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ORIGINAL

EFFECT OF MOTOR GAMES ON EMOTIONAL AWARENESS

EFFECTO DE LOS JUEGOS MOTORES SOBRE LA TOMA DE CONCIENCIA EMOCIONAL

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ABSTRACT

The aim of the research is the awareness of thirteen emotions classified as positive, negative and ambiguous. It was done with students of different educational background, through competitive and non competitive activities,

belonging to four domains of the motor action (psychomotor, cooperation, opposition and cooperation/opposition). In addition, the model of emotional competence elaborated by Bisquerra was reviewed. High school, college and minor degree students were the research participants. Data was collected using the GES (games and emotion scale) questionnaire and analyzed through classification trees. The results only showed two types of emotions: positive and negative. The positive emotions regarding joy and humor reached the highest values in competitive games, whereas happiness and love had the highest values in cooperative games, especially with women. Negative emotions had higher values in competitive games with college students.

KEYWORDS: Emotional Awareness, Emotional Competencies, Motor Action Theory, Motor Game, Gender.

RESUMEN

En esta investigación se estudió la toma de conciencia de trece emociones positivas, negativas y ambiguas con alumnado de diferentes niveles educativos a través de juegos de cuatro dominios de acción motriz (psicomotor, cooperación, oposición y cooperación-oposición) con y sin competición. Además se revisó el modelo de clasificación de las emociones elaborado por Bisquerra. Participaron alumnos de ESO, universitario y graduados. Los datos se registraron mediante el cuestionario GES (games and emotionscale) y se analizaron mediante árboles de clasificación. Los resultados identificaron únicamente dos grupos de emociones: positivas y negativas. Las emociones positivas de alegría y humor alcanzaron los valores más intensos en los juegos con adversarios; mientras que la felicidad y el amor fueron más intensos en los juegos cooperativos y sobre todo en mujeres. Las emociones negativas fueron más intensas en juegos con competición y con alumnos universitarios.

PALABRAS CLAVE: Conciencia emocional, Competencias emocionales, Teoría acción motriz, Juego motor, Género.

INTRODUCTION

Physical education and emotional intelligence through motor games

Among the various educational resources from which Physical Education (PE) can benefit, motor games (MG) play an important role for the development of various educational skills (Lavega, & Jaqueira Araujo, 2013). The MG situation corresponds to that which is encoded, with or without motor confrontation, named as game or sport by social institutions. Each MG is defined by a set of rules that determines its internal logic and regulates the relationships established among participants, leading to the different domains of the motor action (Parlebas, 2001). Attending to the type of motor interaction among participants, two large families (domains) of motor games are identified: psychomotor games in which there is no motor interaction (e.g., jump, run separate short streets); and sociomotor games where there may be cooperation

in motor interaction (e.g., dance games, building human towers), opposition (e.g., fighting games, one against one in a game with racquet); or cooperation-opposition (e.g. team games). These different groups of games can be performed in competition, in the end we know who win or lost, or without competition, in which there is no scoring system (Alonso, Gea and Yuste, 2013).

The PE classroom is a place where we can and should address the education of emotions (Pellicer, 2011), the MG being a powerful tool for this. MG trigger the motor experiences that are both emotional experiences (Lavega, Filella, Lagardera, Mateu, & Ochoa, 2013), which may contribute to the development of emotional intelligence (EI). The playful experience triggers emotional reactions from the players of a fundamentally positive sign (Lavega, Mateu, Lagardera, & Filella, 2010), being able to relate this reaction to the particular characteristics of the practice performed and the types of practitioners (Lavega et al., 2013). The emotional positive state, caused by MG leads the player into a state of well-being or healthcare (Martins, Ramalho, & Morin, 2010).

Emotional education should be addressed from the earliest stages of education (Agulló, Filella, Soldevila, & Ribes, 2011; Fernández-Berrocal and Extremera, 2002; Ribes, Bisquerra, Agulló, Filella, & Soldevila, 2005) and should continue into adolescence and adulthood, since lacking the skills provided by EI generates problems inside and outside the classroom to students of any age (Extremera, & Fernández-Berrocal, 2004, Saez de Ocariz, & Lavega, 2015). Similarly, it is shown as fundamental in the formation of future teachers (Bisquerra, 2005; Bisquerra, & Perez, 2012), since they transmit this content to their students.

Parallel emotional education is a key topic to promoting equal opportunities for both genders. Previous studies have revealed that male and female emotional reactions manifest unequally depending on the type of MG. The boys often show negative emotions more intense when in the presence of competition, while the girls' intensity is higher when the games are cooperative (Lavega, March et al, 2013; Lavega, Araujo et al, 2013; Lavega, Filella et al, 2013; Lavega et al, 2014).

Bisquerra model of emotional competence

The current educational system considers the importance of emotional competencies (Repetto, Pena, Mudarra and Ubarri, 2007; Reppeto, Pena and Lozano, 2007), recognizing the relationship between intellectual ability and skills related to the management of emotions. In this sense, the Rafael Bisquerra's work and his research group counseling (GROP) are also oriented, focusing on the study of these competences.

