Achievement goals, social goals, and motivational regulations in physical education settings

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This study examined the relationship between achievement and social goals, and explored how both goals affect students' level of informed self-determination in Physical Education. Participants were 395 high school students. Three scales were used to assess achievement, social goals, and motivation. Several hierarchical regression analyses revealed that mastery-approach goals were the greatest contributors to the individuals' levels of self-determination. Achievement and social goals were found to be separate predictors of students' levels of self-determination, and this highlights the importance of separating mastery and performance goals into avoidance and approach profiles. Girls reported significantly higher values than boys on responsibility, relationship, and mastery-avoidance goals, whereas boys scored higher on performance-approach goals. Researchers could use achievement and social goals to study students' motivation and achievement in Physical Education settings.

Metas de logro, metas sociales y regulaciones motivacionales en el contexto de la educación física. Este estudio examinó la relación entre las metas de logro y las metas sociales, y exploró cómo las metas de logro y las metas sociales de los estudiantes pueden afectar a los niveles de autodeterminación informados en el contexto de la educación física. Los participantes eran 395 estudiantes de dos institutos del norte de España. Se utilizaron tres escalas para evaluar las metas de logro, las metas sociales y la motivación. Los análisis de regresión jerárquica revelaron que las metas de aproximación a la maestría representaban el contribuidor más grande de los niveles de autodeterminación. Este estudio proporcionó también evidencias de que las metas de logro 2×2 y las metas sociales son predictores diferenciados de los niveles de autodeterminación, y demuestra la importancia de dividir las metas de maestría y de rendimiento en formas de regulación de aproximación y evitación. Las mujeres informaron valores significativamente más altos que los varones en las metas de responsabilidad social, las metas de relación y en las metas de evitación de maestría. Los varones puntuaron más alto en las metas de aproximación al rendimiento. Se recomienda usar las metas de logro y sociales para estudiar la motivación y el logro del estudiante en educación física.

Young people's regular participation in physical activity contributes to the enhancement of their physical, psychological and social well-being (Biddle, Sallis, & Cavill, 1998). For this reason, students' regular physical activity has become a priority for Physical Education (PE) teachers, families, and governments. Therefore, it seems important to analyze all the factors that could influence youngsters' likelihood of becoming physically active (Sallis et al., 1992). In order to increase children's physical activity levels, it is essential to enhance their motivation to participate in PE. Over the last twenty years, the Achievement Goal Theory (AGT) has been a great help to be able to understand the relationship among affect, cognition, and behavior in physical activity contexts (Whitehead, Andree, & Lee, 2004). Two predominant goal types have

constituted the central focus of the dichotomous achievement goal perspective: mastery and performance (Nicholls, 1989). Mastery goals focus on development and demonstration of competence via personal improvement and learning. In contrast, performance goals focus on the demonstration or proving of competence levels relative to others.

Elliot and McGregor (2001) proposed a 2×2 achievement goal framework in which mastery goals, like performance goals, can be separated into mastery-approach and mastery-avoidance categories. The rationale for this model lies in how competence is defined and how it is valenced: a desirable and positive possibility (success) or an undesirable and negative possibility (failure). Mastery-approach goals are defined in absolute/intrapersonal terms and are positively valenced, whereas mastery-avoidance goals are also defined in absolute/intrapersonal terms, but negatively valenced. Meanwhile, performance-approach goals are defined in normative terms and are positively valenced, whereas performance-avoidance goals are also defined in normative terms, but are negatively valenced. As described by Wang, Biddle, and Elliot (2007) «crossing these two dimensions yields four achievement goals that are positioned

to comprehensively cover the types of competence-based goals that individuals pursue and adopt in academic, work, and sport environments. These four achievement goals are: mastery approach (focused on task-based or intrapersonal competence), mastery-avoidance (focused on task-based or intrapersonal incompetence), performance-approach (focused on normative competence), and performance-avoidance (focused on normative incompetence)» (p. 149). Although Guan, Xiang, McBride, and Bruene (2006) showed that Elliot and McGregor's (2001) 2×2 achievement goal model provides a good fit for PE settings, few studies have used it to explore and explain students' achievement goals and behaviors, particularly at the high school level (Wang et al., 2007).

