



Original article. Attitudinal style and basic psychological needs of university students: a qualitative study based on self-determination theory.

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Attitudinal style and basic psychological needs of university students: a qualitative study based on self-determination theory

Estilo actitudinal y necesidades psicológicas básicas de los estudiantes universitarios: un estudio cualitativo basado en la teoría de la autodeterminación

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Ethical aspects: This study did not involve experiments on humans or animals. Participation was voluntary and informed consent was obtained from all participants.

Abstract

This study adopts an exploratory qualitative design to analyze the effects of the Attitudinal Style emerging pedagogical model, alongside the implementation of self-regulated learning strategies, on the Basic Psychological Needs of university students enrolled in the bachelor's degree in Human Movement Sciences. The research is framed within Self-Determination Theory, which emphasizes the role of autonomy, competence, and relatedness in motivation and learning. Data were collected using a set of open-ended questions as the primary data collection tool. A total of 76 university students (56 males and 20 females, aged 18 to 23 years) participated in the study. Results suggest that the Attitudinal Style model, through its emphasis on autonomy support and the promotion of self-regulated learning, may enhance students' Basic Psychological Needs, fostering a more inclusive and motivating educational environment.

Keywords: attitudinal style; basic psychological needs; self-regulated learning; self-determination theory; higher education

Resumen

El estudio adopta un diseño cualitativo exploratorio para analizar los efectos del modelo pedagógico emergente Estilo Actitudinal, junto con la implementación de estrategias de aprendizaje autorregulado, sobre las Necesidades Psicológicas Básicas de estudiantes universitarios matriculados en la licenciatura en Ciencias del Movimiento Humano. La investigación se enmarca en la Teoría de la Autodeterminación, que enfatiza el papel de la autonomía, la competencia y la relación en la motivación y el aprendizaje. Los datos se obtuvieron utilizando un conjunto de preguntas abiertas como principal herramienta de recolección. Participaron en el estudio un total de 76 estudiantes universitarios (56 hombres y 20 mujeres, con edades entre 18 y 23 años). Los resultados sugieren que el modelo Estilo Actitudinal, mediante su énfasis en el apoyo a la autonomía y el uso del aprendizaje autorregulado, puede potenciar las Necesidades Psicológicas Básicas de los estudiantes, fomentando un ambiente educativo más inclusivo y motivador.

Palabras clave: estilo actitudinal; necesidades psicológicas básicas; teoría de la autodeterminación; aprendizaje autorregulado; educación superior



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Introduction

In the educational context of physical education (PE), understanding the quality of students' motivation is crucial for fostering engagement, learning, and personal development (Cecchini et al., 2019). The Self-Determination Theory (SDT) proposed by Deci & Ryan (2008) stands as one of the most influential frameworks for understanding motivation, particularly among adolescents. This theory distinguishes between three qualities of motivation along a self-determination continuum in accordance with the relative autonomy level present in each of them (Ryan & Deci, 2017). At one end of the continuum lies autonomous motivation, considered the optimal form of human motivation. It involves engaging in activities because they are inherently interesting, enjoyable, or challenging (intrinsic motivation), or because the individual personally values and integrates the activity into their identity (identified regulation). At the midpoint of the continuum lies controlled motivation, where behavior is influenced by internal pressures, such as enhancing self-esteem or avoiding shame and guilt (introjected regulation), or by external pressures, including rewards and punishments (external regulation). Finally, at the opposite end of the continuum is amotivation, characterized by a lack of intention or motivation to act, resulting from feelings of incompetence or a belief that the activity has no value (Deci & Ryan, 2008). This theory has been extensively applied in PE, showing promising results in the design of intervention programs aimed at enhancing different motivational outcomes among students (Diloy-Peña et al., 2021; Kelso et al., 2020; Pérez-González et al., 2019; Vasconcellos et al., 2020).

