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ORIGINAL

INTRINSIC MOTIVATION, EMOTIONAL INTELLIGENCE AND SELF-REGULATED LEARNING: A MULTILEVEL ANALYSIS

MOTIVACIÓN INTRÍNSECA, INTELIGENCIA EMOCIONAL Y AUTORREGULACIÓN DEL APRENDIZAJE: UN ANÁLISIS MULTINIVEL

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ABSTRACT

The purpose of the study was to model the relationships between intrinsic motivation, emotional intelligence and self-regulation of learning in physical education (PE) classes. The sample consisted on 480 students (248 boys and 232 girls) enrolled in year four of Primary Education ($M = 9,29$, $DT = 0,52$) from a total of 23 classes. Multilevel analysis taking intrinsic motivation as a dependent variable, revealed a statistically significant effect for school, planning, self-checking, effort, regulation, emotional control and emotional

recognition. The reduction in the intraclass correlation coefficient, from the null model to the final model, was approximately 67%. Promoting the development of emotional intelligence and improving self-regulation in PE classes could increase students' intrinsic motivation for this subject.

KEY WORDS: motivation, emotional intelligence, self-regulation, multilevel.

RESUMEN

La finalidad del estudio es modelar, por primera vez, las relaciones entre la motivación intrínseca, la inteligencia emocional y la autorregulación del aprendizaje en las clases de Educación Física (EF). La muestra estuvo formada por 480 estudiantes (248 varones y 232 mujeres) de cuarto curso de Educación Primaria ($M = 9,29$, $DT = 0,52$) procedentes de un total de 23 clases de EF. El análisis multinivel, tomando la motivación intrínseca como variable dependiente, reveló un efecto estadísticamente significativo para el profesor (colegio), la planificación, la autocomprobación, el esfuerzo, la regulación, el control emocional y el reconocimiento emocional. La reducción en el coeficiente de correlación intraclase, del modelo nulo al modelo final, fue aproximadamente del 67%. Promover el desarrollo de inteligencia emocional y la mejora de la autorregulación en las clases de EF podría incrementar la motivación intrínseca del alumnado por la materia.

PALABRAS CLAVE: motivación, inteligencia emocional, autoregulación, multinivel.

INTRODUCTION

This study aims to model, for the first time, the relationships between intrinsic motivation, emotional intelligence and self-regulation of learning in Physical Education (PE). According to Deci & Ryan (2000), intrinsic motivation is a natural inclination towards assimilation, mastery, spontaneous interest and exploration. Intrinsic motivation is associated with desirable attitudes and values and with better learning in PE class (Larson & Rusk, 2011; Taylor et al., 2014). It is directly related to greater task persistence and improved well-being, in childhood (Dishman, McIver, Dowda, Saunders, & Pate, 2015) and adolescence (Beiswenger & Grolnick, 2010), effort (Cox, Ullrich-French, Madonia, & Witty, 2011; Standage, Duda & Ntoumanis, 2003; Taylor, Ntoumanis, Standage, & Spray, 2010), and enjoyment (Cox, Ullrich-French, & Sabiston, 2013; McDavid, Cox, & McDonough, 2014; Pulido, Sánchez-Oliva, Amado, González-Ponce, & Sánchez-Miguel, 2014). Likewise, intrinsic motivation is related to a positive attitude towards physical activity (Halvari, Skjesol, & Bagoien, 2011), a predisposition to become actively involved (Lim & Wang, 2009; Taylor et al., 2010), active involvement in games (Wallhead, Garn, Vidoni, & Youngberg, 2013), high levels of physical activity (Cox et al., 2010), 2013; Halvari et al., 2011; Kim, Cardinal, & Yun, 2015; Taylor et al., 2010), positive cognitive, psychomotor and social experiences (Vallerand, 2001), and school performance (Cerasoli, Nicklin, & Ford, 2014).

