Importance of Physical Education: motivation and motivational climate

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Abstract

The objective of this research was to study the predictive power of motivation and motivational climate with regard to the importance and usefulness awarded to Physical Education (PE). The sample consisted of 1298 Spanish students (626 males = 48.2%; 672 females = 51.8%) secondary schools students from provinces of Almeria, Granada and Málaga participated. The age range was between 12 and 19 years (M = 15.13) (SD=1.43), with the median age for boys being 15.26 (SD=1.42) and that of girls 15.01 (SD = 1.43) years. We used a questionnaire composed of Sports Motivation Scale, Learning and Performance Orientations in Physical Education Classes Questionnaire and Importance of PE. A stepwise multiple regression analysis was conducted with SPSS v.17.0. The results of this work show the importance of intrinsic motivation for both boys and girls as a predicting variable for greater importance and usefulness being ascribed to PE, while a greater number of variables have an effect among girls.

1. Introduction

We know that students who have a positive attitude towards physical activities in Physical Education classes (PE) (Cardinal & Cardinal, 2001), or who indicate that they are more motivated and enjoy themselves more in these classes (Cox, Smith, & Williams, 2008), have a greater likelihood of being active outside the educational context. The PE plays an important role in the promotion and acquisition of students’ healthy behavior (Moreno & Llamas, 2007; Nuviala, Gómez-López, Pérez, & Nuviala, 2011). The present study is based on achievement goal theory (Nicholls, 1984) and Self-determination theory (Deci & Ryan, 1985).
Achievement goal theory considers that in an environment of achievement, such as PE classes, the student is motivated by obtaining success. Equally, the subjective perception of success depends on the criterion used to define what constitutes such success. This criterion is conditioned by personal factors (dispositional orientation) and by social and contextual factors (motivational climate). Motivational climate is generated by the different social agents (family, peers and teachers) that will define the keys to success and failure (Cervelló, Jiménez, Del Villar, & Santos-Rosa, 2004). This motivational climate differs depending on the established success criterion, whether it is task-oriented or ego-oriented (Ames, 1992). A climate involving the task is one in which the teacher encourages autonomy, self-direction, participation, individual mastery of the task, problem-solving and the same opportunities to be rewarded. Instead, in an ego-involving climate, the teacher controls much of the class dynamics, fosters interpersonal competition, public assessments and usually rewards more gifted students (Cervelló & Santos-Rosa, 2000; Nicholls, 1989; Roberts, 2001). Students, who perceive a task-oriented climate consider PE as an activity as an end in itself, prefer challenging tasks and tend to have fun in the class. The contrary occurs in a perceived ego-based climate, where students consider the course as a means to gain social approval or status within the class group (Cervelló, Escartí, & Balague, 1999). As noted by Moreno, Vera and Cervelló (2006), the PE teacher represents a fundamental element in creating a classroom environment that promotes and encourages active practice within and out of PE classes.

Moreover, self-determination theory explains how motivation influences people (Frederick & Ryan, 1995). This theory is based on a continuum by establishing different levels of self-determination. Going from the highest to the lowest degree of self-determination, student behavior can be intrinsically motivated, extrinsically motivated or amotivated. Intrinsic motivation occurs when students participate in class because they enjoy learning and experiencing the different practices, which is the most self-determined form of motivation (González-Cutre, Sicilia, & Moreno, 2011). On the other hand, extrinsic motivation depends on the degree of internalization that can come from internal or external sources (Deci & Ryan, 1985, 2000), as for example, practicing because the student knows the benefits of active practice on health, or feels guilt or even to follow educational rules, thus avoiding a possible punishment (González-Cutre et al., 2011). Finally, amotivation appears when the student is not motivated, either intrinsically or extrinsically (Pelletier et al., 1995), when that student does not understand why he or she has to have PE classes, or knows their value, thus seeing this course as a waste of time (González-Cutre et al., 2011). Moreno and Llamas (2007) showed that motivation generated by the teacher was a determining factor in the perception of the usefulness and importance of PE by students. Others like Moreno, Zomeño and Marín (2009d) and Moreno, Cervelló and González-Cutre (2007) found that students who practiced more extracurricular physical activity, perceived PE to be of high importance and usefulness.

The aim of this paper is to study how both theories can predict the importance of PE. The important of this search is that student with high importance of PE are also they have more motivation and more practice physical activity in their free time.

2. Method

2.1. Participants

In this study a total of 1298 (626 males = 48.2%; 672 females = 51.8%) secondary schools students from provinces of Almeria, Granada and Málaga participated. The age range was between 12 and 19 years (M = 15.13 (SD = 1.43), with the median age for boys being 15.26 (SD = 1.42) and that of girls 15.01 (SD = 1.43) years.