Additionally, SDT posits that the social context plays a critical role in shaping motivation, closely linked to the satisfaction of basic psychological needs (BPN), which are considered universal and innate: autonomy, competence, and relatedness (Chen et al., 2015; Ryan & Deci, 2017). The three BPN do not operate in isolation but rather interdependently and should thus be considered in combination rather than separately (Guay, 2022). According to Niemec & Ryan (2009), autonomy refers to an individual's perception of being the originator and controller of their own behavior. Competence denotes the feeling of being capable and efficient in performing tasks (Deci & Ryan, 2017), while relatedness represents the sense of belonging to a specific social group or environment (Vlachopoulos & Michailidou, 2006). In



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this context, numerous studies have shown that pedagogical models (PMs) applied in PE can have a positive impact on both motivation and the satisfaction of BPN (Saiz-González et al., 2024). Notable examples include models focused on Cooperative Learning (Garvi-Medrano et al., 2023), Sport Education (Méndez-Giménez et al., 2021; Vicianá et al., 2020), Teaching Games for Understanding (García-Castejón et al., 2021; Gil-Arias et al., 2020) or Teaching Personal and Social Responsibility (Manzano-Sánchez et al., 2021; Manzano-Sánchez & Gómez-López, 2023). Collectively, these studies support the notion that pedagogical approaches grounded in SDT principles can significantly contribute to the development of autonomy, perceived competence, and positive social relationships among students (Vasconcellos et al., 2020).

The Attitudinal Style Model: Enhancing Motivation, Autonomy, and Learning Outcomes

Among emerging PMs (Álvarez-Sánchez et al., 2026; Arufe-Giráldez et al., 2023), Attitudinal Style (AS) stands out, emphasizing attitudes as the central component of the teaching and learning process, with the primary objective of fostering motivation towards PE and improving learning outcomes (Pérez-Pueyo et al., 2020). Its objective is to generate formative experiences grounded in shared assessment, promoting learning and ensuring the success of all students. The session design addresses three components: intentional bodily activities, sequential organization towards attitudes, and final assemblies. However, the authors don't perceive this design as rigid (Pérez-Pueyo et al., 2020). The model is based on five pillars: (1) critical reflection by the teacher on educational practice, (2) intentional work on motivational aspects to create positive experiences, (3) using motor skills as a means, (4) from a critical perspective regarding the more mechanistic view of PE, (5) questioning demonstration as an essential resource in the classroom (Pérez-Pueyo et al., 2021). In this way, the teacher becomes a facilitator of learning, adapting educational practices to accommodate various learning paces and student characteristics

It is important to highlight that the implementation of AS inherently involves the use of formative and shared assessment, with numerous experiences recently published across all educational stages. (Pérez-Pueyo et al., 2024). Consequently, the model emphasizes the



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integration of feedback into daily activities as part of an active process that transcends the simple transmission of information, focusing instead on supporting students in monitoring their progress and improving their perception of learning (Pérez-Pueyo & López-Pastor, 2017). Furthermore, the AS encourages student autonomy and active participation in the classroom, while fostering positive social interactions and enhancing students' perceived competence and self-efficacy (Álvarez-Sánchez et al., 2025; Pérez-Pueyo et al., 2020).

In this sense, the integration of self-regulated strategies enhances key elements of AS (Álvarez-Sánchez et al., 2024), in line with a hybridization approach that focuses not on merely combining parts of the different PMs but on strengthening their core characteristics generating adaptations that meet the specific needs of the teacher (Casey, 2024).

By prioritizing respect for individual differences and promoting active engagement, the model aligns closely with the core principles of SDT (Table 1).

TABLE 1. Relationship Between Attitudinal Style and Self-Determination Theory Principles

Key aspects of AS	SDT principles
Focus on attitudes as central to teaching and learning	Competence: Sense of mastery and effectiveness.
Encouragement of student autonomy and active participation	Autonomy: Freedom in decision-making.
Fostering positive social interactions	Relatedness: Social connection and support.
Respect for individual differences	Autonomy and competence: Space for personal growth.
Integration of feedback in daily activities	Autonomy and competence: Balance between control and ability.
Generation of formative experiences with shared assessment	Autonomy and relatedness: Control over decisions and actions.

