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### Influence of the motivational climate in physical education on the intention to practice physical activity or sport

Amparo Escartí<sup>a</sup> & Melchor Gutiérrez<sup>b</sup>

<sup>a</sup> Department of Social Psychology at the Faculty of Psychology, University of Valencia, Spain

<sup>b</sup> Motor Development and Sport and Exercise Psychology, University of Valencia, Spain

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## **Influence of the Motivational Climate in Physical Education on the Intention to Practice Physical Activity or Sport**

**Amparo Escartí and Melchor Gutiérrez**

This study is based on the achievement goal theory and intended to verify the effects of the motivational climate of the physical education (PE) on students' motivation, interest, and intention to practice physical activity or sport. In order to meet these objectives, 975 participants, from 13 to 18 years of age, completed the following instruments: PECCS, TEOSQ, IMI, Satisfaction Scale, and the Intention to Practice Physical Activity or Sport. The data were analyzed by means of Structural Equation Modeling (SEM). The results confirmed that the mastery dimension of motivational climate has an influence, directly or indirectly, on task orientation, the three dimensions of intrinsic motivation—interest, perceived competence, and satisfaction—and the intention to practice physical activity or sport, in contrast to ego orientation. On the other hand, the comparison dimension of the motivational climate demonstrated specific effects on each of the variables analyzed, increasing the tension-pressure and negatively affecting the enjoyment and interest of the students. Therefore, in PE, a motivational climate oriented more toward mastery, rather than a competitive climate, should be promoted.

**Key Words:** motivational climate, physical education classes, goal orientation, intrinsic motivation, intention to practice physical activity

### **Key Points:**

- The mastery dimension of motivational climate, pursuit of progress by pupils, has a direct influence on task orientation.
- The comparison dimension of motivational climate, pursuit of comparison by pupils, has a direct influence on ego orientation.
- The mastery dimension of motivational climate has an indirect influence on intention to practice.
- The comparison dimension of motivational climate, worries about mistakes, has a direct influence on tension-pressure and an indirect influence on intention to practice.

### **Introduction**

In the area of physical education (PE) and sport sciences, one of the topics of study that has aroused great interest in the last decade is the study of the motivational climate that teachers create in their classes, as well as the implications that this climate has on the motivation and intention of the students to practice sport or do exercise. PE can be a very appropriate context in which to encourage young people to practice sport or do exercise at the present time and promote future physical activity or sport habits. The intention expressed by students to practice sport or

physical activity can be both a good indicator of the motivation toward this activity as well as a strong predictor of this behavior (28).

The most widely used theory in the last two decades to analyze the motivational processes in sports and educational contexts has been the achievement goal theory (1, 2, 22, 30, 33, 34). This theory considers that people in achievement situations wish to demonstrate competence and that this desire leads them to develop two fundamental achievement goals, one related to self-referenced parameters (task orientation), and the other with competitive or social comparison parameters (ego orientation). Different studies in the area of sports have demonstrated that adopting one goal or the other has cognitive, affective, and behavioral consequences for the subjects in terms of motivation (see 17, 44, for reviews). The results of various studies in the area of physical activity and sports have demonstrated that task orientation is related to criteria of self-referenced success. The subjects with this orientation believe that being successful means learning new things and progressing in their learning endeavors. Task-oriented individuals enjoy the activities more and bring greater intrinsic motivation and persistence to tasks than ego-oriented subjects (19, 53). Ego-oriented individuals believe that being successful means being better than others and demonstrating publicly that one is capable of doing things that others cannot. When ego orientation is dominant and the subject's perception of his or her own competence is low, maladaptive motivational models are produced, resulting in lack of interest in the activity, lack of persistence and, finally, giving up (43, for reviews).

The achievement goal theory predicts a particular connection between the goal orientation and the subject's perception of competence (34). Some studies have also found relationships between intrinsic motivation and goal orientation (9, 20, 45, 46). The intrinsic motivation construct refers to the subject's interest in carrying out an activity without seeking external rewards. The studies have suggested that intrinsic motivation provides the subjects with satisfaction derived from the activity, effort, and persistence (for reviews, 54, 55). In the area of PE, the relationships between the social context, the goal orientation, and the intrinsic motivation have been consistently demonstrated. The subject's significant adults structure both real and psychological environments that encourage the adoption of one goal orientation or the other. Specifically, the research shows that the teacher is an agent of prime importance in influencing students' perceptions of competence and their intrinsic motivation (15, 16, 28, 47, 50, 56, 57).

