ORIGINAL

3x2 ACHIEVEMENT GOALS, FRIENDSHIP AND AFFECTIVITY IN PHYSICAL EDUCATION: AGE-GENDER DIFFERENCES

METAS DE LOGRO 3x2, AMISTAD Y AFECTO EN EDUCACIÓN FÍSICA: DIFERENCIAS EDAD-SEXO

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ABSTRACT

The objectives of the study are three: (a) to analyze the differences related to age and sex in the 3x2 achievement goals, the friendship goals, and the affectivity in Physical Education, (b) to study the relationships between these variables, and c) to explore the predictive value of the 3x2 achievement goals and friendship on affectivity. The sample consisted of 1610 students (855 males and 755 females), aged between 10 and 17 years. MANOVAS, univariate analyzes (Scheffé), and linear regressions were performed. The results showed a significant decrease in achievement goals (except other-approach), friendship goals, and positive affect due to development. Males scored higher on task-approach, other-approach, and other-avoidance goals than women. Task-approach and friendship-approach were the main positive predictors of positive

affect. The range of 13 to 14 years shows a great sensitivity to the three competences of achievement, social competence, and affective instability.

KEY WORD: Achievement goal; age; gender; Physical Education.

RESUMEN

Se persiguen tres objetivos: (a) analizar las diferencias relativas a la edad y sexo en las metas de logro 3x2, metas de amistad, y afectividad en Educación Física, (b) estudiar las relaciones entre esas variables, y (c) explorar el valor predictivo de las metas de logro 3x2 y amistad sobre la afectividad. La muestra estuvo formada por 1610 alumnos (855 varones y 755 mujeres) de 10 a 17 años. Se realizaron MANOVAS, análisis univariados (Scheffé), y regresiones lineales. Los resultados mostraron un descenso significativo de las metas de logro (excepto aproximación-otro), metas de amistad y afecto positivo debido al desarrollo. Los varones puntuaron más alto las metas de aproximación-tarea, aproximación-otro, y evitación-otro. Las metas de aproximación-tarea y aproximación-amistad fueron los principales predictores positivos del afecto positivo. La franja de 13 a 14 años muestra una gran sensibilidad a los tres estándares de competencia de logro, competencia social e inestabilidad afectiva.

PALABRAS CLAVE: Metas de logro; edad; sexo; Educación Física.

INTRODUCTION

The achievement goals construct was developed in the late 1970s by authors such as Ames (1984), Dweck (1986), Maehr (1989), and Nicholls (1984). All of them conceived achievement goals as the reasons or purposes that direct people's behavior (Ames, 1992). This theory has evolved since then to the present, passing through four different models: dichotomous, trichotomous, 2x2 model and, most recently, 3x2 model. Initially, the goal orientations were conceptualized in a dichotomous way; on the one hand, the *mastery goals*, whose objective was to develop competence towards the task and, on the other, the *performance goals*, whose aim was to demonstrate competence in general (Ames, 1992). In subsequent years, the trichotomous model was derived, by including, in addition to the *definition* (mastery and performance), the *valence* of the competence in the performance goals (*approach and avoidance*). The focus of the approach was success and positive states, while avoidance one was failure and attempts to move away from negative possibility (Elliot & Harackiewicz, 1996). Consequently, the model conceptualized three goals: mastery, performance-approach and performance-avoidance (Elliot & Church, 1997).

In a later evolution, Elliot & McGregor (2001) speculated on avoidance-mastery goals. The crossing of *definition* and types of *valence* of the competence gave rise to the four achievement goals that make up the 2x2 model: mastery-approach, mastery-avoidance, performance-approach and performance-avoidance. The mastery-approach goals corresponded to the traditional conception of the mastery goal, while mastery-avoidance goals try to avoid the lack of learning. Moreover, performance-approach goals were related to traditional performance goals, and performance-avoidance goals were about avoiding doing worse than others.

The latest evolution has formed the 3x2 achievement goal framework (Elliot, Murayama & Pekrun, 2011). This recent impulse proposes to bifurcate the goals of mastery when considering two differentiated standards: *task and self*. In *task-based goals*, competence is conceptualized in terms of doing it right or wrong in relation to a task. However, in *self-based goals*, it is the personal focus itself the benchmark of evaluation. Consequently, people who adopt these goals focus on doing it right or wrong in relation to how they have done it in the past or how they can do it in the future. By crossing the three standards (*definition*) with the two ways in which competence can be valued (*valence*), six achievement goals are proposed: task-approach goals (focused on the attainment of task-based competence), task-avoidance goals (focused on the avoidance of task-based incompetence), self-approach goals (focused on the achievement self-based competence), self-avoidance goals (focused on the avoidance of self-based incompetence), other-approach goals (focused on the attainment of other-based competence) and other-avoidance goals (focused on the avoidance of other-based).