In addition to achievement goals, students have social reasons for trying to succeed academically. The literature suggests that, at least, two social goals are associated with achievement goals: social relationship goals, that refer to an individual desire to form and maintain positive peer relationships in school (Patrick, Hicks, & Ryan, 1997) and social responsibility goals, that represent a desire to adhere to social rules and role expectations (Wentzel, 1991). Although there is some evidence of the relationship between students' social goals, and achievement goals in academic contexts (Elliot, Gable, & Mapes, 2006), and sport (Hodges, Allen, & Smellie, 2008), this issue has not been considered enough in the PE domain. Just a few studies have addressed this concern, and all of them confirm this correlation: Cecchini et al. (2008), Guan et al., (2006), and Moreno, Parra, and González-Cutre (2008).

On the other hand, another major theoretical framework that is being increasingly used to study motivation in PE is the self-determination theory or SDT (Ryan & Deci, 2000). This theory identifies three types of behavioral regulation: intrinsic motivation, extrinsic motivation, and amotivation. Intrinsic motivation has been defined as doing an activity for its inherent satisfaction, which represents the highest degree of self-determined motivation. Moreover, Vallerand et al., (1992) have developed a tripartite taxonomy of intrinsic motivation. They believe that it can be separated into more specific motives: knowledge, accomplishments, and experience stimulation. In contrast, extrinsic motivation is evident when individuals perform an activity because they value its associated outcomes, more than the activity itself. Three types of extrinsic motivation have been measured in PE (Goudas, Biddle, & Fox, 1994): identified regulation, introjected regulation and external regulation. Identified regulation represents behaviors with a high degree of self-determined motivation (Ryan & Deci, 2000). Introjected regulation describes extrinsically motivated behaviors which have been barely internalized, and they are performed without feelings of guilt or shame. Lastly, external regulation represents the lowest degree of self-determined motivation, and it refers to behaviors carried out in order to attain tangible rewards or to avoid punishment or threats. In addition, amotivation is the least self-determined motivational form of regulation. Whereas, both intrinsic motivation and extrinsic motivation represent different degrees of volition, amotivation represents the absence of motivation. It arises from feelings of personal incompetence, lack of activity value, and the belief that one's actions cannot influence one's outcomes (Ryan & Deci, 2000).

Research on physical activity and SDT (Vallerand, 2001) supports the idea that the type of motivational regulation of a person depends on the quality of performance, learning, personal experience, and well-being. Motivational regulations high in self-determination (intrinsic motivation and identified regulation)

produce more motivationally adaptive responses than those low in self-determination (external regulation and amotivation). Standage, Duda, and Ntoumanis (2003) have provided evidence showing a link between mastery goals and self-determined motivation in PE. They have also revealed a misconnection between performance goals and high self-determination. In order to gain a better understanding of the relationship between AGT and SDT in PE settings, the 2×2 model could provide a better fit.

Moreno, Parra, and González-Cutre (2008) studied the relationship between social goals and one type of motivational regulation (amotivation) in PE settings. Guan, Xiang, et al., (2006) analyzed the links between social goals and achievement goals. Cecchini et al., (2008) deepened in this connection, and tried to find out its impact on the persistence of PE students. Therefore, it seems reasonable to look at the type of motivation (intrinsic, extrinsic or amotivation) that drives that persistence. Students' goal of action derives not only from their perceptions of ability (AGT), but also from their perceptions of interpersonal relationships (social), as well as their motivation to perform in class (SDT). For these reasons, we decided to take a step further, and carry out an investigation that would consider the relationship among achievement goals, social goals, and motivational regulations in PE contexts.

Based on the aforementioned precedents, we designed our study with a main objective: examine the impact that achievement goals, and social goals have on the different degrees of self-determined motivation: intrinsic motivation, identified regulation, introjected regulation, external regulation, and amotivation. At the same time, we shared one objective with a previous study (Guan, Xiang et al., 2006): «examine the relationship between four achievement goals and two social goals using the 2×2 achievement goal model» (p. 61). Finally, we modified one of their objectives: examine grade- and gender-related differences in achievement goals, social goals, and motivation regulations.

