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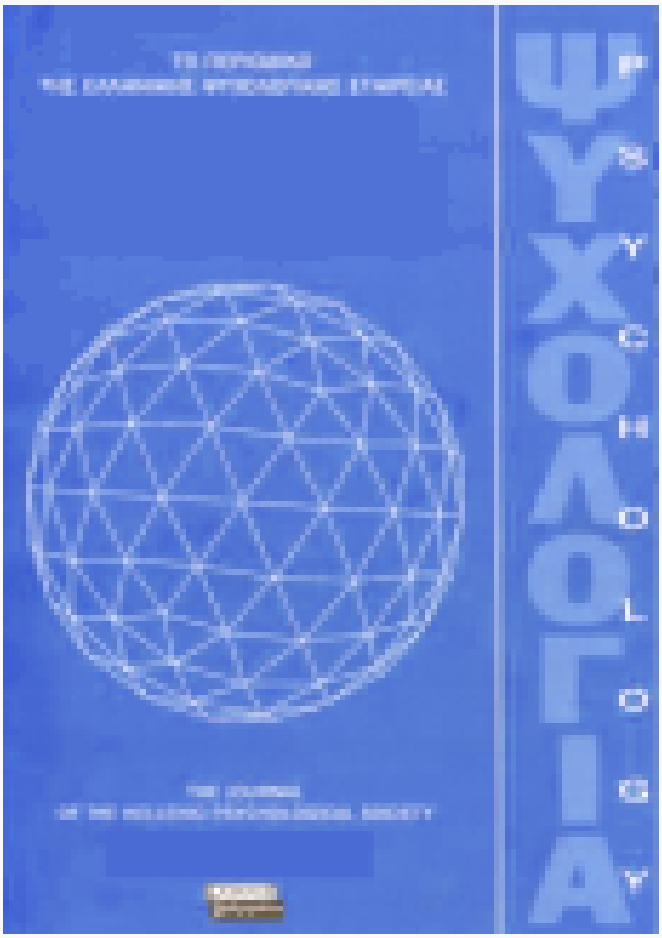

Multidimensional structure of goal orientations: The importance of adopting a personal development goal in physical education

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Multidimensional structure of goal orientations: The importance of adopting a personal development goal in physical education

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ABSTRACT

A multidimensional structure of goal orientations is presented. Four levels of generality are proposed, that is, goal orientations operate at the global higher order level (life in general), global lower-order level (human action domain irrespective of life context), contextual level (life domain), and situational level of generality. Findings from 4 studies are presented supporting this argument. Results from confirmatory factor analyses support the existence of 4 goal orientations (personal development, ego-strengthening, ego-protection and social acceptance) at different levels of generality. A personal development goal is positively linked with intrinsic motivation but ego goals are positively associated with less self-determined forms of motivation in physical education. An experimental study and a short intervention lasting 9 consecutive lessons indicate how we can promote a personal development goal in physical education without emphasizing ego-strengthening goals.

Key-words: Goal orientations, Personal development, Physical education.

Research in the Greek Physical Education (P.E.) context indicates that in the ages 10-18 there is a substantial decrease in students' motivation (Digelidis & Papaioannou, 1999; Papaioannou, 1997). Most of this research was based on goal orientations theory (Ames, 1992; Dweck & Leggett, 1988; Nicholls, 1989). According to this theory, in achievement domains such as sport and physical education, two classes of goals predominate, namely task and ego (Duda, 1993; 1996; Nicholls, 1989). When a task goal is salient people focus on competence development and skill mastery. When an ego goal is emphasized, people are preoccupied with how able they are relative to others. They either try to exhibit high normative ability by surpassing others or they try to avoid showing evidence of low ability by withdrawal or by applying little effort in order to justify the forthcoming low performance.

Goal orientations differ as a function of individual differences and situational demands

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(Duda, 1993). Today there is extensive information about the positive role of individuals' task orientation on their motivation in physical activity settings (Roberts, 1992). Also, a large number of studies indicate that a climate emphasizing personal development leads to positive motivational outcomes (Biddle & Ntoumanis, 1999). On the other hand, a climate emphasizing ego-involvement has negative impact on students' motivation. Teachers, coaches and parents are encouraged to create a climate emphasizing personal development.

Today there are few sophisticated studies examining how class or family factors such as feedback, task-structure, student grouping or evaluation, affect students' perceptions of motivational climate (Papaioannou & Kouli, 1999). Furthermore, there are no intervention studies attempting to create this climate. Most importantly, there is no theoretical model clarifying what are the effects of motivational climate in different life contexts (school, sport, family, peer) in other areas of students' life. Accordingly, there is a scarce of research examining what are the consequences of goal orientations in a particular life domain in different life contexts. In addition, the effects of motivational climate and goal orientations have been basically examined in the achievement domain. There are no studies examining whether team or school motivational climate has an impact on moral behavior, health-related behavior, social relationships etc., in life contexts such as peer, work, spouse etc. Below, a new theoretical model is presented, which can address several of the aforementioned issues.

The Multidimensional Hierarchical Model of Goal Orientations (MHMGO)

Recently, it has been suggested that goal orientations should be examined within a multidimensional hierarchical framework (Papaioannou, 1999). At least three dimensions were proposed:

1. The domains of human action. Goal orientations should be examined in different domains of human action. Most of the research in the sport context focused on achievement. Other domains should be also examined, such as discipline, prosocial behavior, morality etc.

2. The hierarchical levels of generality. Goal orientations should be examined in three levels of generality. From the higher to the lower levels, these levels are the global (or personality), the contextual (or life domain) and the situational (or state). The global domain is subdivided in two orders. In the global lower-order level, motivation should be examined with reference to the particular domain of human action. In the global higher-order, motivation should be examined with reference to any human action in general. An example of a hierarchical model addressing three domains of human action and two life domains is depicted in Figure 1.

