anales de psicología, 2018, vol. 34, nº 1 (january), 52-62
http://dx.doi.org/10.6018/analesps.34.1.262131

ISSN print edition: 0212-9728. ISSN web edition (http://revistas.um.es/analesps): 1695-2294

Effect of 3x2 achievement goals and classroom goal structures on self-determined motivation: a multilevel analysis in secondary education

Antonio Méndez-Giménez*, José-A. Cecchini, David Méndez-Alonso, José-Antonio Prieto, and Javier Fernández-Rio

Universidad de Oviedo (Spain).

Título: Efecto de las metas de logro y las estructuras de metas de clase 3x2 en la motivación autodeterminada: un análisis multinivel en educación secundaria.

Resumen: El estudio afronta dos objetivos: (a) examinar la validez de constructo del *Cuestionario de Estructuras de Meta de Clase-3x2*, y (b) analizar conjuntamente la influencia de las estructuras de metas de clase y las metas de logro 3x2 en la motivación autodeterminada del alumnado de secundaria. Participaron 2284 estudiantes (51,6% varones y 48,4% mujeres) de 12-17 años (M = 14.31 años; DT = 1.15), distribuidos en 148 clases. Los resultados del análisis factorial confirmatorio apoyaron el modelo hipotético. La validez y consistencia interna del cuestionario fueron satisfactorias. Los resultados de los modelos lineales jerárquicos proporcionaron apoyo a los modelos directo, indirecto y de interacción. Respecto a efectos directos, la estructura de aproximación-yo, y las metas de aproximación-yo y aproximación-tarea fueron predictores positivos de la motivación autodeterminada, mientras que la estructura de aproximación-otro, y las metas de aproximación-otro y evitación-tarea fueron predictores negativos. En cuanto a efectos indirectos, los resultados revelaron que las tres metas de aproximación y la de evitación-tarea eran mediadores parciales de la relación entre la estructura de aproximación-yo y la motivación autodeterminada, mientras que las metas de aproximación-otro lo eran en la relación con su estructura correspondiente. Respecto a la interacción, la relación entre las metas de aproximación-tarea y la autodeterminación varió en función de la estructura de aproximación-otro.

Palabras claves: Orientación de meta personal; clima motivacional; modelos multinivel; educación secundaria.

Abstract: The study faces two objectives: (a) to examine the construct validity of the *3x2 Classroom Goal Structures Questionnaire*, and (b) to jointly analyze the influence of the classroom goal structures and 3x2 achievement goals on high school students' self-determined motivation. 2284 students participated (51.6% men and 48.4% women) aged 12-17 years (M = 14.31 years, SD = 1.15), from 148 classrooms. The results of confirmatory factor analysis supported the hypothesized model. The validity and internal consistency of the questionnaire were satisfactory. The results of hierarchical linear models provided support to the direct, indirect and interaction models. Regarding direct effects, self-approach structure, and self-approach and task-approach goals were positive predictors of self-determined motivation, whereas the other-approach structure, and other-approach and task-avoidance goals were negative predictors. In relation to indirect effects, the results revealed that the three approach goals, and task-avoidance goals were partial mediators of the relationship between the self-approach structure and self-determined motivation, whereas other-approach goals were partial mediators in the relationship with their parallel structure. Regarding the interaction effects, the relationship between task-approach goals and self-determination varied depending on the other-approach structure.

Keywords: Personal goal orientation; motivational climate; multilevel models; secondary education.

Introduction

Currently, the construct *achievement goal* (AG) is defined as goals based on competence used to guide behaviour (Elliot, 1999). Over the last three decades, the AG theory has evolved from a dichotomic perspective (Ames, 1992), to the 3x2 framework (Elliot, Murayama, & Pekrum, 2011), via the trichotomic view (Elliot & Harackiewicz, 1996) and the 2x2 structure (Elliot & McGregor, 2001). First, mastery or task goals focused on competence standards based on the task or intrapersonal (self-referenced), while performance or ego referred to interpersonal competence standards or normative. The second step produced the trichotomic model, considering two types of valence: approach goals, focused on acquiring positive consequences, and avoidance goals, focused on avoiding negative consequences, which produced two types of performance goals (performance-approach and performance-avoidance). A few years later, Elliot & McGregor (2001) proposed a third change named 2x2, since mastery goals, like performance goals, were divided in approach and avoidance. As a result of the combination of definition (intrapersonal/normative reference) and valence (approach/avoidance), the 2x2 framework produced four types of AG: mastery-approach (intrapersonal and positive), performance-approach (normative and positive), mastery-avoidance (intrapersonal and negative) and performance-avoidance (normative and negative).

The fourth step is the current 3x3 AG model ((Elliot, Murayama, & Pekrum, 2011; Murayama, Elliot, & Friedman, 2012), which establishes three standards to define competence: absolute (task), intrapersonal (self), and normative (others). Mixing these three standards (definition) with the two types of valence, Elliot et al. (2011) determined the six goals of this framework: task-approach (Tap), oriented to achievement based on the task (i.e. "finish the task correctly"); task-avoidance (Tav), focused to avoid incompetence based the task (i.e. "avoid making the taks incorrectly"); self-approach (Sap), focused on achievement based on the self (i.e., "performing better than before"); self-avoidance (Sav), oriented to avoiding incompetence based on me (i.e., "avoid performing worse than before"); others-approach (Oap), oriented to competence based on others (i.e., "performing better than others"); and others-avoidance (Oav), focused on avoiding incompetence based on others (i.e., "avoid performing worse than others").

Besides being a framework to study individual differences in students' motivation, AG theory also helps assess class context influence on motivation and learning (Meece,

*** Correspondence address [Dirección para correspondencia]:**
Antonio Méndez-Giménez. C/ Aniceto Sela s/n, despacho 219. 33005, Oviedo, Asturias (Spain). E-mail: mendezantonio@uniovi.es

Anderman, & Anderman, 2006). In educational contexts, class achievement framework (CAF) has been defined as the environmental emphasis relative to competence, which is observed via class practice and the specific messages the teachers send to their students (Ames, 1992). Considering that students' perceptions on CAF (psychological environment) play a key role in their goal adoption, research on CAF has focused on students' perceptions instead of the environment itself. It could be expected that the evolution of the concepts linked to environmental factors which lead individuals to interpret competence and adopt different goals could happen parallel to the personal AG construct. However, the evolution of the environmental framework has been limited. From the dichotomic perspective, research focused on two types of structures: mastery CAF, which plays the class emphasis on mastery, comprehension and personal improvement, and performance CAF, whose emphasis is on skill and competition in class (Ames & Archer, 1988). Teachers who promote mastery CAF provide students with stimulating and multifaceted learning opportunities, focusing on effort, support student autonomy, stimulate students to use self-referenced criteria and believe that errors are an integral part of the learning process. In contrast, teachers who use performance CAF tend to group students based on competence, appraise them when they are successful over others, give privileges to students with better grades and use assessment procedures which encourage students to compare with their class mates (Kaplan, Middleton, Urdan, & Midgley, 2002).