Method

Participants and procedures

A total of 395 students (186 boys, 209 girls) from two high schools in the northern part of Spain served as participants in this study. Students grade levels varied among ninth (30.1%), tenth (37.7%), and eleventh (32.2%), and their ages ranged from 14 to 19 years (*M*= 15.68, *SD*= 1.06).

Before collecting any data, permission to conduct the study was obtained from the University of Oviedo's Human Ethics Committee. Informed consent was also obtained from the participants, the teachers and the principals of each school involved. All questionnaires were administered by two of the researchers during regularly scheduled PE classes. Prior to questionnaire administration, the students were told that their responses would be kept confidential. They were also informed that their teachers would not have access to the questionnaires. Researchers encouraged students to answer as truthfully as they could, highlighting that their responses would not influence their PE grades.

Measures

2×2 Achievement Goal Scale-PE (2×2 AGS-PE). The 2×2 Achievement Goal Scale from Elliot and McGregor (2001) was adapted by Guan et al., (2006) to PE settings. This scale contains the

four achievement goals: mastery approach, performance approach, performance avoidance, and mastery avoidance. Each goal includes three items. A confirmatory factor analysis (CFA) was employed to examine the construct validity of test scores produced by the 2×2 AGS-PE. Multiple fit indexes were used to assess the adequacy of the 2×2 achievement goal model: the comparative fit index (CFI), the Tucker-Lewis Index (TLI), and the root mean square error of approximation (RMSEA). The results from CFA strongly supported the 2×2 achievemente goal model. All indexes (CFI = .95, TLI= .93, and RMSEA= .07) indicated that the 2×2 AGS-PE represented an adequate fit to the current data (Hu & Betler, 1999). Cronbach alphas for the performance-approach, mastery-approach, performance-avoidance, and mastery-avoidance subscales were .87, .81, .77 y .79, respectively; indicating that the score produced by the 2 × 2 AGS-PE had acceptable internal consistency.

Social Goal Scale-PE (SGS-PE). Guan, McBride, and Xiang (2006) validated the Patrick, Hicks, and Ryan' social goal scale (1997) to high school students in PE settings (SGS-PE), proving its good psychometric properties. Moreno, González-Cutre, and Sicilia (2007) translated into Spanish, and validated Guan et al' scale for PE classes in Spain. Psychometric properties of the scale were analyzed and proved to be consistent. In our study, we used this scale's version. Once again, CFA and Cronbach's alpha coefficients were employed to examine the construct validity and internal reliability of the test scores produced by the SGS-PE. Several indices showed that the social goal model represented an acceptable fit to the current data (CFI= .93, TLI= .92, and RMSEA= .08). Reliability analysis indicated that the internal consistency of the social goal scale was acceptable with alpha coefficients of .82 and .76 for the responsibility goal and the relationship goal, respectively.

Self-Regulation Questionnaire (SRQ). In order to measure the different types of motivation postulated by SDT (intrinsic motivation, introjected and external regulations), a questionnaire presented by Goudas, Biddle, and Fox (1994) and adapted to PE settings by Ryan and Connell (1989) was used. Furthermore,

Goudas et al., (1994) adapted to PE contexts the amotivation subscale of the Academic Motivation Scale (Vallerand et al., 1992). It has demonstrated clear factor structure and high internal reliability (Wang et al., 2007). Multiple indices revealed that the self-determination model represented an acceptable fit (CFI= .92, TLI= .91, and RMSEA= .07). Reliability analysis indicated that the internal consistency of the SRQ was acceptable with alpha coefficients of .86, .85, .73, .78 and .80 for intrinsic motivation, identified regulation, introjected regulation, external regulation and amotivation, respectively.

All three scales (2×2 AGS-PE, SGS-PE, and SRQ) of the present study used items measured on Likert scales ranging from 1 *(strongly disagree)* to 5 *(strongly agree)*.

Data analysis

Descriptive statistics were used to provide a summary of students' achievement goals, social goals, and motivational regulations. Pearson correlations were performed to examine relationships between achievement goals, social goals, and self-determination levels. A 2 (gender) × 3 (grade level) multivariate analysis of variance (MANOVA) was used to examine gender and grade differences among the participants on the four achievement goals (mastery approach, performance approach, performance avoidance, and mastery avoidance), the two social goals (relationship and responsibility), and the types self-determination of (intrinsic motivation, identified regulation, introjected regulation, external regulation, and amotivation) in PE. Finally, five hierarchical regression analyses were employed to examine how achievement goals and social goals might affect student motivational regulations.

