uld be mentioned here that past and recent research in Greece shows that the social approval goal
:tion is closely tied with the Greek word "agapi," which in English means love (Papaioannou 2001b; Tri-
1972). There are two Greek words depicting the meaning of love. "Agapi" expresses the warm emotion
:nother-child relationship and the approval of in-group members. Instead, the positive emotion between
:mbers of a happy pair is usually depicted with the word "erotas". This creates problems in translation,
:e the words "agapi" and "agapitos" (it means "he is loved" - by others) express much better the concept
:il approval from members of the group, than any other Greek word. In English, people prefer the words
; liked" or "s/he is accepted", but if these words were used in item translation, then they would mislead
:ho know Greek. Hence, in item translation the word "love" was chosen, but the readers should bear in
:e abovementioned different meanings of this word in English and Greek.

The Effects of Teachers' Expectations about Students' Motivation on Teachers' Autonomy-Supportive and Controlling Behaviors

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Abstract

Previous studies in both educational and sport settings have examined the relationship between teachers' and coaches' expectations and behaviors towards students and athletes. The purpose of the present study was to extend this line of research by examining the effects of teachers' expectations about students' motivation on the frequency of controlling and autonomy-supportive behaviors. Following the assessment of teachers' expectations about students' motivation and the assessment of students' self-determined motivation at the end of the first lesson, the interactions between PE teachers from nine classes and 172 students were videotaped and systematically coded during the six following gymnastics courses. Analyses revealed that (1) teachers' expectations were not related to students' initial self-determined motivation, (2) overall, teachers interacted less frequently with students that they expected to be more motivated, and (3) teachers were much more controlling with students that they believed to be not motivated. The results are discussed in terms of the consequences of this differentiated treatment for students' autonomous motivation.

Key words: expectations effect, self-determination theory, motivation, differential treatment, autonomy-support, control, teaching behaviors.

A considerable amount of research in the last 20 years has examined the implications of being intrinsically or extrinsically motivated in the classroom. More specifically, research guided by self-determination theory (SDT; see Deci, Vallerand, Pelletier, & Ryan, 1991; Deci & Ryan, 1985, 2000; Reeve, 2002; Ryan & Deci, 2000, 2002 for reviews), has shown that the extent to which students' behaviors are intrinsically motivated and autonomous (i.e., fully volitional, freely pursued and wholly endorsed by the self) as opposed

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to extrinsically motivated and controlled (i.e., pressured and directed by external or internal forces leaving people feeling like they have no choice), have important consequences for the quality of students' learning, performance, and well-being.

According to SDT, the central concept that could explain the relationship between the students' motivation and their experience in the classroom is the degree to which their behaviors are self-determined. SDT proposes different types of motivation (Deci & Ryan, 1985, 2000; Ryan & Deci, 2002) which can be ordered along a continuum ranging from high (intrinsic motivation, integrated and identified regulation) to low (introjected, external regulation, and amotivation) levels of self-determination. *Intrinsic* motivation (i.e., when people do an activity for the pleasure it provides or for its own sake) is highly autonomous and represents the prototype of self-determination, whereas *amotivation* (i.e., when individuals do not perceive contingency between their actions and subsequent outcomes, do not value the activity, or felt incompetent) is the least self-determined type of motivation. *External* regulation (i.e., when people behave in order to attain a desired consequence such as tangible rewards or to avoid a threatened punishment), *introjected* regulation (i.e., when individuals do behaviors in order to avoid anxiety or to experience ego-enhancing pride), *identified* regulation (i.e., when people choice fully decide to engage in behavior that is not interesting per se, but nevertheless important, because it helps them reach valued personal goals), and integrated regulation (i.e., when activity is fully assimilated to the self because it has been evaluated and brought into congruence or harmony with other aspects of an individual's values and identity)[1] are four different forms of motivation ordered from lower to higher levels of self-determination, that fall between intrinsic motivation and amotivation. Much research now supports the self-determination continuum in the realms of education (e.g., Vallerand, Pelletier, Blais, Brière, Senécal, & Vallières, 1993), sport (e.g., Pelletier, Fortier, Vallerand, Tuson, Brière, & Blais, 1995) or exercise (e.g., Li, 1999).

Because it is postulated that higher levels of self-determination are associated with better psychological functioning, SDT proposes that the extent to which an individual is self-determined is strongly reflected in the quality of his or her experience. For example, it has been shown that higher levels of self-determined motivation are related to several positive outcomes, such as effort, academic achievement, engagement, quality of conceptual learning, preference for optimal challenge, creativity, rates of retention (see Reeve, 2002; Ryan & Deci, 2000, for reviews). Although research within the sport or physical education (PE) context are more scarce, they also confirm the results observed in the education domain (see Vallerand & Rousseau, 2001, for a review). For example, studies have shown that self-determined motivation is a significant predictor of long-term perseverance in handball (Sarrazin, Vallerand, Guillet, Pelletier, & Cury, 2002) or in swimming (Pelletier, Fortier, Vallerand, & Brière, 2001). It also predicts positively the

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[1] This regulation was not assessed in the present study because pilot data collected during the development of the SMS (Pelletier et al., 1995) revealed that this regulation did not emerge as a perceived reason for participation in the physical domain. Furthermore, this type of motivation seems more often encountered among adults rather than children (Vallerand, 1997).

intention of being physically active in the future or to play sport (e.g., Ntoumanis, 2001; Pelletier et al., 1995; Standage, Duda, & Ntoumanis, 2003) and self-reported effort in PE (Ntoumanis, 2001) or in sport (Pelletier et al., 1995), and negatively with boredom in PE (Ntoumanis, 2001).

