

Understanding emotions through games: Helping trainee teachers to make decisions

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© Education & Psychology I+D+i and Editorial EOS (Spain)

Abstract

Introduction. The aim of this study was to provide guidelines to help professionals make decisions regarding the types of emotions produced by different sporting games classified into four domains of motor action (psychomotor, co-operation, opposition and co-operation/opposition).

Method. The sample comprised 284 first-year university students of physical education and primary education (INEFC, Faculty of Education, universities of Lleida and Barcelona, Spain) aged between 18 and 25. Through a quasi-experimental design the students indicated, on a validated questionnaire, the intensity felt for thirteen emotions after play games. A classification tree was generated in order to analyse the data.

Results. Comparison of different motor action domains showed that cooperative games were the most likely to elicit intense positive emotions among students. In non-competitive co-operation games, scores for positive emotions were 18.3% higher than those reported for competitive games.

Conclusions and Conclusions: The findings suggested that the type of games chosen is the first important decision to make in terms of educating students' emotions. Each domain of motor action is associated with the production of certain types of emotion.

Keywords: Physical education, Games, Emotions, Motor action domains, Motor Praxeology.

Received: 11/14/10

Initial acceptance: 12/22/10

Final acceptance: 06/22/11

Conocer las emociones a través de juegos: Ayuda para los futuros docentes en la toma de decisiones

Resumen

Introducción. El objetivo de este estudio fue proporcionar orientaciones para ayudar a profesionales de la educación física a tomar decisiones en torno a las emociones que produjeron diferentes juegos deportivos clasificados en cuatro dominios de acción motriz (psicomotor, cooperación, oposición y cooperación/oposición).

Método. La muestra correspondió a 284 estudiantes universitarios de educación física y de educación primaria (INEFC, Facultad de Educación, universidades de Lleida y de Barcelona, España). A través de un diseño cuasi-experimental los estudiantes indicaron en un cuestionario validado la intensidad sentida en trece emociones tras participar en cada juego. El análisis de los datos se realizó a través de los árboles de clasificación.

Resultados. La comparación de los resultados en los diferentes dominios de acción motor mostró que los juegos cooperativos fueron los que activaron emociones positivas más intensas entre los estudiantes. En los juegos no competitivos de cooperación los resultados en emociones positivas fueron 18.3% más elevados que en los juegos competitivos.

Conclusión. Los resultados sugieron que el tipo de juegos a elegir es la primera decisión importante que debería plantearse para educar emociones en los estudiantes. Cada dominio de acción motriz está asociado a la producción de diferentes tipos de emoción.

Palabras Clave: Educación física, Juegos, Emociones, Dominios de acción motriz, Praxiología motriz.

Recibido: 14/11/10

Aceptación inicial: 22/12/10

Aceptación final: 22/06/11

Introduction

One of the major contributions of physical education is precisely its ability to present students with activities that enable them to experience different kinds of emotions. However, many educators continue to believe that the true value of physical education (PE) is to be found solely in its more rational aspects, thus overlooking the importance of experiencing positive, negative and ambiguous emotions. Indeed, human experience is as much emotional and social as it is cognitive and physical, meaning that we think, feel, act and interact simultaneously in the world (Denzin, 1984; Dewey, 1938; Fernández, 2008; Parlebas, 2001; Pena & Repetto, 2008).

Over forty years have passed since Parlebas first talked about affect as the key to motor behaviour, arguing that cognitive structure and motor action are modelled by affect. In Parlebas (2001) view, PE plays a role in the education of each student's motor behaviour. The concept of motor behaviour means considering the individual when making motor decisions, their reactions, their notion of risk and their body strategies, as well as the way they interpret the physical response of other participants. Any motor behaviour not only tells us about the strictly physical participation of the player but also the personal experience which comes with it (e.g. happiness, fears, perceptions, emotions, etc.). In that sense it truly reflects that person's way of being and way of feeling.

The following subsections provide theoretical arguments that justify the importance of introducing education of the emotions in the pedagogical content knowledge training of PE teachers. Furthermore, it is paramount that PE teachers acquire the scientific knowledge to predict what kind of emotions can be activated by each family of sporting games. Thus in the last two subsections of this introduction we review the main theoretical foundations of motor praxeology, mainly through the concepts of the internal logic of sporting games and the domains of motor action. We show how sporting games can be categorized into different domains of motor action by using scientific criteria. This is an extraordinary teaching tool because each domain of motor action activates a different type of motor experience and brings on different levels of intensity for each type of positive negative or ambiguous emotions.

Pedagogical content knowledge (PCK)

In 1987 PCK was defined as the special amalgam of content and pedagogy that is uniquely the providence of teachers, their own special form of professional understanding. PCK identifies the distinctive bodies of knowledge for teaching (Shulman & Richert, 1988). According to McCaughtry (2004) and McCaughtry & Rovegno (2003) most current conceptions of teachers' pedagogical content knowledge rely heavily on the Dewey **a** notion of connecting curriculum to students' lives. These conceptions focus on the idea that, in order to teach well, teachers must be able to consider students' content background (e.g. Grossman, 1990; Schempp, Manross, Tan, & Fincher, 1998; Bunker & Thorpe, 1997; Werner, Thorpe, & Bunker, 1996).