NOTE. Own elaboration

Despite the theoretical foundation of AS and its potential to enhance BPN, a review of the existing literature reveals a lack of studies analyzing its effects on university students, as most of the existing research on this PM has been conducted in secondary education contexts. This limitation is particularly relevant, given that university students present different motivational characteristics, levels of autonomy, and learning demands compared to earlier educational stages. Therefore, the primary objective of this research is to explore whether the



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implementation of this emerging PM may positively influence the satisfaction of BPN in university students, given its unique characteristics and theoretical basis in SDT.

Material and Methods

Participants

A total of 76 students voluntarily participated, comprising 56 males and 20 females, aged between 18 and 23 years. A purposive sampling strategy was employed based on predefined inclusion criteria. They were distributed across four natural groups from the 2nd to the 4th year of the bachelor's degree in Human Movement Sciences. All participants attended the same university located in San José, Costa Rica, characterized by a medium socio-economic level. The selection criteria were as follows: (1) full attendance throughout the duration of the workshop(s), and (2) active engagement in the practical workshop sessions.

Design

The study employed an exploratory qualitative design, using a set of open-ended questions as the primary data collection tool. It is framed within an interpretative approach aimed at exploring students' perceptions of their learning experiences in relation to the AS model and Self-Regulated Learning strategies.

Procedure

The research process was initiated following the approval of the Ethics Committee of the University of León (ETICA-ULE-048-2023). To collect the required data for analyzing the research objectives, an open-ended questionnaire was sent via email to each participating student immediately after the workshops ended. This qualitative approach enabled students to openly share their perceptions, viewpoints, and personal experiences regarding the workshops (Weller et al., 2018). Participants were explicitly informed that their responses would remain anonymous, creating a safe environment that encouraged honest and authentic reflections without concern for judgment or identification.



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A single teacher conducted four workshops, each lasting four hours, scheduled according to course coordination and facility availability. Specifically, the workshops covered content related to urban dance, parkour, and strength-endurance, and were directed toward students enrolled in the following subjects: Pedagogy of Aerobic Dance, Pedagogy of Gymnastics, Alternative Sports, and Teaching Methods in PE and Sports, respectively. The urban dance workshop was repeated for students in both Pedagogy of Aerobic Dance and Pedagogy of Gymnastic courses (see Table 2).

TABLE 2. Intervention program overview

Workshop	Content covered	Subject	Duration/sessions
Urban Dance	Final choreography	Pedagogy of Aerobic Dance	2 sessions / 2 hours
Urban Dance	Final choreography	Pedagogy of Gymnastics	2 sessions / 2 hours
Parkour	Obstacle course	Alternative Sports	1 session / 4 hours
Strength-endurance	Individual routine presentation	Teaching Methods in Physical Education & Sports	1 session / 4 hours

In all workshops, the teacher implemented AS, following its theoretical framework (Pérez-Pueyo, 2016). It is worth noting that the teacher had prior experience in applying this model, having previously delivered similar workshops in other educational contexts. Additionally, in the strength-endurance workshop, various strategies grounded in self-regulated learning (Zimmerman, 2002) were implemented to promote autonomous learning and increase student engagement in physical tasks. These strategies included self-observation, aimed at tracking personal performance, and a self-reflection phase, conducted after the learning effort to evaluate performance.

Throughout the data collection process, ethical guidelines established by international educational research organizations were strictly adhered to, particularly those outlined by the American Psychological Association (2020).



