Journal of Educational Psychology
2014, Vol. 106, No. 2, 541–554

0022-0663/14/$12.00 DOI: 10.1037/a0034399

Does Observed Controlling Teaching Behavior Relate to Students' Motivation in Physical Education?

Jotie De Meyer
University College Ghent and Ghent University

Isabel B. Tallir, Bart Soenens, Maarten Vansteenkiste, Nathalie Aelterman, and Lynn Van den Berghe
Ghent University

Lise Speleers
University College Ghent

Leen Haerens
Ghent University

Self-determination theory (SDT) has served as a theoretical framework for considerable research on teaching behavior and student motivation. The majority of studies have focused on need-supportive teaching behavior at the expense of need-thwarting teaching behavior (i.e., the "dark side" of teaching). The goal of the present study was to examine motivational dynamics involved in controlling teaching behavior in the context of physical education (PE). The majority of studies on observed teaching behavior were conducted in the laboratory. To augment the ecological validity in the present study, the behavior of PE teachers was videotaped to rate their controlling teaching behavior in a real-life setting. In a sample of 56 teachers and 702 secondary school students, controlling teaching behavior during a specific PE class, as observed by external raters, was related positively to students' perceived controlling teaching behavior and, through these perceptions, to controlled motivation and amotivation. These associations were obtained in spite of the low incidence of controlling teaching behaviors, suggesting that students may be quite sensitive to controlling teaching behaviors. No associations were found between observed controlling behavior and student autonomous motivation and students' perceptions of autonomy-supportive teaching. Practical implications and recommendations for PE teachers' professional development training are included.

Keywords: self-determination theory, psychological needs, teaching style, motivation, physical education

> "Come on Dean, just throw and catch (irritated). A boy of your age should be able to do this naturally. NO, NO, NO . . . STOP, NOT GOOD, come over here."

In both early and contemporary research on student motivation, it is recognized that teachers' way of interacting with students is of major educational importance as it affects students' enjoyment, learning, and engagement (e.g., Baird, 1973; Hamre & Pianta, 2001; Wentzel, 2002). A large number studies on the topic of teaching style have been conducted against the background of self-determination theory (SDT; Deci & Ryan, 2000), a broad theory on human motivation with applications in the context of education generally (e.g., Reeve, 2009; Vansteenkiste, Lens, & Deci, 2006) and in the context of physical education more specifically (e.g., Ntoumanis & Standage, 2009).

In SDT, autonomy-support is considered a key dimension of teaching style. Autonomy-supportive teachers try to foster students' sense of volition and willingness to put effort in their studying (Reeve, 2009). In contrast, and as illustrated in the introductory example, controlling teachers make use of pressuring tactics to make students think, feel, or behave in a specific way, thereby bypassing the students' viewpoint (Reeve, 2009; Soenens, Sierens, Vansteenkiste, Dochy, & Goossens, 2012). The degree to which teachers adopt an autonomy-supportive or relatively more controlling style is considered an important source of influence on the quality of students' motivation. Research in the context of physical education (PE) has furthermore shown that high-quality motivation for PE is a determinant of both activity levels and engagement in class (e.g., Aelterman et al., 2012) and the degree

This article was published Online First September 30, 2013.

Jotie De Meyer, Faculty of Education, Health and Social Work, University College Ghent, Ghent, Belgium, and Department of Movement and Sports Sciences, Ghent University, Ghent, Belgium; Isabel B. Tallir, Department of Movement and Sports Sciences, Ghent University; Bart Soenens, Maarten Vansteenkiste, and Nathalie Aelterman, Department of Developmental, Personality and Social Psychology, Ghent University; Lynn Van den Berghe, Department of Movement and Sports Sciences, Ghent University; Lise Speleers, Faculty of Education, Health and Social Work, University College Ghent; Leen Haerens, Department of Movement and Sports Sciences, Ghent University.

This research was partially supported by the PWO program (Practice Oriented Scientific Research) of the University College Ghent and by a research project grant of the Flemish Research Foundation (FWO Grant G.0234.10). Jotie De Meyer and Isabel B. Tallir contributed equally to this work.

Correspondence concerning this article should be addressed to Jotie De Meyer, Department of Movement and Sports Sciences, Ghent University, Watersportlaan 2, 9000 Ghent, Belgium. E-mail: jotie.demeyer@ugent.be

to which students adopt an active lifestyle outside of PE classes (Haerens, Kirk, Cardon, De Bourdeaudhuij, & Vansteenkiste, 2010).

Although several studies have examined the correlates of an autonomy-supportive teaching style, fewer have focused explicitly on the effects of controlling teaching. This study focuses on controlling teaching as such because it is increasingly recognized in SDT that the presence of controlling behavior cannot be equated simply with the absence of autonomy-supportive behavior (Bartholomew, Ntoumanis, Ryan, Bosch, & Thøgersen-Ntoumani, 2011). Controlling socialization would be characterized by relatively specific dynamics that deserve to be studied in their own right (Vansteenkiste & Ryan, in press).

Moreover, the few studies that addressed the role of controlling teaching style typically relied on student self-reports of teaching behaviors. Unfortunately, although convenient, self-reports may yield a response bias, thereby artificially inflating obtained relationships between teaching behavior and motivational outcomes. Therefore, observations of teaching behavior are of added value as they allow one to examine hypotheses concerning controlling teaching in a more conservative fashion. External observations also create the possibility of investigating the degree of convergence between observed and student perceived teaching behavior. Therefore, in the present study we observed and coded PE teachers' controlling behavior during a 50-min class period to examine whether and how coded observations would relate to student perceptions of controlling teaching and, in turn, to students' self-reported motives for putting effort in PE. A possible advantage of observing controlling teaching behavior during PE classes rather than during regular academic classes is that there might be more opportunities to observe a broad variety of teaching behaviors in PE classes. As students are typically spread around the gym and safety issues also come into play, it might be the case that teaching a PE class involves more provision of rules, instructions, monitoring, and continuous feedback than teaching a regular academic class. As such, there can be a larger variety statements that can be rated in terms of the quality of communication. Also, PE teachers interact with students both verbally and physically, again possibly resulting in a broader repertoire of teaching behaviors that can be rated in terms of their controlling character.

Basic Psychological Needs and Student Motivation for PE

Central to SDT is the formulation of three basic psychological needs (Ryan & Deci, 2002; Vansteenkiste, Niemiec, & Soenens, 2010). Specifically, the needs for autonomy (i.e., experiencing a sense of volitional and psychological freedom), competence (i.e., experiencing a sense of effectiveness), and relatedness (i.e., experiencing closeness and mutuality in interpersonal relationships) have been identified as fundamental psychological nutriments for optimal functioning and well-being, both at the interindividual (e.g., Adie, Duda, & Ntoumanis, 2012) and intraindividual level (e.g., Ryan, Bernstein, & Brown, 2010). Furthermore, SDT posits that, in the case of the frustration of the three basic psychological needs, people are likely to become vulnerable to ill-being and even pathology (e.g., Verstuyf, Vansteenkiste, Soenens, Boone, & Mouratidis, 2013).

Over the past few years, it has become increasingly clear that need satisfaction and need frustration should be differentiated. Although at first sight it may seem as if need frustration is exactly the opposite of need satisfaction, with both representing the opposite poles of a single continuum, increasingly it is recognized that need frustration cannot be equated with low need satisfaction. Indeed, the lack of fulfillment of the psychological needs does not by definition imply that the needs are actively frustrated (Bartholomew, Ntoumanis, Ryan, Bosch, & Thøgersen-Ntoumani, 2011; Sheldon & Gunz, 2009). To illustrate, although a student may not feel very connected to his peers during a class (low relatedness satisfaction), this does not imply that he or she feels rejected or excluded by them (high relatedness frustration). The distinction between need satisfaction and frustration is more than just a conceptual issue because both processes would relate to relatively specific developmental antecedents and educational outcomes (Vansteenkiste & Ryan, in press). That is, whereas need satisfaction would relate primarily to well-being, performance, and adjustment (e.g., class engagement), need frustration would be primarily predictive of ill-being, indicators of psychopathology, and disruptive, antagonistic behavior. Consistent with this notion, Bartholomew, Ntoumanis, Ryan, and Thøgersen-Ntoumani (2011) found that in different samples of athletes, need satisfaction related relatively specifically to vitality and positive affect, whereas need frustration related relatively specifically to depressive symptoms, burnout, and disordered eating. Similar results were reported by Balaguer et al. (2012) in a sample of adolescent soccer players.

Much like need satisfaction and need frustration would relate differentially to well-being and ill-being, according to SDT both processes would have differential implications for the quality of students' motivation. Need satisfaction is hypothesized to give rise to high-quality motivation, that is, autonomous motivation (Deci & Ryan, 2000). In contrast, need frustration is assumed to lead to the adoption of suboptimal motivational orientations, in particular, controlled motivation and amotivation (Deci & Ryan, 2000).

According to SDT, autonomous motivation can take at least two different forms. Intrinsic motivation occurs when students engage in an activity for the sake of the enjoyment and challenge experienced in the activity itself. For instance, students are intrinsically motivated when they enjoy playing basketball and experience challenge and fun while practicing a shooting technique. Identified motivation occurs when students understand and endorse the value of an activity, although they may not necessarily find the activity enjoyable as such. For instance, students might participate in PE exercises to improve their personal fitness. Because in both cases students experience a sense of volition and psychological freedom during activity engagement, intrinsic and identified motivation are often taken together to form a composite score of autonomous motivation (Deci & Ryan, 2000).

