European Journal of Psychology of Education
1994, Vol. IX, nº 3, 241-250

Perceived Motivational Climate and Intrinsic Motivation in School Physical Education Classes

Marios Goudas
Stuart Biddle
University of Exeter, UK

Research has shown that dispositional achievement goal orientations have important effects on motivation, affect and behaviour in sport and physical activity. However, rather less is known about the relationship between perceived ethos, or climate, of physical education (P.E.) classes and subsequent motivation. The purpose of this study, therefore, was to investigate the psychometric properties of an inventory assessing P.E. class climate and the relationship of subscales of the inventory with intrinsic motivation. Second order factor analysis revealed class climate dimensions of 'mastery' and 'performance', confirming prior research. The mastery dimension scores were found to significantly enhance the prediction of intrinsic motivation beyond that accounted for by perceived competence, whereas this was not the case for performance climate scores. MANOVA showed that children perceiving their P.E. class to be high in both *mastery and performance climate reported greater intrinsic motivation and perceived competence.*

Recently, sport psychologists have applied social-cognitive theories of achievement motivation to the area of youth sport in the pursuit of further understanding children's sport motivation (Roberts, 1993). Surprisingly, however, physical education (P.E.) has largely been ignored as an area for the study of motivation. The investigation of motivational issues in physical education is crucial for at least two reasons. First, the range of participants' capacity for physical performance and motivation is likely to be far broader than in volunteer youth sport. Second, it is acknowledged that physical education has the potential to assist individuals in the development of active lifestyles and thus contribute significantly to individual and public health (Haywood, 1991).

One of the approaches taken in educational and youth sport motivational research is based on goal-perspective theories (Ames, 1984; Dweck & Leggett, 1988; Nicholls, 1989).

The authors thank Professor Neville Bennett and Dr Ken Fox (University of Exeter) for their helpful comments on an earlier draft of this paper.

These theories adopt the principle that the purpose of goal-directed behaviour in achievement settings is the demonstration of competence. However, the way that competence can be demonstrated is dependent on the standards individuals use to evaluate their performance. When the basis for performance evaluation is normative, that is when success is defined in comparison with the performance of others, then an 'ego' or 'performance' goal orientation is adopted. Alternatively, when performance evaluation is self-referenced, that is personal improvement constitutes success, then a 'task' or 'mastery' goal orientation is adopted. The terms task and ego orientation (Nicholls, 1989) will be used here to refer to these two main dispositional goal orientations adopted in school achievement.

A number of studies have shown that task orientation is associated with adaptive motivational patterns both in education and sport settings. Task orientation has been related to beliefs that success in sport and in schoolwork stems from high effort and cooperation with peers (Duda & Nicholls, 1992; Duda, Fox, Biddle, & Armstrong, 1992; Nicholls, Patashnic, & Nolen, 1985). On the other hand, in the same studies, ego orientation was associated with the belief that success stems from high ability. Regarding behavioural correlates, task orientation has been associated with persistence and intensity in sport participation (Duda, 1988) and with self-reported exerted effort (see Duda, 1992).

In the physical education domain, Papaioannou (1990) found that student's task orientation was associated with beliefs that the purposes of school P.E. are the increase of self-esteem, the improvement of fitness, and the establishment of good character. Ego orientation was related to beliefs that the purposes of P.E. are social status, and the enhancement of self-esteem.

Establishing that differences in dispositional goal orientations account for variations in motivation and behaviour is important. However, little scope exists to change such orientations unless modifications take place to the environment (Lloyd & Fox, 1992; Nicholls, 1989). This has led to an increased interest in the perception of the achievement environment itself (Ames, 1992). Different settings could enhance or diminish the salience of particular achievement goals. For example, in a P.E. class, students may be praised only when they demonstrate superior performance compared with other students, and students with high athletic capacity may be the role models. Some refer to this as a 'performance' environment or climate (Ames, 1992). Conversely, in another class, students may be directed towards self-improvement, and praise may be given for high effort regardless of actual achievement. This is a mastery environment or climate. This field of study has also been referred to as 'motivational climate' (Ames, 1992).

