

Self-Determined, Goal Orientations and Motivational Climate in Physical Education

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ABSTRACT

The aim of this study was to analyze the degree of prediction to which the goal orientation adopted by the student and the motivational climate created by the teacher as perceived by students in physical education classes, have on the students' self-determined behaviors. The sample included 846 high school students from the Murcia region (Spain) aged 12–19 years old. The Spanish versions of the Perception of Success Questionnaire, the Perceived Motivational Climate in Sport Questionnaire-2 and the Motivational Climate Scale were the instruments used to collect data. A descriptive, correlated and stepwise multiple regression analysis was carried out following the Self Determination Index. Results show that the majority of students were task oriented, they perceive a task climate and were intrinsically motivated. Moreover, the relevance of the role of the teacher in physical education classes was demonstrated, as the main predictor variable of self-determined behavior in students was the motivational climate.

Key words: physical education, motivational climate, teaching, adolescence

Introduction

Today, the social importance attributed to physical education (PE) lessons due to the role it plays in the promotion of healthy and lasting habits in students has given rise to a great number of studies that analyze the importance of this subject for students and the benefits it might have on their behavior^{1,2}. During their teenage years students go through socialization and teachers are the most influential psychosocial agents, more than other such agents like, for instance, family and peers¹. This relationship between students' lifestyles and PE lessons makes teachers key figures when it comes to orienting students and encouraging them to adopt healthy habits^{3,4} through the creation of a learning environment and a climate that motivates them to participate in physical and sports activity inside and outside schools.

In terms of students achieving that motivation, authors like Chen et al.⁵ argue that even the concept students have of PE (perceived importance, interest, usefulness, etc.) might influence their motivation. For example, Granero-Gallegos et al.⁶ demonstrated that a greater importance, interest and usefulness of PE, increased motivation in students. Furthermore, motivation would not depend solely

on this concept or on the psychosocial agents above, but rather, as Rutten et al.⁷ conclude, the school environment in which students are immersed can also promote autonomous motivation in them.

Two of the most widely used motivational theories are used in this study in order to analyze some of the factors affecting students' motivation in PE lessons: achievement goal theory^{8–10} and self-determination theory^{11–13}.

The achievement goal theory aims to analyze the different dispositional and environmental factors that influence an individual's motivation for achievement. This theory posits that people engage in achievement contexts with the purpose of showing their competence and skills¹⁴. For students, PE lessons are contexts that demand achievement¹⁵ as they usually seek to demonstrate their ability in class hours⁸. The adoption of these criteria depends both on personal traits (dispositional orientation) and on social and situational aspects (motivational climate)^{8,9}.

According to this theoretical construct, there exist two types of dispositional goal orientations or final orienta-

tion¹⁶: task orientation, which manifests itself when the goal is learning oriented and participants judge their capacities through a process of self-comparison; and ego orientation, in which the goal is competitive and participants judge their competence level in relation to other participants. Task orientation is generally associated with more positive motivational, affective and behavioral patterns than ego orientation^{17,18}. As is apparent, it would be highly interesting for teachers to get to know students' goal orientations with a view to future teacher actions. In order to do so, however, we first need to find out if goal orientations are shared by both male and female students. In terms of the gender variable, the study carried out by Duda and Whitehead¹⁹ shows that male students are more concerned about victory and proving their capacity in achievement contexts than female students and are thus more ego-oriented.

A further important aspect for students is the set of signals they perceive around them, signals through which they will define the keys to success and failure. This theory posits that the significant actors around students (family, teachers and peers) build structures in which a certain climate is created and that will be perceived by the subjects involved²⁰. This motivational climate will vary according to the success criterion established and whether it is task or ego oriented²¹. While classmates influence the motivational climate that a student perceives, teachers play a key role in the creation of a motivational climate in the classroom. A task oriented climate is one in which the teacher encourages autonomy, self-direction, participation, task mastery at the individual level, problem solving and equal reward opportunities. By contrast, in an ego oriented climate, teachers are much more in control of classroom dynamics, they encourage interpersonal competition and public tests and tend to reward the most gifted students^{8,14,18}. Therefore, those students who perceive a task oriented motivational climate see PE as an end in itself and enjoy themselves significantly more than those in an ego-oriented climate, who see lessons as a means to achieve other goals²².