Results

Descriptive statistics of achievement goals, social goals, and self-determination levels are illustrated in Table 1. Students

Table 1
Descriptive data and correlations among achievement goals, social goals, and degrees of self-determination

Variables	M	SD	1	2	3	4	5	6	7	8	9	10	11
	Full sample		**Correlations**										
1. Performance approach goals	2.51	1.17	1.00										
2. Mastery approach goals	3.93	.85	.220**	1.00									
3. Performance-avoidance goals	2.50	1.10	.619**	.131**	1.00								
4. Mastery-avoidance goals	2.99	1.02	.194**	.495**	.299**	1.00							
5. Responsibility goals	4.19	.60	-.065	.411**	.017	.251**	1.00						
6. Relationship goals	4.43	.55	.064	.381**	.131**	.252**	.340**	1.00					
7. Intrinsic motivation	3.59	1.02	.250**	.611**	.089	.328**	.316**	.294**	1.00				
8. Identified regulation	3,85	.92	.236**	.724**	.162**	.464**	.363**	.369**	.775**	1.00			
9. Introjected regulation	2.93	.90	.448**	.432**	.366**	.332**	.238**	.233**	.511**	.499**	1.00		
10. External regulation	2.81	1.08	.064	-.077	.253**	.067	.030	.074	-.214**	-.128*	.175**	1.00	
11. Amotivation	1.83	.92	.075	-.355**	.195**	-.085	-.159**	-.130*	-.447**	-.388**	-.054	.426**	1.00

** *p<.01*, * *p<.05*

reported the highest value on social-relationship goals, followed by social-responsibility goals, mastery-approach goals, performance-avoidance goals, performance-approach goals, and mastery-avoidance goals.

Results of the intercorrelations among achievement goals confirmed that all are positively associated with each other. The intercorrelations among achievement goals and social goals indicated that mastery goals (approach and avoidance) were positively associated with social goals (relationship and responsibility), while only performance-avoidance goals were positively associated with social relationship goals (see Table 1).

The assumption of homogeneity of covariance was evaluated using the Box M test. The result revealed that the assumption was not met (Box $M= 421.123$, $F= 1.424$, $p<.001$). Following Tabachnick and Fidell's (1996) suggestion, we proceed to use Pillai's Trace to evaluate multivariate significance of main effects and interactions. The 2 (gender) $\times$ 3 (grade level) MANOVA analysis yielded a significant main effect for gender, Pillai's Trace= .181, $F_{(11, 379)}= 7.102$, $p<.001$, $\eta^2= .182$. Follow-up univariate ANOVAs revealed that girls placed significantly higher values on social responsibility goals [$F_{(1,389)}= 7.770$, $p<.05$, effect size (f)= . 021], relationship goals [$F_{(1,389)}= 17.007$, $p<.001$, effect size (f)= .045] and mastery-avoidance goals [$F_{(1,389)}= 19.573$, $p<.001$, effect size (f)= .051] than boys. Boys scored higher on performance-approach goals [$F_{(1,389)}= 11.753$, $p<.001$, effect size (f)= .031] and external regulation [$F_{(1,389)}= 6.03$, $p<.05$, effect size (f)= .016]. The MANOVA also yielded a significant main effect for grade level, Pillai's Trace= .106, $F_{(11, 379)}= 1.795$, $p<.05$, $\eta^2= .053$. Follow-up univariate ANOVAs revealed a drop in the increase of grade level on mastery-approach goals [$F_{(1,389)}= 13.513$, $p<.05$, effect size (f)= .019], mastery-avoidance goals [$F_{(1,389)}= 4.908$, $p<.01$, effect size (f)= .026], introjected regulation [$F_{(1,389)}= 4.878$, $p<.01$, effect size (f)= .026] and external regulation [$F_{(1,389)}= 3.809$, $p<.05$, effect size (f)= .021]. Finally, the MANOVA revealed no significant main effect for interaction between gender and grade.