On the other hand, intrinsic motivation experiences a drop in young people as time passes (Cecchini, Fernández-Losa, González, Fernández-Río, & Méndez-Giménez, 2012; Nader, Bradley, Houts, McRitchie, & O'Brien, 2008; Troiano et al., 2008). Various longitudinal studies have shown a progressive and constant decrease in motivation in adolescence (Fredricks & Eccles, 2002; Ntoumanis, Barkoukis, & Thøgersen-Ntoumani, 2009; Otis, Grouzet, & Pelletier, 2005; Watt, 2004). Most of these studies have been conducted in secondary education (De Muyne et al., 2017) and university education (Hagger, Koch, & Chatzisarantis, 2015). Consequently, there is a dearth of research on intrinsic motivation in primary education.

Intrinsic motivation and emotional intelligence

Schutte, Manes, & Malouff (2009) define emotional intelligence as a set of self-perceptions, dispositions, and motivations that share some elements with the main characteristics of personality (Petrides, Pérez-González and Furnham, 2007; Petrides, Pita, & Kokkinaki, 2007). In the field of sport, the first studies have been carried out to better understand the influence of emotional intelligence on the motivational process (Blanchard, Amiot, Perreault, Vallerand, & Provencher, 2009; Fernández-Ozcorta, 2013; Núñez, León, González-Ruiz, & Martínez-Albó, 2011). Núñez et al. (2011) observed that emotional intelligence indirectly and positively influenced the intrinsic motivation of athletes. Also, in the context of sport, it has been observed that autonomous motivation (intrinsic and identified motivation) was positively related to emotional recognition, empathy and emotional control and regulation (Arribas-Galarraga, Saies, Cecchini, Arruza & Luis-de-Cos, 2017). Greater self-determination in the motives that lead the athlete to become actively involved in the competition

provides a greater degree of adaptability in threatening situations so that the individual faces them more efficiently due to better emotional regulation (Weinstein, Deci & Ryan, 2011; Weinstein & Hodgins, 2009). In the context of university education, intrinsic motivation has been positively related to the ability to understand and learn about one's own emotions and those of others, and to the ability to experience new or unusual emotions and to express one's own emotions (Oriol, Amutio, Mendoza, Da Costa & Miranda, 2016). One of the fundamental characteristics of emotional intelligence is the ability to self-motivate (Carrión, 2001; Gardner, 1993). In this sense, emotional skills can help to produce an increase in the intrinsic motivation of the student to do his/her school work (Jiménez & López-Zafra, 2009). According to Van Zile-Tamsen (1998), the extent to which emotional intelligence affects students' academic performance depends on student motivation. This explains the possibility of a relationship between emotional intelligence and motivation to influence student performance.

Research that has addressed the relationship between motivation and emotional intelligence in the context of PE is scarce. However, several authors have recognized the suitability of exploring these associations both because of the characteristics of the PE and because of the interest it arouses among students (Cera, Almagro, Conde, & Sáenz-López, 2015). Bisquerra & Pérez (2007) pointed out that intrinsic motivation is positively influenced by emotional intelligence, and that both factors will be fundamental in the challenge posed by education in the 21st century. It seems key, therefore, to know how these relations are established between both variables in order to understand in depth the processes of teaching and learning.

Intrinsic motivation and self-regulation of learning

Learning self-regulation is an active, self-directed process by which students test, regulate and control their cognition, motivation, affection, behavior, and environment to achieve their goals (Efklides, Niemivirta, & Yamauchi, 2002). According to this definition, motivation is one of the substantial elements in learning self-regulation. In fact, self-motivated beliefs and self-reflection processes play a key role in self-regulated learning (Schunk & Schwartz, 1993). At present, intrinsic motivation is considered as one of the key determinants of students' self-regulated learning process (Hrbackova & Suchankova, 2016; Pintrich, 1999; Schunk & Zimmerman, 2008). In this context, Boekaerts (2002) highlights the disparity between the concepts of self-regulation and self-control. The process of self-regulated learning is associated with positive emotions, intrinsic motivation, and self-reward, while the process of self-control is associated with extrinsic motives (environmental demands) and the punishment system (Sternberg, 2001).

