Psychology, Society & Education (2025) 17(1), 11-20

Psychology, Society & Education

www.uco.es/ucopress/ojs/index.php/psye

Students' psychological needs' frustration in Physical Education and intention to be physically active from a person-centred approach

Alba González-Peño[1], Evelia Franco*[2], Carmen Ocete[3] & Javier Coterón[1]

[1] *Universidad Politécnica de Madrid, Madrid (Spain)*
[2] *Universidad Loyola Andalucía, Sevilla (Spain)*
[3] *Universidad Pontificia de Comillas, Madrid (Spain)*

Keywords

Motivation
Secondary school
Physical activity
Adolescences

Abstract

Although the benefits associated with physical activity have been evidenced, levels of physical activity among adolescents are still low. Physical Education classes seem to be the ideal context to promote the development of active lifestyles in students, so promoting their motivation will be fundamental. This study aims to establish profiles of Physical Education students according to their basic psychological need frustration and to explore the relationship between these profiles and the intention to be physically active depending on whether they practiced extracurricular physical activity. A total of 580 students participated, 413 of whom were engaged in out-of-school physical activity, by completing a validated questionnaire. A cluster analysis was performed including the variables autonomy, competence, and relatedness frustration. The results showed the existence of three profiles (high, medium, and low frustration). Differences were found in the intention to be physically active as a function of extracurricular physical activity. Findings suggested that the detrimental role of basic psychological need frustration in Physical Education may be more evident among those students who already engage in physical activity.

Frustración de las necesidades psicológicas en Educación Física e intención de ser físicamente activo desde un enfoque centrado en la persona

Palabras clave

Motivación
Educación secundaria
Actividad física
Adolescentes

Resumen

Aunque se han evidenciado los beneficios asociados a la actividad física, los niveles de práctica entre los jóvenes siguen siendo bajos. La clase de Educación Física es el contexto ideal para promocionar la adquisición de estilos de vida activos en el alumnado, por lo que promover su motivación resultará fundamental. Este estudio persigue identificar perfiles de estudiantes de Educación Física según la frustración de sus necesidades psicológicas básicas y explorar la asociación entre los perfiles emergentes y la intención de ser físicamente activo según si practicaban actividad física extraescolar. Participaron 580 alumnos, de los cuales 413 realizaban actividad física extraescolar, completando un cuestionario validado. Se llevó a cabo un análisis clúster seleccionado las variables frustración de autonomía, competencia y relación para la formación de los grupos. Los resultados revelaron la existencia de tres perfiles (alta, media y baja frustración), así como diferencias en la intención de ser físicamente activo en función de la práctica de actividad física extraescolar. Los hallazgos del estudio apuntan a que la frustración de las necesidades podría tener un papel más determinante en el estudiantado que ya practica actividad física fuera del horario escolar.

* *Corresponding author:* Evelia Franco Álvarez. Department of Communication and Education, Faculty of Psychology and Education, Universidad Loyola Andalucía, Avenida de las Universidades, 2, 41704, Dos Hermanas, Sevilla, Spain. efranco@uloyola.es
Cite this article as: González-Peño, A., Franco, E., Ocete, C., & Coterón, J. (2025). Students' psychological needs' frustration in Physical Education and intention to be physically active from a person-centred approach. *Psychology, Society & Education, 17*(1), 11-20. https://doi.org/10.21071/psye.v17i1.17378
Received: 10 September 2024. *First review*: 19 November 2024. *Accepted:* 13 January 2025.

ISSN 1989-709X

The benefits associated with physical activity (PA) among youth are countless (Tilga et al., 2021), since PA performed in adolescence is a good predictor of PA performed in adulthood (Telama et al., 2005). Despite this, PA levels in adolescents are insufficient (Guthold et al., 2020). The Physical Education (PE) class has received particular attention due to its potential to promote the development of active life habits in adolescents and to increase their levels of PA both during and outside PE (Kalajas-Tilga et al., 2020; Van Doren et al., 2021). So much so that it is widely accepted that a key aim of PE is the preparation of students for lifelong physical activity (Leisterer & Jekauc, 2019).

Based on the theory of planned behaviour (Ajzen, 1991), the intention to engage in a specific behaviour is the most reliable predictor of its actual performance, and it seems to reflect the motivation that a person has to engage in the behaviour (Webb & Sheeran, 2006). In the PE context, the intention expressed by students to be physically active has been found to predict their engagement on PA (Hagger et al., 2005; Hein et al., 2004). In this line, students' intentions have been predicted by different motivational variables such as autonomous motivation and need satisfaction (Vasconcellos et al., 2020). Since motivation in PE has been highlighted as a key aspect in students' experiences in this context (Burgueño et al., 2023), its promotion will be of particular importance in encouraging PA. Therefore, fostering quality motivation among students will be essential to enhance their engagement in PA during the lesson and outside of school (Fierro-Suero et al., 2022; Van Doren et al., 2021).

Self-determination theory (SDT; Ryan & Deci, 2022) has been a frequent framework of reference in the PE setting to understand the motivational processes experienced by students during the classes. This theoretical approach explains that behavioural regulation towards an activity depends on the degree of self-determination. Different levels of self-determination will thus constitute distinct forms of motivation: autonomous motivation, controlled motivation, and amotivation. When experiencing autonomous motivation, students are engaged in the activities and feel enjoyment and satisfaction from being involved in the lesson. When controlled, students are more likely to act under the teacher's directions to avoid feelings of guilt and shame, or even punishment or threats. Last, when students are amotivated, they might not understand the reasons for doing PE.