Besides, there exists a significant positive relationship between motivational climate and goal orientation. A task oriented motivational climate will lead to a task oriented goal, whereas an ego oriented climate will lead to ego orientation^{14,17,20,21,23–25}.

In terms of gender, numerous studies have shown that it is a variable that modulates the motivational climate perceived by students²⁶. Males normally score higher than females in an ego oriented climate^{14,26}, whereas females show more involvement in a task oriented motivational climate^{27,28}. The latter tendency in women differs from the findings by Jairo and Márquez²⁶ as they show in their study that male students scored higher in both ego and task oriented motivational climates. These authors claim that the phenomenon might be attributed to the characteristics of the instrument used, namely an adaptation for PE of the Perceived Motivational Climate in Sport Questionnaire-2 (PMCSQ-2), originally intended for the sports environment.

Self-Determination Theory (SDT)¹¹, has different mini-theories which explain the different levels of motivation amongst students. Thus, according to the mini-theory of Integration Organism¹¹, ranked according to degree of self-determination, students' behavior can be intrinsically motivated, extrinsically motivated or amotivated towards the pursuit of sports.

If we apply this theory to PE we find that students who participate in class because they enjoy learning and experiencing the different activities are likely to display intrinsic motivation, which is the most self-determined form of motivation²⁹. Students involve themselves in those activities which arouse their interest and commit to them for the sake of pleasure and enjoyment^{11,12}. According to this theory, there are three different manifestations of intrinsic motivation: knowledge, achievement and experience stimulated motivation³⁰. Knowledge as motivation implies that students commit to PE lessons for pleasure and satisfaction while they pursue learning. Achievement as motivation is reflected in students who commit to lessons for pleasure while they try to improve or reach new goals. Intrinsic motivation is seen in learners who commit to lessons to experience sensations associated with their own senses.

Extrinsic motivation, on the other hand, comes from external sources. Deci and Ryan^{11,12} identify four different kinds of extrinsic motivation. Ranked according to their degree of self-determination, integrated, identified, introjected and external types of regulation were found. With regard to integrated regulation, the student harmonizes values and ways of conceiving the world. It is the most self-determined form of internalized regulation and it can barely be differentiated from intrinsic motivation. Still, it is in fact a manifestation of extrinsic motivation given that students do not act upon the pleasure the activity provides¹². Identified regulation is reflected in students who are aware of the importance of PE and its benefits and thus practice it. Students with introjected regulation participate in PE classes in order to please the teacher or to avoid a feeling of guilt associated with non-participation. External regulation implies that students attend lessons because they have to obey educational rules to avoid potential punishment²⁹.

Finally, there is amotivation; students, are neither intrinsically nor extrinsically motivated³¹. In other words, they have no intention of doing anything¹². These are students who do not see a reason why they should attend PE lessons, do not know what it is good for and therefore regard the subject as a waste of time²⁹.

There are a great number of studies that show the relationships between achievement goals and self-determination theory. There are studies that have proved a significant relationship between goal orientations adopted by students, the motivational climate perceived, motivation and the intention to adopt an active lifestyle in the future^{25,32,33}.

As we can see, these and other studies prove that the more self-determined students are, the more they commit

and adhere to sports^{34,35}. Koka and Hein³⁶ and Moreno, Hellín et al.¹⁵ even go as far as determining intrinsic motivation as a direct predictor of after-school physical or sporting exercise. Therefore, finding out ways of influencing students' intrinsic motivation would be of the utmost importance given that we know from other previously cited authors that a motivational climate and goal orientations might bear relationship to self-determination. The importance of this study must be highlighted, not only due to the size of the sample, but also because it demonstrates the prediction capacity of the students' self-determination from goal orientations adopted by themselves and the motivational climate generated by the teacher in PE lessons. Thus, our research has three main purposes: 1) to analyze self-determination levels, perceived motivational climate and goal orientations of high school students, 2) to study said motivational factors according to two socio-demographic variables: gender and age and 3) to test to what extent the students' goal orientations and perceived motivational climate as perceived by themselves and generated by the teacher is able to predict the students' self-determination in PE lessons.