Like autonomous motivation, controlled motivation can take at least two forms (Deci & Ryan, 2000). In the case of external regulation, one acts because one is pressured from the outside, such as by a desire to obtain rewards, to avoid punishments, or to meet external obligations. For instance, students may cooperate during PE lessons because they are afraid of threatening punishments such as having to do push-ups or sit-ups if they do not cooperate. In the case of introjected regulation, students act out of internal pressures, such as the avoidance of guilt, shame, or anxiety or attempt to bolster their own self-worth. For instance, students

might cooperate to prove that they are "good athletes." Although controlled motivation brings feelings of pressure and tension and represents a less than optimal type of motivational regulation, it does involve a certain goal-directedness and intentionality. This is not the case with amotivation, an orientation where people do not see any reason to act in a particular way. This may for instance be the case because students feel incompetent in performing an activity (Deci & Ryan, 2000).

In an educational context, controlled motivation and amotivation have been shown to relate to maladaptive outcomes, including ill-being, lowered performance, and school dropout (e.g., Assor, Vansteenkiste, & Kaplan, 2009; Vallerand, Fortier, & Guay, 1997). In the context of PE, both controlled motivation and amotivation have been shown to predict maladaptive outcomes such as decreased effort and reduced class engagement (e.g., Aelterman et al., 2012) and the absence of transfer of physical activity from the PE context to leisure time (e.g., Haerens et al., 2010; Ntoumanis, 2001; Standage, Duda, & Ntoumanis, 2003). Given the maladaptive outcomes that are associated with controlled motivation and amotivation, an important question is whether and how teaching behavior affects students' motivation during physical education. In SDT, a controlling interpersonal style is considered an important antecedent of these dynamics (e.g., Ryan & Deci, 2000).

Autonomy-Supportive and Controlling Teaching Styles

Consistent with the notion of the needs, SDT defines three dimensions of teachers' interpersonal style. That is, through their interpersonal style teachers can either support or thwart students' needs for relatedness, competence, and autonomy (Deci & Ryan, 1987; Grolnick, Benjet, Kurowski, & Apostoleris, 1997; Ryan & Deci, 2006).[1] First, relatedness-supportive (i.e., warm, friendly, responsive, involved) interactions are contrasted with cold, unfriendly, indifferent, and distant interactions (e.g., Soenens, Duriez, Vansteenkiste, & Goossens, 2007). Second, a well-structured and competence-enhancing style is contrasted with a chaotic style (e.g., Jang, Reeve, & Deci, 2010; Vansteenkiste et al., 2012). Third, and most germane to the topic of this article, SDT distinguishes between an autonomy-supportive and a controlling teaching style. Autonomy support refers to a style where socialization figures identify, nurture, and develop students' inner motivational resources so that students perceive themselves as the initiator of their actions (Reeve, 2009). Autonomy-supportive teachers take the students' perspective, offer choices, and encourage initiative. Also, they demonstrate the intrinsic value of activities (e.g., by including fun-elements and participating themselves), and they provide a meaningful rationale to explain the usefulness of activities in the class. Numerous studies have shown that teacher autonomy support is associated with high-quality motivation (e.g., Soenens & Vansteenkiste, 2005) and a host of desirable educational outcomes, including autonomy need satisfaction (Reeve & Jang, 2006), engagement (Assor, Kaplan, & Roth, 2002; Reeve & Jang, 2006), school performance (Soenens & Vansteenkiste, 2005), and enjoyment (Reeve & Jang, 2006). Similarly, perceived autonomy-supportive teaching during PE is related to adaptive outcomes, such as enjoyment (Yli-Piipari, Watt, Jaakkola, Liukkonen, & Nurmi, 2009) and effort-expenditure during PE (Ntoumanis, 2001) and intentions to be physically active outside PE (i.e., during leisure time; Hagger, Chatzisarantis, Culverhouse, & Biddle, 2003).

Autonomy-supportive teaching is contrasted with a controlling teaching style, where teachers largely dismiss students' perspectives and pressure students to think, act, or feel in particular ways (Reeve, 2009). According to SDT, a controlling style can be expressed in at least two different ways, that is, externally or internally controlling (Ryan, 1982; Soenens & Vansteenkiste, 2010). Externally controlling teaching refers to the activation of a sense of external obligation in students by using rather overtly observable controlling strategies, such as punishments, pressuring rewards, and explicitly controlling language, like "you must" (e.g., Reeve & Jang, 2006; Vansteenkiste, Simons, Lens, Sheldon, & Deci, 2004). Internally controlling teaching refers to the use of tactics that trigger internally pressuring (i.e., introjected) forces in learners by appealing to students' feelings of guilt, shame, anxiety, and self-worth. An exemplary statement of a teacher provoking internal pressure would be "Everyone should be able to do the following exercise. Even a toddler could do it" (Vansteenkiste, Simons, Lens, Soenens, & Matos, 2005). The activation of those internal pressures may also happen in a relatively covert and subtle way, for instance, through the facial display of disappointment or the withdrawal of attention when students fail to meet certain standards (Soenens & Vansteenkiste, 2010).

Much like need frustration cannot be simply equated with an absence of need satisfaction, it is increasingly recognized in SDT that controlling teaching (which represents a feature of a need thwarting interpersonal style) cannot be equated simply with low autonomy-support (Bartholomew, Ntoumanis, Ryan, Bosch, & Thøgersen-Ntoumani, 2011; Vansteenkiste & Ryan, in press). When teachers do not explicitly provide choices and do not actively encourage initiative (i.e., are low in autonomy-support), this does not imply automatically that they actively thwart the students' need for autonomy (e.g., using pressuring language and punishments). Given that controlling teaching is not by definition the same as low autonomy support, it deserves to be studied in its own right. Relative to studies addressing autonomy-supportive teaching, however, fewer studies have explicitly addressed the dynamics involved in controlling teaching. In the general educational context, Assor, Kaplan, Kanat-Maymon, and Roth (2005) found that perceived controlling teaching was related to controlled motivation, amotivation, negative affect in the classroom, and low school engagement. Similarly, Soenens et al. (2012) showed that perceived controlling teaching was related to poorer quality of

[1] We would like to clarify our usage of the terms need frustration and need thwarting a bit more. As noted by Vansteenkiste and Ryan (in press), need thwarting refers to socialization figures' (e.g., teachers) actual or perceived behaviors, that is, what they do (or are perceived to do) to thwart students' needs (e.g., using controlling language, guilt-induction). Need frustration in contrast refers to students' personal experiences during PE activities, such as pressure (as a manifestation of a frustrated need for autonomy), alienation (as a manifestation of a frustrated need for relatedness), and inadequacy (as a manifestation of a frustrated need for competence). Need thwarting teacher behaviors represent only one source of influence on student experiences of need frustration. Other potential sources of influence may be features of the child (such as personality, interests, and physical ability) and other socialization figures (e.g., peers and parents).

motivation to study, which, in turn, related to less use of learning strategies and lower grades.

The present study, then, attempted to add to the small body of research on controlling teaching by addressing three of its limitations. First, most studies have relied on student reports of teaching behavior, which is logical in light of SDT's assumption that subjective experiences of teacher control ultimately determine student motivation and engagement. Although some studies have relied on teacher reports of their need-supportive teaching behaviors, thereby contrasting these teacher-reports with students' self-reports of those behaviors (e.g., Taylor, Ntoumanis, & Standage, 2008; Taylor, Ntoumanis, Standage, & Spray, 2008), to the best of our knowledge no such studies have dealt with controlling teaching behaviors in particular. The dominant reliance on student report measures in the majority of past work yields two disadvantages, that is, (a) it may cause problems of shared method variance, such that associations between perceived controlling teaching and student outcomes get inflated artificially, and (b) it prevents one from examining whether and to what extent observed controlling teaching behavior is equally perceived as controlling by the students. For this reason, we obtained both ratings of observed behavior and student self-reports of controlling teaching in the present study.

Second, the few studies that included observations made use of ratings on a bipolar scale where controlling teaching was contrasted *a priori* with autonomy-supportive teaching (e.g., Reeve, Jang, Carrell, Jeon, & Barch, 2004), such that no unique score for observed controlling teaching could be derived (but see Reeve & Jang, 2006, for an exception). To address this limitation, a measure of observed controlling behavior is required.

A final limitation of past work on controlling teaching behavior (Deci, Spiegel, Ryan, Koestner, & Kauffman, 1982; Reeve & Jang, 2006) is that most studies were conducted in the laboratory, where pairs of individuals were instructed to take up either the role of a teacher or a student. In the present study, we videotaped PE lessons in real-life rather than in laboratory circumstances, and we observed the behavior of experienced PE teachers, which considerably augmented the ecological validity of the obtained findings.