THE DETERMINANTS OF MOTIVATION

According to SDT, the type of motivation people manifest within a particular context is strongly related to the satisfaction of basic psychological needs within that context. That is, the more factors in the social environment that support the needs for autonomy (i.e., feeling like the 'origin' and not the 'pawn' of one's actions), competence (i.e., feeling effective in one's ongoing interactions), and relatedness (i.e., feeling connected to others, to caring for and being cared for by those others), the more people will be intrinsically and autonomously motivated (Deci & Ryan, 1985, 2000; Ryan & Deci, 2002). More specifically, in the educational context, research reveals that the degree to which teachers are autonomy supportive versus controlling has a particularly important effect on students' motivation (Deci, Eghrari, Patrick, & Leone, 1994; Reeve, Bolt, & Cai, 1999; Vallerand et al., 1997; see Reeve, 2002; Ryan & Deci, 2000, for reviews). In essence, autonomy-supportive teachers are responsive (e.g., spend time listening, acknowledge the student's feelings and perspective), supportive (e.g., praise the quality of performance), explicative (e.g., provide a rationale for tasks and limits), and provide choice and opportunities for initiative taking and independent work. In opposition, controlling teachers essentially take charge (e.g., hold the instructional materials, use directives/commands), shape students toward a right answer (e.g., give solution), and motivate through pressure (e.g., threats, criticisms and deadlines) (see Reeve, 2002; Ryan & Deci, 2000, and Mageau & Vallerand, 2003, for reviews respectively in educational and sport domains).

THE DETERMINANTS OF TEACHERS INTERPERSONAL BEHAVIORS

Given the importance of these dimensions of teaching behaviors for student's motivation and subsequent educational outcomes, it is important to understand why some teachers provide more autonomy support while others are primarily controlling. Few studies have investigated this issue. For example, it has been shown that some teachers' characteristics like their general orientation toward behaving with others in a controlling versus autonomy supportive way (e.g., Deci, Schwartz, Sheinman, & Ryan, 1981), their own motivational orientation (e.g., Pelletier, Séguin-Lévesque, & Legault, 2002; Wild, Enzle, Nix, & Deci, 1997), and (c) their lay theories regarding ways of optimizing intrinsic motivation (e.g., Boggiano, Barrett, Weiher, McClelland, & Lusk, 1987) represent predictors of their teaching behaviors. Research has also demonstrated that some contextual factors have an influence on teachers' interpersonal behaviors. Among those factors, two important sources of influence have been identified: the pressure from above and a pressure from below (Pelletier, et al., 2002). The pressure from above relates to pressures

that are placed on teachers by demands in the school organization. For example, when higher authorities impose restrictions about a curriculum (e.g., Pelletier et al., 2002) or when teachers are responsible for their students being able to perform up to standards (e.g., Deci, Spiegel, Ryan, Koestner, & Kauffman, 1982), then teachers tend to become more controlling with their students. The pressure from below relates to the influence that students may have on teachers. For example, the students' performance and their behavior at school can entail more or less controlling behaviors among teachers. More specifically, students who are listless or disruptive create tension for teachers, which can easily push them to become controlling with these students.

THE EFFECTS OF TEACHERS EXPECTATIONS

An interesting aspect of the influence of students' characteristics on teacher behaviors is that this influence is not only determined by the actual students' characteristics but also by the teachers' perceptions or beliefs about those characteristics. For instance, a considerable amount of studies on self-fulfilling prophecies have shown that teachers' beliefs about their students' abilities or motivation had an influence on their behaviors towards their students.

Merton (1948) first introduced the term of self-fulfilling prophecy to refer to circumstances in which people's belief or expectation about something could lead them to behave in ways that cause the belief to come true even if the belief was initially incorrect. In educational context, the phenomenon is better known as "Pygmalion effect" (Rosenthal & Jacobson, 1968). In the last thirty years, this topic has generated many studies in the education domain (see, Good & Brophy, 2000; Jussim, Smith, Madon, & Palumbo, 1998, for reviews), in physical education classes or in competitive sport context (see, Horn, Lox, & Labrador, 1998; Martinek, 1989, 1991; for reviews). In all of these contexts the researchers (e.g., Good & Brophy, 2000; Horn et al., 1998; Jussim et al., 1998; Martinek, 1989) generally agree on several steps by which expectancies can be self-fulfilling: (a) the perceiver (e.g., a teacher) adopts particular beliefs (e.g., future achievement) about a target (e.g., a student), (b) the perceiver treats the target differently (qualitatively and quantitatively) according to these expectations (e.g., he/she is more supportive, gives clearer and more positive feedback, pays more attention and provides more opportunities for learning difficult subject matter to the high expectation), (c) this differential treatment influences the target's behavior who, in turn, confirms the perceiver's initial expectancies (e.g., the students who were more supported and who had more opportunities for learning have more chances than the others to carry out good performances), (d) this behavioral confirmation reinforces the target's original expectation, and the process continues.

