

Effects of COVID-19 on the Emotional Experience of Schoolchildren in Traditional Sports Games

Efectos de la COVID-19 en la experiencia emocional de los escolares en los juegos deportivos tradicionales

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Miriam Moreno Caselles

Universidad de Murcia
Murcia, Spain

Verónica Alcaraz-Muñoz*

ORCID: <https://orcid.org/0000-0001-6920-5352>

Universidad Católica de Murcia
Murcia, Spain

Llanos Calvo García

IES Algarb
Ibiza, Spain

José Ignacio Alonso Roque

ORCID: <https://orcid.org/0000-0002-6388-5016>

Universidad de Murcia
Murcia, Spain

Abstract

The objective of this study was to analyse how modifications to traditional sports games (TSG) adapted to the COVID-19 standard affected primary school pupils' emotional experiences, particularly by gender. A total of 93 primary school students participated. The Games and Emotion Scale for Children was used to assess the type and intensity of emotion. After implementing COVID-19 measures in TSG, participants experienced positive emotions more intensely than negative emotions. Individual games showed a tendency towards higher values of positive emotions than the other games with higher motor interaction. As for negative emotions, cooperation-opposition games elicited more negative emotional appraisal. No significant differences in the experience of positive and negative emotions were observed when comparing competitive and non-competitive games, nor did they differ by sex. The results revealed that changes to the games did not alter the emotional experience, indicating that physical education practitioners can modify the games' structural and functional aspects to achieve other pedagogical objectives without affecting students' emotional behaviour.

Keywords

Internal logic, physical education, elementary education, motor conduct, well-being, COVID-19.

Resumen

El objetivo de este estudio fue analizar cómo las modificaciones realizadas en los juegos deportivos tradicionales, adaptados a las medidas contra la COVID-19, afectaron la experiencia emocional de los alumnos de primaria, en especial según su género. Participaron 93 alumnos de primaria. Se utilizó la escala de juegos y emociones para niños para evaluar el tipo de emoción y su intensidad. Tras la implementación de las medidas de prevención de la COVID-19 en los juegos deportivos tradicionales, las emociones positivas se experimentaron con mayor intensidad que las negativas. Los juegos individuales mostraron una tendencia a valores más altos de emociones positivas que los demás juegos con mayor interacción motora. En cuanto a las emociones negativas, los juegos de cooperación-oposición generaron una valoración emocional más negativa. No se observaron diferencias significativas en la experiencia de emociones positivas y negativas al comparar los juegos competitivos y no competitivos, ni según el sexo de los participantes. Los resultados revelaron que los cambios introducidos en los juegos no alteraron la experiencia emocional, lo que indica que los profesionales de la educación física pueden modificar los aspectos estructurales y funcionales de los juegos para alcanzar otros objetivos pedagógicos sin preocuparse por afectar el comportamiento emocional de los alumnos.

Palabras clave

Lógica interna, educación física, educación primaria, comportamiento motor, bienestar, COVID-19.

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* **Corresponding Author:** Email: veronica.alcaraz4@gmail.com. Facultad de Educación, Universidad Católica de Murcia (UCAM). Campus de los Jerónimos, Guadalupe 30107, Murcia, Spain.

Introduction

The COVID-19 pandemic brought about changes in all economic sectors and people's lives. The experience of confinement necessitated that teachers adapt their teaching. Numerous changes to the classical educational paradigm had to be addressed, and in doing so, various problems in educational systems were identified (Sa & Serpa, 2020).

Physical education (PE) was among the areas most affected by the loss of motor practices in enclosed spaces and by restrictions on the use of materials. Faced with this new scenario, the Joint Commission of the Regional Ministry of Education and Culture and the Spanish Ministry of Health (2020) developed a guide outlining safety and hygiene measures for programme teaching.

