical activity contexts shows that motor self-efficacy is an excellent moderator of the relationships between different motivational variables, the intention to practice physical activity, the experience of physical practice, and intervention processes to increase physical activity levels (Dishman et al. 2009; Luszczynska et al. 2010). Therefore, in this research, we wondered whether it could play a relevant role as a moderator in the relationships between teacher leadership and student enjoyment.

Based on this, the present study explores whether motor self-efficacy also moderates the relationship between transformational leadership and the outcomes observed in Physical Education classes. This implies that the perception of the environment (transformational leadership) interacts with personal self-efficacy to influence students' outcomes. In other words, the moderation effect is based on Bandura's theory, which justifies the importance of considering both the environment and personal characteristics

to understand human behavior (Bandura 1986, 1993). Thus, the purpose of this research was to analyze the relationships between teacher transformational leadership and enjoyment in Physical Education classes, exploring the moderating effect of motor self-efficacy in these relationships. The hypotheses of the study are: (1) A positive relationship will be determined between transformational leadership and enjoyment in Physical Education classes; (2) A moderating effect of motor self-efficacy will be determined in the relationships between transformational leadership and enjoyment in Physical Education classes.

Methods

Research design

This research employed an associative, explanatory approach. Specifically, it adhered to a latent variables design, as outlined by Ato, López García, and Benavente (2013).

Participants

Four hundred and twenty-nine teenagers (205 boys, 224 girls), from the province of Málaga, participated in the study. The sample was between 14 and 16 years old ($M = 14.97$; $SD = .85$). All of them took the Physical Education subject and studied from third to fourth of Compulsory Secondary Education. Physical education is a compulsory subject in the secondary stage of the national curriculum in Spain. The sessions took place for one hour, twice a week. Participants were excluded if they: (a) did not regularly attend classes; (b) had difficulties reading or understanding the study questions; (c) were unable to participate in Physical Education due to recent injury; or (d) had recently joined the school. Inclusion criteria were: (a) regular participation in Physical Education classes; (b) enrollment in the second, third, or fourth year of Compulsory Secondary Education; and (c) ages between 14 and 16.

Instruments

Transformational Teaching Questionnaire (TTQ) (Beauchamp et al. 2010). The Spanish version of this questionnaire was used to measure the transformational leadership of teachers (Álvarez et al. 2018). It allows the evaluation of the perception that students have about the behaviors of their teachers related to the transformational leadership style. The TTQ begins with the stem ‘My Physical Education teacher ...’. Consisting of 16 items and four factors (each with four items) to measure individualized consideration (e.g. ‘Shows that s/he cares about me’), idealized influence (e.g. ‘Acts as a person that I look up to’), intellectual stimulation (e.g. ‘Creates lessons that really encourage me to think’), and inspirational motivation (e.g. ‘Is enthusiastic about what I am capable of achieving’). This is answered on a Likert-type scale from one (never) to five (always). The internal consistency analysis (Cronbach’s alpha) showed values of .88 for individualized consideration, .85 for idealized influence, .83 for intellectual stimulation and .90 for motivational inspiration.

Motor Self-Efficacy Scale (MSES) (Hernández Álvarez et al. 2011), which is an adaptation to the motor domain of the Baessler and Schwarzer (1996). General Self-Efficacy

Scale (GSE). This instrument analyzes the personal perception of competence to cope with motor tasks. It consists of 10 items and a single factor. The questionnaire was answered using a Likert-type scale from 1 (strongly disagree) to 4 (strongly agree). The internal consistency analysis (Cronbach's alpha) gave a value of .87.

Intrinsic Satisfaction in Sport Instrument (SSI-EF) (Duda and Nicholls 1992). The Spanish version of the Sport Satisfaction Instrument adapted to Physical Education from the original Sport Satisfaction Instrument was used to measure the level of enjoyment in Physical Education (Baena-Extremuera et al. 2012; Balaguer et al. 1997). It measures intrinsic satisfaction in an activity through eight items by means of two factors: enjoyment, consists of five items (e.g. 'I usually have enjoyment in the Physical Education classes'), and boredom consists of three items (e.g. 'In Physical Education, I usually wish the class would end quickly'). This is answered on a Likert-type scale from one (do not agree at all) to four (strongly agree). For this study we have used only the enjoyment factor. The internal consistency analysis (Cronbach's alpha) gave values of .88 for it.