Midley et al. (2000) applied the AG trichotomic model to the class context, recognizing three CAF: mastery CAF, where the class environment is focused on academic work to finish the task and develop competence in relation to oneself (intrapersonal and task based competence); performance-approach CAF, where the class environment is oriented towards academic work to show competence in relation to others (normative competence); and performance-avoidance CAF, where the class environment is oriented on academic work to avoid showing incompetence in relation to others (normative incompetence). Probably, in the lower educational levels there is not much performance-avoidance CAF because teachers tend to focus on finishing tasks and learning. However, as students go up in secondary or college education performance-avoidance CAF is more evident (Karabenick, 2004; Murayama & Elliot, 2009). Peng and Cherng (2005) extended Elliot and McGregor's (2001) 2x2 framework to the CAF and build a four-factor structure, more suitable to secondary and baccalaureate Taiwanese students: mastery-avoidance CAF refers to the class environment focused on academic work to avoid showing incompetence compared to oneself (intrapersonal and task-based incompetence). Unfortunately, task-avoidance CAF and performance-avoidance CAF have been scarcely researched and only a few studies have adopted the four-factor CAF (Lin & Cherng, 2006, 2007; Peng, Cherng, Chen, & Lin, 2013). To date, no studies have explored the CAF using the 3x2 AG framework.

Contextual factors have been research as one of the AG antecedents within the hierarchical model of achievement motivation (Elliot, 1999). It has been proposed that the CAF can influence students' AG (Ames, 1992, Maehr & Midgley, 1996). Church, Elliot, & Gable (2001) y Michou, Mouratidis, Lens, & Vansteenkiste (2013) showed that mastery CAF can facilitate the adoption of mastery approach goals, performance-approach CAF promote performance-approach goals, and performance-avoidance CAF promote the adoption of performance-avoidance goals.

Murayama and Elliot (2009) proposed a framework to assess the connections between CAF, AG and achievement results which included three models (direct effect, indirect effect and interaction effect). The direct effect model considers that the CAF influences the more relevant achievement results, even more than the personal AG (Ames & Archer, 1988; Gutman, 2006; Karabenick, 2004; Lau & Nie, 2008; Nolen, 2003; Turner et al., 2002; Urdan, Midgley, & Anderman, 1998; Wolters, 2004). The indirect effect model hypothesizes that the CAF influences indirectly the more relevant achievement results via its impact on the adoption of personal AG. This model highlights the mediating role of the AG in the CAF-achievement outcomes connection, since CAF influences AG adoption and this influences achievement outcomes. Most studies have supported the indirect effect model (Bong, 2005; Greene, Miller, Crowson, Duke, & Akey, 2004; Miki & Yamauchi, 2005; Patrick, Ryan, & Kaplan, 2007; Yamauchi & Miki, 2003). Finally, the interaction effect model points out that CAF moderate the influence of AG on the relevant achievement results. It highlights the interactive role of personal AG and CAF. It is believed that the influence of AG adoption changes depending on the type of CAF promoted. However, this model has been scarcely researched (Lau & Nie, 2008; Linnenbrink, 2005; Murayama & Elliot, 2009). These three models are not incompatible, but they have been researched only from the trichotomic framework (Murayama & Elliot, 2009; Schwinger & Stiensmeier-Pelster, 2011) and the results have been inconclusive. This is why the present study has focused on the assessment of the three models from the 3x2 AG framework.

Mastery-approach CAF have been linked to more adaptive variables: intrinsic motivation, self-efficacy, persistence and effort, challenge seek, less disruptive behaviours, positive affect and enthusiasm, positive grades and a decrease in depressive symptoms over time. Performance-approach CAF have produced contradictory results: greater exam anxiety, disruptive conducts, limited effort in difficult tasks, cheating and depressive symptoms (Linnenbrink, 2005; Meece et al., 2006; Murayama & Elliot, 2009; Urdan & Midgley, 2003; Wolters, 2004). Finally, the effects of performance-avoidance and mastery avoidance CAF have not been assessed.

Several assessment instruments have been proposed to assess CAF in educational contexts. From a dichotomic perspective, Ames and Archer (1988) designed a questionnaire

to assess students' perceptions of two CAF dimensions: mastery and performance. They identified group of dimensions of the class climate (i.e., definition of success, reasons to be satisfied, reasons for the effort, evaluation criteria...) related to the adoption of each goal orientation. From the trichotomic perspective, the *Patterns of Adaptive Learning Strategies* (PALS; Midgley et al., 2000) acknowledged three environments based on students' perceptions: mastery-oriented, performance-approach orientation and performance-avoidance orientation. In sport and physical education contexts Newton, Duda and Yin (2003) validated the *Perceived Motivational Climate Sport Questionnaire* (PMCSQ). Papaioannou, Tsigilis, Kosmidouy, & Milosis (2007) developed a tool from the trichotomic perspective, and recently, Méndez-Giménez, Cecchini, & Fernández-Río (in press) assessed construct validity of the 3x2 Motivational Climate Questionnaire in physical education.

Since there is no assessment instrument for academic contexts in line with the latest steps, 3x2 AG, which incorporate there definition criteria (task, self, other) and the two valences (approach-avoidance), it seems relevant to design and validate a tool to assess the six environmental constructs on CAF. Murayama et al. (2012) emphasized that the assessment of the influence of the mastery-avoidance CAF could be worthy, because teaching strategies that promote mastery-avoidance goals (i.e., mastery-avoidance CAF) are common (i.e.: "try to avoid making mistakes"). This mastery-avoidance CAF could have a substantial impact in the learning process. Similarly, the last theoretical step in 3x2 AG suggests that mastery structures should be divided based on the task and the self, which remains unexplored.

In the present study two goals were set: a) examine the structural validity of the 3x2 achievement class structure questionnaire (ACSQ 3x2), and b) assess the direct, indirect and interaction relations between 3x2 achievement class structures, 3x2 AG and self-determined motivation in secondary education and baccalaureate students. The first hypothesis was that the results will dissociate task-based CAF into task, self and others, both approach and avoidance. The second hypothesis was that CAF will not be direct and indirect predictor of self-determined motivation, but also that interactions will emerge between personal AG and CAF. Based on previous research (Lau & Nie, 2008; Méndez-Giménez, Cecchini, Fernández-Río, Méndez-Alonso, & Prieto-Saborit, 2017; Murayama & Elliot, 2009), the third hypothesis was that both mastery-approach CAF and Tap and Sap will positively predict self-determined motivation, while others-approach CAF and Oap will predict it negatively. Regarding the indirect effects, the fourth hypothesis was that approach goals will mediate, at least partially, the relation between approach goals and self-determined motivation. Finally, based on the scarce research on the interaction model, no hypothesis was established.

Method

Participants

2284 students included in 148 secondary education classes from 34 schools of 17 Spanish provinces agreed to participate. A convenience sampling technique was utilized. The sample's gender distribution was 51.6% men and 48.4% women. They ranged in age from 12 to 17 years old (M = 14.31; SD =1.15). The electronic format used for the questionnaire forced participants to answer all the questions to proceed. Therefore, no questionnaire had to be disregarded. Prior to data analysis, several questionnaires were eliminated for different reasons (duplicates, item errors…).