These new developments have aroused great interest among researchers, mainly in the search for relationship patterns between 3x2 achievement goals and motivational outcome variables. In the context of general education, Elliot

et al. (2011) found consistent adaptive relations of task-approach goals (e.g., with intrinsic motivation, learning effectiveness), and more moderate self-approach goals (e.g., with energy in class) and other-approach (e.g., test performance, learning effectiveness). Self-avoidance goals were maladaptive (negative relation with absorption and energy in class), as well as other-avoidance goals (negative relationships with test performance and intrinsic motivation, and positive with test concerns). In another study, Brondino, Raccanello, & Pasini (2014) reported that task-approach goals positively predicted the positive emotions and, negatively, negative ones. Self-approach goals only positively predicted fun. Task-avoidance negatively predicted positive emotions, and other-avoidance positively predicted positive emotions (fun, hope, pride). Other-approach and self-avoidance goals did not predict any emotion. Afterwards, Diseth (2015) concluded that task-approach goals, but also approach-other goals, were related to the more functional aspects of motivational variables (eg., self-efficacy, learning strategies), while goals self-based (both approach and avoidance) showed an inverse relationship pattern (eg., less academic achievement or learning strategies). Therefore, compared to previous literature, the study by Diseth (2015) questioned the presumed positive relationships of the self-approach goals and put into value positive assumptions of the other-approach goals. Recently, Méndez-Giménez, Cecchini, Fernández-Río, Méndez-Alonso, & Prieto-Saborit (2017) partially confirmed the results pattern of Elliot et al. (2011). Task-approach goals and approach-self goals were positively related to positive outcomes (self-determination and satisfaction with life). Other-approach goals were positively associated with positive valence variables (e.g., satisfaction with life), but also negatively with positive variables (e.g., self-determination). Other-avoidance goals were negatively linked with positive outcomes (e.g., satisfaction with life). Finally, task-avoidance goals presented a pattern of slightly negative relationships (self-determination) and null (satisfaction with life).

In the context of PE, Méndez-Giménez, Cecchini, & Fernández-Río (2014) replicated that most adaptive pattern of task-approach goals (positive relation with self-determination index, perceived competence, skill dimensions and physical condition of the physical self-concept, and friendship- approach goals). Other-approach goals occupied a second place in the adaptive level of the variables under study (positive relationships with the self-determination index, perceived competence, and the dimensions of ability, physical attractiveness, and physical condition of the physical self-concept). However, goals of self-approach only had positive relation with the index of self-determination. In the sports field, Mascret, Elliot, & Cury (2015) showed positive relations of the task-approach goals with a higher number of outcome variables (e.g., intrinsic interest and perceived competence) than the self-approach goals (only with intrinsic interest), and the other-approach goals (only with perceived competence).

Despite the theoretical evolution of the framework in the different areas of study, the variables age and sex of the participants have not yet been investigated from the perspective of 3x2 achievement goals. In relation to the development of achievement goals, Paulick, Watermann, & Nückles (2013) considered two possible paths of theory and research. On the one hand, developmental

psychologists (Dweck, 2000; Nicholls, 1984) argued that students' mastery goals decline, and performance goals increase in adolescence, mainly as a consequence of cognitive development and their concept of ability becomes increasingly differentiated. On the other hand, educational psychologists suggest that the transition from primary schools to secondary schools is the main source of overall decline in motivation during early adolescence (Juvonen, Le, Kaganoff, Augustine, & Constant, 2004). Thus, various studies (e.g., Bong, 2009; Shim, Ryan & Anderson, 2008) confirmed a general decline in all types of 2x2 achievement goals. It is necessary to clarify how it affects the personal development in the adoption of the goals of achievement from the perspective of the new 3x2 model.

Finally, numerous studies have emphasized the need to include social goals in motivational studies (Garnet, 2009; Cecchini et al., 2008, Cecchini, González, Méndez-Giménez & Fernández-Río, 2011; Méndez-Giménez, Fernández-Río & Cecchini, 2012, 2014, 2015). Méndez-Giménez et al. (2015) examined the predictive value of 2x2 achievement goals and friendship goals on various motivational consequences in the context of PE, and found that mastery-approach goals and friendship-avoidance goals were the only positive predictors of effort, while the mastery-approach goals and friendship-approach goals were revealed as the only positive predictors of fun. Nowadays, there is a gap of research in relation to this subject from the theoretical framework of 3x2 achievement goals.