Different research has helped to better understand students' motivational and self-regulated learning and to explore its implications for learning in various fields (Bandura, 1997; Boekaerts & Cascallar, 2006; Eccles & Wigfield, 2002; Pekrun & Linnenbrink-Garcia, 2012; Zimmerman & Schunk, 2011). However, it is necessary to unravel the complex and reciprocal relationships between motivation and the self-regulatory construct of learning (Shell & Soh, 2013).

Previous work in these fields has generally examined the constructs of intrinsic motivation and self-regulation in isolation or, at most, considered the ways in which individual variables interact (McInerney & Van Etten, 2004). Only recently have researchers begun to examine the complex reciprocity between motivational and self-regulatory variables (Shell & Husman, 2008; Shell & Soh, 2013; Zimmerman & Schunk, 2013).

Self-regulating students are considered to approach their learning tasks proactively, i.e. they show personal initiative, perseverance, and adaptive skills that originate in metacognitive strategies and favorable motivational beliefs (Zimmerman, 2008). During task processing, motivation may take the form of intrinsic motivation (e.g., enjoying task processing), unpleasant affection (e.g., boredom), or state anxiety, experienced as an increase in excitement, worry, and intrusive thoughts (Eysenck, Derackshan, Santos, & Calvo, 2007; Sarason, 1988).

OBJECTIVES AND HYPOTHESIS

The purpose of this study is to model the relationships between intrinsic motivation, emotional intelligence, and self-regulation of learning in the context of PE. To do this, multilevel modeling will be applied, consisting of level 2 units (classes), which in turn are formed by level 1 sub-units (students within classes). First, the simplest multi-level model will be tested, taking as a dependent variable the intrinsic motivation in order to determine whether it varies significantly between classes. In this case, the independent variables: emotional intelligence and self-regulation of learning will be included in the model.

Based on previous studies, it is expected to find that both emotional intelligence (Blanchard, Amiot, Perreault, Vallerand, & Provencher, 2009; Carrión, 2001; Fernández-Ozcorta, 2013; Gardner, 1993; Jiménez & López-Zafra, 2009; Núñez et al, 2011) and self-regulation of learning (Pekrun & Linnenbrink-Garcia, 2012; Schunk & Zimmerman, 2013; Shell and Husman, 2008; Shell & Soh, 2013; Zimmerman & Schunk, 2011) predict significantly and positively the intrinsic motivation in PE classes. We hope to find new and relevant contributions, both for teaching and for the future of PE research.

MATERIAL AND METHODS

Participants and design

The sample consisted of 480 students (248 males and 232 females) in the fourth year of Primary Education ($M = 9,29$, $DT = 0,52$) out of a total of 23 classes. Each class had an average of 20.9 pupils (minimum = 15; maximum = 25 pupils). Participants came from 11 schools (eight public and three concerted) in a city in the north of Spain. Classes were given by 11 PE specialist teachers.

Instruments

Emotional Intelligence. The Emotional Intelligence Scale, elaborated by Cecchini, Méndez-Giménez, & García-Romero (2018) in PE, was used during this project. All items were preceded by the heading: "In my PE. lessons..". The scale is made up of three dimensions: *emotional recognition*, or the student ability to recognize his or her own emotions in PE class (8 items; e.g., "I am aware of when I start to get angry in games and/or competitions"); *emotional control and regulation*, or the ability to control emotions during play and participation in classes (7 items; e.g., "I am aware of when I start to get angry in games and/or competitions"); *emotional control and regulation*, or the ability to control emotions during play and participation in classes (7 items; e.g., "I am good at controlling my level of tension") and, finally, *emotional empathy*, or ability to be aware of and appreciate the feelings of peers throughout the class (7 items; e.g., "I easily understand how my peers and/or rivals feel in games and/or competitions"). Cronbach's alpha values in the original research were, correspondingly, the following: *emotional recognition* (0,90), *emotional control and regulation* (0,88), and *empathy* (0,88). Responses to the items are produced using a Likert scale of 5 anchor points (1 = *Strongly disagree* to 5 = *Strongly agree*).