The motivational climate concept was introduced by Ames (1, 3) to designate the different atmospheres created by the significant adults in the achievement environments. The study by Ames and his collaborators focused mainly on the school environment and analyzed the elements that made up the motivational climate and the way in which these elements can be used to create, in Ames' terms, either a climate of mastery in which teachers transmit to the students that the important goal is to learn, progress, and achieve personal goals through work and effort, or a climate of competitiveness, in which social comparison, interpersonal competition, and final result are emphasized as determining the success achieved. Authority figures such as teachers, coaches, and parents create psychological climates in which the criteria they have of what constitutes success and failure are perceived. The elements that make up these climates are: the way the reward systems are used, the way the practice sessions are designed, the way the subjects are grouped, and the way the authority figures evaluate performance. These motivational

climates communicate certain objectives and have an influence on the tendency of the students to adopt one motivational goal or the other.

In the context of PE, some studies have demonstrated that the motivational climates that promote the orientation toward mastery in PE classes favored more adaptive motivational models in the students, while the climates oriented toward competitiveness promoted less adaptive motivational models (25, 39, 50). In a review carried out by Ntoumanis and Biddle (35) on the influence of the motivational climate created in PE class and its impact on motivation to do exercise, the authors conclude after reviewing 14 studies that a climate of mastery is related to more adaptive motivational models than is a motivational climate oriented toward competition. The students who perceived a climate oriented toward mastery considered success to be the result of effort rather than innate ability and experienced more satisfaction with PE classes and greater intrinsic motivation. On the other hand, the subjects who perceived a climate oriented toward competition appeared less satisfied with PE classes and less intrinsically motivated. These authors conclude that future research should examine in depth what is known about the mastery climate and the need for teachers to emphasize the mastery climate and abandon competitive climates in order to improve students' satisfaction and intrinsic motivation when practicing a physical activity and doing exercise.

In the last decade a great number of motivational studies have been carried out based on the goal theory. Traditionally these studies have analyzed, on the one hand, the effects of the goal orientation on motivation and, on the other hand, the importance of the motivational climates for the motivational patterns of the individuals, without considering that both elements should be studied together because one is the cause of the other (2). Only very recently, studies of both sport and PE (23, 27, 54) have used causal designs to analyze the influence of the motivational climate on task orientation, intrinsic motivation, satisfaction with the practice, and the intention to continue practicing. In spite of the fact that the results of these studies are very encouraging and confirm the importance that motivational climates have on the motivational patterns of the athletes or students, more research is needed with different samples in order to confirm the previous results.

The objective of our research was to analyze the influence of the motivational climate of the PE class on the students' task orientation, intrinsic motivation, satisfaction and, ultimately, the intention to practice sports and do exercise. We consider the intention to practice sports or do physical exercise to be a good behavioral predictor, just as several studies in the area of PE have demonstrated (12, 13, 27, 40). We start from the supposition that, in the context of PE, the teacher has control of the class and, by his or her behavior in the classroom, creates motivational climates oriented toward mastery or competitiveness. However, as these climates are more psychological than real, and since depending on how the student interprets the teacher, he will be influenced by him/her in one way or another, we consider it important to take as a starting point students' perceptions of the motivational climate of PE class.

In agreement with the goal theory and the previous research, we hypothesized that the climates oriented toward mastery would favor task orientation and increase intrinsic motivation, satisfaction with PE class, and intention to practice sports. On the contrary, the climates oriented

toward competition would favor ego orientation and diminish intrinsic motivation, satisfaction with PE class, and intention to practice physical activity or sport.

## Method

### *Participants*

A sample of 975 participants (472 male and 503 female students) was recruited from PE classes. Participants ranged in age from 13 to 18 years ( $M$  age = 15.25 years,  $SD$  = 1.17). All schools were located in the Valencian Community (Spain). Students were taking PE as a required course, and all the classes were coeducational.