2.2. Instruments

**Importance of PE (IPE):** This test measured the importance and usefulness of PE as perceived by students (Moreno-Murcia, González-Cutre, & Chillón, 2009a) through three items. Students had to answer on a scale of polytomic items with a range of scores between 1 (*strongly disagree*) to 4 (*fully agree*). Previous studies showed its internal validity and reliability in the field of PE: $\alpha = .75$ (Moreno-Mucia et al., 2009a), $\alpha = .76$ (Moreno &
Llamas, 2007; Granero-Gallegos, Baena-Extremera, Pérez-Quero, Ortiz-Camacho, & Bracho-Amador, 2012). In this study the reliability obtained was .76 ($\alpha_{\text{male}} = .76; \alpha_{\text{female}} = .77$).

Learning and Performance Orientations in Physical Education Classes Questionnaire (LAPOPECQ): the Spanish version was used (Cervelló et al., 2002) of the original Learning and Performance Orientations in Physical Education Classes Questionnaire (Papaioannou, 1994). This scale measures the perception of students of motivational climate in PE classes. It is composed of 27 items and has two dimensions: Perception of motivational climate, which involves learning (learning climate; 13 items) and Perception of motivational climate, which involves the performance (performance climate; 14 items). Students had to answer on a scale of polotomic items with a range of scores between 0 (strongly disagree) and 10 (totally agree). Recent studies (e.g., Moreno, Zomeño, Marín, Cervelló, & Ruiz, 2009c; Moreno et al., 2009b) with regard to adolescents in educational contexts have shown the internal reliability and validity of the factor structure in two first order subscales, obtaining internal consistency values greater than $\alpha = .75$ for the dimension of motivational climate for performance and $\alpha = .84$ for the motivational climate for learning. In the present study, the internal consistency of the subscale climate for learning was $\alpha = .91$ ($\alpha_{\text{male}} = .90; \alpha_{\text{female}} = .92$) and performance climate, $\alpha = .87$ ($\alpha_{\text{male}} = .87; \alpha_{\text{female}} = .86$).

The Sport Motivation Scale (SMS): the Spanish validated version was used by Núñez et al., (2006) and adapted for PE by Granero-Gallegos and Baena-Extremera (2013). The original scale was called Echelle Motivation dans les Sports (EMS) (Brière, Vallerand, Blais, & Pelletier, 1995) and was translated into English by Pelletier et al. (1995) who renamed it the Sport Motivation Scale (SMS). It consists of 28 items, which include the different types of motivation, as established by the theory of self-determination (Deci & Ryan, 1985). The theory of self-determination explains the multidimensionality of motivation: amotivation, extrinsic motivation (EM) (external regulation EM, introjected EM and identified EM), and intrinsic motivation (IM) (IM knowledge, IM achievement and IM stimulation). A total of 4 items correspond to each of the seven motivational factors. Students were asked to answer on a scale of polotomic items with a range of scores from 1 (strongly disagree) to 7 (fully agree). Previous studies (e.g., Moreno, Llamas, & Ruiz, 2006) have proven the internal validity of the factor structure of the instrument, as well as its reliability in the field of PE. Internal consistency found in this study was: IM knowledge, $\alpha = .84$; IM achievement, $\alpha = .82$; IM stimulation, $\alpha = .82$; identified EM, $\alpha = .80$; imposed EM, $\alpha = .69$; external regulation EM, $\alpha = .77$; and amotivation, $\alpha = .72$. The consistencies among males’ values were between .66 (introjected EM) and .84 (IM knowledge), while among girls the values ranged from .67 (amotivation) to .84 (IM knowledge). Although internal consistencies values of less than .70 were obtained by some factors (but between .66 and .70), they can be considered marginally acceptable given the small number of items on the subscale (Taylor, Ntomanis, & Standage, 2008).

2.3. Procedure

We obtained permission from the management of the schools to perform the research and students were informed of the purpose of the study and their rights as participants. The tests were done during PE lessons after agreement with the teacher. Each participant had 20-30 minutes to complete the questionnaires. The answers to the instrument were kept anonymous.

2.4. Statistical analysis

A stepwise multiple regression analysis was conducted to verify the extent to which the various subscales of the LAPOPECQ and SMS (predictor variables) predict the importance and usefulness of PE (variable criteria) as perceived by the participants, differentiating between males and females (variable selection). The SPSS v.17.0 was used to do all calculations.
3. Results

A stepwise multiple regression analysis was performed to verify to what extent the various subscales of the LAPOPECQ and SMS predict the importance and utility of PE as perceived by the high school students. To do so, the rating of the IPE was taken as variable criteria and as predictor variables each of the dimensions of the LAPOPECQ and SMS. Sex was used as selection variable, to check prediction among males and among females. The index of tolerance and independence of the variables included in the regression equation were evaluated in addition to normal data rates. The index of tolerance produced values between .95 and .30 and (VIF) variance inflation factor produced values between 1.53 to 1.96, which indicates that the probability of error for possible co-linearity is excluded (Gil, 2003; Hair, Anderson, Tatham, & Black, 1999). In addition, the Durbin-Watson obtained was between 1.91 (females) of 1.89 (males), so the independence of the data obtained can be confirmed (Gil).