The Present Study

In the present study, we made use of the observational ratings of controlling teaching during a specific PE class, and we assessed students' perception of controlling teaching as well as their type of motivation for the past PE class. We addressed three research aims. First, we examined whether observed controlling teaching behavior related to student perceptions of controlling teaching behavior and to low-quality student motivation for PE, as manifested in controlled motivation and amotivation. Second, we examined the degree of specificity in the associations between observed controlling teaching and maladaptive motivational outcomes (i.e., controlled motivation and amotivation). Specifically, we examined whether observed controlling teaching would be related uniquely to perceived controlling teaching and maladaptive motivational outcomes or whether, on top of that, controlling teaching behavior would also relate negatively to adaptive motivational processes, that is, perceptions of autonomy-supportive teaching and autonomous motivation for PE. As discussed before, dynamics of contextual need thwarting might be relatively specific and may be, at least to some extent, distinct from dynamics of need support. In line with this, Bartholomew, Ntoumanis, Ryan, Bosch, and Thøgersen-Ntoumani (2011) and Balaguer et al. (2012) found that a controlling coaching style had unique associations with athletes' experiences of need frustration and was unrelated to experiences of need satisfaction. Given these results, we anticipated that observed controlling teaching would primarily relate to maladaptive motivational outcomes. Finally, it was investigated whether perceived controlling teaching would play an intervening role in the associations between observed controlling teaching and motivational outcomes. This hypothesis is based on the argument that students' perceptions of socialization figures' behavior (rather than the actual behavior) ultimately determine the students' outcomes (e.g., Lamborn, Mounts, Steinberg, & Dornbusch, 1991).

In examining these research questions, we relied on a sample of students with a broad age range (varying between Grades 7–12), which allowed us to also consider the role of developmental differences. This seems important as past research on developmental changes in students' motivation for PE has typically shown a decline in autonomous motivation across middle and high school (e.g., Digelidis & Papaioannou, 1999; Ntoumanis, Barkoukis, & Thøgersen-Ntoumani, 2009), while less systematic evidence was obtained for changes in controlled motivation and amotivation. Specifically, we examined both (a) the direct association between students' grade and motivational constructs and (b) the moderating role of grade in associations between controlling teaching and the motivational constructs. The latter was deemed important because some research suggests that, as children grow older, they become more inclined to perceive socialization figures' involvement in school as intrusive and as signaling incompetence (e.g., Pomerantz & Eaton, 2000). Hence, it deserves to be explored whether, with increasing age, students would perceive teachers' behaviors as increasingly controlling, as would be reflected in an increasingly strong association between observed and perceived controlling teaching. As a consequence, with increasing age students may also respond more negatively to both observed and perceived controlling teaching, such that the association with adverse motivational outcomes (i.e., controlled motivation and amotivation) strengthens with increasing grade level.

Method

Participants

In the initial sample,[2] 809 students were recruited from 56 classes out of the same number of schools located in Flanders (Flemish speaking part of Belgium). For nine students (1%),the parents refused to sign the informed consent, and 98 students (10%) were absent at the moment of the data collection. All students provided signed informed consent themselves. This resulted in a sample of 56 teachers and 702 students. The teachers were on average 39 years old (SD = 11 years, ranging from 21 to

[2] The sample used in this study is part of a larger data set. The videotapes used in the present study were also used in the study of Haerens et al. (2013). In the Haerens et al. (2013) article, however, only findings on dimensions of need supportive teaching behavior (i.e., involvement, structure, and autonomy-support) were reported, whereas the present study focuses on need thwarting teaching behavior.

56 years), 67% were men, and teachers had an average teaching experience of 16 years (SD = 11, ranging from 0 to 35 years). Almost half of the sample (49%) was female, and students had a mean age of 14.44 years (SD = 1.81, ranging from 11 to 21 years). We sampled students in every grade of secondary school, which in Belgium (Flanders) encompasses Grades 7 through 12. The total sample contained a comparable number of students in each grade (Grade 7, n = 124, M_{age} = 12.06 ± .57; Grade 8, n = 126, M_{age} = 13.02 ± .55; Grade 9, n = 140, M_{age} = 14.07 ± .71; Grade 10 (n = 112, M_{age} = 15.29 ± .78; Grade 11, n = 126, M_{age} = 16.20 ± .66; Grade 12, n = 74, M_{age} = 17.14 ± .73). Of the participating students, 68% followed an academic track, 23% followed a technical track, and 9% followed a vocational track. Students were either in co-educational (64%) or in single sex PE classes (25% boys, 11% girls), with each class containing on average 16 students (SD = 4, ranging from 3 to 23). The lesson content of the observed lessons was categorized as interactive games (39%) or individual sports lessons (61%).

Procedure

In Flanders, PE class is compulsory for all secondary school students and is taught for two 50-min lessons each week by specialized PE teachers. In some schools, PE lessons are combined into a single 100-min lesson. For the present study, data were gathered in a randomly chosen PE lesson. Two weeks prior to this lesson, all students received an informed consent form to be signed by their parents. The informed consent form explained the study purposes and asked for parents' authorization for their child to be videotaped and to fill out the questionnaires immediately after the lesson. As the entire lesson was videotaped by means of digital camcorders, students who did not return a signed informed consent form did not participate in the observed lesson. The camcorder was positioned on a fixed spot in the gymnasium before the PE lesson started. The camcorder was set up to capture a large viewing angle such that all students and the PE teacher could be recorded simultaneously. Additionally, teachers were equipped with a small microphone fixed on their shirt to capture instructions and teacher-student interactions. Teachers were asked to give their PE lessons as they would do normally, and they were told that the main focus of the study would be on students' behavior. The study protocol was approved by the Ethical Committee of Ghent University.

Measures

Observed controlling teaching behavior. In an independent sample (i.e., a sample that did not overlap with the current sample), Van den Berghe et al. (2013) developed an observation tool for assessing need-thwarting teaching behavior. In the present study, we only used the scale for controlling teaching behavior, which consists of 7 items (see Appendix). Testifying to the validity of this scale, Van den Berghe et al. (2013) showed that the items from this scale loaded on a separate factor than items reflecting other features of need-thwarting teaching (i.e., coldness and chaos). To assess interrater reliability of the need-thwarting observation items, three trained observers independently coded 30 identical videotaped PE lessons. To assess intrarater reliability, one observer coded 20 lessons twice, with 2 weeks in between both ratings. The raters were familiar with both SDT and research on PE, and they were involved in the development of the coding instrument from the very beginning. Intrarater and interrater reliabilities were calculated by means of intraclass correlation coefficients (ICC), thereby using a two-way random model. Van den Berghe et al. (2013) provided evidence for adequate interrater reliability (.87), intrarater reliability (.95), and internal consistency (.80). Finally, observed controlling teaching was related in a theoretically plausible way to a measure of teachers' motivational orientation, with teachers with a controlled orientation displaying more controlling behavior.

For the purpose of the present study, the items for controlling teaching behavior were coded by one of three external observers every 5 min of each PE lesson using a 4-point scale, with the following answering categories 0 = *never observed*, 1 = *sometimes observed*, 2 = *often observed* and 3 = *observed all the time*. On average 7.66 (SD = 2.91) intervals were coded per lesson, and in total, 429 5-min intervals were coded. A score for controlling teaching behavior was created by averaging the scores on the individual items. This score had a Cronbach's alpha of .73 and had a mean of .22 (SD = .23, range between 0.00 and 1.05) on a scale from 0–3.

Students' perceptions of teaching behavior. To assess students' perceptions of controlling teaching, we used a 9-item scale. The items were administered immediately following the PE class and were formulated specifically with reference to this class. Seven items were from the Psychologically Controlling Teaching (PCT) scale (Soenens et al., 2012), and two items were from the Teacher As Social Context Questionnaire (TASCQ; Skinner & Belmont, 1993). The internal consistency and validity of the PCT scale (e.g., "During this class the teacher made me feel guilty when I dissatisfied him/her") was demonstrated by Soenens et al. (2012). The reason why we added two items from the TASCQ (i.e., "During this class it seemed like my teacher was always telling me what to do" and "During this class my teacher often criticized me on how I do the things during class") is that we aimed to obtain a more global and a broader index of perceived controlling teaching, while the PCT scale mainly taps into internally controlling teaching behaviors in particular (Soenens & Vansteenkiste, 2010). The two items from the TASCQ are more general and also reflect more externally controlling teaching. Because these items tap into controlling teaching, they are usually reverse scored and added to the autonomy-support items of the TASCQ. In the current study, we did not reverse score these items and instead added them to the 7 items of the PCT scale to obtain a general measure of perceived controlling teaching. An exploratory factor analysis indicated that all 9 items loaded on one factor, explaining 51.45% of the variance and factor loading ranging between .62 and .77. Cronbach's alpha of the resulting 9-item scale was .88, and the average score was 1.93 (SD = 0.76, ranging between 1.00 and 5.00).

To assess students' perceptions of autonomy-supportive teaching behavior, we used the remaining six items from the TASCQ autonomy-support scale (e.g., "During this class my teacher gave me a lot of choices about how to do the exercise"). Items of both questionnaires were rated by students on a 5-point Likert scale from 1 (*not true for me*) to 5 (*very true for me*). The average score of perceived autonomy-support was 2.86 (SD = 0.81, ranging between 1.00 and 5.00). Cronbach's alpha was .79.

Students' motivation for PE. To measure students' motivation specifically with regard to the lesson they just followed, they

were administered the validated Behavioral Regulations in Physical Education Questionnaire (BRPEQ; Aelterman et al., 2012). We used the stem "I put effort in this past physical education class because," which was followed by items reflecting autonomous motivation (8 items; e.g., "I enjoy this PE class") and controlled motivation (8 items; e.g., "I have to prove myself"). In addition, students filled out items tapping into amotivation as experienced during the class (4 items; e.g., "I don't see why this PE class is part of the curriculum").[3] Items were rated on a 5-point Likert scale from 1 (*not true for me*) to 5 (*very true for me*). Cronbach's alphas of these three scales were .89, .86, and .81, respectively.

