ORIGINAL

SUPPORTING AUTONOMY IN PHYSICAL EDUCATION: PERCEPTION VERSUS REALITY

APOYO A LA AUTONOMÍA EN LAS CLASES DE EDUCACIÓN FÍSICA: PERCEPCIÓN VERSUS REALIDAD

Aguado-Gómez, R.[1]; Díaz-Cueto, M.[1]; Hernández-Álvarez, J.L.[1] y López-Rodríguez, A.[1]

[1]Department of Physical Education, Sport and Human Movement. Autonomous University of Madrid. Spain, raquel.aguado@uam.es, mario.diaz@uam.es, juanluis.hernandez@uam.es, mangeles.lopez@uam.es

Spanish-English translator: Aguado-Gómez, R., raquel.aguado@uam.es

Código UNESCO / UNESCO code: 5899 Otras Especialidades Pedagógicas (Educación Física y Deporte) / Other pedagogical specialties (Physical Education and Sport)
Clasificación Consejo de Europa / Council of Europe classification: 5. Didáctica y metodología / Didactic and methodology

ABSTRACT

This investigation, on the one hand it focuses on students´ and teachers´ perception about autonomy support during Physical Education instruction, and on the other hand, in the coherence between perception and reality observed in the classes. Two scales were administered to determine the frequency of instructional behaviors favoring the development of autonomy, and teacher´s classes were observed and videotaped. The results show that the observed frequency of instructional behavior favoring autonomy support during classes is significantly lower than that perceived by students and teachers. The observed reality reveals a teacher profile with room for improvement in behaviors such as: communication quality, task functionality, promotion of students' thinking, creation of situations in which students can express their opinions of the tasks, and increasing intrinsic motivation.

KEY WORDS: autonomy support, physical education, teaching style, personal initiative, intrinsic motivation.

RESUMEN

Esta investigación se centró, por una parte en la percepción de apoyo a la autonomía en las clases de Educación física, que tienen tanto el alumnado como el profesorado, y por otra, en la coherencia entre percepción y la realidad observada en las clases. Se aplicaron dos escalas al profesorado y al alumnado con el objeto de conocer con qué frecuencia se producen comportamientos instructivos favorables al desarrollo de la autonomía, y se observaron y grabaron en video clases impartidas por el profesorado. Los resultados muestran que la frecuencia de los comportamientos instructivos de apoyo a la autonomía durante la intervención de enseñanza es significativamente menor que la percibida por el alumnado y el profesorado. La realidad observada muestra un perfil de profesorado con gran margen de mejora en comportamientos como: calidad de la comunicación, funcionalidad de las tareas, fomento del pensamiento del alumnado, situaciones en las que el alumnado pueda expresar su opinión sobre las tareas y motivación intrínseca.

PALABRAS CLAVE: apoyo a la autonomía, educación física, estilo de enseñanza, iniciativa personal, motivación intrínseca.

1. INTRODUCTION

Personal autonomy, understood as the experience of being the author and origin of one's own behavior, reflects personal and social development, and, therefore, is a challenge to the educational system and a quality indicator. Moreover, for theories that consider learning to be the student's active, self-constructed, and intentional process (Kirk & MacPhail, 2002), personal autonomy is highly relevant for optimal learning. It is therefore necessary for teachers to employ strategies and instructional behaviors to support the development of autonomy.

As noted by Black and Deci (2000), in the profession of teaching, autonomy support refers to the concept of an individual who, from a position of authority, adopts others' viewpoints, acknowledges their feelings, and provides adequate information and opportunities to choose while minimizing the use of pressure and demands. In this sense, autonomy support raises questions about teaching styles and the situations in which such support can be observed.

To answer these questions, the investigators analyzed students' autonomy support from the perspective of comparing teaching styles (controlling versus supportive autonomy), (Black & Deci, 2000; Reeve, Bolt, & Cai, 1999; Reeve & Jang, 2006). As a synthesis of the findings about the benefits of autonomy support, among others, we note the positive influence on the increase of students' autonomous self-regulation, perceived competence, interest/enjoyment in class, better academic performance, higher conceptual comprehension, and a decrease of learning-related anxiety.

In Physical Education (PE), research has focused on two aspects: the relations between autonomy support and motivation in class, and the relation between autonomy support and the promotion of an active lifestyle. Research of the relation between autonomy and motivation (Cox & Williams, 2008; Goudas, Biddle, & Fox, 1994; Moreno-Murcia, Zomeño, Marín de Oliveira, Ruiz, & Cervelló, 2013; Standage, Duda, & Ntoumanis, 2005) has confirmed the importance of students' autonomy support for their intrinsic motivation in PE classes, even when it is only a positive perception of such support (Cox & Williams, 2008), not always coinciding with the reality of the teacher's behavior.