A series of hierarchical regression analyses were conducted to determine whether the social goals and achievement goals could predict the five motivational regulations. Until now, research in PE domains has undermined the relevance of social goals, focusing on achievement goals to understand students' behavior. In each of the five regressions, the social goals (responsibility goals and relationship goals) were entered in the first step to control their effects and justify the validity of our approach. The fact that both social goals were significant showed us their importance in the analysis process. In the second step, the achievement goals (mastery-approach goals, performance-approach goals, mastery-avoidance goals and performance-avoidance goals) were entered to examine whether they could account for additional variance of the five types of behavioral motivations.

The hierarchical regression analysis predicting intrinsic motivation indicated that the inclusion of social goals predicted a significant amount of variance ($R^2= .14$), with both responsibility ($\beta= .24$) and relationship ($\beta= .21$) being significant predictors.

The addition of the achievement goals dimensions in Step 2 improved quite substantially the prediction of intrinsic motivation ($R^2= .41$). Mastery-approach goals ($\beta= .49$), performance-approach goals ($\beta= .21$), and performance-avoidance goals ($\beta= -.13$) were the three significant predictors of intrinsic motivation (see Table 2). Additionally, responsibility goals continue to be significant predictors of intrinsic motivation ($\beta= .09$).

Table 2
Hierarchical regression analysis predicting intrinsic motivation, identified regulation, introjected regulation, external regulation, and amotivation, using achievement goals and social goals as independent variables

Step	Variable	R^2	R^2Ch	Fch-value	St. Beta	t
	Intrinsic motivation					
1	Responsibility goals	.14		31.28**	.24	4.86**
	Relationship goals				.21	4.22**
2	Responsibility goals	.41	.27	44.20**	.09	2.16*
	Relationship goals				.06	1.51
	Mastery-approach goals				.49	9.72**
	Performance-approach goals				.21	4.23**
	Mastery-avoidance goals				.04	.87
	Performance-avoidance goals				-.13	-2.52*
	Identified regulation					
1	Responsibility goals	.20		48.87**	.26	5.56**
	Relationship goals				.27	5.76**
2	Responsibility goals	.55	.35	80.41**	.07	1.79
	Relationship goals				.08	2.30*
	Mastery-approach goals				.58	13.16**
	Performance-approach goals				.09	2.13*
	Mastery-avoidance goals				.12	3.08*
	Performance-avoidance goals				-.02	-.56
	Introjected regulation					
1	Responsibility goals	.09		17.50**	.18	3.47*
	Relationship goals				.17	3.33*
2	Responsibility goals	.35	.26	34.71**	.12	2.65*
	Relationship goals				.04	.98
	Mastery-approach goals				.24	4.53**
	Performance-approach goals				.32	5.89**
	Mastery-avoidance goals				.07	1.54
	Performance-avoidance goals				.10	1.93
	External regulation					
1	Responsibility goals	.01		1.05	.01	.09
	Relationship goals				.07	1.33
2	Responsibility goals	.10	.09	6.70**	.04	.83
	Relationship goals				.07	1.39
	Mastery-approach goals				-.16	-2.58*
	Performance-approach goals				-.10	-1.62
	Mastery-avoidance goals				.04	.67
	Performance-avoidance goals				.31	4.87**
	Amotivation					
1	Responsibility goals	.03		6.30*	-.13	-2.42*
	Relationship goals				-.08	-1.60
2	Responsibility goals	.18	.15	14.63**	-.01	-.01
	Relationship goals				-.01	-.29
	Mastery-approach goals				-.40	-6.76**
	Performance-approach goals				.01	.16
	Mastery-avoidance goals				.05	.95
	Performance-avoidance goals				.23	3.73**

$R^2Ch= R^2$ change; Fch= F change; St. Beta= Standardized Beta

With regard to the prediction of identified regulation, the results showed that Step 1 explained again a significant amount of variance ($R^2= .20$). The addition of the achievement goals

dimensions in Step 2 improved quite substantially the prediction of identified regulation (R^2= .55). Mastery-approach goals (β= .58), performance-approach goals (β= .09), mastery-avoidance goals (β= .12) were the three significant predictors of identified regulation (see Table 2). Additionally, relationship goals continue to be significant predictors of identified regulation (β= .08).

