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Research paper

Is high teacher directiveness always negative? Associations with students' motivational outcomes in physical education

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HIGHLIGHTS

- Two qualitatively different ways of teacher directiveness were examined.
- Competence support and control can be perceived by students simultaneously.
- Competence support was positively associated with adaptive outcomes.
- Control was positively related to maladaptive consequences.
- The "high competence support–low control" profile yielded maximized adaptive and minimized maladaptive outcomes.

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ABSTRACT

This study investigates how perceived competence-supportive and externally and internally controlling styles can be combined and associated with different students' motivational outcomes in Physical Education (PE). In a sample of 1107 students, results revealed that while competence-support positively related to need satisfaction and autonomous motivation, external and internal control positively related to need frustration, controlled motivation, amotivation, and oppositional defiance. Of the four identified profiles, the "high competence-support–low control" profile was the most adaptive, while the "low competence-support–very high control" profile was the most maladaptive. Findings suggest that PE teachers combine both styles with differentiated students' motivational outcomes.

1. Introduction

Providing students with clear directions is seen as an important aspect of effective classroom management (Nie & Lau, 2009). For this purpose, physical education (PE) teachers can use a wide variety of strategies (Vasconcellos et al., 2020; White et al., 2021). For instance, to optimize learning time, some PE teachers will put the spotlight on clarifying the key points necessary for students to succeed in the task. Instead, other PE teachers will require students to develop the target task in a prescribed way (Escriva-Boulley et al., 2021). These two examples illustrate two qualitatively different ways in which teachers can guide students in the instructional process. While the first PE teachers provide directions adopting a competence-supportive style, the second PE teachers adopt a controlling style.

Grounded on self-determination theory (SDT) (Ryan & Deci, 2020), competence support and control are two styles characterized by high teacher directiveness. However, SDT also outlines how the two styles are qualitatively different, as the one is need–supportive (i.e., competence support) and the other is need–thwarting (i.e., control) (Escriva-Boulley et al., 2021). Teachers can thus guide students in their instructional process in two qualitatively different ways, which may likely be used simultaneously as strategies to manage the class (Burgueño, García-

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González, Abós, & Sevil-Serrano, 2022; Haerens et al., 2018; Leo, Pulido, Sánchez-Oliva, López-Gajardo, & Mouratidis, 2022). To illustrate, when the target task is introduced, teachers may provide learners with accurate guiding instructions, clear expectations, defined organizations, and basic rules for successful completion (i.e., competence-supportive style). If in doing so, teachers rely on excessively pressuring verbal commands (i.e., externally controlling style), or repetitive facial expressions of disapproval (i.e., internally controlling style), they combine a set of competence-supportive and controlling strategies to provide directions to students.

The present research pays special attention to the ways in which students perceive how their teacher can guide them in the classroom practice. To the best of our knowledge, research over the last years has examined the effects from teachers' controlling style, compared to autonomy-supportive style, in PE lessons (Sun, Li, & Shen, 2017; Vasconcellos et al., 2020; White et al., 2021). Nevertheless, as the notion of competence support has emerged more recently on researchers' agenda, little is, therefore, known on the possible separate and combined effects of competence-supportive and controlling styles in PE lessons. Considering that competence support and control refer to two styles that are high in directiveness (i.e., the teacher takes the leadership in learning interactions), PE teachers often wonder how can more effectively implement a competence-supportive style for an optimal classroom management without falling into controlling practices. Therefore, there is a need for new research to address the question of how students perceive their teacher to use competence-supportive and internally and externally controlling styles in a separate or combined way in order to enhance their motivational outcomes in the classroom. This research, therefore, sought to analyze the associations of students' perceptions of competence-supportive and internally and externally controlling style from their PE teacher with their basic psychological needs (BPN), quality of motivation, and oppositional defiance in PE through both a variable-centered and person-centered approach.

1.1. Self-determination theory: motivation and basic psychological needs in PE

SDT adopts an organismic approach to motivation that has been broadly used to understand students' experiences and learning in PE (Vasconcellos et al., 2020). This framework proposes a multidimensional conceptualization of motivation by discerning between three qualities of reasons why students are driven to participate in PE (Ryan & Deci, 2020). Autonomous motivation reflects that students participate in PE based on inherent enjoyment, curiosity, and seeking new challenges (intrinsic motivation), the alignment with their identity system (integrated regulation), and the recognition of its benefits (identified regulation). Controlled motivation expresses that students participate in PE because they feel compelled, either by themselves to gain contingent self-worth and avoid guilt or shame (introjected regulation) or by others to obtain rewards and avoid punishment (external regulation). Finally, amotivation implies that students have no autonomous or controlled reasons to participate in PE. Apart from participating in PE guided by autonomous, controlled or lack of reasons, students may also adopt defensive and reactive motives. This is the case when they constantly challenge teachers and when they behave contrary to teachers' expectations (i.e., oppositional defiance; Haerens, Aelterman, Vansteenkiste, Soenens, & Van Petegem, 2015).

SDT argues that students' autonomous motivation for PE is fostered by the satisfaction of their BPNs for autonomy (i.e., being a causal agent), competence (i.e., experiencing efficacy and goal process), and relatedness (i.e., experiencing mutual care and genuine links to classmates) (Sun et al., 2017; Vasconcellos et al., 2020; White et al., 2021). Instead, students' controlled motivation and amotivation for PE are facilitated by the frustration of their BPNs for autonomy (i.e., coercion and pressure to participate), competence (i.e., inefficacy and clumsiness for tasks), and relatedness (i.e., loneliness and social exclusion) (Vasconcellos et al., 2020; White et al., 2021). A growing basis of research in PE suggested that students' oppositional defiance is facilitated by teachers' controlling style (Abós, Burgueño, García-González, & Sevil-Serrano, 2022; Haerens et al., 2015), and to a lesser degree by feelings of need frustration (Abós et al., 2022). Finally, SDT details that students' need-based experiences and the quality of their motivation are supported or thwarted according to the perception and interpretation that they form regarding (de)motivating styles used by their PE teacher (Bandura, 1997; Vasconcellos et al., 2020).

1.2. The role of PE teachers' (de)motivating styles

Through their (de)motivating styles, teachers can provide students with need-supportiveness and directions in managing the classroom practice (Nie & Lau, 2009). Focusing on directiveness (i.e., the degree in which the teacher takes the leadership in learning interactions or rather leaves the initiative to students themselves; Vansteenkiste, Aelterman, Haerens, & Soenens, 2019), SDT-based research argues that autonomy support (i.e., need-supportive practices) and chaos (i.e., need-thwarting practices) are less directive styles, inasmuch as the teacher leaves more room for students to perform a leading role (Aelterman et al., 2019; Escriva-Boulley et al., 2021; Vansteenkiste et al., 2019). Instead, when teachers take the initiative to direct students in the classroom, they can do it using a tone of guidance (or competence support) and/or pressure (or control) (Aelterman et al., 2019; Escriva-Boulley et al., 2021). A competence-supportive style is need-supportive and is, therefore, related to need satisfaction and positive student outcomes, whereas a controlling style is need-thwarting and is primarily associated with need frustration and negative student outcomes (Escriva-Boulley et al., 2021).