The literature review shows that many PCK researchers have focused almost exclusively on identifying how teachers understand the physical and cognitive qualities of students' experiences, while largely ignoring how teachers understand student emotion and factor this into their teaching. More recently, however, some scholars have claimed that student emotion is central to PCK because teachers, in order to make effective teaching decisions, must understand how students emotionally affiliate with the learning process, with a particular subject matter, with other students, and with cultural contexts (e.g. Hargreaves, 1998; Hargreaves, 2000; Hollingsworth, Dybdahl, & Minarik, 1993). Indeed, it transpires that some teachers' decisions about content, curriculum and pedagogy are in fact mediated or influenced by how the teacher interprets emotions (Hargreaves, 1998; McCaughtry, 2004; Rosiek, 2003; Zembylas, 2002).

The Internal Logic: What Gives Games Their Identity. Every sporting game creates and proposes a particular domain of action that imposes upon the player a specific form of involvement and certain ways of relating to space, with objects, with time and with other players. These forms of motor action that are characteristic of a given situation correspond to what Parlebas (2001) calls 'the internal logic' of the situation.

Each game produces unprecedented behaviours, chains of new actions and different strategies. It appears that the re-encounter triggers highly disparate actions that seem to lead to unpredictable disorder. However, beneath this apparent disorder lies a profound sense of order, for the actions of the game take shape according to the regularities dictated by the in-

ternal logic of the activity. Each game or sport can be conceived of as a praxeological system (Lagardera & Lavega, 2003; Lagardera & Lavega, 2004) with an internal logic that imposes a system of obligations and leads its participants to establish a particular type of relationship governed by the rules or requirements of that sport.

Motor action domains and emotions. Parlebas (2001) upholds the concept of internal logic and employs systems theory to develop a systemic classification of games and sports. Applying the criteria for physical interaction to any physical activity, four groups of games or motor action domains emerge. Each domain of motor action produces different types of relationships and, therefore, different kinds of impacts on its players. Games in each domain of motor action show common traits in their internal logic, in that they tend to activate specific characteristics in the personality of participants.

(a) *Psychomotor games* in which the participant takes part without any opponent countering his/her physical actions. These games call for effectiveness, the measurement of physical force, self-discovery and knowledge of the body, and help participants identify their strengths and weaknesses. The long jump and throwing something at a target are examples of this category.

(b) *Co-operation games*, in which different players have to help each other to reach a common goal. These games require a social dialogue, an agreement with or favourable response to others. Dancing with a partner or passing a ball without letting it fall to the ground are examples of this category.

(c) *Opposition games*, in which players have to challenge one or more of their opponents to attain their goal. In these games the players have to make decisions, anticipate moves, perceive their rivals' actions and challenge other players. Chasing and catching an opponent and sports such as judo and tennis fall into this category.

(d) *Co-operation/opposition games*, in which various players form part of a team and have to beat their opponents, who are usually also organised in teams. These games activate a collective strategy, decision making and group challenge. Examples of this category are sports such as football, basketball, handball and other team games.

Each of these four motor action domains can be performed with or without competition, in other words, with or without a final victory. When there is competition, players are classified as winners or losers, which is not the case in games that do not have a clearly-defined end.

Classification of emotions

The present study uses Bisquerra's classification of emotions, which itself is based on Lazarus' typology that describes emotions as positive, negative and borderline (Lazarus, 1991; Lazarus, 2000). However, so as to adapt the terminology to our context the term 'borderline' is replaced by 'ambiguous'. Thus, reference can be made to three types of emotions: positive emotions (joy, humour, love and happiness), negative emotions (fear, anxiety, anger, sadness, rejection, shame) and ambiguous emotions (surprise, hope and compassion) (Bisquerra, 2000).

Each physical education teacher has to have the means to decide which type of game or sport he/she wants to use to develop these different emotions in his/her students. For this reason, the present study aims to offer a tool to help physical education teachers choose the most suitable type of sporting games for achieving their pedagogical aims, taking into account the emotions which they arouse.

Objectives and hypotheses

Objectives

- To provide guidelines to help professionals make decisions regarding the different sort of emotions produced by different sporting games
- To identify the relationship between sporting games based on the different domains of motor action and the expression of positive and negative emotions.
- To identify the relationship between competitive and non-competitive sporting games and the expression of positive and negative emotions.

Hypotheses

- Sporting games based on the different domains of motor action could create circumstances that produce high ratings in terms of the expression of positive emotions and few intense negative emotions.
- Teachers could make an important decision when trying to encourage positive emotions, such as happiness, joy, humour, empathy, solidarity or calmness, by selecting games of different motor action domains.
- Teachers could reduce high levels of negative emotions such as hate, anxiety, frustration, blame, insecurity or rejection, by using non-competitive games.

Method

Participants

The sample comprised 284 first-year university students, 212 trainee teachers for secondary-school physical education (INEFC, universities of Lleida and Barcelona, Spain) and 72 trainee primary school teachers (University of Lleida, Spain). Mean age was 19.7 years (SD = 2.63); 144 (50.7 %) students were male and 140 (49.3 %) female.

All the students gave their informed consent to participate in this research. The study was conducted primarily in the University of Lleida, specifically in the centres of the National Institute for Physical Education of Catalonia (INEFC) and in the Faculty of Education during, respectively, the first-year course on the theory and practice of games and classes about social education. The research was also carried out in the INEFC centre attached to the University of Barcelona, once again during the first-year course on the theory and practice of games.