You can understand the emotional competence as the set of knowledge, skills, abilities and attitudes necessary to understand, express and regulate emotional phenomena appropriately (Bisquerra, 2003, p. 22).

Bisquerra makes an educational approach to the concept of IE (Bisquerra and Perez, 2012), focusing on learning emotions and is the author of reference of the different innovation plans in emotional education of Spanish curricula (Extremera and Fernández-Berrocal 2004; Garrido, Repetto, & Talavera, 2008; Morales, & Lopez-Zafra, 2009; Pertegal, Oliva, & Hernando, 2010). It aims to educate emotional competencies and design a model of educational intervention, based on five competency blocks: emotional awareness, emotional regulation, emotional autonomy, social competence, life skills and welfare (Bisquerra, 2009, pp.148-151).

The emotional awareness is defined as the ability to become aware of their own emotions and the emotions of others, including the ability to capture the emotional climate of a particular context (Bisquerra, 2003, p. 23). This competition takes place in three stages. The first refers to the ability to perceive and identify feelings and emotions. The second refers to the ability of naming emotions acquiring an emotional vocabulary. The third develops the ability to understand and become involved in the emotions of others (empathy). The first emotional competence Bisquerra points out is very similar to other models (Bar-On, Maree, & Elias, 2007; Goleman, 1997; Salovey, & Mayer, 1990).

Bisquerra (2000) classifies emotions as either bringing comfort or discomfort to the objectives sought by the person, organized on a continuum between positive and negative extracted from the work of Lazarus (1991). It identifies 13 different emotions and organizes them into 3 groups: positive that trigger feelings of subjective well-being and are specified in joy, humor, love and happiness. Negative emotions are those that trigger feelings that keep the person's subjective well-being and are specified in anger, sadness, rejection, fear, anxiety and embarrassment. It may be the case that emotions arise from positive or negative feelings, depending on the circumstances generated. In this case we speak of ambiguous (or neutral) emotions and they are laid out in surprise, hope and compassion.

When we educate emotionally during PE classes, is it possible that students, while playing, are aware of their own emotions? Is this emotional awareness different in boys than in girls? During the game, are the emotions given as positive, negative and ambiguous, as described by Bisquerra?

In the research the Bisquerra's (2003) and GROP's model of education of emotional competencies, has been followed, focusing on the study of the first phase corresponding to the emotional awareness.

Two objectives were raised:

- a) To examine whether the behavior of the 13 emotions during the game responds to the theoretical model proposed by Bisquerra (2000) when classified as positive, negative and ambiguous emotions.

- b) To study the effects that different MG families with and without competition games and the type of student and gender variables on the intensity of the 13 emotions as described by Bisquerra (2000).

MATERIAL & METHOD

This research corresponded to a quasi-experimental study, because the sample was not random but intentional; the participants were students of secondary schools, higher education and university graduates.

Participants

In this study 1091 participants were involved, 600 (55%) men and 491 (45%) women (age range 11-41 years; *Mean* = 19.59 years, *SD* = 5.21). The study data came from three different age groups:

- a) High school students. The sample selection was based on criteria (Goetz, & Lecompte, 1988) determined in advance depending on the attributes that the group should have. Groups of students whose teachers participated in training on emotional physical education that the research team taught in the faculties of PE were the ones selected. They involved 220 students from secondary and high schools, 101 men and 119 women, age range 12 -18 years; *Mean* = 13.11 years, *SD* = 1.47), seven schools from Catalonia (IES Marius Torres-Lleida, Flix-Tarragona-Barcelona Verdaguer, Narcís Monturiol-Figueras-Girona) and 2 from Valencia (IES Victoria Kent and Betula Alba - Elche).
- b) University students: freshmen, studying the degree of PE, a subject taught by members of the research team. A set of 798 students attended the universities of Barcelona, Catholic University of Murcia, Wales (based Málaga), Lleida, and the Basque Country (Vitoria based), 472 men and 326 women (age range 17-44 years; *Mean* = 20, 32 years, *SD* = 3.53).
- c) Graduates: In this study a total of 73 graduates of PE were included, 27 men and 46 women (age range 21-41 years; *Mean* = 32.6 years, *SD* = 7.99), attending a course in continuing education on emotional physical education through sports games; this course was given in different venues of Catalonia (Seu de Urgell) and Valencia (Elche).

All participants gave their consent to participate voluntarily in this study which was approved by the Ethics Committee of the University of Lleida.

Instrument & Procedure

Before starting this formative experience, all high school students, university students and graduates received the same theoretical and practical training (two sessions of 1.5 hours) on the meaning, classification and role of emotions

in the PE, and the use of the recording instrument. All students participated in eight sports games. The teacher explained the game and invited students to participate. To ensure the unity of criteria, the games were recorded with photographs and video. This information was provided to the rest of the teachers who participated in the experience.

At each session, four-engine games were played, two of each of the domains of the motor action. A set of each of the domains was competitive.

1) Psychomotor-Competitive. Pull, contact and win. Players stand in pairs facing each other, leaving an object on the floor between them. Each player throws the ball with the intention of hitting the object obtaining a point each time it is achieved.