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Instruments

Basic Psychological Needs: The Spanish version of the Basic Psychological Needs in Physical Education Scale by Menéndez-Santurio and Fernández-Río (2018) was used as a reference. This validated instrument was initially designed to measure the fulfillment of BPN in PE contexts, making it a suitable foundation for developing the open-ended questions used in this research. The goal of this adaptation was to ensure that the questions aligned more closely with the practical experiences of the students during the workshops and capture richer, more content-specific information. In this way, open-ended questions provide deeper insights into how the workshops influenced their perceptions of BPN (see Table 3).

These questions were reviewed by the research team to ensure content validity and clarity, although no formal external expert panel or pilot testing was conducted prior to data collection.

TABLE 3. Thematic blocks and corresponding open-ended questions

Block 1: Autonomy	Block 2: Competence	Block 3: Relatedness
How did you perceive autonomy in the workshop you attended?	How did you feel about the tasks in the workshop that were considered difficult? Do you think you improved in these tasks?	What value did the relationships with your classmates have in the workshop? Were the relationships friendly?
Do you feel that you had the freedom to choose what interests you?	Do you believe you completed most of the tasks in the workshop correctly?	Did you feel like a valuable member of your group during the workshop?
What is your opinion on the way the workshop was conducted?	Do you think there were tasks that you couldn't complete but your peers were able to?	Did you identify with your classmates while participating in the workshop? Did you feel part of the group?
Do you think the workshop was adapted to your personal preferences?		

Data Analysis

Data analysis must be explicit, reflective, and intentional (Braun & Clarke, 2019). Accordingly, the responses from the open-ended questions were initially compiled into a single



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Word document to organize and review the data. This document served as the basis for the subsequent coding process, which was carried out using NVivo 12 (Bazeley & Jackson, 2013).

An inductive–deductive hybrid approach was adopted, as initial coding was guided by the predefined theoretical framework of SDT, while allowing new categories to emerge from the data.

Data Encoding

The coding process was carried out independently by two researchers (JLAS and PASM), who later compared their coding to ensure consistency in the categorization of responses. Any discrepancies were discussed and resolved through consensus. This dual independent coding procedure was used as a form of researcher triangulation to enhance analytical rigour and trustworthiness. Each extract was treated as a unit of meaning, and therefore a single participant could generate multiple extracts within the same category or subcategory depending on the content of their responses. Text excerpts were categorized into different nodes based on the predefined content blocks: (1) Autonomy, (2) Competence, and (3) Relatedness.

The analysis followed a three-phase process: (1) initial familiarization and open coding of the data, (2) generation of preliminary categories and subcategories, and (3) refinement and definition of final themes. During the coding process, potential subthemes or subcategories were identified within each content block, highlighting more specific aspects of students' experiences. The use of NVivo 12 facilitated the systematic organization and analysis of the data, ensuring that relevant themes and subthemes were consistently identified and examined. Following Braun and Clarke (2021) guidelines, the criteria of specificity and coherence in qualitative research were rigorously applied throughout the process.

Description of Categories

The following section outlines the three main categories of analysis, along with the various subcategories identified during the process (see Table 4).



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TABLE 4. Categories and Subcategories of Analysis

Block 1: Autonomy	Block 2: Competence	Block 3: Relatedness
1.1 Autonomy in the choice of activities and tasks	2.1 Perception of difficulty	3.1 Teamwork and cooperation
1.2 Structure and dynamism of the workshop	2.2 Achievement and mastery of tasks	3.2 Sense of belonging and inclusion
1.3 Social Interaction and Teamwork	2.3 Personal condition and comparison with peers	

- **Autonomy in the choice of activities and tasks:** This subtheme refers to how students experience the freedom to choose and personalize their activities and tasks within the workshop. It examines the sense of control and decision-making.
- **Structure and dynamism of the workshop:** It explores how the structure (e.g., task sequence) and the dynamism (e.g., variation in activities) affect student participation and engagement.
- **Social interaction and teamwork:** It explores how working together enhances learning experiences and contributes to a more enjoyable and motivating environment.
- **Perception of difficulty:** This subtheme involves how students perceive the difficulty of tasks and activities within the workshop.
- **Achievement and mastery of tasks:** It focuses on how students perceive their progress and whether they feel they have successfully mastered the tasks set before them.
- **Personal condition and comparison with Peers:** It highlights the role of self-assessment and peer comparison in building confidence or fostering a sense of inadequacy.
- **Teamwork and cooperation:** This refers to the importance of teamwork and how students collaborate to achieve shared goals within the workshop.
- **Sense of belonging and inclusion:** This subtheme addresses how students feel valued and included within the group.

