

TEACHERS' MOTIVATIONAL CLIMATE AND TARGET STRATEGIES INTERVENTION EFFECT ON SECONDARY SCHOOL PHYSICAL EDUCATION CLASSES

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Abstract: Previous studies have shown that the motivational climate articulated by the in the Physical Education (PE) teacher present a favorable impact on the levels of student participation physical activities. This study aimed to assess the effects, of Epstein's TARGET strategies on PE classes given by teachers who had previously taught in motivational climates. 323 Students participated aged between 12 and 17. A pretest-posttest comparison group and repeated measures design was used. In the control group there were reduced levels of satisfaction of basic psychological needs, lower indexes of self-determined motivation, fair play, intention to do sport, and time spent on physical activities. For its part, TARGET strategies intervention showed a positive impact on the perception of autonomy, competence, social relations, as well as on the levels of self-determined motivation and participation on sports activities. These results are encouraging, because they provide a means to modify teacher attitudes still rooted in the historical tradition of aiming for high performance in their Physical Education classes.

Keywords: Target strategies. Climate motivation. Physical education. Teachers, Secondary School

INTRODUCCIÓN

Current levels of physical activity in adolescents are clearly insufficient to achieve health benefits (Craig, Mindell, & Hirani, 2008; Ekelund et al., 2011; Rosenkranz et al., 2012). What is more, the progressive increase in sedentary behaviour throughout adolescence (Harding et al., 2015), is seriously compromising young people's health (Fenton et al., 2015; Janssen & LeBlanc, 2010; Strong et al., 2005). In order to address this problem, it is necessary to systematise and validate educational interventions with the aim of reducing the fall in levels of physical activity in those age groups. Physical Education (PE) teachers must play an important role as promoters of their students' current and future physical-sports activity (Cecchini, Fernández-Río, & Méndez-Giménez, 2014).

In addition, the simple fact of doing sport is not enough to ensure the achievement of other important objectives which have traditionally been associated with sport, such as character, fair play, and responsibility. Moreover, extensive participation in some sports has even been seen to have negative effects on certain values and attitudes. In fact, extensive participation in medium contact sports in young people (Conroy et al., 2001), and in high contact sports in boys in a summer camp (Bredemeier et al., 1987), corresponded with judgements that legitimised aggressive behaviours in sport. In addition, the levels of personal involvement in medium contact sports (e.g., European football and basketball) have been seen to be associated with lower levels of fair play in sport (Cecchini et al., 2007). However, when PE teachers put in practice the cooperative learning method, the effect are significantly positive (Ghaith, 2018), because students develop interpersonal communication,

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management and leadership skills (Cecchini et al., 2019), and even increasing their intrinsic motivation (Fernández-Espínola et al., 2020). In fact, there are some studies that showed how PE and sports lessons with cooperative games could effectively promote both students' stress coping and problem-solving skills (Gorucu, 2016; Lang et al., 2016; Nopembri et al., 2019)

So why, in this research, do we associate the promotion of physical-sports activity with improvement in values, such as fair play? The reason is that in both cases, the motivational climate seems to play an important role. Previous studies like those being done by Cecchini, Fernández-Río, Méndez-Giménez, Cecchini, et al. (2014) in the context of PE has shown that the motivational climate articulated by the teacher can have a favorable impact on the levels of student participation in extracurricular physical-sports activities. It has also been observed that the relationship between doing sport and moral reasoning (Kavussanu & Ntoumanis, 2003), and with fair-play behaviours (Cecchini et al., 2007), in sport may be mediated by the sportsperson's goal orientation. In the context of PE, attainment goals have been seen to be related with fair-play in secondary school students (Fernández-Río et al., 2012).