Assessment instruments

3x2 Achievement goals. The Spanish validated version (Méndez-Giménez et al., 2017) of the 3x2 Achievement Goal Questionnaire (Elliot et al., 2001) was used. It contains 18 items grouped in six factors: task-approach goals (Tap), focused on goal achievement based on the task (i.e., "do the task correctly"), task-avoidance goals (Tav), focused on avoiding incompetence based on the task (i.e., "avoid doing the task incorrectly"), self-approach goals (Sap), focused on competence based on oneself (i.e., do it better than before"), self-avoidance goals (Sav), focused on avoiding incompetence based on the self (i.e., "avoid doing it better than before"), others-approach goals (Oap), focused on competence based on others (i.e., "do it better that others"), and others-avoidance goals (Oav), focused on avoiding incompetence based on others (i,.e., "avoid doing it worse than others"). In the validated version (Mendez-Gimenez et al., in press), Cronbach's alphas ranged from .75 to .89. Participants responded in a 7-point likert scale from 1 (absolutely not true to me) to 7 (absolutely true to me).

3x2 achievement class structure. The 3x2 Achievement Class Structure Questionnaire (ACSQ-3x2), developed from the 3x2 Motivational Climate in physical education (PE) (Méndez-Giménez et al., in press) was used. Items were modified to refer to general academic contexts, including the heading to make participants focus on the different subjects assessed. The questionnaire includes several items that represent the CAF generated by the teacher in class (perceived by the students) and incorporates the ideas of the 3x2 framework (Elliot et al., 2011). It has 18 items grouped in six CAF (three items on each construct) with the following stem: "In class, the goal of the teacher is that each student..." (Annex 1). Task-approach (CAFTap): "...perform correctly the tasks", task-avoidance (CAFTav): "...avoid performing wrong the tasks", self-approach (CAFSap): "...perform the tasks better that before", self-avoidance (CAFSav): "...avoid performing the tasks worse than before", others-approach (CAFOap): "...perform the tasks better than others", and others-avoidance (CAFOav): "...avoid performing the tasks worse than others". Participants responded in a 5-point likert scale

from 1 (absolutely not true to me) to 5 (absolutely true to me). In the original study Cronbach's alphas were .82, .72, .79, .78, .84, .77 for CAFTap, CAFTav, CAFSap, CAFSav, CAFOap, and CAFOav, respectively.

Motivation in the academic context. The Spanish validated version (EME-E; Nuñez, Martín-Albo, Navarro, & Suárez, 2010) for non-university educational contexts of the Academic Motivation Scale (AMS; Vallerand et al., 1992) was used. It includes 7 subscales: amotivation (i.e., "I had good reasons to go to school, but now I ask myself if it is worth continue"), external regulation (i.e., "to obtain a more prestigious job"), introjected regulation (i.e., "because I want to probe myself that I can pass"), identified regulation (i.e., "because I believe that the education I receive in my school will improve my working competence"), intrinsic motivation tom knowledge (i.e., "because I feel pleasure and satisfaction when I learn new things"), intrinsic motivation to achievement (i.e., "for the pleasure that I feel when I pass the exams"), and intrinsic motivation to stimulating experiences (i.e., "because it is stimulating to read about things that I find interesting"). Each subscale has four items that ask about the reasons why students go to school. Participants responded in a 7-point likert scale from 1 (absolutely not true) to 7 (absolutely true). Cronbach's alphas were .82, .75, .82, .73, .86, .88, .73, respectively. A self-determination motivation index (SDI) proposed by Vallerand (1997) was obtained using the following equation: [2 x (IM to knowledge + IM to achievement + IM to stimulating experiences)/3) + Identified Reg.] – [(Introjected Reg. + External Reg.)/2) + (Amotivation x 2)].

Control variables. Prior research has showed that educational stage and gender can be important predictors of motivation and outcomes variables (Eccles & Midgley, 1989; Hyde & Durik, 2005). Therefore, this information was obtained and assessed. Educational stage was coded as: 1 = grades 7-8, 2 = grades 8, 9, 10. Males were coded as 1, and females as 2.

Procedure

Researchers contacted the schools' directors to share the goals of the project and they signed a written consent. After a full review of all the existing CAF and motivational climate questionnaires, Méndez-Giménez et al.'s questionnaire (2017) was modified to assess 3x2 CAF. Two pilot studies were conducted to know if secondary education students were able to understand the meaning of the different items. Prior to test administration, teachers were informed of the protocol to use to fill the questionnaires in class and online through google forms (30 minutes aprox.). Participants had access to the questionnaire via a link provided by the researchers. They were told that it was voluntary, that their responses were anonymous, and that they would not affect their grades. They were also asked to respond honestly. All data was assessed using SPSS, 20.0. and EQS 6.2.

Data analysis

Confirmatory factor analysis. Since data did not follow a normal distribution (Kolmogorov-Smirnov, $p < .05$), the program EQS 6.2. (Bentler, 2005) was used to conduct a confirmatory factor analysis based on Satorra-Bentler chi-square (S-Bχ^2; Satorra y Bentler, 1994) and robust standard estimates. Evaluation of the sample's goodness-of-fit data was performed using multiple criteria (Byrne, 2008): the Comparative Fit Index (*CFI; Bentler, 1990), the Root Mean-Square Error of Approximation (*RMSEA; Browne & Cudeck, 1993), and the Standardized Root Mean Square Residual (SRMR). The *CFI represents the CFI robust version calculated on the S-Bχ^2 statistical basis. The *RMSEA is the robust version of the usual RMSEA and it takes into account the approximation error in the population (Browne & Cudeck, 1993). To complete the analysis, the confidence interval to 90% provided by *RMSEA (Steiger, 1990) was also included. Finally, the SRMR, the average standardized residual value, was also used.

Comparison with alternative models. Following Elliot et al.'s procedure (2011), additional analysis were conducted to confront the fit of the hypothesized model with six alternative models: (a) the 2x2 model, where others-achievement structures loaded on the latent hypothetical factors, while task and self-achievement structures loaded on the common latent factors; (b) the trichotomic model, where others-achievement loaded on its hypothesized latent factor, but task and self-achievement loaded together in a latent factor; (c) the dichotomic model, where others-achievement loaded in a latent factor, and task and self-achievement loaded together in a common latent factor; (d) the Tap/Tav (task-approach/task-avoidance) model, where all items loaded in their hypothesized latent factors, except task-approach and task avoidance which loaded together in a common latent factor; (e) the Sap/Sav (self-approach/self-avoidance) model, where all items loaded in their hypothesized latent factors, except self-approach and self-avoidance which loaded together in a common latent factor; and (f) the Oap/Oav (others-approach/others-avoidance) model, where all items loaded in their hypothesized latent factors, except others-approach and others-avoidance which loaded together in a common latent factor. The Akaike (AIC) criterion was used to compare the hypothesized model and the alternative models (Kline, 2005). Scores for an alternative model in the chi-square difference significantly larger than cero indicate that the alternative model produces a worse fit than the hypothesized model. Lower AIC scores indicate a better fit.