Procedure

The sample was obtained in the province of Málaga, Spain. A non-probabilistic (convenience) sampling method was used to select the participants. Firstly, permission was sought from the school to conduct the study, after explaining the research's purpose. Upon obtaining approval from the school's administration, families were contacted through a letter to request their children's participation. Subsequently, informed consent was obtained from the adolescents to participate in the research. In all these cases, participants were informed about the study's characteristics, the type of data intended to be collected, assured of the confidentiality of their information, and informed of their right to withdraw consent at any time. Throughout the research process, the principles established in the Declaration of Helsinki (World Medical Association 2013) were respected and approval was obtained from the ethics committee of University of Málaga-CEUMA to carry out the research (CEUMA: 209-2023-H). The data were collected during school hours, specifically during Physical Education classes. Students spent approximately 60 min filling out all the questionnaires. Throughout the information collection process, a researcher was present to address any questions that might arise.

Data analysis

Means, standard deviations and bivariate correlations were analyzed for all studied variables. Simple moderation analysis was used to evaluate the relationships among the constructs (Hayes 2018) using SPSS PROCESS v.3.5 (model 1 – with one moderator). This model allows us to control the effect of the moderator on the relationships between variables, providing regression coefficients that offer an explanatory value of said relationships (Hayes 2018). To carry out the moderation analyzes, a bootstrap analysis of 10,000 samples was used, with a confidence level of 95% and significance set at $\alpha = 0.05$ (Hayes 2018).

Results

Descriptive statistics were calculated and are shown in Table 1. As can be seen, skewness and kurtosis indicate a normal distribution. Overall, the data suggest that participants have a positive perception of the teacher’s transformational leadership in the context of Physical Education, which is associated with moderately high levels of enjoyment and motor self-efficacy. Enjoyment and motor self-efficacy show skewed distributions towards higher levels, indicating a positive experience and a positive perception of personal skills in physical activities. The low standard deviation in all variables suggests that there is consistency in the participants’ perceptions in each of the measured dimensions.

Additionally, as seen in Figure 1, moderation analyzes were conducted to examine the effect of self-efficacy on the relationship between transformational leadership and enjoyment. As can be observed, there is a direct relationship between the teacher’s transformational leadership and its four components with students’ enjoyment during Physical Education classes. A direct relationship is also seen between students’ perceived self-efficacy and their enjoyment. Furthermore, in four of the models – the general transformational leadership model, individualized consideration, idealized influence, and intellectual stimulation – significant relationships are shown. However, for the inspirational motivation model, no significant relationships are observed. In other words, in four of the proposed models, there is a moderating interaction effect of students’ self-efficacy on the relationship between the teacher’s transformational leadership and students’ enjoyment.

Moderation analysis

Five moderation models were constructed to analyze the relationships between: transformational leadership and enjoyment, individualized consideration and enjoyment, idealized influence and enjoyment, intellectual stimulation and enjoyment, and finally, inspirational motivation and enjoyment during Physical Education classes. Self-efficacy was included as a moderator. Figure 2 shows the coefficients of the five models. As can be seen in Table 2, there is an association between the different variables that make up transformational leadership and the teacher’s overall transformational leadership with students’ enjoyment, particularly when self-efficacy levels are low. However, when students’ perceived self-efficacy was higher, a decrease in the intensity of these relationships was observed. Therefore, it is shown that motor self-efficacy acts as a moderator in the relationship between transformational leadership and enjoyment. Thus,

Table 1. Descriptive statistics (Mean, Standard Deviation, Skewness, Kurtosis).

Sample	Variables	Range					
		M	SD	Min	Max	S	K
N = 429	1. Transformational leadership	3.88	.90	1	5	-.81	.10
	1.1. Individual consideration	4.05	.96			-.97	.25
	1.2. Idealized influence	3.76	.98			-.77	-.02
	1.3. Intellectual stimulation	3.71	.93			-.63	.11
	1.4. Motivational inspiration	3.99	1.00			-.89	.07
	2. Enjoyment	3.39	.66	1	4	-1.19	.89
	3. Motor Self-efficacy	3.11	.53	1	4	-.50	.55

Note: M = Mean; SD = Standard Deviation; S = Skewness; K = Kurtosis; Min = minimum score; Max = Maximum score.