The majority of the studies in the educational domain (including sport and PE) have examined teachers' expectations concerning students' potential ability or competence (e.g., Trouilloud, Sarrazin, Martinek, & Guillet, 2002). However, it is highly probable that teachers elaborate beliefs related to other students' characteristics such as the students' capacity to make efforts, to spontaneously engage in an activity, to be disruptive, which are things that "count" for a teacher, as shown by works on educational attitudes (e.g., Wolfe & Engel, 1978; Yee & Frutcher, 1971). For instance, teachers seem to show clear preferences for students who work hard and make efforts, in spite of limited abilities (e.g., Covington & Omelich, 1979). Similar results were found in PE by Biddle and Goudas (1997). In this study, teacher clearly preferred to interact with motivated and hard-working students, whatever their level of ability or achievement.

It is also highly probable that teachers develop beliefs and expectations about the specific nature of their students' motivation. Pelletier and Vallerand (1996) have examined more specifically whether a supervisor's beliefs about a subordinate's intrinsic (or extrinsic) motivation could induce the supervisor to support autonomy (or to be controlling) with the subordinate, which in turn, would cause the behavior of the subordinate to confirm the supervisor's beliefs. In two experimental studies, the authors observed that when "teacher-subjects" were led to believe that the "student-subject" they were about to teach was extrinsically motivated, rather than intrinsically motivated, they were more controlling toward the students, which in turn led the students to display low levels of intrinsic motivation toward the puzzles. On the other hand, teachers who were led to believe that they were interacting with intrinsically motivated students were more autonomy supportive and their student showed higher levels of intrinsic motivation. Thus, the teachers' beliefs about the student's motivation actually created their own reality.

Two other studies examine whether such effects could occur in naturalistic settings (Jussim, 1989). Skinner and Belmont (1993) examined the effects of three dimensions of teacher behavior (involvement, structure, and autonomy support) on students' engagement across a school year as well as reciprocal effect of student's engagement on teacher's behavior. Correlational and path analyses revealed that students' engagement (measured in the spring) was associated with the three dimensions of teacher's behavior (as measured in the fall). More interestingly, reciprocal effects of student motivation on teacher behavior were also found. Teachers' perceptions of students' engagement predicted teachers' interactions with students across the school year. The more students were engaged, the more teachers were autonomy supportive. However, teaching behavior was assessed by teachers self-report of their interactions with each child in their classrooms. Consequently, students' engagement and autonomy supporting behavior shared systematic error variation that may have resulted in an overestimation of the effects. Moreover, the correlations between a teacher's behavior and students' perceptions of them were low. Because of those limitations, it seemed important to have an objective (independent) measure of those variables to check if the results reported by the authors were not a methodological artifact.

Sarrazin, Trouilloud, Tessier, Chanal, and Bois (2005) designed a similar study to address specifically those issues. More exactly, in that study the teaching sessions were videotaped and rated by independent coders to assess the frequency and the style (i.e., controlling vs. autonomy-supportive) of interactions between teachers and students. Results showed that (1) PE teachers used preferentially a controlling style (in 95% of the interactions), and (2) teacher's positive expectations about their students' motivation were positively related to an autonomy-supportive style. Nevertheless, this study suffered

also from few methodological problems. First, students of the various classes were taught different sports (volleyball, table tennis, badminton and indoor football). The specificity of each sport could modify the nature of the teacher-student relationship. Secondly, the high versus low expectations conditions were created by splitting the sample at the median. This created a loss of information insofar as all the full variability of the answers was not used. It was likely that a student who obtained a score of 1 (on a 7-points scale) was not completely similar to the one who obtains a score of 3 (even if the both are below the median split). Thirdly, all the teachers' behaviors were classified in two categories (controlling vs. autonomy-supportive behaviors). Thus each category included a great variety of different behaviors (e.g., manner of asking a question, manner of holding instructional materials and organizational instruction, type of feedback, and so on) (see Mageau & Vallerand, 2003; Reeve et al., 1999; Reeve, 2002, for reviews). A more refined analysis of the relationship between teachers' expectations and specific teaching behaviors could undoubtedly provide a more complete understanding of how the teachers' expectations are related to students' motivation. Finally, in order to take into account the variability of behaviors related to the personal style of each teacher (independently of the expectations they hold for each of their students) an horizontal weighting was carried out which consisted in converting each category of behavior to a proportion by dividing the number of individual communications received by a student by the total number of individual communications received by that student (see for a similar coding, Sinclair & Vealey, 1989). As a consequence, the total number of received communications was expressed in percentages which resulted in a loss of information about the total number of communications (e.g., a student who receives 3 controlling behaviors on a total of 4 obtained the same score, 75%, as another student who received 15 on a total of 20). Also, this led to categorization of autonomy supportive and controlling behaviors as exclusive (i.e., if a student received 33% of autonomy-supportive behavior, he/she automatically obtained a controlling behavior score of 66%). It was then impossible to determine how the two dimensions of teacher behaviors fluctuated in function of the beliefs about each student's motivation.

In sum, so far few studies have examined how teachers' beliefs or expectations about students' motivation are related to teachers' interpersonal behaviors in the laboratory and in naturalistic contexts. According to these studies, teachers who expect their students to be intrinsically motivated or self-determined are more likely to behave in an autonomy-supportive way toward their students while teachers that expect their students to be extrinsically motivated or non self-determined are more likely to behave in a controlling way with their students. Although this research have shown once again that teachers expectations could influence their behaviors, we do not know with precision what are the specific autonomy supportive or controlling behaviors that are related to teachers' expectations and how those behaviors relate to each other. In other words, it is difficult to determine if teachers become more autonomy supportive when they expect to interact with a self-determined student or if they become controlling when they expect to interact with a non self-determined student, and what are the specific autonomy supportive or controlling behaviors affected by those expectations.