Linear hierarchical model analysis. Linear hierarchical models (Raudenbush & Bryk, 2002) or multilevel (Goldstein, 2003) were designed to assess data when cases are grouped in large information units and means are considered in the lowest (students) and highest levels (classes). MIXED SPSS (18.0) procedure was used to adjust the models (Pardo, Ruiz, & San Martín, 2007). Following Elliot and Maruyama (2009), the process was divided in several steps:

First, as a preliminary analysis, the unconditioned or null model was examined to estimate the variances between classes and in the class (Hofmann, Griffin, & Gavin, 2000). CAF and SDI significant variation among classes were explored. The intraclass correlation coefficient was also obtained (ICC).

Second, the interaction effect model was assessed. Two analyses were conducted: first, a regression model with random coefficients, and later, a model of slopes as results. The regression analysis with random coefficients tries to assess which part of the variability in the class (level 1 variability) could be explained by the AG. To correctly assess the relation between AG and SDI is mandatory to obtain a regression equation for each group and asses how the intersections and the slopes of those equations change. With this procedure, it is assumed not only that classes can have a different SDI, but also that the relation SDI and personal AG can be different depending on the grade (different slopes). The models that include this type of variation are called random coefficients models, because they let both coefficients (intersection and slope) change randomly from class to class. To do this, a model was built with the six AG as simultaneous predictors of the SDI. Slopes were allowed to change through classes, and later, the non-significant random effects were eliminated for statistical reasons (Raudenbush & Bryk, 2002). Independent variables scores were re-scaled, subtracting the mean of the class group (central scores), to know the transversal interactions (Enders & Tofighi, 2007). To make the coefficient β_0 clear enough, researchers usually re-scale independent variables scores, subtracting the mean (using differential scores, central, instead of the direct ones). Therefore, the mean scores were subtracted from the variable SDI. Grade level (1 = grades 7-8, 2 = grades 8, 9, 10) was included as a predictor of the intersections, while gender was kept as predictor of the fixed effects. Both variables remained non-central to facilitate the interpretation of the results. Next, a regression analysis of means and slopes as results was conducted to find which variables could signal that variability. The 3x2 CAF were added to the previous model and the interactions between CAF and personal AG. Non-significant predictors were omitted from the model. To assess the type of interactions, the significance of the slope in the CAF scores was tested, a standard deviation above and below of the samples' mean (Bauer & Curran, 2005).

Third, the direct effects model was examined with the same model described in the previous paragraph, but re-scaling the AG scores, subtracting the mean of all participants to every score (scores centred in the total mean), because it is more appropriate when a level two predictor is more interesting and the level one effects must be controlled. Grade level and gender were controlled in the analysis.

Finally, indirect effects were examined using a multilevel mediation analysis (Krull & MacKinnon, 2001). Level one predictors were centred in the global mean. Grade level and gender were controlled in the analysis. Three phases were conducted: 1) a model was developed with the CAF as class predictors of the SDI; 2) a second model was developed with the CAF as class predictor of the personal AG, and 3) a third model was developed where both the CAF and the personal AG dimensions which had been significant for the SDI were again included as predictors of this dimension. The term intersection was used as a random coefficient.

Results

Descriptive analysis and bivariate correlations of the 3x2 achievement class structure

Table 1 shows descriptive statistics, Cronbach's alphas and bivariate correlations of the six CAF dimensions

Table 1. Cronbach's alpha, descriptive statistics and bivariate correlations

	A	*M*	*DT*	1	2	3	4	5
1. CAFTap	.80	4.00	.88	-				
2. CAFTav	.74	3.85	.95	.61**	-			
3. CAFSap	.78	4.07	.84	.74**	.63**	-		
4. CAFSav	.76	3.74	.98	.54**	.71**	.63**	-	
5. CAFOap	.79	2.80	.97	.27**	.23**	.22**	.27**	-
6. CAFOav	.71	3.15	.90	.31**	.41**	.30**	.45**	.60**

Note. CAFTap = task-approach achievement class structure; CAFTav = task-avoidance achievement class structure; CAFSap = self-approach achievement class structure CAFSav = self-avoidance achievement class structure; CAFOap = others-approach achievement class structure; CAFOav = others-avoidance achievement class structure.
** $p < .01$.

Control Variables

Regarding grade level, no significant differences were found in the SDI. On the contrary, gender produced significant differences in the SDI, with males showing higher scores than females.

Confirmatory factor analysis

Comparisons between models indicated that the hypothesized model provided a better fit to the data than any of the alternative models (Table 2). This results support the 3x2 CAF model and the need to differentiate between task and self.

Table 2. Comparison between the hypothesized and the alternative models.

	S-Bχ^2	*df*	*CFI	*RMSEA 90% CI	SMRM	ΔS-Bχ^2	AIC
3x2	854.69***	120	.955	.051(.048-.055)	.04		914.71
2x2	980.59***	129	.947	.054(.051-.057)	.04	125.90	722.50
Trichotomic	1611.84***	132	.908	.070(.067-.073)	.06	757.15	1347.89
Dichotomic	2044.07***	134	.881	.079(.076-.082)	.07	1189.38	1776.07
TAp/TAv	1338.49***	125	.924	.065(.062-.068)	.05	483.80	1088.46
SAp/ SAv	1312.98***	125	.926	.065(.061-.068)	.05	458.29	1062.98
OAp/OAv	1403.90***	125	.920	.067(.064-.070)	.06	549.21	1153.90

*** $p < .001$

Descriptive analysis and bivariate correlations between 3x2 personal achievement goals and SDI

Table 3 shows descriptive statistics and bivariate correlations between variables in class students' scores.

Table 3. Descriptive statistics and bivariate correlations between variables in class students' scores.

	M	*DT*	1	2	3	4	5	6
1. SDI	6.73	4.17	-					
2. Tap	5.92	1.17	.35**	-				
3. Tav	5.67	1.41	.24**	.57**	-			
4. Sap	5.68	1.23	.53**	.63**	.50**	-		
5. Sav	5.34	1.38	.31**	.46**	.56**	.62**	-	
6. Oap	4,14	1.78	.06*	.28**	.17**	.25**	.20**	-
7. Oav	4,45	1.71	.11**	.32**	.38**	.32**	.43**	.71**

Note. SDI = Self-determined motivation index; Tap = task-approach goals; Tav = task-avoidance goals; Sap = self-approach goals; Sap = self-avoidance goals; Oap = others approach-goals; Oav = others-avoidance goals.
* $p < .05$. ** $p < .01$.

Unconditioned model

Results from the preliminary analyses showed that all CAF and SDI dimensions changed significantly between classes: CAFTap, $\chi^2(147) = 318.62$, $p < .001$; CAFTav, $\chi^2(147) = 272.06$, $p < .01$; CAFSap, $\chi^2(147) = 294.83$, $p < .001$; CAFSav, $\chi^2(147) = 238.94$, $p < .01$; CAFOap, $\chi^2(152) = 218.35$, $p < .01$; CAFOav, $\chi^2(147) = 225.75$, $p < .01$, SDI, $\chi^2(147) = 402.35$, $p < .001$. The ICC were 6.9%, 4.3%, 6.7%, 3.1%, 3.1%, 3.4%, 11.3%, respectively.