Self-regulation of learning. Scales of *planning*, *self-checking*, and *effort* were measured with items from Hong and O'Neil's self-regulatory inventory (2001). Examples of items from each scale are the following: *planning* (9 items), e.g., "I determine how to solve the task before I start"; *self-check* (5 items), e.g., "I check my work while I am doing it", and *effort* (10 items), e.g., "I work as hard as possible on all tasks". Cronbach's alpha values in the original research were as follows: *planning* (0,76), *self-checking* (0,60), and *effort* (0,83). The answers are 5 points Likert's type (1 = *Strongly disagree* to 5 = *Strongly agree*).

Self-efficacy. Self-efficacy was evaluated using the Generalized Self-efficacy Scale (Schwarzer, & Jerusalem, 1995). It is composed of 10 items, e.g., "I always manage to solve difficult problems if I try hard enough. The alpha value of Cronbach in the original research was $\alpha = 0,82$. The response range was from 1 (*Strongly disagree*) to 5 (*Strongly agree*).

Intrinsic motivation. The intrinsic motivation subscale of the Perceived Causality Locus Scale (PLOCQ; Goudas, Biddle, & Fox, 1994), adapted and validated to Spanish by Moreno, González-Cutre, & Chillón (2009), was used. This subscale is composed of four items (e.g., "because PE is fun"). The items were preceded by the heading "I participate in PE...". Cronbach's alpha value in Moreno et al. research (2009) was $\alpha = 0,75$. The response range was from 1 (Strongly Disagree) to 7 (Strongly Agree).

Procedure

School principals and PE teachers were contacted for collaboration, and informed consent was sought from the students' parents. The questionnaires

were completed individually in the classroom. One of the researchers in the study was present in the classroom to give instructions and resolve any doubts that might arise. Student participation was voluntary and anonymous. The time required to complete the questionnaire ranged from 20-25 minutes.

Data analysis

Confirmatory factorial analysis. Since the questionnaires on emotional intelligence and self-regulation of learning in PE have not been validated for these ages, a confirmatory factorial analysis (CFA) was performed for each of them. The program EQS 6.2 (Bentler, 2006) was used since in both cases, the kurtosis coefficient advised the use of the statistic Satorra-Bentler chi-square ($S-B\chi^2$; Satorra & Bentler, 1994) and the robust standard estimators (Byrne, 2008; Curran, West, & Finch, 1996). The assessment of the goodness of the fit of the data was based on multiple criteria (Byrne, 2008). The robust version of the Comparative Fit Index (*CFI) was used as the incremental adjustment index, the robust version of the Root Mean Square Error Approximation (*RMSEA) and the Standardized Root Mean Square Residual (SRMR) were used as measures of the absolute adjustment indexes. The 90% confidence interval provided by *RMSEA (Steiger, 1990) was also included to complete the analysis. Regarding *CFI, Hu and Bentler (1999) suggest a value of 0,95 as an indication of a good fit. For *RMSEA, values below 0,05 indicate a good fit, and values up to 0,08 represent reasonable approximation errors. Finally, an SRMR with values below 0,08 is indicative of a good fit (Hu & Bentler, 1999).

Multilevel analysis. Multilevel modeling was applied to respect the hierarchical structure of the data. The sample in this study can be described as a multi-centre sample, i.e. formed by units of higher level or level 2 (classes), and these, in turn, by subunits or level 1 (students within classes). Consequently, a basic regression model was applied with two levels and a single dependent variable (intrinsic motivation) that is measured at the lowest level (student) and in explanatory variables that exist at the different levels: a) class: teacher (school); b) student: gender and variables that measure self-regulation of learning and emotional intelligence. The procedures of the mixed linear model (SPSS 21.0) with maximum likelihood estimates were used, following the procedures of Snijders & Bosker (2004).