Material and Methods

Participants

We used convenience, non-probabilistic sampling based on the subjects we had access to. A total of 846 high school students from the Murcia region (Spain) participated in this study (463 males =54.72%; 363 females =42.91%); 20 students did not mention their gender. Their ages ranged between 12 and 19 (\bar{X} =15.47; SD =1.32) with male mean age being 15.44 (SD =1.30), and female mean age being 15.51 (SD =1.34). 27.8% of students were in the first stage of compulsory secondary education (1st and 2nd academic year of Educación Secundaria Obligatoria (ESO), Spanish acronym; students between 12 and 14 years old), 54% were in the second stage of ESO (3rd and 4th academic year; students are 15 and 16 years old) and 18.4% were post-compulsory secondary education students (from 16th years old). Furthermore, 82% of the sample was Spanish, 13% were English students and 5% were from South America. The cultural and economic level of the population sampled was average; the failure rate was 3% per course.

Measures

Cuestionario del Clima Motivacional Percibido en el Deporte-2 (PMCSQ-2)³⁷, the Spanish version of the original Perceived Motivational Climate in Sport Questionnaire-2³⁸, adapted for PE³⁹ was used. It features 33 items to measure the motivational climate of students in PE lessons along two dimensions: perception of a motivational climate involving ego (16 items) and perception of a motivational climate involving a task (17 items). Students are instructed to state their degree of agreement or disagreement with the items on a 5 point Likert type scale ranging from strongly disagree (1) to strongly agree (5).

Previous studies have shown the internal validity of the factorial structure of the instrument as well as its reliability in the field of PE³⁹. In our study, the internal consistency of the ego climate subscale was α =0.90 and that of task climate was, α =0.88. Following the original structure of two factors and 33 items³⁹ it conducted a confirmatory factorial analysis (CFA) which showed an acceptable fit: χ^2 =1003.56, df =494, p <0.001, χ^2/df =2.03, Goodness of Fit Index (GFI)=0.95, Non-Normative Fit Index (NNFI)=.94, Normalized Fit Index (NFI)=0.95, Comparative Fit Index (CFI)=.96, Root Mean Square Error of Approximation (RMSEA)=0.04.

Escala de Motivación en el Deporte (SMS), the Spanish version of the original Sport Motivation Scale adapted for PE was used (SMS-EF)^{40,41}. The original scale is called Échelle de Motivation dans les Sports (ÉMS)⁴² and was translated into English by Pelletier, Fortier et al.⁴³ under the name Sport Motivation Scale (SMS) and psychometric properties similar to those in the French version were obtained. It features 28 items which measure the different types of motivation established by the self-determination theory¹¹ and suggest the multidimensional explanation of motivation: amotivation (4 items), extrinsic motivation (EM) (12 items; external, introjected and identified regulation), and intrinsic motivation (IM) (12 items; knowledge, self-improvement and stimulation); 4 items correspond to each factor altogether. The scale was headed »I participate and make efforts at PE lessons...«. The answers were scored on a Likert type scale from 1 (totally disagree) to 7 (totally agree). Previous studies have shown the internal validity of the factorial structure of the instrument as well as its reliability in the field of PE⁴⁴. Our study found an internal consistency of: knowledge as IM, α =0.76; achievement as IM, α =0.62; stimulation as IM, α =0.77; identified EM, α =0.72; introjected EM, α =0.66; external regulation EM, α =0.73; and amotivation, α =.72. Although some factors obtained an internal consistency value below 0.70 (between 0.60 and 0.70), they can be considered to be marginally acceptable⁴⁵ given the small number of items in the subscale. The original model of seven factors and 28 items, evaluated with CFA, showed a good fit: χ^2 =806.39, gl =329, p <.000, χ^2/gl =2.45, GFI=.95, NNFI=.97, NFI=.96, CFI=.95, RMSEA=.05.

Cuestionario de Percepción de Éxito²² (POSQ), the Spanish version of the Perception of Success Questionnaire^{46,47} adapted for PE⁴⁸ was used (POSQ-EF). It features 12 items to assess students' dispositional goal orientations in PE lessons along two dimensions which measure task orientation (6 items) and ego orientation (6 items). Students are instructed to state their degree of agreement or disagreement with the items on a 5 point Likert type scale ranging from strongly disagree (1) to strongly agree (5). Previous studies have shown the internal validity of the factorial structure of the instrument as well as its reliability in the field of PE³. In our study, the internal consistency of the task orientation subscale was α =0.86 and that of ego orientation was α =0.88. The fit indices in the CFA of this scale showed a very good fit: χ^2 =124.29, gl =53, p <.000, χ^2/gl =2.34, GFI=.98, NNFI=.98, NFI=.97, CFI=.98, RMSEA=.04.