Considering these antecedents, the present study proposed three objectives: (a) to analyze the differences related to age and sex in the 3x2 achievement goals, the friendship goals (approach and avoidance), and affectivity in the context of PE, (b) to study the relationships between the variables under study, and (c) to explore the predictive value set of 3x2 achievement goals and the friendship goals in affectivity depending on the age.

METHOD

Participants

Intentional or convenience sampling was performed. The sample consisted of 1610 students, 855 males and 755 females, belonging to 60 classrooms of 7 schools and institutes of the national territory, aged between 10 and 17 years. Of these, 225 were of 5 and 6 of Primary Education, 341 of 1º ESO, 411 of 2º ESO, 272 of 3º ESO, 240 of 4º ESO, and 121 of 1º Baccalaureate. Table 1 presents the distribution considering age and sex of the participants. To examine the development, data from two adjacent groups were merged to form three age brackets.

Table 1. Distribution of the sample by age groups and sex

	Sex		Total
	Males	Females	
10-12 years	195 (48.1%)	210 (51.9%)	405
13-14 years	365 (56.5%)	281 (43.5%)	646
15-17 years	295 (52.8%)	264 (47.2%)	559

Measures

3x2 Achievement Goals. The questionnaire of Achievement Goals in *Physical Education* (CML 3x2-EF) of Méndez-Giménez, Cecchini et al. (2014) was used. This is the validation in Spanish and the specific context of the PE of the questionnaire developed by Elliot et al. (2011). The items were preceded by the heading "In the classes of Physical Education my goal is ...". This instrument is composed of a total of 24 items grouped into 6 factors: *task-approach* (e.g. "...correctly perform many exercises and skills"), *task-avoidance* (e.g. "...avoid doing wrong tasks"), *self-approach* (e.g. "...to do the exercises better than I do habitually"), *self-avoidance* (e.g. "...avoid doing the skills worse than I usually do"), *other-approach* (e.g. "...overcome other students in performing skills and tasks "), *other-avoidance* (e.g. "...avoid doing worse exercises and tasks than other students"). Cronbach's alpha from the study of Méndez-Giménez, Cecchini et al. (2014) ranged from .74 (task-avoidance) to .89 (other-approach). Participants indicated agreement with each of these statements using a 5-point Likert scale, ranging from 1 (not true for me) to 5 (totally true for me).

Friendship Goals. The validated version in Spanish was realized by Méndez-Giménez, Fernández-Río et al. (2014) from the Elliot, Gables and Mapes *Relationship Goals Questionnaire-Friendship Version* (RGQ-F). The items are preceded by the following introduction: "In my PE classes I try to ...". The scale is composed of 8 items grouped in two dimensions: *friendship-approach* (4 items), (e.g. "... deepening relationships with my friends") and *friendship-avoidance* (4 items), (e.g. "... avoid disagreements and conflicts with my friends"). The composite reliability coefficient of this instrument in the study by Méndez-Giménez, Fernández-Río et al. (2014) was .86 and .85 for the goals of friendship-approach and friendship-avoidance, respectively. Participants indicated the degree of agreement with each of these statements using a 5-point Likert scale, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

Affectivity. The PANASN (*Positive and Negative Affect for Children and Adolescents*) questionnaire was used, an instrument adapted to the school population by Sandín (2003) from the PANAS adult version (*Positive and Negative Affect Schedule*). The items were preceded by the heading: "In my Physical Education classes...". The PANASN constitutes a self-report questionnaire consisting of 20 items, ten items evaluate positive affect (e.g. "...I am an animated person, I am excited") and the other ten negative affect (e.g. "...I feel nervous "). In the study by Sandín (2003), Cronbach's alpha coefficients for males were .73 and .74 for positive and negative affect, respectively, while values for females were .72 and .75, respectively. Participants indicated agreement with each of these statements using a 3-point Likert scale, ranging from 1 (*never*) to 3 (*many times*).

Procedure

In the first moment, school director were contacted to request their collaboration in this study and to request the informed consent of the parents of the students. Before distributing the questionnaires to the students, we talked with the

teachers of Physical Education to explain the protocol that they had to follow to fill them, either in paper format, or online, through the platform Google *Forms*. It was decided that in the 6th grade of Primary Education, given the complexity of the instrument, the teachers read one by one the items, while in Secondary and Bachelor's degree they covered independently. The questionnaires were completed in the ordinary classroom or computer, according to the chosen method of passage, during the months of April and May 2015. The participation of the students was voluntary and the confidentiality of the answers was insisted, since these were not would affect the grade of the subject.