### *Instruments*

**Physical Education Class Climate Scale—PECCS (6).** The PECCS is an English translation of the French EPCM (L'Echelle de Perception du Climat Motivational/Perception of Motivational Climate Scale) used by Goudas and Biddle (24). An oblique rotation factor analysis was performed with the 19-item questionnaire. A five-factor solution resulted, accounting for 71% of the variance: pursuit of progress by pupils (i.e., the pupils are very pleased when they learn new skills and games), promotion of learning by the teacher (i.e., the PE teacher is pleased when each pupil learns something new), pursuit of comparison by pupils (i.e., pupils try to do better than one another), worries about mistakes (i.e., the pupils worry about making mistakes), and promotion of comparison by the teacher (i.e., the teacher particularly appreciates those who win); and two second-order-factors (i.e., mastery dimension and comparison dimension). The internal consistency of the scales was confirmed by the Cronbach alpha. All alphas were satisfactory and above .69.

In this study, we used a Spanish translation. The questionnaire items began with the stem *In my PE class...*, and 5-point Likert scales were used anchored by *don't agree at all* (1) and *agree completely* (5). Pupils were asked to respond by making reference to what occurred most often in their PE classes. The alpha coefficients obtained based on our sample were: pursuit of progress by pupils (alpha = .78), promotion of learning by the teacher (alpha = .72), pursuit of comparison by pupils (alpha = .68), worries about mistakes (alpha = .78), and promotion of comparison by the teacher (alpha = .68). Alpha total of the scale was .81.

**Task and Ego Orientations in Sport Questionnaire—TEOSQ (18).** The TEOSQ was used to assess individual goal orientations in this study. This questionnaire requires participants to think about when they feel most successful in PE classes and to respond to 13 items indicative of task orientation (i.e., when I work really hard) and ego orientation (i.e., when the others can't do as well as me). Responses are made on a Likert scale ranging from *strongly disagree* (1) to *strongly agree* (5). In this study we used a Spanish translation. The TEOSQ has demonstrated factorial and construct validity and reliability in the physical domain, both in its original English version (18, 19, 21) and the adapted Spanish version (41). The alpha coefficients obtained based on our results were .82 and .81 for ego orientation and task orientation, respectively. Alpha coefficient of the overall scale were .79.

**Intrinsic Motivation Inventory—IMI (45).** The IMI was used to assess intrinsic motivation in sports based on four subscales: interest-enjoyment, perceived competence, effort-importance, and tension-pressure. It is comprised of 18 items suitably reworded for the specific context and

event. Responses are made on a Likert scale ranging from *strongly disagree* (1) to *strongly agree* (5). McAuley, Duncan, and Tammen (32) have provided evidence for the validity and the reliability of the IMI when applied to sport and exercise settings. Alpha coefficients for each of the subscales were: interest-enjoyment (alpha = .78), perceived competence (alpha = .80), effort-importance (alpha = .84), and tension-pressure (alpha = .68). The internal consistence of the overall scale has been reported with an alpha coefficient of .85. In this study we used a Spanish translation, and questions were adapted to PE classes (i.e., “I enjoyed PE very much,” “I think I am pretty good at PE,” “I put a lot of effort into PE,” “I felt tense while doing PE”). The alpha coefficients obtained based on our sample were: interest-enjoyment (alpha = .79), perceived competence (alpha = .72), effort-importance (alpha = .75), and tension-pressure (alpha = .82). The internal consistence of the overall scale has been reported with an alpha coefficient of .80. Similar reliability coefficients have been elicited in prior findings for these subscales (26).

**Satisfaction.** This questionnaire, made up of eight items, has been adapted from an instrument elaborated by Duda and Nicholls (19) to measure the subjects’ enjoyment when practicing sports. Although in its original English version the authors found two factors (boredom and enjoyment), later studies with a Spanish version (10, 11, 41) have converted them into only one called enjoyment, with an alpha coefficient for all the items of .77. In our study we used the Spanish version and have adapted it to the PE class. The questionnaire begins with the general expression, *When I am in PE class...* Exemplary item of this scale is, “I usually enjoy doing exercise.” The subjects must answer on a Likert scale from *do not identify at all* (1) to *identify completely* (5). The alpha coefficient obtained with our study sample was .82.