Procedure

Permission for the research was secured from the competent bodies, secondary schools. Parents/guardians and students were briefed in detail about the protocol and object of the study. The signing of informed consent on both their parts was a prerequisite for participation. The instruments for measuring the different variables were administered in the classrooms by the researchers themselves and teachers were not in attendance. All the participants were informed on the object of the study, its voluntary nature and on the confidentiality of answers and data management, they also had explained to them the fact that there were no correct or incorrect answers and they were requested at the beginning of the study to reply with uttermost sincerity and honesty.

Statistical Analysis

Item analysis, homogeneity, internal consistency of each subscale (Cronbach's α), multivariate variance analysis 2 (gender) x 3 (age) and linear regression according to gender, in which the self-determination index acted as criterion variable and the PMCSQ-2 and POSQ dimensions were predictor variables, were carried out with SPSS 17.0. Descriptive statistics and asymmetry and kurtosis rates were calculated; they were in general close to zero and <2.0, as recommended by Bollen and Long⁴⁹, which indicates similarity with the normal univariate curve.

Results

Descriptive and Correlation Analysis

Table 1 shows the descriptive values of each variable. With regard to mean values, in Motivational Climate, task climate scored much higher than ego climate among students. In the SMS, those factors related to intrinsic motivation scored high, especially achievement as IM, the in-

trojected EM mean value stands out among the extrinsic motivation values, the lowest score corresponds to amotivation. Finally, task orientation scored higher than ego orientation in the Perception of Success subscales.

Analysis of the correlations revealed the high and positive correlation between task climate and the IM subscales and with identified EM and introjected EM. Both the IM and EM dimensions showed high and positive correlations. Amotivation correlated positively and significantly with external regulation EM and with ego climate. Furthermore, ego orientation showed a high correlation with external regulation EM whereas task orientation correlated significantly with the most self-determined SMS scales and with the PMCSQ-2 task climate (Table 2).

TABLE 1
MEAN (X), STANDARD DEVIATION (SD), CRONBACH'S ALPHA (α) OF PMCSQ-2, SMS-PE AND POSQ-PE SUBSCALES

Subscales	\bar{X}	SD	α
PMCSQ-2			
Ego climate	2.24	0.78	0.90
Task climate	3.69	0.67	0.88
SMS-PE			
Knowledge as IM	4.56	1.34	0.76
Achievement as IM	4.85	1.25	0.62
Stimulation as IM	4.55	1.34	0.77
Identified EM	4.33	1.31	0.72
Introjected EM	4.73	1.21	0.66
External regulation EM	4.00	1.39	0.73
Amotivation	3.16	1.47	0.72
POSQ-PE			
Ego orientation	2.95	1.11	0.90
Task orientation	4.08	0.81	0.86

Note. \bar{X} = mean, SD = Standard Deviation, α = Cronbach's Alpha

TABLE 2
CORRELATIONS OF PMCSQ-2, SMS-PE AND POSQ-PE SUBSCALES

Subscales	1	2	3	4	5	6	7	8	9	10	11
1. Ego Climate	1	-0.36**	-0.12**	-0.06	-0.05	0.02	-0.07	0.20**	0.30**	0.27**	-0.15**
2. Task Climate	-	1	0.44**	0.35**	0.39**	0.38**	0.36**	0.21**	-0.07	-0.02	0.40**
3. Knowledge as IM	-	-	1	0.63**	0.76**	0.67**	0.71**	0.47**	-0.02	0.13**	0.35**
4. Achievement as IM	-	-	-	1	0.66**	0.59**	0.66**	0.43**	-0.04	0.18**	0.43**
5. Stimulation as IM	-	-	-	-	1	0.71**	0.70**	0.51**	0.01	0.21**	0.38**
6. Identified EM	-	-	-	-	-	1	0.67**	0.67**	0.15**	0.24**	0.29**
7. Introjected EM	-	-	-	-	-	-	1	0.52**	0.06	0.24**	0.38**
8. External Reg. EM	-	-	-	-	-	-	-	1	0.37**	0.47**	0.12**
9. Amotivation	-	-	-	-	-	-	-	-	1	0.23**	-0.16**
10. Ego orientation	-	-	-	-	-	-	-	-	-	1	0.25**
11. Task orientation	-	-	-	-	-	-	-	-	-	-	1