Analysis

In the first place, descriptive analyzes (mean and standard deviation), internal consistencies, using Cronbach's alpha and bivariate correlations were performed for each age group. A multivariate analysis of variance (MANOVA) was performed to observe the evolution of the 3x2 achievement goals according to age and sex, with these variables as intrasubject factors. When significant differences were detected in MANOVA, univariate analyzes were performed using the Scheffé test. Within each age group, t-tests for related samples were performed on all possible pairs of 3x2 achievement goals. Finally, several linear regressions were executed to examine 3x2 achievement goals and friendship goals as predictors of dependent variables (positive and negative affect).

RESULTS

Descriptive analysis, reliability of scales and bivariated correlations

Table 2 presents means, standard deviations, and Cronbach's alpha of all variables of interest about age groups. Levels of reliability were acceptable across all variables and age ranges (Nunnally, 1978). A first developmental trend was observed: Cronbach´s α coefficients of the younger group were lower than the other two older age groups.

Table 2. Descriptive analyzes and reliability of the data of the total sample and by age groups

	Total Sample (n = 1610)			10-12 years (n = 405)			13-14 years (n = 646)			15-17 years (n = 559)		
	M	*SD*	α	*M*	*SD*	α	*M*	*SD*	α	*M*	*SD*	α
1. Task-ap	4.13	.78	.82	4.29[a]	.71	.77	4.13[b]	.78	.81	4.01[c]	.80	.83
2. Task-av	3.96	.94	.77	4.08[a]	.94	.75	3.95[ab]	.94	.76	3.88[b]	.90	.78
3. Self-ap	4.08	.80	.80	4.28[a]	.70	.72	4.03[b]	.82	.81	3.99[b]	.80	.83
4. Self-av	3.76	1.00	.79	3.87[a]	1.00	.75	3.77[ab]	1.00	.79	3.65[b]	.99	.82
5. Other-ap	3.21	1.16	.88	3.23[a]	1.13	.85	3.17[a]	1.14	.88	3.22[a]	1.18	.91
6. Other-av	3.43	1.11	.83	3.56[a]	1.10	.79	3.43[ab]	1.11	.83	3.33[b]	1.09	.85
7. Friendship-ap	3.92	.93	.83	4.13[a]	.87	.81	3.87[b]	.94	.84	3.80[b]	.93	.84
8. Friendship-av	3.97	.92	.75	4.22[a]	.86	.72	3.94[b]	.93	.76	3.82[b]	.91	.76
9. Posit affect	2.41	.35	.74	2.45[a]	.33	.71	2.38[b]	.37	.77	2.39[b]	.33	.74
10. Negat. affect	1.76	.43	.81	1.74[a]	.43	.80	1.77[a]	.43	.81	1.75[a]	.42	.81

Note: Scheffé Post Hoc Analysis, *p* <.05

A second pattern associated with age emerged in all variables: the highest values were among the youngest students. It emphasized the high score of the task-approach goals in the three groups (4.29, 4.13 and 4.01, respectively) and self-approach (4.28, 4.03 and 3.99, respectively), and the lowest assessment of the other-approach goals. Regarding friendship goals, the *avoidance* dimension obtained values slightly higher than the *approach* in all groups. Finally, the positive affect obtained values significantly higher than the negative affect.

Tables 3 and 4 present the bivariate correlation coefficients within each age group. Several aspects are remarkable. First, the correlation coefficients between the six achievement goals were generally smaller in the younger sample, compared to the other two age ranges. In addition, in all three groups, the highest correlations are between the task-approach and self-approach goals (.69, .71 and .75), and between the task-avoidance and self-avoidance goals (.68, .73 and .68). In relation to friendship goals, their correlation coefficients increased with age (.61, .63 and .64, respectively). Finally, there were no correlations between the two dimensions of affectivity.