Despite interest in studying how PE was approached during COVID-19 and how the emotional experiences of pupils in primary PE were managed, we have not found sufficient practical experience in implementing PE, especially in the practice of Traditional Sports Games (TSG). Therefore, this study aimed to analyse how modifications to TSG, adapted to the COVID-19 standard, with and without competition, affected the emotional experiences of primary school pupils.

Physical Education in Times of COVID-19: Coping with Teaching in Restricted Circumstances

The period of confinement had a negative impact on the physical and psychological well-being of children and adolescents (Brooks et al., 2020). Thus, social and emotional health was affected by pandemic restrictions (Draper et al., 2021). Regarding the physical consequences, pre-pandemic studies report that non-school periods are associated with decreased physical activity, sleep irregularity, and dietary imbalance (Brazendale et al., 2017). Furthermore, physical activity during confinement was limited to the home environment. This fact, together with the increasingly sedentary lifestyle (Xie et al., 2020), could have worrisome repercussions on the future development of schoolchildren.

In terms of psychological impact, factors such as fear of infection, frustration, boredom, lack of peer contact, lack of space at home, and family financial loss can have lasting effects on children and adolescents (Wang, Zhang et al., 2020). Children aged 6–12 years may exhibit irritability, nightmares, behavioural

problems, or excessive attachment, loss of interest in peers, and competition for parental attention at home (Espada et al., 2020).

The closure of schools and home confinement have led to changes in children's habits, with significant physical and psychological consequences (Paricio & Pando, 2020). This made it necessary to determine the best way to teach PE in schools. The Joint Commission of the Regional Ministry of Education and Culture and the Regional Ministry of Health (2020) established guidelines for classroom teaching: social distancing, hand disinfection, mask use, and classroom ventilation. Other measures included prioritising outdoor activities (Wang, Tang et al., 2020), maintaining good ventilation, and maintaining a safety distance (Consejo COLEF, 2020; Filiz & Konukman, 2020). Finally, physical contact between students and the use of shared materials should be avoided; however, if necessary, appropriate hygiene and prevention measures should be implemented. In turn, the materials used should be disinfected before and after sport (World Health Organisation, 2020).

One of the most researched aspects has been the impact on PE teacher training. Varea and González-Calvo (2021) reported that PE teachers feel a lack of contact with trainee PE students and perceive that PE is losing its identity (González-Calvo et al., 2020). Other studies indicate that trainee PE teachers consider it necessary to teach PE face-to-face (González-Calvo et al., 2022) and in direct contact with students (Gobbi et al., 2021). This situation has led to the search for improved teacher training for online instruction and adaptations of motor content to make PE face-to-face and safe (Varea et al., 2022). However, few studies have examined practical experiences currently being carried out in schools.

The Pedagogy of Motor Behaviour, Internal Logic, and Domains of Motor Action

Each person has a characteristic motor behaviour according to the experiences they have undergone. Motor behaviour is loaded with individual meaning and presents four dimensions (Parlebas, 2015): a) organic dimension, when performing, for example, in the game of dodgeball, a pass with greater force or precision; b) cognitive dimension, deciding to make the pass or throw; c) social meaning, when the pass is made to one

teammate instead of to another; and d) affective-emotional dimension, which involves the enjoyment and well-being (or ill-being) derived from the motor situation (Alcaraz-Muñoz et al., 2024; Rillo-Albert et al., 2021). The unitary treatment of these dimensions, the selection of activities appropriate to the objectives, and the adaptation of the practice to the students constitute what has been called the Pedagogy of Motor Behaviours (PCM; Parlebas, 2018). Personal and relational treatment has enabled the creation of a pedagogical model to address motor conflicts and their transformation through TSG (Rillo-Albert et al., 2020), as well as the analysis of students' motor competence through its application in PE classes (Pic & Lavega-Burgués, 2019). The object of study of PCM is the person who moves, makes decisions, produces affective responses, develops strategies, and decodes those of others.