Results

The results suggest that the AS was perceived to positively influence the BPN of university students. Below, the key findings from the data analysis across the different



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categories are presented. A comparative perspective is also included, considering the specific content of the workshops for each block.

Contribution of AS on the Student's Autonomy Levels

Autonomy in the choice of activities and tasks (56 extracts)

In this category, the opportunity to choose songs, choreographies, or the difficulty level of the exercises was among the most appreciated aspects, as it provided students with greater control over their learning process, enhancing their engagement and motivation during the workshops.

'I like being able to choose which songs to play and the level of difficulty I want for the exercises; it makes me feel more involved' 'I felt free to choose the routine I wanted, as it allowed me to perform the exercises that I knew I could execute correctly'

Structure and dynamism of the workshop (32 extracts)

The sequential organization of attitudes facilitated smooth and dynamic transitions between the various activities in the workshop.

'Each person worked with their group on a part of the choreography, and in the end, we combined everything. Everyone had their own space and personal improvement within the choreography'

Students appreciated the balance between autonomy and teacher guidance.

'The teacher gave us the freedom to experiment with different styles and movements, and we could make decisions about our own choreography'

Social interaction and teamwork (47 extracts)

Peer support played a crucial role in fostering independent decision-making and encouraging more active engagement in the activities.

'I liked the fact that we had to try to find solutions to the problems we encountered while working on such a long group choreography. I appreciated being given the option to create our own choreographies and positions, but with guidance throughout the process'

Differences emerged depending on the type of content, particularly in how students experienced autonomy. While autonomy in dance workshops was primarily experienced



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through creativity and the choice of music and movements, in activities such as parkour or strength-resistance, autonomy was combined with a clearer need for teacher guidance due to the complexity of the movements and the safety involved.

'I'm not a fan of dance but being able to choose the music and how to perform the movements made it more enjoyable' 'Parkour is fun, but sometimes I wasn't sure if I was doing the movements correctly. I appreciated that the teacher gave us room to make choices'

Students' Perceptions of Competence in Relation to the AS Model

Perception of difficulty (28 extracts)

During the data coding and category analysis, it became evident that most students initially found the tasks challenging. However, most reported improvement over time, mainly due to practice and continuous feedback from the teacher.

'At first, I struggled to keep up with the rhythm of the choreography, but with practice, I gradually managed to improve' 'I felt overwhelmed at the beginning, but after receiving feedback, I was able to enhance my performance'

Achievement and mastery of tasks (37 extracts)

The implementation of self- and peer-assessment led most students to perceive that, despite making some mistakes, they successfully performed the majority of tasks by the end of the workshop.

'I felt safe and confident while performing each task, and I believe that being able to discuss with my peers allowed me to gain different perspectives on the exercises and how they could be combined'

Personal condition and comparison with peers (22 extracts)

The extracted data also show that the inclusion of intentionally designed activities fostered a positive initial predisposition and attitude among students.

'In the workshop, we encountered some complex exercises, which some classmates were unable to complete successfully. However, they managed to perform regressions of these exercises, ensuring the inclusion of everyone in the activities'



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Differences were also observed depending on the type of content and how they impact students' perception of competence. Parkour tends to be more challenging at the beginning; however, task adaptation and mutual support facilitated their progression.

'I initially felt frustrated because some movements seemed impossible to me, but after trying repeatedly and receiving help, I began to make progress'

In urban dance, students faced challenges related to motor coordination and synchronization with music, requiring greater mental focus and motor memory. Improvement was experienced gradually as students became familiar with the choreographies and refined their movements.