Research of the relation between autonomy support in PE and adherence to physical activity reveals a positive correlation between the perception of autonomy support and the practice of physical activity in leisure time (Chatzisarantis & Hagger, 2009; Hagger, Chatzisarantis, Culverhouse, & Biddle, 2003; Lim & Wang, 2009; Zhang, Solmon, & Gu, 2012). Moreover, in the investigations carried out with an intervention process, the findings indicate that students whose teachers supported their autonomy were more favorably disposed towards physical activities and participated more frequently than students whose teachers did not employ teaching styles supporting autonomy (Chatzisarantis & Hagger, 2009; Cheon, Reeve, & Moon, 2012; Reeve, Jang, Carrell, Jeon, & Barsh, 2004)**.**

Consequently, students' autonomy support has been shown to be relevant for two essential goals in PE: improving motivation so that students will engage more in their

learning, and increasing adherence to physical activity to achieve an active lifestyle and enjoy its benefits for physical and psychosocial health (Harris, Kuramoto, Schulzer, & Retallack, 2009; Janssen & Leblanc, 2010).

However, in spite of the findings about the positive relations between autonomy support and these goals, in the Spanish context, there are some questions about the quality of teachers' instructional behavior and the possibilities of guiding it towards autonomy support.

With regard to the first issue, some investigators offer reflections and conclusions about which aspects of teachers' behavior provide support to students' autonomy (Deci & Ryan, 1994, Reeve et al., 1999; Reeve & Halusic, 2009; Stefanou, Perencevich, DiCintio, & Turner, 2004). Thus, Reeve and Halusic (2009) show a pathway for teachers who wish to promote students' autonomy: take the students' perspective into account, be patient and give students time to learn, stimulate internal motivational resources, eliminate external controls such as pressure or rewards, provide explanatory essentials, use flexible and non-coercive language, and acknowledge and accept criticism.

With regard to the second question, studies of interventions have raised the issue of whether teachers can improve autonomy support (Chatzisarantis & Hagger, 2009; Cheon & Reeve, 2013; Cheon, Reeve & Moon, 2012; Edmunds, Ntoumanis, & Duda, 2008; Reeve et al., 2004; Tessier, Sarrazin, & Ntoumanis, 2010). The findings show that this is possible. However, as noted by Tessier et al., (2010), one of the limitations of these studies is that the teachers' behaviors were not assessed prior to the investigation. A self-reported interpersonal style (self-perception) does not necessarily manifest during instruction in the classroom and, therefore, it is necessary to know the real starting point.

In PE, there are some theoretical frameworks that are useful to design an intervention aimed at improving autonomy support. The spectrum of teaching styles proposing a progression ranging from teacher-focused styles to student-focused styles (Mosston & Ashworth, 1990). In particular, the approach to teaching sport games known as *Teaching Games for Understanding* (TGfU) (Bunker & Thorpe, 1982; Díaz-Cueto, Hernández-Álvarez, & Castejón, 2010; Griffin & Butler, 2005) has implied a relevant methodological change in the role students play in their learning. Various authors agree that the TGfU model can be described as a approach that is consistent with the constructivist principles (Kirk & MacPhail, 2002; Rovegno & Dolly, 2006), as it places students in a teaching-learning environment where tactic thinking, comprehension of the principles of the game, and decision-making and problem-solving situations are relevant, constituting a process in which students have a high degree of autonomy.

However, in Spain, although some studies have analyzed teachers' discourse during PE classes (e.g., López, 2012; Velázquez et al., 2007; Velázquez & López, 2010), investigations of students' autonomy, either from the students' or the teachers' perceptions of instructional behaviors supporting such autonomy, or from the reality of in-class observation, are practically nonexistent. In this context, in an effort to

further our knowledge of instructional behaviors favoring students' autonomy support, this study has the following goals:

a) To determine the students' perception of their teachers' instructional behaviors that could support their autonomy.

b) To determine the teachers' perceptions of their own instructional behaviors that favor students' autonomy support.

c) To identify, by means of direct observation of Physical Education classes, the presence of instructional behaviors favoring students' autonomy support and to relate them to students' and teachers' perceptions.

2. METHOD

Participants

First part of the study (goals a and b). Participants were 173 PE teachers (111 men and 62 women) and 2,201 students (1,056 boys and 1,145 girls), the latter aged between 12 and 17 years (M = 14.3, SD = 1.5). The investigation was carried out in public and private schools from eight Autonomous Communities. The teachers had a mean teaching experience of: less than 5 years (20.2%), between 5 and 10 years (28.3%), between 11 and 15 years (22.0%), and more than 15 years (29.5%).

Second part of the study (goal c). To observe the classes, 30 teachers who had participated in the first part of the study (20 men and 10 women), with a mean experience of 11.4 years, were randomly selected.

Measurement instruments

First part of the study

Considering the contributions of various authors (Cheon et al., 2012; Reeve & Halusic, 2009), we designed and applied two scales to determine students' and teachers' rating of the frequency of instructional behaviors favoring autonomy in the teachers' discourse.

The students' scale had 10 items (Table 2). Its content was validated by a group of PE instruction experts (N = 7), and it was rewritten after an initial test with students (N = 32). Subsequently, the scale was applied in a pilot test (N = 94 students), showing a reliability index of .86.

The teacher's scale also had 10 items (Table 3), coinciding in content with the students' scale. The scale content was validated by a group of PE instruction experts (N = 7), and rewritten after a pilot test (N = 27 teachers), showing a reliability index of .81.

The frequency of instructional behaviors was rated on a scale ranging from 0 to 10 (due to its familiarity with the rating of academic results in our country): 0 points was the minimal score and 10 points the maximum score. The rating categories are presented in Table 1.