Table 3. Bivariate correlations for groups 1 (10-12 years) and 2 (13-14 years)

	1	2	3	4	5	6	7	8	9	10	11
1. Sex	1	-.12**	-.05	-.06	-.08*	-.19**	-.13**	.04	.02	-.09*	.03
2. Task-ap	-.04	1	.58**	.71**	.56**	.32**	.34**	.38**	.38**	.40**	-.10**
3. Task-av	.09	.45**	1	.53**	.73**	.17**	.47**	.24**	.37**	.31**	-.10**
4. Self-ap	.00	.69**	.44**	1	.65**	.33**	.37**	.37**	.38**	.37**	-.08*
5. Self-av	.06	.42**	.68**	.48**	1	.31**	.56**	.20**	.34**	.27**	-.03
6. Other-ap	-.20**	.27**	.10*	.22**	.21**	1	.66**	.20**	.26**	.21**	.12**
7. Other-av	-.10*	.32**	.46**	.27**	.51**	.60**	1	.20**	.36**	.18**	.06
8. Friendship-ap	-.05	.40**	.20**	.36**	.15**	.17**	.21**	1	.63**	.26**	.10*
9. Friendship-av	.06	.44**	.45**	.43**	.34**	.10*	.30**	.61**	1	.27**	.04
10. Posit affect	-.05	.38**	.30**	.32**	.26**	.17**	.26**	.32**	.30**	1	-.01
11. Negat affect	-.07	-.11*	-.05	-.10*	-.01	.13**	.10*	.01	-.02	.01	1

Note. The coefficients of group 1 are presented below the diagonal; the coefficients of group 2, above the diagonal. Sex was coded as 1 = male and 2 = female; * p <.05; ** p <.01.

Table 4. *Bivariate correlations for group 3 (15-17 years) and the complete sample*

	1	2	3	4	5	6	7	8	9	10	11
1. Sex	1	-.06*	.00	-.01	-.02	-.17**	-.11**	.00	.04	-.02	.01
2. Task-ap	-.01	1	.57**	.72**	.53**	.33**	.37**	.40**	.41**	.39**	-.11**
3. Task-av	.01	.64**	1	.53**	.70**	.18**	.49**	.25**	.41**	.30**	-.08**
4. Self-ap	.01	.75**	.57**	1	.59**	.32**	.35**	.39**	.41**	.36**	-.08**
5. Self-av	-.04	.56**	.68**	.59**	1	.31**	.58**	.22**	.37**	.28**	-.03
6. Other-ap	-.13**	.39**	.25**	.38**	.38**	1	.64**	.20**	.22**	.20**	.08**
7. Other-av	-.12**	.41**	.51**	.37**	.64**	.67**	1	.21**	.34**	.22**	.05*
8. Friendship-ap	-.02	.40**	.27**	.39**	.29**	.24**	.21**	1	.63**	.30**	.04
9. Friendship-ap	.03	.39**	.42**	.40**	.40**	.25**	.32**	.64**	1	.29**	.03
10. Positi affect	.05	.37**	.28**	.35**	.31**	.19**	.23**	.31**	.29**	1	-.02
11. Negat affect	.07	-.11**	-.09*	-.06	-.03	.00	.00	.00	.08*	-.05	1

Note. The coefficients of group 3 are presented below the diagonal; the coefficients of total sample, above the diagonal. Sex was coded as 1 = male and 2 = female; * p <.05; ** p <.01.

Secondly, the six achievement goals correlated positively and significantly with the two friendship goals in all groups of students. The younger group scored higher between the task-avoidance and friendship-avoidance goals (r = .45). In the intermediate group, the two goals of friendship and the task-approach goal obtained higher values (r = .38), as well as the goal of friendship-avoidance goals and self-approach (r = .38). To conclude, the older group showed values similar to the younger group between task-avoidance and friendship-avoidance (r = .42).

Thirdly, all achievement goals correlated positively and significantly with positive affect. However, negative affect did so negatively with task-based and self-based goals, and positively with other-based goals. In a unanimous way, the upper value in the three age groups is between the positive affect and the task-approach goals, with values ranging from r = .37 to .40, while the lower values are between negative affect and task-approach (r = -11 and -10).

Finally, in the fourth place, the values of the total sample are higher than those reported by the different age groups. The high correlation (r = .72) between the task-approach and self-approach goals is the same with the task-avoidance and self-avoidance goals (r = .70) and the other-approach and other-avoidance goals (r = .64). In the relationship between friendship-approach and friendship-avoidance, values similar to those are shown in the 3 age groups (r = .63) are obtained. In affectivity, as in previous cases, the two dimensions acquire values almost null.

Differences related to age and sex

A MANOVA was performed on the set of achievement goals and the variables friendship-approach, friendship-avoidance, positive affect and negative affect, with the three age groups and sex as inter-subject factors. The Traza de Pillai was used instead of the Lambda de Wilks to determine the multivariable significance, since the homogeneity assumption of the covariance matrix was not satisfied, according to the Box Test (Tabachnick & Fidell, 2001). Statistically significant differences according to gender emerged $F(10, 1592) = 7.39$, $p < .001$ ($\eta^2 = .04$), age group $F(20, 3186) = 4.65$, $p < .001$ ($\eta^2 = .03$), and the interaction sex and age $F(20, 3186) = 1.63$, $p < .05$ ($\eta^2 = .010$).