Measures

An exhaustive review of the specialist literature on sporting games and emotions revealed no instrument capable of relating positive, negative and ambiguous emotions (identified by authors such as Lazarus (1991, 2000) or Bisquerra (2000) with the four domains of motor action and the presence or absence of competition (Parlebas, 2001). Therefore, two years work were dedicated to developing an instrument that included the different independ-

ent variables (domains of motor action: psychomotor, co-operation, opposition, co-operation/opposition) and the dependent variable corresponding to the emotional intensity of the different types of emotions (positive emotions: joy, humour, love and happiness; negative emotions: fear, anxiety, anger, sadness, rejection and shame; and ambiguous emotions: surprise, hope and compassion). The instrument also included variables referring to gender and sports experience.

The questionnaire was developed through the collaborative work of a specialist international Research Group for Sporting Games and a Pedagogical Research Group specialised in teaching emotional skills.

This instrument consisted of the following parts: (a) Participants' identification details; (b) classification of each game situation; (c) different emotions: positive, negative and ambiguous. Given that each emotion may be classified in other ways the bottom part of the sheet included a list of different words linked to each emotion. The subject was asked to rate each emotion on a scale from 0 to 10 depending on the intensity felt after participating in each game; (d) motor action fields or domains of sporting experience: identification of the sport played in one of the four motor action domains; (e) competition level of sporting experience: sports at local, national or international competition level (see Appendix 1). The Psychometric properties of the questionnaire are:

Acceptability. First, data quality was assessed according to completeness of the data and score distributions. For each question, ceiling and floor effects, skewness and kurtosis were calculated. Due to item characteristics, behaviour differed between emotions. Negative emotions showed a floor effect above 30 %, ambiguous emotions showed a floor effect around 20 %, and no floor effect appeared for positive emotions. No ceiling effect was found. For negative and ambiguous emotions, there was significant skewness and kurtosis associated with the floor effect.

Reliability. Internal consistency as measured by Cronbach's alpha was good for the whole scale ($n = 271$; $\alpha = .92$). Similar results were obtained for each type of emotion: positive ($\alpha = .93$), negative ($\alpha = .90$) and ambiguous ($\alpha = .95$).

Construct validity. Confirmatory factor analysis used to test the structure of the questionnaire suggested that only ambiguous emotions (hope, surprise and compassion) loaded on a single factor. Positive and negative emotions loaded on several factors. Positive emotions depended mainly on motor action domains, and only love loaded on a single factor. Negative emotions seem to need more factors because there are six negative emotions. Anxiety, disgust and shame loaded on separate factors. In summary, the factor analysis reproduced the questionnaire structure adequately. The final model, which consisted of twelve factors, showed good fit indices ($\chi^2 = 7125.79$, $df = 4174$). The model does not include an overall higher-order factor.

Procedure

The research procedure involved the following stages:

Training students' emotions

Participants received four hours and thirty minutes of theoretical and practical training in emotions. Two sessions of one hour and thirty minutes were used to explain the basic theoretical principles underlying emotional education: Concept, components, classification and the meaning of emotions in the context of physical education. In these sessions, students learnt how to identify the thirteen emotions by means of exercises involving game situations. They were given a fictitious description of different game situations and had to imagine which emotions they would feel in that situation, completing the exercise by responding to a questionnaire similar to the one they would use subsequently in the sessions involving sporting games. Over the next two weeks, four practical sessions were dedicated to identifying the thirteen emotions (positive, negative and ambiguous) in the different game situations they engaged in, as well as to familiarising themselves with the sections of the questionnaire they had to use. This phase consisting of four practical sessions had a total duration of one hour and thirty minutes. The main practical component of the study was conducted once it had been confirmed that the students had no further doubts in terms of identifying the emotions.

Selection and application of sporting games

Two games representative of each of the motor action domains were selected, one competitive game involving winners and losers, and another non-competitive game.

1) *Psychomotor Competitive. Throw, contact and win.* Players stand in pairs 2 m apart and an object is placed on the floor between them. They have to throw the ball and try to hit the object. They get one point for every time they hit the object. The winner is the one with the most points.

2) *Psychomotor Non-competitive. Get to know your tummy.* Each player takes a ball and squeezes it, exploring different areas of his/her tummy according to the teacher's instructions.

3) *Co-operation Competitive. Pass and win.* Each team forms a circle. Players must try to pass several balls at the same time. The winner is the team that makes the most passes.

4) *Co-operation Non-competitive. Chains behind* (give a back massage to your partner). In pairs while a player lowers and raises his/her body his/her partner gives him/her a gentle back massage, pressing and running a tennis ball along either side of the spinal column. The roles are then switched.

5) *Opposition Competitive. Hand win (singles).* Two players stand on either side of a net and try to make the ball bounce twice in the opponent's court. They get one point each time the opponent is unable to return the ball. The winner is the player with the most points.

6) *Opposition Non-competitive. Copy-Chase.* One participant moves around the room in whatever way he/she wishes while carrying a tennis ball. The other players, who also have a ball, must copy the first player's movements. When they catch the first player they switch roles.

7) *Co-operation-Opposition Competitive. Hand win (teams).* The rules are the same as in hand win (singles), but in this case each team has two players.