SDT also posits that motivation is associated with the satisfaction or frustration of three basic psychological needs (BPN). Autonomy is related to taking the initiative and having the freedom to choose which activities to be involved in by being responsible for one's behaviour. Competence can be understood as the feeling of being able to do something and willing to tackle proposed challenges. Relatedness is about feeling part of the group and building close relationships with others. This theory suggests that BPN frustration is related to forms of motivation less self-determined. However, the "dark-side" of motivation has been studied to a lesser extent (e. g., Franco et al., 2021), pointing out that the negative experiences that students have during the PE lessons will have a detrimental effect on their motivational patterns (Diloy-Peña et al., 2024), resulting in different maladaptive outcomes such as disengagement or lack of learning (Hastie et al., 2022; Jang et al., 2024). On this basis, if students feel that their needs are being frustrated or threatened, they will tend to neglect the task and thus become amotivated (Zamarripa et al., 2022). In this sense, previous studies have already evidenced the important role that positive experiences play in students' motivational process (e. g., Fierro-Suero et al., 2022; Kalajas-Tilga et al., 2020), suggesting that it is more likely that they will be disengaged towards extracurricular PA when they have maladaptive experiences. Specifically, significant associations have been found between students' need frustration and amotivation and their intention to undertake PA (Hagger & Chatzisarantis, 2016; Sánchez-Oliva et al., 2020). Therefore, promoting a PE context in which students feel amotivated will have a negative impact on their intention to engage in extracurricular PA.

Although there is evidence that students' positive and meaningful experiences in PE classes will nurture their BPN (Vasconcellos et al., 2020; White et al., 2021), little research has addressed the role of need frustration experiences in the explanation of PA-related variables among students (e. g., Franco et al., 2020). Only one study has been found that has addressed the association between frustration of students' needs and their intention to be physically active (Cuevas-Campos et al., 2020). Findings suggested that maladaptive patterns characterised by need frustration and amotivation were significantly related to the intention to be physically active; that is, students are more likely to disengage in PA when they do not understand why they should participate in PE class and feel their autonomy, competence, and relatedness frustrated. It must be pointed out, though, that this work was a variable-centred study, in which the analysis of the outcomes was carried out regardless of the personal characteristics of the participants. To overcome this limitation, an interesting research line has emerged aiming to establish students' profiles and understanding how such different groups of students behave. The person-centred approach has emerged in recent years as an important line of research in the analysis of motivational and behavioural patterns (e. g., Burgueño et al., 2024). This approach is characterised by the identification of groups according to their common characteristics. The implementation of such an approach to the analysis of motivational variables could help to overcome the limitations of the variable-centred approach outlined above. Specifically, the person-centred approach assumes that the relationships between study variables are not necessarily the same for all participants, which allows to understand the individual differences of each person. In fact, the person-centred approach has been used to establish students' profiles according on how they perceive different variables such as motivation, BPN satisfaction, or PE teaching behaviours (Burgueño et al., 2024; Fierro-Suero et al., 2022; García-González et al., 2023; Leo et al., 2022). Despite the aforementioned advances in the knowledge of this research topic, the analysis of need frustration from a person-centred perspective has received less attention. An interesting and relatively recent line of

research has though addressed the coexistence of BPN satisfaction and frustration and their correlates. Specifically, it has been found that perceiving need satisfaction together with need frustration seemed to buffer the undermining effect of BPN frustration on motivation (Li et al., 2021; Warburton et al., 2020), highlighting the importance of minimizing these maladaptive experiences (Burgueño et al., 2023).

Given the associations between BPN frustration and physical activity, an interesting variable to examine regarding students' profiles according to their BPN frustration is their physical activity participation. In this line, the study developed by Coterón et al. (2020) showed that students with relatively high levels of extracurricular PA showed a more adaptive motivational pattern in PE class, with higher scores in competence satisfaction, relatedness, and intrinsic motivation. It is thus plausible to think that the level of extracurricular PA might be associated to students' intentions to engage in these practices.

The present study

Considering the literature addressed above, it seems that the use of a person-centred approach to gain understanding on the association between students' BPN frustration in PE and their intention to be physically active shed some light on the understanding of the motivational dynamics of the PE context. The aims of this study are: 1) to establish students' profiles according to their BPN frustration, and 2) to compare the emerging profiles in terms of their amotivation and intention to be physically active, considering extracurricular PA in which students are involved. Considering existing evidence, regarding the first aim of the study it was hypothesized the existence of three or four students' profiles. More specifically, the emergence of a low-frustration and a high-frustration group was expected. The scarcity of studies in this research line did not allow us to hypothesize about the features of those third-fourth profiles. As for the second aim, it was expected that students belonging to the high-frustration group would score higher in amotivation and lower in intention to be physically active than students in the low-frustration group. Due to the lack of studies addressing this research question, no hypotheses could be determined regarding the association between PE needs frustration and extracurricular PA.

Methods

Participants

The sample was composed of 580 PE students (53% females) from 13 secondary schools in Madrid (Spain), of whom 413 were engaged in some form of extracurricular PA. The participants' age ranged from 12 to 15 years (M_{age} = 13.47; SD = 0.95). A non-probabilistic convenience sample was carried out. Participants received two compulsory PE sessions every week with an average duration of 50 minutes in both public and private schools. Those schools were located in rural (38%) and urban areas with low-medium socioeconomic levels.

Instruments

Basic Psychological Needs: To assess students' perceptions of their BPN frustration, the Spanish version for the PE context of the *Basic Psychological Need Satisfaction and Frustration Scale in Physical Education* (BPNSFS; Chen et al., 2015; Zamarripa et al., 2020) was used. The items were introduced by the stem "In my PE class…". This instrument is composed by 12 items (four items per dimension) and captures autonomy frustration (e. g., "My daily activities feel like a chain of obligations"), competence frustration (e. g., "I feel like a failure because of the mistakes I make"), and relatedness frustration (e. g., "I feel that people who are important to me are cold and distant towards me"). The items were rated on a five-point Likert scale from 1 = *Strongly disagree* to 5 = *Strongly agree*. Cronbach's alpha was calculated and adequate internal consistency values were obtained for autonomy frustration (α = .84), competence frustration (α = .82), and relatedness frustration (α = .84).

Amotivation: To assess students' amotivation, the Spanish version for the PE context of the *Perceived Locus of Causality Scale* (PLOC; Ferriz et al., 2015; Goudas et al., 1994; Wilson et al., 2006) was used. The scale was introduced by the stem "I take part in PE classes…", which included four items to measure amotivation (e. g., "But I do not understand why we should have PE."; α = .8; Nunnally & Bernstein, 1994). Students answered the different reasons using a five-point Likert scale from 1 = *Strongly disagree* to 5 = *Strongly agree*.