Each motor situation, such as a TSG, contains an internal logic that guides players to engage in different decisional, social, organic, and emotional processes (Parlebas, 2018). The internal logic of a TSG centers on players' relationships with one another (Rillo-Albert et al., 2021). For example, relations of opposition with opponents or of cooperation with allies of a team, and relations with space by occupying it, with time by acting faster or slower, and with the materials present in the game, such as how a ball should be used in dodgeball. Teachers can modify or select this internal logic, adapting it to their pedagogical objectives and the students' needs.

The different motor situations share internal logic features and guide the players' behaviour during the game. Thus, the distribution of these practices in the different domains or families of motor action follows the criterion of social relationships. Parlebas (2018) proposes four domains of motor action (DAM): (a) psychomotor, in which the player acts without relating to other players, as in playing hopscotch; (b) cooperative games, where all players try to achieve the same common goal, as in making a human tower or jumping rope by groups; (c) oppositional domain, in which players are opponents who prevent others from achieving their goals, as in arm wrestling or wrestling; (d) oppositional cooperation domain, which combines both types of motor relationships (cooperative and oppositional), such as, for example, dodgeball.

Finally, when choosing or modifying a game, it is important to consider how it can end. That is, games with an end or purpose specified in the rules (internal logic) that allow a winner to be determined are considered

competitive. On the other hand, if the game ends due to factors external to the rules, such as players' decisions, without a winner or losers, it will be considered a non-competitive game (Lavega et al., 2014).

Games as a Trigger for Emotions, Competition, and Sex

PE, understood as PCM, involves considering the different dimensions that characterise the individual's personality, with the emotional sphere being a key to a PE that seeks emotional well-being. TSGs are a suitable setting for studying students' emotions and moods (Cifo et al., 2021; Lavega et al., 2014).

Research such as that carried out by Alonso et al. (2013) indicates that socio-motor games elicit more intense positive emotions than psychomotor games. Cooperative games produce stronger positive emotions, followed by cooperative-oppositional and oppositional games. Lavega et al. (2013) conclude that the motor action domain alone does not determine emotional experience, as positive emotions are most valued by students across all the DAMs (Sáez de Ocáriz et al., 2014). According to the studies consulted, the practice of TSG elicits intense, non-aseptic emotional responses and always carries personal meaning (Koundourou et al., 2021). But these results are not due to chance in their choice or design, but depend instead on their internal logic, their domain of motor action, and the existence or inexistence of an end marker (Founaud & González-Audicana, 2020).

Regarding the presence or absence of competition, Lavega et al. (2014) note that competitive games elicit stronger negative emotions, especially among losing players. Other authors consider that the maximum emotional intensity in competitive games occurs in oppositional and cooperative-oppositional games. In contrast, in the absence of competition, negative and ambiguous emotions are least intense (Jaqueira et al., 2014). Alcaraz-Muñoz et al. (2020) differ from other studies, such as Miralles et al. (2017), in finding that cooperative-oppositional games elicited stronger positive emotions than other domains, with cooperative games generating the most intense negative emotions in primary PE.

Regarding gender, differences in emotional experience were observed across students' educational stages. Thus, at the university level, the emotional intensity was greater in males (Lavega et al., 2014). They also found that females scored higher on socialisation, empathy, and attention to others. However, other studies, such

as that by Gelpi Fleta et al. (2014), found no significant gender differences in primary school students (Founaud & González-Audicana, 2020). Chaplin (2014) notes that gender differences in emotions become more pronounced with increasing age.

In conclusion, positive emotions are more frequent in TSGs (in educational and training contexts), regardless of the DAM, although they are more intense in socio-motor situations. Likewise, the presence or absence of competition influences the emotional experience, which is more intense in competitive games. However, this increase in emotionality occurs in both positive and negative emotions. Gender does not show emotional differences in TSG during the early stages of training; some differences emerge as academic life progresses.

Therefore, this study aimed to analyse how modifications to the structural and functional aspects of TSGs,

implemented in response to COVID-19 constraints, affected the emotional experiences of primary school students, female and male.