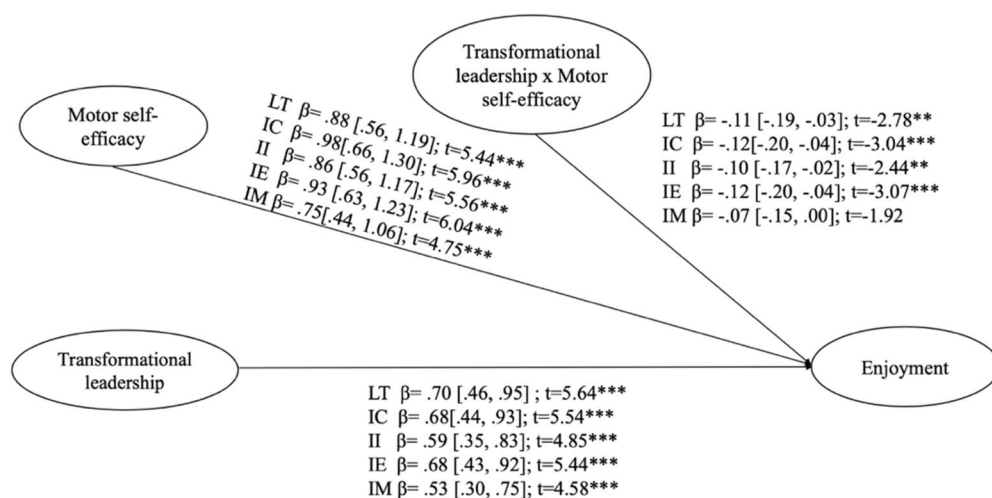


Figure 1. Statistical moderation model.

Notes: $**p < 0.01$; $***p < 0.001$. LT = Transformational Leadership; II = Idealized Influence, IM = Inspirational Motivation, IS = Intellectual Stimulation, IC = Individualized Consideration. The standardized beta coefficients (β) with confidence intervals (95% CI) and -values indicate the strength and significance of the relationships.

when self-efficacy values are high, the association between transformational leadership and enjoyment decreases. In contrast, when self-efficacy values are lower, the strength of the association between these variables increases.

The Johnson-Neyman graph (Figures A–E) shows the moderating effect of motor self-efficacy on the relationship between the Physical Education teacher's transformational

Table 2. Conditional effect of moderated models.

	Self-efficacy values (moderator)	<i>B</i>	SE	95%CI		
				LB	UB	
Model LT						
Transformational leadership → Enjoyment	2.60 (p16)	.41	.03	.35	.47	
Transformational leadership → Enjoyment	3.10 (p50)	.35	.03	.30	.41	
Transformational leadership → Enjoyment	3.62 (p84)	.29	.04	.22	.37	
Model IC						
Individualized consideration → Enjoyment	2.60 (p16)	.37	.03	.31	.43	
Individualized consideration → Enjoyment	3.10 (p50)	.31	.03	.26	.36	
Individualized consideration → Enjoyment	3.62 (p84)	.24	.03	.18	.31	
Model II						
Idealized influence → Enjoyment	2.60 (p16)	.34	.03	.28	.40	
Idealized influence → Enjoyment	3.10 (p50)	.29	.03	.24	.34	
Idealized influence → Enjoyment	3.62 (p84)	.24	.03	.17	.31	
Model IE						
Intellectual stimulation → Enjoyment	2.60 (p16)	.36	.03	.29	.42	
Intellectual stimulation → Enjoyment	3.10 (p50)	.30	.03	.24	.35	
Intellectual stimulation → Enjoyment	3.62 (p84)	.23	.04	.16	.30	
Model IM						
Inspirational motivation → Enjoyment	2.60 (p16)	.34	.03	.28	.39	
Inspirational motivation → Enjoyment	3.10 (p50)	.30	.03	.25	.35	
Inspirational motivation → Enjoyment	3.62 (p84)	.26	.04	.19	.33	

Note: B = standardized regression coefficient; Levels = low (p16 = 2.60), medium (p50 = 3.10), and high (p84 = 3.62); SE = standard error; LB = Lower Bound; UB = Upper Bound; Model LT = Transformational Leadership (LT); Model IC = Individualized Consideration (IC); Model II = Idealized Influence (II); Model IE = Intellectual Stimulation (IE).

