El Modelo Circular de Estilos de Enseñanza de Apoyo o Amenaza de las Necesidades: Una Guía para la Investigación y la Práctica

The Circumplex Model of Need-Supportive and Need-Thwarting Teaching: A Guide for Research and Practice

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El Modelo Circular de Estilos de Enseñanza de Apoyo o Amenaza de las Necesidades: Una Guía para la Investigación y la Práctica

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Resumen:

Los docentes de educación física desempeñan un papel crucial en la configuración de la motivación de los estudiantes y otros resultados importantes a través de sus interacciones de apoyo y de amenaza de las necesidades. Por lo tanto, comprender toda la gama y la complejidad de estas interacciones es esencial para avanzar tanto en la teoría como en la práctica. El Modelo Circular, un modelo basado en la Teoría de la Autodeterminación, ofrece un marco prometedor y basado en la evidencia para capturar esta complejidad. Integra diferentes dimensiones de apoyo y de amenaza de las necesidades y adopta un enfoque graduado y pormenorizado. Este texto reflexivo describe cómo el Modelo Circular puede guiar la investigación identificando qué constructos examinar, qué análisis utilizar y cómo hacer avanzar significativamente el campo de estudio. También destaca la relevancia práctica del modelo, proporcionando una guía para iniciativas de desarrollo profesional formativo y estudios de intervención. Además, el modelo ayuda a interpretar las prácticas docentes, mostrando que la efectividad de la enseñanza depende de su implementación e interpretación. En general, el Modelo Circular posee un gran potencial para avanzar en el ámbito educativo tendiendo un puente entre la teoría y la práctica.

Palabras claves:

Teoría de la Autodeterminación, Estilos y Enfoques Motivadores y Desmotivadores, Educación Física.

Abstract:

Physical education teachers play a crucial role in shaping students' motivation and other important outcomes through their need-supportive and need-thwarting interactions. Understanding the full range and complexity of these interactions is therefore essential for advancing both theory and practice. The Circumplex Model, a Self-Determination Theory-based model, offers a promising, evidence-based framework to capture this complexity. It integrates different need-supportive and need-thwarting dimensions and adopts a graded and fine-grained approach. This reflective text outlines how the Circumplex Model can guide research by identifying which constructs to examine, which analyses to use, and how to significantly move the field forward. It also highlights the model's practical relevance, providing a guide for formative professional development initiatives and intervention studies. In addition, the model helps to interpret teaching practices, showing that the effectiveness of teaching depends on its implementation and interpretation. Overall, the Circumplex Model holds strong potential to advance the educational field by bridging theory and practice.

Keywords:

Self-Determination Theory, Motivating and Demotivating Styles and Approaches, Physical Education.

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1. Introduction

The way teachers interact with their students is of major educational importance, as these interactions help shape how students experience and engage in the learning environment (Ryan & Deci, 2017, 2023). In physical education (PE), for instance, the quality of teacher–student interactions has been linked to students' motivation (see Vasconcellos et al., 2020 for a review), engagement (see Guo et al., 2023 for a review), well-being (Behzadnia et al., 2018; Liu et al., 2017), health-related quality of life (Tilga et al., 2019; Tilga et al., 2020), physical activity intentions (Behzadnia et al., 2018; Leo et al., 2023), in-class physical activity (Van Doren et al., 2021; Van Doren et al., 2024), and leisure-time physical activity (see Hagger & Chatzisarantis, 2016 for a review; Kalajas-Tilga et al., 2020; Koka et al., 2019). Consequently, researchers and educators are deeply interested in understanding these interactions and how they determine student outcomes.