<table>
<thead>
<tr>
<th>Variables</th>
<th>Male F</th>
<th>Female F</th>
<th>β</th>
<th>R²</th>
<th>T</th>
<th>p</th>
<th>Male F</th>
<th>Female F</th>
<th>β</th>
<th>R²</th>
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<th>p</th>
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<td>Step 1</td>
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<td>IM knowledge</td>
<td>179.35</td>
<td>IM knowledge</td>
<td>161.66</td>
<td>.42</td>
<td>.18</td>
<td>11.64</td>
<td>.000</td>
<td>IM knowledge</td>
<td>.44</td>
<td>.19</td>
<td>12.71</td>
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<td>Step 2</td>
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<tr>
<td>IM knowledge</td>
<td>72.67</td>
<td>IM knowledge</td>
<td>88.88</td>
<td>.38</td>
<td>.19</td>
<td>9.6</td>
<td>.000</td>
<td>EM identified</td>
<td>.19</td>
<td>.21</td>
<td>3.63</td>
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<td>Performance Climate</td>
<td>.11</td>
<td>EM identified</td>
<td>.31</td>
<td>.11</td>
<td>.23</td>
<td>6.17</td>
<td>.000</td>
<td>EM identified</td>
<td>.24</td>
<td>.23</td>
<td>4.48</td>
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<tr>
<td>IM knowledge</td>
<td>62.97</td>
<td>EM identified</td>
<td>-1.7</td>
<td>.36</td>
<td>.26</td>
<td>4.82</td>
<td>.000</td>
<td>Amotivation</td>
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<td>-2.99</td>
<td>.003</td>
<td>.003</td>
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<td>Step 4</td>
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<tr>
<td>IM knowledge</td>
<td>49.22</td>
<td>EM identified</td>
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<td>.36</td>
<td>.26</td>
<td>4.82</td>
<td>.000</td>
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<tr>
<td>Performance climate</td>
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<td>.12</td>
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<td>.25</td>
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<td>Performance climate</td>
<td>2.53</td>
<td>.011</td>
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Note. p is significant to level<.05

The results of the analysis of stepwise linear regression, differentiating the prediction according to the sex variable, can be seen in Table 1. In general, the results show the importance of intrinsic motivation as a predicting variable for students who ascribe greater importance and usefulness to PE, although females were influenced by a greater number of variables. In a more detailed analysis focused on men, it can be highlighted that a total percentage of explained variance of 19% was obtained. In the first step, IM knowledge (β = .42) predicts positive consideration of PE as an important and useful subject, with a percentage of explained variance of 18%. In the second step a 19% of the total variance explained was reached, with performance climate also being introduced. As can be seen, the greater the knowledge IM the student has, the greater probability that he or she will assign more importance and usefulness to PE. Twenty three % of total variance explained was obtained for the girls, and as in the case of the boys, the variable that best predicts the importance awarded to PE is knowledge IM (β = .44), reaching 19% of the total explained variance. In the second step, in addition to the strong predictive relationship of knowledge IM, identified EM is added (β = .19), reaching 21% of the explained variance. In the third step
amotivation is included (β = -17) as the predicting variable, in a negative and significant way, reaching 23% of the explained variance; in this case, amotivation among the girls predicts a lesser degree of importance and usefulness assigned to PE. In the fourth step we reach 25% of the explained variance and a dimension of LAPOPECQ is added, the perception of a performance climate (β = .12), is added as predicting variable of the importance attached to the subject. Thus when female students perceive a performance climate in PE lessons, there is a greater likelihood of them considering PE to be a more important and useful subject.