3. The process Social Factors á→ Perception ↔ Motivation ↔ Consequences. The social factor effects on goal orientations are mediated by people's perception. At the situational level of generality, social factors affecting people's perceptions and motivation are the task structure, the authority, the rewards, the type of students' grouping, the evaluation (Epstein, 1989), various forms of goal setting processes, feedback, strategies (learning, achieving, behavioral), psychological techniques etc. (Papaioannou & Goudas, 1999). When the situational factors occur on a regular basis in one particular life domain, they become contextual social factors affecting students' perceptions and motivation in the particular life domain. For example, teachers who consistently use ability grouping in their classes they are likely to create an ego-involving climate in the lesson. One can assume that the same social factors can have pervasive effects at the global level when they occur in several contexts, or for long-lasting periods in people's life. Other social factors affecting people's perceptions and motivation at the global level are what we call culture, that is, values stemming from religion, media, political,

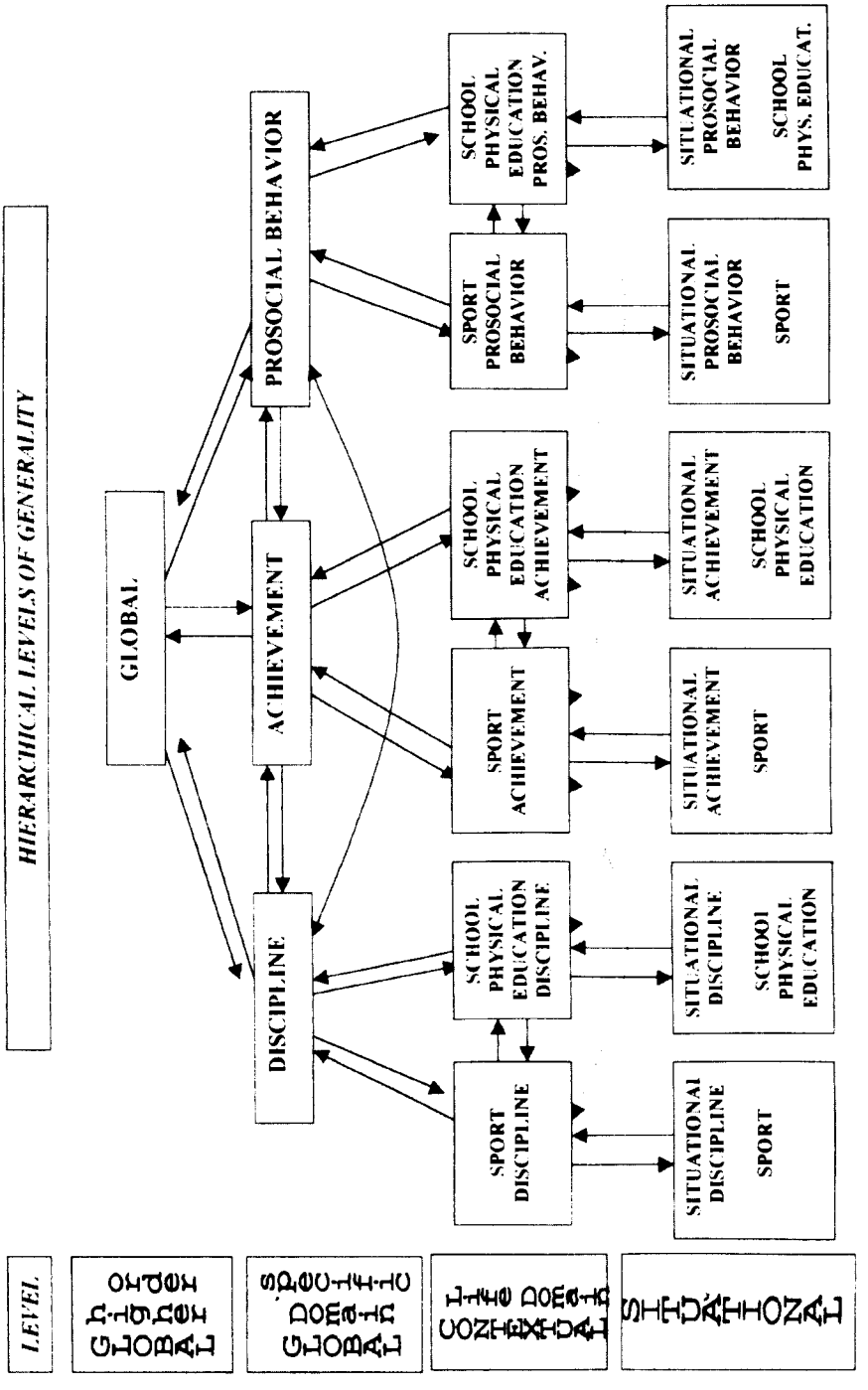


Figure 1
Example of three domains of human action and two contexts (life domains) in the hierarchical levels of generality.

educational and sport system, family structure etc.

Goal orientations interact with other dispositional constructs, such as intrinsic-extrinsic motivation, self-perceptions etc., leading to important outcomes, which can be affective, cognitive and behavioral in nature. These outcomes can also affect people's motivation, which could influence people's perceptions of the social factors. A three-dimensional model for two domains of human action (discipline and achievement), one life context (e.g., sport), three levels of generality and the continuum social factors-perception-motivation-consequences is depicted in Figure 2.

This model of goal orientations has important implications for research. From a methodological standpoint, constructs implying perception of social factors, motivational processes and consequence of motivation should be specific to (1) the particular level of generality, (2) the particular domain of human action, and (3) the particular life domain. This has important implications for measurement procedures. For example, if the examined outcome of motivation is satisfaction, then at the global higher-order domain life satisfaction should be examined. At the global human activity domain, satisfaction should be pertinent to the particular activity domain (e.g., satisfaction in the achievement domain). At the contextual level, satisfaction should be relevant to the particular life domain and the specific activity domain (e.g., satisfaction with sport achievement). At the situational level, satisfaction stemming from doing a particular action, in a particular context, at a particular moment, should be examined.

From a conceptual point of view, this model provides a framework to study the effects of motivational climate and goal orientations at a particular life context on goal orientations and their corresponding consequences in different life contexts and human action domains. At this point of research we can only hypothesize that top-down and bottom-up effects occur among goal orientations at different levels in the hierarchy. The same also applies to the perceptions. At the contextual level, correlation is predicted among goal orientations at different life domains (e.g., Duda & Nicholls, 1992), but this should not always be expected at the situational level. At the global level, correlation should be expected among goal orientations at different domains of human action.