Random coefficients regression analysis

For SDI, Tap and Sap were positive predictors, while Tav and Oap were negative predictors. Tap's slope changed significantly between classes (Table 4), which indicates that in some of them the effect of Tap was positive and in others neutral or negative.

Means and slopes as outcomes regression analysis

The connection between Tap and SDI changed based on the CAFOap (Table 5). Slope analysis revealed that Tap was a positive predictor of SDI in a weak CAFOap (estimated beta = .26, $p < .001$) and this relation was strengthen in a strong CAFOap (estimated beta = .37, $p < .001$). Figure 1 shows a graphical resume of the slope results.

Table 4. 3x2 achievement goals predictors of SDI

Fixed effects	Coefficient
Intersection (γ_{00})	-1.11***
Grade (γ_{01})	.04
Gender (γ_{10})	.81***
Tap (γ_{20})	.27**
Tav (γ_{30})	-.15*
Sap (γ_{40})	1.67***
Sav (γ_{50})	-.07
Oap (γ_{60})	-.14*
Oav (γ_{70})	.04
Random effects	Variance
Intersection (u_{0j})	2.00***
Tap (u_{2j})	.25*

Note. Models level 1 (Y_{ij}) = β_{0j} + β_{1j} (gender) + β_{2j} (Tap) + β_{3j} (MET) + β_{4j} (Tav) + β_{5j} (Sap) + β_{6j} (Oap) + β_{7j} (Oav) + r_{ij}. Models level 2: $\beta_{0j} = \gamma_{00} + \gamma_{01}$ (grade) + u_{0j}, $\beta_{1j} = \gamma_{10}$, $\beta_{2j} = \gamma_{20}$, $\beta_{3j} = \gamma_{30}$, $\beta_{4j} = \gamma_{40}$, $\beta_{5j} = \gamma_{50}$, $\beta_{6j} = \gamma_{60}$, $\beta_{7j} = \gamma_{70}$
* $p < .05$. ** $p < .01$. *** $p < .001$

Table 5. Achievement class structures as predictors of the intersection and the slope of SDI..

Fixed Effects	Coefficient
Intersection (γ_{00})	-8.17***
Grade (γ_{01})	.05
CAFSap (γ_{02})	2.64***
CAFOap (γ_{03})	-1.31**
Gender (γ_{10})	.77***
Tap (γ_{20})	-2 .04**
CAFOap (γ_{21})	.82**
Tav (γ_{30})	-.16*
Sap (γ_{40})	1.63***
Oap (γ_{50})	-.12**
Random Effects	Variance
Intersection (u_{0j})	1.33***
Tap (u_{2j})	.21*

Note. Level Models level 1: (Y_{ij}) = β_{0j} + β_{1j} (gender) + β_{2j} (Tap) + β_{3j} (Tav) + β_{4j} (Sap) + β_{5j} (Oap) + r_{ij}. Models level 2: $\beta_{0j} = \gamma_{00} + \gamma_{01}$ (grade) + γ_{02} (CAFSap) + γ_{03} (CAFOap) + u_{0j}, $\beta_{1j} = \gamma_{10}$, $\beta_{2j} = \gamma_{20} + \gamma_{21}$ (CAFOap) + u_{2j}, $\beta_3 = \gamma_{30}$, $\beta_{4j} = \gamma_{40}$, $\beta_{5j} = \gamma_{50}$
* $p < .05$. ** $p < .01$. *** $p < .001$

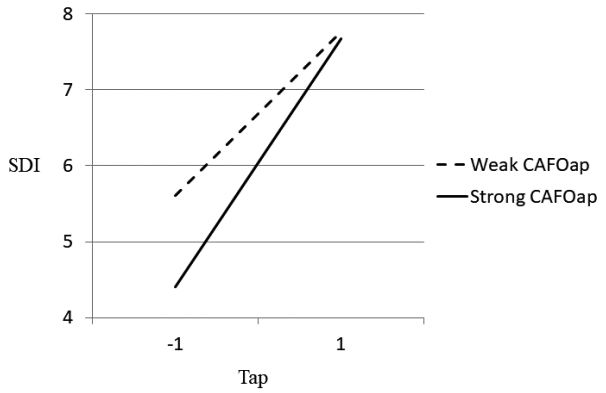

Figure 1. Predictive values for self-determined motivation as a function of task-approach achievement goals in high and low levels of others-approach achievement class structure.
Note. SDI = Self-determined motivation index; Tap = task-approach goals; CAFOap = others-approach achievement class structure.

Direct and indirect effects

Effect direct model. Results showed that CAFSap and CAFOap were significant predictors of students' SDI, CAFSap was a positive predictor (γ_{02} = 3.28, p < .001), while CAFOap was a negative predictor (γ_{03} = -1.28, p < .01).

Indirect effects model. Results from phase 1 (model with CAF as an in class predictor of SDI) revealed that only CAFSap (γ = 2.64, p < .001) and CAFOap (γ = -1.31, p < .01) were significant. In the subsequent analyses only these two CAF dimensions were used. Results from phase 2 (model with CAFSap and CAFOap as an in class predictor of personal AG) showed that CAFSap positively predicted Tap (γ = .71, p < .001), Tav (γ = .72, p < .001), Sap (γ = .92, p < .001), and Oap (γ = .49, p < .01), while CAFOap only positively predicted Oap (γ = .99, p < .001). Results from model 3 (CAF dimensions and personal AG who were significant were again included as predictors) showed that Tap, Tav, Sap and Oap were significant predictors of SDI. Tap (γ_{20} = .25, p < .01) and Sap (γ_{40} = 1.71, p < .001) were positive predictors, while Tav (γ_{30} = -.18, p < .01) and Oap were negative predictors (γ_{50} = -.12, p < .01).

Based on the previous results, the indirect effect of CAFSap was examined via Tap (1), Tav (2) MAY (3) and Oap (4) and the indirect effects of CAFOap via Oap (5), using the Sobel (1982) test (Krull & Mackinnon, 2001). The indirect effects were significant for (1): z = 2.32, p < .05, para (2): z = 2.14, p < .05, (3): z = 7.73, p < .001, (4): z = 2.01, p < .05, y (5): z = 2.68, p < .01. In all the cases, the mediation was partial because the negative influence of both structures (CAFSap and CAFOap) on SDI was maintained (as it was the case in the direct effects). Figure 2 shows direct, indirect effects and their interactions.