In the first study to assess classroom goal orientations, Ames and Archer (1988) found that students' perceptions of class mastery goals were positively related to attitudes toward their class, preference for challenging tasks, as well as to the use of effective learning strategies. On the other hand, perceptions of performance goals corresponded to maladaptive motivational patterns, such as attributing failure to insufficient ability. In a similar study, Seifriz, Duda, and Chi (1992) assessed basketball players' perceptions of their teams' motivational climate. Perceptions of team mastery goals were correlated with beliefs that link sport success with effort and higher self-reported intrinsic motivation. Again, perceptions of performance goals were related to beliefs that superior ability is the primary cause of success in sport.

Papaioannou (1994; in press) was the first to examine the motivational climate of P.E. classes. He developed the 'Learning and Performance Orientation in Physical Education Classes Questionnaire' (LAPOPECQ). The LAPOPECQ comprises five subscales: class learning orientation, teacher's promotion of learning orientation, class competitive orientation, students' worries about mistakes, and winning without effort. This research, with Greek students, established a hierarchical structure for the LAPOPECQ. The first two subscales comprised a mastery factor while the other three a performance factor.

So far, conceptualization of classroom climate has been based on the way achievement is defined and how students' perceptions of ability are formed. However, many other factors can also influence the way students approach schoolwork. Consequently it is important to identify

those classroom factors that are compatible with, and facilitate, the promotion of a mastery goal structure. To do this, Ames (1992) examined three different aspects of classroom structure that may influence the salience of one or other goal. These were:

a) the design of tasks and learning activities,
b) evaluation and recognition practices, and
c) the distribution of authority.

In short, she argued that a mastery goal structure is promoted when tasks are designed for novelty, variety, diversity and according to student's interests, and when evaluation focuses on individual improvement and progress while mistakes are viewed as part of learning and not as demonstration of low capacity. Regarding the distribution of authority, Ames (1992) states that helping students participate in decision-making and providing 'real' choices for students would facilitate a focus on mastery goals. Although the first two aspects have been covered in the existing literature on achievement classroom goals, distribution of authority has not been researched in connection to goal structures.

In the limited number of studies conducted so far, situational goal orientations have been shown to be independent (e.g. Ames & Archer, 1988). It is possible, therefore, for an individual to perceive her/his class as high mastery *and* high performance oriented or as low performance *and* high mastery oriented or other combinations. This mirrors similar proposals when investigating dispositional goal orientations (Fox, Goudas, Biddle, Duda, & Armstrong, 1994). Papaioannou (1992) has also supported the independence of situational class goal orientations. Future research, therefore, should investigate the effects of these goals *in combination* rather than singly.

Goal orientations theory predicts that mastery involvement will facilitate intrinsic motivation. In mastery involvement there is a focus on the task for its own sake rather than as a means to an end. Papaioannou (in press) examined the relationship between motivational climate and a measure of intrinsic motivation. He found that students' perceptions of a mastery class' orientation was a good predictor of intrinsic motivation even after partialling out perceived competence.

The purposes of this study, therefore, were twofold:

a) to establish the structural validity and internal reliabilty of an inventory assessing class climate in physical education and
b) to examine the relationship of these dimensions of climate in combination, with an index of self-reported intrinsic motivation.

Method

Sample

The participants in this study were 154 boys and 100 girls from Years 8 and 9 (ages 13-15 years) in three comprehensive schools located in London and the south west of England. A range of children were sampled, including those from an inner-city environment, from a small town, and a city private school representative of middle to upper socio-economic status.

Procedure and instrumentation

The pupils completed an anonymous 15-minute questionnaire pack during one of their P.E. lessons. Two psychology inventories were administered: the Intrinsic Motivation Inventory and an inventory assessing perceived motivational climate.