Table 1. *Rating Categories of the Scales for the Measurement of the Perception of Instructional Behaviors Favoring Students' Autonomy*

Never	Low frequency		Medium-low frequency		Medium frequency	Medium-high frequency		High frequency		Always
0	1	2	3	4	5	6	7	8	9	10

Second part of the study

We videotaped and observed three PE classes (in some cases, 4) of each one of the 30 participant teachers. On the whole, we created a database corresponding to 102 classes.

Taking as reference the orientations of Reeve and Halusic (2009), to analyze the information from the observations, we established four categories and their correspondence with the scale items:

Category 1. Communication quality and task goals. This includes the quality of the message, communication of the goals of the teaching tasks, and selective attention to task aspects considered more relevant by the teacher (Items 1, 2, and 10).

Category 2. Motivation. This includes the instructional behaviors in the teacher's discourse that refer to encouraging and congratulating students (Items 4 and 6).

Category 3. Knowledge of the students' perspective. This includes situations in which we observed the teacher displaying interest in the students' perception of task development, attending to their problems or needs of support for their learning (Items 3, 5, and 9).

Category 4. Comprehension of learning. This includes question-answer interactions between the teacher and the students, seeking comprehension of the learning or knowledge of what the students know about the task (Items 7 and 8).

Data analysis

The data from the scales were analyzed with the SPSS-17.0 statistical package (SPSS Inc., Chicago, Illinois, USA). We obtained elementary descriptive statistics (means and standard deviations), as well as the frequency analysis. We used t-tests

(dichotomic variables) and ANOVA (with post-hoc Scheffé) to analyze possible differences between non-dichotomic variables.

We transcribed the teachers' discourses and analyzed them, seeking evidence of the four above-mentioned categories. Table 4 presents the correspondence between the items and the signs in the teachers' discourse that guided our observation, as well as the dual perspective analysis: the quantitative perspective, which refers to the percentage of teachers who presented an instructional behavior favoring students' autonomy; and the qualitative perspective, related to nature of the contents of the teachers' discourse. Fragments of the teachers' discourse obtained from the transcriptions are also provided.

Ethical aspects

In according with the rules of the Research Ethics Committee of the University to which this research group belongs, we obtained the permission of the students' parents for them to participate in the study (informed consent). We also obtained permission from the board of directors of the schools and from the participant teachers.

3. RESULTS: ANALYSIS AND DISCUSSION

Students' perception

The students considered that 9 of the 10 instructional behaviors occurred with a medium-high frequency, with a rating of 6 out of 10 points (Table 2). The other item (Item 9) was rated at a medium frequency. No teachers' instructional behavior received a high frequency rating, but neither was any rated as low frequency.

Table 2. *Students' Perception of the Frequency of Instructional Behaviors of Autonomy Support (Mean, Standard Deviation, and Gender Differences)*

Teacher's instructional behaviors	M (SD)	p
1. Explains so clearly that I understand everything he/she says	7.0 (2.2)	.009**
2. Underlines the most important things I must learn	7.8 (2.3)	.018*
3. Is interested to know whether I understand his/her explanations	7.1 (2.6)	.650
4. Encourages me to make an effort	7.2 (2.8)	.151
5. Pays attention to me when I need it	7.4 (2.5)	.375
6. Congratulates me when I make an effort	6.5 (2.9)	.583
7. Makes me think about what I'm doing and why I should do it that way	6.3 (2.6)	.731
8. Makes me understand and corrects me if I'm doing something wrong	7.3 (2.5)	.114
9. When we are finished, he/she assembles us to comment about what we worked on	5.8 (3.3)	.530
10. Transmits the goals of the Physical Education class well	7.4 (2.5)	.845

Nota. *$p<0,05$; **$p<0,001$

Only the first two items of the scale presented significant gender differences. Both refer to key aspects of communication: explaining clearly, in which girls gave a lower rating to their teachers ($p < .01$); and underlining the most important aspects of learning, in which girls gave a higher rating to their teachers ($p < .05$). In previous studies, like those of Lim and Wang (2009) or those of Rutten, Boen, and Seghers (2012), no significant gender differences were found, and fairly similar results were found in both groups, although slightly higher in the group of girls. The ANOVA revealed no statistically significant differences by age group.

Teachers' perception

The teachers thought that most of the behaviors studied were present in their teaching discourse with a medium-high (4 out of 10) or high frequency (3 out of 10) (Table3). The remaining behaviors were considered present with a medium (2 out of 10) or medium-low frequency (1 out of 10)

Table 3. *Teachers' Perception of the Frequency of their Instructional Behaviors Supporting Students' Autonomy (Mean, Standard Deviation and Gender Differences)*

Teacher's instructional behaviors	M (SD)	p
1. I explain so clearly that they understand everything I say	5.9 (1.2)	.680
2. I underline the most important things they must learn	7.7 (1.7)	.400
3. I am interested to know whether they understand my explanations	7.9 (1.8)	.158
4. I encourage them to make an effort	8.5 (1.7)	.716
5. I pay attention to them when they need it	8.0 (1.7)	.822
6. I congratulate my students when they make an effort or do things well	8.4 (1.8)	.699
7. I make them think about what they are doing and why they should do it that way	6.7 (1.8)	.280
8. I make them understand and I correct them if they are doing things the wrong way	5.6 (1.7)	.229
9. I assemble my students to comment on what we have worked on	4.8 (2.2)	.405
10. I explain the task goals	6.5 (1.9)	.217

No significant gender differences were found. The educational stage (Primary vs. Secondary) marks a tendency, with a higher perception of the frequency of behaviors favoring autonomy among the Primary teachers, but significant differences were only found in 1 of the 10 behaviors ($p < .001$, for Item 3).