PURPOSE OF THE STUDY AND HYPOTHESES

The purpose of the present study was to answer those questions by replicating and extending the Sarrazin et al's study. A sample of 172 students and their teachers were observed in PE classes where the same sport activity was taught (gymnastics). Several categories of controlling and autonomy-supportive teaching behaviors were coded and related with the teachers' expectations identified at the beginning of an 8-weeks training program. Finally, a new data coding was used which takes into account both the inter-teacher variability and the quantity of the overt teaching behaviors.

According to self-fulfilling prophecy and SDT we made the general hypothesis that teachers would treat students differently, qualitatively and quantitatively, according to their expectations regarding their students' motivation. We defined expectations about students' motivation in function of their current meaning in the educational field, namely the teachers' *beliefs about the students' capacity to provide efforts and to become involved spontaneously in the school tasks*. More precisely, we hypothesized first, concerning the frequency of interactions, that teachers would initiate more interactions when they had "high" than "low" expectations towards their students, because those expectations correspond more to their definition of the "good" student (e.g., Biddle & Goudas, 1997; Covington & Omelich, 1979).

Second, concerning the type of interactions, we hypothesized that teachers would behave in an autonomy-supportive way when they had "high" versus "low" expectations about their students' motivation. By contrast, they would become more controlling when they have "low" versus "high" expectations about their students' motivation (Pelletier & Vallerand, 1996; Sarrazin et al., 2005; Skinner & Belmont, 1993). However, we did not have specific hypotheses about the precise nature of the autonomy supportive or controlling behaviors that teachers would emit.

Finally, we hypothesized that teachers' behaviors should be primarily influenced by their "beliefs" or the expectations they have about the students' motivation independently of the students "true" motivation. In other words, teachers should be more controlling when they believe or expect that their students are less motivated, uninterested or amotivated even if their behavior is in fact not so different from the behaviors of the other students.

METHOD

PARTICIPANTS

Seven PE teachers (that ranged in age from 33 to 46 years) and their 172 students (98 females and 74 males, 6th- to 9th-grades students; M age = 13.14 years, SD = 1.47, range = 11- 16 years) from 9 classes in a single junior high school situated in the south east of France volunteered to participate to the study.

PROCEDURES

In France, physical education is a compulsory subject for all high school students. Generally, physical education teachers teach each of several physical and sporting activities in 8-weeks cycles (i.e., 8 lessons of 2 hours). The study was conducted during gymnastics cycles in scheduled physical education lessons. Prior to the initiation of the research, teachers, parents, students and school administrators were asked to participate in an observational study. All participants were guaranteed anonymity. Because of the nature of the investigation, the teachers were not told the exact purpose of the study or the specific variables under investigation. Rather they were told that the researchers were only interested in different types of student behavior exhibited during PE courses without alluding to the "Pygmalion effect". This was a precautionary measure taken to prevent the Hawthorne effect (e.g., Adair, Sharpe, & Huynh, 1989) from influencing teachers' interactions with their students. Because partial deception was employed, appropriate debriefing was carried out following the data collection.

At the end of the first lesson, teachers' expectations about students' motivation and students' self-determined motivation were assessed. Next, the teacher-student interactions were videotaped during the 6 following gymnastics courses with a digital camcorder. The teachers were equipped with a small microphone fixed on the collar of their cloth, with a transceiver allowing a precise recording of the content of the communications and the synchronization between the pictures and the sound. In order to not perturb the teacher and the students, the camcorder was situated in a fixed spot with a large angle, but at a sufficient distance to identify the student concerned by the interactions.

MEASURES

Teacher's Expectations about Students' Motivation. At the end of the first lesson, the teachers filed a questionnaire assessing for each student their expectations about effort (e.g., *"according to you, will this student provide efforts during this gymnastic session?"*) and autonomy (e.g., *"according to you, will this student be able to work in an autonomous way during this gymnastics session?"*). Responses were made on a 7-points frequency scale anchored by 1 (*never*) and 7 (*always*). These two items were strongly correlated ($r = .78$, $p < .001$), and their average was calculated to form a single dimension called "expectancies of motivation".

Students' self-determined motivation. Motivation toward gymnastics was assessed at the beginning of the teaching cycle, with an adapted French version of the Sport Motivation Scale (Pelletier et al., 1995). This tool is a 28-items inventory that assesses the multifaceted motivational regulations proposed by SDT. These types of motivation include the intrinsic motivation to know (IMK; e.g., "I go in gymnastics for the fun of discovering new skills/techniques"), the intrinsic motivation toward accomplishments (IMA; e.g., "...for the satisfaction I experience while I am perfecting my abilities"), the intrinsic motivation to experience stimulation (IMS; e.g., "...for the excitement I feel when I am really involved in the activity"), identified regulation (IDR; e.g., "...because what I learn in PE will be useful later"), introjected regulation (INR; e.g., "...because I must do PE to feel good about

myself"), external regulation (EXR; e.g., "...because I will be marked"), and amotivation (AM; e.g., "I don't know why I do gymnastics, if I could, I will get exempted"). Responses were made on a 7-points scale ranging from 1 (*strongly disagree*) and 7 (*strongly agree*). Each subscale had an adequate internal consistency ($\alpha = .87$, $.87$, $.85$, $.85$, $.78$, $.68$, and $.83$ respectively for IMK, IMA, IMS, IDR, INR, EXR and AM). In order to have a composite indicator of the students' motivation, the self-determination index was used (see Grolnick & Ryan, 1987; Vallerand, 1997). This index was calculated by giving each subscale a specific weight according to its respective place on the self-determination continuum, in accordance with the following formula: $[(2*(IMK+IMA+IMS)/3)+IDR]$ - $[((INR+EXR)/2)+(2*AM)]$. In previous studies this index has shown good reliability and predictive validity (see, Vallerand, 1997).