Perceived motivational climate. This scale was an adaptation of the LAPOPECQ and is suitable for school students aged 12-18 years. More specifically it contained four of the five

LAPOPECQ subscales. These were class learning orientation (e.g. '[In this P.E. class] we usually learn something new and feel happy about this' 'we feel very satisfied when we learn new skills and games'), teacher's promotion of learning orientation (e.g. '[in this P.E. class] the P.E. teacher insists that our mistakes are part of learning' 'the P.E. teacher is satisfied when pupils are improving after putting in some effort'), class competitive orientation (e.g. '[In this P.E. class] successful students are those who do better on skills' 'pupils feel most satisfied when they manage to do better than others'), worries about mistakes, e.g. '[In this P.E. class] students worry about making mistakes because it would cause the disapproval of other students' 'pupils worry about practising skills thay are not good at'). Furthermore, it was attempted in this study to make a broader conceptualisation of the classroom climate by adding two factors that have been shown to influence student motivation. These were students' perceptions of teachers' support (Moos & Trickett, 1987) (e.g. '[In this P.E. class] the teacher is more like as friend than a figure of authority') and students' perceptions of choice (e.g.'[In this P.E. class] pupils are often given the opportunity to say what they think about a certain activity' 'pupils have a choice of what activities they take part in'). 5-point Likert-type scales were utilized. Internal reliabilities using Cronbach's alpha coefficient were as follows: classroom learning (.77), teacher promotion of learning (.71), teacher support (.72), and students' worries about mistakes (.66). Internal reliability of class competitive orientation could be improved to .68 and the alpha for perceived student choice to .64 with the deletion of questions 4 and 2 respectively. These items were therefore deleted.

Intrinsic Motivation Inventory (IMI). This inventory was established by Ryan and colleagues (Ryan, 1982; Ryan, Mims, & Koestner, 1983) as a measure of intrinsic motivation following achievement tasks. It comprises four subscales: enjoyment/interest, effort/importance, competence, and pressure/tension. A total of all the items provides an indication of overall levels of intrinsic motivation. McAuley, Duncan, and Tammen (1989) established an 18-item version of this inventory for measuring intrinsic motivation following sports tasks. This version was used in the present study but reworded to reflect the context of P.E. lessons. Again 5-point Likert-type scales were utilized. Internal reliabilities were as follows: IMI (total) (.88), enjoyment/interest (.82), and competence (.83). The internal reliabilty of the effort/importance subscale could be improved from .76 to .82 with the deletion of one item (n° 2), so this item was removed. The pressure/tension subscale, with an alpha of .56, was considered unreliable and was excluded from further analyses.

Results

Construct validity

Both questionnaires were subjected to factor analysis. Principal components extraction was used with oblimin factor rotation. Factors with eigenvalues greater that 1 were retained. Table 1 presents the results of the factor analysis of the perceived motivational climate questionnaire. Six factors emerged that explained 56.8% of the variance. As can be seen in Table 1, the items of the subscales class learning orientation and teacher's promotion of learning orientation were split across two factors. The other subscales emerged as separate factors (see Table 1).

Table 2 presents the results of an oblique rotation following factor analysis with principal components extraction, for the IMI items excluding the items of the pressure/tension scale. The factorial structure of the questionnaire was supported. Three factors emerged that explained 69.8% of the variance (see Table 2).

Composite scores were computed for each one of the factors that emerged in the two factor analyses (average score for the items loading in the factor). Thus, nine new variables were created: class learning orientation I, class learning orientation II, teacher support,

Table 1

Factors and factor loadings for the perceived motivational climate questionnaire (oblimin rotation)

Subscale and item numbers		Factors and loadings					
		1	2	3	4	5	6
Class Learning	1				-.65		
	2				-.60		
	3				-.63		
	4	.51					
	5	.74					
	6	.62					
Teacher's promotion of learning	1				-.41		
	2				-.43		
	3						
	4	.57					
	5	.58					
	6					-.56	
Class competitive	1						-.57
	2						-.72
	3						-.56
	4						
	5						-.69
Worries about mistakes	1		.63				
	2		.65				
	3		.55				
	4		.73				
Teacher support	1					-.77	
	2					-.79	
	3					-.53	
Student choice	1			.65			
	2						
	3			.42			
	4			.79			
Eigenvalue		6.9	2.1	1.9	1.4	1.2	1.0