According to Self-Determination Theory (SDT; Ryan & Deci, 2023), PE teachers play a crucial role in shaping student outcomes by supporting or thwarting students' basic psychological needs. These needs include the need for autonomy (i.e., experiencing a sense of volition), the need for competence (i.e., experiencing a sense of effectiveness), and the need for relatedness (i.e., experiencing a sense of connection). A PE teacher can either interact in a need-supportive or need-thwarting way with their students, also referred to as motivating or demotivating (Ryan & Deci, 2017). Need-supportive teaching, that is autonomy-supportive (e.g., PE teachers identify and nurture students interests, preferences, and feelings to volitionally engage them), structuring (e.g., PE teachers begin from the students' abilities and provide help and guidance so they feel competent), and relatedness-supportive (e.g., PE teachers invest time, energy, and resources to build a warm connection with students), fosters a "bright" pathway toward adaptive outcomes (Haerens et al., 2015). On the other hand, need-thwarting teaching, that is controlling (e.g., PE teachers apply internal and external pressure to make students think, feel, and behave in a teacher-prescribed way), chaotic (e.g., PE teachers adopt a laissez-faire attitude, leaving students on their own and confusing them), and relatedness-thwarting (e.g., PE teachers distance themselves from their students, which creates a cold relationship), promotes a "dark" pathway toward maladaptive outcomes (Haerens et al., 2015).

In recent years, research on PE teachers' need-supportive and need-thwarting teaching has advanced considerably. Earlier studies typically focused on isolated or limited dimensions, with autonomy-supportive teaching receiving the most attention and by extension controlling teaching (Vasconcellos et al., 2020). More recently, research has begun to investigate multiple dimensions simultaneously, which led to the emergence of the integrative Circumplex Model (Aelterman et al., 2019; Escriva-Boulley et al., 2021). Grounded in SDT principles (Aelterman & Vansteenkiste, 2023) and supported by empirical research (e.g., Burgueño et al., 2023; Escriva-Boulley et al., 2021; Van Doren et al., 2023), this model offers a comprehensive and nuanced understanding of need-supportive and need-thwarting teaching. In doing so, the model provides a clear guide for research and practice.

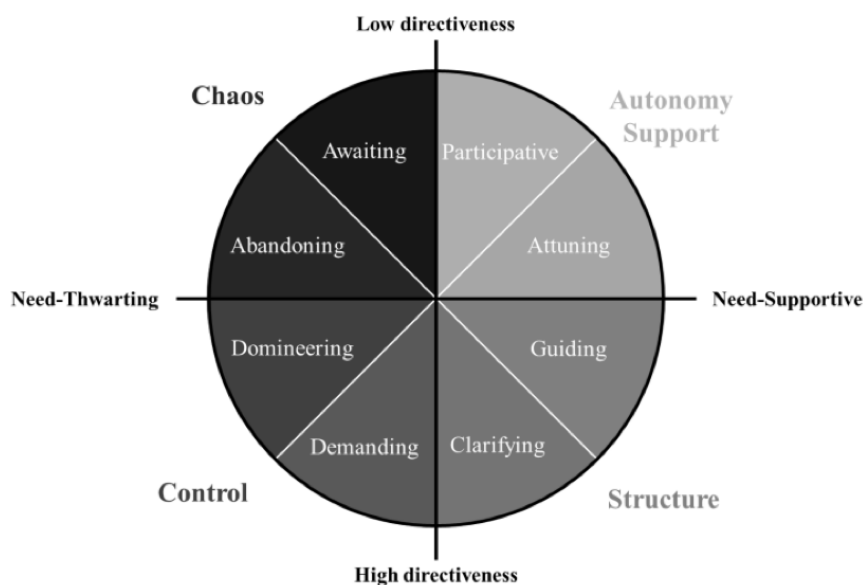# 2. The Circumplex Model of Need-Supportive and Need-Thwarting Teaching

According to the Circumplex Model (Aelterman et al., 2019), need-supportive and need-thwarting teaching can be structured along a two-dimensional circumplex (see Figure 1). The ho-

rizontal dimension (i.e., x-axis) represents the extent to which the PE teacher supports (i.e., autonomy support and structure), relative to thwarts (i.e., control and chaos) students' basic psychological needs. The vertical dimension (i.e., y-axis) reflects the extent to which the PE teacher is directive and takes the lead (i.e., structure and control) or instead leaves the initiative and action to the students (i.e., autonomy support and chaos). Each of the four quadrants is further subdivided into two specific subareas, resulting in eight more refined approaches. Moving along the circumplex, the autonomy-supportive dimension can be divided into a participative and attuning subarea, structure into a guiding and clarifying subarea, control into a demanding and domineering subarea, and chaos into an abandoning and awaiting subarea (see Table 1 for a detailed description; Aelterman et al., 2019; Escriva-Boulley et al., 2021).