2) Psychomotor-not competitive. Know your belly. Each player runs with a ball on his belly, exploring the different areas of the body

3) Competitive Cooperation. Passes and wins. Each team is placed in a circle. Players must pass each other several balls at the same time. The team that is able to perform most passes wins.

4) Cooperation-non-competitive. Latter chains. In pairs, one player back massages gently the other pressing them with a ball.

5) Opposition-Competitive. (Simple) winning ball. Two players stand on either side of a network and try to hit the ball twice in the rival field. Each time the opponent can not return the ball a point is obtained.

6) Opposition-not competitive. Pursue imitating. One participant moves freely along the track carrying a tennis ball, chasing their peers. The other players, also with a tennis ball should imitate his movements. When a player is captured the roles are exchanged.

7) Co-Opposition Competitive. Winning ball (teams). The rules are the same as the (simple) winning ball, but in this case each team consists of two players.

8) Cooperation / Opposition-Non competitive. Ball sitting. paradoxical game in which players can pass the ball to any player by a rebound in the ground (cooperative action) or directly by air (opposing action). The player who receives the ball in rebound is still alive, but if you get an air pass captured then you must sit down. Those captured are saved if they intercept the ball and pass it to another player who is also captured. All players decide freely to cooperate or oppose.

For identification of the emotional intensity experienced at each game, GES (Games and Emotion Scale) validated by Lavega, and Filella March (2013) was used. At the end of a game, students wrote down their personal questionnaire intensity level (0 to 10) they had experienced in each of the thirteen emotions.

Zero meant there was no sense of that emotion and ten that they had lived it with maximum intensity.

Data analysis

The normality of the data was studied through the Kolmogorov-Smirnov test; the nonparametric data were to be seen as a very asymmetric distribution of intensities. To analyze the data the technique of classification trees and Sonquist developed by Morgan (1963) was applied; It is an analysis technique of nonparametric segmentation (free distribution procedure) with an exploratory purpose. AIDCS classification tree (automatic interaction detector Chi-square) in order to allow partitions of more than two branches, in which one of the main variables had three categories generated. Answer-module Tree® SPSS Classification Trees™ 13.0 was used. One cross-validation system was applied and continued until at least 50 subjects were considered as number of cases in the terminal nodes and 100 subjects in the child nodes. Other features were: control of tree size (minimum size of node size divisions: 10; maximum levels of tree: 3); method validation (10 fold cross-validation), initial divisions (not established), prior to the variable "categories" of destination (use of the frequency distribution in the data set), misclassification costs (unity for all categories), and handling of missing data (use of predictive factors substitutes).

The dependent variable, ie, the emotional intensity (EMIN) (range 0-10), was recoded into four categories in order to obtain similar frequency: 0 to 0.99 (29%), 1 to 2.99 (24.5%), 3 to 4.99 (17.4%) and 10.05 (28.6%). CHAID procedure in five predictors (independent variables) were chosen: motor action domain (psychomotor, cooperation, cooperation-opposition and opposition); game result (win, loss and game without victory); kind of emotion (love, humor, happiness, love, hope, surprise, compassion, anxiety, anger, sadness, fear, shame and rejection); gender (female and male) and type of student (ESO student, undergraduate and graduate).

RESULTS

Hierarchical segmentation technique analyzed 88,495 observations and resulted in a classification tree with 92 nodes, of which 57 were for terminal nodes; and it analyzed the thirteen emotions, grouping them into two groups: positive and negative, associated with different types of predictive variables. Ambiguous emotions behaved as negative emotions.

Predictors for positive emotions

The classification tree established the motor action domain as the main predictor of emotional intensity (EMIN) of the four positive emotions (joy, humor, love and happiness). Considering the EMIN that originated the four domains of motor action (psychomotor, cooperation, cooperation-opposition and opposition) two patterns of emotional behavior were identified; the first corresponding to the joy and humor and the second referred to happiness and love.

Given the difficulty of representing the 91 nodes of the classification tree the results of the various predictors for the 13 emotions are shown in tabular form and subsequently tree figures relating to different types of emotions are included. Table 1 shows the data in order of descending emotional intensity (EMIN).