On the one hand, competence support refers to the manner the teacher organizes and delivers the activities in PE lessons (Vasconcellos et al., 2020). Competence support has been traditionally and primarily operationalized in terms of structure (Ntoumanis, 2022). Competence-supportive teachers provide students with an overview of learning goals and expectations for the lesson, as well as useful information and clarifying guidelines for successful completion prior to task development (Ntoumanis, 2022; Vasconcellos et al., 2020). Apart from providing clarifications, competence-supportive teachers will also guide students' learning, by helping them during ongoing task development, and providing efficacy-relevant feedback during and after task accomplishment (Ntoumanis, 2022). A growing body of research on PE has shown that students' perceptions of competence support from their teacher were positively related to their need satisfaction and autonomous motivation (Burgueño & Medina-Casaubón, 2021; Vasconcellos et al., 2020). Competence support is, thus, thought to be an essential part of teachers behaviors that help to explain the bright side of student functioning (i.e., competence-supportive style → need satisfaction → autonomous motivation) (Vansteenkiste, Ryan, & Soenens, 2020).

On the other hand, a controlling style refers to the use of teachers of pressure strategies to make students think, feel, or behave in a prescriptive manner. When being controlling, teachers impose their own agenda and requirements on students, regardless of what they are interested in doing (Haerens et al., 2015). PE teachers can develop a controlling style in an externally and/or internally manner (Aelterman et al., 2019; Burgueño, Abós, García-González, Tilga, & Sevil-Serrano, 2021). External control (also

known as demanding approach; Aelterman et al., 2019) involves teachers' explicit and overt attempts to create a sense of external obligation toward the task through the impositions of deadlines, explicitly coercive verbal commands (e.g., you must/have to), threats, or environmental incentives (Burgueño et al., 2021; De Meyer, Soenens, Aelterman, De Bourdeaudhuij, & Haerens, 2016). Internal control (also denominated as domineering approach; Aelterman et al., 2019) involves teachers' subtle or covert attempts to induce ego-involvement. It also involves the use of verbal and facial displays of disappointment or approval, withdrawals of attention, or appeals to feelings of guilt and pride (Burgueño et al., 2021; De Meyer et al., 2016). A small body of PE research has indicated positive relationships between students' perceptions of externally and, particularly, internally controlling styles from the PE teacher and maladaptive outcomes such as their need frustration, controlled motivation, amotivation, and oppositional defiance (Abós et al., 2022; De Meyer et al., 2016). Controlling practices from teachers are believed to be an antecedent of the dark side of students functioning (i.e., controlling style → need frustration → controlled motivation/amotivation, and oppositional defiance) (Haerens et al., 2015).

1.3. Merits of person-centered approaches

Over the last decade, previous SDT-based research has documented the differentiated effects from teachers' autonomy support and control, two diametrically opposite styles in terms of need-supportiveness and directiveness, in PE lessons (Vasconcellos et al., 2020). However, there is small evidence on the distinctive role of teachers' competence support in PE lessons given that it has been largely unaddressed in the eyes of students (Vasconcellos et al., 2020). Taking into account that competence support and control refer to styles that are high in directiveness, very little is currently known on how teachers are able to provide competence support avoiding falling into controlling practices in order to effectively manage the classroom and promote adaptive motivational and behavioral outcomes among students in PE lessons.

To the best of our knowledge, the few existing studies relied on variable-centered approaches to analyze the simultaneously relationships between the students' perception of competence-supportive and controlling styles from the teacher with their learning-related outcomes (e.g., Burgueño & Medina-Casaubón, 2021; Leo, Mouratidis, Pulido, López-Gajardo, & Sánchez-Oliva, 2022; Vasconcellos et al., 2020). Although these studies made a valuable contribution, they usually examined competence-supportive and controlling styles as independent dimensions, hereby ignoring the possible dynamic interplay among them.

Current SDT-based research on profile analysis is confirming that PE teachers can simultaneously combine several (de)motivating styles at different degrees in their instructional practice (Burgueño et al., 2022; Haerens et al., 2018; Leo, Pulido, et al., 2022). Each of these studies identified four differentiated profiles in terms of need–supportive and need–thwarting teaching behaviors with the retention of two similar profiles (i.e., high need–supportive and low need-thwarting profile; low need–supportive and high need-thwarting profile). Instead, the two other profiles identified in these previous studies consistently differed among the three studies with combinations at different degrees from–low–to–high in terms of need-supportive and need–thwarting behaviors (e.g., low need–supportive and low need-thwarting behaviors; high need-supportive and high need-thwarting behaviors).

The advantage of person–centered approaches over variable–centered analysis thus lies in the opportunity to identify co-occurring combinations of motivating and demotivating styles, as well as in examining how these different profiles yield differentiated students' motivational and behavioral outcomes. Yet, so far, no studies have been found that specifically examine the combinations of perceived competence-supportive and controlling styles from PE teachers according to the students' perspective. As the provision of too much competence support could be perceived as control and vice-versa when the teacher takes the lead in learning interactions, there is a need to gain more insights into how teachers can guide students in the classroom and whether the style with which directions are provided matters. Additional evidence also needs to be gathered on the separate and combined role played by the two more directive but qualitative different styles in relation to students' need-based experiences, motivation, and oppositional defiance in PE. This will help PE teachers to implement effective classroom management strategies to develop students' motivational processes and adaptative behavioral outcomes in PE lessons.

1.4. The present study

Drawing from the premise that the perception and interpretation that students conduct classroom learning environment is the most important determinant of their motivation and functioning (Bandura, 1997), the present study focuses on analyzing the influence of teachers' competence-supportive and controlling styles on students' motivational outcomes from the students' perspective using variable-centered and person-centered approaches. Therefore, the objective of this research was twofold. Adopting a variable-centered approach, the first objective of this study was to examine the associations of students' perceptions of competence-supportive style and internally and externally controlling styles from the teacher with their need–based experiences, quality of motivation, and oppositional defiance. Consistent with the SDT tenets (Ryan & Deci, 2020; Vansteenkiste et al., 2020) and evidence from previous research (Sun et al., 2017; Vasconcellos et al., 2020), we hypothesized that: a) perceived competence-supportive style from the teacher would be positively related to need satisfaction, and negatively related to need frustration; b) perceived externally and internally controlling styles from the teacher would be positively related to need frustration and oppositional defiance, and negatively related to need satisfaction; c) need satisfaction would be positively related to autonomous motivation, while controlled motivation and amotivation would display negative relations; d) need frustration would be positively related to controlled motivation and amotivation, while autonomous motivation would be negatively related.