Finally, we can unify the two key factors underlying this study. Following PCM (Parlebas, 2018), motor interaction involves a social relationship component that is key in PE. Without motor relations, we cannot activate processes associated with emotional experience, social relations, and group decision-making. COVID-19 imposed very severe restrictions that deeply limited motor interactions, thus compromising the effectiveness of PE. In this sense, it is key to have tools that allow for the modification of motor situations to address all kinds of limitations, as is the case here. For this reason, the justification for this work seeks to provide teachers with tools to effectively and appropriately modify their play proposals.

Method

Design and Participants

In order to effectively address the study objectives, a quasi-experimental design with post-test (Bisquerra, 2004), also known as a semi-experimental design (McMillan & Schumacher, 2012), was chosen since quantitative data were collected and the sample was not randomised. Furthermore, the quantitative and qualitative data facilitated the analysis of students' emotional experiences in both competitive and non-competitive games, accounting for the different domains of motor action. Given the nature of the study data, a complementary combined approach was adopted, as the qualitative data clarified the results from the questionnaire administered to students. The participants were 93 students in Elementary Education (60 boys and 33 girls; age range = 7–10 years; $M_{age} = 8.23$, $SD = .48$) from a Spanish school. The ecological aspect of the study was pursued, not to generalise, but to describe the initial results.

Ethical Aspects

The fathers, mothers, and/or legal guardians of the children—all minors—gave their consent to participate in the study, which was also approved by the University's Research Ethics Committee (Comisión Ética de Investigación, 2022) in accordance with the Helsinki Declaration and the Oviedo Convention (3917/2022). In the consent form, participants were informed about

the research process, the confidential treatment and protection of data, and the right to withdraw from the research if they so decided. Non-participation in two or more games was considered an exclusion criterion.

Instrument

Games and Emotions Scale for Children Questionnaire

The intensity of the emotions experienced in each game was assessed by the Games and Emotions Scale for Children (GES-C), validated by Alcaraz-Muñoz et al. (2022). This questionnaire has a total of nine items, which were grouped into two factors of emotions: *positive emotions* (joy, humour, affection, and happiness) and *negative emotions* (sadness, fear, anger, rejection, and shame; Lazarus, 1991). The items were rated on a five-point Likert-type scale ranging from 0 (*I did not feel anything*) to 4 (*I felt a lot*). For each identified emotion (positive or negative), the mean emotional intensity was computed. In terms of reliability, the Cronbach's alpha indicated good internal consistency for both positive ($\alpha = .85$) and negative ($\alpha = .77$) emotions. Confirmatory factorial analysis adequately reproduced the scale structure and showed good fit indices (minimum $X^2/df = 1.35$; Tucker-Lewis index [TLI] = .98; comparative fit index [CFI] = .98; root mean square error of approximation [RMSEA] = .048 [LO90 = .000 – HI90 = .086]).

Selection and Application of Games

In accordance with the interventions of Alcaraz-Muñoz et al. (2020) with primary school students, four 60-minute sessions dedicated to study games were developed, in addition to a previous 60-minute session to familiarise students with initial emotional awareness. All these games were modified in accordance with the COVID-19 regulations established by the Joint Regional Ministry of Education and Culture and the Regional Ministry of Health (2020) and by the Official College of Physical Education Graduates (Consejo COLEF, 2020). To apply the games, the sequencing of sessions was maintained in increasing order of cognitive and relational complexity, as determined by the motor action domains of each game: psychomotor games, cooperative games, oppositional games, and cooperative-oppositional games. In each session, two games of a DAM were played, a competitive one and a non-competitive one.

Procedure

Four practical sessions corresponding to the four domains of motor action took place. At the end of each game, students rated the emotional intensity (0–4) they experi-

enced for each of the nine emotions on their personal copy of the GES-C. The teacher led the sessions, introducing the games, reminding the students of the rules, and addressing any questions. Once the game began, the teacher did not intervene to avoid helping, motivating, or providing feedback that could influence students' emotional experience. The participants had no previous experience with questionnaires of this type. Furthermore, they had no prior experience assessing emotional experiences. All the guidelines provided by the authors of the GES-C were followed for its administration.