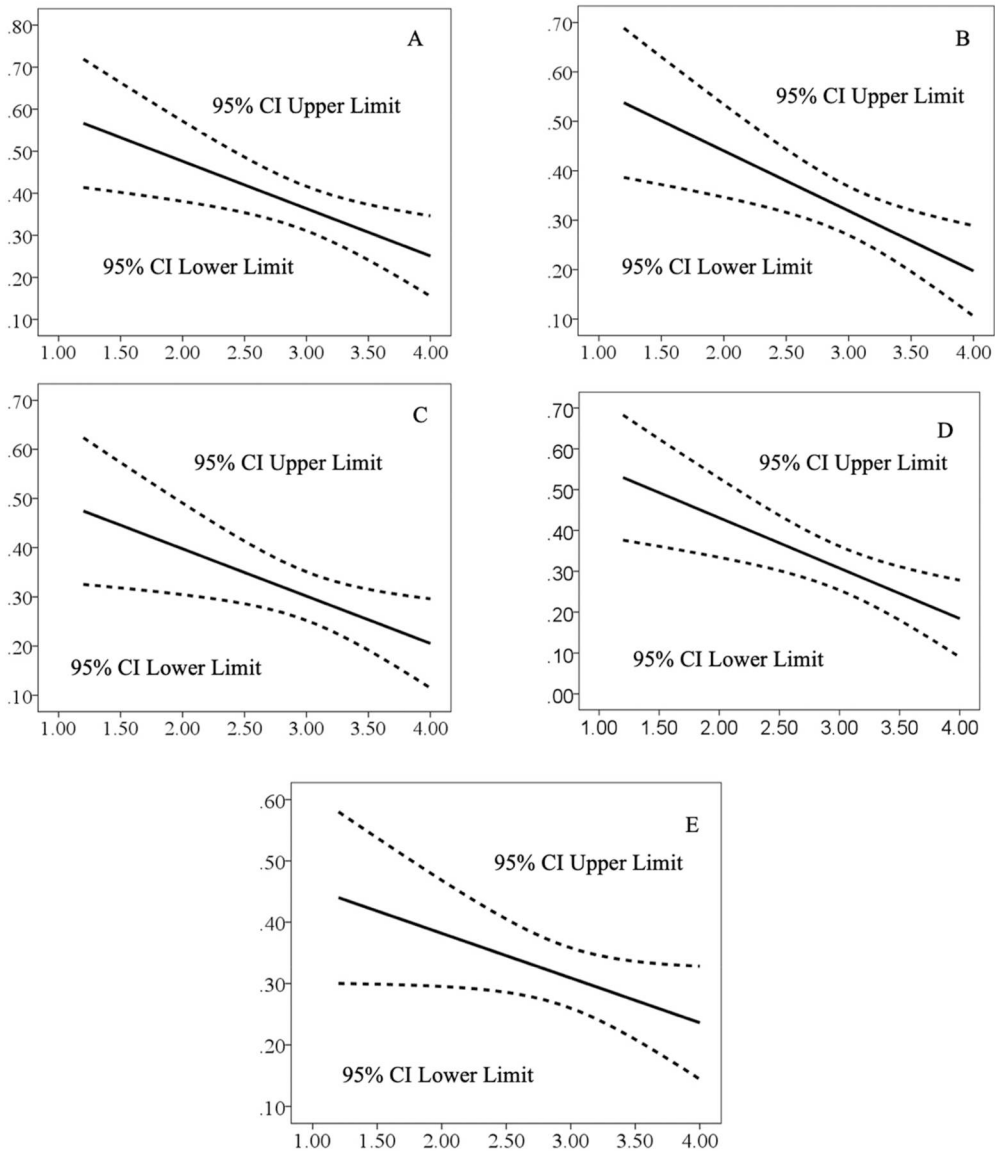


Figure 2. Johnson-Neyman plot illustrating the moderation effect of the motor self-efficacy on the relationship between transformational leadership and enjoyment.