Table 1: Identification of the predictors of the intensity of positive emotions

FIRST LEVEL (1st PREDICTIVE VARIABLE)	SECOND LEVEL (2nd PREDICTIVE VARIABLE)	Nodes 11- 22. Second tree level	THIRD LEVEL (3rd PREDICTIVE VARIABLE)	Nodes Third level of the tree
JOY Node 1 (M=6,48; SD = 2,97)	DOMAIN (p = 0.005 ; F = 174,074; g1 = 3; g2 = 6816)	Opposition Node 12 (M=7,12, SD = 2,49; n = 1716)	STUDENT (p = 0.005 ; F = 16,294; g1 = 1; g2 = 1713)	Graduate Node 39 (M = 7,94, SD = 1,88; n = 142)
				ESO Node 37 (M = 7,46, SD = 2,67; n = 405)
				Undergraduate Node 38 (M = 6,9, SD = 2,46; n = 1169)
		Cooperation-Opposition Node 13 (M = 6,93, SD = 2,93; n = 1655)	STUDENT TYPE (p = 0.005 ; F = 58,522 g1 = 1; g2 = 1653)	ESO / Graduate Node 40 (M = 7,7, SD = 2,6; n = 547)
				Undergraduate Node 41 (M = 6,55, SD = 3,00; n = 1108)
		Cooperation Node 11 (M = 6,73, SD = 2,81; n = 1784)	GENDER (p = 0.005 ; F = 13,727 g1 = 1; g2 = 1782)	Female Node 35 (M = 7,00, SD = 2,77; n = 800)
Male Node 36 (M = 6,51, SD = 2,83; n = 984)				
Psychomotor Node 14 (M = 5,11, SD = 3,19; n = 1665)	RESULT (p = 0.005 ; F = 189,757 g1 = 1; g2 = 1663)	With Competition Node 42 (M = 6,25, SD = 2,83; n = 754)		
		Without Competition Node 43 (M = 4,16, SD = 3,15; n = 911)		
HUMOR Node 2 (M=6,04; SD =3,16)	DOMAIN (p = 0.005; F = g1 = 3; g2 = 6811)	Opposition Node 16 (M = 6,92, SD = 2,6; n = 1713)	RESULT (p = 0.005; F = 25,303 g1 = 1; g2 = 1711)	Without Competition Node 47 (M = 7,02, SD = 2,38; n = 940)
				With Competition Node 46 (M = 6,58, SD = 2,78; n = 773)
		Cooperation-Opposition Node 17 (M = 6,72, SD = 2,8; n = 1655)	STUDENT TYPE (p = 0.005; F = 31,879 g1 = 1; g2 = 1653)	ESO /Graduate Node 48 (M = 7,26, SD = 2,93; n = 548)
				Undergraduate Node 49 (M = 6,45, SD = 2,67; n = 1107)
		Cooperation Node 15 (M=6,01, SD = 3,25; n = 1782)	RESULT (p = 0.005; F = 130,654 g1 = 1; g2 = 7180)	With Competition Node 44 (M = 6,89, SD = 2,76; n = 856)
				Without Competition Node 45 (M = 5,19, SD = 3,44; n = 926)
Psychomotor Node 18 (M = 4,49, SD = 3,35; n = 1665)	RESULT (p =0.005; F = 322,766 g1 = 1; g2 = 1663)	With Competition Node 50 (M = 5,98, SD = 2,8; n = 755)		
		Without Competition Node 51 (M = 3,26, SD = 3,27; n = 910)		
HAPPINESS Node 4 (M=6,16; SD = 3,10)	DOMAIN (p = 0.005 ; F = 179,453; g1 = 1; g2 = 6812)	Cooperation Node 21 (M = 7,00, SD = 3,03; n = 1783)	RESULT (p = 0.005; F = 334,598 g1 = 1; g2 = 1781)	Without Competition Node 58 (M = 8,16, SD = 2,36; n = 928)
				With Competition Node 57 (M = 5,74, SD = 3,18; n = 855)
		Opposition// Cooperation-Opposition //Psychomotor Node 22 (M = 5,87, SD = 3,08; n = 5031)	RESULT (p = 0.005; F = 27,615 g1 = 1; g2 = 5029)	Without Competition Node 60 (M = 8,16 , SD = 2,36; n = 928)
				With Competition Node 59 (M = 5,62, SD = 3,19; n = 2325)

LOVE Node 3 ($M=3,74$; $SD=3,326$)	DOMAIN ($p=0.005$; $F=190,382$ $g/1=1$; $g/2=6807$)	Cooperation Node 19 ($M=4,66$, $SD=3,52$; $n=1783$)	RESULT ($p=0.005$; $F=187,638$ $g/1=1$; $g/2=1781$)	Without Competition Node 53 ($M=5,7$, $SD=3,53$; $n=927$)
				With Competition Node 52 ($M=5,2$, $SD=3,14$; $n=856$)
		Opposition// Cooperation-Opposition //Psychomotor Node 20 ($M=3,41$, $SD=3,19$; $n=5026$)	STUDENT TYPE ($p=0.005$; $F=14,994$ $g/1=2$; $g/2=5023$)	Graduate Node 56 ($M=4,14$, $SD=3,26$; $n=421$)
				ESO Node 54 ($M=3,52$, $SD=3,52$; $n=1186$)
		Undergraduate Node 55 ($M=3,28$, $SD=3,03$; $n=3419$)		