Statistical Analysis

Descriptive data are presented as means and standard deviation of the mean. The Kolmogorov-Smirnov test was used to assess normality. The data had a non-normal distribution, so non-parametric tests were applied: Mann-Whitney U and Wilcoxon for categorical variables of two groups; and Kruskal-Wallis and Friedman's *H* for categorical variables of three or more groups. A *p*-value of .05 was used for all statistical tests. All analyses were conducted using the Statistical Package for the Social Sciences (SPSS) version 24 for Windows.

Results

Type of Emotion

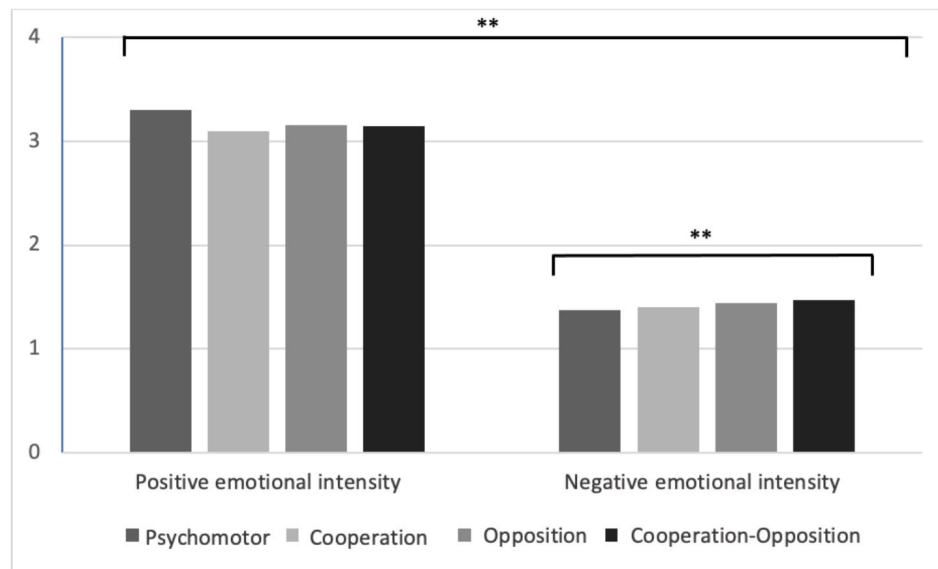
Positive emotional experience ($M = 3.17$, $SD = .86$) was higher than negative emotional experience ($M = 1.39$, $SD = .50$). Significant differences were observed for negative emotions ($p < .05$). Concerning the type of emotion elicited in the games, the positive emotion of joy ($M = 3.85$, $SD = .06$), and the negative emotion of anger ($M = 1.64$, $SD = .19$) obtained the highest values in the overall computation of the games.

According to the DAMs, no significant differences in positive emotions were observed ($p > .05$). Positive

emotions were similar across domains (see Figure 1). However, the psychomotor domain showed a tendency toward higher values than the other domains.

Regarding negative emotions, significant differences ($p = .00$) were found across the domains. The cooperative-oppositional domain obtained a higher negative emotional rating ($M = 1.47$, $SD = .68$), followed by the oppositional ($M = 1.44$, $SD = .65$), the cooperative ($M = 1.40$, $SD = .64$), and the psychomotor ($M = 1.37$, $SD = .65$) domains (see Figure 1).