Taking a person-centered approach, the second objective of this study was to investigate to what extent students' perceptions of competence-supportive style and internally and externally controlling styles from their teacher can be combined and which resulting style yields the most and least optimal pattern of outcomes. Taking differences and similarities of the two styles into consideration (Aelterman et al., 2019; Escriva-Boulley et al., 2021), we expected to identify up to four profiles with different levels of competence-supportive style, and externally and internally controlling styles according to the students' perception. Two of them would be characterized by high perceptions of competence support and low control, and vice-versa. The other two teaching profiles would be characterized by showing simultaneously high, moderate or low levels both of perceived competence support and control. In addition, we hypothesized that the profile characterized by high competence support and low externally and internally controlling would report the highest levels on need satisfaction and autonomous motivation, and the lowest on need frustration, controlled motivation, amotivation and oppositional defiance. Conversely, the oppositive profile, characterized by low perceived competence support and high control, was expected to have the lowest scores

on need satisfaction and autonomous motivation, and the highest on need frustration, controlled motivation, amotivation, and oppositional defiance. No hypotheses were made about the differences in motivational outcomes with respect to the other resulting profiles.

2. Methods

2.1. Participants and procedure

A non-probabilistic convenience sample of 1118 secondary PE students from 11 to 18 years old from a northeastern Spanish city participated in this cross-sectional study. After removing univariate and multivariate outliers, the final sample included 1107 students ($M_{age} = 14.12$; $SD = 1.51$; 563 girls, 50.9%). All students received two 60-min coeducational PE lessons per week. Class size ranged from 20 to 32 students.

Ethical approval was granted from Ethics Committee for Clinical Research of Aragon (CEICA) (PI15/0283). A written informed consent was obtained from both students and their parents or tutors. A paper-and-pencil survey with validated questionnaires was administered by the researchers in a quiet classroom without the presence of PE teachers. The approximate time to complete the survey was 20–25 min.

2.2. Measures

2.2.1. Perceived competence-supportive teaching style in PE

To assess students' perceptions of competence support from PE teachers, the competence-support factor of the Basic Psychological Needs Support Questionnaire in Physical Education (BPNSQ) validated in Spanish (Sanchez-Oliva, Leo, Amado, Cuevas, & García-Calvo, 2013) was used. Four items, on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), measured competence support (e.g., "Tries to get us to accomplish the goals that are set for tasks") after the stem "In PE classes, my teacher …". The one-factor confirmatory factor analysis (CFA) model obtained a good fit to the data: $\chi^2/df = 4.31$, $p < .001$; CFI = 0.97; TLI = 0.95; RMSEA = 0.069.

2.2.2. Perceived internally and externally controlling teaching style in PE

To assess students' perceptions of externally and internally controlling teaching behaviors adopted by PE teachers, the Controlling Teaching Scale for Physical Education (CTS-PE) validated in Spanish (Burgueño et al., 2021) was used. The instrument is preceded by the stem "In PE classes, my teacher …" and is composed of four items that assess externally controlling teaching behaviors (e.g., "Threatens with sanctions when I am not doing what (s)he tells me to do") and four items that assess internally controlling teaching behaviors (e.g., "Makes me feel guilty when I disappoint him/her") on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Both the hierarchical one-factor CFA model and the two-factor correlated CFA model showed the same good fit to the data: $\chi^2/df = 4.00$, $p < .001$; CFI = 0.99; TLI = 0.98; RMSEA = 0.061.

2.2.3. Need satisfaction and frustration in PE

To assess students' need satisfaction and frustration in PE (i.e., perceptions of autonomy, competence, and relatedness), the Spanish PE version of the Basic Psychological Needs in Exercise Scale was used (Moreno-Murcia, González-Cutre, Chillón-Garzón, & Parra, 2008) and the Spanish PE-version of the Basic Psychological Need Satisfaction and Frustration (BPNSNF) scale (Chen et al., 2015) were used respectively. Both instruments are preceded by the stem "In my PE lessons …" and include four items per factor to measure autonomy satisfaction (e.g., "I feel that the activities I do in PE fit in with my interests"), competence satisfaction (e.g., "I feel that in PE I perform the activities effectively"), relatedness satisfaction (e.g., "I feel that in PE lessons I can communicate openly with my classmates"), autonomy frustration (e.g., "I feel pressured to do too many things"), competence frustration (e.g., "I have serious doubts about whether I can do exercises well"), and relatedness frustration (e.g., "I feel that classmates who are important to me are cold and distant towards me"), respectively. Both instruments are rated on a 5-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). Consistent with the SDT tenets, a composite variable of need satisfaction and need frustration was calculated for parsimony reasons. The hierarchical CFA models for need satisfaction ($\chi^2/df = 2.67$, $p < .001$; CFI = 0.99; TLI = 0.99; RMSEA = 0.051) and need frustration ($\chi^2/df = 1.95$, $p < .001$; CFI = 0.98; TLI = 0.98; RMSEA = 0.034) indicated a good fit.

2.2.4. Motivation for PE

To assess students' motivation for PE, the Spanish PE version of the Perceived Locus of Causality Scale (PLOC) (Ferriz, González-Cutre, & Sicilia, 2015) was used. Following the stem "I engage in PE lessons …", this questionnaire includes four items per factor to measure intrinsic motivation (e.g., "… because PE is enjoyable"), integrated regulation (e.g., "… because I consider that PE is in line with my values"), identified regulation (e.g., "… because it is important for me to do well in PE"), introjected regulation (e.g., "… because I want the others to think that I'm good"), external regulation (e.g., "… so that the teacher won't yell at me"), and amotivation (e.g., "… but I really feel I'm wasting my time in PE"). Students responded on each item through a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). Consistent with SDT-based research, autonomous motivation (i.e., average values of intrinsic motivation, integrated and identified regulation), controlled motivation (i.e., average values of introjected and external regulation), and amotivation were estimated for parsimony reasons. The three-factor hierarchical CFA model showed acceptable fit to the data: $\chi^2/df = 9.12$, $p < .001$; CFI = 0.94; TLI = 0.93; RMSEA = 0.079.

2.2.5. Oppositional defiance

Students' perceived oppositional defiance towards their PE teachers were measured using a Spanish validated version in PE (Abós, Sevil-Serrano, Sanz, Aibar, & García-Gonzálz, 2016). The stem "In PE lessons …" introduces four items that measure oppositional defiance (e.g., "I sometimes think about completely ignoring what the PE teacher asks me to do") as a behavior of rejection of the PE teacher's authority and the intention to actively defy their requests. A 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) was used. The one-factor CFA model showed good fit to the data: $\chi^2/df = 1.51$, $p = .220$; CFI = 0.99; TLI = 0.99; RMSEA = 0.020.

2.3. Data analysis

Analyses were conducted using SPSS 28.0 and MPlus v8.4. Firstly, descriptive statistics, McDonald's Omega reliability coefficients, and latent correlations (via CFA) were computed. Regarding the variable-centered approach, a multilevel structural equation modeling (SEM) approach was run, following the two-step proposal (Kline, 2016), to analyze the relationships among the target variables. The measurement model, first of the two steps, examined the bidirectional relationships among the different latent variables under study. A multilevel SEM, the second step, analyzed

paths from the students' perceptions of competence-supportive and controlling styles from their PE teachers to their motivation and oppositional defiance through need-based experiences. Indirect effects from teaching styles to students' motivation and oppositional defiance through need satisfaction and need frustration were also analyzed using Hayes' (2017) methods of multiple mediation. The weighted least squares mean and variance adjusted estimator (WLSMV) was used since it is more suitable to Likert-type scales and considering non-normal data (Li, 2016). An acceptable fit to data is obtained with values up to 5 for the χ^2/df coefficient, equal or greater than 0.90 for CFI and TLI, and as high as 0.08 for RMSEA (Kline, 2016).