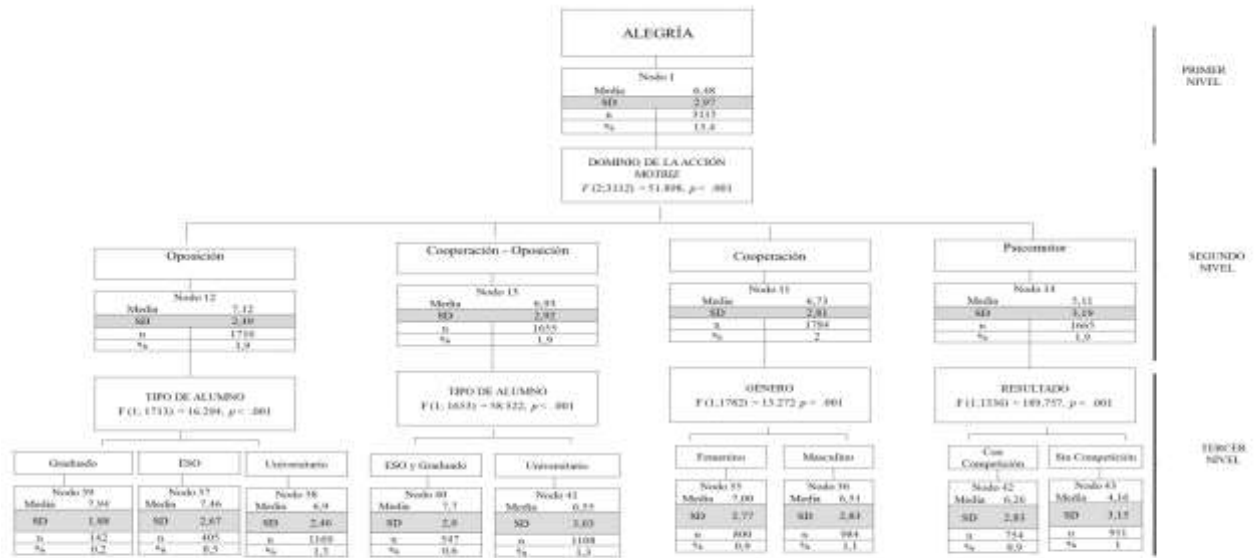
In the first pattern (joy, and humor) significant differences ($p < .001$) among the four domains (nodes 11, 12, 13 and 14) they were found. In both emotions of the first pattern, the most intense values originated in domains with presence of adversary opposition games (nodes 12, 16) and cooperation-opposition (nodes 13 and 17); the lowest EMIN activated psychomotor domain (nodes 14 and 18). However, in the second pattern (happiness and love) the most intense values were raised in cooperative games (nodes 19 and 21); These two emotions had a similar behavior ($p > .05$) in all other domains of motor action, in which the EMIN of happiness and love was less than that caused by the cooperation (nodes 20 and 22).

By studying the second predictor of positive EMIN the result was the explanatory variable that appeared on more occasions (7), followed by the type of student (4) and gender (1). Regarding the result, four times the values were more intense when there was no competition: a) mood in opposition; b) in cooperation happiness, c) happiness in other domains (psychomotor, opposition and cooperation-opposition), and d) love cooperation. On three other occasions EMIN was higher with the presence of competition: a) Psychomotor joy; b) cooperation humor; and c) Psychomotor humor.

In relation to the sample, the university obtained the lowest values of IE: a) joy in opposition; b) in cooperation-opposition joy; mood-opposition cooperation; and d) Psychomotor love, opposition-opposition cooperation. Higher prices for those emotions were for graduates: a) joy in opposition; and b) Psychomotor love, opposition-opposition cooperation. In other cases they graduates the highest values shared with students of ESO: a) joy-opposition cooperation; and b) in cooperation-opposition mood.

In relation to gender, it only appeared as a second predictor of joy the cooperative games which observed that women reached values more intense than men.

Graph. 1: Tree of predictor variables of emotional intensity of joy (example of the behavior of positive emotions)



Predictive variables for negative emotions

The classification tree established the result (with and without competition) and gender (male and female) as the first predictor of EMIN of the six negative emotions. Ambiguous emotions of hope, surprise and compassion, as they behave like negative ones, are included

Considering the EMIN that originated these two predictors, two patterns were identified; the first corresponding to the emotions: hope, surprise, compassion, anxiety, anger, sadness, fear and shame; and the second, rejection.

Table 2: Identification of the predictor variables of the intensity of negative emotions

FIRST LEVEL (1st PREDICTIVE VARIABLE)	SECOND LEVEL (2nd PREDICTIVE VARIABLE)	Nodes 11- 22 Second tree level	THIRD LEVEL (3rd PREDICTIVE VARIABLE)	Nodes Third tree level
HOPE SURPRISE Node (M = 3,53; SD = 3,42)	RESULT (p = 0.005; F = 342,885; g/1 = 1; g/2 = 3614)	With Competition Node 33 (M = 4,11, SD = 3,44; n = 6360)	EMOTION (p = 0.005; F = ; g/1 = 1; g/2 =)	Hope Node 87 (M = 4,38, SD = 3,47; n = 3179)
				Surprise Node 88 (M = 3,83, SD = 3,39; n = 3181)
		Without Competition Node 34 (M = 3,03, SD = 3,33; n = 7256)	DOMAIN (p = 0.005; F = 147,596; g/1 = 2; g/2 = 7253)	Opposition// Cooperation- Opposition Node 90 (M = 3,66, SD = 3,32; n = 3589)
				Cooperation Node 89 (M = 2,71, SD = 3,40; n = 1854) Psychomotor Node 91 (M = 2,11, SD = 3; n = 1858)