*p<0.05;**p<0.01

In order to analyze the interaction effects of students' gender and age on the constructs studied, a multivariate analysis [MANOVA 2x3 (gender x age)] was carried out in which the independent variables were gender and age, the dependent ones being the PMCSQ-2, POSQ and SMS subscales. Covariance homogeneity was assessed using Box's X test; the data adjustment null hypothesis was rejected (Box's $X=502.28$, $F=1.39$, $p<0.000$). In view of the above, and following the suggestions of Tabachnick and Fidell⁵⁰, we used Pillai's Trace instead of Wilk's Lambda in order to assess the multivariate significance of main effects and interactions. The multivariate contrast did not show significant differences or interaction effects between the two independent variables (gender x age) (Pillai's Trace=0.06, $F_{(22,786)}=1.17$, $p=0.027$). However, significant differences in students' gender (Pillai's Trace =0.14; $F_{(11,392)}=5.67$; $p<0.001$) and age (Pillai's Trace =0.12; $F_{(22, 786)}=2.29$; $p<0.001$) were found.

With regard to gender, intersubject effects tests showed significant differences in seven dimensions (Table 3). Under perceived motivational climate, females scored higher than males in ego motivational climate; however, no statistically significant differences were found in relation to task motivational climate. In the SMS differences were found in knowledge as IM, achievement as IM, stimulation as IM, identified EM, and external regulation EM; females scored higher than males in all of these dimensions. In perception of success, females also scored higher than males in ego orientation.

In terms of students' age (Table 4), intersubject effects showed significant differences only in task orientation. Analyses a posteriori (Bonferroni tests) were carried out in order to check the differences among different age

groups; they showed that the significant differences occurred in the 12 and 17–19 year old groups ($p=0.041$), the youngest group scoring the highest in task orientation.

Stepwise multiple regression analysis

A *stepwise multiple regression analysis* was carried out to find the extent to which the different PMCSQ-2 and POSQ subscales predict self-determination behavior. To that end, on the basis of calculating the mean score of each motivation sub-scale in PE lessons (SMS), the self-determination index (SDI)⁵¹, was calculated: $((2 \times (\text{knowledge as IM} + \text{achievement as IM} + \text{stimulation as IM})/3) + \text{identified EM}) - ((\text{external regulation EM} + \text{Introjected EM})/2) + (2 \times \text{Amotivation})$). In our study the index ranged between 5.65 and 28.13 ($X=15.54$, $SD=3.83$). This formula has been used in other studies with similar characteristics to this case^{39,52–54}.

The mean SDI score was taken as the criterion variable and each of the dimensions of the PMCSQ-2 and POSQ were the predicting variables. Gender was used as the selection variable.

The tolerance and independence rates of the variables included in the regression equation were assessed. The tolerance rate showed values ranging from 0.79 and 0.98 and the variance inflation factor (VIF) ranged between 1.14 and 1.63; these values indicate that error probability derived from potential co-linearity is ruled out⁵⁵. Moreover, the Durbin-Watson statistic obtained ranged between 1.64 and 1.93, which allows us to confirm data independence⁵⁶.

TABLE 3
MULTIVARIATE ANALYSIS (INTERSUBJECT EFFECTS DEPENDING ON GENDER) ACCORDING TO PMCSQ-2, SMS-PE AND POSQ-PE SUBSCALES