The Circumplex Model is not only firmly grounded in theory (Aelterman et al., 2019; Aelterman & Vansteenkiste, 2023) but is also supported by strong empirical evidence. In recent years, researchers have used multidimensional scaling (MDS) analyses, an exploratory statistical technique, to visualize the relations among the four teaching dimensions and their eight subareas (Borg et al., 2013). Through this work, the Circumplex Model has been identified across a variety of domains, including education (secondary: Aelterman et al., 2019; higher: Vermote et al., 2020; physical education: Escriva-Boulley et al., 2021), sport (Delrue et al., 2019; Van Meervelt et al., 2024), and nursing (Duprez et al., 2019). Moreover, its applicability has been demonstrated across different informants (e.g., athletes and coaches: Delrue et al., 2019; students and teachers: Aelterman et al., 2019), countries (e.g., France and Flanders: Escriva-Boulley et al., 2021; Spain: Burgueño et al., 2023; Japan: Teraoka et al., 2024) and cultural contexts (e.g., Bouten et al., 2025; Diloy-Peña et al., 2024b).

Figure 1

The Circumplex Model of Need-Supportive and Need-Thwarting Teaching (adapted from Aelterman et al., 2019; Escriva-Boulley et al., 2021).

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Table 1

Detailed Explanation of PE Teachers' Need-Supportive and Need-Thwarting Teaching According to the Circumplex Model (Aelterman et al., 2019; Escriva-Boulley et al., 2021).

Style (Dimension)	Explanation	Approach (Subarea)	Explanation
Autonomy-Supportive	The PE teacher seeks to maximally identify and nurture students' interests, preferences and feelings, by adopting a tone of understanding (i.e., open and curious). The PE teacher engages the student volitionally.	Participative	The PE teacher identifies students' personal interests by going into dialogue and asking students' input and suggestions. Where possible, the PE teacher offers (meaningful) choices and optimally follows students' pace.
		Attuning	The PE teacher nurtures students' personal interests by offering interesting and enjoyable activities, accepting students' expressions of negative affect, and trying to understand how students see things. The PE teacher relies on inviting language and provides meaningful rationales.
Structure	Starting from the capabilities and abilities of the students, the PE teacher provides strategies, help and assistance, so that students feel competent by adopting a tone of guidance.	Guiding	The PE teacher nurtures students' progress by offering appropriate help and assistance and expressing confidence in students' capabilities. Together with the students', the PE teacher constructively reflects on mistakes, so that they see for themselves what can be improved and how they can improve.
		Clarifying	The PE teacher communicates expectations to students in a clear and transparent way. The PE teacher offers an overview of what students can expect and monitors students' progress in meeting the communicated expectations.
Control	The PE teacher insists that students think, feel, and behave in a prescribed way by adopting a tone of pressure. The PE teacher imposes their agenda and requirements on students', irrespective of what students think.	Demanding	The PE teacher requires discipline from students by using powerful and commanding language. The PE teacher points students on their duties, tolerates no participation or contradiction, and threatens with sanctions if students don't comply (i.e., external control).
		Domineering	The PE teacher exerts power to students to make them comply with their requests. The PE teacher suppresses students by inducing feelings of guilt and shame, or personally attacking students (i.e., internal control).
Chaos	The PE teacher leaves students on their own, by adopting a tone of laissez-faire. The PE teacher makes it confusing for students to figure out what they should do, how they should behave, and how they can develop their skills.	Abandoning	The PE teacher gives up on students and allows them to just do their own thing, because eventually students have to learn to take responsibility for their own behavior.
		Awaiting	The PE teacher offers a laissez-faire learning climate where the initiative fully lies with the students. The PE teacher tends to wait to see how things evolve, doesn't plan too much and let things take their course.