<p>ANXIETY COMPASSION Node 7 ($M = 1,8$; $SD = 2,77$)</p>	<p>RESULT ($p = 0.005$; $F = 187,970$; $g/1 = 1$; $g/2 = 13599$)</p>	<p>With Competition Node 27 ($M = 2,15$, $SD = 2,93$; $n = 6349$)</p>	<p>GENDER ($p = 0.005$; $F = 48,903$; $g/1 = 1$; $g/2 = 6347$)</p>	<p>Male Node 73 ($M = 2,38$, $SD = 2,99$; $n = 3491$)</p>
				<p>Female Node 72 ($M = 1,86$, $SD = 2,82$; $n = 2858$)</p>
		<p>Without Competition Node 28 ($M = 1,5$, $SD = 2,58$; $n = 7252$)</p>	<p>DOMAIN ($p = 0.005$; $F = 104,592$; $g/1 = 2$; $g/2 = 7249$)</p>	<p>Cooperation/Opposition Node 76 ($M = 2,03$, $SD = 2,64$; $n = 1876$)</p>
				<p>Opposition Node 75 ($M = 1,83$, $SD = 2,63$; $n = 1876$)</p>
<p>ANGER Node 5 ($M = 1,49$; $SD = 2,58$)</p>	<p>RESULT ($p = 0.005$; $F = 343,322$; $g/1 = 1$; $g/2 = 6804$)</p>	<p>With Competition Node 23 ($M = 2,1$, $SD = 2,94$; $n = 3175$)</p>	<p>STUDENT TYPE ($p = 0.005$; $F = 66,593$; $g/1 = 2$; $g/2 = 3172$)</p>	<p>Undergraduate Node 62 ($M = 2,5$, $SD = 3,003$; $n = 2079$)</p>
				<p>ESO Node 61 ($M = 1,5$, $SD = 2,85$; $n = 818$)</p>
		<p>Without Competition Node 24 ($M = 0,97$, $SD = 2,09$; $n = 3631$)</p>	<p>DOMAIN ($p = 0.005$; $F = 179,337$; $g/1 = 2$; $g/2 = 3628$)</p>	<p>Graduate Node 63 ($M = 0,8$, $SD = 1,83$; $n = 278$)</p>
				<p>Cooperation-Opposition Node 66 ($M = 0,36$, $SD = 1,4$; $n = 184$)</p>
<p>SADNESS Node 8 ($M = 1,14$; $SD = 2,27$)</p>	<p>RESULT ($p = 0.005$; $F = 449,263$; $g/1 = 1$; $g/2 = 6801$)</p>	<p>With Competition Node 29 ($M = 1,75$, $SD = 2,727$; $n = 3174$)</p>	<p>STUDENT TYPE ($p = 0.005$; $F = 52,609$; $g/1 = 2$; $g/2 = 3171$)</p>	<p>Undergraduate Node 78 ($M = 2,08$, $SD = 2,83$; $n = 2079$)</p>
				<p>Graduate Node 79 ($M = 1,59$, $SD = 2,62$; $n = 208$)</p>
		<p>Without Competition Node 30 ($M = 0,61$, $SD = 1,61$; $n = 3629$)</p>	<p>DOMAIN ($p = 0.005$; $F = 32,201$; $g/1 = 2$; $g/2 = 3626$)</p>	<p>ESO Node 77 ($M = 0,95$, $SD = 2,29$; $n = 815$)</p>
				<p>Cooperation-Opposition Node 82 ($M = 0,92$, $SD = 1,84$; $n = 854$)</p>
<p>FEAR SHAME Node 6 ($M = 0,74$; $SD = 1,79$)</p>	<p>RESULT ($p = 0.005$; $F = 60,448$; $g/1 = 1$; $g/2 = 13602$)</p>	<p>With Competition Node 25 ($M = 0,87$, $SD = 1,93$; $n = 6346$)</p>	<p>STUDENT TYPE ($p = 0.005$; $F = 47,712$; $g/1 = 2$; $g/2 = 6343$)</p>	<p>Undergraduate Node 68 ($M = 1,03$, $SD = 2,03$; $n = 4159$)</p>
				<p>ESO Node 67 ($M = 0,63$, $SD = 1,83$; $n = 1629$)</p>
		<p>Without Competition Node 26 ($M = 0,63$, $SD = 1,66$; $n = 7258$)</p>	<p>DOMAIN ($p = .005$; $F = 82,118$; $g/1 = 1$; $g/2 = 7256$)</p>	<p>Graduate Node 69 ($M = 0,36$, $SD = 1,12$; $n = 558$)</p>
				<p>Opposition/Cooperation-Opposition Node 71 ($M = 0,81$, $SD = 1,77$; $n = 3584$)</p>
<p>REJECTION Node 9 ($M = 0,53$; $SD = 1,60$)</p>	<p>GENDER ($p = 0.005$; $F = 94,654$; $g/1 = 1$; $g/2 = 6805$)</p>	<p>Male Node 32 ($M = 0,7$, $SD = 1,80$; $n = 3785$)</p>	<p>RESULT ($p = .005$; $F = 45,394$; $g/1 = 1$; $g/2 = 3783$)</p>	<p>With Competition Node 85 ($M = 0,91$, $SD = 2,06$; $n = 1746$)</p>
				<p>Without Competition Node 86 ($M = 0,52$, $SD = 1,53$; $n = 2039$)</p>
		<p>Female Node 31</p>	<p>TYPE STUDENT ($p = .005$;</p>	<p>Undergraduate / ESO Node 83 ($M = 0,36$, $SD = 1,33$; $n = 2673$)</p>
				<p>Graduate Node 84 ($M = 0,07$, $SD = 0,65$; $n = 349$)</p>