4. Discussion and conclusions

The objective of this research was to study the predictive power of motivation and motivational climate with regard to the importance and usefulness awarded to PE. In summary, with regard to the prediction of the importance ascribed to PE, we found that for both boys and girls’ intrinsic motivation is the most important factor followed by extrinsic motivation, agreeing with contributions from Moreno et al., (2006). In relation to the former type of motivation, data from this research corroborates the contributions of Baena-Extremera, Granero-Gallegos, Bracho-Amador and Pérez-Quero (2012), Granero-Gallegos et al., (2012), Moreno et al. (2006), who argue that the more self-determined motivational profile matches those students who ascribe greater importance to PE. Moreno, Zomeño, Marín, Ruiz and Cervelló (2013), in a study of prediction along the lines of this present investigation conclude that a high index of self-determination positively predicts the significance and usefulness ascribed by the student to PE. In this regard, several investigations show that self-determined motivation positively relates to greater commitment and adherence to the practice of sport (Standage, Duda, & Ntoumanis, 2003; Moreno et al., 2007) to the point of becoming a predictive value (Duda & Ntoumanis, 2003; Moreno & Llamas, 2007), more specifically, this refers to intrinsic motivation (Koka & Hein, 2003; Moreno et al., 2006) which establishes a direct relationship with the practice of extracurricular physical-sport activity.

Concerning intrinsic motivation, knowledge IM had the greatest predictive value; therefore it is clear that students doing PE sought to progress in their understanding of it. Ntoumanis (2002) and Wang and Biddle (2001) showed that more self-determined students show positive motivational impact factors towards the subject of PE, such as interest, effort, fun, satisfaction and high participation, essentials in the intrinsic motivation for knowledge. Our results show how students of both sexes have a high intrinsic and extrinsic motivation in step 2. With regard to this, authors such as Vallerand and Fortier (1998) set out two theoretical positions. The first explains the alternation in the two types of motivation, when intrinsic is high, extrinsic is low; the second refers to the combination of intrinsic and extrinsic motivation, increasing motivation at the highest levels, this being the case that concerns us. Similarly, Vallerand and Fortier (1998) and Pelletier et al. (1995) proposed this theoretical positioning at the contextual level (PE and sport), maintaining that the relationship between intrinsic motivation and non-self determined forms of extrinsic motivation is orthogonal or slightly negative. Similarly, Vlachopoulos, Karageorghis and Terry (2000) carried out a cluster analysis in which one of the profiles is characterized by high scores in both types of motivation (intrinsic and extrinsic), and here it was interesting to note that this group has the highest values in the practice of extracurricular physical activity, ascribing great importance to PE.

The third predictive element is amotivation, this is only present among the girls and in a negatively predictive relationship. According to Moreno et al. (2006) girls are usually located in an amotivation profile, ascribing less importance to PE. In the work of Baena-Extremera et al. (2012) the authors showed that girls have higher figures than boys in boredom, contrary to what was found in the study of Castillo, Balaguer and Duda (2001). In the work by Standage et al. (2003) and Vlachopoulos et al. (2000) it was shown that amotivation relates negatively with the intention of girls to carry out physical activity in their spare time. This suggests that while self-determined motivation predicts a positive intention to be physically active in free time related to the importance ascribed to PE, amotivation predicts intentions not to be physically active, corroborating the finding of other investigations (Duda & Ntoumanis, 2003). In this regard, Ennis (1996) says that girls tend to have more negative experiences regarding PE and less interest in participating in this area and doing physical activities in their spare time than boys, which could explain the appearance of amotivation in the third step, which does not occur in boys.

As can be seen, the motivation performance climate appears in the fourth step of the regression analysis. It may be noted that the orientation to the task does not appear but the performance does and, in addition, immediately
after amotivation. According to Moreno et al. (2006), both the task and ego climate are related to the importance awarded to PE, the first generally being higher. Regarding this, studies such as those by Baena-Extremera et al. (2012) and Fernández-Río, Méndez-Giménez, Cecchini and González (2012) found that students who are oriented to the task tend to have fun and be satisfied with their PE classes, while for those who are oriented to the ego, it is the opposite; they get bored and they are amotivated (Nicholls, 1989; Duda, Fox, Biddle, & Armstrong, 1992), as can be seen in this present work. Worst of all, and corroborating the findings of investigations by Cury, Biddle, Sarrazin and Famose (1997) and Ginn, Vincent, Semper and Jorgensen (2000), the orientation to the task tends to be related, to a greater persistence, adherence and voluntary participation in physical activity, due mainly to the intrinsic motivation of students (Ntounamis, 2005), while the ego orientation is often related to non-persistence, abandonment and the imposed participation in this type of activity.

In conclusion, the results of this work show the importance of intrinsic motivation for both boys and girls as a predicting variable for greater importance and usefulness being ascribed to PE, while a greater number of variables have an effect among girls. Thus, if we are to improve the level of interest and physical-sport practice among girls, we must also attend to variables in PE, which can enhance the importance and usefulness awarded to this subject among girls. Therefore, this research information will serve to assist in the design of PE programmes that seek a better understanding of the motivation to be physically active (Coakley & White, 1992) because experiences in PE lessons become mediators in the inclusion of physical activity as a healthy lifestyle habit (Moreno et al., 2006).

References