Figure 1. Mean Positive and Negative Emotional Intensity as a Function of Motor Action Domain



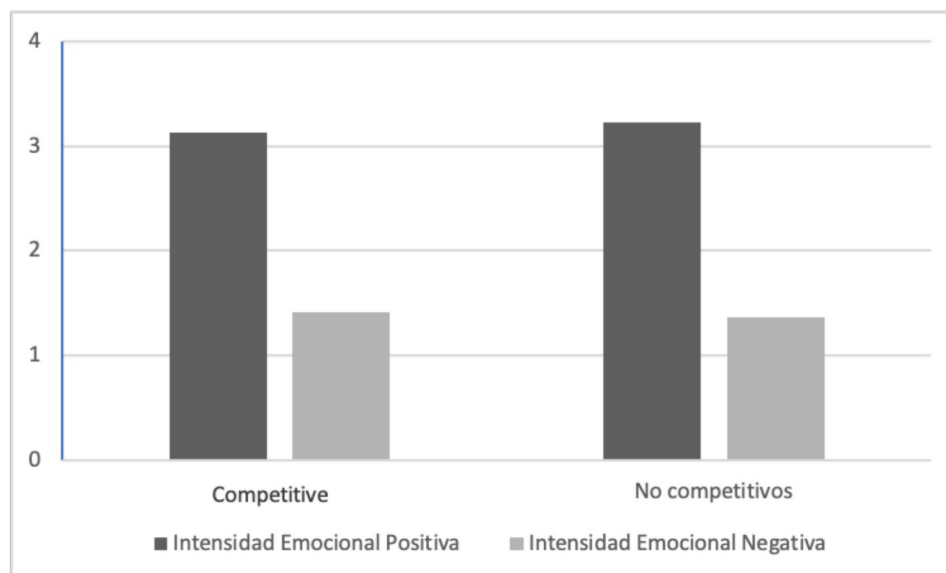
****** $p < .01$; ***** $p < .05$.

Type of Emotion and Competition

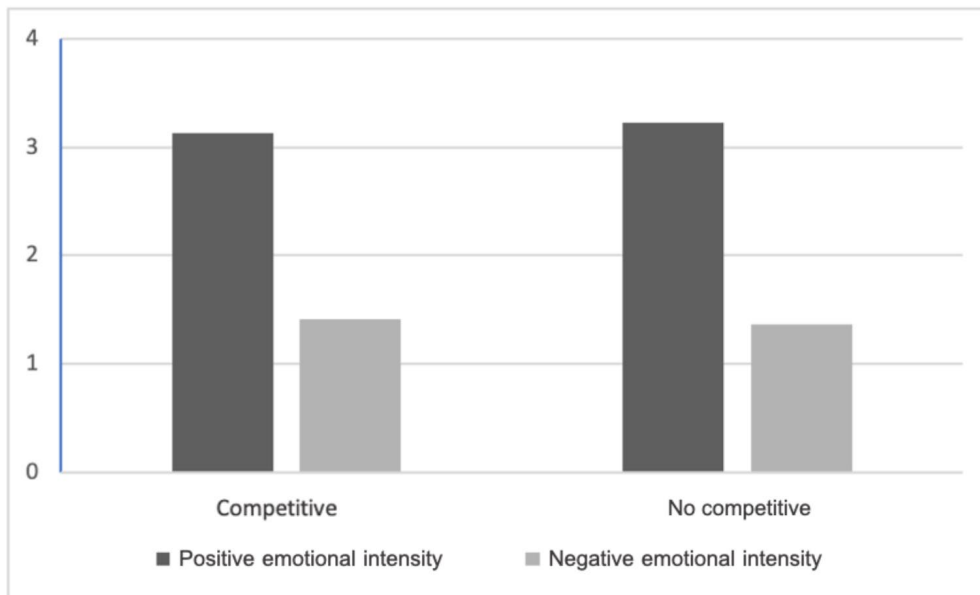
Regarding the interaction between the type of emotion and the type of game (competitive or non-competitive), no significant differences were observed in the experience of positive and negative emotions when comparing the type of game ($p > .05$). In competitive games, the

mean for positive emotions was 3.13 ($SD = 1.29$), whereas for negative emotions, it was 1.41 ($SD = .78$). In non-competitive games, the mean of positive emotions was higher, with a value of 3.22 ($SD = 1.12$), and the mean of negative emotions was slightly lower, with a value of 1.37 ($SD = .84$) (see Figure 2).