2.1. The Circumplex Model: A Graded Approach

One of the defining characteristics of the Circumplex Model is its graded approach, which suggests that the eight approaches are meaningfully related to one another. In line with their position in the model, correlations between the eight approaches follow a sinusoidal pattern. Each approach is most positively correlated with its neighboring approach, and these correlations gradually decrease, becoming nonsignificant and even negative as one moves further along the model (Aelterman et al., 2019). For example, an attuning approach correlates most strongly and positively with a participative and guiding approach, with these correlations becoming weaker (e.g., awaiting and clarifying) and even negative (e.g., domineering approach; Escriva-Boulley et al., 2021; Van Doren et al., 2023).

The Circumplex Model therefore helps explain the high correlations that have been reported between autonomy support and structure in past research (e.g., Haerens et al., 2013). High correlations are expected between neighboring approaches (e.g., attuning and guiding). For instance, research has shown that the attuning and guiding approaches overlap (Escriva-Boulley et al., 2021; Van Doren et al., 2023). In the sport context, these approaches were so closely related that they could not be separated through factor analysis (Delrue et al., 2019). Rather than indicating a problem, these high correlations should be valued, as they simply reflect reality: attuning (i.e., autonomy support) and guiding (i.e., structure) are both highly need-supportive.

Importantly, even though autonomy support and control, and structure and chaos, appear visually as opposites in the Circumplex, the model views them as distinct and unique constructs. Consistent with the dual-process model (Haerens et al., 2015), the absence of autonomy support does not automatically imply the presence of control, and a lack of structure does not automatically mean chaos. Empirical research supports this thinking as autonomy support and control, and structure and chaos, only show small to moderate negative correlations (e.g., Escriva-Boulley et al., 2021) and reveal distinct associations with unique (student) outcomes (e.g., Behzadnia et al., 2018; Koka et al., 2019; Leo et al., 2023; Liu et al., 2017; Teraoka et al., 2024; Van Doren et al., 2024).

This also helps clarify why the neighboring approaches that represent the transition from need-supportive to need-thwarting (i.e., participative to awaiting, and clarifying to demanding) do not necessarily show the strongest positive correlations. Although they sit next to each other on the Circumplex Model, the correlations between these subareas are among the lowest and often nonsignificant because they represent conceptually different constructs (i.e., need-supportive vs need-thwarting; Escriva-Boulley et al., 2021; Van Doren et al., 2023).

2.2. The Circumplex Model: A Fine-Grained Approach

Besides the Circumplex Model's graded approach, a second defining characteristic is its fine-grained approach. Each of the four broader quadrants (i.e., autonomy support, structure, control, and chaos) is subdivided into two more refined subareas (i.e., participative, attuning, guiding, clarifying, demanding, domineering, abandoning, and awaiting). This subdivision provides a more nuanced perspective, distinguishing between the specific (motivational) effect of each approach (Aelterman et al., 2019).

Specifically, the guiding and attuning approaches are labeled as directly **need-nurturing**, because they actively foster students' basic psychological needs. The participative and clarifying

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approaches are labeled as **need-enabling**, because they create a supportive environment in which need satisfaction can occur, without necessarily ensuring it (Aelterman et al., 2019). Indeed, research shows the strongest associations between attuning and guiding and adaptive outcomes (e.g., autonomous motivation, need satisfaction, learning, intentions to be physically active, desired PE hours), while these associations are less pronounced for the participative and clarifying approaches (Burgueño et al., 2023; Diloy-Peña et al., 2024a; García-Cazorla et al., 2024; Van Doren et al., 2023). Similarly, the domineering and abandoning approaches are labeled as **need-thwarting**, because they actively undermine students' basic psychological needs. The demanding and awaiting approaches are labeled as **need-depriving**, because they fail to sufficiently support these needs, though they do not necessarily provoke intense need frustration (Aelterman et al., 2019). Research consistently shows that domineering and abandoning are most strongly linked to maladaptive outcomes (e.g., controlled motivation, amotivation, and need frustration), whereas these relations tend to be weaker for the demanding and awaiting approaches (Burgueño et al., 2023; Van Doren et al., 2023).