**Intention to Practice Physical Activity or Sport.** This 5-item questionnaire is designed to measure the intention the subjects have to practice physical activity or sports in the immediate future. We used a Spanish version elaborated specifically to this study. All the items are headed by the expression, *From now on...* (i.e., I have the intention to practice physical activity or sport). Subjects answered on a Likert scale ranging from *strongly disagree* (1) to *strongly agree* (5). The alpha coefficient obtained with our sample was .91.

### **Procedure**

The questionnaires were filled out in two 1-hour sessions during PE class in the last month of the school year so that participants could have sufficient criteria regarding the PE class and the teacher’s educational system. With the aim of not hampering the students’ freedom to respond, the teacher was not present during the administration of the questionnaires. All participants were volunteers.

### **Data Analysis**

Structural equation modeling (SEM) with observed variables was employed to explore the pattern of relationships within the data set. SEM is a multivariate methodology that tests a hypothesized model in a simultaneous analysis of all variables to determine the extent to which it is consistent with the data. This analytic tool suits our particular research problem because an a priori model exists that includes both direct and indirect (mediation) effects. All structural models were estimated using maximum likelihood techniques within the EQS 5.1 program (4). Although maximum likelihood is based on the assumption that variables are normally distributed, there is growing evidence that it performs well under a variety of non-optimal

conditions, including ordinal variables, leading to approximately correct point estimates of parameters (14, 29).

The assessment of overall fit is a main aspect of SEM models, due to its confirmatory scope. There is certainly a broad consensus that overall fit should be assessed with a variety of indices with different rationale, because no single index offers the best approach to the fit assessment problem (31, 49). The most widely used of these indices is the chi-square statistic. A significant chi-square test would cast doubt on the model specification (7). In this study, four other indices have been considered: CFI, LISREL-GFI, LISREL-AGFI, and RMSEA. The comparative fit index (CFI) is an incremental fit index, with 0.9 normally considered as a minimum for model acceptance (5). The LISREL-GFI indexes the relative amount of observed variances and covariances accounted for by the model and is analogous to *R*-square, whereas LISREL-AGFI incorporates a penalty function for complicated models (it favors parsimonious models). A cut-off criterion of 0.9 is usually used in order to accept a model as an adequate representation of the data. Finally, the Root Mean Square Error of Approximation (RMSEA) has a minimum of 0, which indicates perfect fit. Browne and Cudeck (8) suggested that a value of the RMSEA of up to 0.05 would indicate a close fit of the model, a value of about 0.08 or less would indicate a reasonable error of approximation, and values greater than 0.1 indicate poor model fit.

### Results

Several modifications were introduced in the a priori model (see Figure 1), according to: (a) statistical modification indices—the Wald test (for dropping non-significant parameters) and the Lagrange Multiplier test (for adding parameters); and (b) theoretical meaning of the statistically proposed modifications. According to Wald tests, all non-significant relationships were dropped. However, marginally significant relationships ( $p > .1$ ) were retained due to theoretical considerations. Lagrange Multiplier tests proposed several modifications, all of them correlations between the errors of mediational variables. Only two modifications were introduced, given that they made theoretical sense and would greatly improve the model: the correlation between interest/enjoyment and perceived competence; and the correlation between goal task orientation and effort/importance. These two types of modifications—dropping non-significant parameters in order to make the model more parsimonious, adding two more parameters—greatly improved the model's overall fit. This modified model had a chi-square of 116.12 ( $df = 47, p > .001$ ), a CFI of 0.94, and a GFI and AGFI of 0.96 and 0.91, respectively, with an RMSEA of 0.066. According to all fit indices the model adequately represents the data.