Note. only loadings >.40 included

Table 2

Factor structure and loadings for the IMI (oblimin rotation)

Subscale and item numbers		Factors and loadings		
		1	2	3
Enjoyment/Interest	1		.70	
	2		.94	
	3		.76	
	4		.55	
Competence	1	.79		
	2	.86		
	3	.85		
	4	.64		
Effort/Importance	1			-.97
	2			-.82
	3			-.59
	4			
	5			-.72
Eigenvalue		6.0	1.2	1.1

Note. only loadings >.40 included

perceived choice, class' competitive orientation, worries about mistakes, enjoyment/interest, effort/importance, and competence. All these scales had acceptable reliability (Cronbach's alpha >.64).

Hotelling's T^2 was computed to test for differences between boys and girls on the six climate subscales. Results showed that there was a significant group difference ($T^2 = .12, p < .001$). Univariate F-tests revealed that boys scored higher than girls on the second learning factor (boys $M = 3.74$, girls $M = 3.54$), class competitive (3.62, 3.23), perceived student choice (2.60, 2.32), and teacher support (3.32, 2.89).

A significant gender difference also emerged in intrinsic motivation ($T^2 = .12, p < .01$). Post-hoc stepdown F-tests, with competence entered first, revealed that boys scored significantly higher than girls on competence (3.79 and 3.24 respectively), but once these scores were accounted for, no other gender differences emerged.

Motivational climate dimensions

In order to examine the way that different aspects of the motivational climate group together, the six variables that emerged from the perceived motivational climate questionnaire were subjected to a second-order principal components analysis with varimax rotation. A two factor solution emerged with the two factors explaining together 63.7% of the variance. The first factor, which was named 'Mastery Dimension', comprised the two learning subscales, the teacher support subscale as well as the subscale of perceived choice. The subscales class competitive orientation and worries about mistakes loaded on the second factor which was labelled 'Performance Dimension'. Factor loadings are presented in Table 3.

Table 3

Factor analysis of the motivational climate subscales

	Mastery dimension	Performance dimension
Learning 1	.75	
Learning 2	.84	
Teacher Support	.81	
Perceived Choice	.57	
Worries about mistakes		.92
Class Competitive		.61
Eigenvalue	2.80	1.01

Note. only loadings >.40 included

In order to obtain the subjects' scores on each of these dimensions, all the items that were contained in the subscales loading on each dimension were totalled. In this way, two new variables were created which were named Mastery and Performance dimensions.

Relationships between mastery and performance dimensions and intrinsic motivation

In order to examine whether the two dimensions of motivational climate were related to students' reported intrinsic motivation, three separate hierarchical regression analyses were performed. Dependent variables were the enjoyment and effort subscales as well as the total IMI score. These analyses are presented in Table 4. Perceived competence was entered first in all three analyses because it is considered as a main determinant of intrinsic motivation (Deci & Ryan, 1985). In all three regression analyses, the mastery dimension significantly enhanced

the prediction beyond perceived competence. On the contrary, the performance dimension did not contribute to the prediction beyond perceived competence.

Table 4

Increments in R^2 values from hierarchical regression analyses for Enjoyment, Effort and IMI

	Enjoyment	Effort	IMI
Perceived Competence	.28**	.37**	.68**
Performance	.01	.01	.01
Mastery	.18**	.07**	.04**
Total R^2	.47**	.45**	.73**