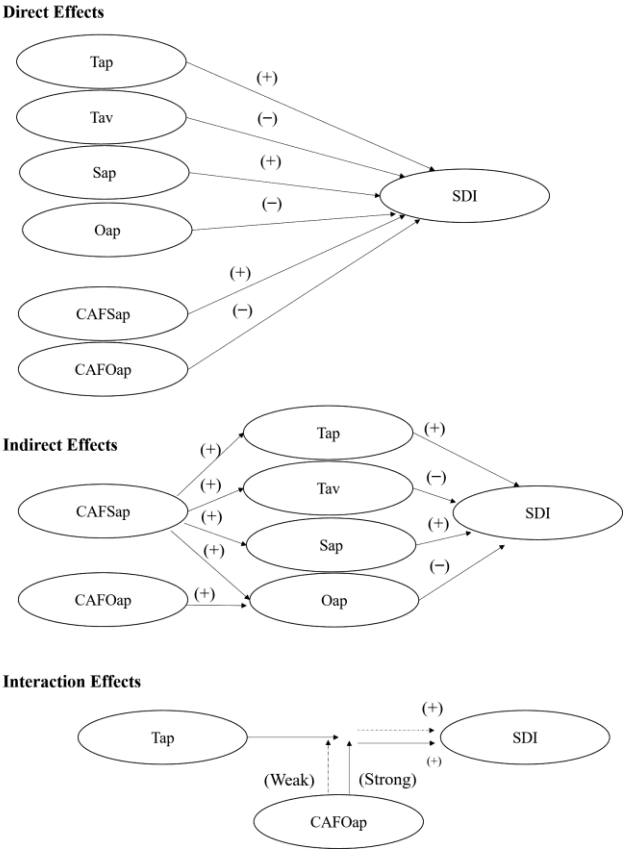

Figure 2. Joined analysis of the effects of the achievement class structures and achievement goals in the self-determined motivation.
Note. CAFSap = Self-approach achievement class structure; CAFOap = Others-approach achievement class structure; SDI = Self-determined motivation index; Tap = Task-approach achievement goals; Tav = Task-avoidance achievement goals; Sap = Self-approach achievement goals; Oap = Others-approach achievement goals.

Discussion

The study had two goals: (a) examine construct validity of the ACSQ-3x2, and (b) assess the influence of CAF and 3x2 AG, jointly, in secondary education students self-determined motivation.

Regarding construct validity of the ACSQ-3x2, results showed that the six CAF represent different constructs and that the 3x2 model provides a better fit to the data than any of the six alternative models tested. Results are in line with those reported by Méndez-Giménez et al. (in revision) in the context of PE, and confirm hypothesis 1: the differentiation between task, self and others (both approach and avoidance). Findings suggest the extension of the 3x2 AG model to the environmental component generated by the teacher. Similarly, the ACSQ-3x2 could be considered a relevant tool to mind a gap in the existing literature on AG.

Participants reported higher levels of approach CAF, except in others-based. Regarding achievement class structures perceived by the students, the highest scores were obtained

in CAFSap and CAFTap, and the lowest in CAFOap. Correlations between CAF were positive and moderate, in line with those found by Méndez-Giménez et al. (2017). Data analysis discriminated between CAF task-based o self-based, correlations between CAFTap – CAFSap and CAFTav – CAFSav were elevated (.74 and .71, respectively). Similar results have been obtained in previous studies on the 3x2 AG framework (Elliot et al., 2011). Bong (2009) highlighted higher correlations between AG reported by secondary tan university students.

Regarding the global effects of CAF and 3x2 AG, results allow us to support hypothesis 2. CAF was not only direct and indirect predictor of SDI, interactions between personal AG and CAF also emerged in the prediction. The preliminary analysis (unconditioned model or null) revealed that all CAF dimensions and the SDI changed significantly between classes. In contrast to the previous study of Maruyama and Elliot (2009), where no significant changes were found in the performance-avoidance CAF, in the present study significant differences appeared in the CAFOav. The different assessment tools used and cultural differences could explain the different outcomes. Maruyama and Elliot's study (2009) was conducted on Japanese students. Prior research (Elliot, Chirkov, Kim, & Sheldon, 2001; Wang, Biddle, & Elliot, 2007) found that individuals from collectivist countries (Russia, Korea, Japan…) tend to adopt avoidance achievement goals than people from individualistic countries (North America and Europe). More research is needed to assess if these differences can also influence on the variability of CAF.

Regarding the direct effects model, results indicated that CAFSap was a direct positive predictor of self-determined motivation, while CAFOap was a negative predictor. This trend is supported by previous research works conducted on different outcome variables such as academic achievement, commitment or intrinsic motivation (Lau y Nie, 2008; Meece et al., 2006; Murayama y Elliot, 2009). Contrary to our predictions, the CAFTap was not a direct predictor. Results indicate that from the two dimensions of mastery-approach CAF in the 3x2 framework, the CAFSap was the one that plays a central role in the direct connection to self-determined motivation. Environments that promoted self-referenced competence improvement were powerful motivational stimuli for these adolescents. Congruent with prior research (Church et al., 2001; Méndez-Giménez et al., 2017), Tap and Sap were positive direct predictors of self-determined motivation, while Tav and Oap were negative direct predictors. In conclusion, results partially supported hypothesis 3.

Regarding the indirect effects model, results revealed that CAFSap was a positive predictor of Tap, Tav, Sap and Oap, and CAFOap was a positive predictor only of Oap. Results indicated that goals have acted as partial mediators with the self-determined motivation. The connection between CAFSap and the rest of the goals emerged for the first time in the scientific literature. Further from our more restrictive prediction (hypothesis 4), CAFSap promoted the adoption of different types of goals, not only the matching (Sap), and all had a proximal influence in the motivational results. For its part, results of the relation CAFOap – Oap were convergent with previous studies who found that performance-approach CAF leads to the adoption of performance-approach goals (Schwinger, & Stiensmeier-Pelster, 2011; Urdan, 2004), and those who emphasize the maladaptive role of both CAF and personal performance-approach goals (Anderman, Cupp, & Lane, 2009; Givens-Rolland, 2012; Kaplan, Gheen, & Midgley, 2002; Lau, & Nie, 2008; Murdock, Hale, & Weber, 2001).

Regarding the interaction effects model, results showed that the relation between Tap and SDI changed according to the CAFOap and that relation was damaged in a CAFOap strong vs weak. Lau and Nie (2008) also examined context-individual interactions using a multilevel analysis y they warned that the approach-avoidance structures (CAFOap in this study) could be specially negative for those students who adopt strong performance-avoidance goals, because they promote the maladaptive effects of the relation between performance-avoidance goals an relevant achievement outcomes. Emphasizing achievement goals in class can aggravate the risk of this group of students, even when teachers focus on the approach dimension of performance. Those students who adopt low Tap and perceive a strong CAFOap are less self-determined motivated than those who also adopt low Tap, but perceived a weak CAFOap. Interestingly, students with high Tap scores seem to be the more resistant to the negative effects of CAFOap than those with lower Tap scores. Future research should deepen in this and other interactions between CAF and AG.

Results from the present study have important practical implications. It seems highly recommendable to promote self-referenced contexts to promote students' self-determined motivation. Similarly, teachers should limit comparative contexts, contexts focused on competence achievement based on others, or avoidance structures for their negative outcomes. Finally, students' Tap and Sap in educational contexts should be fostered, because these personal orientations are more adaptive and they protect from the negative effect of normative contexts.

A limitation of the present study is that students provided, at the same time, CAF and AG data. This could have produced a bias in the participants' responses (social desirability or acquiescence) or an over or underestimation of the scores and the correlations among variables.

In conclusion, this study has re-affirmed within the 3x2 AG framework, Murayama and Eliot's (2009) thesis that considering globally the three models (direct, indirect an interactive) represent a more profound and complete scenario of analysis that can focus on each of the models independently. Future research should continue assessing this integral framework of analysis, still underused.