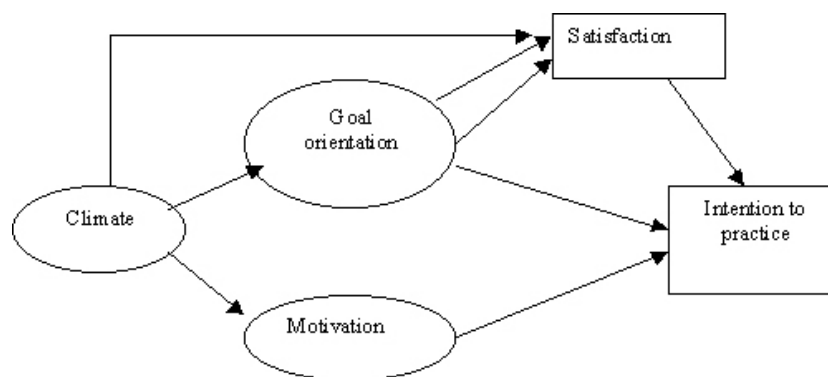


Figure 1 — Initial path-analysis model.

Figure 2 shows the maximum likelihood estimates of the structural coefficients in the final model. The indirect effects are as interesting as the direct effects (shown in Figure 2). Among them, the indirect effects of pursuit of progress by pupils and promotion of comparison by teacher on satisfaction were statistically significant ( $\beta = 0.315$  and  $\beta = -0.076$ , respectively;  $p < .05$ ). There were some statistically significant indirect effects on the intention to practice sports: ego orientation ( $\beta = -0.033$ ,  $p < .05$ ), interest/enjoyment ( $\beta = 0.159$ ,  $p < .01$ ), perceived competence ( $\beta = 0.028$ ,  $p < .05$ ), effort/importance ( $\beta = 0.044$ ,  $p < .05$ ), pursuit of progress by pupils ( $\beta = 0.167$ ,  $p < .01$ ); promotion of comparison by teacher ( $\beta = -0.02$ ,  $p < .05$ ).

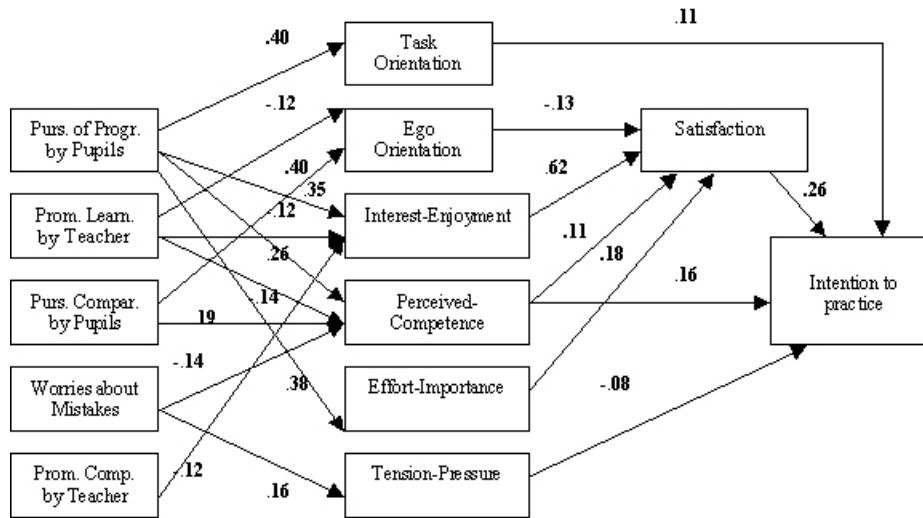


Figure 2 — Parameter estimates for model 2.

### Discussion

In this study, we analyzed the influence of students’ perceptions of motivational climate in their PE classes on task orientation, intrinsic motivation, satisfaction with the practice, and the intention to practice physical activity or sport. The relationships between these variables were measured by using a model based on the goal theory (2, 33).