		($M = 0,32$, $SD = 1,28$; $n = 3022$)	($F = 15,527$; $g/1 = 1$; $g/2 = 3020$)	
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No significant differences ($p > 050$) between anxiety and compassion (node 7) or between hope and surprise (node 10) were found. The tree bunched fear and shame (node 6; $p >, 050$).

The nine negative emotions were the result as the main predictor; Competitive games activated more negative EMIN than the games without competition. The EMIN predictor of rejection was gender; the boys reached more intense values ($p <,050$) than girls.

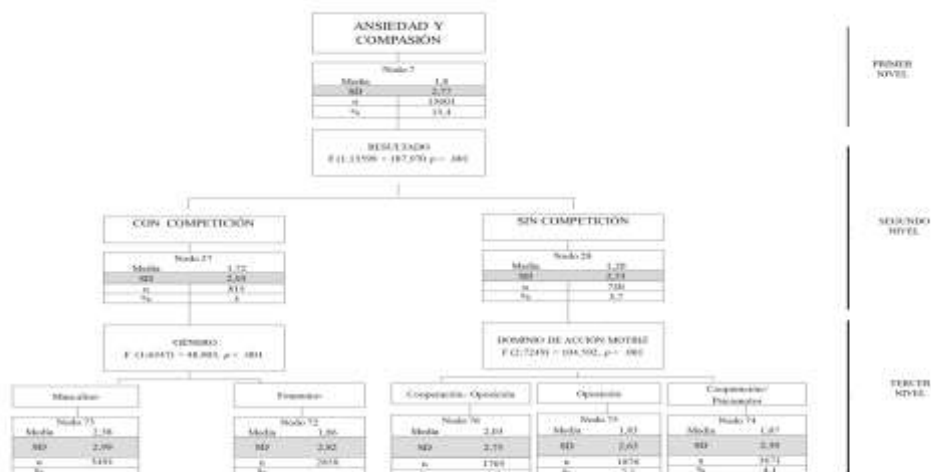
As a second variable predictive of negative EMIN, ordered from largest to smallest presence in the tree was: a) the domain (5 times) associated with games without competition, b) the type of student (4 times) attached to games with competition, c) the result (1 time) linked to male gender c) gender (1 time) referred to games with competition.

In relation to domain the lower EMIN occurred in games without adversary (in the psychomotor domain: hope-surprise, in the cooperative domain: sadness and in-cooperation psychomotor domains either: anxiety-pity, anger, fear-shame). The highest EMIN originated in domains with adversaries (in cooperation-opposition anxiety-pity, anger, sadness, and in opposition or opposition either co-: hope-surprise, fear-shame).

In graduates, lower values were recorded in three of the four emotions: anger, fear-shame; and sadness. The most intense values the university students triggered anger, sadness, fear-shame. In the case of rejection they shared values with students of ESO.

In relation to gender, the boys reported more intense anxiety-pity values than girls.

Graph 2: Tree of the predictors of emotional intensity of anxiety and compassion (example of the behavior of ambiguous emotions)



DISCUSSION

This study aimed to investigate the emotional awareness into three groups of students after participating in different types of motor games (domains of motor action, with and without competition), in order to examine the classification of emotions proposed by Bisquerra (2000) and reveal the main predictors of that emotional experience.

Review of classification of emotions by Bisquerra

The first finding of this research confirms that the thirteen emotions have been identified by the participants and that, unlike the model by Bisquerra (2000; 2003), behave unevenly. The data shows the presence of two large groups of emotions: positive and negative, confirming previous findings (Duran, Lavega, Salas, Tamarit and Invernó, 2015). In this study the emotions of surprise and compassion have had a negative orientation, which does not mean that on other occasions or experiences could not have given their ambiguous nature a positive character.

Significant differences between emotional intensity (Emin) of joy, humor, love and happiness are observed. The detailed analysis identifies two subgroups represented by: joy-humor and happiness-love, as was observed in Lavega, March, et al. (2013). In each of these two subcategories the EMIN was explained through different predictors.