Note. ** $p < .001$

Since prior research (Ames & Archer, 1988) has shown that performance and mastery dimensions of class climate are largely orthogonal, it is important to study the combined effects of the dimensions even though a small correlation ($r = .3$) was found here. Consequently, four groups were created based on the mean score on each dimension as follows: Group 1: low mastery/low performance, Group 2: low mastery/high performance, Group 3: high mastery/low performance and Group 4: high mastery/high performance. A one-way MANOVA was then performed with perceived competence, enjoyment, effort, and IMI as dependent variables and the four groups as the independent variable. There was a significant multivariate effect using the Pillais' criterion ($F_{(12,621)}= 4.84$, $p < .001$). Stepdown F tests were then performed with the dependent variables examined in the same order as before. There were signficant effects for competence ($F_{(3,208)}= 5.23$, $p < .01$), enjoyment ($F_{(3,207)}= 6.37$, $p < .001$), and IMI ($F_{(3,205)}= 7.62$, $p < .001$). Post-hoc Scheffe multiple comparisons tests revealed that Group 4 (high/high) students had higher competence and reported higher levels of enjoyment than students in Groups 1 (low/low) and 2 (low mastery/high performance). Additionally, Group 3 (high mastery/low performance) students enjoyed P.E. more than students in Group 1.

Table 5

Mean scores for each dimension profile

	n	Enjoyment	Effort	Competence	IMI
Lo Ma/Lo Pe	61	3.32	3.39	3.29	3.41
Lo Ma/Hi Pe	38	3.57	3.61	3.29	3.43
Hi Ma/Lo Pe	33	3.99	3.90	3.71	3.81
Hi Ma/Hi Pe	80	4.00	3.96	3.75	3.74

Note. Lo Ma/Lo Pe = Low Mastery/Low Performance; Lo Ma/Hi Pe = Low Mastery/High Performance; Hi Ma/Lo Pe = High Mastery/Low Performance; Hi Ma/HI Pe = High Mastery/High Performance

Discussion

The construct validity of the instruments was generally supported through the results of the factor analyses. Regarding the perceived motivational climate questionnaire, the results supported the structure proposed by Papaioannou (1992). However, the items supposed to

comprise the scales of class learning orientation and teacher promotion of learning orientation were mixed. Thus, in subsequent studies, it may be better if these two scales are merged to comprise one factor. Regarding the IMI, the low reliability of the pressure/tension subscale did not allow its inclusion in subsequent analyses. It must be noted that this scale showed low internal reliability in other studies that used the IMI in sport contexts (McAuley et al., 1989; Seifriz et al., 1992). The scale may need to be reworded in subsequent studies to improve its reliability.

More important, however, were the results of the factor analysis that sought to examine dimensions of the P.E. class climate. Perception of teacher support and students' perception of choice were part of a mastery dimension alongside class learning orientation. This can shed light on the conceptualisation of what a mastery climate actually is in physical education. More specifically, regarding the motivational climate only in terms of goal orientations, may hide other important factors.

One of these is the students' perception of treatment received by teachers which has received a great deal of attention (eg. Weinstein, 1989) and has been shown to account for differences in student motivation. Regarding physical education, in two studies that examined students' attitudes toward P.E. classes, the teacher emerged as the most influential factor (Figley, 1985; Luke & Sinclair, 1991). Additionally, perceptions of self-determination, or of an internal locus of causality (eg. students' perceptions of choice), have been established to be major antecedents of intrinsic motivation (deCharms, 1976; Deci, 1975). As the results of this study show, these two factors are inextricably linked in the multivariate reality of the classroom. Thus, a mastery dimension exists not only when success is defined as self-improvement and exerted effort is rewarded instead of normative ability, but equally when students perceive their teacher to take a personal interest in them and when they perceive that they can have some involvement in class decision-making.

The mastery dimension of classroom climate emerged as the main predictor of students' self-reported intrinsic motivation in P.E. classes. This was true even after the effects of perceived competence were partialled out. This replicates previous work by Papaioannou (in press) and by Seifriz et al., (1992). However, when the mastery and performance dimensions were considered together, as in the present study, the students who scored high on both dimensions reported higher levels of intrinsic motivation. Similarly, in the studies by Duda (1988) and Fox, et al. (1994), when dispositional high ego orientation was coupled with high task orientation, sport motivation remained high even if participants had low perceived ability. However, in the present study it was found that the dimensions of mastery and performance were slightly correlated. Further work is required, therefore, on the extent to which class climate dimensions are independent. Similarly, further evidence is required of gender and age differences across the class climate dimension profile groups.