One theoretical framework which has helped in understanding the role played by the perceived motivational climate created by the PE teacher and also by the students' goal orientation is the theory of achievement goals (Ames, 1992; Dweck, 1999). This theory states that the fundamental motivation for behaviour is the need to satisfy basic needs, but that environmental factors can encourage or restrict it (Deci & Ryan, 2002). According to this theory, there are two predominant orientations in contexts of achievement: one is orientation towards the task (Nicholls, 1989), in which the perception of success is related to personal improvement, learning, achievement, and effort, in such a way that the mechanisms of comparison are self-referential; the other is orientation towards the ego (Nicholls, 1989), in which the perception of success is built on the basis of the capacity to withstand comparison to others, to be the best, to win, to stand out, etc. That said, the adoption or predominance of one orientation over the other depends on dispositional factors, which refer to individual characteristics and situational factors, and which also refer to the socio-cultural context, called the "motivational climate" (Ames, 1992). This climate, created by significant others, PE teachers among them, affects personal goal orientation through a combination of attitudes and behaviours through which the key in the construction of success and failure are defined. There are two types of motivational climates, in line with the two types of goal

orientation, identified by Ames (1992) and Nicholls (1989) as a "performance climate" and a "mastery climate", and by Kavussanu and Roberts (1996) as well as Roberts (2001) as an "ego involving motivational climate", and a "task involving motivational climate". The first is positively related to ego-orientation and is built on the same principles, comparison with others, outperforming others, success, public evaluation, awards to those who stand out, etc. The second is related to task orientation and encourages personal improvement, learning, participation, and effort, among other things.

In addition, self-determination theory (SDT) sets out two principal postulates. The first places the types of motivation in a hierarchy according to their level of autonomy, from behaviours of one's own choosing to those imposed by the surroundings. Ordered from higher to lower levels of self-determination, there are the following types: intrinsic motivation, extrinsic regulation (integration, identification, introjection, external regulation), and amotivation.

The second SDT postulate states that social factors, such as a teacher's behaviour, influence the type of motivation a person may have (Deci & Ryan, 2002). Nonetheless, this influence is mediated by a person's own perceptions of *competence* (the need to be skilled and effective), *autonomy* (the need to self-regulate one's own behaviour), and *relatedness* (the need to feel safely connected to others).

Following on from the precepts of SDT, Vallerand (1997) as well as Vallerand and Losier (1999) proposed the *Hierarchical Model of Intrinsic and Extrinsic Motivation*, which established a four-stage causal sequence: Social Factors → Psychological Mediators → Types of Motivation → Consequences. In recent decades this theory has become a preferred framework for understanding the causes of motivation, but it comes with some significant limitations. Although there have been some transversal studies adopting this model in PE (Ntoumanis, 2001; Méndez-Giménez et al., 2013), there are practically no longitudinal or experimental studies which have applied it (Cecchini et al., 2001). Recently Cecchini Fernández-Río, Méndez-Giménez, Cecchini et al. (2014) examined the repercussions of a climate of mastery, encouraged by the PE trainer, on psychological mediators, types of motivation and behavioural consequences. The results showed that the motivational climate had a significant effect on basic psychological needs, self-determined motivation, as well as on the athletes' persistence and efforts. Another study examined the effects of engendering a climate of mastery in PE classes on the practice

of extracurricular sport in students' free time (Cecchini, Fernández-Río, & Méndez-Giménez, 2014), the results of which support its efficacy.

Nor are there many experimental studies which observed the hypothetically negative consequences of a performance climate engendered by the PE teacher on the different causal stages of the model, for ethical reasons, among others (Cecchini et al., 2001). Nonetheless, it is something quite essential, as it would alert PE teachers of behaviour and attitudes that might be jeopardising their students' health and proper education in a formative consumption of sport.

In a review of results of modification strategies for motivational climate in PE classes Braithwaite et al. (2011) suggest that future research should provide more empirical evidence to support teaching strategies which encourage the adaptation of motivational processes. The majority of studies did not include questions related to teachers' attitudes, beliefs, or teaching practices before interventions, which is an issue because these variables directly influence results (Biddle & Mutrie, 2008).