Plan of Analyses

Multilevel regression analyses were employed for all analyses using MLwiN (Version 2.25; Rasbash, Steele, Browne, & Goldstein, 2009). Data were treated as a two-level hierarchical model, consisting of students at Level 1 and classes at Level 2. Gender was included as a covariate at Level 1 and grade; gender composition of the class, educational track, class size, and lesson topic were included as covariates at Level 2. All quantitative explanatory variables were grand mean centered before they were entered in the predictor models.

Associations between observed and perceived controlling teaching behavior (i.e., controlling and autonomy-supportive) and students' motivation (i.e., controlled motivation, autonomous motivation, and amotivation) were examined in a series of multilevel regression analyses. These multilevel regression analyses consisted of the following three steps. In Step 1, the baseline variance components model (Rasbash et al., 2009) or intercept-only model (Hox, 2010) was estimated for students' perceptions and motivation with only an intercept and no explanatory variables (i.e., Model 0). This allowed us to evaluate the percentage of variation in students' perceptions and motivation situated at the student and class level, and it provided the null model to compare gradually more complex models in the subsequent steps. In Step 2, five covariates (i.e., students' gender, grade, gender composition, educational track, class size, and topic of the lesson) were included in the models (Model 1). In Step 3, observed controlling teaching behavior was entered as a predictor of each of the student variables (i.e., Model 2). In a final model (i.e., Model 3), we also added the interaction between grade and observed controlling teaching behavior as a predictor of students' perceptions and motivation.

In an additional set of analyses, we examined the intervening role of perceived controlling teaching behavior in the association between observed controlled teaching behavior and controlled motivation and amotivation. To test the significance of indirect effects, we used the product-of-coefficient test (MacKinnon, Fairchild, & Fritz, 2007), which tests the significance of the product of two regression coefficients, a^*b. The a-path represents the association between observed and students' perceived controlling teaching behavior. The b-path represents the association between perceived controlling teaching behaviors and student motivation, while simultaneously adjusting for the relation between observed controlling teaching and student motivation. The indirect effect is significant when the 95% confidence interval (CI) does not contain zero. In case there was an initial direct association between observed controlling teaching and students' motives (i.e., the c-path), we also inspected whether this c-path would be diminished or reduced to nonsignificance when adding perceived controlling teaching to the equation (i.e., the c′-path).

Given that perceived controlling teaching behavior and motivation were measured at the student level (Level 1) while the antecedent variable (i.e., observed controlling teaching behavior) was measured at the class level (Level 2), a specific statistical procedure was applied to ensure that the a-path and b-path were estimated at the same level (in this case, Level 2; Zhang, Zyphur, & Preacher, 2009). That is, perceived controlling teaching behavior and student motivation (i.e., the two Level 1 or within-group variables) were decomposed into a between-group (Level 2) and within-group variable (Level 1), so that, similar to the estimation of the a-path, the b-path could also be estimated at the class level (Level 2). For instance, the between-group variable consisted of the average class score for perceived controlling teaching, meaning that all students within the same class received the same score, so that variability in this variable involved uniquely between-class variation. For the within-group level, the mean score of the class was subtracted from the students' individual scores, so that this score represented uniquely the variability of individual scores within classes. Both variables were entered into the regression analyses, and the regression coefficient of the between-group variable was used in the calculations for the analyses of indirect effects (Zhang et al., 2009). In testing the intervening role of perceived controlling teaching, we controlled for background variables that were found to have significant effects in Step 2 of the initial series of multilevel regressions.

Results

We first estimated the baseline variance components model for perceived controlling teaching and students' controlled motivation and amotivation. For perceived controlling teaching, the null-model showed an intercept value of 1.97 (0.05), indicating that the average level of perceived controlling teaching was low. Both class-level variance and student-level variance were significantly different from zero, with 18.34% ($\chi^2 = 14.45$, $df = 1$, $p < .001$) of the variance in perceived controlling teaching situated at the class level. As for students' controlled motivation and amotivation, the null-models indicated intercept values for of 1.88 (.05) and 1.76 (.05), respectively, suggesting that scores on low-quality motivation were rather low. The random parts of the null models showed that for both forms of motivation variances at both the student- and class-level were significantly different from zero. Specifically, the class level-variance was 13.24% ($\chi^2 = 9.18$, $df = 1$, $p < .01$) for controlled motivation and 9.55% ($\chi^2 = 8.47$, $df = 1$, $p < .01$) for amotivation.

[3] In this study, we did not include a measure of integrated regulation, a third type of autonomous motivation next to identification and intrinsic motivation. This decision was informed by both methodological and substantive reasons. First, integrated regulation is not usually assessed in research on adolescents, since it requires a high degree of introspection and self-awareness and is hardly empirically distinguishable from identified and intrinsic regulation through self-reports in children and adolescents (Vallerand & Fortier, 1998). Second, in the present study students' motivation was measured specifically with regard to the lesson students just followed. As integrated regulation requires coherence across situations and even different domains in life (Ryan & Deci, 2000), it is hard to assess integrated motivation with regard to reasons for participation in one specific lesson.

Next, we estimated similar models for perceived autonomy support and autonomous motivation. The null model for perceived autonomy supportive teaching indicated an intercept value of 2.90 (.05), with 17.33% ($\chi^2 = 13.66$, $df = 1$, $p < .001$) of the variance being situated at the class-level. As for students' autonomous motivation, the null model indicated an intercept value of 3.55 (.05), with 10.30% ($\chi^2 = 11.20$, $df = 1$, $p < .001$) of the variance situated at class level.

In the next step, we added the covariates (i.e., students' gender, grade, gender composition, educational track, class size, and topic of the lesson) to the model. These findings are reported in Table 1 under the column Model 1. Gender was related to perceived controlling teaching, controlled motivation, and amotivation, with girls perceiving their PE teachers as more controlling and displaying less controlled motivation and amotivation. Class size was related to perceived autonomy-support, with students in smaller classes perceiving their teachers as less autonomy supportive. Grade was related to controlled motivation, autonomous motivation, and perceived autonomy support, with students in higher grades displaying less controlled motivation and less autonomous motivation and also perceiving their teachers as less autonomy supportive. Students perceived their teachers as being more autonomy supportive during interactive games compared to individual sports.

More central to the present study, in the following step (i.e., Model 2), we added observed controlling teaching as a predictor of the perceived teaching style and motivational outcomes. As hypothesized, a significant positive relation was found between observed and perceived controlling teaching behavior. Also, a significant association was found between observed controlling teaching behavior and controlled motivation, but not with amotivation. Observed controlling teaching behavior was unrelated to perceived autonomy-supportive teaching and also did not relate to students' autonomous motivation. In Model 3, we added the interaction between grade and observed controlling teaching as a predictor of students' perceptions and motives. None of the interaction terms reached significance, indicating that the investigated associations were invariant across grade.

In a final set of models, we tested whether observed controlling teaching behavior would be indirectly related to controlled motivation and amotivation through students' perceived controlling teaching. In these analyses, we only controlled for students' gender and grade as the previous set of analyses showed that these were the only background variables with systematic significant effects on the study variables involved. Results of these analyses can be found in Table 2. First, as already shown before, the relation between observed and perceived controlling teaching behavior (a-path) was significant. Second, we investigated the relation between perceived controlling teaching behavior and motivation (controlled and amotivation), while statistically controlling for observed controlling teaching. In doing so, we estimated both between-group and within-group relationships, with the between-group relationship representing the crucial b-path to estimate the indirect effect. Both the between-group and the within-group relation between perceived controlling teaching behavior and controlled motivation and amotivation were significant. Subsequent analyses using the product-of-coefficient test (MacKinnon et al., 2007) revealed that the indirect association between observed controlling and controlled motivation through perceived controlling teaching was significant ($a^*b = .25$, $SE = .11$, $Z = 2.34$, $p < .05$). Given that observed controlling teaching yielded an initial direct association with controlled motivation (c-path), we tested whether this association would fall below significance after including perceived controlling teaching (c′-path). This was the case, suggesting that the effect of observed controlling teaching on controlled motivation was fully indirect via perceived controlling teaching. The indirect pathway between observed controlling teaching behavior and amotivation through perceived controlling teaching behavior ($a^*b = .20$, $SE = .09$, $Z = 2.15$, $p < .05$) was also significant.

Discussion

The present study focused on the outcomes of observed and student perceived controlling teaching in the context of physical education. Theoretically, controlling teaching is assumed to thwart students' needs for autonomy which, in turn, would activate the adoption of suboptimal motivational orientations, in particular, controlled motivation and amotivation (Deci & Ryan, 2000). The most novel aspect of the present study involved the examination of this SDT-grounded sequence of relations using observations rather than just self-reports of controlling teaching. The reliance on rated observations allowed for a more conservative and methodologically stringent test of the hypothesized dynamics of teacher control than previously obtained associations between perceived controlling teaching and motivational outcomes could be due to shared method variance. Although a few previous studies in the SDT-literature (e.g., Deci et al., 1982; Reeve & Jang, 2006) made use of observations, most of these studies were conducted in more artificial laboratory circumstances. The present study, in contrast, took place in a real-life setting in which professional PE teachers were videotaped during their PE class and their controlling behaviors were rated. A number of interesting findings emerged.