Four goal orientations

According to Elliot, the ego/performance goal should be distinguished in performance avoidance and performance approach goals (Elliot & Church, 1997). A performance avoidance goal indicates people's efforts to establish that they are competent in a normative sense, whereas a performance avoidance goal indicates people's attempts to avoid negative evaluation of their competence. Research in the academic domain provided construct and predictive validity for a questionnaire assessing task, performance avoidance and performance approach goals (Elliot & Church, 1997). According to Elliot's conceptualization, the terms performance approach and avoidance goals are specific to the achievement domain. However, based on the MHMGO, performance approach and performance avoidance goals are just a manifestation of two goal orientations that exist at the global level of generality and take specific form in the achievement domain. Papaioannou (1999) called the two goals ego-strengthening and ego-protection goals respectively because these are applicable to several domains of human action. An ego-strengthening goal denotes people's effort to gain positive evaluation from others but an ego-protection goal indicates people's attempt to avoid negative evaluation. For example, in the prosocial domain some people donate money in order to gain social recognition and establish their names as donors, in the religious domain some people go to church in order to avoid appearing atheists, etc.

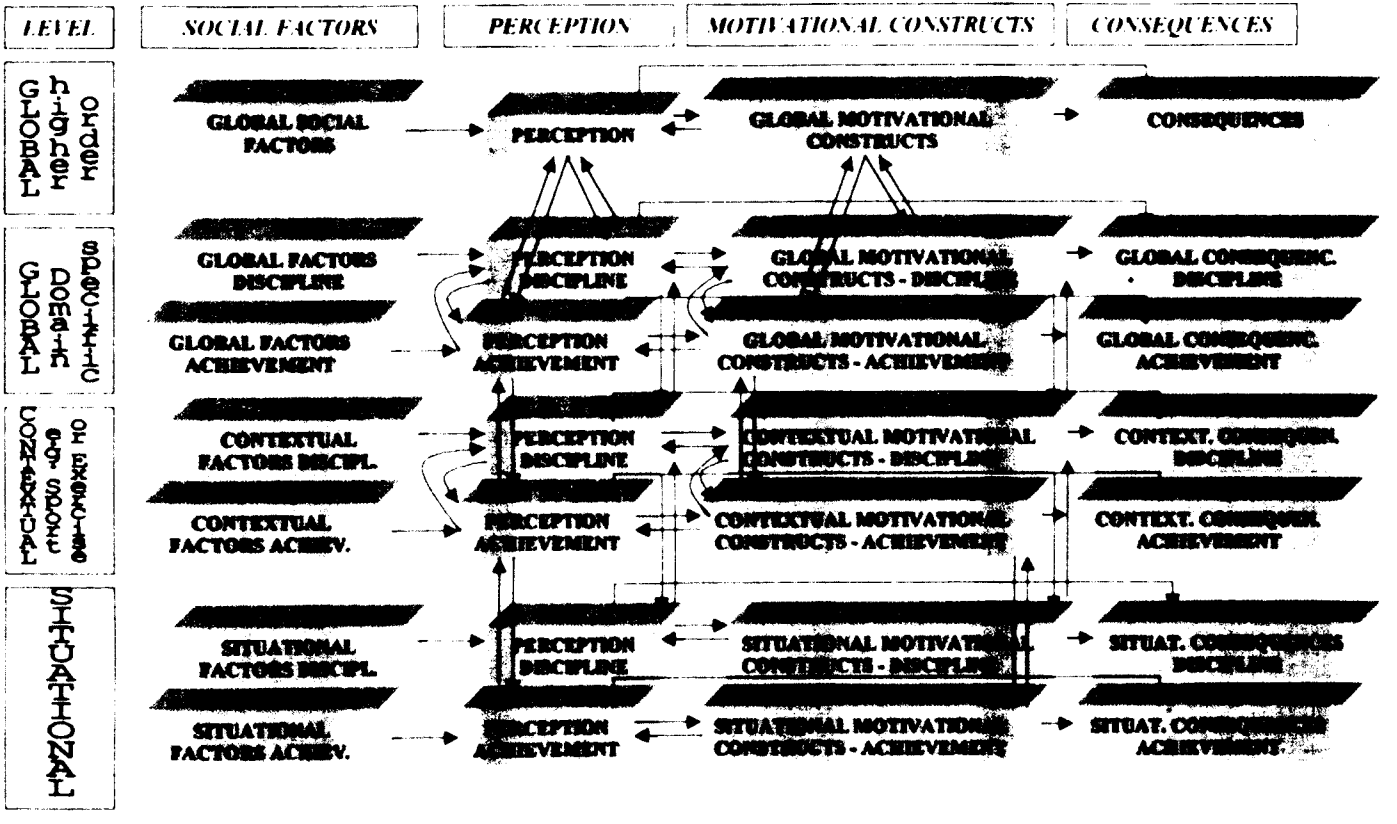


Figure 2
The general framework for two domains of human action (discipline and achievement) and one life domain (sport context).

Likewise, the terms task (Nicholls, 1989) or learning (Dweck & Leggett, 1988) or mastery (Ames, 1992) goal, are pertinent to the achievement domain. All of them imply competence development, in other words, personal development in the achievement domain. However, people pursue goals for personal development in several domains of human action, such as religion (e.g., become a better Christian), morality, discipline, prosocial, etc. Accordingly, this goal at the global level of generality was called personal development goal (Papaioannou, 1999).

The first version of goal orientation theory was built on a cross-cultural analysis of achievement motivation (Maehr & Nicholls, 1980). In the original model social acceptance was considered an important goal in achievement domains. However, this goal was not considered in later research, possibly because it is not so important in the achievement domain of western societies. However, recent cross-cultural research implies that social acceptance goal is very important in many nonwestern cultures (e.g., Hayashi, 1996). Likewise, Papaioannou and Voudalikakis (1999) following the research methodology of Triandis (1972), administered open-ended questionnaires to Christian and Muslim students living in Northeastern Greece in order to examine their perceptions regarding to what leads to success, what are the consequences of success and how they define success in sport, school and life. The results revealed that both Christians and Muslims referred to social acceptance as important determinant and consequence of success in school, sport and life. Moreover, when they were asked what is success in school, sport and life, many students mentioned social acceptance (e.g., be loved by the teacher, coach, parents, friends, etc.). Taking into consideration that social acceptance goal has important consequences in several nonachievement domains (e.g., several adolescents smoke in order to gain social acceptance from their peers), a decision was made to examine this goal in our studies. In sum, our research focused on four goals, namely personal development, ego strengthening, ego-protection and social acceptance.