Purpose of Research

As mentioned the before aim of this study was to examine the effects of Epstein's (1988) TARGET strategies on physical education classes given by PE teachers who had previously taught in a motivational climate high in performance and low in mastery. There were two specific objectives. Firstly, to analyse whether the performance climate engendered by the PE teacher would, in time, give rise to a fall in the students' perceptions of the levels of satisfaction of their basic psychological needs, their levels of self-determined motivation, their intentions to engage in sport, their weekly hours spent doing sport, and their attitudes and behaviours related to fair play. Secondly, to analyse whether PE teachers would be able to change those attitudes and behaviours, changes which are associated with modification of the motivational climate in their classes (mastery climate), which should give rise to positive changes in the variables being analysed. Based on this, we hypothesise that the performance climate engendered by the PE teacher will, in time, lead to a fall in students' perceptions of the levels of satisfaction of their basic psychological needs, their levels of self-determined motivation, their intentions to engage in sports activities, the amount of time they spend doing sport each week, and attitudes and behaviours related to fair play. We also hypothesise that these teachers will be able to change those attitudes and behaviours, changes which are associated with the modification of the motivational climate in their classes (mastery climate), which should lead to positive changes in students' perceptions of levels of satisfaction of basic psychological needs, self-determined motivation, intentions to engage in sports activities, time spent doing sport each week, and attitudes and behaviour related to fair play.

Method

Participants

A total of 323 students participated, aged between 12 and 17 years old, from four state high schools in a city of approximately 200,000 inhabitants in the North of Spain. This sample was made up of 142 girls, with a mean age of 14.41, and 181 boys, with a mean age of 14.16. The selection criteria for the sample were established based on the motivational climate engendered by their PE teachers. To that end, 30 secondary school PE teachers was preselected who had given their consent to be video recorded in 10 physical education sessions (300 sessions in total). This pre-selection was random from the so-called purpose sample (Patton, 2002). The PE teachers had to be qualified, with at least 5 years' experience in giving PE classes, and demonstrate interest in the theory and application of TARGET strategies, they should have at least 3 years of working experience at the particular school, which had to be a state school, and they were obliged to attend a month-long training process in both theory and practice. This training process was carried out by specialized researchers. During the school year 2013/14 the analysis of video recorded sessions was performed using the method created by Morgan et al. (2005) based on the TARGET dimensions. Validity was established by four researchers with experience in teacher training and motivational climate research, who met and agreed the teaching behaviours matched the different assigned structures. The Bellack percentage agreement between the observers was 93.0%. Finally, the observations were recoded to facilitate analysis and the six teachers who generated the highest performance climate in their classes were selected. Three teachers and their corresponding students were randomly selected to form the experimental group ($n = 175$; 94 boys, 81 girls), and three to form the control group ($n = 148$; 87 boys, 61 girls).

The three teachers in the experimental group attended a month-long training program (October 2014). This was presented by four members of the Research Team (from the University of Oviedo, North of Spain) with broad experience in this area (it means, they are specialized on the implementation of TARGET strategies in PE classes), and consisted of 30 hours of theory and 12 practical, hour-long sessions. Once the implementation of the program had started, the PE teachers had to attend monthly two-hour sessions with the aim of addressing any difficulties in implementing the model. Every thirty days, one of the research team monitored one of the training sessions and had a

subsequent hour-long meeting with the PE teacher to improve the process.

Procedure

The students' participation was voluntary, and they were assured of anonymity and that their information would not be available to their teachers or parents. Informed consent was obtained from the parents and school principals. All questionnaires were completed in the presence of an experienced researcher. All participants were given the measuring instruments, which they completed at that time, both before, and just after the intervention (pre- end of September 2014, post- end of May 2015).

During school year 2014/15 (almost a complete school year, approximately 5 months duration, from 1 November 2014 to 15 May 2015), Epstein's (1988) TARGET strategies were applied in physical education sessions to the experimental group. Meanwhile, the control group had their planned physical education sessions without applying those strategies.

The experimental group's physical education classes were prepared based on the model and procedures suggested for encouraging involvement in the task (Cecchini et al., 2014; Duda & Balaguer, 2007; Treasure & Roberts, 1995). Treasure identified those strategies consistent with the promotion of a mastery climate in physical education classes and organised them in Epstein's TARGET areas. The strategies which were used are given below, also organised by TARGET sections.