8) *Co-operation/Opposition Non-competitive. Sitting ball.* Paradoxical game in which players can either bounce the ball to each other (co-operation action) or throw it (opposition action). The player who receives the ball by a bounce stays alive, but if they receive it in the air they are caught and have to sit down. They can be saved if they can intercept the ball and pass it to another player who is then caught. All the players can decide to co-operate or oppose as they wish, with no logical criteria.

Participants were distributed in groups of thirty students. The same teacher worked with all the groups and gave the same instructions to all the participants. All the games sessions were conducted under the same conditions. Each group played five games in each of the two 90-min sessions.

The games used in the first session were: 1. Pass and win; 2. Hand win (singles); 3. Hand win (teams); and 4. Chains behind. The second session involved the following games: 5. Copy-Chase; 6. Sitting ball: Throw; 7. Contact and win; and 8. Get to know your tummy.

Data recording

Each student was given a questionnaire and a pen. The teacher began by explaining the game which students had to take part in. After playing each game the students had to immediately fill in the questionnaire, rating the intensity of the different emotions experienced on a scale of 0 to 10, where 0 meant they had not felt that emotion and 10 that they had felt it with maximum intensity. The questionnaire was answered individually (see Appendix 1).

Data Analysis

A CHAID (Chi-squared Automatic Interaction Detector) classification tree was generated in order to allow partitions larger than two branches, as one of the main variables had three categories. The module Answer-Tree® SPSS Classification Trees™ 13.0 was used. An internal cross-validation system was applied and the growth stop was set at 50 subjects as the minimum number of cases in the terminal nodes.

Other characteristics were: tree size controls (minimum size node to splits: 10; maximum tree levels: 3), validation method (10-fold cross-validation), initial splits (not preferred), prior probabilities for the target variable ‘categories’ (use frequency distribution in data set), misclassification costs (unitary for all categories), and handling of missing data (use surrogate predictors).

The dependent variable, i.e. emotional intensity (range 0-10), was recoded into four categories in order to obtain similar frequencies: 0-0.99 (29 %), 1-2.99 (24.5 %), 3-4.99 (17.4 %) and 5-10 (28.6 %). Eligible factors in the CHAID procedure were: Motor Action Domains

of Sporting Experience, Competition Level of Sporting Experience, Motor Action Domains of Games, Competition and Emotion.

Resultados

As regards predicting which sporting games have the tendency to arouse different types of emotions, the data analysis using classification trees yielded the following results (see figures 1, 2 and 3).

First decision: Types of Emotions (nodes 1, 2 and 3)

The first difference to consider ($p = .000$ and $\chi^2 = 2908.7$, $df = 2$) corresponds to the three types of emotions (positive, negative and ambiguous) associated with nodes (1, 2 and 3). Participants in the sporting games reported the highest intensity in positive emotions (from 5-10) in 56.1% of cases. In contrast, negative emotions reached the highest intensity in only 9.2 % of the participants, while ambiguous emotions were given the highest rating in 20.6 % of cases.

Second Decision: Positive Emotions and Motor Action Domains (nodes 4, 5 and 6)

The classification trees show that in order to predict which type of games arouse positive emotions, each type of motor action domain must be taken into consideration (nodes 4, 5 and 6), ($p = .000$ and $\chi^2 = 60.5$, $df = 1$). These emotions attained their highest ratings (from 5 to 10) in the domain of co-operation (70.1 %). Games played with opponents (opposition games and games of co-operation/opposition) all behaved in the same way, and activated maximum intensity in positive emotions in 53.8 % of participants. In psychomotor games, participants gave these maximum ratings less often (46.7 %).

If co-operation games are chosen (node 5) in order to arouse positive emotions, then the next aspect to consider is competition ($p = .000$ and $\chi^2 = 37.3$, $df = 1$). The intensity of these emotions was highest (ratings between 5 and 10) in non-competitive co-operation games (node 14), these results being observed in 79.2 % of cases. In competitive co-operation games (node 13), such ratings were obtained less often (60.9 % of participants).

If sporting games of opposition or co-operation/opposition are chosen (node 6) then the participants' sporting experience should also be taken into account i.e. what type of sports have they taken part in previously (nodes 15 and 16) ($p = .000$ and $\chi^2 = 37.3$, $df = 1$). Players who had regularly taken part in team sports, for example, co-operation sports -rhythmic gymnastic groups, synchronized swimming-, opposition sports -judo, singles tennis or karate- and co-operation/opposition sports -basketball, football or handball-, gave maximum ratings for positive emotions in 58.2 % of cases.

Finally, if psychomotor sporting games are chosen (node 4) to arouse positive emotions then the players sporting experience should again be considered as a predictive criterion (nodes 11 and 12) ($p = .002$ and $\chi^2 = 14.7$, $df = 1$). Participants who had regularly taken part in socio-motor sports gave higher ratings more often (50.5 %) than did participants who had specialised in psychomotor sports or those who had never done sport (39.6 %).