Scale development

Based on the above mentioned theorizing a number of scales were developed. Their psychometric properties were tested in several studies. Here, findings from 4 recent studies are reported.

In the first study (Tsigilis, 2000), five instruments were developed assessing the four goal orientations at the (1) global high-order level of generality, (2) global lower-order level, discipline domain, (3) global lower-order level, achievement domain, (4) context of physical education, discipline domain, and (5) context of physical education, achievement domain. Five additional tools were also constructed in order to assess students' perceptions of their fathers' emphasis on goal orientations at these five levels-domains. Five hundred seventy three Greek students at junior and senior high school completed these scales in two different phases. These students gave also self-reports concerning their satisfaction and being disciplined in school physical education and generally in life. Also, they completed a scale assessing life satisfaction.

Ten Confirmatory Factor Analyses (CFAs) were conducted, one CFA for each of the ten aforementioned instruments. All CFAs were computed using AMOS 4 software (Arbuckle & Wothke, 1999). In each analysis, a four-factor model was specified; the items were freed to the factor that they were supposed to load and fixed to the other three factors. No correlated residuals were permitted. The factors were freed to correlate to each other. The results appear in Table 1. Eight of these instruments consist of 28 items, 7 items for each scale, and two instruments consist of 24 items, 6 items for each scale. In most cases, the Tucker and Lewis I indices (TLI or NNFI) that are supposed to be unaffected by the sample size were over .90

implying a good fit. For the instruments assessing goal orientations at the global higher order level of generality and goal orientations at the global lower order-achievement domain, the indices were neither perfect nor unacceptable. These findings support the four-factor structure of these tools. All subscales had good internal consistency (in all cases the alpha reliability was over .80).

In the second study (Milosis, 2000), five hundred eighty students reported in four instruments assessing goal orientations at the four levels of generality, that is, (1) global higher-order level, (2) global lower-order achievement domain, (3) achievement in the context of physical education, (4) goal orientations at the situational level of generality in physical education lesson, achievement domain. Moreover, the students reported on instruments assessing their perceptions of their physical education teachers' emphasis on the four goals at the four hierarchical levels of generality. These instruments were completed in three phases. In the first phase, students' perceptions of their teacher's emphasis on goal

Table 1
Goodness of fit indices for the instruments used in the first study

	χ^2	*df*	χ^2/df	NNFI	CFI	IFI	RMSEA
Goal orientations at the global higher-order level of generality	748	344	2.18	.89	.90	.90	.045
Goal orientations at the global lower-order level, achievement domain	844	344	2.45	.87	.88	.88	.050
Goal orientations at the global lower-order level, discipline domain	542	246	2.20	.92	.93	.93	.046
Goal orientations at the contextual level, achievement in physical education	807	344	2.34	.91	.92	.92	.049
Goal orientations at the contextual level, discipline in physical education	696	344	2.02	.94	.94	.94	.042
Perception of father's emphasis on goal orientations at the global higher-order level of generality	536	246	2.18	.91	.92	.92	.045
Perception of father's emphasis on goal orientations at the global lower-order level, achievement domain	754	344	2.19	.91	.92	.92	.046
Perception of father's emphasis on goal orientations at the global lower-order level, discipline domain	771	344	2.24	.92	.93	.93	.047
Perception of father's emphasis on goal orientations at the contextual level, achievement in physical education	746	344	2.17	.93	.93	.93	.045
Perception of father's emphasis on goal orientations at the contextual level, discipline in physical education	622	344	1.81	.95	.96	.96	.038

Note: The indices result from analyses using the AMOS 4 software.

orientations at the three higher-order levels were assessed. In the second phase, students' goal orientations at the three higher-order levels of generality were measured. In this phase, intrinsic-extrinsic motivation at the global and contextual domains (Guay, Blais, Vallerand, & Pelletier, 1996; Pelletier, Fortier, Vallerand, et al. 1995) and satisfaction at the three higher-order levels of generality were also assessed. In the third phase, after a 35 minutes physical education lesson, the students reported on the state-related goal orientations, state-related perceptions of their teachers' emphasis on goal orientations, state-related intrinsic-extrinsic motivation (Guay & Vallerand, 1998), and state satisfaction in the lesson. The results from the confirmatory factor analyses supported the four-factor structure of all instruments. The fit indices for each scale are given in Table 2. The alpha reliability of all subscales was higher than .80, suggesting good internal consistency.

Correlation of goals at the global higher-order level with other scales

The personal development and ego-strengthening subscales at the global higher-order domain were administered to one thousand one hundred twenty two athletes of various sports, aged 11-18, alongside with other well-known scales in the sport literature (Study 3, Papaioannou, 2001). These were the task- and ego- orientation scale of Duda and Nicholls (1992), which

Table 2
Goodness of fit indices for the instruments used in the second study

	χ^2	*df*	χ^2/df	NNFI	CFI	IFI	RMSEA
Goal orientations at the global higher-order level of generality	670	344	1.95	.93	.94	.94	.041
Goal orientations at the global lower-order level, achievement domain	658	344	1.91	.94	.94	.94	.040
Goal orientations at the contextual level, achievement in physical education	621	344	1.80	.95	.95	.95	.037
Goal orientations at the situational level, achievement in physical education	749	344	2.18	.93	.94	.94	.045
Perception of teacher's emphasis on goal orientations at the global higher-order level of generality	604	246	2.45	.90	.91	.91	.050
Perception of teacher's emphasis on goal orientations at the global lower-order level, achievement domain	842	344	2.45	.89	.90	.90	.050
Perception of teacher's emphasis on goal orientations at the contextual level, achievement in physical education	636	246	2.59	.89	.90	.90	.052
Perception of teacher's emphasis on goal orientations at the situational level, achievement in physical education	624	344	1.81	.94	.94	.94	.038

Note: The indices result from analyses using the AMOS 4 software.

was adapted for the physical education lesson, the Seifriz, Duda, and Chi (1992) questionnaire assessing perceived motivational climate in sport, and the scale of Papaioannou (1998) assessing perceptions of physical education teacher's emphasis on task and ego goals. Taking into consideration that at the global higher-order level the goals are concerned with any domain of human action in any life context, we expected that they would be moderately correlated to the constructs of the scales in the physical activity context. The ego-protection and social goal subscales were not included in this study, because its main focus was different and a great number of items had already been used.