The study was conducted in accordance with The Code of Ethics of the World Medical Association (Declaration of Helsinki), which reflects the ethical principles for research involving humans; approved and according to ethics committee guidelines (CEIC Ethics Committee of the Principality of Asturias; Approval No. CPMP/ICH/135/95).

Fidelity check on teacher training and implementation of lessons

The participant instructors (PE teachers) had at least 5 years of prior teaching experience and also agreed to attend a specific seminar to be trained in TARGET strategies before starting the implementation phase. The seminar consisted of 20 hours of theory and 10 hours of practical training, and included pre-designed lessons, which were subsequently analyzed and discussed. While carrying out the intervention program, to assess treatment fidelity: a) an everyday protocol questionnaire was collected from each of the participating PE teachers to ensure that all intervention sessions were delivered according to the program design. At the end of every intervention session, the PE teachers provided "yes or no" answers to a series of questions designed to check if they had followed all steps involved in each of the three protocols. Analysis of the questionnaires indicated that the intervention sessions were delivered at 100% efficiency; b) Moreover, the instructor had to attend a weekly meeting with the research group; c) All of the teaching sessions were recorded by video in order to check the fidelity of the process. Every thirty days, a member of the research team randomly monitored and checked one of the training sessions to verify that the established instructional protocol was being followed correctly. In addition, the progression of the experiment was closely monitored by the study's Lead investigators. Finally, a combination of training seminars, pre-designed sessions, an everyday protocol questionnaire and analysis of videos to provide adequate training were used (Braithwaite et al., 2011).

Instruments

The following instruments were used to perform the present study:

The Spanish version of the *Basic Psychological Needs in Exercise Scale-BPNE* (Vlachopoulos & Michailidou, 2006) adapted for physical education by Moreno et al. (2008). It is composed of 12 items, four per domain, making up three factors: autonomy, competence, and relationships with others. Likert-type scale with scores from 1 (*totally disagree*) to 5 (*totally agree*). In this study the values for Cronbach's alpha were .77 for autonomy, .80 for competence, and .89 for relationships with others.

Self-determined motivation. Perceived Locus of Causality (PLOC) scale from Goudas et al. (1994), which was validated in Spanish by Moreno et al., (2009). This scale is made up of 20 items (four per factor) which measure intrinsic motivation, identified regulation, introjected regulation, external regulation, and demotivation. The responses are via a Likert-type scale from 1 (*totally disagree*) to 7 (*totally agree*). The scores produced were used to calculate the self-determination index (SDI): $(2 * \text{intrinsic motivation} + \text{identified regulation}) - (\text{introjected regulation} + \text{external regulation}) / 2 + 2 * \text{demotivation}$ (Vallerand & Rousseau, 2001). In this study Cronbach's alpha for SDI was found to be .77.

Sportsmanship. Fair play attitudes scale created by Cruz et al. (1996) following the work of Boixadós and Cruz (1995a, 1995b). It is composed of 23 items in three subscales: 12 about playing hard, 6 about winning, and 5 about enjoyment. Participants responded on a Likert-type scale from 1 to 5 points between «I don't identify with this at all» = 1 and «I completely identify with this» = 5. Values of Cronbach's alpha in this study were: play hard = .85, winning = .73, enjoyment = .71.

The Spanish adaptation of *Intention to do physical activity/sport. Measure of intention to be physically active* (MIFA) by Moreno et al. (2007) of the version by Hein et al. (2004) called *Intention to be Physically Active*. It is made up of five items which measure students' intentions to be physically active after going through various educational institutions. The answers are given on a Likert-type scale from 1 to 5 (1 = "totally disagree", and 5 = "totally agree"). In this study Cronbach's alpha was .84.

The Kid Physical Activity Questionnaire that is part of the *Krece Plus questionnaire on physical activity*. This questionnaire was validated for Spanish youth by Serra et al. (2003). It consists of two questions about weekly time spent doing extracurricular sports activities, and daily hours spent watching television or playing videogames. In the current study only the question about physical activity was used.