Table 5. *Descriptive analyzes of the data according to sex for the total sample and age groups*

	Sex	Total Sample Males: 855 Females: 755		Group 1 (10-12 years) Males: 195 Females: 210		Group 2 (13-14 years) Males: 365 Females: 281		Group 3 (15-17 years) Males: 295 Females: 264	
		M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Task-approach	Male	4.17*	.74	4.33	.68	4.22**	.73	4.02	.76
	Female	4.08	.82	4.27	.74	4.01	.84	4.01	.84
Task-avoidance	Male	3.95	.93	3.99	.98	3.99	.94	3.87	.89
	Female	3.97	.94	4.17	.91	3.90	.96	3.89	.92
Self-approach	Male	4.09	.77	4.28	.66	4.08	.81	3.98	.77
	Female	4.07	.83	4.28	.73	3.98	.85	4.00	.84
Self-avoidance	Male	3.79	.99	3.80	1.04	3.85*	.99	3.69	.94
	Female	3.73	1.02	3.94	.97	3.69	1.01	3.60	1.05
Other-approach	Male	3.40***	1.13	3.48***	1.05	3.38***	1.15	3.37**	1.16
	Female	2.99	1.15	3.01	1.16	2.92	1.10	3.05	1.19
Other-avoidance	Male	3.56***	1.11	3.69*	1.09	3.57**	1.11	3.46**	1.11
	Female	3.29	1.09	3.46	1.11	3.27	1.09	3.19	1.07
Friendship-approach	Male	3.91	.91	4.19	.77	3.84	.98	3.82	.90
	Female	3.92	.95	4.09	.96	3.92	.91	3.78	.97
Friendship-avoidance	Male	3.94	.92	4.17	.83	3.92	.95	3.80	.90
	Female	4.02	.93	4.27	.89	3.98	.92	3.85	.93
Positive Affect	Male	2.41	.35	2.48	.32	2.41*	.38	2.38	.34
	Female	2.40	.35	2.44	.34	2.34	.37	2.42	.34
Negative Affect	Male	1.75	.44	1.78	.44	1.76	.45	1.72	.42
	Female	1.77	.42	1.72	.43	1.79	.40	1.79	.42

Note: *p <.05, **p <.01, ***p<.001

The following univariate analyzes showed that males scored higher than females on task-approach goals, $F(1, 1610) = 5.74$, $p <.05$ ($\eta^2 = .004$); $F(1, 1610) = 50.86$, $p <.001$ ($\eta^2 = .03$), and other-avoidance, $F(1, 1610) = 22.59$, $p <.01$ ($\eta^2 = .01$). Table 5 shows the descriptive statistics of the variables to be studied as a function of sex for the total sample and the age brackets. In contrast to the other age brackets, from 13 to 14 years, there were differences between sex of task-approach goals and self-avoidance goals in favor of males. In all age groups the significant differences of other-approach goals and avoidance-other goals in favor of the men were verified.

Likewise, age differences were observed in the task-approach goals, $F(2, 1609) = 16.03$, p <.001 (η2 = .02); task-avoidance, $F(2, 1609) = 5.48$, $p <.01$ ($\eta^2 = .01$), self-approach; $F(2, 1609) = 17.89$, $p <.001$ ($\eta^2 = 0.02$); self-avoidance, $F(2, 1609) = 5.96$, $p <.01$ ($\eta^2 = .01$), other-avoidance, $F(2, 1609) = 5.97$, p <.01 ($\eta^2 = .01$) friendship-approach, $F(2, 1609) = 16.39$, $p < .001$ ($\eta^2 = .02$), friendship-avoidance , $F(2, 1609) = 22.47$, $p < .001$ ($\eta^2 = 0.03$), and positive affect, $F(2, 1609) = 6.53$, $p < .01$ ($\eta^2 = .01$). Scheffé's Post Hoc analysis showed that, in general, the weight of achievement goals decreases with the increase in the age of the students (Table 2). All paired comparisons were statistically significant (p <.05). Three patterns were found in all age groups: (a) in relation to achievement goals: task-approach > self-approach > task-avoidance > self-avoidance > other-avoidance > other-approach; (b) as

regards friendship goals: friendship-avoidance > friendship-approach, and (c) affectivity: positive affect > negative affect.