No significant differences were observed as a function of teacher experience (ANOVA, post hoc Scheffé nonsignificant), although there was a tendency towards a higher rating of the frequency of instructional behaviors supporting autonomy (in 5 out of 10 behaviors) in the group with more experience (more than 20 years teaching).

Students' perception versus teachers' perception

In 5 out of the 10 items, the students rated the frequency of the instructional behaviors more positively than the teachers, and the differences were significant in Items 1, 8, and 9 ($p < .01$). All three items refer to aspects of teacher communication. In contrast, in 5 of the 10 items, the teachers had a perception of their instructional behaviors that was not supported by the students' opinion, with significant differences in Items 3 ($p < .05$), 4, and 6 ($p < .01$). Two of these items (Items 4 and 6) refer to emotional aspects.

Observation of reality and contrast with perception

The second part of the study had the goal of observing the reality of the teachers' instructional behaviors in PE classes, and analyzing the consistency between perception and reality. For this purpose, we selected certain signs to observe for each one of the items of the perception scales (Table 4).

Table 4. *Aspects to Observe and Nature of the Data*

Teacher's instructional behaviors	Observation
1. I explain so clearly that they understand everything I say	Structure of the message. Tone of voice Comprehensible terminology.
2. I underline the most important things they must learn	Provokes selective attention to important aspects of the task
3. I am interested to know whether they understand my explanations	Direct questions about what was explained or about whether they understood it
4. I encourage them to make an effort	Driving comments: Let's go! Go ahead! You can make it!
5. I pay attention to them when they need it	Interest in students' problems. Teacher's support to students' demands for support to improve learning the task. Teacher's support when observing that the task is being carried out incorrectly and the students may become unmotivated.
6. I congratulate my students when they make an effort or do things well	Comments of appraisal/approval: Very good! Congratulations! Congratulations for your good work!
7. I make them think about what they are doing and why they should do it that way	Questions about what they are doing (why do you straighten your legs? Do you think that's the best way?... Why did you decide to pass instead of shooting?)

8. I make them understand and I correct them if they are doing things the wrong way	Teacher 's support and guidance of students' comprehension through successive exchanges of questions and answers with the intention of deepening the learnings.
9. I assemble my students to comment on what we have worked on	Assembles the students to reinforce certain aspects of learning and/or to know their opinion.
10. I explain the task goals	Comments on the value of the task for the goals of teaching-learning.

In-class observation allowed us to show the relative frequency with which a behavior is present in the teacher's discourse and percentages of teachers who present certain instructional behaviors (Table 5). The teachers' interventions favoring autonomy support made up 30.6% of the total discourse.

Table 5. *Teachers who Display Instructional Behaviors Favoring Students' Autonomy and the Relative Frequency (%) of these Behaviors*

Instructional behavior	Teachers who display the instructional behavior	Relative frequency in comparison to the total interventions
Category 1. Communication quality and ends		
1. I explain using clear and precise language	nq	nq
2. I underline the most relevant aspects to correctly perform the task	56.7	2.8
10. I refer to the goals of the teaching tasks	46.7	5.3
Category 2. Motivation		
4. I motivate the students to make an effort in learning	73.3	8.2
6. I congratulate the students for their effort	43.3	4.1
Category 3. Knowing the students' perspective		
3. I am interested to know whether the students have understood my explanations	56.7	6.2
5. I pay attention to them when they need it	nq	nq
9. I assemble the students to talk about what happened while performing the task	33.3	1.8
Category 4. Comprehensive learning		
7. I encourage the students to think about what they're doing	40.0	2.2
8. I make them understand and I correct them if they are doing things the wrong way	nq	nq
Total		30.6

Note. nq = not quantified

Analysis of teacher's discourse allowed us to identify the nature of the instructional behaviors potentially favoring the development of autonomy. Accordingly, on the basis of the literal transcription of the discourse and the videotaped classes, the analysis carried out yielded the following results:

Category 1. Communication quality and goals of the tasks

This category refers to three centers of attention: (a) the quality of the discourse (clarity and precision when explaining the task); (b) information about the task goals; and (c) the most important aspects on which students should concentrate to perform the tasks correctly (selective attention).

With regard to the quality of the discourse, observation revealed that a large number of teachers (36.7%) frequently emitted messages that were poorly structured and confusing. The deficiencies of the message are frequently related to the teacher's lack of concentration caused by students' disruptive behaviors. As noted by Haerens et al. (2013), these situations may differ at different moments of the session and as a function of the context. At the beginning of the classes, it is easier to assemble the students, and they are ready to listen, but the teachers' job becomes more complex during performance of the activities because they must deal with certain aspects such as students' behavior or safety in a noisy environment.