Intention to be physically active: The adapted and translated Spanish version (Moreno et al., 2007) of the *Intention to be Physically Active Questionnaire* (Hein et al., 2004) was used. The items were preceded by the phrase "Regarding your intention to partake in sports…". This scale has a total of five items measuring participant's intention to be physically active (e. g., "After graduation, I would like to be physically active"). The items were rated on a five-point Likert scale from 1 = *Strongly disagree* to 5 = *Strongly agree*. Adequate internal consistency was also found for this dimension (α = .83).

Extracurricular PA: Students reported whether they practiced or not PA outside of the school. In order to incorporate this variable into the analyses, responses were codified as 0 = *Does not practice* and 1 = *Practices*.

Procedure

After obtaining approval from the Universidad Pontificia de Comillas (code 2022/46), the heads of department and PE teachers from different schools were contacted and informed about the aims of the project to request their participation. Students' families were informed about the research to ask for informed consent. A printed questionnaire was administered to the PE students, which took approximately 10 minutes to complete. The research assistant explained students the aims of the project and underlined that there were no right or wrong answers. American Psychological Association guidelines (2002) were followed regarding consent, confidentiality, and anonymity of participants responses.

Data analysis

First, descriptive statistics and bivariate correlation analyses were carried out. Cluster analysis was performed to identify students' profiles based on the frustration of each BPN (autonomy, competence, and relatedness). Prior to cluster analysis, data were explored to detect potential outliers. Standardized scores were calculated for the variables used to establish students' profiles (autonomy, competence, and relatedness frustration). A value was considered an outlier if it was more than 3 *SD* away from the variable mean. According to Hair et al. (2018), the two-stage procedure was followed. The first exploratory phase consisted on performing a hierarchical cluster analysis in a subsample following the Ward method (Ward, 1963). In the second phase, the solutions in the subsample considered in the first phase and the subsample that had not been previously included were contrasted using k-means. The stability of the solution was checked by randomly splitting the sample in two halves. The full two-step procedure was then applied for each half. Both the dendrogram and the agglomeration schedule were considered when retaining potential solutions. The two –and three– cluster solutions were then analysed and the definite number of clusters was finally selected considering both the amount of variance explanation (Hair et al., 2018; Milligan & Cooper, 1985) and the meaningful interpretation provided by the solution.

A multivariate analysis of variance (MANOVA) was performed to analyse potential significant differences in the profiles previously identified in terms of needs frustration, amotivation, and intention to be physically active. To check post-hoc comparisons, univariate tests were carried out through Bonferroni's test and the effect size was calculated in the differences. The sample was then split into two halves considering whether the students practiced or not extracurricular physical activity. After that, two new MANOVAs were performed to analyse potential significant differences in the possible significant differences in the previously studied outcome profiles for each group (students practising and not practising PA). Post-hoc comparisons were performed following the same procedure described for the MANOVA conducted with the total sample. Finally, a contingency table was created and a Chi-square test was performed to determine whether a significant association existed between the established students' profiles and the practice of PA. Standardized corrected residuals were explored to identify cells with significant deviations between observed and expected frequencies. To perform the analyses, the SPSS 26.0 statistical packaged was used.

Results

Descriptive statistics

Descriptive statistics and bivariate correlations are shown in Table 1. Overall, students showed higher scores in their intention to be physically active than BPN frustration and amotivation. Autonomy frustration showed higher values than competence, relatedness frustration, and amotivation, while relatedness frustration presented the lowest scores. As for correlations, each BPN frustration were positively correlated between them as well as with amotivation. Finally, associations between need frustration and amotivation with intention to be physically active were significantly negative in all the cases.

A person-centred approach

In this analysis, BPN frustration perceived by students was considered as a grouping variable. A total of seven outliers were removed before performing the cluster analysis, which resulted in a final sample of 580 PE students (53% females). Two distinct solutions (two and three clusters) were retained based on the dendrogram and the agglomeration schedule. The three-cluster solution was selected given that variance explanation was higher than in the two-cluster solution (Hair et al., 2018), and the solution provided a meaningful interpretation. The cross-validation procedure performed by splitting the sample in two halves provided an average kappa value of 0.86 for the retained solution, suggesting good stability according to Hair et al. (2018).

Results from the cluster analysis revealed the identification of three different clusters according to their autonomy, competence, and relatedness frustration. Based on their absolute scores (Table 2), the three clusters were labelled as follows: a) a relatively low frustration group (n = 193; 33.28%) characterized by low autonomy, competence, and relatedness frustration; b) a relatively moderate frustration group (n = 301; 51.9%) characterized by moderate autonomy and competence frustration and

Table 1

Descriptive statistics for study variables

Variables	1	2	3	4	5
1. Autonomy frustration	1	.63*	.54*	.55*	-.24*
2. Competence frustration		1	.69*	.39*	-.12**
3. Relatedness frustration			1	.41*	-.1*
4. Amotivation				1	-.23*
5. Intention to be physically active					1
M	2.58	2.5	2.1	2.24	3.98
SD	1.1	1.07	1.07	1.01	0.95

* $p < .01$.

low relatedness frustration; c) a high frustration group (n = 86; 14.83%) typified by high autonomy, competence, and relatedness frustration. Multivariate differences were found between the three clusters ($F_{10, 1152} = 62.98$, $p < .001$, $\eta^2 = .59$). The univariate differences between clusters among all the students are presented in Table 2. Significant differences emerged in the frustration of autonomy ($F_{2, 580} = 307.93$; $p < .001$, $\eta^2 = .52$), competence ($F_{2, 580} = 559.635$; $p < .001$, $\eta^2 = .66$), and relatedness ($F_{2, 580} = 563.33$; $p < .001$, $\eta^2 = .66$) need. Post hoc analyses confirmed the profiles labelling. Regarding amotivation, significant differences were found ($F_{2, 580} = 70.66$; $p < .001$, $\eta^2 = .2$). As for the intention to be physically active, significant differences also emerged ($F_{2, 580} = 12.14$; $p < .001$, $\eta^2 = .04$).

Chi-Square test, together with the analysis of the corrected standardized residuals, revealed no significant association between the established students' profiles and their practice of PA ($\chi^2_4 = 4.93$; $p = .3$).