Finally, a significant interaction between sex and age in positive affect was observed, $F(2, 1609) = 3.24$, p <.05 ($\eta^2 = .004$). Although, in both men and women, there is a drop in values in this variable with the increase in age, it also tends to be lower in the sex differences.

Linear regression analysis

Table 6 shows the linear regression analyzes performed to examine 3x2 achievement goals and friendship goals as predictors of dependent variables (positive and negative affect). Eight regression analyzes were performed, two for the total sample and two for each age range. Given the large amount of regression analysis, for reasons of expository clarity, only the values of β are exposed. Preliminary analyzes showed that the variance inflation factor (IVF) for achievement goals varied between 1.98 and 2.62 (well below the conventional cut-off criterion of 10), and that Tolerance values ranged from .37 to. 50, indicates that the assumption of non-multicollinearity is fulfilled. The value of the Durbin-Watson test (between 1.70 and 1.89 for positive affect, and 1.85 and 2.12 for negative affect in the age brackets) also allowed for the assumption of error independence, with values between 1 and 3.

The analysis in the total sample revealed that task-approach and friendship-approach goals were the main positive and significant predictors of positive affect, along with a prediction of lower self-approach and task-avoidance goals ($R^2 = .20$). Variations were observed by age groups; the analysis showed that from the 13 to 14 years the three goals of achievement approach and task-avoidance goals were the main positive and significant predictors of positive affect ($R^2 = .21$); while in group 1 and 3 were the task-approach and friendship-approach goals ($R^2 = .21$ and .19, respectively).

Table 6. Achievement goals and friendship goals as predictors of affectivity in each age group

	Total sample (n = 1610)		10-12 years (n = 405)		13-14 years (n = 646)		15-17 years (n = 559)	
	Positive affect	Negative affect	Positive affect	Negative affect	Positive affect	Negative affect	Positive affect	Negative affect
	β	B	β	β	β	β	β	β
Task-approach	.19***	-.14***	.20**	-.14*	.19***	-.13*	.18**	-.15*
Task-avoidance	.08*	-.09*	.12	-.04	.16**	-.12	-.02	-.12
Self-approach	.09*	-.06	.03	-.08	.14*	-.12	.08	.04
Self-avoidance	.02	.05	.01	.03	-.07	.12	.10	.02
Other-approach	.06	.10**	.02	.13	.14**	.15**	-.01	.01
Other-avoidance	-.01	.04	.07	.10	-.10	.02	.03	.04
Friendship-approach	.12***	.07*	.18**	.06	.06	.18**	.14**	-.06
Friendship-avoidance	.05	.06	.01	-.00	.07	-.02	.06	.19**
R^2	.20***	.04***	.21***	.05**	.21***	.07**	.19***	.04**

Note: *p<.05, ** p<.01; ***p<.001.

In the second place, and considering the total sample, the analyses revealed that the task-approach goals (in negative) and other-approach goals and friendship-approach (both positive) were significant predictors of negative affect (R^2 = .04). This pattern is reflected in the range of 13 to 14 years (R^2 = .07), whereas in groups 1 and 3 only the task-approach goals remained as negative predictor, although the 15-17 years also emerged friendship-avoidance goals as positive predictors of negative affect (R^2 = .05 and .04, respectively).

DISCUSSION

The present study pursues three aims: (a) to analyze the differences related to age and sex in 3x2 achievement goals, friendship goals (approach and avoidance), and affectivity in the context of Physical Education, (b) to study the relationships between the 3x2 achievement goals and other variables under study, and (c) to explore the predictive value set of 3x2 achievement goals and the friendship goals in affectivity as a function of age.

Regarding the analysis of development-related differences, we found a tendency for younger students to score higher on the variables studied, except the other-approach goals and negative affect, in which, there were no differences (e.g., Bong, 2009; Shim, Ryan, & Anderson, 2008). Likewise, a tendency was observed for less reliable answers of the students younger than of the older students. Both patterns associated with development have been described in previous studies (e.g., Bong, 2009). Secondly, identical patterns were found in three age brackets relative to the strength of achievement goals. Task-approach goals along with self-approach goals were the most valued, followed by avoidance goals (task, self, and other, respectively), and finally, the other-approach goals. These results are congruent with those reported in the general academic context from the perspective of 3x2 achievement goals (Méndez-Giménez et al., 2017). The results revealed the adoption of multiple goals in these groups of Physical Education students, with priority of task-approach goals and self and less emphasis on goals relative to others. These results are also consistent in the research done from the paradigms of preliminary achievement goals (dichotomous to 2x2 model) in the context of Physical Education (e.g., Cecchini et al., 2008; Cecchini et al., 2011; Moreno-Murcia, Cervelló, & González-Cutre, 2008). However, they diverge from those found in the study by Bong (2009), where Korean students from the 5th and 6th grades of Primary Education and Higher, adopted stronger performance-approach goals in the context of mathematical classes. As Dekker et al. (2013), the sociocultural context can perform an influence on the strength of students' adoption of goals.