References

Ames, C. (1992). Classrooms: Goals, structures, and student motivation. *Journal of Educational Psychology, 84*, 261-271. http://dx.doi.org/10.1037//0022-0663.84.3.261

Ames, C., & Archer, J. (1988). Achievement goals in the classroom: Students' learning strategies and motivation processes. *Journal of Educational Psychology, 80,* 260-267. http://dx.doi.org/10.1037/0022-0663.80.3.260

Anderman, E. M., Cupp, P. K., & Lane, D. (2009). Impulsivity and academic cheating. *Journal of Experimental Education, 78*, 135–150. http://dx.doi.org/10.1080/00220970903224636

Bauer, D. J., & Curran, P. J. (2005). Probing interactions in fixed and multilevel regression: Inferential and graphical techniques. *Multivariate Behavioral Research, 40,* 373-400.

Bentler, P. M. (2005). *EQS structural equations program manual.* Encino, CA: Multivariate Software.

Bong, M. (2005). Within-grade changes in Korean girls' motivation and perceptions of the learning environment across domains and achievement levels. *Journal of Educational Psychology, 97,* 656-672. http://dx.doi.org/10.1037/0022-0663.97.4.656

Bong, M. (2009). Age-related differences in achievement goal differentiation. *Journal of Educational Psychology, 101,* 879–896. http://dx.doi.org/10.1037/a0015945

Church, M. A., Elliot, A. J., & Gable, S. L. (2001). Perceptions of classroom environment, achievement goals, and achievement outcomes. *Journal of Educational Psychology, 93*, 43–54. http://dx.doi.org/10.1037//0022-0663.93.1.43.

Cohen, J., Cohen, P., West, S., & Aiken, L. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences.* Mahwah, NJ: Erlbaum.

Eccles, J., & Midgley, C. (1989). Stage/environment fit: Developmentally appropriate classrooms for young adolescents. En R. E. Ames & C. Ames (Eds.), *Research on motivation and education* (Vol. 3, pp. 139–186). New York: Academic Press.

Elliot, A. J. (1999). Approach and avoidance motivation and achievement goals. *Educational Psychologist, 34*, 169-189. http://dx.doi.org/10.1207/s15326985ep3403_3.

Elliot, A. J., Chirkov, V. I., Kim, Y., & Sheldon, K. M. (2001). A cross-cultural analysis of avoidance (relative to approach) personal goals. *Psychological Science, 12,* 505-510. http://dx.doi.org/10.1111/1467-9280.00393

Elliot, A. J., & Harackiewicz, J. M. (1996). Approach and avoidance achievement goals and intrinsic motivation: A mediational analysis. *Journal of Personality and Social Psychology, 70,* 461-475. http://dx.doi.org/10.1037/0022-3514.70.3.461

Elliot, A. J., & McGregor, H. A. (2001). A 2 x 2 achievement goal framework. *Journal of Personality and Social Psychology, 80*(3), 501-519. http://dx.doi.org/10.1037/0022-3514.80.3.501

Elliot, A. J., Murayama, K., & Pekrun, R. (2011). A 3 x 2 achievement goal model. *Journal of Educational Psychology, 103*(3), 632-648. http://dx.doi.org/10.1037/a0023952

Enders, C. K., & Tofighi, D. (2007). Centering predictor variables in cross-sectional multilevel models: A new look at an old issue. *Psychological Methods, 12,* 121-138.

Givens-Rolland, R. (2012). Synthesizing the evidence on classroom goal structures in Middle and Secondary Schools: A meta-analysis and narrative review. *Review of Educational Research, 82*(4), 396–435. http://dx.doi.org/10.3102/0034654312464909

Goldstein, H. (2003). *Multilevel statistical models* (3ª ed.). New York: Halstead Press.

Greene, B. A., Miller, R. B., Crowson, H. M., Duke, B. L., & Akey, K. L. (2004). Predicting high school students' cognitive engagement and achievement: Contributions of classroom perceptions and motivation. *Contemporary Educational Psychology, 29,* 462-482. http://dx.doi.org/10.1016/j.cedpsych.2004.01.006

Gutman, L. M. (2006). How student and parent goal orientations and classroom goal structures influence the math achievement of African Americans during the high school transitions. *Contemporary Educational Psychology, 31,* 44-63. http://dx.doi.org/10.1016/j.cedpsych.2005.01.004

Hofmann, D. A., Griffin, M. A., & Gavin, M. B. (2000). The application of hierarchical linear modeling to organizational research. En K. J. Klein & S. W. Kozlowski (Eds.), *Multilevel theory, research, and methods in organizations: Foundations, extensions, and new directions* (pp. 467-511). San Francisco: Jossey-Bass.

Hyde, J., & Durik, A. (2005). Gender, competence and self-regulation. En A. J. Elliot & C. S. Dweck (Eds.), *Handbook of competence and self-regulation* (pp. 375–391). New York: Guilford Press.

Kaplan, A., Gheen, M., & Midgley, C. (2002). Classroom goal structure and student disruptive behavior. *British Journal of Educational Psychology, 72,* 191-211.

Kaplan, A., Middleton, M., Urdan, T., & Midgley, C. (2002). Achievement goals and goal structures. En C. Midgley (Ed.), *Goals, goal structures, and patterns of adaptive learning* (pp. 21–53). Mahwah, NJ: Erlbaum.

Karabenick, S. A. (2004). Perceived achievement goal structure and college student help seeking. *Journal of Educational Psychology, 96*(3), 569-581. http://dx.doi.org/10.1037/0022-0663.96.3.569

Krull, J. L., & MacKinnon, D. P. (2001). Multilevel modeling of individual and group level mediated effects. *Multivariate Behavioral Research, 36,* 249-277.

Lau, S., & Nie, Y. (2008). Interplay between personal goals and classroom goal structures in predicting student outcomes: A multilevel analysis of person-context interactions. *Journal of Educational Psychology, 100,* 15-29.

Lin, Y. H., & Cherng, B. L. (2006). The interaction effects between the cues of classroom goal and personal goal orientations on solving mathematics problems and self-regulated learning. *Bulletin of Educational Psychology, 37*, 231-255.

Lin, Y. Y., & Cherng, B. L. (2007). The latent change analysis among individual goal orientations, classroom goal structures and self-regulated learning strategies. *Bulletin of Educational Psychology, 39*, 173-194.

Linnenbrink, E. A. (2005). The dilemma of performance-approach goals: The use of multiple goal contexts to promote students' motivation and learning. *Journal of Educational Psychology, 97*, 197-213.

Maehr, M. L., & Midgley, C. (1996). *Transforming school cultures*. Boulder, CO: Westview Press.