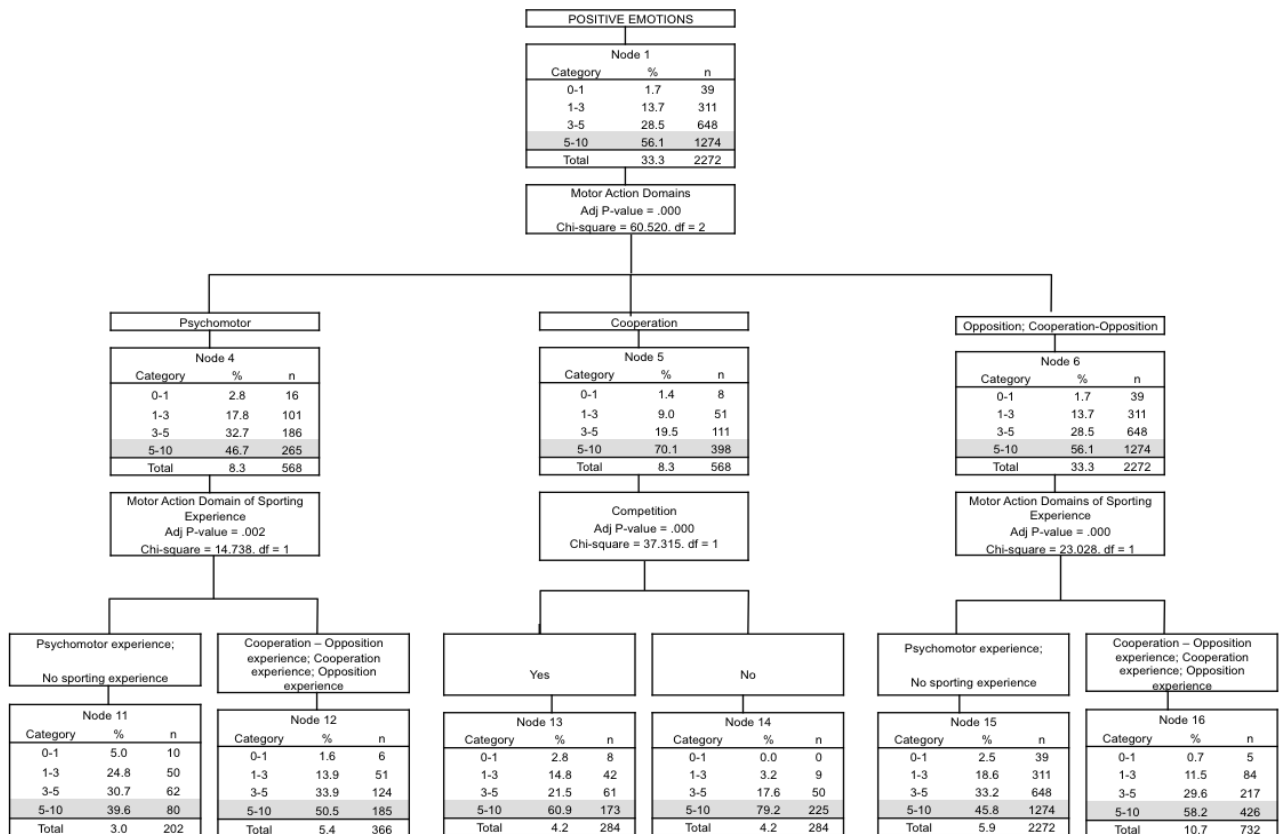


Figure 1. Classification tree to predict the teaching of positive emotions in sporting games.

Third Decision: Negative Emotions and Competition (nodes 7 and 8)

The classification tree shows that in order to predict which types of sporting games arouse negative emotions the aspect of competition should be taken into account (nodes 7 and 8) ($p = .000$ and $\chi^2 = 120.3$, $df = 1$).

If competitive sporting games are chosen (node 7), then negative emotions have the highest ratings (from 5 to 10) in 14.2 % of participants. In contrast, if non-competitive sporting games are played (node 8) such ratings are only observed in 4.2 % of cases.

When using non-competitive sporting games (node 8) the next criteria to be considered is the sex of participants (nodes 19 and 20) ($p = .000$ and $\chi^2 = 18.0$, $df = 1$). When participants were male these maximum values appeared in 6.2 % of cases, whereas among females they were only reported in 2.1 % of cases.

If competitive sporting games are used (node 7) a further criterion to be considered is the level of competition in the participants' sporting experience (nodes 17 and 18) ($p = 0.000$ and $\chi^2 = 26.8$, $df = 1$). Negative emotions attain the highest values in 15.9 % of cases, both when participants have experience of competitive sports -local, national or international competitions- and among those who have no sporting experience. However, participants who had sporting experience in recreational non-competitive physical activities reported high values for negative emotions in only 7.1 % of cases.