Videotape Analyses. Each class was videotaped during six lessons of two hours. Only the teaching behaviors that were directed towards *individual* students were coded (i.e., all the communications addressed to a group or the whole class were not assessed). Given that the most motivated students are more likely to seek interactions with their teacher (and thus to increase artificially the number of feedbacks they receive), only the teachers' behaviors initiated by the teachers were taken into account (see Horn, 1984 for a similar analysis). The student "targeted" has been identified during the coding session with a passport photo. Both the *frequency* and the *type* scores were computed for each student based on the number of communications given to that student from the teacher. Fifteen categories of verbal interactions derived from previous works in school (Reeve, 2002; Reeve, et al., 1999) and sport (Mageau & Vallerand, 2003) domains were coded: *organizational communications (told in an autonomy-supportive vs. controlling vs. neutral way), technical or tactical hints (told in an autonomy-supportive vs. controlling vs. neutral way), questions (asked in an autonomy-supportive vs. controlling vs. neutral way), praises, encouragements, perspective-talking statements, negative communications (related to the student's social behavior vs. student's work), criticisms* (see Table 1 for the operational definitions and examples of these 15 categories). Given the complexity to classify some teaching behaviors either as controlling or autonomy supportive, a "neutral" category was added for some communications.

CODING RELIABILITY AND DATA ANALYSIS

Teachers' behaviors were coded by two coders trained with this type of analysis and that were unaware of the teachers' expectations. Five lessons randomly selected were separately coded by the two observers, to estimate inter-rater reliability. Relative frequency scores within the categories were then compared through correlational analyses to determine the degree of agreement between raters. To estimate intra-rater reliability, two coders scored the same random sample of lessons again 2 weeks later. Analyses revealed a good homogeneity inter-rater (between .70 and .95; M = .80) and intra-rater (between .75 and 98; M = .85) overall categories of utterances.

A Principal-components factor analysis with Oblimin rotations was carried out on 12 utterances (the 3 "neutral" categories were not included in the analyses). Four factors

Table 1. Types of verbal interactions which were coded in the study

Types of verbal interactions:	Definitions:	Examples:
1. Organizational communications told		
—in a controlling way	- Frequency of the organizational commands that the student must, has to, or ought to do something.	"You must move into the left-hand line"
—in a neutral way	- Frequency of organizational statements for which the tone is neither controlling nor autonomy-supportive.	"Bring the springboard please"
—in an autonomy-supportive way	- Frequency of statements that provide a choice in the organization of the material.	"You can choose the group you want"
2. Technical or tactical hints told		
—in a controlling way	- Frequency of technical or tactical directives that impose a motor skill on the student.	"Extend the arms, I have told you that 10 times"
—in a neutral way	- Frequency of technical or tactical statements for which the tone is neither controlling nor autonomy-supportive, the intention is above all to make the student progress.	"Bend your leg at the reception of the jump you will succeed better"
—in an autonomy-Supportive way	- Frequency of suggestions that encourage pupils to take initiatives and to solve problems independently	"Maybe you could try different positions to jump over this obstacle and choice the best"
3. Questions asked		
—in a controlling way	- Frequency of directives posed as a question.	"What have I just said, Paul?"
—in a neutral way	- Frequency of questions for which the tone is neither controlling nor autonomy-supportive.	"Is it your last try ?"
—in an autonomy-Supportive way	- Frequency of questions that provide choices to the pupil	"Which exercise do you want to start with?"
4. Praises	Frequency of verbal approvals of the student's performance	"Well done!" "Good job!"
5. Encouragements	Frequency of pep-talk statements to boost the student's effort	"Now you're getting the hang of it; let's go!"
6. Perspective-talking statements	Empathic statements reflecting an understanding of the student's perspective	"I can see that you are starting to be tired"
7. Negative communications related to		
—the student's social behavior	- Frequency of directives intended to restore discipline into the classroom.	"Shut up Paul!"
—the student's work	- Frequency of directives meant to emphasize the lack of efforts and which could be sarcastic.	"Do not do too much, you will wear away the apparatus!"
8. Criticisms	Frequency of hurtful statements	"You are completely numskull!".

emerged (based on the number of factors with eigenvalues greater than 1). The first factor extracted accounted for 28% of the variance and contained 5 utterances (with a weight greater than .45) related to the teachers' controlling behaviors: organizational communications told in a controlling way (.68), hints told in a controlling way (.69), controlling questions (.60), negative communications related to the student's social behavior (.46) and negative communications related to the student's work (.56). The second factor accounted for 14% of the variance and contained 3 utterances related to the teachers' autonomy-supportive behaviors: organizational communications told in an autonomy supportive way (.72), questions asked in an autonomy supportive way (.51) and hints told in an autonomy supportive way (.58). The third factor accounted for 13% of the variance and contained 2 utterances: encouragements (.47) and perspective-talking statements (.73). Finally, the fourth factor accounted for 9% of the variance and contained only one utterance: criticisms (.67). Praises loaded on none of the factors. The behaviors of the first two factors were summed and named controlling style and autonomy-supportive style respectively[2].