Figure 2. Mean Positive and Negative Emotional Intensity According to the Type of Game (Competitive, Non-Competitive) and the Result Obtained (Winning or Losing)



****** $p < .01$; ***** $p < .05$.



Type of Emotion and Gender

Regarding the interaction between type of emotion and gender, no significant differences in positive or negative emotional appraisal ($p > .05$) were observed between boys and girls (see Table 2). However, girls' emotional

intensity was higher for positive emotions ($M = 3.35$, $SD = 1.04$) and lower for negative emotions ($M = 1.35$, $SD = .42$), whereas boys scored lower on positive emotions ($M = 3.07$, $SD = 1.15$) and higher on negative emotions ($M = 1.39$, $SD = .56$).

Table 1. Mean Emotional Intensity by Type of Emotion and Gender

Gender	Type of Emotion							
	Positive				Negative			
	Mean	SD	Asymptotic sig.	Chi-square	Mean	SD	Asymptotic sig.	Chi-square
Female	3.35	1.04	.894	.018	1.35	.42	.951	.004
Male	3.07	1.15	.574	.316	1.39	.56	.829	.046

Discussion

The main objective of the study was to analyse how modifications to different motor games affected students' emotional experiences, taking into account variables such as different DAMs, competition, and gender.

Positive Emotions Were Resistant to the Modifications Made to Games in Response to the Pandemic

The results showed that the modifications had no effect on students' emotional experiences, consistent

with findings from other studies consulted. Likewise, positive emotional experiences were greater than negative experiences across all games. These data indicate that the changes resulted in normal TSG development. Play is a constant in people's lives, shaping children's involvement in this micro-society and activating their motor behaviour; the emotional dimension is especially relevant given the psychological consequences of COVID-19. Thus, PE helps to achieve adequate personal and social well-being through TSGs, which are consid-

ered a very valuable resource due to their motivational, participatory, and coexistential nature.

The results obtained revealed that TSGs were ideal for the students' affective development. Thus, positive emotions were observed to reach higher intensities across all DAMs, regardless of the presence or absence of the competition factor. In contrast, negative emotions were associated with a lower emotional level. These results coincide with studies in primary (Alcaraz-Muñoz et al., 2017, 2020; Miralles et al., 2017), secondary, and high school students (Duran et al., 2014; Rillo-Albert et al., 2020) and, finally, university students (Alonso et al., 2013; Lavega et al., 2014). After calculating effect sizes, the TSGs developed in the present study elicited positive emotional experiences despite adaptations to them, consistent with pre-pandemic studies by Alcaraz-Muñoz et al. (2020) and Founaud and González-Audicana (2020). Participating in various TSG activities, above all, elicits pleasurable emotions, thereby confirming their richness as pedagogical tools. Likewise, the results showed that TSGs create a motivating context for students, given that affection is a fundamental aspect of the teaching-learning process, as learning depends on the emotions produced.

It should also be noted that the emotional experience depended on the game's internal logic, with the relationships it allowed determining the type of emotion. This micro-society of the TSG, subject to a series of rules, obligations, and rights, requires the teachers' intervention because their knowledge of the internal logic and emotional education will condition their choice of the motor situations. Therefore, educators must understand the features of motor action to differentiate the situations they present to students and distinguish the emotions elicited by each game.

COVID-19 Favours Playing Individually

After finding that positive emotional experiences were greater than negative ones across all motor situations, positive emotions were analysed according to the different DAMs. The results revealed no significant differences in positive emotions. However, it was observed that this type of emotion reached higher values in individual games. These results differ from other studies, which indicate that positive emotions in individual games tend to be lowest, whereas negative emotions tend to rise (Alcaraz-Muñoz et al., 2020; Miralles et al., 2017). A possible explanation for this lies in the context of the pandemic. Authors such as Espada et al. (2020) reported that, between ages 6 and 12, a loss of interest in peers

was observed following reduced peer contact. Thus, the fear of infection may explain why pupils valued this type of game, in which there was no motor interaction between players, more positively.