Given the evidence that competition may diminish intrinsic motivation (Vallerand, Ryan, & Deci, 1987), the present results, alongside previous research cited, give cause for optimism in that as long as there is an emphasis on mastery goals, motivation in P.E. classes can be retained for all students in competitive and non-competitive activities.

References

Ames, C. (1984). Competitive, cooperative, and individualistic goal structures: A motivational analysis. In R. Ames & C. Ames (Eds.), *Research on motivation in education* (vol. 1, pp.177-207). London: Academic Press.

Ames, C. (1992). Classrooms: Goals, structures, and student motivation. *Journal of Educational Psychology, 84,* 261-271.

Ames, C., & Archer, J. (1988). Achievement goals in the classroom: Students' learning strategies and motivation processes. *Journal of Educational Psychology, 80,* 260-267.

deCharms, R. (1976). *Enhancing motivation change in the classroom.* New York: Irvington.

Deci, E. L., & Ryan, M. L. (1980). The empirical exploration of intrinsic motivational processes. *Advances in Experimental Social Psychology, 13,* 39-80.

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior.* London: Plenum.

Duda, J. L. (1988). The relationship between goal perspectives, persistence and behavioral intensity among male and female recreational sport participants. *Leisure Sciences, 10,* 95-106.

Duda, J. L. (1992). Motivation in sport settings: A goal perspective approach. In G. C. Roberts (Ed.), *Motivation in Sport and Exercise* (pp. 57-91). Champaign: Human Kinetics.

Duda, J. L., & Nicholls, J. G. (1992). Dimensions of achievement motivation in schoolwork and sport. *Journal of Educational Psychology, 84,* 290-299.

Duda, J. L., Fox, K. R., Biddle, S. J. H., & Armstrong, N. (1992). Children's achievement goals and beliefs about success in sport. *British Journal of Educational Psychology, 62,* 313-323.

Dweck, C. S, & Leggett, E. L. (1988). A social-cognitive approach to motivation and personality. *Psychological Review, 95,* 256-273.

Figley, G. E. (1985). Determinants of attitudes toward physical education. *Journal of Teaching in Physical Education, 4,* 229-240.

Fox, K., Goudas, M., Biddle, S., Duda, J., & Armstrong, N. (1994). Children's task and ego goal profiles in sport. *British Journal of Educational Psychology, 64,* 253-261.

Harter, S. (1981). A new self-report scale of intrinsic versus extrinsic orientation in the classroom: motivational and informational components. *Developmental Psychology, 17,* 300-312.

Haywood, K. M. (1991). The role of physical education in the development of active lifestyles. *Research Quarterly for Exercise and Sport, 62,* 151-156.

Lloyd, J., & Fox, K. R. (1992). Achievement goals and motivation to exercise in adolescent girls: a preliminary intervention study. *British Journal of Physical Education Research Supplement, 11,* 12-16.

Luke, M. D., & Sinclair, G. D. (1991). Gender differences in adolescents' attitudes toward school physical education. *Journal of Teaching in Physical Education, 11,* 31-46.

McAuley, E., Duncan, T., & Tammen, V. V. (1989). Psychometric properties of the Intrinsic Motivation Inventory in a competitive sport setting: A confirmatory factor analysis. *Research Quarterly for Exercise and Sport, 60,* 48-58.

Moos, R. H., & Trickett, E. J. (1987). *Classroom Environment Scale manual.* Palo Alto, CA: Consulting Psychologists Press.

Nicholls, J. G. (1989). *The competitive ethos and democratic education.* Cambridge, MA: Harvard University Press.

Nicholls, J. G., Patashnick, M., & Nolen, S. B. (1985). Adolescents' theories of education. *Journal of Educational Psychology, 77,* 683-692.