The results are shown in Table 3. The correlations were according to expectations. The most interesting finding was the very strong link between the two goals at the global higher-order level and the perception of motivational climate in sport. These findings imply that for youngsters who participate in organized sport, the team climate plays very important role in the formation of their general goal orientations in life.

Goal orientations and intrinsic extrinsic motivation

In the sport psychology literature there are dozens of studies showing a strong connection between task orientation and intrinsic motivation. Ego orientation has been found to be a positive correlate of extrinsic motivation (Duda, Chi, Newton, Walling, & Catley, 1995). Using the data from Study 2, the relationship of personal development, ego-strengthening, ego-protection and social acceptance goals with intrinsic motivation, external regulation and amotivation at the four levels of generality was examined. Likewise, the association between perceptions of teacher's emphasis on goal orientations and intrinsic motivation, external regulation and amotivation was also investigated.

The results appearing in Table 4 suggest that personal development goal and the perception of teacher's emphasis on personal development

Table 3
Correlation among goal orientations at the global level and scales in physical activity settings (*N* = 1122)

	1	2	3	4	5	6	7	8
1. Personal development global	1.00							
2. Ego-strengthening global	.21	1.00						
3. Task orientation in physical education	.34	.12	1.00					
4. Ego orientation in physical education	-.04	.48	.23	1.00				
5. Perception of teacher's emphasis on task-involvement in physical education	.30	.12	.52	.06	1.00			
6. Perception of teacher's emphasis on ego-involvement in physical education	-.08	.45	.12	.48	.16	1.00		
7. Perception of a task-involving climate in sport	.61	.10	.34	-.02	.36	-.01	1.00	
8. Perception of an ego-involving climate in sport	-.11	.54	.02	.46	.03	.57	-.07	1.00

Note: Correlation coefficients larger than .07 are significant at the .001 level.

were positively linked to intrinsic motivation at all levels of generality. Moreover, personal development goal was negatively associated with amotivation at all levels of generality. The perception of teacher's emphasis on personal development was negatively connected to amotivation at the situational level.

The ego-strengthening and ego-protection goals were positively related to external regulation and amotivation at all levels of generality. Likewise, the perception of teacher's emphasis on ego-strengthening and ego-protection goals was positively related to external regulation and amotivation at all levels of generality. According to expectations, in all cases, amotivation had a slightly higher relationship with the ego-protection goal than with the ego-strengthening one. Similarly, amotivation had a slightly higher correlation with perceptions of teacher's emphasis on ego-protection than with perceptions of teacher's emphasis on ego-strengthening, at all levels of generality.

Social acceptance goal had a positive link with both intrinsic motivation and external regulation and no association with amotivation at all levels of generality. Similarly, the perception of teacher's emphasis on social acceptance goal was positively related to both intrinsic motivation and external regulation at all levels of generality. These findings are reasonable because people who undertake actions for social reasons, probably like social relations (intrinsic motivation) and at the same time they seek social acceptance (external regulation).

The sum of these studies provides construct validity for all the questionnaires of the hier-

Table 4
Relationship between goal orientations and intrinsic-external regulation and amotivation at four levels of generality

	Levels of generality											
	Global-higher order			Global achievement			Contextual physical education			Situational physical education		
	Int.	Ext.	Am.	Int.	Ext.	Am.	Int.	Ext.	Am.	Int.	Ext.	Am.
Personal goals												
Personal development	.42	.15	-.19	.48	.10	-.19	.50	.12	-.35	.48	-.10	-.21
Ego-strengthening	.09	.35	.25	.04	.37	.25	.10	.39	.26	.15	.25	.21
Ego-protection	.04	.31	.28	.00	.30	.33	-.13	.18	.47	-.03	.32	.41
Social goal	.27	.37	.09	.29	.40	.07	.38	.30	.01	.28	.16	.14
Perception of teacher's emphasis on												
Personal development	.20	.13	-.01	.28	.17	-.08	.41	.13	-.15	.53	-.06	-.20
Ego-strengthening	-.07	.20	.29	-.02	.22	.29	.09	.26	.28	.06	.39	.37
Ego-protection	-.12	.16	.35	-.10	.18	.35	-.10	.14	.36	-.02	.48	.53
Social goal	.17	.30	.22	.16	.26	.17	.28	.22	.10	.35	.14	.12

Note: At each level of generality the respective goal orientations and perceptions were selected. At the global achievement level the global intrinsic-extrinsic motivation scale was used. Int. = intrinsic motivation; Ext. = external regulation; Am = amotivation. Correlation coefficients larger than .16 are statistically significant at the .001 level.

archical model of goal orientations. At the same time, they strengthen the arguments of goal theorists that people pursuing personal development are intrinsically motivated in all contexts. On the other hand, the ego goal is connected to external regulation and amotivation which are negative predictors of long-term motivation (Vallerand, in press). Our studies show that this is probably true for either ego strengthening or ego-protection. However, the predictive ability of the goal orientations instruments in a long-term perspective has yet to be examined.

Differences at the situational level

At the third phase of Study 2, the following experiment was conducted. One hundred eighty five students participated in a lesson consisting of task-involving drills. One hundred seventy four students took part in a lesson containing ego-involving drills and two hundred twenty one students were involved in a typical physical education lesson (no intervention). All of them were at the first grade of junior high school (age = 13 + 0.5). The Greek physical education curriculum at the secondary school is sport-oriented and at this grade competitive sports predominate in the lesson.

An example of ego-involving drills is the following: The children are playing two by two, each child sets overhead passes to him/herself, trying to overcome each other. Examples of task-involving drills: two by two, volley overhead sets, with the goal to keep the ball in the air for 20 consecutive passes, or, two by two, volley overhead sets, with the goal to set passes correctly (fingers). Past research showed that these drills affected the motivational climate of the lesson (Papaioannou & Kouli, 1999).