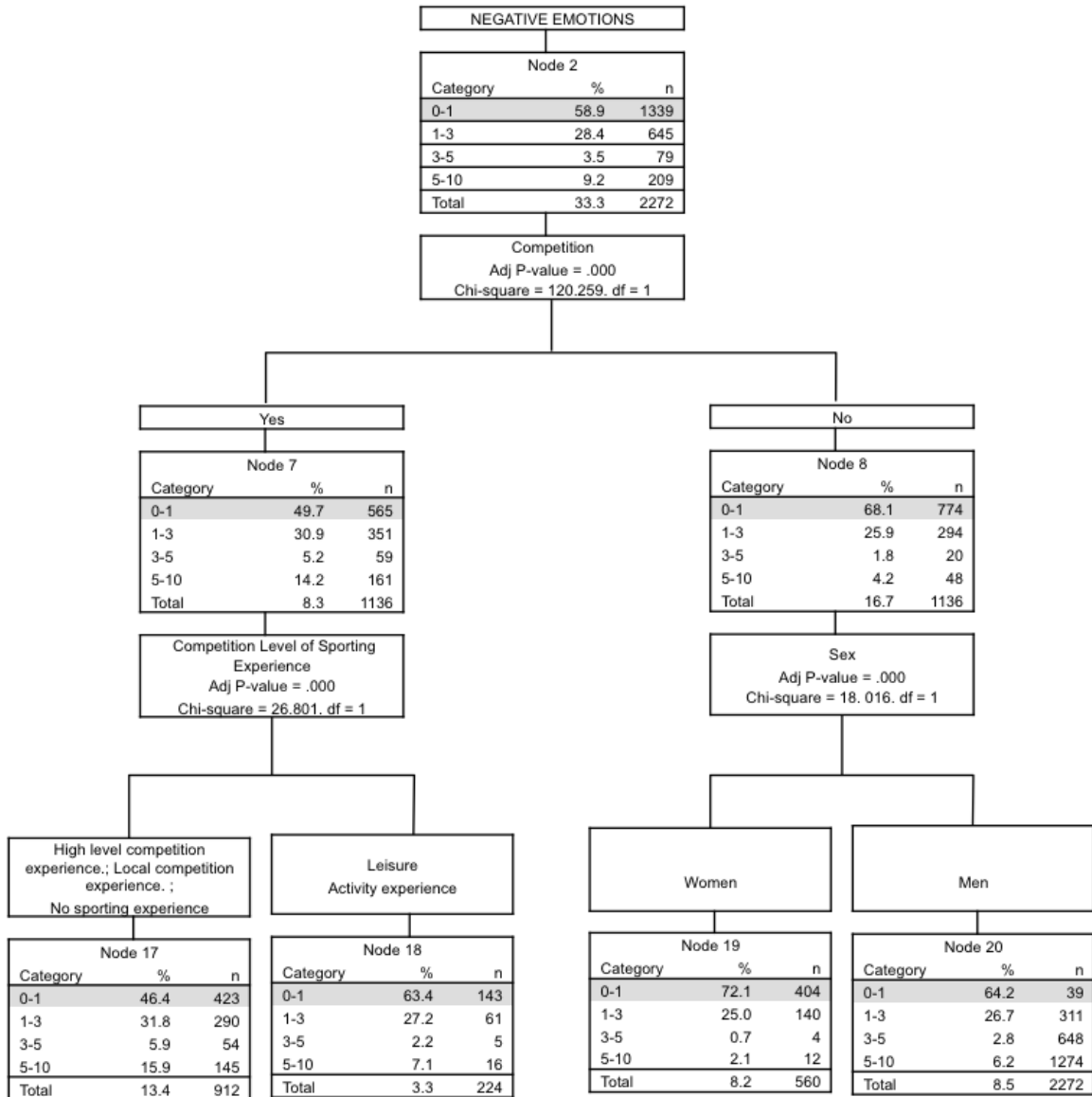


Figure 2. Classification tree to predict the teaching of negative emotions in sporting games.

Fourth Decision: Ambiguous Emotions and Sex (nodes 9 and 10)

The classification tree shows that in order to predict which type of sporting games arouse ambiguous emotions the sex of participants should be considered (nodes 9 and 10) ($p = .000$ and $\chi^2 = 76.6$, $df = 1$).

In sporting games with men (node 10) ($p = .000$ and $\chi^2 = 18.0$, $df = 1$) the intensity of ambiguous emotions reached its highest values (0-5) in 26.7 % of cases, whereas among

women (node 9) these maximum values were only achieved in a little over half (14.2 %) of these occasions.

When women participate in sporting games the level of competition of their sporting experience should be considered (nodes 21, 22 and 23) ($p = .000$ and $\chi^2 = 56.7$, $df = 2$). Ambiguous emotions reached maximum values in 19.5 % of women who regularly participated in competitive sports, whether at local level (regional championships) or in performance sports (national or international championships). Women with experience in recreational physical activities (non-competitive and non-federated) expressed ambiguous emotions of a higher intensity in 6.7 % of cases, while those who had never done any physical exercise reported these maximum values in 4.2 % of cases.

If the aim is to arouse ambiguous emotions in men it is necessary to consider whether the chosen sporting games are competitive or not (nodes 24 and 25) (node 10) ($p = .000$ and $\chi^2 = 22.8$, $df = 1$). When the element of competition is not introduced the highest values of these emotions (5-10) are activated in 31.9 % of cases. In contrast, in competitive games ambiguous emotions reached their highest values in 21.5 % of participants.