First, the simplest multilevel model (null model) was tested, obtained by eliminating the independent variables from the model. At this level, student' intrinsic motivation is interpreted as the result of combining the intrinsic motivation of the class to which he/she belongs and the residues or the random variation around that mean (Hofmann, Griffin, & Gavin, 2000). The amount of variance explained was calculated using intraclass correlation coefficients (ICC). Subsequently, the independent variables were included in the model. In the interest of parsimony, variables that were not significant in all model estimates were excluded from the final model. The remaining variables were included in the model, one by one, using the incremental mode model construction strategy (West, Welch, & Galecki, 2015). To evaluate the improvement of the model, the final model was compared with the intercept-only model using the AIC (Akaike Information Criterion) and BIC (Bayesian

Information Criterion) fit indices, and the likelihood ratio test. In all cases, the lower indices indicate a better fit model. All results were tested with an alpha of 0,05. The predictors were focused on the group mean since the analysis was interested in knowing the interactions at the transverse level (Enders & Tofighi, 2007). The teacher (school) was included as a predictor at the class level. The teachers were ordered according to the average intrinsic motivation level of the classes to facilitate their analysis. Sex was also included as a predictor of fixed effects. In order to facilitate the interpretation of the results, both variables were not centered.

RESULTS

Confirmatory factorial analyses and descriptive analyses

The CFA results in the learning self-regulation questionnaire did not support the hypothetical model: $S-B\chi^2 (521) = 812,83, p < 0,001$; $S-B\chi^2/df = 1,56$; *CFI = 0,91; *RMSEA (90% CI) = 0,034 (0,030-0,039); SRMR = 0,05. Analysis of the Lagrange test and the Jöreskog & Sörbom modification index (1984) showed that three items of the *planning* factor, one item of the *self-checking* factor, five items of the *effort* factor, and four items of the *self-efficacy* factor should be eliminated. The re-specified model showed an excellent shape: $S-B\chi^2 (183) = 262.49, p < 0,01$; $S-B\chi^2/df = 1,43$; *CFI = 0,96; *RMSEA (90% CI) = 0,030 (0,021-0,038); SRMR = 0,04.

In the emotional intelligence questionnaire, the results strongly supported the hypothesized model: $S-B\chi^2 (206) = 277,62, p > 0.05$; $S-B\chi^2/df = 1,35$; *CFI = 0,96; *RMSEA (90% CI) = 0,027 (0,018-0,035); SRMR = 0,04.

Table 1 shows that all scores are high. The highest scores emerge in intrinsic motivation (range 1-7), effort and emotional recognition, and the lowest in self-test and emotional empathy. Likewise, it is observed that the correlations between the variables are, in general, high. Intrinsic motivation correlates positively and significantly with all variables, being the highest with control and emotional regulation and with effort; and the lowest with empathy.

Table 1. Descriptive analysis, Cronbach alpha and bivariate correlations for all study variables

	α	<i>M</i>	<i>DT</i>	1	2	3	4	5	6	7
1.	0,82	6,01	1,30	1						
2.	0,76	4,00	0,79	0,39**	1					
3.	0,71	3,81	0,89	0,38**	0,55**	1				
4.	0,73	4,21	0,73	0,43**	0,53**	0,51**	1			
5.	0,76	3,88	0,74	0,39**	0,52**	0,53**	0,64**	1		
6.	0,75	3,90	0,75	0,44**	0,52**	0,50**	0,59**	0,63**	1	
7.	0,80	3,81	0,80	0,37**	0,47**	0,46**	0,53**	0,56**	0,62**	1
8.	0,79	4,17	0,67	0,40**	0,52**	0,42**	0,52**	0,54**	0,64**	0,69**

Note: 1. Intrinsic M; 2. Planning; 3. Self-checking; 4. Effort; 5. Self-efficacy; 6. Emotional control and regulation; 7. Emotional empathy; 8. Emotional Recognition

Multi-level Analysis

Null model. The results of the preliminary analysis revealed that intrinsic motivation varied significantly between classes. The variance of the factor (class = 0,15, $p < 0,05$) indicates how much the dependent variable (intrinsic motivation) varies between classes, and the variance of the residues (residues = 1,57, $p < 0,001$) indicates how much the dependent variable varies within each class. The ICC was 9% (Table 2).