In order to take into account the few absences of certain students to some courses (generally for health reasons), the data were calculated in mean frequency per lesson (i.e., 2 hours). Otherwise, a considerable controversy exists in the literature concerning the appropriate unit of analysis to be used in examining instructional behavior (see, Horn, 1984). Given the variability of teaching behaviors which exists between teachers (e.g., Good & Brophy, 2000) and given that teacher-student interactions are not independent of the setting in which they occur, it seems unsuitable to use the individual student as the unit of analysis without taking into account the specificity of each class. Therefore, the methodology proposed by Horn (1984) was used. The mean frequency of each utterance for each student was converted to standard scores which reflected the number of standard deviations that each student was from the class mean on each variable. For example, if David received an average of 5 hints per lesson told in a controlling way, in a class where the teacher gives on average 2.5 hints of this type with a standard deviation of 1.5. David will obtain then the score of 1.67 (5 - 2.5/ 1.5); this means that he is 1.67 standard deviation above the mean of his class concerning this hints. If Richard received an average of 5 controlling hints, in a class where the teacher gives on average 4.5 hints of this type with a standard deviation of 2. Richard will obtain then the score of 0.25 (5 - 4.5/ 2); that is, he is 0.25 standard deviation above the mean of his class concerning this hints). Thus these standardized scores allowed the

[2] Neutral categories were excluded of the factor analysis because they did not fit really with any SDT categories. Nevertheless, the factor analysis carried out with all the 15 categories (i.e., including the 3 neutral categories) reveals relatively identical results. Five factors with eigenvalues greater than 1 emerged. Two are rigorously identical to the first two factors found in the former factorial analysis (i.e., the ones named "controlling style" and "autonomy-supportive style" respectively), a third factor gathers the three neutral categories with praises, and encouragements. On the last two factors only one item loaded significantly: perspective-talking statements on the first and criticisms on the second. Given the difficulty to named these last three factors our strategy to gather only the items on an identifiable factor does not seem affected by the results of this factor analysis.

comparison of the students between them but also recognized the dependency which occurs between teacher-student interactions and the general setting in which they occur. The same standardization was made for the expectation variable.

RESULTS

The observational procedures described above resulted in the collection of 6,369 teaching behaviors, as summed across all teachers. Descriptive statistics (see Table 2) revealed that the average number of teaching utterances received by an individual student in a two hours lesson was 12.52, with considerable variation among students (from 0 to 99; $SD = 11.92$). In terms of average frequency across all teachers and students, the results showed a prevalence of controlling behaviors (37.22%), followed-up by hints told in a neutral way (23.44%) and praise (11.81%). The autonomy-supportive behaviors only represented 4.6% of the communications (see Table 2).

To test the hypotheses, we relied on partial correlations between teachers' expectations and teaching behaviors while controlling for differences in students' self-determined motivation. Because the students self-determined motivation was moderately correlated with the teachers' expectations ($r = .30$, $p < .001$) and it had little effect on the teacher's behavior ($Mr = .09$), so the magnitude of the partial correlations were very similar in all cases to the magnitude of the zero-order correlations shown in Table 2.

Overall, the results showed that the frequency of communications was negatively correlated with the teachers' expectations ($pr = -.30$, $p < .001$). That is, when teachers had expectations of high motivation they were initiating less interactions with their students. Otherwise, teachers' expectations correlated significantly with 9 of 15 utterances. When teachers had expectations of low motivation, they were more likely to give organizational communications in a controlling way ($pr = -.44$, $p < .001$), provide hints in a controlling way ($pr = -.18$, $p < .05$) or in a neutral way ($pr = -.21$, $p < .001$), to ask controlling questions ($pr = -.35$, $p < .001$), to encourage ($pr = -.15$, $p < .05$), to criticize ($pr = -.20$, $p < .01$), to give negative communications related to the student's social behavior ($pr = -.26$, $p < .001$) or work ($pr = -.20$, $p < .01$) and they were less likely to ask autonomy-supportive questions ($pr = .15$, $p < .05$). When an $\alpha < .003$ (to protect against making a Type 1 error) was used (based on Hays' (1994) formula: α^{test}/number of tests, or .05/15), teachers' expectations were still significantly correlated with four categories of behaviors (organizational communications told in a controlling way, controlling questions, negative communications related to the student's social behavior or work). Finally, when the different categories of behaviors were summed to create an overall category of controlling behaviors and an overall category of autonomy supportive behavior, only the controlling teaching category was significantly correlated with the teachers' expectations ($pr = -.40$, $p < .001$).