Regarding negative emotions, the cooperation-opposition domain obtained the highest score. This aligns with Alonso et al. (2013), who concluded that relational complexity (teammates and opponents) increases difficulty because the player must interpret both the motor behaviours of the rival team and those of their own team. Concerning reports on the cooperative domain, in which negative emotions increased, Sáez de Ocáriz et al. (2014) argued that games with opponents fostered negative emotions. However, the results of the present study and those of Alcaraz-Muñoz et al. (2020) showed that the cooperative domain elicited stronger negative emotions than other socio-motor domains during the pandemic. These games involve a closer, more necessary motor relationship, which could affect students' emotional experience due to fear of social interaction.

Positive Emotions Led Games with and without Competition

One specific objective of the study was to determine students' emotional experiences as a function of the presence or absence of competition in the games. The results indicated that emotional intensity (positive and negative) was similar in games with and without competition. Likewise, studies consulted (Lavega et al., 2014) indicate that positive emotions were somewhat lower during competitive games than during non-competitive games. This may be because the presence of winners and losers can foster perceptions of motor conflicts, as players are driven to pursue success (Rillo-Albert et al., 2021). However, positive emotional intensity was greater than negative emotional intensity. Competition was less relevant than the TSG's value in promoting a pleasant emotional experience (Alcaraz-Muñoz et al., 2020; Founaud & González-Audicana, 2020). Thus, because positive emotional experience was significantly higher, winners in TSGs tended to value positive emotions more than negative ones.

In competitive cooperative games, positive emotions were significantly higher among the winning team. The study by Alcaraz-Muñoz et al. (2020) aligns with this aspect by highlighting that, across all DAMs, there were significant differences in positive emotions. This could be because, in this type of motor situation, processes related to the pursuit of common goals are activated.

Therefore, the pursuit of a common goal could have led the players to value positive emotions more when winning.

Finally, in the cooperative-oppositional domain, winners had significantly stronger positive emotions than losers, whereas losers had stronger negative emotions. The fact that positive emotions were more intensely valued by winners is also reported by other authors (Alcaraz-Muñoz et al., 2020, 2022). These results may be related to processes activated in this domain, such as relational complexity, the interpretation of peers' and opponents' behaviours, and the elevation of both victory and failure. Thus, the competitive factor did not significantly influence students' emotional appraisal, as no differences were observed between competitive and non-competitive games.

Conclusion

The data revealed that changes across games did not alter students' emotional experience, as the motor objective remained unchanged; instead, structural and functional changes were observed.

Regarding the type and intensity of emotion experienced across motor situations, the results confirmed that positive evaluations were significantly higher than negative ones, with joy predominating.

The DAMs behaved similarly, with the psychomotor domain showing the highest values, a result that contradicts other studies' findings. In the negative experience, it was

Boys and girls play positively

The results revealed no differences in the emotions experienced by boys and girls. These data are consistent with studies by Duran et al. (2014), Founaud and González-Audicana (2020), and Miralles et al. (2017) involving primary, secondary, and high school students. Thus, emotional intensity was stronger in males (Lavega et al., 2014). Gea et al. (2016) found that girls valued ambiguous emotions more highly and tended to attend to aspects related to solidarity, care for others, and socialisation. A justification for the results of the present study may be found in the explanations provided by Chaplin (2014), who noted that gender differences in positive emotions increase with age, with girls exhibiting more positive emotions than boys from childhood through adolescence.

noteworthy that the cooperation domain reached higher values than domains such as opposition or psychomotor.

Competition was not a determining factor in the emotional experience. However, in games where it was present, winners tended to value positive emotions more than negative ones, whereas losers rated negative emotions higher and positive emotions lower.

Regarding gender, boys and girls had similar emotional experiences in the different traditional sports games, as was the case in other studies carried out at the same educational stage.

Conflict of Interest Statement

The authors declare no conflicts of interest regarding the research topic.

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