Table 2. Unconditional model in intrinsic motivation

	Intrinsic motivation	
	Estimate	SE
Fixed Effects		
Intercept	6,00***	0,10
Random Effects		
Residues	1,57***	0,10
Variance - class (t2)	0,15*	0,07
ICC	0,09	
Model fit statistics		
-2 log likelihood	1606,82	
AIC	1610,82	
BIC	1619,17	

Note: ICC = Intra-class correlation coefficient, AIC = Akaike Information Criterion; BIC = Bayesian Information Criterion. SE = Standard error. * $p < .05$. *** $p < .001$.

Final multi-level model. Table 3 shows the final model for the analyzed variables. The multilevel analysis revealed a statistically significant effect at the class level (in fact, comparing professor P11 with the rest, statistically significant differences are observed with eight teachers: P1 to P8), and at the student level, in the following variables: planning, self-checking, effort, emotional regulation and control, and emotional recognition. The reduction in the ICC is approximately 67%. It is observed how the model fit statistics have improved with respect to the null model. Likewise, the variance has been reduced to level 1 ($\Delta = -0,45$) and level 2 ($\Delta = -0,11$).

Table 3. Final multilevel model for intrinsic motivation

	Intrinsic motivation	
	Estimate	SE
Fixed Effects		
Intercept	5,25***	0,32
Student Level		
Sex	0,14	0,10
Planification	0,23**	0,09
Self-checking	0,15*	0,07
Effort	0,21*	0,09
Self-efficacy	0,13	0,12
Regulation and emotional control	0,31***	0,09
Emotional recognition	0,25*	0,10
Empathy	-0,07	0,09
Class Level		
P1	1,48**	0,46
P2	1,27**	0,38
P3	1,12*	0,38
P4	1,00*	0,44
P5	0,95*	0,38
P6	0,90*	0,36
P7	0,90*	0,39
P8	0,81*	0,36
P9	0,29	0,35
P10	0,06	0,38
P11	-	-
Random Effects		
Level 1. Variance and student (s ²)	1,12***	0,07
Level 2. Variance and class (t ²)	0,04	0,04
ICC	0,03	
Model fit statistics		
-2 log likelihood	1445,37	
AIC	1449,37	
BIC	1457,64	

Note: ICC = Intra-class correlation coefficient, AIC = Akaike Information Criterion; BIC = Bayesian Information Criterion. SE = Standard error. * $p < .05$; ** $p < .01$. *** $p < .001$.

DISCUSSION

The purpose of this study was to model the relationships between intrinsic motivation, emotional intelligence, and self-regulation of learning in PE. Before approaching this objective, correlations between all the variables were requested, which showed that all of them were positively related to each other. Specifically, intrinsic motivation correlated positively and significantly with all the variables that explain emotional intelligence and self-regulation of learning, with the highest relationships established with emotional control and regulation and effort and, the lowest, with empathy. These results are convergent with previous studies carried out in educational contexts. On the one hand, the most intrinsically motivated students in PE classes tend to worry more about their own learning (Larson & Rusk, 2011; Taylor et al., 2014) to the extent that they program, check and evaluate their progress in a more self-directed way. On the

other hand, more motivated students in PE perceive themselves as more able to recognize and control their emotions, as well as to empathize with those of their peers and adversaries when playing games and sports (Petrides, Pérez-González et al., 2007; Petrides, Pita et al., 2007). These findings support the interests of the study and justify further analysis.