Concerning the person-centered approach, a multilevel latent profile analysis (LPA) was performed. Standardized scores for students' perceptions of competence-supportive and externally and internally controlling styles were computed. Thereupon, we tested the model with a two-profile solution, increasing the number of profiles up to the model with more profiles no longer yielded a significantly model better fit than the one before it (k-1) (Weller, Bowen, & Faubert, 2020). Every tested profile model was estimated with 5000 random sets, 1000 iterations, and a final optimization process on the 250 best solutions (Muthén & Muthén, 1998-2017). To decide the optimal number of profiles for data, a combination of various criteria was taken into consideration (Weller et al., 2020). The first of them was the examination of parsimony indexes including Akaike Information Criterion (AIC), Bayesian Information Criterion (BIC), and Sample-Size Adjusted BIC (SSA-BIC). A lower value on AIC, BIC, and SSA-BIC would express a better-fitting model (Weller et al., 2020). Second, Lo-Mendell-Rubin adjusted likelihood ratio (LMR) tests were run to determine if the fit of a model with k latent profiles is better than the fit of a model with k-1 profiles. A significant p-value would report a k-profile model fits better than the k-1 profile model (Weller et al., 2020). The third criterion was to consider entropy as an indicator of a good degree of accuracy in profile membership assignment when values are over 0.80 (Weller et al., 2020). As fourth criterion, profile size was deemed based on the argument that profiles with less than 5% of the participating sample would be spurious (Weller et al., 2020).

To compare profiles in terms of perceived competence-supportive and controlling teaching styles on motivational outcomes, Bolck–Croon–Hagenaars (BCH) tests of overall mean equality were performed (Muthén & Muthén, 1998-2017). This approach also includes *post-hoc* pairwise comparisons of profile means on the target outcome variables using Wald chi-square tests to determine between which two profiles there would be significant differences (Muthén & Muthén, 1998-2017). The decision of selecting the BCH approach was taken by being considered the most robust method currently available for comparing groups on continuous dependent variables without influencing profile membership (Nylund-Gibson, Grimm, & Masyn, 2019). The statistic significant level was $p < .05$.

3. Results

3.1. Preliminary descriptive and correlational results

Table 1 shows that perceived competence-supportive style was positively and significantly related to the bright motivational pathway variables (i.e., need satisfaction and autonomous motivation) and negatively and significantly related to the dark pathway variables (i.e., need frustration, amotivation, and oppositional defiance). The inverse correlational pattern was observed for perceived externally and internally controlling styles.

3.2. Variable-centered approach

Because in this study the sample (i.e., 1107 students) was nested within 52 classrooms, we explored the multilevel nature of the data prior to conducting the SEM and LPA (Preacher, Zhang, & Zyphu, 2011). Two-level model with students nested within classrooms was estimated. Classroom-level variance was significant for 12 of the 16 variables studied (χ^2 (1) = 2.47–3.65, $p < .05$; ICC = 0.12–0.43) with the exception of need frustration (χ^2 (1) = 2.433, $p = .02$; ICC = 0.07), competence frustration (χ^2 (1) = 2.23, $p = .03$; ICC = 0.9), relatedness frustration (χ^2 (1) = 2.59, $p = .01$; ICC = 0.09), and controlled motivation (χ^2(1) = 1.61, $p = .11$; ICC = 0.07). Consequently, we controlled for the multilevel nature of the data at classroom level in the SEM and LPA.

The results of the two-level SEM approach showed first the robustness of the tested measurement model with a good fit to the observed data: χ^2/df = 1.50; $p < .001$; CFI = 0.95; TLI = 0.95; RMSEA = 0.021 (90%CI = 0.019–0.023). Second, the structural model also had a good fit to the observed data: χ^2/df = 1.49; $p < .001$; CFI = 0.95; TLI = 0.95; RMSEA = 0.021 (90% CI = 0.019–0.023). The total variance explained by this model was 51% for autonomous motivation, 25% for controlled motivation, 65% for amotivation, and 66% for oppositional defiance. Fig. 1 displays that perceived competence-supportive style was significantly and positively related to need satisfaction, while being negatively related to need frustration. Perceived controlling style was significantly and positively related to need frustration, whereas being negatively related to need satisfaction. While need satisfaction was positively and significantly related to autonomous motivation, and negatively related to controlled motivation and amotivation; an opposite pattern of results was found for need frustration. Finally, no direct relationships were found between the two perceived styles from the teacher and motivational outcomes, apart from the fact that teachers' internally and externally controlling styles displayed direct and positive relationships with oppositional defiance.

Table 2 shows that 10 out of the 16 tested indirect effects were significant. Only those from teachers' style to students' oppositional defiance (4 indirect effects) and to controlled motivation via need satisfaction (2 indirect effects) were not significant.

3.3. Person-centered approach

The fit statistics AIC, BIC, and SSA-BIC, entropy, participants per profile, and p-value from adjusted LMR tests pointed out that a four-profile model fitted the observed data best (see Table 3). The five- and six-profile models were ruled out by being non-significantly different from the four-profile model and both retaining a profile with less than 5% of the sample. Further, the four-profile model was preferred over the two- and three-profile solutions since it had lower values of AIC, BIC, and SSA-BIC, and a higher degree of entropy.

Table 4 shows descriptive statistics for each retained profile, and Fig. 2 displays the graphical representation of the four-profile model in terms of standardized and raw scores. The first profile (n = 598, 54.02%) was labeled as "high competence support–low control" by including students with above-average scores of competence support and below-average scores of external and internal control (z-scores of 0.28, −0.73, and −0.56, respectively). The second profile (n = 267, 24.12%) was denominated as "moderate competence support and control" by including students reporting moderate levels of competence support and external and internal control, which were slightly below or above average (z-scores of −0.05, 0.20, and 0.34, respectively). The third profile (n = 154, 13.91%) was labeled as "moderate competence support–high control" by including students with slightly below-

Table 1
Descript statistics, reliability coefficients, and latent correlations between study variables.

	Range	M(SD)	ω	1	2	3	4	5	6	7	8	9	10
1. Competence-supportive style	1–5	3.60 (1.08)	.85	–									
2. Controlling style (global)	1–5	2.03 (0.99)	.91	−.40**	–								
3. External control	1–5	1.93 (1.07)	.88	−.46**	.91**	–							
4. Internal control	1–5	2.13 (1.10)	.85	−.46**	.92**	.81**	–						
5. Need satisfaction	1–5	3.60 (0.81)	.85	.81**	−.45**	−.49**	−.53**	–					
6. Need frustration	1–5	1.98 (0.83)	.90	−.48**	.46**	.51**	.58**	−.68**	–				
7. Autonomous motivation	1–7	5.05 (1.41)	.93	.51**	−.37**	−.38**	−.40**	.70**	−.62**	–			
8. Controlled motivation	1–7	3.45 (1.47)	.88	−.25**	.33**	.33**	.35**	−.36**	.47**	−.24**	–		
9. Amotivation	1–7	2.08 (1.52)	.92	−.56**	.45**	.46**	.52**	−.75**	.71**	−.78**	.31**	–	
10. Oppositional defiance	1–5	1.92 (0.87)	.73	−.42**	.60**	.74**	.82**	−.48**	.55**	−.44**	.33**	.56**	–

Note: **$p < .01$.