The teachers seem to be aware of their limitations. Their rating of their own capacity to clearly explain the task was 5.9 points (out of 10), and analysis of the in-class observation revealed consistency between perception and reality. Nevertheless, nonverbal messages (gestures, demonstrations...) also facilitate students' comprehension.

Sometimes, while describing the different actions, the teacher demonstrates them the way the students should do them. This nonverbal language allows the teacher to clearly transmit the message so that each student knows what to do. This may explain why students gave a high frequency rating to (7/10) the way the teachers explain clearly and make themselves understood, much higher than the teachers' self-ratings (5.9). However, this form of nonverbal communication, which is relevant in PE, is closely linked to the imitation of the teacher's gestures and movements, thereby limiting the students' autonomy because it draws away from flexible discourse that is open to new solutions (Reeve & Halusic, 2009).

With regard to information about the task goals, the results show that teachers do not offer it frequently enough to favor students' comprehension. The frequency of this instructional behavior is self-rated by the teachers as medium-high (6.5/10), but, as reported in other studies (López, 2012; Velázquez et al., 2007; Velázquez & López, 2010), it is actually not observed very frequently in their discourse. In fact, only 46.7% (Table 5) informed about the task goals.

The third aspect of this category focused on knowing whether the teachers underline the most important aspects on which the students should concentrate to perform the tasks correctly. The following is a good example:

> Attention, you should concentrate on the movement of the legs and the direction of the feet...In what position should the legs be?... [When students respond] that's right, good…! They should be bent...the body's center of gravity low...and the feet?... [In this case, he doesn't wait for a response] aimed at where I want to send the ball...Let's go!... (Teacher 14)

Sometimes, the teacher underlines relevant aspects for the correct performance of the task, warning about the errors that, in his or her experience, the students usually commit. In any event, 56.7% of the teachers sometimes make comments to underline relevant task aspects, although, out of all the teachers' interventions, the relative frequency was 2.8%, a value lower than that obtained by Velázquez and López (2010).

Category 2. Teachers' discourse aimed at student motivation

Do the teachers encourage and congratulate their students? Observation revealed a higher percentage of these expressions than other kinds of teachers' messages (Table 5), although the frequency was still probably insufficient. Moreover, more teachers (43.3%) were observed attempting to motivate with messages that reflect pressure and/or defeating others, which draws away from the recommendation of providing messages of intrinsic motivation, more favorable to the development of autonomy (Cox & Williams, 2008; Deci & Ryan, 1994, 2002; Pihu, Hein, Koka, & Hagger, 2008). Thus, for example, when teachers put pressure with an exam "Work on this [multi-jump exercise crossing the gym] because next day there's going to be an exam" (Teacher 22)

This way of motivating and encouraging students to make an effort may be fast and effective at short term. But autonomy support should be based on students' intrinsic motivation (Reeve & Halusic, 2009; Reeve & Jang, 2006; Rutten et al., 2012), and it is necessary to complement these behaviors based on the motivation to defeat the other, or be better than..., with discourses and activities that support the student' expectations of achieving a personal sense and meaning.

In any event, we frequently observed encouraging feedback ("Good", "Very good", "That's right"), which transmits support to whatever the student is doing at that time, as reported in other studies (Díaz-Cueto & Aguado-Gómez, 2012; López, 2012; Velázquez et al., 2007). In fact, the percentage of teachers who emit encouraging messages exceeded 70% (Table 5), and this is consistent with the fact that the teachers think their encouraging and congratulating messages are very frequent (Table 3), although the students perceive them with a lower frequency (Table 2), as in the study of López (2012).

> Teachers' interventions to congratulate the students for their efforts in class are usually done both individually and to the whole group. The teachers use short sentences and, frequently, they do not point out the reason for the congratulation "Come on, guys, we have to advance more, hey, listen, you have all... you have all done a pretty good job" (Teacher 17).

Although 73.3% of the teachers encourage the students, only in 43.3% could we observe congratulatory messages to the students for performing the tasks. Nevertheless, the relative frequency was high compared with other types of intervention (4.1%), indicating that the teachers who compliment do so fairly frequently during their classes.

Category 3. Interest in knowing the students' perception

Attempting to know the students' perspective is a basic feature of autonomy support (Reeve & Jang, 2006; Reeve & Halusic, 2009). Therefore, the analysis focused on: (a) teachers' interest in knowing whether the students understand their explanations; (b) teachers' expressions aimed at students when they need attention; and (c) the times when the teachers assemble the students to analyze the development of the class with them.

The students and teachers both perceive that the teachers' interest in knowing whether the students understand their explanations occur with a medium-high frequency, although there was a significant difference favoring the teachers. Nevertheless, the observation and analysis of the teachers' transcriptions revealed that this frequency was not so high, in contrast with the results obtained by Haerens et al. (2013), who found a relation between their in-class observations of physical education and students' perceptions.

> In our study, only 56.7% of the teachers showed interest in knowing whether the students understood their messages, by means of questions to the whole group or to a certain student: "**…** OK, did you understand me?... Ana, Peter, ... Did you understand the explanation?" (Teacher 29).