'At first, I couldn't perform the choreography correctly, but after practicing and receiving feedback, it became easier for me'

Lastly, regarding strength-endurance, the tasks tend to be perceived as less technical but demanding in terms of sustaining physical effort over time. Students mentioned that although the initial tasks were challenging, adapting to the exercises allowed them to notice improvements.

'I had never exerted myself so much physically, but when I started to see that I could do more repetitions, I felt highly motivated'

Effect of AS on Fostering Relatedness

Teamwork and cooperation (44 extracts)

The analysis of responses revealed a clear tendency toward a positive and collaborative environment.

'Teamwork was essential; everyone contributed ideas and effort' 'We supported each other a lot; there was always empathy and mutual respect among all participants'

Sense of belonging and inclusion (24 extracts)

Collaboration was a recurring factor, with a strong emphasis on teamwork and the active contribution of each member, fostering a sense of belonging within the group.



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'Communication was key to ensuring everyone could understand each other'

Differences depending on the type of content were also identified. In urban dance workshops, communication with peers was established as a crucial tool for presenting the final choreography.

'We relied heavily on each other in creating the choreographies and learning the steps'

On the other hand, in the strength-endurance workshops, although group dynamics were also present, the emphasis was more on personal improvement and mutual support to successfully complete the activities

'Even though I didn't always feel confident, I always received support from everyone'

In turn, it can be noted that relationships in the parkour workshops stood out due to a greater adaptation to teamwork, given the nature of the activity, which requires collaboration to overcome obstacles and achieve certain physical challenges.

'Teamwork was essential; everyone contributed ideas and effort'

Discussion

The aim of this research was to explore students' perceptions of the relationship between AS and the BPN of university students when applied in different workshops. To this end, various subcategories of BPN were measured. In this regard, the discussion will be structured around the analysis of these three main categories.

Students' Perceptions of Autonomy in Relation to the AS Model

As reflected in the results, the application of the model was perceived positively influence students' autonomy levels, regardless of the specific content covered in the workshops. These findings are consistent with several studies applying PMs based on SDT, which report significant improvements in autonomy levels (Carriedo et al., 2022; Viciania et al., 2020). This increase in autonomy appears to have been facilitated by the teacher's role, who, while guiding the process, fostered student decision-making by adopting an empathetic



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approach and considering their preferences and interests. Such an approach not only enhanced students' perception of the subject but also fostered greater empathy towards the PE teacher, as highlighted in previous studies (Granero-Gallegos et al., 2023; Hortigüela-Alcalá et al., 2016). Moreover, it aligns closely with autonomy-supportive interventions in PE classes (Moreno-Murcia & Sánchez-Latorre, 2016; Reeve, 2009), which have consistently demonstrated significant increases in students' autonomy following the implementation of intervention programs (Guay, 2022).

While the AS model on its own was perceived to support autonomy in urban dance workshops, more notable perceived improvements were observed in parkour and strength-endurance workshops, where additional self-regulation strategies were applied. Previous research has established that integrating self-regulated learning strategies with autonomy-supportive teaching leads to more effective development of students' autonomy and confidence in PE contexts (Laxdal et al., 2019). These results underscore the importance of combining different pedagogical strategies to maximize students' perceived autonomy and engagement in PE (Casey & Kirk, 2024).

Students' Perceptions of Competence in Relation to the AS Model

Regarding competence, the results indicate perceived increases in students' competence following the implementation of AS. However, this specific outcome has not been previously measured in other studies on this emerging PM. Nonetheless, Hortigüela-Alcalá et al. (2016) reported improvements in physical self-concept after applying AS in PE settings. Although competence satisfaction and physical self-concept are distinct constructs, they are closely related, as both contribute to students' overall perception of their abilities and confidence in performing physical activities (Fraguela-Vale, 2020). The observed increase in competence supports previous findings by Hortigüela-Alcalá et al. (2016) regarding improvements in self-perception.