When teachers more frequently engaged in controlling behaviors according to the raters, the students reported that they experienced more controlling teaching during the class and also felt more pressured to engage in the past PE lesson, as reflected in higher scores on controlled motivation. Remarkably, these associations were obtained even though the occurrence of controlling teaching behavior was quite low. As such, these results suggest that even a sporadic exposure to controlling teaching behaviors may increase students' perception of need thwarting by the teacher and prompt a more controlled form of motivation. These findings are perhaps somewhat counterintuitive as one might reason that a certain threshold of controlling teaching behavior needs to be surpassed before these behaviors would be perceived as actually controlling by students or before the controlling behavior would affect their motivation. The present findings suggest the opposite. It seems that, although the incidence of controlling teaching behaviors was low, such behaviors are quite salient. Students seem to be sensitive to these behaviors, which may explain why these behaviors did relate to students' experiences and motivation. This is an important result because students with controlled motivation have been found to experience more boredom and unhappiness during PE (e.g., Ntoumanis, 2001; Standage, Duda, & Ntoumanis, 2005), to display reduced rated engagement (Aelterman et al., 2012) and to have a decreased likelihood to remain active during leisure time (Haerens et al., 2010).

Table 1
Summary of the Model Estimates for the Two-Level Analyses of the Associations Between Observed Controlling Teaching and Student Perceived Teaching and Motivational Outcomes

Parameter	Students' perceived controlling teaching behavior			Students' controlled motivation		
	Model 1 (a) Unstandardized *B* (*SE*)	Model 2 Unstandardized *B* (*SE*)	Model 3 Unstandardized *B* (*SE*)	Model 1 (b) Unstandardized *B* (*SE*)	Model 2 Unstandardized *B* (*SE*)	Model 3 Unstandardized *B* (*SE*)
Fixed part						
Intercept	2.28 (0.12)	2.26 (0.12)	2.24 (0.12)	2.07 (0.12)	2.05 (0.12)	2.02 (0.12)
Students' gender (girl)[a]	−0.44 (0.07)***	−0.43 (0.07)***	−0.43 (0.07)***	−0.24 (0.08)**	−0.23 (0.08)**	−0.24 (0.08)**
Grade	−0.05 (0.03)	−0.05 (0.03)	−0.05 (0.03)	−0.09 (0.03)**	−0.09 (0.03)**	−0.09 (0.03)**
Girls only[b]	−0.23 (0.19)	−0.19 (0.19)	−0.16 (0.20)	−0.31 (0.20)	−0.27 (0.20)	−0.22 (0.20)
Gender composition[b]	−0.22 (0.12)	−0.18 (0.11)	−0.17 (0.12)	−0.21 (0.12)	−0.16 (0.12)	−0.14 (0.12)
Technical track[c]	0.02 (0.12)	−0.04 (0.11)	−0.04 (0.11)	0.03 (0.12)	−0.04 (0.12)	−0.03 (0.12)
Vocational track[c]	−0.16 (0.18)	−0.12 (0.17)	−0.11 (0.17)	−0.20 (0.19)	−0.17 (0.18)	−0.15 (0.18)
Class size[d]	−0.02 (0.01)	−0.02 (0.01)	−0.02 (0.01)	−0.02 (0.01)	−0.02 (0.01)	−0.02 (0.01)
Topic (interactive games)[d]	0.01 (0.09)	0.00 (0.09)	0.00 (0.09)	0.10 (0.10)	0.09 (0.09)	0.09 (0.09)
Observed controlling teaching		0.38 (0.19)*	0.38 (0.19)*		0.44 (0.19)*	0.43 (0.19)*
Grade × Observed Controlling Teaching			−0.08 (0.14)			−0.13 (0.14)
Random part						
Class level variance	0.05 (0.02)**	0.04 (0.02)**	0.04 (0.02)*	0.05 (0.02)*	0.04 (0.02)*	0.04 (0.02)*
Student level variance	0.44 (0.03)***	0.44 (0.03)***	0.44 (0.03)***	0.52 (0.03)***	0.52 (0.03)***	0.52 (0.03)***
Deviance test model	1,230.55	1,226.71	1,226.38	1,326.03	1,321.31	1,320.45
$\chi^2(df)$		3.84 (1)	4.17 (2)		4.72 (1)*	5.58 (2)

Note. Values in parentheses are standard errors. Intercept Model 1 represents (a) the mean students' perceived controlling teaching behavior, (b) controlled motivation, (c) amotivation, (d) students' perceived autonomy support, and (e) autonomous motivation score for boys from an average grade in a general educational track with only boys and with an average class size and during individual sports. $\chi^2(df)$ = represents the difference with Deviance Test Model 1.
[a] 0 = boy, 1 = girl. [b] 0 = boys only, 1 = girls only, 2 = gender composition. [c] 0 = general track, 1 = technical track, 2 = vocational track. [d] 0 = individual sports, 1 = interactive games.
* $p < .05$. ** $p < .01$. *** $p < .001$.

In contrast to the findings for controlled motivation, observed controlling teaching behavior was not related directly to students' amotivation. A number of explanations can be provided. First, it might be the case that the development of amotivation requires more than only the thwarting of the need for autonomy. Possibly, for amotivation to occur, the needs for competence and relatedness need to be blocked simultaneously with the need for autonomy (Deci & Ryan, 2000). Thus, amotivation would develop when teachers behave not only in a controlling fashion but also in a way that actively thwart students' need for competence (e.g., by being critical) and relatedness (e.g., by acting in a cold and unfriendly fashion). Second and related to the previous reasoning, amotivation might develop when frustration of the needs is *chronic* and accumulates across different lessons, an issue that we could not pursue in the present research given the study only comprised a single lesson. Therefore, future research could examine whether observations of need-thwarting teaching behavior that are aggregated across classes are more strongly predictive of amotivation compared to a one-shot assessment of need-thwarting teaching behavior. Third, the lack of association may also be due to type of amotivation that was assessed in the present study. Specifically, our scale for amotivation (e.g., "I felt the previous PE lesson was a waste of time") tapped into a lack of concern or value for the past PE lesson (Ryan, Lynch, Vansteenkiste, & Deci, 2011). We did not assess amotivation stemming from a lack of perceived competence or positive efficacy beliefs to do the required PE activities. Perhaps then, amotivation due to a lack of valuation of the activity is rooted relatively more strongly in personal characteristics of students than in teachers' behavior. For students low on valuation of the activity, it may not really matter how the teacher behaves because they think the lesson is a waste of time anyway.

Importantly, it should be noted that amotivation was not completely unrelated to controlling teaching behaviors, as there was an indirect association between controlling behaviors and amotivation through student perceptions of controlling teaching. Hence, to the extent that students actually perceive their teachers as controlling, this does seem to increase their likelihood of experiencing amotivation. Similarly, perceived controlling teaching played an intervening role in the associations between observed controlling behavior and controlled motivation. Thus, what seems to matter most in terms of predicting motivational outcomes is the experienced control by the student, which can be predicted by what actually happens in the classroom according to external observers.

Yet, the association between observed and perceived controlling behavior is far from perfect, and future researchers may want to examine moderating factors that determine the size of this gap. Possibly, not everyone experiences a shouting and guilt-inducing PE teacher as equally controlling. For instance, autonomously motivated students or those feeling a strong sense of relatedness with the teacher may interpret the objectively recorded controlling behaviors as relatively more informational rather than pressuring and evaluative, such that the perceived functional significance of the behavior (Deci & Ryan, 1985) differs somewhat between students. Notably, while the gap between observed and perceived controlling behavior may be somewhat smaller for some students, the same gap could be larger for others. For instance, students high on controlled motivation or those displaying oppositional defiance vis-à-vis their teacher (Vansteenkiste, Soenens, Van Petegem, &

Students' amotivation			Students' perceived autonomy support			Students' autonomous motivation		
Model 1 (c) Unstandardized *B* (*SE*)	Model 2 Unstandardized *B* (*SE*)	Model 3 Unstandardized *B* (*SE*)	Model 1 (d) Unstandardized *B* (*SE*)	Model 2 Unstandardized *B* (*SE*)	Model 3 Unstandardized *B* (*SE*)	Model 1 (e) Unstandardized *B* (*SE*)	Model 2 Unstandardized *B* (*SE*)	Model 3 Unstandardized *B* (*SE*)
2.01 (0.13)	1.97 (0.13)	2.01 (0.13)	2.72 (0.11)	2.72 (0.11)	2.72 (0.12)	3.48 (0.13)	3.49 (0.13)	3.46 (0.13)
−0.22 (0.09)*	−0.21 (0.09)*	−0.21 (0.09)*	−0.10 (0.08)	−0.10 (0.08)	−0.10 (0.08)	−0.11 (0.09)	−0.11 (0.09)	−0.12 (0.09)
−0.06 (0.03)	−0.05 (0.03)	−0.05 (0.03)	−0.11 (0.03)***	−0.11 (0.03)***	−0.11 (0.03)***	−0.11 (0.03)***	−0.11 (0.03)***	−0.11 (0.03)***
−0.14 (0.22)	−0.13 (0.22)	−0.16 (0.23)	−0.15 (0.19)	−0.14 (.19)	−0.15 (0.20)	0.02 (0.22)	0.01 (0.22)	0.07 (0.23)
−0.19 (0.13)	−0.17 (0.13)	−0.19 (0.13)	−0.03 (0.11)	−0.03 (0.12)	−0.03 (0.12)	0.05 (0.13)	0.04 (0.13)	0.06 (0.13)
0.09 (0.13)	0.07 (0.13)	0.06 (0.13)	0.02 (0.11)	0.01 (0.11)	0.01 (0.11)	−0.11 (0.13)	−0.09 (0.13)	−0.09 (0.13)
0.14 (0.20)	0.15 (0.20)	0.14 (0.20)	−0.14 (0.18)	−0.14 (0.18)	−0.14 (0.18)	0.00 (0.20)	−0.01 (0.20)	0.01 (0.20)
0.01 (0.01)	0.01 (0.01)	0.00 (0.01)	−0.06 (0.01)***	−0.06 (0.01)***	−0.06 (0.01)***	−0.03 (0.01)	−0.02 (0.01)	−0.02 (0.01)
−0.03 (0.10)	−0.04 (0.10)	−0.04 (0.10)	0.38 (0.09)***	0.38 (0.09)***	0.38 (0.09)***	0.13 (0.10)	0.13 (0.10)	0.13 (0.10)
	0.18 (0.21)	0.18 (0.21)		0.06 (0.19)	0.06 (0.19)		−0.13 (0.22)	−0.14 (0.21)
		0.08 (0.16)			0.01 (0.14)			−0.13 (0.16)
0.04 (0.02)	0.04 (0.02)*	0.04 (0.02)*	0.03 (0.02)*	0.03 (0.02)*	0.03 (0.02)*	0.04 (0.02)*	0.04 (0.02)*	0.04 (0.02)*
0.73 (0.04)***	0.73 (0.04)***	0.73 (0.04)***	0.55 (0.03)***	0.55 (0.03)***	0.55 (0.03)***	0.68 (0.04)***	0.68 (0.04)***	0.68 (0.04)***
1,509.51	1,508.81	1,508.55	1,335.18	1,335.07	1,335.07	1,469.25	1,468.87	1,468.21
	0.70 (1)	0.96 (2)		0.11(1)	0.11(2)		0.38 (1)	1.04 (2)