The relative frequency of this instructional behavior (6.2%) indicates that teachers who display this behavior do so fairly frequently, as in other investigations (López, 2012; Velázquez et al., 2007; Velázquez & López, 2010). Among the rest of the teachers, in many cases, they stop the task and go back and explain some technical or organizational aspect to the group so the students will be able to perform the task.

With regard to the second aspect (paying attention when students need it), through observation, we confirmed that such attention is expressed in two ways: (a) showing interest in the students' problems; (b) attending to their needs to progress in the learning, orienting and guiding the personal process of each student. Interest in students' personal problems was frequent among the teachers, who are especially concerned with health-related aspects. Attention to the students' needs to be able to progress in the learning was also frequently observed among the teachers. For example, the teacher observes a group that seems angry and unmotivated and says to them:

> What's the matter? Is there a problem? [The students tell him they don't feel capable of carrying out the task]… Well, let's see,...tell me calmly, what is the

problem… What do you think you have to do and why do you think you are incapable of doing the task well?.. (Teacher 25)

Students' and teachers' perceptions were consistent with our observations. As shown in Tables 2 and 3, the students rated the frequency of their teachers' attention as medium-high, in contrast to the teachers, who rated it as high, consistent with other studies (López, 2012; Velázquez et al., 2007; Velázquez & López, 2010). But these data also reveal that some teachers display indifference during classes and do not seem to realize that some students need support to carry out the task.

Does the teacher assemble the students to talk about what went on during the tasks? The in-class observation confirmed that students' (medium frequency) and teachers' ratings (medium-low frequency) are real. Only one out of every three teachers habitually assembled the students at the end of the class, and this only occurred in 1.8% of the teachers' interventions (Table 5), coinciding with the results

In this case, the teacher showed a comprehensive attitude towards students' criticism about how the task was performed. From a discourse of acceptance of the students' negative perception, the teacher transmitted serenity and confidence in the learnings the students would be capable of achieving in the next sessions.

Category 4. Comprehensive learning

Dialogue and the strategy of questions and answers are the central elements of a process aimed at improving students' comprehension of the learnings and developing their capacity to think about the action. Using questions as a form of teacher-student dialogue is inherent to the comprehension process and their inclusion in the teachers' discourse favors reflection and intelligent responses to motor problems, as well as critical thinking (Gubacs-Collins, 2007; Velázquez et al., 2007).

Nevertheless, according to López (2012)., although many teachers ask questions, they do so very infrequently. Perhaps because, as noted in other studies, asking questions is a difficult strategy to practice and, sometimes, teachers are not patient enough to wait for the students' response (Díaz-Cueto et al., 2010; Reeve & Halusic, 2009).

In our study, we confirmed our misgivings about the teachers' capacity to ask good questions and wait for the students' response. In fact, only 40% of the teachers asked questions to make the students reflect on what was going on. Moreover, when the teachers asked questions, they sometimes were not patient enough to observe their effect on the students. In the following example, during a Rugby class, everything appears to indicate that the questions contribute to a learning scenario that favors students' cognitive engagement:

> When do we use this kick? When we are...in which area of the field? OK, very well, behind the 22nd line we mentioned, and near our trial area. OK, and above all...When...where are our teammates? In front of us,...why?

> Because if nobody is behind us, there is nobody we can pass the ball to, and we cannot make a forward pass... (Teacher 17)

However, appearances can be deceiving. This teacher is talking to himself, he has constructed a message with questions and answers but he does not give his students a chance to answer. The students displayed a listening attitude and they may have suffered cognitive dissonance, but, as noted by Reeve and Halusic (2009), the teacher is not patient enough to wait for their answers and, therefore, he will not verify the students' comprehension and knowledge of the task.

Nevertheless, the existence of these questions in the teachers' discourse can lead students and teachers to state that this type of instructional behavior occurs with a medium-high frequency, without confirmation by observing reality.

Second question in this category is Do the teachers make the students understand the task and do they correct poor performance? This item produces the greatest differences in the responses to the perception scales. Whereas the teachers believed that the behavior described in the item occurs with a medium frequency (5.6/10)—which expresses their lack of confidence in their students' improving their learning—the students perceive a medium-high frequency (7.3/10), believing in their capacity of comprehension and of having corrected their errors.

In the next example, the female teacher, through a brief dialogue with the students, detects and makes the students become aware of where the problem lies and of the possible solutions:

> Q: Tell me which things didn't turn out very well with the parachute
> A: The big igloo didn't turn out well.
> Q: Why do you think it didn't turn out well? (Teacher 11).

As noted by Reeve and Halusic (2009), this initial dialogue, using a guided discovery teaching style (Mosston & Ashworth, 1990), represents a learning situation that favors students' seeking solutions, reflection on their own decisions, and confidence in their own competences.

Conclusions

The development of students' autonomy requires the teachers to carry out instructional behaviors frequently to favor such development. However, students' and teachers' perceptions of the frequency with which such autonomy support behaviors occur in the classes are different. The differences in perception do not define a favorable or unfavorable tendency depending on who is expressing their opinion. In 5 of the 10 items, the students rated the frequency of instructional behaviors supporting autonomy higher than their teachers, whereas the opposite occurred in the remaining 5 items.

In-class observation revealed very diverse situations. On the negative side, we note that more than one half of the teachers ignored most of the autonomy support

behaviors observed in their interventions. In contrast, on the positive side, three out of four teachers used a motivating discourse, frequently encouraging their students, although less than half of them congratulated their students when they made an effort to perform the task well.