Papaioannou, A. (1990). *Goal perspectives, motives for participation, and purposes of P. E. lessons in Greece, as perceived by 14 and 17 years old pupils.* Unpublished M. Phil. thesis, University of Manchester, England.

Papaioannou, A. (1992). Goal perspectives, motivation and the interaction of person and environment. *Journal of Sports Sciences, 10,* 608.

Papaioannou, A. (1994). The development of a questionnaire measuring physical education classes' achievement orientations. *Research Quarterly for Exercise and Sport, 65,* 11-20.

Papaioannou, A. (in press). Motivation and goal perspectives in physical activity for children. In S. J. H. Biddle (Ed.), *European perspectives on Exercise and Sport Psychology.* Champaign: Human Kinetics.

Roberts G. C. (1993). Motivation in sport: understanding and enhancing the motivation and achievement of children. In R. N. Singer, M. Murphey, & L. K. Tennant (Eds.), *Handbook of research on sport psychology* (pp. 405-420). New York: Macmillan.

Ryan, R. M. (1982). Control and information in the intrapersonal sphere: An extension of cognitive evaluation theory. *Journal of Personality and Social Psychology, 43,* 450-461.

Ryan, R. M., Mims, V., & Koestner, R. (1983). Relation of reward contigency and interpersonal context to intrinsic motivation: A review and test using cognitive evaluation theory. *Journal of Personality and Social Psychology, 45,* 736-750.

Seifriz, J. J., Duda, J. L., & Chi, L. (1992). The relationship of perceived motivational climate to intrinsic motivation and beliefs about success in basketball. *Journal of Sport and Exercise Psychology, 14,* 375-391.

Vallerand, R. J., Deci, E. L., & Ryan, R. M. (1987). Intrinsic motivation in sport. *Exercise and Sport Science Reviews, 15,* 389-426.

Weinstein, R. S. (1989). Perceptions of classroom processes and student motivation: children's views of self-fulfilling prophecies. In C. Ames & R. Ames (Eds.), *Research on motivation in education* (vol. 3, pp. 187-221). London: Academic Press.

Key words: Intrinsic motivation, Motivational climate, Physical education

Received: April 1993

Revision received: June 1993

Marios Goudas. School of Education, University of Exeter, Heavitree Road, Exeter EX1 2LU, United Kingdom.

Current theme of research:

Motivation in physical education

Most relevant publications in the field of Educational Psychology:

Fox, K., Goudas, M., Biddle, S., Duda, J., & Armstrong, N. (1994). Children's task and ego goal profiles in sport. *British Journal of Educational Psychology, 64,* 253-261.

Goudas, M., & Biddle, S. (1994). Intrinsic motivation in Physical Education: Theoretical foundation and contemporary research. *Educational and Child Psychology, 11,* 68-76.

Goudas, M., Biddle, S., & Fox, K. (in press). Achievement goal orientations and intrinsic motivation in Physical Fitness testing with children. *Pediatric Exercise Science, 6,* 159-167.

Stuart Biddle. School of Education, University of Exeter, Heavitree Road, Exeter EX1 2LU, United Kingdom.

Current theme of research:

Motivation in exercise, Physical education and sport

Most relevant publications in the field of Educational Psychology:

Biddle, S. J. H. et al. (1993). Assessment of children's physical self-perceptions. *International Journal of Adolescence & Youth, 4,* 93-109.

Biddle, S. J. H., Brooke, R. (1992). Intrinsic versus extrinsinc motivational orientation in physical education and sport. *British Journal of Educational Psychology, 62,* 247-256.

Duda, J. L., Fox, K. R., Biddle, S. J. H., & Armstrong, N. (1992). Children's achievement goals and beliefs about success in sport. *British Journal of Educational Psychology, 62,* 313-323.

Goudas, M., & Biddle, S. (1993). Pupil perceptions of enjoyment in physical education. *Physical Education Review, 16,* 145-150