To deepen the understanding of students' profiles considering their PA, two more MANOVAs were performed to analyze differences in study variables according to emerging profiles for both students who practiced PA (Table 3) and students who did not practice PA (Table 4).

Regarding students who performed PA, multivariate differences were found between the three clusters ($F_{8, 814} = 150.94$, $p < .001$, $\eta^2 = .6$). As shown in Table 3, significant differences emerged in the frustration of autonomy ($F_{2, 410} = 262.48$; $p < .001$, $\eta^2 = .56$), competence ($F_{2, 410} = 427$; $p < .001$, $\eta^2 = .68$), and relatedness ($F_{2, 410} = 418.09$; $p < .001$, $\eta^2 = .67$) need. Regarding amotivation, significant differences were found ($F_{2, 410} = 45.18$; $p < .001$, $\eta^2 = .18$). As for the intention to be physically active,

Table 2

Differences in need frustration, amotivation, and intention to be physically active between the established profiles

	Low frustration group (n = 193) $M(SD)$	Moderate frustration group (n = 301) $M(SD)$	High frustration group (n = 86) $M(SD)$
Autonomy frustration	1.57 (0.48)^c	2.84 (0.93)^b	3.90 (0.65)^a
Competence frustration	1.43 (0.39)^c	2.75 (0.76)^b	4.01 (0.53)^a
Relatedness frustration	1.26 (0.42)^c	2.1 (0.73)^b	3.98 (0.62)^a
Amotivation	1.68 (0.77)^c	2.37 (0.92)^b	3.01 (1.14)^a
Intention to be physically active	4.24 (0.94)^a	3.81 (0.95)^b	4 (0.85)

Note. Different superscripts represent significantly different cluster means. The lack of superscript represents the lack of differences with other groups.

Table 3

Differences in need frustration, amotivation, and intention to be physically active between the established profiles of students who practiced PA

	Low frustration group (n = 144) $M(SD)$	Moderate frustration group (n = 207) $M(SD)$	High frustration group (n = 62) $M(SD)$
Autonomy frustration	1.52 (0.45)^c	2.84 (0.89)^b	3.88 (0.64)^a
Competence frustration	1.42 (0.39)^c	2.71 (0.75)^b	4.03 (0.51)^a
Relatedness frustration	1.26 (0.41)^c	2.11 (0.73)^b	3.95 (0.6)^a
Amotivation	1.64 (0.73)^c	2.35 (0.93)^b	2.83 (1.15)^a
Intention to be physically active	4.23 (0.80)^a	4.07 (0.84)^b	4.1 (0.8)

Note. Different superscripts represent significantly different cluster means. The lack of superscript represents the lack of differences with other groups.

Table 4

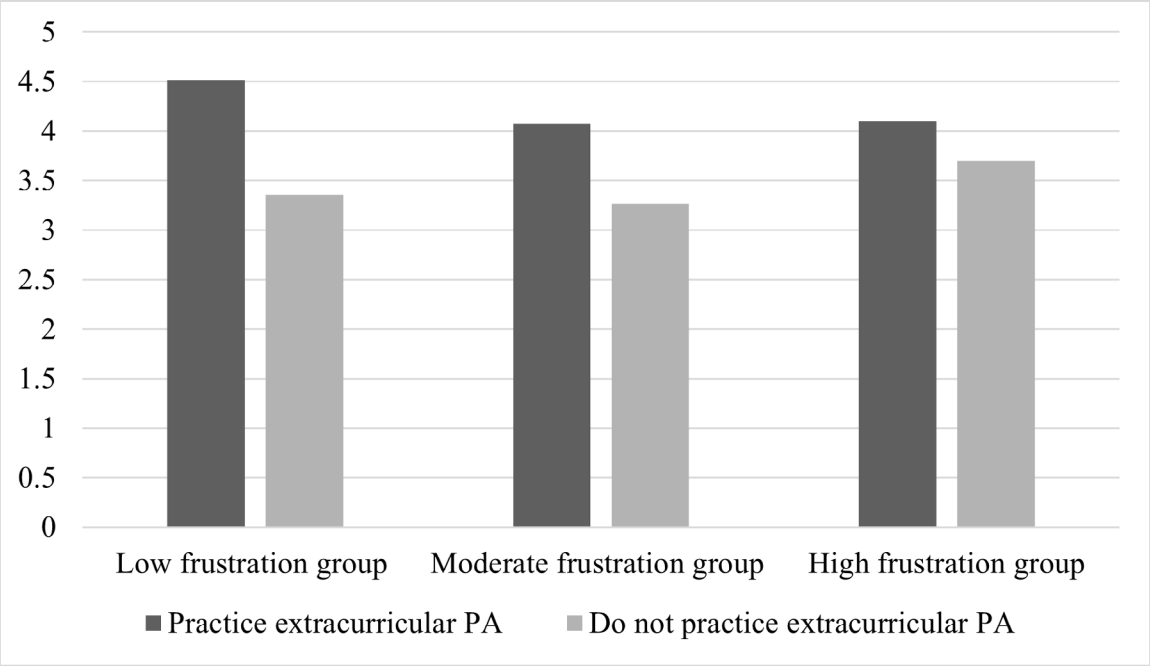
Differences in need frustration, amotivation, and intention to be physically active between the established profiles of students who did not practice PA

	Low frustration group (n = 47) $M(SD)$	Moderate frustration group (n = 96) $M(SD)$	High frustration group (n = 24) $M(SD)$
Autonomy frustration	1.76 (0.53)^c	2.83 (1.02)^b	3.95 (0.69)^a
Competence frustration	1.45 (0.37)^c	2.83 (0.78)^b	3.96 (0.58)^a
Relatedness frustration	1.27 (0.44)^c	2.08 (0.73)^b	4.05 (0.66)^a
Amotivation	1.81 (0.89)^c	2.42 (0.91)^b	3.48 (0.98)^a
Intention to be physically active	3.35 (1.19)	3.27 (0.94)	3.7 (0.89)

Note. Different superscripts represent significantly different cluster means. The lack of superscript represents the lack of differences with other groups.