Children exercised in the lesson for 35 minutes. After that, they completed the situation-specific scales assessing perceptions of teacher's emphasis on goal orientation, personal goal orientations, intrinsic-extrinsic motivation and satisfaction. The results showed that in the lesson consisting of task-involving skills, students reported that their teacher placed greater emphasis on personal development than students in the control group (see Table 5). Nevertheless, this did not affect their personal development goal. Also, students in the task-involving lesson did not report higher levels of intrinsic motivation or identified regulation than students in the control group. On the other hand, they were more satisfied with the lesson than students in the control group. These findings suggest that sometimes teachers create a task-involving climate, their students realize it and feel satisfied, but they do not necessarily become more task-involved and more intrinsically motivated.

This finding underscores the importance of measuring perceptions when we examine people's motivation. If only goal orientations had been measured, one could conclude that the task-involving drills did not promote a task-involving climate. Nevertheless, the task-involving climate was created; the students saw it and felt greater satisfaction than the students in the control group.

Interestingly, students in the group with the ego-involving drills were more intrinsically motivated than students in the control group. Although there were no differences between these two groups of students in the perceptions of teacher's emphasis on ego-involvement, the students who were taught the ego-involving drills were more ego-strengthening oriented than the students in the control group. The demand of the drills to overcome each other made them more competitive than students in the control group. This strong competitive goal increased also intrinsic motivation.

Nevertheless, the maladaptive effects of the ego-involving climate emerged. The students who were taught the ego-involving drills were more ego-protective than the students who were taught the task-involving drills. All these findings are according to theory (e.g., Nicholls, 1989) and

Table 5
Differences in perceptions, goals, intrinsic-extrinsic motivation, amotivation and satisfaction assessed at the situational level

	Type of drills - lesson							
	Task-involving		Ego-involving		Typical control			
	M	*SD*	*M*	*SD*	*M*	*SD*	*F*	*p*
Perception of a teacher promoting								
Personal development goal	4.15_{a}	.78	4.07_{ab}	.66	3.91_{b}	.83	4.25	.015
Ego-strengthening goal	2.71_{a}	.98	3.15_{b}	1.10	3.05_{b}	1.00	10.20	.000
Ego-protection goal	2.48_{a}	.80	2.77_{b}	.88	2.75_{b}	.85	5.30	.005
Social goal	3.23_{a}	.98	3.69_{b}	.92	3.40_{a}	.99	9.15	.000
Students' goals								
Personal development	4.38_{a}	.63	4.34_{a}	.63	4.26_{a}	.79	1.20	n.s.
Ego-strengthening	2.48_{a}	.96	3.08_{b}	1.10	2.76_{c}	.98	13.90	.000
Ego-protection	2.34_{a}	.90	2.69_{b}	1.05	2.53_{ab}	.98	4.83	.008
Social	3.32_{a}	1.05	3.84_{b}	.95	3.57_{ab}	1.03	9.15	.000
Regulation								
Intrinsic motivation	4.19_{ab}	.82	4.29_{a}	.74	3.99_{b}	.96	5.28	.005
Identified regulation	4.03_{a}	.75	4.04_{a}	.77	3.89_{a}	.93	1.70	n.s.
External regulation	3.05_{a}	1.10	3.20_{a}	1.08	3.13_{a}	1.10	.77	n.s.
Amotivation	2.52_{a}	.99	2.65_{a}	1.05	2.59_{a}	.99	.63	n.s.
Satisfaction	4.21_{a}	.68	4.27_{a}	.65	4.00_{b}	.87	6.00	.003

Note: Means sharing the same subscript are not statistically significant ($p > .05$).

research (e.g., Duda, 1996) suggesting that teachers should avoid social evaluation in their classes and enhance task orientation.

As has been already said, the typical Greek physical education lesson at this grade is relatively competitive and not highly task-oriented (Diggelidis & Papaioannou, 1999; Papaioannou, 1997). Students in the control groups had higher scores on the measures assessing perceptions of a teacher who promotes ego-strengthening and ego-protection than students who were taught the task-involving drills. Actually, there was no difference in the perceived ego-involving climate between the control and the ego-involving group. The students in the control group were more competitive than the students in the task-involving group, but after the lesson felt less satisfaction. Playing competitive games and not learning leaves a feeling of dissatisfaction after the end of the lesson. The students in the ego-involving lesson did not experience this feeling. Instead, they felt equally satisfied with the students in the task-involving group. The students in the ego-involving group enjoyed the lesson. However, one wonders whether they will continue to feel like that in the long term if they always try to protect themselves in an ego-involving atmosphere.

Finally, it should be mentioned that students in the lesson comprising ego-involving drills

reckoned that their teacher placed greater emphasis on social acceptance than students in the other groups. This is quite natural. When physical education teachers introduce a competitive drill, they usually say something like "I want to see who is going to be the first". Students feel that they have to compete in order to please the teacher.

In sum, the situational-specific measures captured effectively both climate and students' goals. Their application in this experiment showed that they were quite distinct from other constructs such as intrinsic-extrinsic motivation. Three out of four scales of the instrument assessing intrinsic-extrinsic motivation at the situational level did not reveal differences among the three groups. This was natural, because the aim of the experiment was to manipulate goals and not intrinsic - extrinsic motivation or amotivation. On the contrary, the scales, which were developed based on goal theory, captured all the expected differences.

It is interesting to observe that in both experimental groups, students felt greater satisfaction with the lesson than in the control group. Most probably because these lessons were well structured and had clear goals. In both task-involving and ego-involving classes students had a goal to pursue. This caused them greater satisfaction than students in the typical classes. On the other hand, for students who were taught the task-involving drills, just one lesson was probably not enough to make them focus on personal development. Likewise, they did not have stronger intrinsic or identified reasons to participate in the lesson than students in the control groups. Teachers should know that their good effort to create a task-involving climate does not immediately affect students' goal towards personal development. This is more extensively discussed in the study to be described below.