In relation to negative emotions, the detailed analysis of each of the EMIN distinguishes two subcategories; rejection, Emin whose values are lower in this research (which is the main predictor gender) and other negative emotions (in which the main explanatory variable is the result). All this confirms the relationship between competition and the emotional experience of negative sign, as seen in previous studies (Jaqueira, Lavega, Lagardera, Araújo, &

Rodrigues, 2014; Lavega, Lagardera, March, Rovira, & Araújo, 2014; Muñoz, Lavega, & Serna Aires, 2015).

The data indicates that the results of this study has been the same if they had used nine emotions instead of thirteen, three positive (joy, happiness and love) and six negative (anxiety, anger, sadness, shame, rejection and also the negative) surprise. This is the first empirical evidence revision of the classification of Bisquerra (2000), representing a contribution for further studies in emotional education in the field of physical activity and sport (PE).

Domain motor action and competition: main predictors of emotional experience

It has been observed that in every family games (domains) various emotional states are raised, so it should be the first predictor to consider. The sociomotor games with the presence of adversaries originate the most intense mood of joy and values; however it is the cooperative games that raise the greatest intensity of happiness and love (Duran, Lavega, Planas, Muñoz, & Pubill, 2014). These data enrich the contributions of studies on the experience of positive emotions (eg, Alonso Lavega, and Reche, 2012; Lavega et al, 2011;. Lavega, March et al, 2013).

The PE teacher should know that recreational experiences that pit students to a game with winners and losers originate different emotional experiences to which the result is not compared, as has already been shown in other studies (eg, Etxebeste, Del Barrio, Urdangarin, Usabiaga and Oiarbide, 2014; Lavega, Araujo et al, 2013; Lavega, Filella et al, 2013). In the same direction of evidence it has been observed that the result is the main predictor of the intensity of the most negative emotions; competitive games activate the most intense values for anxiety, anger, sadness-fear.

These findings will be key when the teacher seeks to promote different emotional experiences through the use of MG or other motor practices such as motor expression (Gelpi, Romero, Mateu, Rovira, & Lavega, 2013, Torrents, Mateu Planas, and Dinusova, 2011), self-exploration practices or motor introjection (Rovira, Lopez-Ros, Lagardera, Lavega, & March, 2013) or physical activities in nature (Parlebas, 2001).

Relationship between the type of student (according to educational level and gender) and the emotional experience

This research confirms EMIN trends identified in different groups of college students (e.g., Lavega et al, 2011; Lavega, Filella, et al, 2013) and secondary school or high school (Alonso et al, 2012.). However, no work had been done that following the same methodological procedure in the formation of emotional awareness, it examined the effects of sports games EI in three different age groups. In the case of students of ESO this training in emotional education can help them acquire transferable skills and to improve their personal and social welfare (Alonso et al, 2012; Bisquerra, 2000). In relation to students or

graduates in PE this learning could reverse positively on their future pupils (or customers), formal PE and non-formal, in other contexts of recreation, management or federated sport (Alonso et al., 2013; Bisquerra, & Perez, 2012; Lavega, Filella, et al, 2011;. Lavega, Araujo et al, 2013).

College students are the ones with lower EI of joy, humor and love when participating in games with opponents. They also record the most intense negative emotions of anger, sadness, fear, shame and rejection when competing values. One possible explanation, as shown by other research (Alonso et al, 2012), is because these students of PE are active participants in sports competitions and it is possible that when enemies appear, their eagerness to overcome them leads to get values lower than those registered by students of ESO, who have little experience in competitive sport, or graduates who have stopped competing or have learned to do so (Lopez-Torres, Torregrosa, & Roca, 2007).

From a gender perspective, girls experience more EMIN joy than boys when participating in cooperative games. The female, when involved in cooperative activities, achieves greater social and emotional well-being (Conti, Collins, & Picariello, 2001, 2001; Johnson and Engelhard, 1992; Knight, & Chao, 1989). As in racing games, where men experience more values of intense anxiety and compassion than women. The cultural significance (Kemper, 1981; Hochschild, 1979) and adherence to cultural stereotypes could explain that boys respond enthusiastically to competitive situations; the footprint of the competitive practice, seems to be at the root of this behavior (Conti, et al., 2001; Knighy Chao, 1989).

CONCLUSIONS

This research provides evidence on the validity of the Bisquerra's model of emotional awareness in the context of PE, and continues to reveal the variables involved in studying the effects of sports games on the emotional experience. In light of the data we can point out some interesting conclusions:

1. The empirical evidence provided by this study establish two unequal behavior of emotions; on the one hand the positive nature of joy, love and happiness is found. In parallel negative emotions of anger, sadness and anxiety are identified. The ambiguous emotion of surprise has shown a negative orientation on this occasion.
2. The various groups of participants experience positive emotions more intensely when participating in games that require sociomotor interact with each other, whether colleagues or adversaries. Joy and humor reach maximum values when they are opponents in games (games of opposition and cooperation-opposition); while the maximum intensity of happiness and love is obtained when cooperating.
3. Competitive games with winners and losers are those that trigger more intense negative emotions.

4. The females experience intense positive emotions especially when they participate in cooperative games.
5. College students live more intensely negative emotions, in relation to other groups of different educational level.

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