Figure 1

Differences in intention to be physically active between the profiles



Note. In the group of students who practiced extracurricular PA, significant differences ($p.$ < .05) were found between the low and moderate frustration group. No significant differences were found between profiles in the case of students who did not practice extracurricular PA.

significant differences also emerged ($F_{2, 410}$ = 15.46; p < .001, η^2 = .07). In this case, students in the low frustration group reported higher levels of intention to be physically active than students' in the moderate frustration group.

In the case of students who did not practice PA, multivariate differences were also found between the three clusters ($F_{8, 322}$ = 50.89, p < .001, η^2 = .56). As shown in Table 4, significant differences emerged in the frustration of the autonomy ($F_{2, 164}$ = 54.16; p < .001, η^2 = .4), competence ($F_{2, 164}$ = 128.25; p < .001, η^2 = .61), and relatedness ($F_{2, 164}$ = 144.82; p < .001, η^2 = .64) need, as well as for amotivation ($F_{2, 164}$ = 26.21; p < .001, η^2 = .24). No significant differences were found in the intention to be physically active ($F_{2, 164}$ = 1.79; p = .17 η^2 = .02).

Figure 1 shows the results for the three-cluster solutions using means scores of intention to be physically active. Findings are presented for both those students who did extracurricular PA and those who did not.

Discussion

The objectives of this study were to establish PE students' profiles according to their BPN frustration and to compare the emerging profiles in terms of their amotivation and intention to be physically active, considering extracurricular PA in which students are involved.

Regarding the first objective of the study, three students' profiles were established namely low, moderate, and high frustration groups. Students belonging to the first profile were characterized by perceiving low autonomy, competence, and relatedness frustration, as well as amotivation, and high levels of intention to be physically active. Students profiled in the second group perceived that their needs were relatively frustrated and felt amotivated, while their intentions to practice PA were the lowest compared to the other students. The third group was composed of students who perceived their autonomy, competence, and relatedness more frustrated and experienced more amotivation, although their intentions to engage in extracurricular activities were also high when compared with the second profile.

As for the second aim of the study, two complimentary analyses were performed. Firstly, the emerging profiles were analysed independently in the groups of students who did and did not practice PA. Secondly, a Chi-square test was performed to determine whether a significant association existed between the established students' profiles and the practice of PA. Regarding the first approach (comparing students according their practice of PA), an interesting finding was that, as expected, students that practiced PA outside of the school exhibited higher values of intention to be physically active than those who did not practice. In this line, the existing literature has widely evidenced the predictive role that the intention to be physically active has towards the practice of PA, since it is a determinant of active behaviour (Fierro-Suero et al., 2022; Mercier et al., 2023; Sánchez-Oliva et al., 2020; Shen et al., 2022). It was also found that competence frustration was higher in the group of high frustration for students who did practice extracurricular PA. Considering the associations found by previous works between the intention to be physically active and the engagement in PA activities outside school and the studies that have evidenced relationships between competence and the intention to be phy-

sically active (Coterón et al., 2020; Cuevas-Campos et al., 2020; Koka et al., 2020), it would make sense to think that students who practiced PA may feel their need for competence frustrated in PE when the activities proposed by the teacher differ from what they do in their extracurricular PA. This fact could be due to students feeling they do not have the opportunity to show their competence in what they feel better prepared, or because they compare their level of competence with the standard of what they used to do outside of school.

On the other hand, regarding the differences between profiles in the intention to be physically active among students who did extracurricular PA, the findings suggested that students who perceived lower levels of need frustration and amotivation exhibited more intention to be physically active outside school, whereas the high and moderate frustration groups showed lower scores in the intention to practice PA. Despite the profiles showed different levels of intention to be physically active, on further analysis and exploring the two groups individually, the results showed that the intention to be physically active was significantly different between those students' profiles that practice extracurricular PA, suggesting that belonging to one profile or the other seems to condition their intention to practise PA. In particular, the findings were in the expected direction since the low frustration group reported higher levels of intention among those students who did extracurricular PA, as previously evidenced by Cuevas-Campos et al. (2020). Interestingly, no differences were found between profiles in their intention to be physically active among students who did not participate in extracurricular PA. While it could be possible that sample size would be affecting this lack of significance, this finding could also be shedding light on how motivational processes may vary in students depending on whether they are or not engaged in extracurricular PA. Further studies could explore the possibility that those students who practice PA outside of school may be more vulnerable to the detrimental effect of BPN frustration in PE. The study of Cuevas-Campos et al. (2020) pointed out that need frustration was associated with exhaustion and boredom, aspects that were negatively related to the intention to be physically active. In the same line, Coterón et al. (2020) found that autonomy and competence were more closely associated to the intention to be physically active than relatedness. These authors also suggested that students' motivational patterns associated with their engagement in PE were different according to the level of extracurricular PA. Given this evidence, it might be plausible that certain students who engaged in PA are more likely to be negatively affected by the experience of BPN frustration, because they are used to being physically active in other contexts where they are likely to have more opportunity to feel their basic psychological needs met. Therefore, when students have negative experiences that thwart their BPN and are amotivated, it is more likely that they will be less willing to engage in PA activities outside of the school.