Table 2. Descriptive statistics for all dependent measures and their correlation with teachers' expectancies of motivation

Variables	M	SD	Range	Percentage	r with expectancy[1]
Utterances:					
1. Organizational communications told in a controlling way	1.35	1.72	0 to 10	10.79	-.44***
2. Organizational communications told in a neutral way	1.22	1.19	0 to 6	9.72	-.14
3. Organizational communications told in an autonomy-supportive way	0.16	0.27	0 to 1.5	1.24	.05
4. Hints told in a controlling way	2.11	2.59	0 to 18.5	16.82	-.18*
5. Hints told in a neutral way	2.93	3.57	0 to 35	23.44	-.21**
6. Hints told in an autonomy-Supportive way	0.18	0.36	0 to 2.75	1.42	-.07
7. Controlling questions	0.56	0.91	0 to 5	4.43	-.35***
8. Neutral questions	0.72	0.91	0 to 6	5.80	-.12
9. Autonomy-supportive questions	0.24	0.37	0 to 2	1.94	.15*
10. Praises	1.48	2.24	0 to 18	11.81	-.01
11. Encouragements	0.86	1.11	0 to 6	6.83	-.15*
12. Perspective-talking statements	0.24	0.37	0 to 2	1.94	-.06
13. Negative communications related to the student's social behavior	0.24	0.55	0 to 4	1.88	-.33***
14. Negative communications related to the student's work	0.41	0.74	0 to 26	3.31	-.26***
15. Criticisms	0.03	0.16	0 to 2	0.27	-.20**
Teaching style:					
Controlling (1+4+7+13+14)	4.66	5.26	0 to 31	37.22	-.40***
Autonomy-supportive (3+6+9)	0.57	0.64	0 to 4	4.60	.12
Number of utterances	12.52	11.92	0 to 99		-.30***

Note. Each behavior is coded in mean frequency in a two hours lesson. [1] Partial correlation between teachers' expectancies and behaviors (each variables being standardized as a function of the class), controlling for student's self-determined motivation. *p<.05, ** p<.01, *** p<.001.

DISCUSSION

Research on self-fulfilling prophecies has generated a considerable amount of information in the school context in general and in the sport and PE context in particular. This research shows generally that teachers/coaches' expectations have a strong influence on the way that teachers or coaches treat the students/athletes. Most of those studies have specifically focused on the effects of expectations about students' or athletes' potential, ability or competence. The present study extended this line of research by examining

the effects of a specific type of expectations about students' motivation on the extent to which teachers supported autonomy or became controlling towards the student. Our decision to focus on those specific interpersonal behaviors was justified by the vast amount of information generated by two decades of empirical work on the application of self-determination theory in the educational context. Essentially, that research has shown that autonomous or self-determined students thrive in educational settings, and that high levels of students' self-determined motivation are observed when teachers support the students' autonomy (Deci, et al., 1991; Reeve, 2002; Ryan & Deci, 2000, for reviews). Thus, it seemed important to know more about the determinants of such behaviors. In agreement with past research on self-fulfilling prophecy and SDT, we made the general hypothesis that teachers would treat students differently both quantitatively and qualitatively according to their expectations concerning their students' motivation. More specifically, we hypothesized that teachers would initiate more interactions with students that were perceived as being more motivated, that they would show more autonomy support with those students, and that they would be more controlling with the students that were perceived as being less motivated.

Our results offered partial support for the hypotheses. Although teachers supported more the autonomy of students that were perceived as being motivated and they were more controlling with students that perceived as being less motivated, overall our results have shown that teachers initiated more communications and interactions when they held the expectation that a student had a low level of motivation.

This last result is rather in contradiction with previous work carried out in the sport context (e.g., Horn, 1984; Sinclair & Vealey, 1989; Solomon, Striegel, Eliot, Heon, Maas, & Wayda, 1996), which has shown that coaches initiated more interactions when they had "high" expectations towards their athletes. This difference in the results observed may be attributed to the fact that previous studies in the sport area observed coaches' behaviors in competitive contexts where the main purpose of the interactions was the victory and the optimization of the team performance. Because winning in a competitive context is a very important goal, it is comprehensible that coaches may focus their interactions on the athletes that increase the chances on achieving that goal. By contrast the educational context may be associated with a different type of goals where teachers are probably more centered on the development of skills and the socialization of all the students. This may lead teachers to spend more time with the students who are perceived as lacking motivation. As our results suggest, teachers seem to be preoccupied by the students that were perceived as being less motivated. However, what was even more interesting was the fact that teachers were mainly controlling in their interactions with the students, more specifically with the students that were perceived as being less motivated.

In agreement with past studies on the influence of teachers' beliefs about students' motivation on teachers' interpersonal behaviors (e.g., Pelletier & Vallerand, 1996; Sarrazin et al., in press; Skinner & Belmond, 1993), we were expecting a more balanced effect where teachers would be more autonomy supportive with students that were perceived as being more motivated, and more controlling with students that were perceived as being less motivated. Although, our results partially confirmed this hypothesis, they showed

that teachers were particularly controlling (i.e., by giving organizational communications in a controlling way, providing hints in a controlling way, asking controlling questions, and providing negative communications related to the student's social behavior or work) with all students but more specifically with students that were perceived as being less motivated. This effect could be explained by the possibility that the teachers were globally expecting to interact with students that had low levels of motivation because the course is mandatory for all the students. An examination of the mean for the self-determination index through the classes tends to show that the students' self-determination level was relatively low ($M = 2.21$) when we consider that the possible range for that index (-18 to +18). It is also possible, as shown by Pelletier et al.(2002), that, overall, the teachers' behaviors were affected by other factors such as their implicit theory about the way teachers should interact with their students in physical education classes, or the pressure to achieve a certain level of performance that could be coming from other sources (ex., the school's direction, the teachers' colleagues, or the parents). Because those factors were not measured in the present study, it is difficult to determine with precision why the teachers were apparently so controlling with their students.