Intervention based on the MHMGO

In Study 4 (Kosmidou, 2000), two physical education teachers carried out the intervention in four different junior high schools for a period of three weeks. At this grade, students have physical education three times per week. Hence, the intervention lasted for nine consecutive lessons. The students in the intervention groups were one hundred seventy students and the students in the control groups were one hundred eighty one. The classes of three physical education teachers who followed the typical curriculum served as the control groups. The intervention started three weeks after the beginning of the academic year 1999-2000. Before that time, students completed questionnaires assessing personal goals, perceptions of teacher's emphasis on goals, intrinsic-extrinsic regulation and satisfaction at all levels of generality. The domain of human action was achievement.

The students were in their first year in junior high school, so they were new to this environment. Following the completion of the questionnaires the week prior to intervention, the physical education teachers told students that the aim of the lesson for the next month was to teach them how to set challenging personal goals, how to pursue them and how to evaluate their improvement. The students were also told that their effort to approach these goals would increase their self-efficacy and self-confidence, which would be useful to them in other areas of life.

Three simple tasks were chosen that would allow students to have immediate feedback of their performance and could be used in students' free time. Students tested themselves in sit-ups, balance and endurance in jumping (continuous side jumping). They kept their scores and set weekly goals. Every third day of the week the students assessed themselves, set their new personal goals and participated in the remaining activities of the lesson. At the end of the lesson, they completed the instruments at the situational level of generality. The fourth week, that is, after

the intervention, the students completed the questionnaires at the contextual and global level of generality. The teachers in the intervention study planned their lessons according to the existing instructions for the creation of a task-involving climate in physical education (e.g., Papaioannou & Goudas, 1999; Treasure & Roberts, 1995).

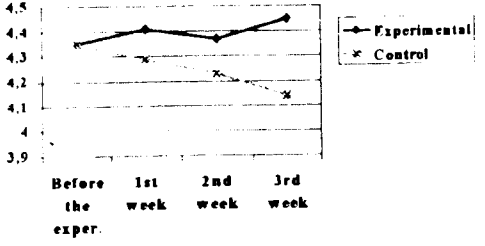
At first, differences at the situational level of generality were examined. For each construct, a repeated measures design was used with the measurements at the situational level of generality as dependent variable and the measurement prior to the intervention as covariate. The adjusted means are shown in Figure 3. The results suggest that at the situational level of generality, students in the experimental groups had higher scores in personal development goal, $F(1, 200) = 7.2, p < .01$, perception of teacher's emphasis on personal development, $F(1, 215) = 4.9, p < .03$, and satisfaction $F(1, 235) = 4.6, p < .04$, than students in the control groups. No differences emerged in intrinsic motivation, $F(1, 218) = 1.6, p > .20$, identified regulation, $F(1, 212) = .3, p > .60$, external regulation, $F(1, 208) = 1.8, p > .10$, and amotivation, $F(1, 209) = 2.9, p > .09$. No differences emerged in ego strengthening goal, $F(1, 195) = 1.6, p > .20$ and social acceptance goal, $F(1, 205) = 1.1, p > .20$. Likewise, no differences appeared in the perceptions of teacher's emphasis on students' ego-strengthening, $F(1, 213) = .04, p > .8$, and social acceptance goal, $F(1, 186) = .01, p > .9$.

The findings concerning the effects of the intervention on goal orientations at the higher-order levels of generality were in line with the findings at the situational level. Analysis of covariance showed large differences in personal development goal at the contextual level. As shown in Table 6, after the intervention, students in the experimental group were much more positively oriented towards personal development in physical education than students in the control groups. Also, students in the experimental groups perceived that their teacher placed much more emphasis on personal development in physical education than students in the control groups.

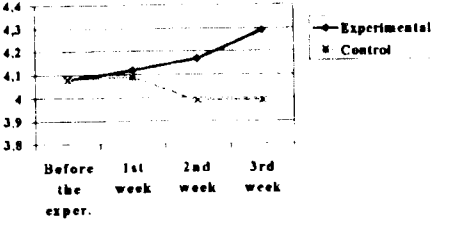
As was expected, students in the experimental groups reckoned that their teachers gave more emphasis on achievement than students in the control groups. Nevertheless, the greatest difference emerged in students' perceptions of teachers' emphasis on personal development generally in life. This difference between the experimental and the control groups was really high. This was not surprising to the researchers. The two teachers in the experimental groups emphasized the value of personal development in life almost in most interactions with their students. For example, when they wanted to stress the values of discipline, mutual understanding, helping, and personal responsibility, they always connected them with the personal development goal in any life domain. However, they did not do it systematically, it was just feedback in their interactions with the students. As the results in Table 6 show, although the personal development goal at the global higher-order domain was affected, the magnitude was not impressive. It is obvious that longer and more systematic intervention in several other domains of human action should have been pursued.

Nevertheless, these findings were considered satisfactory. The intervention had positive effects on students' personal development goal in physical education in particular and in the achievement domain in general. As shown in Table 6, the intervention had positive effects on students' satisfaction in physical education and achievement domains in general. Moreover, it was nice to see that after the intervention students felt greater satisfaction in life. It was already known from previous results that satisfaction in life is strongly linked with the personal development goal in the achievement domain. In this study, the product moment correlation coefficient between these two variables was .51, both before and after the intervention. In addition, the correlation between satisfaction with challenging tasks and life satisfaction was

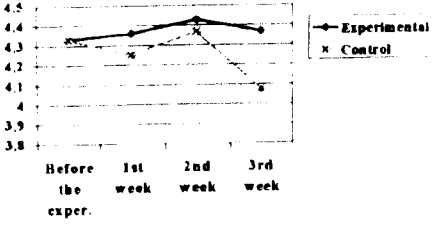
Personal development goal



Perception of teacher's emphasis on personal development



Satisfaction



Perception of a teacher promoting students' ego-protection

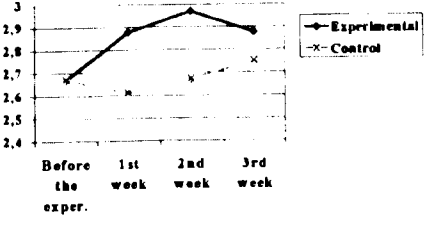


Figure 3

Goals and perceptions at the situational level of generality

Note: The means in weeks 1, 2, and 3 are estimated marginal means, evaluated at covariates (the respective measurement before the intervention).