As for the students' group that did not practice extracurricular PA, no significant differences were found between profiles in the intention to be physically active. Although previous works have evidenced the associations between different motivational variables and students' intentions (Vasconcellos et al., 2020), it has been suggested that negative experiences in PE within perceptions of autonomy, competence, and relatedness frustration or amotivation, as well as other variables such as introjected regulation, were related to lower intention to be physical active and, consequently, to PA engagement (Kalajas-Tilga et al., 2020). According to SDT, when students experience that their needs are being threatened, and consequently, exhibit less self-determined forms of motivation, it is more likely that they will find no reason to participate in the PE lesson and thus abandon the proposed activities. Therefore, in line with previous work, it might be plausible to think that need frustration would weaken the permanence of students' behaviour (Hamer et al., 2012). Nonetheless, the absence of a relationship in the results between need frustration and intention suggests that there may be other different factors influencing students' intentions to be physically active. In this regard, it is important to highlight that, according to the theory of planned behaviour, when an action or a behaviour is not performed, it will be more difficult to have the intention to do it (Ajzen, 1991; Webb & Sheeran, 2006); that is, students who do not engage in PA activities outside of school are more likely to be unwilling to do so. Last, as some authors have outlined, it might be plausible that other aspects could be related to the lack of intention to be physically active or the disengagement in PA activities as potential factors that may explain the levels of intention of that group of students (Mercier et al., 2023; Rhodes et al., 2022). Considering that PE is the most important physical experience for those students who do not practice extracurricular PA, the findings of the present study suggest that having room to take the initiative, choose the activities in the PE class, feeling capable of achieving the challenges, or establishing relationships with their peers (i. e., fostering autonomy, competence, and relatedness) could promote their intention to engage in PA activities after the lesson, which points out to the positive and important role of supporting BPN. Regarding the results of the Chi-square teste, the association between the established students' profiles and the practice of PA was not significant. This finding suggests that the proportion of students belonging to each profile remains the same among the students who practice and who do not practice PA. In other words, it could be inferred that students are equally likely to belong to a low, moderate, or high-frustration profile PE experience, which may condition students to present one profile or another in terms of their BPN frustration regardless of their PA patterns. This is particularly important in the understanding of the high-frustration group, which accounts for approximately 15% of students in the current work. For this group of students, when their teacher proposes activities that exclude certain students, provides critical feedback that appeals to a fixed quality, or rewards unfairly –such that students performing equally well receive different rewards–, this will foster the perception of negative experiences in PE classes, which consequently will impact their motivation, intentions, and levels of extracurricular PA. Therefore, it seems that whether or not students engage in PA does not protect them from being their BPN frustrated when teachers adopt these need-thwarting behaviours.

The present work seeks to provide some practical implications in the PE context. Given the results found, it would be interesting to highlight the need for teachers to consider that students who are physically active outside the classroom may be different from those who are not. Therefore, tailoring teaching to the individual characteristics of each student will be essential in promoting quality motivation in PE. Specifically, it would be useful to sensitize teachers to different strategies or behaviours to avoid thwarting students' BPN, such as pressuring students with deadlines or setting up activities that exclude some students (autonomy thwarting), setting up activities in which the goal is to do better than other students (competence thwarting), or to punish unfairly, so that those who misbehave are treated unequally (relatedness thwarting; Ahmadi et al., 2023).

This study presents some limitations that are worth noting. First, relying on self-reported measures based on students' perceptions could limit the information collected through the questionnaires. It would therefore be interesting to develop qualitative research in which students would have room to express their ideas and perceptions, which will allow us to deepen the understanding of students' motivational patterns related to PA. Second, the cross-sectional design of the study may also be a limitation, since causal relationships could not be drawn. As it can be suggested that quality motivation maintained over time will lead to better engagement among PE students, future longitudinal studies would be interesting to better understand the long-term effects of motivation on intentions to be physically active and engage in extracurricular PA. Last, although the present study from a person-centred approach has provided a broader picture of students' motivation and outcomes with the identification of profiles, it should be mentioned that different student profiles perceive experiences in PE differently. Therefore, differentiated teacher behaviour seems to be necessary when interacting with each student, which points to the importance of making teachers aware of this need in initial and in-service training.

Conclusions

The present study examined differences between student profiles characterised by different levels of needs frustration, amotivation, and the intention to be physically active outside of school. Differences in the intention to be physically active were then analysed between those students' profiles who were (or not) engaged in extracurricular PA. The results suggested that, in the case of students who do not engage in extracurricular PA, the power of BPN frustration in understanding the intention to be physically active is limited, which, in line with previous work, could lead to the assumption that other dispositional or contextual factors that explain the intention to be physically active gain strength in this group (Coterón et al., 2020).

Author contributions

Conceptualization: E.F, J.C.
Data curation: A.G-P, C.O.
Formal analysis: E.F.
Funding acquisition: E.F.
Investigation: E.C, E.F, A.G-P.
Methodology: J.C, A.G-P.
Project administration: E.F, J.C.
Resources: C.O, J.C.
Software: E.F.
Supervision: E.F, J.C.
Validation: C.O.
Visualization: E.F, J.C.
Writing – Original draft: A.G-P, E.F, C.O.
Writing – Review & editing: A.G-P, E.F, J.C.

Funding

Evelia Franco was supported by a Ramón y Cajal postdoctoral fellowship (RYC2022-036278-I) funded by the Spanish Ministry of Science an Innovation (MCIN), the State Research Agency (AEI), and the European Social Fund Plus (FSE+). This study was part of a project (EXP_75076) funded by the Spanish High Council of Sport (CSD).

Acknowledgments

The authors would like to thank the participating schools and students for their collaboration in the study.

Declaration of interests

The authors declare that there is no conflict of interest.

Data availability statement

The data that support the findings of this study are available on request from the corresponding author.

References

Ahmadi, A., Noetel, M., Parker, P. D., Ryan, R. M., Ntoumanis, N., Reeve, J., Beauchamp, M. R., Dicke, T., Yeung, A., Ahmadi, M., Bartholomew, K. J., Chiu, T. K. F., Curran, T., Erturan, G., Flunger, B., Frederick, C. M., Froiland, J. M., González-Cutre, D., Haerens, L., … & Londsdale, C. (2023). A classification system for teachers' motivational behaviours recommended in self-determination theory interventions. *Journal of Educational Psychology*, *115*(8), 1158-1176. https://doi.org/10.1037/edu0000783

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *50*(2), 179-211. https://doi.org/10.1016/0749-5978(91)90020-T

American Psychological Association. (2002). *Ethical principles of psychologists and code of conduct* (Amended August 3, 2016). American Psychological Association.