Notes: X axis = Self-efficacy; Y axis = Effect (β) of the relationships between Transformational Leadership and enjoyment. A = relationship between Transformational leadership and enjoyment, moderated by self-efficacy; B = relationship between individualized consideration and enjoyment, moderated by self-efficacy; C = relationship between idealized influence and enjoyment, moderated by self-efficacy; D = relationship between intellectual stimulation and enjoyment, moderated by self-efficacy; E = relationship between inspirational motivation and enjoyment, moderated by self-efficacy.

leadership, both in the general factor and its four components, and the enjoyment perceived during class. In all cases, the moderation effect indicates that at higher levels of self-efficacy, the strength of the relationship between transformational leadership and enjoyment is weaker, and vice versa. Therefore, as self-efficacy increases, the relationship

between transformational leadership and enjoyment decreases, and the opposite occurs when self-efficacy is lower.

Discussion

The objective of this research was to analyze the relationships between the teacher's transformational leadership and enjoyment in Physical Education classes, exploring the moderating effect of motor self-efficacy in these relationships. The study hypotheses were: (1) A positive relationship between transformational leadership and enjoyment in Physical Education classes will be determined; (2) A moderating effect of motor self-efficacy in the relationships between transformational leadership and enjoyment in Physical Education classes will be determined. The results confirm the research hypotheses, indicating the existence of positive and statistically significant relationships between the variables, as well as a significant moderating effect of motor self-efficacy in the relationships between transformational leadership and enjoyment in the analyzed students.

Firstly, a positive and statistically significant relationship was observed between transformational leadership and enjoyment in Physical Education students. This is consistent with what has been pointed out by other researchers previously (Li and Liu 2022; Sánchez García et al. 2024, 2025). Transformational leadership is an interaction style that has been useful for explaining students' experience of enjoyment in educational contexts, and specifically in Physical Education (Castillo et al. 2020). This leadership style can exert a notable influence on students through different strategies, such as individualized consideration, intellectual stimulation, idealized influence, and inspirational motivation (Bolkan and Goodboy 2009; Sultana et al. 2024). In this research, all these dimensions of transformational leadership have been associated with greater enjoyment. Additionally, it is important to point out that students' perception of enjoyment during Physical Education classes is not a static process (Teixeira et al. 2024), but rather a fluctuating feeling that depends on the context, in which the teacher plays a key role. As other researchers have pointed out, this type of leadership contributes to increasing interest and motivation for learning, increases student engagement, and promotes the perception of social support and well-being, as well as academic competence (Castillo et al. 2020; Sánchez García et al. 2024, 2025). Therefore, this justifies the existence of this type of relationship between these variables.

Secondly, the results revealed positive relationships between the teacher's transformational leadership and enjoyment during Physical Education classes, with this relationship being moderated by the perception of motor self-efficacy. Considering the moderating effect of self-efficacy in this relationship, it is suggested that the teacher's transformational leadership influences students differently, depending on their levels of self-efficacy during Physical Education class (Castillo et al. 2020; Chang et al. 2021; Hernández Martos et al. 2024; Sánchez García et al. 2024, 2025). Based on previous research, this relationship can be explained by the importance of using transformational interaction styles in educational contexts, fostering greater student engagement in their subject through behavioral variables derived from transformational leadership (Li and Liu 2022). This, in turn, could generate an immediate positive relationship with physical activity, with the potential to maintain that connection in the long term (Castillo et al.

2020). In this way, students could associate this positive experience with physical activity, which could influence the adoption of healthy lifestyles over time. In this regard, the initial hypotheses are accepted, establishing the existence of relationships between the teacher's transformational leadership and students' enjoyment while also highlighting the moderating role of perceived self-efficacy in Physical Education students.

Therefore, several studies emphasize that students with a low perception of their motor self-efficacy require support from the teacher to develop it, which can be achieved through idealized influence, individualized consideration, and intellectual stimulation (Bandura 1986, 1993; Leo et al. 2022; Öqvist and Malmström 2018). The short-term goal in this context is for students to enjoy physical practice and engage in the subject, thereby establishing positive connections between pleasant experiences and physical activity (Beauchamp and Morton 2011). However, when students reach high levels of self-efficacy, the relationship between transformational leadership and enjoyment weakens, as the initial support from the teacher has enabled them to develop a self-efficacy perception that no longer requires direct intervention. Rather than relying on the teacher, students enjoy physical activity autonomously, without the need for constant transformational leadership. Thus, although the transformational teacher plays a key role in fostering a high perception of self-efficacy, once this level is achieved, their influence on students' self-perception diminishes, as the student is now able to enjoy the practice independently.