Despite the fact that teachers were more controlling than autonomy supportive, it was still unexpected to find such a low level of autonomy support with the students perceived as more motivated. In fact, although the correlation between the teachers' expectations and the autonomy-supportive style is in agreement with the hypothesis, the level of significance of the correlation is marginal ($pr = .12$, $p = .12$). Only one category of autonomy supportive behaviors tends to be significant (to ask autonomy-supportive questions, pr=.15, p=.049). Nevertheless, it should be noted that the average frequency of the autonomy-supportive behaviors is weak (less than five percent of the interactions). It seemed that the PE teachers involved in the present study, like the Sarrazin et al.'s (2005) study, are more inclined to use, or more at ease with, controlling strategies than autonomy-supportive ones. Consequently, this teaching style does not seem to constitute (at least in this study) a meaningful indicator of differential treatment between students.

When we consider globally the results of the present study, a question remains: why are teachers more controlling with students that were perceived as being less motivated? Some laboratory studies have tried to answer that question (see Deci & Ryan, 1985, for a review). First, student passivity is aversive. It may make a teacher feel incompetent or unliked by the student. In addition, passivity can be interpreted as lack of "internal" motivation, which leads teachers to apply "external" pressure to participate in classroom activities. Unfortunately, past studies (see, Deci et al., 1991; Ryan & Deci, 2000, for reviews) has shown that ironically, such teaching behaviors tend to lead to the opposite effects than the one pursued, which is to increase the students motivation. As shown by research on SDT, contexts that are controlling undermine intrinsic motivation and impair internalization, resulting in more controlled types of regulation or no motivation at all.

It is interesting to note that teachers that expected to interact with students that were less motivated did not rely solely on controlling strategies, they also provided more encouragements ($pr = -.15$ <.05), perhaps because teachers considered that as a good strategy to motivate students that are not motivated. It was not entirely clear if that

strategy could be classified as an autonomy-supportive or controlling strategy. In the present research, like previous research in education (Reeve et al., 1999), encouragements loaded on a distinct factor than the ones representing the controlling and the autonomy supportive behaviors. Along the same lines, giving praises did not load on any factors and it was not significantly related to teachers' expectancies ($r = -.01$; see Table 2). Past research has shown that the provision of positive competence feedback is an important determinant of individuals' intrinsic motivation (see Deci, Koestner, & Ryan, 1999, for a review). However, this research also suggests that providing positive feedback is a more complex than it might appear (Henderlong & Lepper, 2002), insofar as a feedback can be perceived as either informational (i.e., provides the person with information about his/her competence) or as controlling (i.e., it incites the person into reemitting the behavior). If the informational aspect is salient then positive feedback enhances people's intrinsic motivation. By contrast, if the controlling aspect is salient (when the teacher says for example "You did very well, just as you should") then positive feedback undermines people's intrinsic motivation. In the present study, our grid of analysis did not allow us to distinguish these two types of praise. It is perhaps why this type of utterance was not connected to the teachers' expectancies or with a particular teaching style.

It should be noted that these results were observed, after controlling for the students' self-determined level of motivation. This variable was practically not correlated with any teaching behaviors, and moderately correlated with the teachers expectations ($r = .30$, $p < .001$). In other words, it is a teacher's *perception* of a student's motivation, more than the student's own motivation, that had an impact on the teacher interpersonal behaviors. As shown by Pelletier and Vallerand (1996), this could lead some students perceived as not motivated but that were in fact self-determined, to become less motivated because of the way they are treated by controlling behaviors teacher.

Nevertheless, it is necessary to put the role of teacher's expectations as a determinant of teachers' behaviors in perspective. Indeed, the moderate correlations ($prs \leq .44$) between teachers' expectations and their teaching behaviors (specifically their controlling behaviors) suggests that this variable can not explain by itself the strong proportion of controlling behaviors adopted by the PE teachers (see Table 2). In other words, the teachers' expectations are not the only significant determinant of the teaching interpersonal behaviors. Some teachers' characteristics like their ideologies, their lay theories, or they own motivation for their work are also significant determinants that may affect their teaching style. Moreover, contextual and/or institutional characteristics—such as the pressure from higher authorities or from parents, and the characteristics of the taught activity (e.g., the constraints related to the security management of the students)—can lead teachers to become more controlling. It would be interesting in future studies to examine how all those determinants relate to the different categories of teaching behaviors as measured in the present study. Multilevel analyses (e.g., Goldstein, 2003) with a large sample of students and classes seem particularly suited to this kind of question insofar as they allow the partition of variance associated with different effects into components associated with the individual student (e.g., teachers' expectations) and the class (e.g., teacher's lay theories, general motivational orientation, taught activities, and so on) levels.

In conclusion, this study provides more support for the idea that teachers' beliefs about their students' capacity to provide efforts and to become involved spontaneously in the school activities influence their teaching behaviors. More specifically, it seems that their beliefs about the lack of motivation among some students may lead them to become more controlling. As suggested by past studies on the consequence of such a style in an educational context (see Reeve, 2002; Ryan & Deci, 2000; Vallerand & Rousseau, 2001, for reviews), these controlling behaviors would, ironically, foster more compliance and less self-determined motivation among students, which would eventually confirm the teachers initial beliefs.

Lastly, given the motivational benefits of adopting an autonomy-supportive style, additional studies remain to be carried out on the reasons why PE teachers seem primarily controlling (is it a specific context of teaching?), and on the means of encouraging teachers to support more students' autonomy (Reeve, 1998).

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