Burgueño, R., García-González, L., Abós, Á., & Sevil-Serrano, J. (2023). Students' need satisfaction and frustration profiles: Differences in outcomes in Physical Education and physical activity-related variables. *European Physical Education Review*, *29*(4), 563-581. https://doi.org/10.1177/1356336X231165229

Burgueño, R., García-González, L., Abós, Á., & Sevil-Serrano, J. (2024). Students' motivational experiences across profiles of perceived need-supportive and need-thwarting teaching behaviors in Physical Education. *Physical Education and Sport Pedagogy*, *29*(1), 82-96. https://doi.org/10.1080/17408989.2022.2028757

Chen, B., Vansteenkiste, M., Beyers, W., Boone, L., Deci, E. L., Van der Kaap-Deeder, J., Duriez, B., Lens, W., Matos, L., Mouratidis, A., Ryan, R. M., Sheldon, K. M., Soenens, B., Van Petegem, S., & Verstuyf, J. (2015). Basic psychological need satisfaction, need frustration, and need strength across four cultures. *Motivation and Emotion*, *39*(2), 216-236. https://doi.org/10.1007/s11031-014-9450-1

Coterón, J., Franco, E., & Almena, A. (2020). Predicción del compromiso en Educación Física desde la teoría de la autodeterminación: Análisis de invarianza según el nivel de actividad física. *Cultura, Ciencia y Deporte*, *15*(46), 483-492. https://doi.org/10.12800/ccd.v15i46.1599

Cuevas-Campos, R., Fernández-Bustos, J. G., González-Cutre, D., & Hernández-Martínez, A. (2020). Need satisfaction and need thwarting in Physical Education and intention to be physically active. *Sustainability*, *12*(18), Article 7312. https://doi.org/10.3390/su12187312

Diloy-Peña, S., Abós, Á., Sevil-Serrano, J., García-Cazorla, J., & García-González, L. (2024). Students' perceptions of Physical Education teachers' (de)motivating styles via the circumplex approach: Differences by gender, grade level, experiences, intention to be active, and learning. *European Physical Education Review*, *30*(4), 563-583. https://doi.org/10.1177/1356336X241229353

Ferriz, R., González-Cutre, D., & Sicilia, A. (2015). Revisión de la Escala del Locus Percibido de Causalidad (PLOC) para la inclusión de la medida de la regulación integrada en Educación Física. *Revista de Psicología del Deporte, 24*(2), 329-338.

Fierro-Suero, S., Fernández-Ozcorta, E. J., & Sáenz-López, P. (2022). Students' motivational and emotional experiences in Physical Education across profiles of extracurricular physical activity: The influence in the intention to be active. *International Journal of Environmental Research and Public Health*, *19*(15), Article 9539. https://doi.org/10.3390/ijerph19159539

Franco, E., Coterón, J., Gómez, V., & Spray, C. M. (2021). A person-centred approach to understanding dark-side antecedents and students' outcomes associated with Physical Education teachers' motivation. *Psychology of Sport and Exercise*, *57*, Article 102021. https://doi.org/10.1016/j.psychsport.2021.102021

Franco, E., Coterón, J., Huéscar, E., & Moreno-Murcia, J. A. (2020). A person-centered approach in Physical Education to better understand low-motivation students. *Journal of Teaching in Physical Education*, *39*(1), 91-101. https://doi.org/10.1123/jtpe.2019-0028

García-González, L., Haerens, L., Abós, Á., Sevil-Serrano, J., & Burgueño, R. (2023). Is high teacher directiveness always negative? Associations with students' motivational outcomes in Physical Education. *Teaching and Teacher Education*, *132,* Article 104216. https://doi.org/10.1016/j.tate.2023.104216

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

Hagger, M. S., & Chatzisarantis, N. L. D. (2016). The trans-contextual model of autonomous motivation in education: Conceptual and empirical issues and meta-analysis. *Review of Educational Research*, *86*(2), 360-407. https://doi.org/10.3102/0034654315585005

Hagger, M., Chatzisarantis, N., Barkoukis, V., Wang, J. C. K., & Baranowski, J. (2005). Perceived autonomy support in Physical Education and leisure-time physical activity: A cross-cultural evaluation of the trans-contextual model. *Journal of Educational Psychology*, *97*(3), 287-301. https://doi.org/10.1037/0022-0663.97.3.376

Hair, J. F., Babin, B. J., Anderson, R. E., & Black, W. C. (2018). *Multivariate Data Analysis* (8th ed.). Cengage Learning EMEA.

Hamer, M., Kivimaki, M., & Steptoe, A. (2012). Longitudinal patterns in physical activity and sedentary behaviour from mid-life to early old age: A substudy of the Whitehall II cohort. *Journal of Epidemiology and Community Health*, *66*(12), 1110-1115. https://doi.org/10.1136/jech-2011-200505

Hastie, P. A., Stringfellow, A., Johnson, J. L., Dixon, C. E., Hollett, N., & Ward, K. (2022). Examining the concept of engagement in Physical Education. *Physical Education and Sport Pedagogy*, *27*(1), 1-18. https://doi.org/10.1080/17408989.2020.1861231

Hein, V., Müür, M., & Koka, A. (2004). Intention to be physically active after school graduation and its relationship to three types of intrinsic motivation. *European Physical Education Review*, *10*(1), 5-19. https://doi.org/10.1177/1356336X04040618

Jang, H.-R., Basarkod, G., Reeve, J., Marsh, H. W., Cheon, S. H., & Guo, J. (2024). Longitudinal reciprocal effects of agentic engagement and autonomy support: Between- and within-person perspectives. *Journal of Educational Psychology*, *116*(1), 20-35. https://doi.org/10.1037/edu0000815

Kalajas-Tilga, H., Koka, A., Hein, V., Tilga, H., & Raudsepp, L. (2020). Motivational processes in Physical Education and objectively measured physical activity among adolescents. *Journal of Sport and Health Science*, *9*(5), 462-471. https://doi.org/10.1016/j.jshs.2019.06.001

Koka, A., Tilga, H., Kalajas-Tilga, H., Hein, V., & Raudsepp, L. (2020). Detrimental effect of perceived controlling behavior from Physical Education teachers on students' leisure-time physical activity intentions and behavior: An application of the trans-contextual model. *International Journal of Environmental Research and Public Health*, *17*(16), Article 5939. https://doi.org/10.3390/ijerph17165939

Leisterer, S., & Jekauc, D. (2019). Students' emotional experience in Physical Education – A qualitative study for new theoretical insights. *Sports*, *7*(1), Article 10. https://doi.org/10.3390/sports7010010