Additionally, the implementation of formative and shared assessment seems to play a crucial role in supporting students' perceived competence in PE classes. While several studies have explored the relationship between formative and shared assessment and improvements in



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various variables (Chng & Lund, 2018; Slingerland et al., 2024), or, in the context of AS, students' responsibility (Hortigüela-Alcalá et al., 2016), no research has specifically examined its direct impact on competence.

Students' Perceptions of Relatedness in Relation to the AS Model

Finally, regarding relatedness, the observed results indicate perceived improvements in social and interpersonal relationships. Specifically, in the urban dance and parkour workshops, working in medium and large groups where every student fulfills a necessary role to achieve group success fosters better interpersonal relationships, empathy towards peers, and a stronger sense of group identity. This group work approach shares many similarities with cooperative learning, whose application in secondary education has demonstrated significant improvements in social relationships (Cecchini et al., 2019; Garvi-Medrano et al., 2023), as it relies on strong collaborative bonds among students and is closely linked to formative assessment (Pérez-Pueyo, 2016).

In contrast, the strength-endurance workshop, which does not involve structured group work but rather continuous interactions where individual responsibility is developed through formative and shared assessment to improve peer performance, also shows perceived improvements in social relationships and self-regulated learning. This enhancement may stem from the focus on fostering positive attitudes as a key element in creating a task-oriented motivational climate rather than an ego-oriented one (Pérez-Pueyo, 2016). Moreover, this approach encourages greater student responsibility in self-assessment, as highlighted by Hortigüela-Alcalá et al. (2016). While previous studies on formative assessment (Kincal & Ozan, 2018) have shown improvements in academic performance and students' attitudes toward lessons, they did not report significant effects on self-regulation skills. In this regard, there is a lack of existing literature that specifically examines the effects of formative and shared assessment on students' relatedness in the context of PE. Preliminary studies on teachers' perceptions of the implementation of formative assessment in various activities have shown promising results (Slingerland, 2024).



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Overall, this study provides qualitative insights into the AS model in a higher education context, an area that remains underexplored. While previous research has mainly focused on secondary education, the present findings *suggest its potential applicability* in university settings. In particular, the results *support the idea that AS may be associated with the satisfaction of BPN* through autonomy-supportive practices, structured formative assessment, and collaborative learning environments.

Limitations and Future Research

The present study has some limitations that should be acknowledged. First, the exclusive use of open-ended questionnaires as the data collection instrument may limit the depth of methodological triangulation. Although this approach provided rich qualitative information aligned with the exploratory nature of the study, future research could benefit from mixed-methods designs to complement these findings with quantitative data. Second, the study did not include an analysis by gender, which could be relevant to determine whether differences exist in how male and female students experience the AS model. Third, the exploratory nature of the design and the relatively short duration of the workshops should also be considered, as they may limit the generalizability and depth of the observed outcomes.

Future studies should address these aspects to strengthen the robustness and transferability of the findings.

Conclusions

This study explored the association between the AS model and the BPN of university students, revealing its positive relationship with perceived levels of autonomy, competence, and relatedness, and offering valuable insights into its pedagogical potential. AS was perceived to support students' autonomy, particularly in workshops where self-regulation strategies were combined with formative and shared assessment, fostering greater engagement and responsibility. These findings are consistent with prior research on PMs grounded in SDT, which emphasize student choice and active decision-making. Likewise, higher levels of perceived competence satisfaction were reported, attributed to enhanced confidence in students'



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abilities and the reflective nature of the learning process. Furthermore, AS was perceived to promote stronger social relationships and a sense of belonging, even in workshops with an individual focus, by encouraging structured interactions that facilitated collaboration and mutual support.

These findings highlight the pedagogical value of AS for teachers in promoting autonomy-supportive learning environments in higher education. They also contribute to research on SDT and PMs and may inform the design of more motivating university teaching practices.

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