Data analysis

All of the data was analysed using SPSS 19.0 (IBM, Chicago, IL). Before the intervention, a MANOVA was performed using the group (experimental and control) and gender (male or female) as independent variables, and the variables being studied (psychological mediators, motivation, self-determination, sportsmanship, intention to do physical activity, and sports/physical activity) as dependent variables, in order to evaluate the initial homogeneity between the groups.

To evaluate the results, a 4x3 repeated-measures MANOVA was performed, with the group and time as the independent variables, and depressive symptoms and SDI as the dependent (intra-subject) variables. Students represented the units of analysis for this research topic, as opposed to class-based groups (Silverman & Solmon, 1998), because classroom effect was not a significant influence on instructional effects. Accordingly, the focus of this study was on individual student learning outcomes and processes, as well as the experimental group as a whole.

Linear contrast was carried out to determine how each group changed (or didn't) throughout the program. Hedges' *g* was chosen as a measure of effect size to provide an estimation of the effect due to sample size.

Results

Preliminary analysis

The initial MANOVA did not find any statistically significant differences either in terms of group (Wilks Lambda = .964, $F_{(9, 314)} = 1.28, p > .05$), or the interaction of group x gender (Wilks Lambda = .948, $F_{(9, 314)} = 1.88, p > .05$), therefore the two groups were homogeneous, and did not exhibit any differences between them before the intervention.

Post-intervention differences

In order to establish what differences the intervention may have caused, a repeated measures MANOVA was performed, using the group (experimental and control), and gender as inter-subject variables. A significant multivariate effect emerged for the interaction group x time: Wilks Lambda = .788, $F_{(9, 314)} = 9.32, p < .001, \eta^2 = .21$. The following univariate analyses indicated significant

differences in all of the variables: Social relations [$F_{(1, 322)} = 24.76, p < .001, \eta^2 = .07$], perceived competence [$F_{(1, 322)} = 48.12, p < .001, \eta^2 = .13$], autonomy [$F_{(1, 322)} = 69.26, p < .001, \eta^2 = .18$], Relative Autonomy Index (RAI) [$F_{(1, 322)} = 30.99, p < .001, \eta^2 = .09$], play hard [$F_{(1, 322)} = 25.01, p < .001, \eta^2 = .07$], winning [$F_{(1, 322)} = 16.33, p < .001, \eta^2 = .05$], enjoyment [$F_{(1, 322)} = 15.49, p < .001, \eta^2 = .05$], intention to do sport [$F_{(1, 322)} = 20.08, p < .001, \eta^2 = .06$], and weekly time spent on sports activities [$F_{(1, 322)} = 10.89, p < .001, \eta^2 = .03$]. The parameter estimations show statistically significant differences ($p < .001$) in all variables between the control and the experimental group following intervention.

The linear contrast in the experimental group showed significant increases following the implementation of the program, in autonomy ($t = -9.71, p < .001$), competence ($t = -5.62, p < .001$), SDI ($t = -2.06, p < .01$), intention to do sport ($t = -3.39, p < .001$), weekly hours spent doing sport ($t = -2.86, p < .01$), and decreases in the variables play hard ($t = 2.29, p < .05$) and winning ($t = 2.29, p < .05$). In the control group, decreases were seen in autonomy ($t = 2.75, p < .01$), competence ($t = 4.17, p < .001$), social relations ($t = 4.72, p < .001$), SDI ($t = 4.94, p < .001$), enjoyment ($t = 3.62, p < .001$), intention to do sport ($t = -3.01, p < .01$), and weekly time spent doing sport ($t = 1.99, p < .05$), whereas there was an increase in play hard ($t = -4.37, p < .001$) and winning ($t = -3.22, p < .01$).

Table 1 shows the descriptive of the analysis (*Mean and Standard Deviation*) as well as the Effect Size between experimental and control group using post-test measures. (Table 1)

Discussion

The aim of this study was to examine the effects of Epstein's (1988) TARGET strategies on PE classes given by teachers who had previously taught in a motivational climate high in performance and low in mastery.