The use of the question-answer strategy to favor students' comprehension and autonomy (learning to learn) was scarce and inadequate. This strategy was well performed by some, but few teachers (4 out of every 10) placed the students in a position in which they had to think and answer the question. In some cases, teachers asked good questions about the task, but were not patient enough to wait for a response and they answered their own questions. This type of behavior has two negative effects. The first is that students become used to waiting until the teacher gives the response and so they do not have to think about it. The second negative effect is that the teacher does not receive any information about what the students have understood and know.

Teachers' discourse quality cannot be quantified, but the observation and transcription of their discourses allow us to state that the structure, clarity, and precision of the messages needs significant improvement. PE teacher's reliance on nonverbal language (gestures, demonstrations…) makes them somewhat careless about the quality of their spoken language. Four out of every ten teachers were excessively careless about the construction of their messages, and they seemed to be aware of this because they gave low self-ratings of the frequency of their clear expressions.

Summing up, the results show that the frequency of instructional behavior favoring autonomy support found in teaching interventions (reality) is significantly lower than that perceived by students and teachers (perception). The reality of the observed classes reveals a teacher profile with much room for improvement in certain behaviors, especially those referring to communication quality, sharing task goals with the students, promoting students' thinking through adequate questions and giving them time to respond, proposing situations in which students can express their opinion of the tasks, and motivating by congratulating them for their efforts and good work. No doubt, this study establishes a starting point to determine perception and reality and, in both areas, to develop training programs for teachers to improve students' autonomy support.

REFERENCES

Black, A.E., & Deci, E.L. (2000). The effects of instructors' autonomy support and students' autonomous motivation on learning organic chemistry: a self-determination theory perspective. *Science Education, 84,* 740-756. http://dx.doi.org/10.1002/1098-237X(200011)84:6<740::AID-SCE4>3.0.CO;2-3

Bunker, D., & Thorpe, R. (1982). A model for the teaching of games. *Bulletin of Physical Education*, *18*(1), 5-8.

Chatzisarantis, N.L., & Hagger, M.S. (2009). Effects of an intervention based on self-determination theory on self-reported leisure-time physical activity participation. *Psychology & Health, 24,* 29-48. http://dx.doi.org/10.1080/08870440701809533

Cheon, S.H., Reeve, J., & Moon, I.S. (2012). Experimentally Based, Longitudinally Designed, Teacher-Focused Intervention to Help Physical Education Teachers Be More Autonomy Supportive Toward Their Students. *Journal of Sport & Exercise Psychology, 34*, 365-396.

Cheon, S.H. & Reeve, J. (2013). Do the benefits from autonomy-supportive PE teacher training programs endure?: A one-year follow-up investigation. *Psychology of Sport and Exercise*, *14,* 508-518. http://dx.doi.org/10.1016/j.psychsport.2013.02.002

Cox, A., & Williams, L. (2008). The roles of perceived teacher support, motivational climate, and psychological need satisfaction in students' physical education motivation. *Journal of Sport & Exercise Psychology*, *30*(2), 222-239.

Deci, E. L., & Ryan, R. M. (1994). Promoting self-determined education. *Scandinavian Journal of Educational Research, 38*(1), 3-14. http://dx.doi.org/10.1080/0031383940380101

Deci, E.L., & Ryan, R.M. (Eds.). (2002). *Handbook of self-determination research*. Rochester: The University of Rochester Press.

Díaz-Cueto M., & Aguado-Gómez, R. (2012). Percepción de competencia del profesorado de educación física con experiencia sobre la tarea como recurso didáctico. *Retos. Nuevas tendencias en Educación Física, Deporte y Recreación, 22,* 16-18.

Díaz-Cueto, M., Hernández-Álvarez, J.L., & Castejón, F. (2010). Teaching Games for Understanding to In-Service Physical Education Teachers: Rewards and Barriers Regarding the Changing Model of Teaching Sport. *Journal of Teaching in Physical Education*, *29,* 378-398.

Edmunds, J., Ntoumanis, N., & Duda, J.L. (2008). Testing a self-determination theory based teaching style intervention in the exercise domain. *European Journal of Social Psychology, 38,* 375–388. http://dx.doi.org/10.1002/ejsp.463

Goudas, M., Biddle, S., & Fox, K. (1994). Perceived locus of causality, goal orientations, and perceived competence in school physical education classes. *British Journal of Educational Psychology, 64*(3), 453-463. http://dx.doi.org/10.1111/j.2044-8279.1994.tb01116.x

Griffin, L.L., & Butler, J.I. (Eds.) (2005). *Teaching games for understanding theory, research and practice.* Champaign, IL*:* Human Kinetics.

Gubacs-Collins, K. (2007). Implementing a tactical approach through action research. *Physical Education & Sport Pedagogy, 12*(2), 105-126. http://dx.doi.org/10.1080/17408980701281987

Haerens, L., Aelterman, N., Van den Berghe, L., De Meyer, J., Soenens, B., & Vansteenkiste, M. (2013). Observing physical education teachers' need-supportive interactions in classroom settings. *Journal of Sport & Exercise Psychology, 35*, 3-17.