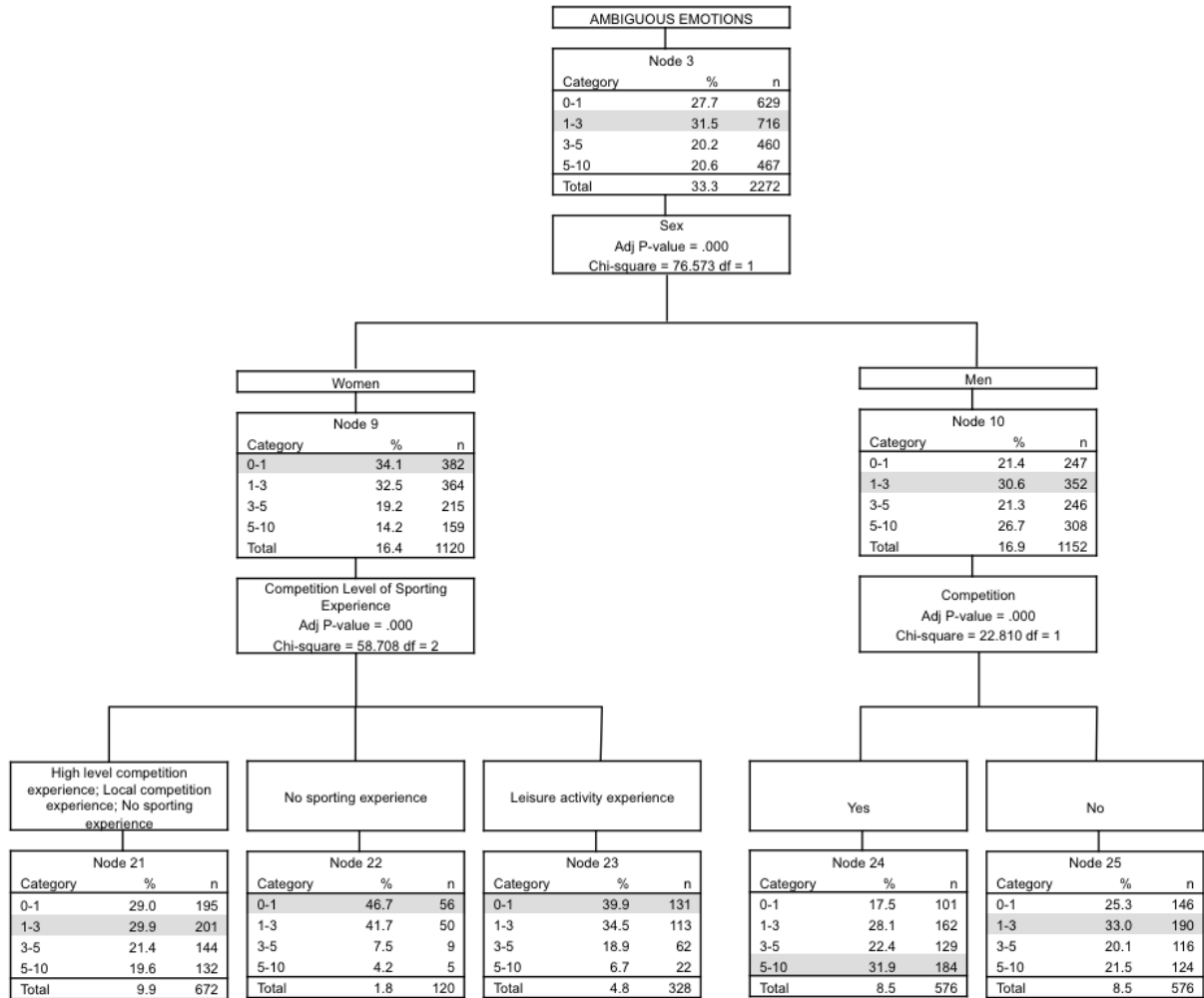


Figure 3. Classification tree to predict the teaching of ambiguous emotions in sporting games.

Discussion

Three sets of key findings warrant discussion. First, the results of this research confirm that the use of sporting games in physical education provides an excellent way of fostering optimum experiences in students. The results also confirm the scientific contribution of Motor Praxeology, or the Science of Motor Action to help teachers make decisions in order to educate emotions through sporting games.

Physical activity can promote socially-desirable behaviours, and emotions play a very important role in this regard, as shown by Eldar (2008) and Parlebas (1999) and Lavega, Ma-

teu, Lagardera, & Filella, (2010). Whereas cognition and performance have been widely reviewed and researched in the literature, the affective domain has yet to be extensively examined. As the scope of the literature on tactical and technical issues in the teaching of games broadens, researchers investigating the pedagogy of games teaching would do well to consider who the learner is, how the learner is motivated to continue to participate, and the importance of affective outcomes (Hargreaves, 2000; McCaughtry, 2004; Rosiek, 2003). This is important because affective outcomes resulting from an approach that seeks to understand how games are taught may have implications for children's experience of physical activity, their future motivation to participate and, in turn, their psychological, physical and social health.

Motor Praxeology offers solid theoretical and epistemological bases for the scientific study of games and sports (Parlebas, 1999; Lagardera & Lavega, 2003; Lagardera & Lavega, 2004). Physical education teachers are constantly making decisions with the aim of facilitating a given teaching task. Therefore, it is important to have strict scientific guidelines available that help teachers choose the most appropriate motor situations for the teaching programme in question (Hargreaves, 1998; Hargreaves, 2000; Hollingsworth et al., 1993; McCaughtry, 2004; Parlebas, 1999).

The present study confirms that sporting games based on the different domains of motor action can create circumstances that produce high ratings in terms of the expression of positive emotions. In contrast, the chosen games provoked very few intense negative emotions. This conclusion is of great interest for the field of physical education, since one reason for the physical inactivity of the adult population is the negative evaluation of such experiences at school (Daley & O'Gara, 1998). Ruiz, Garcia and Pieron (2008) state that students who participate in sporting games at school age, as well as those who do physical exercise regularly, show a much more positive attitude towards physical education. Positive aspects such as self-esteem, motivation and correct emotional attitude promote the development and consolidation of behaviour related with physical activity and a healthy lifestyle (Spence & Blanchard, 2001).