In the control group, as expected, the climate produced by the teacher (high performance, low mastery) had negative repercussions on the satisfaction of the basic psychological needs of their students, on the self-determined motivation index, on levels of fair play, on the intention to do sports activities and on the time spent doing out of school sports activities. These results are alarming as they question the soundness of PE teaching to achieve what are considered key educational goals. Although few studies have looked at the medium to long term repercussions of a performance climate generated by the PE teacher, these results are consistent with observations in previous research (e.g. Cecchini et al., 2001).

We believe there are two things to consider in order to analyse these results: a) teacher behaviour and b) the causal relationship between the variables.

Teachers are characterised, based on the selection criteria in this study, by the following behaviours. They usually plan activities that are not adapted to students' needs and which in most cases do not present any personal challenge or awaken any interest in the student. The plans are not modified and are based on indiscriminate repetition, so it is highly likely that students will compare their performance with each other. The activities are done exclusively according to the teacher, and it is the teacher who determines what, how and when to do things, which does not satisfy students' need for autonomy or to take responsibility. Nor do these teachers normally guarantee equality of opportunity, or recognise individual improvement when it happens. Most groups are competitive and on very few occasions are cooperative strategies

Table 1: Descriptive Results in the Intervention and Effect Size.

| Scales | Experimental Group | | | | Control Group | | | | ES |
|-------------------------------|--------------------|------|------|------|---------------|------|------|------|---------|
| | Pre | | Post | | Pre | | Post | | |
| | M | SD | M | SD | M | SD | M | SD | |
| Basic Psychological needs | | | | | | | | | |
| Autonomy | 2.95 | .93 | 3.78 | 1.01 | 3.21 | .80 | 2.89 | 1.03 | .87*** |
| Competence | 3.52 | .83 | 3.99 | .87 | 3.59 | .79 | 3.12 | 1.10 | .88*** |
| Social relations | 4.05 | .90 | 4.19 | .88 | 4.06 | .91 | 3.44 | 1.18 | .72*** |
| Self-determined motivation | | | | | | | | | |
| Relative Autonomy Index (RAI) | 2.87 | 4.24 | 3.83 | 4.64 | 2.97 | 4.14 | .38 | 5.47 | .68*** |
| Fair Play | | | | | | | | | |
| Play hard | 2.24 | .81 | 2.08 | .92 | 2.33 | .68 | 2.77 | .98 | -.73*** |
| Winning | 2.45 | .99 | 2.25 | 1.17 | 2.55 | .86 | 2.91 | 1.10 | -.58*** |
| Enjoyment | 3.78 | .83 | 3.88 | .89 | 3.64 | .89 | 3.24 | 1.07 | .65*** |
| Physical Activity | | | | | | | | | |
| Intention | 3.77 | .96 | 4.05 | .95 | 3.80 | 1.11 | 3.38 | 1.30 | .59*** |
| Activity | 3.25 | 3.40 | 4.04 | 3.62 | 3.04 | 3.65 | 2.35 | 3.28 | .49*** |

Note. M = Mean; SD = Standard Deviation; ES = Effect Size (differences between experimental and control group in post-test measures); ES negative = show higher results in control group.

*** $p < .001$.

used in class, which diminishes the need to build social relations. The students do not share effort and become more individualist. This is reinforced when the teacher uses evaluation criteria that do not prioritise effort, improvement, or advancement towards individual and collective goals, but rather the relative position in the group based on objective results. Finally, insufficient time is given to complete the planned learning before moving on to the next stage.

In terms of causal relationships, these attitudes and behaviours on the part of the teachers seem to have negative repercussions on the basic psychological needs of the students, producing low levels of self-determined motivation, fewer hours spent on sport each week, and lower levels of future intentions to do sport. Although the current study has not used the causal hierarchical model of motivation (Vallerand, 1997; Vallerand & Losier, 1999), the results allow us to accept this hypothesis, and are consistent with what has been seen in other studies (Cecchini et al., 2013; Cecchini et al., 2011; Fernández et al., 2004; Ntoumanis, 2001).