Our results confirm the main hypotheses proposed in the study. The mastery dimension of motivational climate, the pursuit of progress by pupils, has a direct influence on task orientation, on the three dimensions of the intrinsic motivation—interest, perception of competence, and effort-importance—and an indirect influence via task orientation on the intention to practice physical activity or sport in the future. At the same time, this dimension has an indirect influence on satisfaction with practice. The other mastery dimension of the motivational climate, promotion of learning by the teacher, influences ego orientation and perceived competence directly and negatively, and positively influences interest-enjoyment. This mastery dimension has an indirect influence on the satisfaction and the intention to practice. Thus, when students perceive a climate of mastery, they develop success criteria in which learning new skills and increasing knowledge is the priority, and they are interested in physical activity for the pleasure this activity provides, all of which leads them to feel more satisfied with PE classes. All of these variables have a positive influence on the intention to practice physical activity or sport outside the school’s PE classes.



On the other hand, the comparison dimensions of motivational climate—the pursuit of comparison by pupils, worries about mistakes, and promotion of comparison by the teacher—showed specific direct effects on the distinct variables analyzed. Specifically, pursuit of comparison by pupils is positively related to ego orientation and to perceived competence. At the same time, worries about mistakes had a negative effect on perceived competence and a positive effect on tension-pressure. Finally, the promotion of comparison by the teacher had a direct and negative effect on the enjoyment and interest of the students. Our results confirm that when the students perceive a competitive motivational climate, they enjoy themselves less and feel more pressure, which leads them to experience less satisfaction in sport practice and to have less intention to practice in the near future.

Our results agree with studies carried out in the last few decades that were based on goal theory and that analyzed the influence of the motivational climate on different motivational variables. Studies carried out in both American and European contexts (6, 9, 20, 23, 24, 36–40, 42, 46, 48, 52, 58) have highlighted the importance of motivational climate in PE class with regard to student motivation. Some of these studies have pointed out the need to carry out multicultural research to analyze whether this effect is produced in students of different religions, cultures, or races (38). For the time being, with the knowledge we currently possess, it seems reasonable to predict that, in cultures with democratic values, where giving opportunities to all students is a primary educational value, the mastery motivational climate will favor not only the intrinsic motivation and the intention of the students to carry out physical activity and sport, but also the personal and social development of the pupils.

Our results demonstrate once again the importance of the PE teacher as a transmitter of values and a significant other in the psychological and social development of students (28, 37, 38, 50–52, 57). This fact leads us to conclude that there is a need to carry out more intervention studies whose objective is to train the teaching staff to incorporate instructional methods that favor mastery-oriented climates in their classes.

One of the limitations of our research is related to the fact that it is a cross-sectional study. Thus, it is very difficult to predict if the effects that have been found will be long lasting. Therefore, it would be interesting to launch a longitudinal investigation to track the same variables studied in the present research. Moreover, although intention is a good predictor of sports practice, it would be desirable to test how closely the effects we found in the present research correspond to the real practice of physical activity or sport in adolescence.

More investigations that analyze the components of the motivational climate of the PE class should be conducted. Additionally, it would be interesting to study the psychological and social variables that induce teachers to opt for one motivational climate over another. Moreover, it would be interesting to investigate teachers' awareness of the effects that their practice has upon student motivation. Finally, it would be advisable to analyze the effects of instruction in motivational techniques upon the daily educational activity of teachers.

In order to attain all these objectives, future research should employ both cross-sectional and longitudinal designs. This approach would greatly enhance our understanding of the effects of

motivational climate on students in PE class, and thereby perhaps improve the daily practice of students and teachers in PE.

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### ***About the Authors***

Amparo Escartí <Amparo.Escarti@uv.es> is with the Faculty of Psychology at the University of Valencia, Valencia, Spain. Melchor Gutiérrez <Melchor.Gutierrez@uv.es> is with the Faculty of Physical Education and Sport Sciences at the University of Valencia.

Amparo Escartí, PhD, is Professor in Sport Social Psychology with the Department of Social Psychology at the Faculty of Psychology of the University of Valencia (Spain). She has published several articles and books about sport motivation and sport socialization. She is editor de la revista de Psicología Social Aplicada y de la Revista de Psicología del deporte.

Melchor Gutiérrez, PhD, is Professor of Motor Development and Sport and Exercise Psychology at the University of Valencia (Spain). He is the author of several articles and books in the area of developmental psychology and social values through sport.