The second set of important findings deals with acquiring the criteria that will help PE teachers to promote positive emotions. The present research shows that the first important decision to make when trying to encourage positive emotions, such as happiness, joy, hu-

mour, empathy, solidarity or calmness, concerns the choice of games or motor action domains. This conclusion confirms previous findings about emotions and motor action domains (Lavega et al., 2010). Of course, no game is neutral, and all the sporting games studied produced reactions in the participants. Among the different domains of motor action, cooperation games, mainly those without a competitive aspect, were found to be the most suitable for promoting intense positive emotions among the students. In fact Slutzky and Simpkins (2009) argue that group sport improves significantly the self-concept compared with the individual sport in the same time of performance.

These results agree with the assertions of Werner et al. (1996), who suggested that the primary purposes of teaching any game should be not only to “improve students’ game performance, but also to improve their enjoyment and participation in games, which might lead to a more healthy lifestyle”.

The last set of findings revolves around the importance of having the criteria to make the right decisions when trying to reduce negative emotions. If teachers do not want their students to experience high levels of negative emotions such as hate, anxiety, frustration, blame, insecurity or rejection, then they need to be aware that these aspects can be reduced by using non-competitive games, for example, those which do not separate players into winners and losers. In this regard we agree with Bunker and Thorpe (1997), who stressed the importance of creating a positive climate for learners, and not just judging their success on the basis of whether skills were performed well or not. Sensation may be facilitated by allowing children to keep score if they want, or by continuing to play competitive games and not keeping score if they prefer, and in this way more individuals can be accommodated. Bunker and Thorpe (1997) also pointed out that while skill-based lessons may show the teacher some immediate effect of skill improvement, the social and skill-related interactions over time may convince students of their lack of ability.

Teachers are the mediators between the use of sporting games and the educational outcomes or expected results. Therefore, they should make their decisions in relation to possible choices and follow them through to produce the expected results. If we know which educational outcomes arise from activities associated with each domain of motor action then it is easy to see which physical activities teachers should choose if, for example, they wish to de-

velop solidarity or enhance positive relationships within the group, or, alternatively, want their students to master risk and control their own safety.

In conclusion, many studies about emotions have stated the need for them to be taught so that people become independent and mature (Bisquerra, 2000; Lazarus, 1991; Shoffner, 2009). Games provide active situations which allow for this emotional education, and the first step in teaching emotional skills should concentrate on emotional awareness. Once a person recognises the emotions being felt in each sporting game, teachers can then move on to a second phase, namely teaching students how to regulate their emotions with the aim of fostering self-management, self-esteem, a sense of responsibility, a positive and critical attitude towards life, a stronger relationship with other people and personal well-being.

Acknowledgements

We gratefully acknowledge the support of the Spanish government (Dirección General de Investigación, Ministerio de Ciencia e Innovación) project Perspectiva de género en las emociones suscitadas por los Juegos deportivos psicomotores y de cooperación. [Grant number DEP2010-21626-C03-01]. We also gratefully acknowledge the support of the Catalan government project Sporting games and emotions (AGAUR-INEFC) [Grant number 2009SGR1404; VCP/3346/2009].

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Appendix 1. Questionnaire Emotions and Motor Action Domains for Sporting Games

Motor Actions Domains and Emotions

Date:	Number of the student:	Age:	Sex:	Course:	Formation:	1st Session †	2nd Session †							
		Positive Emotions				Negative Emotions					Ambiguous Emotions			
Name of Sporting Game (distributed in the different domains of motor action)		Happiness (Euphoria)	Humour (Laughter)	Love (Affection)	Well being (Peace)	Anger (Violence)	Fear (Scare)	Anxiety (Nerves)	Sadness (Frustration)	Shame (Insecurity)	Disgust (Rejection)	Hope	Surprise	Compassion
1. THROW, CONTACT AND WIN	Winner													
	Loser													
2. GET TO KNOW YOUR TUMMY														
3. PASS AND WIN	Winner													
	Loser													
4. CHAINS BEHIND														
5. HAND WIN (SINGLES)	Winner													
	Loser													
6. COPY-CHASE														
7. HAND WIN (TEAMS)	Winner													
	Loser													
8. SITTING BALL														

POSITIVE EMOTIONS

Happiness: Enthusiasm, euphoria, excitement, content, fun, pleasure, gratification, satisfaction.

Humour: Smile, laugh.

Love: Affection, solidarity, empathy, acceptance, warmth, trust, kindness, affinity, respect, devotion, love.

Well Being: Happiness, calmness, peace, satisfaction.

NEGATIVE EMOTIONS

Anger: Rage, fury, hate, indignation, resentment, irritability, violence, worry, envy, impotent.

Fear: Dread, horror, panic, terror, anxiety, fright.

Anxiety: Anguish, desperation, restlessness, stress, worry, eagerness, consternation, nervousness.

Sadness: Depression, frustration, deception, pity, pain, pessimistic, loneliness, disgust,

Shame: Blame, shyness, insecurity.

Disgust: Loathing, hostility, scorn, unfriendliness, resentment, rejection, distrust, repugnance, repulsion.

AMBIGUOUS EMOTIONS

Surprise: Reaction to something unexpected which could arouse +ve or -ve emotions.

Hope: Wanting to improve the present situation.

Compassion: To feel the same emotions as the others.