Diminishment of fair-play behaviours may also be a consequence of the low levels of self-determination (Cecchini et al., 2005) although the climate is expected to have a direct relationship with these variables (Boixadós & Cruz, 1999, 2000; Boixadós et al., 2004; Cecchini et al., 2007; Cruz et al., 2001).

Nonetheless, the TARGET strategies (Epstein, 1988) seem to be an appropriate instrument to change teaching behaviour and attitudes, with favourable effects on the values, attitudes and behaviour of the students themselves. In fact, significant differences were seen in all of the variables being analysed. These results concur with the findings of Oliva et al. (2014), by verifying that when the teacher satisfies and supports the basic psychological needs (BPN) of the students, their self-control, behaviour and general motivation all become positively enhanced. The effect size was moderate to large (Borenstein et al., 2005), and in general, larger than that seen in similar work (see Braithwaite et al., 2011). We believe that this may be due to the duration of the intervention, which was almost an entire school year.

Conclusions

In summary, Epstein's (1988) TARGET strategies have a positive impact on the students' perception of autonomy, competence, and social relations, on levels of self-determined motivation, and on doing sports activities. In short, the above-reported open tasks are best presented in a global manner (Cecchini, Fernández-Río, & Méndez-Giménez 2014), and they should also seek the involvement of students, as well as allowing for increased interaction (Ghaith, 2018; Harvey et al., 2010; Mesquita, Farias, & Hastie, 2012). Involving the actual participants of learning processes will consequently satisfy many of their NPBs (Carrasco et al., 2015). From an alternative perspective however, (Cecchini et al., 2013) concluded that these types of programs are based on group-cohesion loyalty to co-participants, and thereby reduce the incidence of truancy.

The theory of self-determination has emerged as an important modern approach to the design of educational interventions and helps understand the processes which lead to sustained motivation. One sub-theory in this theoretical framework, "the theory of basic needs" (Deci & Ryan, 2000), states that satisfying needs of competency, autonomy, and relationships promotes better autonomous motivation, which in turn produces more positive results in terms of doing sports. In fact, there is considerable evidence of the impact of autonomous motivation on participation in physical activities (Fernández-Espínola et al., 2020; Ng et al., 2012; Teixeira et al., 2012). There is also a positive impact on attitudes and fair-play behaviours. Ego orientation has emerged as a powerful predictor of low levels of fair play (Cecchini et al., 2007) and moral reasoning in sportsmen and women (Kavussanu & Ntoumanis, 2003), on the other hand, task orientation drives high levels of fair play (Duda, Olson, & Templin, 1991; Kavussanu & Ntoumanis, 2003; Stephens, 2000). Other studies support our findings by agreeing that "fun" is an important motivating element that satisfies NPBs, and thereby also stimulates intrinsic motivation, generates feelings of being physically active, and raises adherence rates to physical activity (Almagro et al., 2011; Amado et al., 2011; Carrasco et al., 2015; Gorucu, 2016; Lang et al., 2016; Nopembri et al., 2019; Ramis et al., 2013).

Practical application

The results are encouraging, because they provide a means to modify teacher attitudes still rooted in the historical tradition of aiming for high performance in their Physical Education classes. This inclination (perhaps entrenched through years of teaching practice) can and should be redirected, as it is producing significant problems in the current and future sporting potential of students. The "mastery climate" has been observed to be a significant predictor of current and future physical activity in students (Cecchini, Fernández-Río, & Méndez-Giménez, 2014; Cecchini et al., 2019) and helps improve their health (Ekelund et al., 2011; Rosenkranz et al., 2012). As suggested by Almolda et al. (2014), and Gallegos and Extremera (2014), to improve the Teaching-Learning process, we must reaffirm our hypotheses that the more volitional motivations develop the most positive behaviours in students, thereby giving greater value and importance to the area of Physical Education.

This research has some limitations. It does not address any long term change

in teachers' attitudes following the intervention. Neither does it examine Vallerand's (1997) model of causality in a longitudinal study, or the longitudinal relationship between the different variables. New research should be undertaken to examine changes in teacher attitudes over the medium to long term, and how that affects other variables.

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