All types of achievement goals decreased over time except the other-approach goals, which remained unchanged in the three stages of adolescence. Previous research has shown how mastery goals decline with age, at least until the age of 15 (Bong, 2009, Dekker et al, 2013, Digelidis & Papaioannou 1999, Wang & Pomerantz 2009, Wigfield & Cambria 2010). Ruble, Boggiano, Feldman and Loebl (1980) showed that younger children are more focused on the task they are performing than on the performance of others, therefore, they assign less value to social comparison, that is to say, to goals related to others. Generally,

the school environment in higher courses focuses more on the acquisition of knowledge and on learning oriented towards a greater comparative with the others. Students perceive in the environment a greater emphasis on social comparison, assessment and performance as they progress in secondary education grades that may influence their adoption of achievement goals (e.g., Urdan & Midgley, 2003). The results of the present study could point out that this contextual influence is the one that causes that the goals do not decrease the other-approach goals in the same way that the other goals do. Future research should explore the potential interaction between development and the environment in the pursuit of adolescent achievement goals.

On the other hand, the friendship-avoidance goals were higher than friendship-approach goals. Several studies have corroborated this pattern in adolescence in which the fear of social incompetence is stronger than the struggle for such competence (e.g., Garn & Sun, 2009; Méndez-Giménez, Cecchini & Fernández-Río, 2012; Méndez-Giménez, Fernández-Río & Méndez-Alonso, 2015). Likewise, positive affect overcame negative affect in all age groups, which shows the positive emotional-affective balance of the PE subject among students.

Regarding the gender-based comparison, significant differences were found in three of the six achievement goals. Specifically, males scored higher on task-approach, other-approach and other-avoidance goals than women. Focusing on the age brackets, the highest scores of task-approach goals in males in the sample are explained by a more parsimonious decrease in the strength of adopting these goals in males than females. In this way, at 10-12 years of age, there were no differences between the sexes; in the 13-14 year age bracket, the strength with which women adopted these goals dropped, which led to the differences in favor of males, and finally the differences disappeared after 15 years, after the decline in males. Something similar happened in self-avoidance goals. On the other hand, there is great evidence that reinforces the idea that boys are more oriented to the comparison and improvement of their own mates than girls, both in the general academic context and in Physical Education (e.g., Dekker et al., 2013; Moreno-Murcia et al., 2008; Schwinger & Wild, 2012; Wu, 2012).

In relation to the second objective, specifically with respect to the relationships between the six achievement goals, it can be observed that the values of the younger students tend to be lower than the older, these data agree with those reported by Bong (2009) with respondents similar to those in this study. The highest correlations between some goals, such as task-approach and self-approach, are acceptable considering the evolution of the 3x2 achievement goal model. In spite of this, Elliot et al. (2011) defended the need to differentiate both constructs and showed different relationships with outcome variables. Regarding the relationship between achievement goals and other variables, it can be observed that all achievement goals correlated positively with the friendship goals in the three age groups. These data are congruent with those reported by Méndez-Giménez et al. (2012) and Garn & Sun (2009) from the 2x2 goal model and reinforce the importance of combining achievement and social

dimensions to understand the motivational behavior of children and adolescents in the field of physical activity and sport.

Regarding the third objective, in the groups of younger and older, the goals of task-approach and friendship-approach were the only predictors of positive affect. However, in the group of 13 to 14 years, in addition to the task-approach goals, other predictors emerged as self-approach goals, other-approach, and task-avoidance goals. On the other hand, in the younger and older age groups, task-approach goals (negative) were the only predictors of negative affect, along with friendship-avoidance goals. However, in the group of 13-14 years, the goals of task-approach (in negative), and the other-approach goals, and friendship-approach (in positive) were the predictors of negative affect. These results highlight the emotional and socio-affective instability experienced by adolescents, especially at the age of 13-14 years, and the enormous weight of relationships between peers in student motivation and their motivational consequences. In this period when social relationships are so relevant, the pursuit of friendships and competence efforts based on comparison with each other can induce ambivalent affects and confused reactions.

A limitation of the study is its transverse character. Future research may consider longitudinal designs.

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