	Male (N=463)		Female (N=363)		F	p	d	Power
	\bar{X}	SD	\bar{X}	SD				
PMCSQ-2								
Ego climate	2.09	0.76	2.34	0.79	5.69	0.018	0.02	0.66
Task climate	3.76	0.63	3.70	0.69	2.22	0.137	0.01	0.32
SMS-PE								
Knowledge as IM	4.57	1.35	4.92	1.28	5.29	0.022	0.02	0.63
Achievement as IM	4.91	1.18	5.15	1.30	4.18	0.042	0.01	0.53
Stimulation as IM	4.48	1.37	4.93	1.25	13.68	0.000	0.05	0.96
Identified EM	4.21	1.33	4.70	1.28	13.99	0.000	0.05	0.96
Introjected EM	4.80	1.17	4.96	1.19	3.20	0.074	0.01	0.43
External regulation EM	3.65	1.37	4.32	1.42	17.43	0.000	0.05	0.99
Amotivation	2.83	1.45	2.97	1.57	0.09	0.759	0.00	0.06
POSQ-PE								
Ego orientation	2.54	1.07	3.31	1.07	40.08	0.000	0.09	1.00
Task orientation	4.13	0.81	4.21	0.74	1.70	0.193	0.01	0.26

Note. p is significant at <0.05 level

TABLE 4
MULTIVARIATE ANALYSIS (INTERSUBJECT EFFECTS DEPENDING ON AGE) ACCORDING TO PMCSQ-2, SMS-PE POSQ-PE SUBSCALES

	12–14 (N=143)		15–16 (N=411)		17–19 (N=292)		F	p	d	Power
	\bar{X}	SD	\bar{X}	SD	\bar{X}	SD				
PMCSQ-2										
Ego climate	2.31	8.54	2.24	0.79	2.12	0.74	1.33	0.266	0.01	0.29
Task climate	3.75	0.67	3.71	0.69	3.73	0.62	0.02	0.984	0.00	0.05
SMS-PE										
Knowledge as IM	5.08	1.43	4.65	1.37	4.68	1.23	1.93	0.146	0.01	0.40
Achievement as IM	5.23	1.25	5.07	1.22	4.85	1.26	2.94	0.054	0.02	0.57
Stimulation as IM	4.89	1.37	4.71	1.32	4.54	1.35	1.43	0.239	0.01	0.31
Identified EM	4.69	1.38	4.33	1.32	4.49	1.30	1.76	0.173	0.01	0.36
Introjected EM	4.92	1.32	4.95	1.16	4.76	1.13	1.06	0.347	0.01	0.24
External reg. EM	4.22	1.61	3.92	1.31	3.90	1.45	1.07	0.344	0.01	0.24
Amotivation	3.16	1.75	2.82	1.41	2.94	1.51	0.90	0.409	0.00	0.20
POSQ-PE										
Ego orientation	2.85	1.26	2.92	1.12	2.87	1.07	0.24	0.789	0.00	0.09
Task orientation	4.27	0.64	4.22	0.79	4.04	0.82	3.38	0.035	0.02	0.64

Note. p is significant at <0.05 level

Table 5 shows the results of the stepwise multiple regression analysis. First, the data referring to ego orientation as the criterion variable are shown differentiating results by gender. Task climate is the main self-determined behavior predicting variable both for males and females. It should be noted that the analysis for males obtained 29% of explained total variance. In the first step, task climate ($\beta=0.33$) predicts self-determination positively. Ego climate ($\beta=0.29$) was introduced in the second step as a predicting variable, reaching 27% of explained variance. The definitive 29% of explained variance is reached in a third step, and ego orientation is added as a predicting variable ($\beta=0.15$). Among females 28% of total explained variance is reached and, the same as in the case

of males, the variable that predicts most self-determined behavior is task climate ($\beta=0.29$). In the second step, besides the strong predicting relationship of task climate ($\beta=0.39$), ego climate is added ($\beta=0.34$). Thus, both in the case of males and females, the higher the task motivational climate the students perceive, the higher the probability that their motivation will be more self-determined.

Discussion and Conclusions

In terms of the first of the objectives of this research, our results show quite positive data, as the majority of the sample analyzed states itself to be task oriented and to

TABLE 5
STEPWISE MULTIPLE REGRESSION ANALYSIS BY GENDER BETWEEN SDI AND PMCSQ-2 AND POSQ-PE SUBSCALES

SDI	Male					Female						
	Variables	F	β	R ²	t	P	Variables	F	β	R ²	T	p
Step 1												
Task climate	27.78	0.33	0.18	5.27	0.000	Task climate	16.79	0.29	0.19	4.10	0.000	
Step 2												
Task climate	24.47	0.46	0.27	6.85	0.000	Task climate	20.76	0.39	0.28	5.57	0.000	
Ego climate		0.29		4.36		Ego climate		0.34		4.76		
Step 3												
Task climate		0.44		6.63	0.000							
Ego climate	18.74	0.25	0.29	3.65	0.000							
Ego orientation		0.15		2.48	0.014							