Hagger, M. S., Chatzisarantis, N. L. D., Culverhouse, T., & Biddle, S. J. H. (2003). The processes by which perceived autonomy support in physical education promotes leisure-time physical activity intentions and behavior: A transcontextual model. *Journal of Educational Psychology, 95,* 784–795. http://dx.doi.org/10.1037/0022-0663.95.4.784

Harris, K. C., Kuramoto, L. K., Schulzer, M., & Retallack, J. E. (2009). Effect of school-based physical activity interventions on body mass index in children: a meta-analysis. *Canadian Medical Association Journal, 180*(7), 719-726. http://dx.doi.org/10.1503/cmaj.080966

Kirk, D., & MacPhail, A. (2002). Teaching Games for Understanding and situated learning: Rethinking the Bunker-Thorpe model. *Journal of Teaching in Physical Education, 21*, 177-192.

Lim, B.S.C., & Wang, C.K.J. (2009). Perceived autonomy support, behavioural regulations in physical education and physical activity intention. *Psychology of Sport and Exercise, 10*(1), 52–60. http://dx.doi.org/10.1503/cmaj.080966

López, A. (2012). *La calidad de los procesos de comunicación en el aula de Educación Física: un estudio sobre calidad del discurso docente en profesorado de la Comunidad de Madrid.* Tesis doctoral inédita. Universidad Autónoma de Madrid.

Moreno-Murcia, J. A., Zomeño, T., Marín de Oliveira, L. M., Ruiz , L. M., & Cervelló, E. (2013).Percepción de la utilidad e importancia de la Educación física según la motivación generada por el docente. *Revista de Educación, 362*, 380-40. DOI: 10.4438/1988-592X-RE-2011-362-165

Mosston M. & Ashworth S. (1990). *The spectrum of teaching styles: from command to discovery*. New York: Longman Publishers.

Pihu, M., Hein, V., Koka, A., & Hagger, M. S. (2008). How students' perceptions of teacher's autonomy supportive behaviors affect physical activity behaviour: An application of trans-contextual model. *European Journal of Sport Science, 8*, 193-204. http://dx.doi.org/10.1080/17461390802067679

Reeve, J. & Jang, H. (2006). What teachers say and do to support students' autonomy during a learning activity. *Journal of Educational Psychology,* 98(1), 209-218. http://dx.doi.org/10.1037/0022-0663.98.1.209

Reeve, J., & Halusic, M. (2009). How K-12 teachers can put self-determination theory principles into practice. *Theory and Research in Education, 7*(2), 145-154. http://dx.doi.org/10.1177/1477878509104319

Reeve, J., Bolt, E., & Cai, Y. (1999). Autonomy-supportive teachers: How they teach and motivate students. *Journal of Educational Psychology, 91*(3)*,* 537-458. http://dx.doi.org/10.1037/0022-0663.91.3.537

Reeve, J., Jang, H., Carrell, D., Jeon, S., & Barsh, J. (2004). Enhancing students'engagement by increasing teachers' autonomy support. *Motivation and Emotion*, *28*(2), 147-169. http://dx.doi.org/10.1023/B:MOEM.0000032312.95499.6f

Rovegno, I., & Dolly J.P. (2006). Constructivist perspectives on learning. In D. Kirk, D. Macdonald, & M. O'Sullivan (Eds.), *The handbook of physical education* (pp.

242-261). London: Sage Publications.
http://dx.doi.org/10.4135/9781848608009.n14

Rutten, C., Boen, F., & Seghers, J. (2012). How School Social and Physical Environments Relate To Autonomous Motivation in Physical Education: The Mediating Role of Need Satisfaction. *Journal of Teaching in Physical Education, 31,* 216-230.

Standage, M., Duda, J.L., & Ntoumanis, N. (2005). A test of self-determination theory in school physical education. *The British Journal of Educational Psychology, 75,* 411–433. http://dx.doi.org/10.1348/000709904X22359

Stefanou, C.R., Perencevich, K.C., DiCintio, M., & Turner, J.C. (2004). Supporting Autonomy in the Classroom: Ways Teachers Encourage Student Decision Making and Ownership. *Educational Psychologist, 39*(2), 97-110. http://dx.doi.org/10.1207/s15326985ep3902_2

Tessier, D., Sarrazin, P., & Ntoumanis, N. (2010). The effect of an intervention to improve newly qualified teachers' interpersonal style, students' motivation and psychological need satisfaction in sport-based physical education. *Contemporary Educational Psychology, 35,* 242-253. http://dx.doi.org/10.1016/j.cedpsych.2010.05.005

Velázquez, R., Hernández, J. L., Garoz, I., López, C., López, Á., Maldonado, A., … Castejón, F. J. (2007). Calidad de enseñanza en Educación Física y Deportiva y discurso docente: El caso de la Comunidad de Madrid. *Revista de Educación, 344,* 447-467.

Velázquez, R. & López, A. (2010). El proceso de comunicación docente-discente en educación física. *La educación física a estudio.* Barcelona: Graó.

Zhang, T., Solmon, M.A., & Gu, X. (2012). The role of teachers' support in predicting students' motivation and achievement outcomes in physical education. *Journal of Teaching in Physical Education, 31,* 329-343.