Meece, J. L., Anderman, E. M., & Anderman, L. H. (2006). Classroom goal structure, student motivation, and academic achievement. *Annual Review of Psychology, 57,* 487-503. http://dx.doi.org/10.1146/annurev.psych.56.091103.070258

Méndez-Giménez, A., Cecchini, J.A., & Fernández-Río, J. (in press). Validación del Cuestionario de Clima Motivacional 3x2 en Educación Física. *Universitas Psychologica.*

Méndez-Giménez, A., Cecchini, J.A., Fernández-Río, J., Méndez-Alonso, D., & Prieto-Saborit, J.A. (2017). Metas de logro 3x2, motivación autodeterminada y satisfacción con la vida en Educación Secundaria. *Revista de Psicodidáctica, 22*(2), 150-156. http://dx.doi.org/10.1016/j.psicod.2017.05.001

Midgley, C., Maehr, M. L., Hruda, L. Z., Anderman, E., Anderman, L., Freeman, K. E., Gheen, M., Kaplan, A., Kumar, R., Middleton, M. J., Nelson, J., Roeser, R., & Urdan, T. (2000). *Manual for the Patterns of Adaptive Learning Scales (PALS).* Ann Arbor, MI: University of Michigan.

Miki, K., & Yamauchi, H. (2005). Perceptions of classroom goal structures, personal achievement goal orientations, and learning strategies. *Japanese Journal of Psychology, 76,* 260-268. http://dx.doi.org/10.4992/jjpsy.76.260

Murayama, K., & Elliot, A. J. (2009). The joint influence of personal achievement goals and classroom goal structures on achievement relevant-outcomes. *Journal of Educational Psychology, 101*, 432-447. http://dx.doi.org/10.1037/a0014221

Murayama, K., Elliot, A. J., & Friedman, R. (2012). Achievement goals. En R. M. Ryan (Ed.), *The Oxford handbook of human motivation* (pp. 191-207). New York, NY US: Oxford University Press.

Murdock, T. B., Hale, N. M., & Weber, M. J. (2001). Predictors of cheating among early adolescents: Academic and social motivations. *Contemporary Educational Psychology, 26*, 96-115. http://dx.doi.org/10.1006/ceps.2000.1046

Newton, M., Duda, J., & Yin, Z. (2000). Examination of the psychometric properties of the Perceived Motivational Climate in Sport Questionnaire-2 in a sample of female athletes. *Journal of Sports Sciences*, *18*, 275-290.

Nolen, S. B. (2003). Learning environment, achievement, and motivation in high school science. *Journal of Research in Science Teaching, 40,* 347-368. http://dx.doi.org/10.1002/tea.10080

Papaioannou, A. G., Tsigilis, N., Kosmidouy E. & Milosis D. (2007). Measuring Perceived Motivational Climate in Physical Education. *Journal of Teaching in Physical Education, 26*, 236-259.

Pardo, A., Ruiz M. A. & San Martín, R. (2007). Cómo ajustar e interpretar modelos multinivel con SPSS. *Psicothema, 19*(2), 308-321.

Patrick, H., Ryan, A. M., & Kaplan, A. (2007). Early adolescents' perceptions of the classroom social environment, motivational beliefs, and engagement. *Journal of Educational Psychology, 99,* 83-98. http://dx.doi.org/10.1037/0022-0663.99.1.83

Peng, S. L., & Cherng, B. L. (2005). The relationship among a 4-dimensional classroom goal structure, personal goal orientation and academic help-seeking behavior. *Journal of Taiwan Normal University Education, 50*, 69-95.

Peng, S.-L. Cherng, B.-L., Chen, H.-C., & Lin Y.-Y. (2013). A model of contextual and personal motivations in creativity: How do the classroom goal structures influence creativity via self-determination motivations?. *Thinking Skills and Creativity, 10*, 50- 67.

Raudenbush, S.W., & Bryk, A.S. (2002). *Hierarchical linear models: Applications and data analysis methods* (2ª ed.). Thousand Oaks, CA: Sage.

Schwinger, M., & Stiensmeier-Pelster, J. (2011). Performance-approach and performance-avoidance classroom goals and the adoption of personal achievement goals. *British Journal of Educational Psychology, 81*, 680-699. http://dx.doi.org/10.1111/j.2044-8279.2010.02012.x

Turner, J. C., Midgley, C., Meyer, D. K., Gheen, M., Anderman, E. M., Kang, Y., & Patrick, H. (2002). The classroom environment and students' reports of avoidance strategies in mathematics: A multimethod study. *Journal of Educational Psychology, 94,* 88-106. http://dx.doi.org/10.1037/0022-0663.94.1.88

Urdan, T. (2004). Predictors of academic self-handicapping and achievement Examining achievement goals, classroom goal structures, and culture. *Journal of Educational Psychology, 96,* 251-264.

Urdan, T., & Midgley, C. (2003). Changes in the perceived classroom goal structure and pattern of adaptive learning during early adolescence. *Contemporary Educational Psychology, 28*, 524-551.

Urdan, T., Midgley, C., & Anderman, E. M. (1998). The role of classroom goal structure in students' use of self-handicapping strategies. *American Educational Research Journal, 35,* 101-122. http://dx.doi.org/10.3102/00028312035001101

Wang, C.K.J., Biddle, S.J.H., & Elliot A.J. (2007). The 2 x 2 achievement goal framework in a physical education context. *Psychology of Sport and Exercise*, *8*, 147-168.

Wolters, C. A. (2004). Advancing achievement theory: using goal structures and goal orientations to predict students' motivation, cognition, and achievement. *Journal of Educational Psychology, 96*, 236-250.

Yamauchi, H., & Miki, K. (2003). Longitudinal analysis of the relations between perceived learning environment, achievement goal orientations, and learning strategies: Intrinsic– extrinsic regulation as mediator. *Psychologia, 46,* 1-18. http://dx.doi.org/10.2117/psysoc.2003.1

(Article received: 29-06-2016; revised: 20-10-2016; accepted: 16-12-2016)

Anexo I. Cuestionario de estructuras de meta de clase 3x2 (CEMC-3x2)

En las clases, el objetivo del profesor/a es que cada alumno/a…
1. Realice bien las tareas y actividades
2. Realice los ejercicios mejor de como lo hace habitualmente
3. Haga bien muchos ejercicios
4. Evite realizar de manera inadecuada las tareas propuestas
5. Evite hacer las tareas peor en comparación con su nivel habitual
6. Haga las tareas mejor que los demás
7. Evite hacer las tareas y ejercicios peor que los demás
8. Realice correctamente muchas actividades y ejercicios
9. Evite hacer mal las tareas de la asignatura
10. Haga mejor los ejercicios de como lo suele hacer
11. Evite hacer las tareas peor en comparación a como las hace normalmente
12. Haga las tareas mejor que sus compañeros
13. Evite rendir peor que sus compañeros en las tareas y ejercicios
14. Evite hacer mal las tareas de clase
15. Ejecute mejor los ejercicios que en el pasado
16. Evite realizar las habilidades peor en comparación a como lo suele hacer
17. Supere a los otros estudiantes realizando las tareas
18. Evite realizar peor las tareas y ejercicios que sus compañeros

Estructuras de meta de clase:
Aproximación-tarea: 1, 3, 8
Evitación-tarea: 4, 9, 14
Aproximación-yo: 2, 10, 15
Evitación-yo: 5, 11, 16
Aproximación-otro: 6, 12, 17
Evitación-otro: 7, 13, 18