Note: p is significant at level <0.05

perceive a task climate. The results are similar to those in Moreno, Hellín et al.¹⁵, which showed that task orientation was greater than ego orientation, and to those in Moreno, Llamas et al.⁵⁷, which showed that task climate exceeded ego climate. This data shows that students are learning oriented, that they judge themselves rather than doing so in relation to their classmates and that they perceive a climate that promotes their interest and motivation towards PE and its contents. With regard to the results obtained from the SMS scale, the highest values are those referring to the different dimensions of intrinsic motivation, especially achievement as intrinsic motivation, although introjected extrinsic motivation also appears as one of the highest scale values. These results are similar to those in Moreno, Hellín et al.¹⁵; the highest values were found in knowledge, stimulation and execution as intrinsic motivation, followed by identified and introjected extrinsic motivation. The interest shown by teenage students in PE is generally well known and hence the results obtained, which makes them promising as it has been proved that there is a direct relationship between intrinsic motivation in PE lessons and students' commitment to physical exercise³⁵, and even with the desire to participate in sports activities in the future^{24,32,33}.

As to the second objective, the results in our study show that females score higher in ego orientation and ego motivational climate than males. This trend might perhaps be due to the fact that male and female students do not approach teachers in the same way and have in addition different tastes. These results differ from those found by Duda and Whitehead¹⁹ and Moreno, Hellín et al.¹⁵, in which males proved to be more ego oriented than females.

Likewise, the results found in terms of motivational climate perceived by students are different from those found in Cervelló and Santos-Rosa¹⁴ and Jairo and Márquez²⁶, which show that males perceive a higher ego motivational climate than females. They also differ from Walling et al.²⁷ and Ntoumanis and Biddle²⁸, who showed that females were more involved in a task oriented motivational climate than males. Results different from those in Papaioannou and Kouli⁵⁸ and Flores et al.⁵⁹, who found that females tend to perceive a task climate more than males, who perceive it as ego oriented.

Moreover, our results show that females score higher than males along the three dimensions corresponding to intrinsic motivation (knowledge, achievement and stimulation) and also in identified and external regulation extrinsic motivation. Moreno, Hellín et al.¹⁵, by contrast, showed that males are more motivated for externally regulated reasons than females, whereas the latter are more intrinsically motivated to acquire knowledge than males.

With regard to age, it has been proved that the youngest students score the highest in task orientation. In Flores et al.⁵⁹, however, the youngest students scored the highest in both goal orientations. On the other hand, Moreno, Hellín et al.¹⁵ found that 14–15 year old students scored the highest in intrinsic and extrinsic motivation and in amotivation.

Finally, and in terms of the third objective, the stepwise regression analysis shows that the greater the task motivational climate students perceive, the higher the probability that their motivation be more self-determined. After task climate, ego climate both in males and females and ego orientation in males are the variables which predict self-determined behavior. These results coincide with other PE studies which show a positive relationship between task motivational climate and self-determined motivation^{4,35,57,60}.

Further studies with results that also show the importance both of task orientation and task motivational climate in self-determined motivation are Ntoumanis⁶¹ (2002), Standage and Treasure⁶² and Parish and Treasure⁶³.

Spray and Wang⁶⁴ showed that both task orientation and ego orientation had a positive relationship with intrinsic motivation. Besides, Moreno, Conte et al.⁶⁵ also showed how dispositional orientations predicted both intrinsic and extrinsic motivation. The results in Moreno, Hellín et al.¹⁵ show how ego orientation has a positive and significant relationship with the factors that compose intrinsic motivation except for knowledge as intrinsic motivation, extrinsic motivation and amotivation, whereas task orientation was related to all the factors that compose both intrinsic and extrinsic motivation. These results differ from those in Vlachopoulos and Biddle⁶⁶, who found that task orientation had a positive relationship with intrinsic motivation, as opposed to ego orientation, which had a negative one.