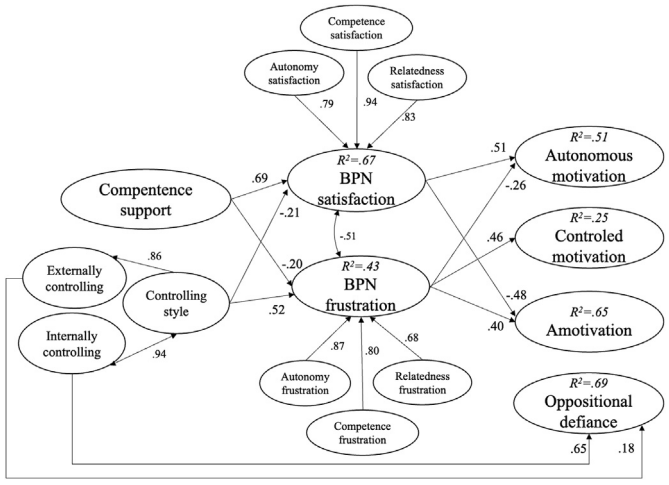

Fig. 1. Predictive effects of the students perceptions of competence-supportive teaching style and externally and internally controlling teaching styles on their motivation and oppositional defiance via need satisfaction and frustration. Note: All paths are significant (p < .001).

average levels of competence support (z-score of −0.43) and above-average levels of external and internal control (z-scores of 1.18 and 0.60). The fourth profile ($n = 88$, 7.95%) was denominated as "low competence support–very high control" by including students reporting below-average levels of competence support (z-score of −1.01) and extremely above-average levels of external and internal control (z-scores of 2.38 and 1.74, respectively).

BCH tests of mean equality found significant differences across the four identified profiles in need satisfaction ($\chi^2 = 208.69$, $p < .001$), autonomy satisfaction ($\chi^2 = 156.44$, $p < .001$), competence satisfaction ($\chi^2 = 3525.83$, $p < .001$), relatedness satisfaction ($\chi^2 = 124.40$, $p < .001$), need frustration ($\chi^2 = 893.72$, $p < .001$), autonomy frustration ($\chi^2 = 243.18$, $p < .001$), competence frustration ($\chi^2 = 2433.91$, $p < .001$), relatedness frustration ($\chi^2 = 207.65$, $p < .001$), autonomous motivation ($\chi^2 = 106.93$, $p < .001$), controlled motivation ($\chi^2 = 284.54$, $p < .001$), amotivation ($\chi^2 = 1416.19$, $p < .001$), and oppositional defiance ($\chi^2 = 171.06$, $p < .001$).

Post-hoc pairwise comparisons among profiles are presented in Table 4. The profile 1 (i.e., high competence support–low control), compared to the other three profiles, scored higher on need satisfaction and autonomous motivation, and lower on need frustration, controlled motivation, amotivation, and oppositional defiance. In contrast, the profile 4 (i.e., low competence support–very high control) was lower than the remaining three profiles on need satisfaction and autonomous motivation and higher on need frustration, controlled motivation, amotivation, and oppositional defiance. Regarding the comparison between the profile 2 (i.e., moderate competence support and control) and the profile 3 (i.e., moderate competence support–high control), the profile 2 scored significantly higher on autonomy satisfaction, competence satisfaction, and autonomous motivation, while both profiles did not significantly differ in need frustration, controlled motivation, amotivation, and oppositional defiance.

Table 2
Indirect effects of the students' perception of competence-supportive and controlling teaching styles on their motivation and oppositional defiance via need satisfaction and frustration.

	β	SE	*p-value*
Indirect effects from a competence-supportive style to autonomous motivation			
Total indirect	.407	.034	<.001
Specific indirect via need satisfaction	.354	.036	<.001
Specific indirect via need frustration	.053	.013	<.001
Indirect effects from a competence-supportive style to controlled motivation			
Total indirect	−.130	.034	<.001
Specific indirect via need satisfaction	−.036	.036	.326
Specific indirect via need frustration	−.094	.023	<.001
Indirect effects from a competence-supportive style to amotivation			
Total indirect	−.416	.035	<.001
Specific indirect via need satisfaction	−.334	.035	<.001
Specific indirect via need frustration	−.081	.018	<.001
Indirect effects from a competence-supportive style to oppositional defiance			
Total indirect	.010	.035	.782
Specific indirect via need satisfaction	.017	.041	.676
Specific indirect via need frustration	−.007	.014	.589
Indirect effects from a controlling style to autonomous motivation			
Total indirect	−.244	.023	<.001
Specific indirect via need satisfaction	−.107	.020	<.001
Specific indirect via need frustration	−.137	.022	<.001
Indirect effects from a controlling style to controlled motivation			
Total indirect	.253	.026	<.001
Specific indirect via need satisfaction	.011	.011	.343
Specific indirect via need frustration	.242	.030	<.001
Indirect effects from a controlling style to amotivation			
Total indirect	.310	.025	<.001
Specific indirect via need satisfaction	.101	.018	<.001
Specific indirect via need frustration	.209	.024	<.001
Indirect effects from a controlling style to oppositional defiance			
Specific indirect via need satisfaction	−.005	.013	.682
Specific indirect via need frustration	.019	.035	.586

Note: β = Standardized coefficient; SE = Standard error.

4. Discussion

Many PE teachers face the challenge to manage their classroom and direct students' learning in a way that engages students in a motivating manner (Nie & Lau, 2009). For this reason, it seems important to examine how students' perceptions of teachers' competence-supportive style and internally and externally

Table 3
Fit indexes, entropy, and model comparisons for models from latent profile analysis.

Model	AIC	BIC	SSA-BIC	LMRT(*p*)	Entropy	Participants for profile	Np<5%
2 profiles	8504.47	8564.58	8526.46	<.001	0.88	857; 250	0
3 profiles	8111.56	8201.28	8144.11	.004	0.90	693; 313; 101;	0
4 profiles	7848.80	7969.03	7892.80	.010	0.92	598; 267; 154; 88	0
5 profiles	7733.49	7883.77	7788.48	.513	0.93	588; 272; 152; 62; 33	1
6 profiles	7637.58	7817.92	7703.57	.644	0.92	533; 183; 182; 120; 57; 32	1

Note. LMRT: Lo–Mendell–Rubin likelihood test; Np<5%: Number of profiles with less than 5% of participants.

Table 4
Mean differences in students' outcomes across profiles based on competence-supportive and externally and internally controlling styles.