A "null model" was then tested using intrinsic motivation as a dependent variable in order to determine whether it varied significantly between classes and within classes (students). The results showed that the factorial variance (class = 0,15, $p < 0.05$), which indicates how much intrinsic motivation varies between classes, and the variance of residues (1.57, $p < 0,001$), which indicates how much intrinsic motivation varies among students, were significant. These exclusionary results allowed for further analysis to try to explain this variability. Since both types of variability can be reduced by introducing independent variables at the appropriate level, a basic regression model with two levels was applied, taking intrinsic motivation as the dependent variable.

At the class level, the teacher/centre was a predictor of intrinsic motivation. As in this study, the number of teachers is identified with the number of schools, it is not possible to determine whether the results can be attributed to the teacher or to the educational centre as a whole. In any case, this variable explained 67% of the variance in class level. In other words, the teacher and/or the school are a key element in increasing levels of intrinsic motivation. Different studies have observed how, for example, the motivational climate constructed by the teacher in the PE classes can significantly increase the levels of students' intrinsic motivation (Ntoumanis, 2001; Ntoumanis et al., 2009; Sproule, Wang, Morgan, McNeill, & McMorris, 2007). The school may also explain some of this variability (Ntoumanis et al., 2009; Taylor et al., 2010), so new studies are needed that address both issues together.

The multilevel model showed that the variable that best explains the variability of intrinsic motivation at the student level is emotional control and regulation. The more self-determined level of reasons for active involvement in PE classes, represented by intrinsic motivation, gives the student a greater degree of adaptability to class tasks, facing them more efficiently, possibly due to better emotional regulation (Weinstein, Deci & Ryan, 2011; Weinstein & Hodgins, 2009). Emotional recognition also showed its predictive, positive and meaningful character about intrinsic motivation. In general, these results are consistent with those observed both in the educational context (Jiménez & López-Zafra, 2009; Oriol et al., 2016; Van Zile-Tamsen, 1998) and in the sporting context (Arribas-Galarraga et al., 2017; Núñez et al., 2011).

The results also showed that planning, self-checking, and effort in learning self-regulation predict intrinsic motivation in PE classes. Planning in the foresight phase is closely related to motivation (Zimmerman, 1986, 1998, 2008). To plan, in order to achieve learning results, entails the establishment of expectations of results and the interest or value of the task to learn. If the expectations of the outcome and the value of the task are high, the intrinsic motivation will tend to be high. Motivation (i.e., self-efficacy, goal orientations, outcome expectations, and task interest/value), together with task analysis, determine goal setting and

planning in the foresight phase (Zimmerman, 1986, 1998, 2008). In short, PE students who learn to generate accurate expectations, analyze task performance closely and apply themselves to tasks with effort will encourage their inherent interest in the subject matter (Ntoumanis, 2001).

PRACTICAL IMPLICATIONS AND LIMITATIONS

This paper offers interesting practical implications for PE teachers. On the one hand, promoting the development of emotional intelligence in their classes could increase the students' intrinsic motivation. In this sense, although some studies have reported on the positive effects of body language and the Sports Education model on the improvement of emotional intelligence, it is necessary to investigate in greater depth which blocks of contents and which methodologies are more likely to achieve this end (Méndez-Giménez, Martínez de Ojeda, & Valverde, 2017). At the same time, professionals who empower self-regulatory strategies among their students are more likely to increase the intrinsic motivation of their students, that is, the inherent pleasure in this subject or activity. Helping students to plan their objectives and to check achievements, as well as making an effort in the tasks to achieve them can mean a more self-determined increase in motivation, apart from a substantial contribution to the development of learning to learn competence from PE subject matter.

Despite these unpublished findings, our research does not overcome some of the limitations we wish to point out. Although multilevel modeling is a commendable advance in glimpsing the relationships between the variables to be studied, only experimental design allows causal relationships to be established. Longitudinal designs with several waves of measurement will allow pulsing the course of these interactions through the different educational stages and specific programs.

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