Considering the prediction of introjected regulation, the results showed that Step 1 explained again a significant amount of variance (R^2= .09). The addition of the achievement goals dimensions in Step 2 improved quite substantially the prediction of identified regulation (R^2= .35). Mastery-approach goals (β= .24), and performance-approach goals (β= .32) were the two significant predictors of identified regulation (see Table 2). Additionally, responsibility goals continue to be significant predictors of identified regulation (β= .12).

Looking at the prediction of external regulation, the results showed that Step 1 did not explained a significant amount of variance (R^2= .01). The addition of the achievement goals dimensions in Step 2 improved quite substantially the prediction of identified regulation (R^2= .10). Mastery-approach goals (β= −.16), and performance-avoidance goals (β= .31) were the two significant predictors of identified regulation (see Table 2).

Lastly, the hierarchical regression analysis predicting amotivation revealed that the inclusion of social goals in Step 1 contributed to the prediction of this type of behavior (R^2= .03). In this case, only responsibility goals were significant variables (β= −.13). In Step 2, the prediction was improved (R^2= .18) with mastery-approach goals (β= −.40) and performance-avoidance goals (β=.23) significantly predicting amotivation (see Table 2).

Discussion

The present study examined a possible relationship between achievement goals and social goals. It also tried to determine how these goals might influence students' reports of motivational regulation's levels in high school PE settings. Our results showed that all mastery goals (approach and avoidance) were positively associated to both types of social goals (relationship and responsibility), but only performance-avoidance goals were positively associated with relationship social goals. Previous studies (Hicks et al., 1995) have agreed that mastery goals have been positively associated with both types of social goals, while performance goals have been positively related only to relationship goals. Furthermore, Guan, Xiang et al., (2006) found significant correlations between achievement goals and social goals in PE contexts. These results could indicate that these two types of goals do not function separated from one another. Nevertheless, our results suggest that the relationship found by Guan and colleagues between performance goals (approach and avoidance) and social goals (relationship and responsibility) could be not so consistent.

Gender differences were found in two of the four achievement goals. Girls scored higher in mastery-avoidance goals (results consistent with those reported by Barkoukis et al., 2007), while boys scored higher in performance-approach goals. These gender differences could be caused, at least partially, by students' perception of their competence. Among all the self-determination variables, external regulation was the only one that showed gender differences (boys scored higher than girls). This result does not agree with the one founded by Lim and Wang (2009). It seems that boys are more concerned about social status and/or external rewards/punishments than girls in PE domains.

There were gender differences in social goals, as well. Girls reported higher values on social responsibility and relationship goals than boys did. Similar results have also been reported in different academic settings (Patrick et al., 1997), as well as in PE contexts (Guan, Xiang et al., 2006). These findings seem to reflect that girls are more willing to value peer relationships, cooperate with others, and adhere to social rules and role expectations than boys.

Differences according to students' level were also found on mastery goals, both approach and avoidance: results decreased as students increased their course level. These results are consistent with previous studies that revealed a tendency in which children began school with a higher orientation of mastery goals (Xiang & Lee, 2002), as well as introjected regulation and external regulation. This tendency has also been observed in previous research where several motivational indicators were studied over different school years (Cecchini, Méndez, & Muñiz, 2002).

In the first step of the hierarchical regression analysis, the results have showed that both types of social goals are important predictors of the most self-determined types of motivations (intrinsic motivation, identified regulation, and introjected regulation). Students who show high levels of social responsibility and social relationship are likely to be intrinsically motivated. Regarding the less self-determined types of motivation, only the responsibility goals were negative predictors of amotivation. This result is congruent with Moreno et al.'s (2008) findings in PE settings: students who try to follow the rules and show responsibility are able to fulfill their relationship needs, which contributes to avoid amotivation.