Duriez, in press) may be more likely than other students to perceive a particular teaching behavior as controlling, as they may more easily experience any interference in their activities as intrusive. In addition, they may also respond to perceived controlling teaching somewhat differently. That is, rather than complying with the teacher, they may become apathetic, cynical, or defiant during the class.

Another aim of this study was to examine associations between observed controlling teaching behavior and perceived autonomy-support and autonomous motivation in students. Based on the growing recognition within SDT that need thwarting in general and controlling teaching in particular cannot by simply equated with an absence of need support in general or the lack of autonomy support in particular (Bartholomew, Ntoumanis, Ryan, Bosch, & Thøgersen-Ntoumani, 2011), we expected that observed controlling teaching would be less strongly related to perceived autonomy-support and to students' autonomous motivation. In fact, although controlling teachers may hamper autonomous motivation, this form of motivation is thought to result especially from experiences of need support (Deci & Ryan, 2000). This expectation was confirmed, as observed controlling teaching behavior was unrelated to perceived autonomy support and students' autonomous motivation. These findings suggest that the dynamics of need thwarting, and more specifically controlling behavior, are relatively specific and are, at least to some extent, distinct from dynamics of autonomy support. Said differently, these findings suggest that for teachers to come across as autonomy-supportive and to promote autonomous motivation, more is needed than simply refraining from controlling and need-thwarting behaviors. For instance, teachers also need to encourage initiative, to provide meaningful choices, to give a reasonable and personally meaningful rationale for activities, and to cultivate and display interest in the activities (e.g., (Deci, Eghari, Patrick, & Leone, 1994; Haerens et al., 2013; Reeve, 2002).

In a more explorative fashion, we also examined possible developmental differences in our study variables. Consistent with a number of previous studies (e.g., Ntoumanis et al., 2009), we found that students in higher grades reported less autonomous motivation and perceived less teacher autonomy support. We also observed a smaller yet significant decline in controlled motivation, suggesting that any kind of motivation for PE was lower among students in higher grades. In spite of this mean-level decline in motivation, however, grade did not moderate associations between observed controlling teaching and students' perceptions and motives. These findings indicate that observed controlling teaching is related to perceived controlling teaching and suboptimal motivations for PE invariantly across grades. Given that this is the first study to examine developmental differences in the associations between observed controlling teaching and student outcomes, more research is needed to replicate our findings.

Practical Implications

One obvious recommendation following from the current findings is that it is important to raise awareness among teachers about the motivational risks associated with controlling practices and to discourage them from engaging in such practices. The observational coding system used in this study might actually be helpful in

Table 2
The Intervening Role of Perceived Controlling Teaching in the Associations Between Observed Controlling Teaching Behavior and Students' Motives

Motivation	c path		c′ path		a path		b path		a*b	
	Unstandardized *B* (*SE*)	95% CI	Unstandardized *B* (*SE*)	95% CI	Unstandardized *B* (*SE*)	95% CI	Unstandardized *B* (*SE*)	95% CI	Unstandardized *B* (*SE*)	95% CI
Controlled motivation										
Class level (= Level 2)	**0.50 (0.18)****	0.16,0.85	0.26 (0.14)	−0.01,0.53	**0.44 (0.18)***	0.09,0.78	**0.57 (0.09)*****	0.40,0.74	**0.25 (0.11)***	0.04,0.46
Pupil level (= Level 1)							**0.64 (0.03)*****	0.57,0.71		
Amotivation										
Class level (= Level 2)	0.32 (0.20)	−0.08,0.72	0.07 (0.18)	−0.29,0.43	**0.44 (0.18)***	0.09,0.78	**0.46 (0.11)*****	0.25,0.68	**0.20 (0.09)***	0.02,0.39
Pupil level (= Level 1)							**0.64 (0.04)*****	0.56,0.73		

Note. The a path is the association between observed and students' perceived controlling teaching behavior; b path is the association between students' perceived controlling teaching behavior and student motivation; c path is the initial, direct association between observed controlling teaching behavior and student motivation; c′ path is the association between observed controlling teaching behavior and student motivation adjusted for students' perceived controlling teaching behavior. CI = confidence interval.
* $p < .05$. ** $p < .01$. *** $p < .001$.

this regard, as it operationalized controlling teaching behaviors at the level of fairly specific and identifiable teaching behaviors. By providing teachers with insight into these specific behaviors (see Appendix) they may come to a deeper understanding of what it means to be controlling, which is the starting point to begin avoiding these behaviors. On the other hand, encouraging teachers to avoid the use of controlling tactics might not be as easy as it seems on first sight. Van den Berghe et al. (2013) recently demonstrated that the use of controlling behaviors is intertwined with teachers' personality functioning. Specifically, teachers with a controlled causality orientation, that is, teachers who tend to perceive pressure more easily in their environment and who at the same time are more sensitive to the effects of pressure, were more likely to engage in controlling behaviors during PE classes. Teachers with a controlled causality orientation might be less open to change and may hesitate to decrease their engagement in controlling behaviors, an issue that deserves more attention in future research. To handle the resistance of control-oriented teachers to changing their teaching style, professional development training will need to be presented in a need-supportive way to the teachers, such that teachers feel understood, are presented with options and a meaningful rationale to implement new teaching practices, and have acquired the necessarily skills to effectively implement the suggested teaching practices (Aelterman et al., 2013; Su & Reeve, 2011).

Limitations and Directions for Future Research

One important limitation of the current study is its cross-sectional design, which prevents us from drawing conclusions about the direction of effects. Most likely, the relation between observed controlling teaching and controlled motivation is bidirectional such that controlling teaching behavior evokes the students' motivation and vice versa. It would be interesting to assess controlling teaching and students' motivation and behavior at multiple occasions during one academic year or even within more limited time constraints (e.g., a single class) to observe in greater detail the nature of the unfolding dynamics between teacher and student behavior. Related to this, future research may examine the long-term influences of need thwarting teaching behavior. Longitudinal research may for instance provide more insight in the question of whether exposure to need thwarting PE teaching behaviors at high school interferes with engagement in sports and exercise later in life.

Another limitation of our study is the relatively small and fairly homogeneous sample. Clearly, caution is warranted in generalizing the current findings, and future research would do well to examine our proposed model in larger samples with more diversity in terms of, for example, class subject, level of education, and ethnicity. It would be particularly worthwhile to examine how the nature of controlling behaviors in academic classes might differ from the PE context and whether the relationships between controlling teaching behavior and students' motivation observed in the PE context also apply in academic classes. Yet, in terms of structural associations between constructs, we believe that dynamics of controlling teaching will work rather similarly in academic classes as compared to PE. Indeed, in SDT it is assumed that controlling practices undermine students' basic and universal psychological needs, and the need for autonomy in particular. On the

basis of this reasoning, it can be predicted that controlling teaching will be related to suboptimal motivational outcomes across contexts and types of classes. Further, given the study was limited to one dimension of need thwarting teaching behavior, future research could examine the other need thwarting teaching behaviors (i.e., controlling, chaos, and cold). This may provide more detailed insights in the associations and interactions between dimensions of need thwarting teaching behavior and students' motivation. Relatedly, although the findings of the current study suggest that dynamics of (autonomy) need thwarting are to some extent distinct from dynamics of (autonomy) need support, an important aim for future research is to further address the interplay of need thwarting and need supportive teaching behaviors. Recent work by Van den Berghe et al. (2013) suggests that observed autonomy-supportive and autonomy-thwarting (i.e., controlling) behaviors are only modestly negatively related. This means that some teachers may display autonomy-supportive and controlling behaviors within the course of one class. It might be interesting to examine whether and how such teachers affect students' motivation and behavior compared to teachers who predominantly rely on autonomy-supportive behaviors or teachers who predominantly rely on controlling behaviors.