	Profile 1 (n = 598) High competence support – Low control	Profile 2 (n = 267) Moderate competence support and control	Profile 3 (n = 154) Moderate competence support – High control	Profile 4 (n = 88) Low competence support – Very high control
Teaching styles				
Competence support				
Z-scores	0.28 (0.06)^{2a,3a,4a}	−0.05 (0.11)^{1a,3a,4a}	−0.43 (0.08)^{1a,2a,4a}	−1.01 (0.13)^{1a,2a,3a}
Raw scores (1–5)	3.90 (0.06)^{2a,3a,4a}	3.55 (0.12)^{1a,3a,4a}	3.13 (0.09)^{1a,2a,4a}	2.51 (0.14)^{1a,2a,3a}
External control				
Z-scores	−0.73 (0.04)^{1a,3a,4a}	0.20 (0.05)^{1a,3a,4a}	1.18 (0.05)^{1a,2a,4a}	2.38 (0.02)^{1a,2a,3a}
Raw scores (1–5)	1.14 (0.04)^{1a,3a,4a}	2.14 (0.06)^{1a,3a,4a}	3.19 (0.06)^{1a,2a,4a}	4.47 (0.17)^{1a,2a,3a}
Internal control				
Z-scores	−0.56 (0.04)^{2a,3a,4a}	0.34 (0.08)^{1a,3a,4a}	0.60 (0.07)^{1a,2a,4a}	1.74 (0.16)^{1a,2a,3a}
Raw scores (1–5)	1.52 (0.04)^{2a,3a,4a}	2.50 (0.09)^{1a,3a,4a}	2.79 (0.08)^{1a,2a,4a}	4.04 (0.17)^{1a,2a,3a}
Outcomes				
Need satisfaction (1–5)	3.85 (0.06)^{2a,3a,4a}	3.48 (0.05)^{1a,4a}	3.39 (0.08)^{1a,4a}	2.64 (0.13)^{1a,2a,3a}
Autonomy satisfaction (1–5)	3.49 (0.08)^{2a,3a,4a}	3.16 (0.07)^{1a,3c,4a}	2.97 (0.11)^{1a,2c,4a}	2.17 (0.25)^{1a,2a,3a}
Competence satisfaction (1–5)	3.86 (0.06)^{2a,3a,4a}	3.51 (0.04)^{1a,3b,4a}	3.29 (0.08)^{1a,2b,4a}	2.66 (0.11)^{1a,2a,3a}
Relatedness satisfaction (1–5)	4.21 (0.04)^{2a,3a,4a}	3.78 (0.06)^{1a,4a}	3.89 (0.09)^{1a,4a}	3.08 (0.11)^{1a,2a,3a}
Need frustration (1–5)	1.72 (0.04)^{2a,3a,4a}	2.13 (0.04)^{1a,4a}	2.24 (0.12)^{1a,4a}	2.84 (0.06)^{1a,2a,3a}
Autonomy frustration (1–5)	2.14 (0.09)^{2a,3a,4a}	2.52 (0.07)^{1a,3c,4a}	2.72 (0.10)^{1a,2c,4a}	3.68 (0.08)^{1a,2a,3a}
Competence frustration (1–5)	1.67 (0.04^{2a,3a,4a}	2.16 (0.06)^{1a,4a}	2.30 (0.17)^{1a,4a}	2.75 (0.09)^{1a,2a,3a}
Relatedness frustration (1–5)	1.35 (0.04) ^{2a,3a,4a}	1.71 (0.05)^{1a,4a}	1.70 (0.16)^{1a,4a}	2.09 (0.05)^{1a,2a,3a}
Autonomous motivation (1–7)	5.36 (0.04) ^{2a,3a,4a}	4.96 (0.13)^{1a,3c,4a}	4.62 (0.19)^{1a,2c,4a}	3.58 (0.22)^{1a,2a,3a}
Controlled motivation (1–7)	3.09 (0.05) ^{2a,3a,4a}	3.74 (0.09)^{1a,4a}	3.62 (0.09)^{1a,4a}	4.72 (013)^{1a,2a,3a}
Amotivation (1–7)	1.69 (0.05)^{2b,3c,4a}	2.21 (0.10)^{1b,4a}	2.22 (0.27)^{1c,4a}	4.08 (0.26)^{1a,2a,3a}
Oppositional defiance (1–5)	1.51 (0.07)^{2c,3c,4a}	2.27 (0.10)^{1c,4a}	2.36 (0.15)^{1c,4a}	2.82 (0.06)^{1a,2a,3a}

Note. Numbers in superscript show significantly different groups. [a] $p < .001$, [b] $p < .01$, [c] $p < .05$.

controlling styles can be combined and which resulting style yields the most and least optimal pattern of outcomes. Through a variable- and person-centered approach, this study suggests that it is better to provide directions in a competence-supporting rather than a controlling manner.

4.1. Analyzing students' perceptions of competence-supportive and controlling styles from PE teachers through a variable-centered approach

The main results of the first aim confirmed SDTs-based theoretical propositions in that, although competence-supportive and controlling teaching styles are characterizing by high levels of directiveness, both related differently to students' motivational outcomes and oppositional defiance during PE lessons. More particularly, perceived teachers' competence-supportive style was positively and primarily linked to bright–side variables, as well as negatively and secondarily linked to dark–side variables.

Consistent with SDT's assumptions (Vansteenkiste et al., 2020) and previous studies on PE (Burgueño & Medina-Casaubón, 2021; Vasconcellos et al., 2020), our results showed that a perceived competence-supportive style tended to energize adaptive motivational and behavioral outcomes (i.e., bright side of functioning) and, in turn, reduce experiences of maladaptive motivational and behavioral patterns (i.e., dark side of functioning). Particularly, a perceived competence-supportive teaching style fostered students' need satisfaction. One plausible mechanism would be because when students see that their PE teacher is using an easy and clear organization to be followed throughout the lessons (competence-supportive style), they would be more likely to take initiative in the lessons (autonomy satisfaction), they would be better able to master the tasks and the lessons goals (competence satisfaction), and they could help each other to achieve the planned objectives (relatedness satisfaction). Additionally, when students perceive that their PE teachers are creating a highly competence-supportive learning environment, they also tend, to a lesser degree, to experience less coercion, failure, and loneliness (need frustration). Indirect effects, in turn, indicated that this fostered autonomous