Leo, F. M., Pulido, J. J., Sánchez-Oliva, D., López-Gajardo, M. A., & Mouratidis, A. (2022). See the forest by looking at the trees: Physical Education teachers' interpersonal style profiles and students' engagement. *European Physical Education Review*, *28*(3), 720-738. https://doi.org/10.1177/1356336X221075501

Li, C., Wang, C. K. J., Koh, K. T., Tan, K. S. S., Tan, S. M., Ang, W. B., Wong, L. H., & Yeo, H. N. C. (2021). Basic psychological need profiles and correlates in physical activity participation: A person-centered approach. *Frontiers in Psychology*, *12*, Article 675639. https://doi.org/10.3389/fpsyg.2021.675639

Mercier, K., Simonton, K., Centeio, E., Barcelona, J., & Garn, A. (2023). Middle school students' attitudes toward physical activity and Physical Education, intentions, and physical activity behavior. *European Physical Education Review*, *29*(1), 40-54. https://doi.org/10.1177/1356336X221106051

Milligan, G. W., & Cooper, M. C. (1985). An examination of procedures for determining the number of clusters in a dataset. *Psychometrika*, *50*, 159-179.

Moreno, J. A., Moreno, R., & Cervelló, E. (2007). El autoconcepto físico como predictor de la intención de ser físicamente activo. *Psicología y Salud*, *17*(2), 261-267. https://doi.org/10.25009/pys.v17i2.710

Nunnally, J. C., & Bernstein, I. H. (1994). The assessment of reliability. In J. C. Nunnally & I. H. Bernstein (Eds.), *Psychometric theory* (pp. 248-292). McGraw-Hill.

Rhodes, R. E., Cox, A., & Sayar, R. (2022). What predicts the physical activity intention–behavior gap? A systematic review. *Annals of Behavioral Medicine*, *56*(1), 1-20. https://doi.org/10.1093/abm/kaab044

Ryan, R. M., & Deci, E. L. (2022). Self-determination theory. In F. Maggino (Ed.), *Encyclopedia of quality of life and well-being research* (pp. 1-7). Springer International Publishing. https://doi.org/10.1007/978-3-319-69909-7_2630-2

Sánchez-Oliva, D., Mouratidis, A., Leo, F. M., Chamorro, J. L., Pulido, J. J., & García-Calvo, T. (2020). Understanding physical activity intentions in Physical Education context: A multi-level analysis from the self-determination theory. *International Journal of Environmental Research and Public Health*, *17*(3), Article 799. https://doi.org/10.3390/ijerph17030799

Shen, L., Gu, X., Zhang, T., & Lee, J. (2022). Adolescents' physical activity and depressive symptoms: A psychosocial mechanism. *International Journal of Environmental Research and Public Health*, *19*(3), Article 1276. https://doi.org/10.3390/ijerph19031276

Tilga, H., Kalajas-Tilga, H., Hein, V., Raudsepp, L., & Koka, A. (2021). Perceived autonomy support from peers, parents, and Physical Education teachers as predictors of physical activity and health-related quality of life among adolescents – A one-year longitudinal study. *Education Sciences*, *11*(9), Article 457. https://doi.org/10.3390/educsci11090457

Van Doren, N., De Cocker, K., De Clerck, T., Vangilbergen, A., Vanderlinde, R., & Haerens, L. (2021). The relation between Physical Education teachers' (de-) motivating style, students' motivation, and students' physical activity: A multilevel approach. *International Journal of Environmental Research and Public Health*, *18*(14), Article 7457. https://doi.org/10.3390/ijerph18147457

Vasconcellos, D., Parker, P. D., Hilland, T., Cinelli, R., Owen, K. B., Kapsal, N., Lee, J., Antczak, D., Ntoumanis, N., Ryan, R. M., & Lonsdale, C. (2020). Self-determination theory applied to Physical Education: A systematic review and meta-analysis. *Journal of Educational Psychology*, *112*(7), 1444-1469. https://doi.org/10.1037/edu0000420

Li, C., Wang, C. K. J., Koh, K. T., Tan, K. S. S., Tan, S. M., Ang, W. B., Wong, L. H., & Yeo, H. N. C. (2021). Basic psychological need profiles and correlates in physical activity participation: A person-centered approach. *Frontiers in Psychology*, *12*, Article 675639. https://doi.org/10.3389/fpsyg.2021.675639

Ward Jr., J. H. (1963). Hierarchical grouping to optimize an objective function. *Journal of the American Statistical Association*, *58*(301), 236-244. https://doi.org/10.1080/01621459.1963.10500845

Webb, T. L., & Sheeran, P. (2006). Does changing behavioral intentions engender behavior change? A meta-analysis of the experimental evidence. *Psychological Bulletin*, *132*(2), 249-268. https://doi.org/10.1037/0033-2909.132.2.249

Wilson, P., Rodgers, W., Loitz, C. C., & Scime, G. (2006). "It's who I am… Really!" The importance of integrated regulation in exercise contexts. *Journal of Applied Biobehavioral Research, 11*(2), 79-104.

White, R. L., Bennie, A., Vasconcellos, D., Cinelli, R., Hilland, T., Owen, K. B., & Lonsdale, C. (2021). Self-determination theory in Physical Education: A systematic review of qualitative studies. *Teaching and Teacher Education*, *99*, Article 103247. https://doi.org/10.1016/j.tate.2020.103247

Zamarripa, J., Rodríguez-Medellín, R., Pérez-Garcia, J. A., Otero-Saborido, F., & Delgado, M. (2020). Mexican basic psychological need satisfaction and frustration scale in Physical Education. *Frontiers in Psychology*, *11*, Article 253. https://doi.org/10.3389/fpsyg.2020.00253

Alba González-Peño, Evelia Franco, Carmen Ocete, Javier Coterón

Students' psychological needs' frustration in Physical Education and intention to be physically active from a person-centred approach
Frustración de las necesidades psicológicas en Educación Física e intención de ser físicamente activo desde un enfoque centrado en la persona

Psychology, Society & Education
vol. 17, no. 1, p. 11 - 20, 2025
Universidad de Córdoba,
ISSN: 2171-2085

DOI: https://doi.org/10.21071/psye.v17i1.17378