Finally, we assumed that the effect of perceived controlling teaching on motivation would be mediated by feelings of need frustration. However, this assumption was not actually tested, and therefore, further research would do well to include an explicit assessment of students' need frustration in the context of PE and to examine whether need frustration is a mediator in the relationship between need thwarting teaching behavior and student outcomes.

Conclusion

This study showed that controlling teaching is not only in the eye of the beholder but, instead, can be traced back to observable teaching behaviors. Specifically, when teachers more frequently engaged in visibly controlling behaviors, students reported that they experienced their teachers as more controlling and that they felt more pressured to engage in the PE lesson. There was also an indirect association between controlling teaching behavior and amotivation. Given the maladaptive emotional and behavioral outcomes associated with these suboptimal types of motivation, the theme of controlling teaching deserves to be examined further and to be put on the agenda of teacher education in the context of PE and beyond.

References

Adie, J. W., Duda, J. L., & Ntoumanis, N. (2012). Perceived coach-autonomy support, basic need satisfaction and the well- and ill-being of elite youth soccer players: A longitudinal investigation. *Psychology of Sport and Exercise, 13,* 51–59. doi:10.1016/j.psychsport.2011.07.008

Aelterman, N., Vansteenkiste, M., Van Keer, H., De Meyer, J., Van den Berghe, L., & Haerens, L. (2013). Development and evaluation of a training on need-supportive teaching in physical education: Qualitative and quantitative findings. *Teaching and Teacher Education, 29,* 64–75. doi:10.1016/j.tate.2012.09.001

Aelterman, N., Vansteenkiste, M., Van Keer, H., Van den Berghe, L., De Meyer, J., & Haerens, L. (2012). Students' objectively measured physical activity levels and engagement as a function of between-class and between-student differences in motivation toward physical education. *Journal of Sport & Exercise Psychology, 34,* 457–480. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/22889689

Assor, A., Kaplan, H., Kanat-Maymon, Y., & Roth, G. (2005). Directly controlling teacher behaviors as predictors of poor motivation and engagement in girls and boys: The role of anger and anxiety. *Learning and Instruction, 15,* 397–413. doi:10.1016/j.learninstruc.2005.07.008

Assor, A., Kaplan, H., & Roth, G. (2002). Choice is good, but relevance is excellent: Autonomy-enhancing and suppressing teacher behaviours predicting students' engagement in schoolwork. *British Journal of Educational Psychology, 72,* 261–278. doi:10.1348/000709902158883

Assor, A., Vansteenkiste, M., & Kaplan, A. (2009). Identified versus introjected approach and introjected avoidance motivations in school and in sports: The limited benefits of self-worth strivings. *Journal of Educational Psychology, 101,* 482–497. doi:10.1037/a0014236

Baird, L. L. (1973). Teaching styles: An exploratory study of dimensions and effects. *Journal of Educational Psychology, 64,* 15–21. doi:10.1037/h0034058

Balaguer, I., González, L., Fabra, P., Castillo, I., Mercé, J., & Duda, J. L. (2012). Coaches' interpersonal style, basic psychological needs and the well- and ill-being of young soccer players: A longitudinal analysis. *Journal of Sports Sciences, 30,* 1619–1629. doi:10.1080/02640414.2012.731517

Bartholomew, K. J., Ntoumanis, N., Ryan, R. M., Bosch, J. A., & Thøgersen-Ntoumani, C. (2011). Self-determination theory and diminished functioning: The role of interpersonal control and psychological need thwarting. *Personality and Social Psychology Bulletin, 37,* 1459–1473. doi:10.1177/0146167211413125

Bartholomew, K. J., Ntoumanis, N., Ryan, R. M., & Thøgersen-Ntoumani, C. (2011). Psychological need thwarting in the sport context: Assessing the darker side of athletic experience. *Journal of Sport & Exercise Psychology, 33,* 75–102. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/21451172

Deci, E. L., Eghari, H., Patrick, B. C., & Leone, D. R. (1994). Facilitating internalization—The self-determination theory perspective. *Journal of Personality, 62,* 119–142. doi:10.1111/j.1467-6494.1994.tb00797.x

Deci, E. L., & Ryan, R. M. (1985). The general causality orientations scale: Self-determination in personality. *Journal of Research in Personality, 19,* 109–134. doi:10.1016/0092-6566(85)90023-6

Deci, E. L., & Ryan, R. M. (1987). The support of autonomy and the control of behavior. *Journal of Personality and Social Psychology, 53,* 1024–1037. doi:10.1037//0022-3514.53.6.1024

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11,* 227–268. doi:10.1207/s15327965pli1104_01

Deci, E. L., Spiegel, N. H., Ryan, R. M., Koestner, R., & Kauffman, M. (1982). Effects of performance standards on teaching styles: Behavior of controlling teachers. *Journal of Educational Psychology, 74,* 852–859. doi:10.1037//0022-0663.74.6.852

Digelidis, N., & Papaioannou, A. (1999). Age-group differences in intrinsic motivation, goal orientations and perceptions of athletic competence, physical appearance and motivational climate in Greek physical education. *Scandinavian Journal of Medicine & Science in Sports, 9,* 375–380. doi:10.1111/j.1600-0838.1999.tb00259.x

Grolnick, W. S., Benjet, C., Kurowski, C. O., & Apostoleris, N. H. (1997). Predictors of parent involvement in children's schooling. *Journal of Educational Psychology, 89,* 538–548. doi:10.1037/0022-0663.89.3.538

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. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/23404876

Haerens, L., Kirk, D., Cardon, G., De Bourdeaudhuij, I., & Vansteenkiste, M. (2010). Motivational profiles for secondary school physical education and its relationship to the adoption of a physically active lifestyle

among university students. *European Physical Education Review, 16,* 117–139. doi:10.1177/1356336X10381304

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 trans-contextual model. *Journal of Educational Psychology, 95,* 784–795. doi:10.1037/0022-0663.95.4.784

Hamre, B. K., & Pianta, R. C. (2001). Early teacher-child relationships and the trajectory of children's school outcomes through eighth grade. *Child Development, 72,* 625–638. doi:10.1111/1467-8624.00301

Hox, J. J. (2010). Multilevel analysis: Techniques and applications. *Quantitative methodology series* (2nd ed.). New York, NY: Routledge.

Jang, H., Reeve, J., & Deci, E. L. (2010). Engaging students in learning activities: It is not autonomy support or structure but autonomy support and structure. *Journal of Educational Psychology, 102,* 588–600. doi:10.1037/a0019682

Lamborn, S. D., Mounts, N. S., Steinberg, L., & Dornbusch, S. M. (1991). Patterns of competence and adjustment among adolescents from authoritative, authoritarian, indulgent, and neglectful families. *Child Development, 62,* 1049–1065. doi:10.1111/j.1467-8624.1991.tb01588.x

MacKinnon, D. P., Fairchild, A. J., & Fritz, M. S. (2007). Mediation analysis. *Annual Review of Psychology, 58,* 593–614.

Ntoumanis, N. (2001). A self-determination approach to the understanding of motivation in physical education. *British Journal of Educational Psychology, 71,* 225–242. doi:10.1348/000709901158497

Ntoumanis, N., Barkoukis, V., & Thøgersen-Ntoumani, C. (2009). Developmental trajectories of motivation in physical education: Course, demographic differences, and antecedents. *Journal of Educational Psychology, 101,* 717–728. doi:10.1037/a0014696

Ntoumanis, N., & Standage, M. (2009). Motivation in physical education classes. *Theory and Research in Education, 7,* 194–202. doi:10.1177/1477878509104324

Pomerantz, E., & Eaton, M. (2000). Developmental differences in children's conceptions of parental: They love me, but they make me feel incompetent. *Merrill-Palmer Quarterly, 46,* 140–167. Retrieved from http://www.merrillpalmerquarterly.com/

Rasbash, J., Steele, F., Browne, W. J., & Goldstein, H. (2009). *A user's guide to MLwiN, v2.10*. Bristol, United Kingdom: Centre for Multilevel Modelling, University of Bristol.

Reeve, J. (2002). Self-determination theory applied to educational settings. In E. L. Deci & R. M. Ryan (Eds.), *Handbook of self-determination research* (pp. 183–203). Rochester, NY: University of Rochester Press.

Reeve, J. (2009). Why teachers adopt a controlling motivating style toward students and how they can become more autonomy supportive. *Educational Psychologist, 44,* 159–175. doi:10.1080/00461520903028990

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

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

Ryan, R. M. (1982). Control and information in the intrapersonal sphere: An extension of cognitive evaluation theory. *Journal of Personality and Social Psychology, 43,* 450–461. doi:10.1037//0022-3514.43.3.450

Ryan, R. M., Bernstein, J. H., & Brown, K. W. (2010). Weekends, work, and well-being: Psychological need satisfactions and day of the week effects on mood, vitality, and physical symptoms. *Journal of Social and Clinical Psychology, 29,* 95–122. doi:10.1521/jscp.2010.29.1.95

Ryan, R. M., & Deci, E. L. (2000). The darker and brighter sides of human existence: Basic psychological needs as a unifying concept. *Psychological Inquiry, 11,* 319–338. doi:10.1207/S15327965PLI1104_03

Ryan, R. M., & Deci, E. L. (2002). An overview of self-determination theory. In E. L. Deci & R. M. Ryan (Eds.), *Handbook of self-determination research* (pp. 3–33). Rochester, NY: University of Rochester Press.