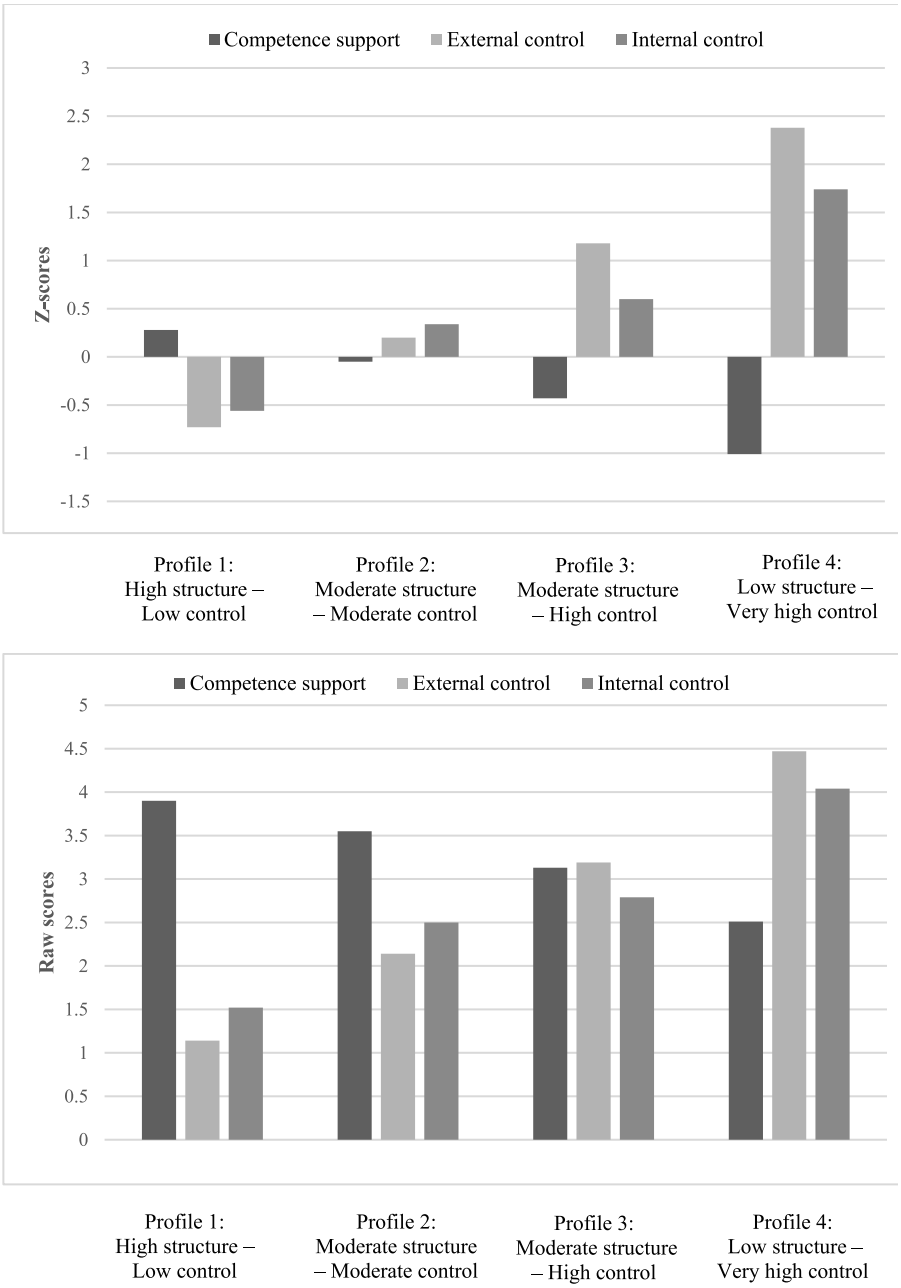

Fig. 2. Profiles of perceived competence-supportive and externally and internally controlling teaching styles in terms of Z-scores (upper side) and raw scores (lower side).

motivation and reduced students' controlled motivation and amotivation. If students perceive the learning environment as highly competence-supporting, they will enjoy and value the PE lesson more (autonomous motivation) and they will likely act less based on pressuring reasons or on de-value their engagement in the activity (amotivation).

By contrast, perceived externally and internally controlling teaching styles were positively and primarily associated with dark–side variables, and negatively associated with bright–side variables. Moreover, our findings indicated that perceived externally and internally controlling styles were positively and primarily related to need frustration, controlled motivation, amotivation, and oppositional defiance, and negatively and secondarily related to need satisfaction and autonomous motivation. Our results, thus, align with SDT's propositions (Vansteenkiste et al., 2020) and previous research on PE (Abós et al., 2022; De Meyer et al., 2016; Haerens et al., 2015). Particularly, they strengthened the premise that externally and internally controlling practices not only to yield maladaptive motivational and behavioral experiences (i.e., dark side), but also undermine adaptive functioning (i.e., bright side). This would suggest that students, when they perceive their PE teachers as using externally and internally controlling behaviors in PE, they would complete the task in question conditioned by experiences of coercion, failure, and exclusion from the group (need frustration) which, in turn, leads to passive engagement or a devaluation of the task (amotivation), and a strong tendency to oppose their teacher's authority (oppositional defiance). The direct path from externally and, in special, internally controlling

behaviors to oppositional defiance is noteworthy. A previous person-centered study also showed that internally controlling behaviors appear to be more detrimental to student motivation (De Meyer et al., 2016). Consistent with previous research (Abós et al., 2022; Haerens et al., 2015), a plausible explanation would rest on the fact that when students see that their PE teachers adopts coercive verbal commands, or threats (externally controlling), and when they have the impression that the PE teachers disapproves of them with facial expressions or withdraws attention (internally controlling), they thoughtlessly rebel against the teacher's authority by feeling actively undervalued and personally excluded (Abós et al., 2022). It is crucial for teachers to understand that these controlling teaching strategies are related to students' oppositional defiance of them, as students' defiance is a major source of concern for many teachers providing them with stress and making them vulnerable for burnout or leaving the profession (von Haaren-Mack, Schaefer, Pels, & Kleinert, 2020).

4.2. Analyzing students' perceptions of competence-supportive and controlling styles from PE teachers through a person-centered approach

Teacher directions are needed to foster effective classroom management (Nie & Lau, 2009). In our study, variable−centered analyses showed that, when providing directions, PE teachers can rely on more motivating or demotivating styles in their instructional practice. Yet, previous person-centered studies in SDT domains have suggested that PE teachers can also rely on a combination of motivating and demotivating styles in the instructional practice (Burgueño et al., 2022; Leo, Pulido, et al., 2022). Such premises are also supported by the recently developed circumplex model of teachers' styles in which a competence-supportive and controlling style are lying next to each other (Escriva-Boulley et al., 2021).

Partly in line with our research hypotheses, two-level LPA revealed four different profiles of teachers' competence support, and externally and internally controlling styles, as seen through the eyes of students. First, as expected, we found a profile characterized by high scores on competence support, and low scores of external and internal control (profile 1). Besides, we obtained one additional profile characterized by low levels of competence-supportive style, paired with very high levels of externally and internally controlling styles (profile 4). Both profiles are aligned with previous SDT-based research in PE, based on combinations of need-supportive and need-thwarting behaviors (Burgueño et al., 2022; Haerens et al., 2018; Leo, Pulido, et al., 2022). These two profiles (i.e., profiles 1 and 4) suggest that students perceive PE teachers as managing the classroom either in a predominantly competence-supportive but not controlling way or in a primarily controlling but not competence-supportive manner. Nonetheless, these two profiles represent slightly more than half of the students participating in this research (61.97%).

Partly in line with previous research on PE (Burgueño et al., 2022; Haerens et al., 2018), we also identified two profiles being high on directiveness, yet qualitatively different. One of these profiles was characterized by moderate levels both of perceived competence-supportive style, and externally and internally controlling styles (profile 2). This entails that this group of students (13.91% of the sample) perceived their PE teachers as providing them with directions in both a competence-supportive and controlling manner when directing the classroom practice. Another profile (7.95%) was characterized by moderate levels of competence-supportive style, and very high levels of externally and internally controlling style (profile 3). Although previous research, relied on need-supportive and need-thwarting behaviors in PE did not find a similar combination (Burgueño et al., 2022; Haerens et al., 2018; Leo, Pulido, et al., 2022), our findings add a new teaching profile, in which almost one tenth of the students perceived their PE teacher as adopting a frequent use of competence support, but mainly of externally and internally controlling practices in managing learning interactions.