The first hierarchical regression analysis also revealed that mastery-approach goals were the most important predictors of intrinsic motivation. These findings are congruent with previous PE-based works using a dichomotous model of achievement motivation (Standage et al., 2003). Deci and Ryan (2000) believe that mastery goals are directly related to intrinsic motivation because of its focus on improvement, learning and self-development. Students that show a high mastery orientation tend to focus on task improvement. They are usually motivated by the intrinsic components of the task, because they consider it important. In addition, social responsibility goals were also found significant predictors of intrinsic motivation when studied together with achievement goals. The desire to adhere to social rules seems to be linked to the highest form of self-motivation. This finding provides additional evidence that students' goals addressed towards responsible behaviors in PE are significantly associated to intrinsic motivation. Although a little bit more limited, a significant effect for performance-approach goals also emerged in our study. Elliot (1999, cited by Guan et al., 2006: 66) showed that «the pursuit of performance-approach goals is posited to elicit similar processes and outcomes produced by mastery-approach goals. This would happen when the focus of performance-approach goals can be congruent with individual motivational foundations». Finally, performance-avoidance goals were found negative predictors of intrinsic motivation. PE students focused on «not showing incompetence» would not be intrinsically motivated to perform in class.

The second hierarchical regression analysis revealed that mastery-approach goals were the major predictors of identified regulation. Previous research, using the dichotomous model, has shown mastery goals associated with identified regulation, which is a relatively self-determined style of extrinsic motivation (Standage et al., 2003). Such identification could help students participate in

PE because they understand the worth of its activities, and they actively desire their repercussions. Mastery-avoidance goals were also shown as predictors of identified regulation. Students concerns for not being able to learn «all that it is there to learn» are not negatively linked to their interest on learning. On the contrary, this concern seems to be the result of the importance that students grant to their personal improvement in PE classes. Social relationship goals also had a positive impact on individuals' levels of identified regulation. These results are consistent with the self-determination theory, and the Vallerand's (1997) hierarchical model. Finally, performance-approach goals also had a positive impact on the students' levels of identified regulation (see table 2). This is consistent with findings previously described on extrinsic motivation (Nien & Duda, 2008). PE students who are focused on normative competence can also consider participation in class a relevant behaviour, and they highly value its associated benefits.

The third hierarchical regression analysis showed that performance-approach goals and mastery-approach goals were both the main predictors of introjected regulation. Deci & Ryan (2000) consider that individuals performance-oriented are concentrated on self-perceptions of ego and/or self worth enhancement, that is, introjected regulation. Moreover, Deci and Ryan (1985) consider that this type of individuals reduce their intrinsic motivation towards an activity. Based in our results, it is acceptable to positively relate mastery and performance orientation to introjected motivation in PE. On the other hand, responsibility goals are also predictors, though limited, of these levels of introjected motivation. It seems reasonable to think that based on the importance that most students concede to «follow the class' rules», they would feel bad with themselves if they do not follow them.

The fourth hierarchical regression analysis revealed that performance-avoidance goals were the only positive predictors of external regulation. Brunel (1999) positively linked performance orientations and perceptions of a performance climate to external regulation in PE settings. To strengthen this idea, we also found that mastery-approach goals were negative predictors of external regulation. Students looking for outcomes, rewards, or recognition from peers do not usually exhibit a mastery-approach behavior.

The last hierarchical regression analysis showed that performance-avoidance goals, positively, and mastery-approach goals, negatively, were the only predictors of amotivation. Elliot and McGregor (2001) believed that the search for performance-avoidance goals causes negative affective, cognitive, and behavioral responses that can lead to undesirable outcomes, such as amotivation. Low-ability students enrolled in PE classes where they have to outperform peers do not keep an active, unselfconscious involvement for a long time (Nicholls, 1989). Moreover, they become amotivated: feelings of incompetence, lack of control over outcomes, and lack of activity value (Deci & Ryan, 2000).

Our study has provided further evidence that mastery-approach, mastery-avoidance, performance-approach, and performance-avoidance goals are differential predictors of self-determination in PE settings. It has shown the importance of separating mastery and performance goals into approach and avoidance forms of regulation. Future research should try to measure different variables together (motivational climate and perception of competency), and examine how the four types of achievement goals yield different results. Youngsters sport participation, and the way they build their competence and active implication on sport along their life, are tremendous educational goals for physical educators. In our study, achievement goals and social goals have been related trying to understand better the processes that operate in this context. Based on these results, PE teachers should create a class climate focused on personal learning and improvement. A class climate that will promote social responsibility and a mastery-approach to learning. A class climate that will give everyone the opportunity to be successful according to his/her capabilities.

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