Table 6
Results from analyses of covariance, using the final measurement as dependent variable and the measurement prior to the intervention as covariate

	Experimental	Control			
	M_{adj}	M_{adj}	$F(1, 261)$	p	η^2
Contextual level of generality					
Personal goals					
Personal development	4.38	4.09	14.50	.000	.06
Ego-strengthening	3.33	3.60	5.80	.017	.02
Ego-protection	2.84	2.88	.15	.695	.00
Social goal	4.20	4.00	4.03	.046	.02
Perception of teacher's emphasis on					
Personal development	4.35	4.03	14.20	.000	.06
Ego-strengthening	2.81	2.83	.02	.882	.00
Ego-protection	2.91	2.79	.85	.358	.00
Social goal	4.07	3.87	3.80	.053	.02
Regulation					
Intrinsic	6.06	5.74	7.50	.007	.04
Extrinsic	5.24	5.13	.57	.451	.00
Amotivation	3.56	3.69	.36	.551	.00
Satisfaction in physical education	4.53	4.28	9.10	.003	.03
Global lower-order achievement domain					
Personal goals					
Personal development	4.34	4.06	13.7	.000	.05
Ego-strengthening	3.46	3.58	1.3	.261	.00
Ego-protection	2.89	2.89	.00	.956	.00
Social goal	4.16	3.98	4.2	.042	.02
Perception of teacher's emphasis on					
Personal development	4.30	4.02	10.7	.000	.05
Ego-strengthening	3.13	3.20	.42	.518	.00
Ego-protection	2.92	2.91	.02	.892	.00
Social goal	4.13	3.83	7.3	.008	.03
Satisfaction with challenging tasks	4.25	4.03	5.6	.019	.02
Global lower-order achievement domain					
Personal goals					
Personal development	4.32	4.10	4.9	.027	.02
Ego-strengthening	3.36	3.55	2.9	.093	.01
Ego-protection	3.07	2.92	1.6	.206	.00
Social goal	4.14	3.93	4.3	.040	.02
Perception of teacher's emphasis on					
Personal development	4.30	3.92	16.6	.000	.08
Ego-strengthening	3.05	3.28	3.5	.064	.02
Ego-protection	2.71	2.89	1.8	.179	.01
Social goal	4.01	3.88	1.6	.199	.01
Regulation					
Intrinsic	5.97	5.77	3.1	.079	.01
Extrinsic	5.52	5.42	.77	.379	.00
Amotivation	3.76	4.06	1.8	.174	.01
Satisfaction with life	4.22	4.07	5.02	.026	.02

.36 before the experiment, and .57 following the intervention. It is not difficult to realize that achievement has high value for the students and satisfaction in this important domain positively affects their satisfaction with life.

The intervention had also positive effects on students' intrinsic motivation at the contextual level of generality. However, since the intervention had not been designed to influence intrinsic motivation, it was not surprising to see that intrinsic motivation at the global level was not affected. Finally, at both contextual and global lower level of generality, students in the experimental groups reckoned that their teacher placed greater emphasis on social acceptance goals than students of the typical classes. This had probably positive effects in students' social acceptance goals at all levels of generality. However, the magnitude of the differences in these scales between experimental and control groups were rather small and further research is needed in order to explain this outcome.

These findings are very important for two reasons. First, they suggest that our understanding about what constitutes a strong task-involving climate in physical education is in the right track. The hierarchical model of goal orientation helps to clarify which is the specific attribute that we should target in order to cultivate a personal development goal in the lesson. If we want to strengthen this goal in the achievement domain, then the increase of students' competence should be targeted. If we want to strengthen personal development in the exercise domain, physical educators can help students to set goals for regular exercise. If teachers want to facilitate personal development in the prosocial domain, they can encourage their students to set goals to increase their helping behavior.

One could possibly argue that these are self-understood and common practice in sport psychology. However, they are not common practice in physical education. Most importantly, if teachers link all these goals with the general value of personal development in life, then students can easily understand why they should try to improve themselves in different domains of human action and various life contexts. In order to understand it, let's consider the general "Value X Expectancy" model of human motivation. Teachers adopting the hierarchical model of personal development increase their efficiency to strengthen the value component in any life and activity domain. In addition, if students see improvement in one domain, they can more easily transfer their expectations for improvement in another domain.

One unexpected finding emerged at the situational level of generality. Students in the experimental groups perceived that their teachers were more likely to promote students' ego-protection, $F(1, 211) = 5.5$, $p < .02$. Nevertheless, no differences emerged in this perception or in ego-protection goal at the contextual and global levels (Table 6).

One possible explanation has to do with students' self-assessment in the goal setting process. Taking into consideration that the questionnaires at the situational level of generality were filled the day of students' self-assessment, it is natural to think that several students were worried about the adequacy of their competence. The lack of differences in ego-protection goal at higher-order levels strengthens the view that at the situational level, the ego-protection goal was affected by the testing and not by the interaction with the teachers. If this is true, then students should be trained not to worry in testing situations, particularly when it is about self-evaluation in a goal setting process comprising personal goals, as was the case in this experiment. However, this is something that needs further investigation in the future.

Study 4 is also important because it clarifies the methodological procedures. The present scales, whose development was based on the multidimensional hierarchical model, exhibited good construct, discriminant and predictive validity. Moreover, their use in the last intervention study was valuable. The measurement at the situational level of generality enlightened the

intervention process. The findings at the situational level of generality revealed that teachers in the experimental classes emphasized the value of personal development not just in theory, but also in practice. Given the relatively short time of the intervention, the emerged large differences at the contextual and global measures between experimental and control groups are not surprising, taking into consideration the different progress of the two groups during the three weeks period.

Conclusion

The findings of these four studies support the construct validity of the scales assessing goal orientations at different levels of generality. Extensive research is needed in order to test all the assumptions stemming from the MHMGO. A variety of experimental and intervention studies are needed in order to establish what are the important dimensions of the motivational climate affecting youngsters' goal orientations. The questionnaires presented here can be useful to researchers examining motivational climate in physical education. Based on the MHMGO several new questionnaires can be developed in order to examine goal orientations in a variety of life and action domains. Finally, a challenging new direction for future research is the interaction among goal orientations at different life contexts and their direct or indirect consequences in various parts of people's life. For that line of research the ideas presented here could be quite useful.

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