Consistent with our second hypothesis of the second objective, the results displayed that students who perceived teachers as being more competence-supporting, and who rarely used externally and internally controlling practices (profile 1) reported the highest levels of need satisfaction, and autonomous motivation, as well as the lowest scores of need frustration, controlled motivation, amotivation, and oppositional defiance. In accordance with previous research in PE (Burgueño et al., 2022; Haerens et al., 2018; Leo, Pulido, et al., 2022), these results suggest that students obtained the greatest motivational benefits and the lowest maladaptive outcomes when their PE teachers directed their instructional practice in a need-supportive way. This involved guiding students towards task completion along with clarifying strategies about expectations and learning goals, without becoming demanding or pressuring.

The "low competence support−very high control" profile (profile 4) was clearly less adaptive. High levels of directiveness are thus not necessarily positive, if the directions are predominantly provided in a need-thwarting way. This group obtained the highest scores of need frustration, controlled motivation, amotivation, and oppositional defiance, along with the lowest levels of need satisfaction and autonomous motivation. Consistent with previous studies in PE (De Meyer et al., 2016), these findings highlight that students are very sensitive to the detrimental effects of externally and internally controlling styles. Or put differently, although students of this profile perceived some teachers' competence-supportive strategies, this could not compensate for the detrimental effects in motivational outcomes and oppositional defiance derived from a (very) common adoption of externally and internally controlling teaching practices.

Contrasted with the prior profile (profile 4), the "moderate competence support−high control" profile (profile 3) and the "moderate competence support and control" profile (profile 2) were less maladaptive, but both also were less adaptive than the "high competence support−low control" profile (profile 1). This seems to indicate that the general perception of an often use of more controlling than competence-supportive directions from the PE teachers undermines adaptive motivational outcomes and facilitates maladaptive motivational patterns among students in the PE lesson. More specifically, it is important to emphasize that the "moderate competence support and control" profile (profile 2) scored higher than the "moderate competence support−high control" profile (profile 3) on autonomy satisfaction, competence satisfaction, and autonomous motivation, although both were similar in maladaptive consequences. These findings would manifest that when directions are relatively equally given by a competence-supportive and controlling combination, competence support may play a partial protective role. In other words, competence support could buffer against maladaptive outcomes, yet it could not attenuate the detrimental to adaptive outcomes if the direction was provided in a slightly more controlling than competence-supportive way. This clearly suggests that high teacher directiveness could be adaptive for students, if it stems from competence support given that the addition of controlling directions had no benefits, on the contrary.

4.3. Practical implications

The results of this research show that the style with which

teachers give instructions to students matters. Particularly, according to our results, it is recommended that PE teachers adopts a competence-supportive style rather a controlling style when providing directions. PE teachers can create competence-supportive learning environments by efficiently providing clear instructional goals for the lessons, clarifying rules and expectations, and providing guiding information at the beginning of the lessons. Teachers can also provide competence support during and after the exercises, for instance, by providing positive and valuable feedback. In parallel, teachers are suggested to avoid or, at least, minimize the use of externally and, particularly, internally controlling strategies given that these practices were very detrimental to students' motivational outcomes and oppositional defiance, even when teachers were also viewed by the students to be competence-supportive. Moreover, to create a highly competence-supportive learning environment without falling into predominantly controlling practices, previous research recommends that PE teachers implement students-centered pedagogical models such as sport education, teaching games for understanding, or teaching styles such as guided discovery, and, in turn, avoid using strictly direct instruction models or teaching styles such as command style (Gil-Arias et al., 2021; Medina-Casaubón & Burgueño, 2017; Mosston & Ashworth, 2008). Therefore, the results gathered a basis of evidence to plan and develop different SDT-based programs for the purpose of training PE teachers to become more competence-supportive and less controlling, when providing directions to students.

4.4. Limitations

Although the study sample is high, a first limitation of this research was the purposive strategy to recruit and select the participating students, which makes it difficult to generalize our results to the whole population and, therefore, the results should be interpreted with caution. Hence, future studies should conduct a more representative sampling according to students' educational level (e.g., elementary education, vocational education), type of school (e.g., private), and socioeconomic and cultural characteristics. A second limitation was the cross-sectional design that made it impossible to determine causal effects among the study variables, although it provided a valuable snapshot perspective of the combination of a competence-supportive and externally and internally controlling styles from teachers in PE. Therefore, future longitudinal and experimental research is needed to analyze how teachers' competence-supportive and controlling styles would influence students' need-based experiences and motivation in PE lessons. A third limitation of this study was that it only considered one behavioral outcome (i.e., oppositional defiance). Further research that includes other adaptive and maladaptive consequences, in its affective, cognitive, and behavioral nature, is needed to better understand how distinct combinations of teachers' competence-supportive and controlling styles influence this type of outcomes among students in PE lessons. A fourth limitation was the use of self-reported measures to capture students' perceptions of competence-supportive and externally and internally controlling styles from PE teachers. In this regard, additional research should triangulate data with the complementary use of systematic observational tools and measures of teachers' perceptions of their own competence-supportive and externally and internally controlling styles. A fifth limitation was that, albeit perceived competence support (or structure) was assessed by a valid and reliable instrument, the used measure in question did not rely on the new conceptualization that differentiates between guiding and clarifying approaches (Aelterman et al., 2019; Escriva-Boulley et al., 2021). As this research laid down the first brick in examining high teacher directiveness in the PE lesson, future studies should consider sensitive measures to the two specific competence-supportive (or structuring) approaches to gain a deeper insight into benefits and costs derived from the teacher's use of highly directive styles in the classroom practice in PE.

5. Conclusions

The results from this research suggest that PE teachers can provide directions to students in qualitatively different ways, given that competence-supportive and controlling teaching styles are differentially linked to specific students' motivational outcomes and oppositional defiance in PE lessons. Particularly, students who perceived their PE teachers as more competence-supporting than controlling, tend not only to experience greater levels of need satisfaction and autonomous motivation, but also lower scores on need frustration, controlled motivation, amotivation, and oppositional defiance in PE. Alternatively, those students who perceived their PE teachers as highly directive, being controlling and competence-supporting, are prone to both higher levels of need frustration, controlled motivation, amotivation, and oppositional defiance, and lower levels of adaptive motivational outcomes in PE lessons. From a perspective of maximizing motivational benefits derived from the PE participation, teachers are encouraged to create a highly competence-supportive learning environment and to refrain from using externally and, particularly, internally controlling practices when guiding students in their instructional process.

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Declaration of competing interest

Authors declare no any actual or potential conflict of interest including any financial, personal or other relationships with other people or organizations within three years of beginning the submitted work that could inappropriately influence, or be perceived to influence, their work.

Data availability

Data will be made available on request.

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