Ryan, R. M., & Deci, E. L. (2006). Self-regulation and the problem of human autonomy: Does psychology need choice, self-determination, and will? *Journal of Personality, 74,* 1557–1586. doi:10.1111/j.1467-6494.2006.00420.x

Ryan, R. M., Lynch, M. F., Vansteenkiste, M., & Deci, E. L. (2011). Motivation and autonomy in counseling, psychotherapy, and behavior change: A look at theory and practice. *The Counseling Psychologist, 39,* 193–260. doi:10.1177/0011000009359313

Sheldon, K. M., & Gunz, A. (2009). Psychological needs as basic motives, not just experiential requirements. *Journal of Personality, 77,* 1467–1492. doi:10.1111/j.1467-6494.2009.00589.x

Skinner, E. A., & Belmont, M. J. (1993). Motivation in the classroom: Reciprocal effects of teacher behavior and student engagement across the school year. *Journal of Educational Psychology, 85,* 571–581. doi:10.1037/0022-0663.85.4.571

Soenens, B., Duriez, B., Vansteenkiste, M., & Goossens, L. (2007). The intergenerational transmission of empathy-related responding in adolescence: The role of maternal support. *Personality and Social Psychology Bulletin, 33,* 299–311. doi:10.1177/0146167206296300

Soenens, B., Sierens, E., Vansteenkiste, M., Dochy, F., & Goossens, L. (2012). Psychologically controlling teaching: Examining outcomes, antecedents, and mediators. *Journal of Educational Psychology, 104,* 108–120. doi:10.1037/a0025742

Soenens, B., & Vansteenkiste, M. (2005). Antecedents and outcomes of self-determination in 3 life domains: The role of parents' and teachers' autonomy support. *Journal of Youth and Adolescence, 34,* 589–604. doi:10.1007/s10964-005-8948-y

Soenens, B., & Vansteenkiste, M. (2010). A theoretical upgrade of the concept of parental psychological control: Proposing new insights on the basis of self-determination theory. *Developmental Review, 30,* 74–99. doi:10.1016/j.dr.2009.11.001

Standage, M., Duda, J. L., & Ntoumanis, N. (2003). A model of contextual motivation in physical education: Using constructs from self-determination and achievement goal theories to predict physical activity intentions. *Journal of Educational Psychology, 95,* 97–110. doi:10.1037/0022-0663.95.1.97

Standage, M., Duda, J. L., & Ntoumanis, N. (2005). A test of self-determination theory in school physical education. *British Journal of Educational Psychology, 75,* 411–433. doi:10.1348/000709904x22359

Su, Y.-L., & Reeve, J. (2011). A meta-analysis of the effectiveness of intervention programs designed to support autonomy. *Educational Psychology Review, 23,* 159–188. doi:10.1007/s10648-010-9142-7

Taylor, I. M., Ntoumanis, N., & Standage, M. (2008). A self-determination theory approach to understanding the antecedents of teachers' motivational strategies in physical education. *Journal of Sport & Exercise Psychology, 30,* 75–94. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/18369244

Taylor, I. M., Ntoumanis, N., Standage, M., & Spray, C. M. (2008). Motivational predictors of students' leisure time physical activity and general physical self concept in physical education: A multilevel growth curve analysis. *Journal of Sport & Exercise Psychology, 30,* S204–S205. Retrieved from http://journals.humankinetics.com/jsep

Vallerand, R. J., & Fortier, M. S. (1998). Measures of intrinsic and extrinsic motivation in sport and physical activity: A review and critique. In J. L. Duda (Ed.), *Advances in sport and exercise psychology measurement* (pp. 91–101). Morgantown, WV: Fitness Information Technology.

Vallerand, R. J., Fortier, M. S., & Guay, F. (1997). Self-determination and persistence in a real-life setting: Toward a motivational model of high school dropout. *Journal of Personality and Social Psychology, 72,* 1161–1176. doi:10.1037/0022-3514.72.5.1161

Van den Berghe, L., Soenens, B., Vansteenkiste, M., Aelterman, N., Cardon, G., Tallir, I. B., & Haerens, L. (2013). Observed need-supportive and need-thwarting teaching behavior in physical education: Do teachers' motivational orientations matter? *Psychology for Sport & Exercise*. Advance online publication. doi:10.1016/j.psychsport.2013.04.006

Vansteenkiste, M., Lens, W., & Deci, E. L. (2006). Intrinsic versus extrinsic goal contents in self-determination theory: Another look at the quality of academic motivation. *Educational Psychologist, 41,* 19–31. doi:10.1207/s15326985ep4101_4

Vansteenkiste, M., Niemiec, C., & Soenens, B. (2010). The development of the five mini-theories of self-determination theory: An historical overview, emerging trends, and future directions. In T. C. Urdan & S. A. Karabenick (Eds.), *Advances in motivation and achievement: Vol. 16. The decade ahead* (pp. 105–166). Bingley, United Kingdom: Emerald.

Vansteenkiste, M., & Ryan, R. M. (in press). On psychological growth and vulnerability: Basic psychological need satisfaction and need frustration as a unifying principle. *Journal of Psychotherapy Integration*.

Vansteenkiste, M., Sierens, E., Goossens, L., Soenens, B., Dochy, F., Mouratidis, A., . . . Beyers, W. (2012). Identifying configurations of perceived teacher autonomy support and structure: Associations with self-regulated learning, motivation and problem behavior. *Learning and Instruction, 22,* 431–439. doi:10.1016/j.learninstruc.2012.04.002

Vansteenkiste, M., Simons, J., Lens, W., Sheldon, K. A., & Deci, E. L. (2004). Motivating learning, performance, and persistence: The synergistic effects of intrinsic goal contents and autonomy-supportive contexts. *Journal of Personality and Social Psychology, 87,* 246–260. doi:10.1037/0022-3514.87.2.246

Vansteenkiste, M., Simons, J., Lens, W., Soenens, B., & Matos, L. (2005). Examining the motivational impact of intrinsic versus extrinsic goal framing and autonomy-supportive versus internally controlling communication style on early adolescents' academic achievement. *Child Development, 76,* 483–501. doi:10.1111/j.1467-8624.2005.00858.x

Vansteenkiste, M., Soenens, B., Van Petegem, S., & Duriez, B. (in press). How are domain and style of parental prohibition related to adolescents' oppositional defiance and internalization? *Developmental Psychology*.

Verstuyf, J., Vansteenkiste, M., Soenens, B., Boone, L., & Mouratidis, A. (2013). Daily ups and downs in women's binge eating symptoms: The role of basic psychological needs, general self-control, and emotional eating. *Journal of Social and Clinical Psychology, 32,* 335–361. doi:10.1521/jscp.2013.32.3.335

Wentzel, K. R. (2002). Are effective teachers like good parents? Teaching styles and student adjustment in early adolescence. *Child Development, 73,* 287–301. doi:10.1111/1467-8624.00406

Yli-Piipari, S., Watt, A., Jaakkola, T., Liukkonen, J., & Nurmi, J.-E. (2009). Relationships between physical education students' motivational profiles, enjoyment, state anxiety, and self-reported physical activity. *Journal of Sports Science & Medicine, 8,* 327–336. Retrieved from http://www.jssm.org/

Zhang, Z., Zyphur, M. J., & Preacher, K. J. (2009). Testing multilevel mediation using hierarchical linear models: Problems and solutions. *Organizational Research Methods, 12,* 695–719. doi:10.1177/1094428108327450

(*Appendix follows*)

Appendix

Overview of the Items Used to Tap Into Observed Controlling Teaching Behavior Together With Illustrative Examples of Each Controlling Behavior

The teacher	Illustration
. . . exercises power over the students by interfering and demanding respect	"Okay, we will do some abdominal exercises now. Look at my demonstration. Now do the exercise at my pace. No one stops until I say so."
. . . commands students, uses controlling language and imperatives	"Come over here! Hurry up. You two! Go get the basketballs in the storage room and do it now. I don't like waiting."
. . . is irritated, loses his patience	The teacher demonstrated some gymnastic exercises on the balance beam but Nicky is chatting around. The teacher already gave her a warning, but now he is done with it. "Nicky, start doing the exercises I demonstrated. Start doing what I asked you to do."
. . . yells at the students	"When I blow my whistle everybody stops right where you are during the tag game." Although the teacher blows his whistle after a while, some students keep on running and playing. He blows his whistle again and yells at the students: "Mary and Thomas, are you deaf?"
. . . pressures the students by making an appeal to their self-confidence or pride or induces feelings of guilt and shame	"I am really disappointed in the performance of some students of this class. You all had a lot of opportunity to practice during the past lesson. I think you all know that this exercise can be easily mastered by all of you, but I am sorry to say that I don't see a lot of progress in some of you."
. . . uses destructive criticism when students are not acting in the way the teacher expects them to	"No, no, no. Not like that. Do what I asked you to do. Keep your feet together while jumping . . . No, wrong again . . . Unbelievable, it is really not difficult to simply copy my demonstration and still you do something else."
. . . does not allow input from the students or reacts negatively to their input	One of the students asks the teacher if the students may compose the teams for the volleyball game themselves. The teacher answers: "No, that won't work. I am the one who puts together the teams."

Received January 30, 2013
Revision received July 26, 2013
Accepted July 29, 2013 ■