The results above as well as those in Buckworth et al.⁶⁷ prove, as Moreno et al.⁶⁵ argue, that a suitable combination of both dispositional orientations are needed in order to move forward in the improvement of self-determined motivation in the teaching/learning process. Therefore, bearing in mind previous studies showing the relevance of certain factors in students' motivation^{6,68}, the significant role of teachers as stimulating and orienting agents in PE lessons is also supported by the results of this study. They should generate an involving task climate, with activities focused on process rather than results and centered on skills mastery, and avoid social comparison processes among students and thus promote intrinsic motivation in students in the context of a fun oriented environment⁴.

García, Santos-Rosa et al.⁶⁹ specified the principles and strategies that teachers can use to achieve a climate which encourages students to do a task from the investigative work done by Epstein.⁷⁰ These authors state in their work the learning environment dimensions: work, authority, recognition, grouping, evaluation and time. Focusing on the tasks, the authors suggest that teachers should set objectives in the short-, medium- and long-term. They should design varied learning tasks involving a personal challenge for the student, where there is an active involvement with the task he is going to perform and freedom of choice where cooperative games and exercises are implemented.

The most important conclusion are: the results highlight the importance of teachers, who, alongside other fac-

tors, play a very important role for high school PE students given that the motivational climate perceived by students is the most relevant predictor of self-determined behavior. It should be highlighted that this study shows that task orientation negative and significantly predicts external regulation and amotivation. Therefore the role of PE teachers as purveyors of values is essential and influences students' social and psychological behavior⁷¹.

From a practical point of view, teachers should plan their lessons through a task oriented motivational climate in order to promote an ideal environment for learning improvement and a higher commitment to PE lessons on the part of students. Therefore climates where teachers encourage and appreciate effort, self-improvement, social relations among classmates, cooperative learning, etc. foster motor commitment in class.

We expect to solve the potential limitations of this study through future experimental work aiming at verifying the results we have found; that is, work that can show whether or not the transfer of an involving motivational climate by the teacher contributes to developing more self-determined behavior among students during PE lessons. Furthermore, it would be interesting to use the *Importancia y utilidad de la Educación Física (IEF)* [Importance and Usefulness of PE] questionnaire, validated by Moreno, Vera et al.⁷¹ and the *Intention to be Physically Active Scale*³², adapted and translated into Spanish by Moreno

et al.⁷², given that there exists a relationship between the goal orientations theory, self-determination theory, the importance students attribute to PE and the intention of being physically active^{1,4,71}.

One of the limitations is that the sampling design is not representative of the population as due to financial and time restrictions we chose to focus the study and use convenience sampling. However, one of the most notable strengths of this study is the size of the sample. So even though it is a sufficiently large sample to ensure a certain quality level for the study, these results cannot be generalized and further research would be necessary in order to contrast them.

There is another possible limitation which has to do with the moment when students were surveyed, as each student was being taught different PE contents depending on the school or class they happened to be attending. Therefore, a potential future option would be to focus on the analysis of these variables with students being taught the same PE contents and contrast results according to age, gender, ethnicity, etc. Furthermore, the analysis of the role and possible influence of other social agents such as parents and teachers on the motivational climate perceived by students is also a potential research option whose results would complete and improve those found in this study.

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SAMOODREĐENE, CILJNA ORIJENTACIJA I MOTIVACIJSKA KLIMA U TJELESNOM ODGOJU

SAŽETAK

Cilj ovog istraživanja bio je analizirati stupanj predviđanja koji ciljna orijentacija koju usvajaju studenti i motivacijska klima koju stvaraju nastavnici a percipiraju učenici u nastavi tjelesnog odgoja ima na učenikovo samoopredjeljenje u ponašanju. Uzorak je uključio 846 srednjoškolaca iz regije Murcia (Španjolska) u dobi od 12–19 godina starosti. Španjolska verzija upitnika percepcije uspjeha, percipirana motivacijska klima u sportskom upitniku-2 i ljestvica motivacijske klime su instrumenti korišteni za prikupljanje podataka. Opisna, korelacijska i postupna višestruka regresijska analiza je provedena nakon indeksa samoopredjeljenja. Rezultati su pokazali da je većina studenata ciljno orijentirana, da percipiraju radnu klimu i da su intrinzično motivirani. Osim toga, važnost uloge nastavnika u nastavi tjelesnog odgoja pokazala je motivacijsku klimu kao glavnu varijablu predviđanja samoopredjeljenja u ponašanju učenika.