In conclusion, overall, these results highlight that students with a low perception of their self-efficacy required more support from the Physical Education teacher to experience enjoyment during classes. In this regard, the transformational teacher, through the behavioral characteristics of this leadership style, should intervene especially with students who have a lower perception of their self-efficacy, helping them develop a positive motor self-efficacy. This will enable them to have a satisfying experience during physical practice and experience sensations of enjoyment, moderated by the perception of self-efficacy. On the other hand, students who already perceived their self-efficacy as high did not need as much support from their teacher to enjoy and engage in the subject (Öqvist and Malmström 2018), as their perception of motor self-efficacy was sufficiently consolidated and did not require the teacher's direct intervention.

However, despite these findings, this study presents certain limitations. For example, it would have been enriching to use a complementary longitudinal design in addition to the cross-sectional design employed. Furthermore, the results could be influenced by the characteristics of the sample group; it would be interesting to replicate the study in other institutions from different provinces to assess the possibility of generalizing the findings. Furthermore, cultural and contextual factors were not explicitly taken into account. Although efforts were made to ensure that the selected institutes shared similar cultural and contextual characteristics, it is important to note that these data were not directly collected from the sample. Regarding future perspectives, it would be valuable to explore how other factors could influence the dynamics between transformational leadership, self-efficacy, and enjoyment in the context of Physical Education. For instance, investigating how students' initial levels of self-efficacy interact with different leadership styles could provide a deeper understanding of these processes.

This study is innovative, as it clearly demonstrates the relationship between the use of the transformational interaction style and the perception of enjoyment during Physical

Education classes, emphasizing that this relationship is moderated by the perception of motor self-efficacy. These findings open a broad field of work for teachers, promoting the application of transformational leadership as a key strategy to foster adherence to active and healthy lifestyles among adolescents.

Practical applications

Based on the results of this study, several practical applications are proposed that could have a significant impact on Physical Education and the development of healthy lifestyles. First, teacher training in transformational leadership skills would be essential, with a focus on the most involved variables, such as idealized influence, individualized consideration, and intellectual stimulation. Regarding idealized influence, teachers should learn to be role models, clearly and enthusiastically conveying the importance of physical activity and well-being. They should also learn to recognize and address the individual needs of students, offering personalized support based on their abilities. Regarding intellectual stimulation, teachers should encourage critical thinking and creativity, using activities that challenge students to reflect and make decisions in their physical learning. Finally, regarding inspirational motivation, teachers should be able to set clear and achievable goals that motivate students while promoting enjoyment of physical activity. To ensure that teachers correctly implement transformational leadership in their classes, ongoing training workshops are proposed. These workshops will help assess whether teachers are applying what they have learned and address any issues that arise during the implementation of transformational leadership in Physical Education classes. Similarly, it is suggested to incorporate activities and strategies aimed at improving students' motor self-efficacy through Physical Education classes. Additionally, implementing extracurricular physical activity programs to promote physical practice and the adoption of active lifestyles during adolescence is recommended. These programs provide opportunities for physical practice in a less formal, more enjoyable setting, which can increase student involvement and enjoyment (Bolkan and Goodboy 2009; Sultana et al. 2024). By offering extra opportunities for physical practice in a less formal and more playful environment, students' enjoyment and involvement can be increased, helping them develop a positive and lasting relationship with physical activity.

Conclusion

After presenting the results, it can be concluded that transformational leadership has an impact on students' enjoyment. However, it is observed that perceived self-efficacy plays a key moderating role. That is, when students have high self-efficacy, the teacher's transformational leadership style has a lesser effect on enjoyment, as their self-efficacy perception is already consolidated and consistent. On the other hand, the teacher's transformational leadership can be essential in developing a better perception of motor self-efficacy, using tools such as idealized influence, intellectual stimulation, and individualized consideration. Moreover, when a student has low motor self-efficacy, the teacher, through a transformational interaction style, can contribute to the development of such self-efficacy, helping the student build a positive perception of their motor skills. This translates into a positive experience during physical activity, generating

enjoyment and pleasant feelings. Therefore, it is crucial to train Physical Education teachers in the use of transformational leadership styles in order to encourage students to adopt active lifestyles from adolescence. If adolescents develop active habits and have positive experiences during their youth, they are more likely to continue engaging in physical activity in adulthood, which would contribute to a healthier population and, in turn, help reduce long-term healthcare costs.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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