Said differently, the different need-supportive and need-thwarting approaches yield a sinusoidal pattern across outcomes. Specifically, the attuning and guiding approaches show the strongest correlations with desirable outcomes, and these correlations gradually decrease and become negative as one moves along the Circumplex toward the domineering and abandoning approaches. Similarly, the domineering and abandoning approaches show the strongest positive correlations with negative outcomes, and these correlations decrease and become negative when moving toward the attuning and guiding approaches (see Figure 2 for an example). It should be noted that the positive peak or negative drop is outcome-dependent (Aelterman & Vansteenkiste, 2023)

Figure 2

Example of Sinusoidal Pattern of Need-Supportive and Need-Thwarting Approaches: Relations Between Eight Approaches and Student Amotivation (adapted from Aelterman & Vansteenkiste, 2023).
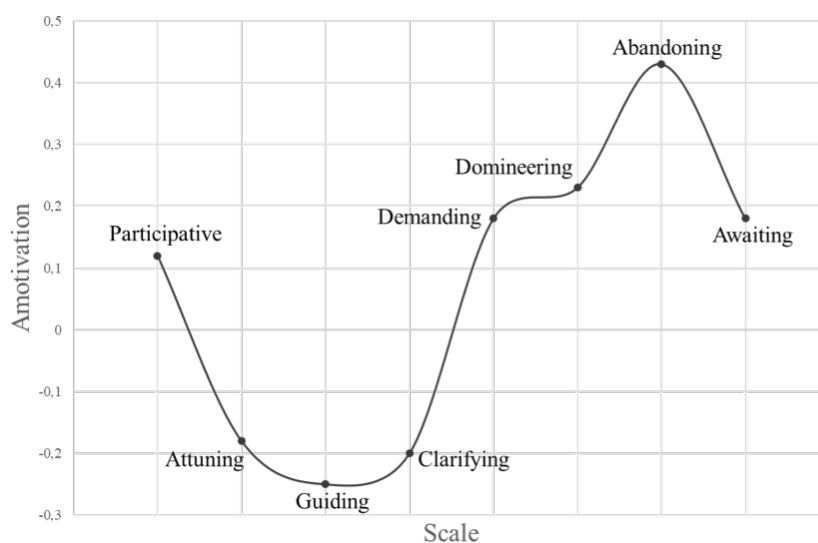
3. The Circumplex Model: A Guide for Research

3.1 The Circumplex Model as a Guide for Determining Which Need-Supportive and Need-Thwarting Constructs to Investigate

The Circumplex Model (Aelterman et al., 2019) offers unique opportunities for research. Its fine-grained approach enables researchers to examine need-supportive and need-thwarting teaching at different levels of specificity. Depending on the research question, need-supportive and need-thwarting teaching can be meaningfully constructed or deconstructed. That is, the Circumplex Model indicates that need-supportive and need-thwarting teaching falls into different teaching styles (i.e., autonomy support, structure, control, and chaos), which in turn comprises different teaching approaches (e.g., autonomy support consist of a participative and attuning approach) (Escriva-Boulley et al., 2021). The Circumplex Model can thus be used as a global need-supportive and need-thwarting teaching score, a teaching style score (e.g., autonomy support), or a teaching approach score (e.g., participative). Researchers might also choose to work with a need-nurturing (i.e., attuning and guiding), need-enabling (i.e., participative, clarifying), need-thwarting (i.e., domineering and abandoning), and need-depriving teaching score (i.e., demanding and awaiting). Additionally, the Circumplex Model provides an integrative view of need-supportive and need-thwarting teaching, allowing to investigate multiple teaching styles or approaches simultaneously (e.g., Bouten et al., 2025; Van Doren et al., 2023; Van Doren et al., 2024). In doing so, it addresses the limitations of earlier work that often examined only one or a few isolated dimensions (Vansteenkiste et al., 2019). In sum, the Circumplex Model's flexibility allows researchers to make meaningful choices to determine which need-supportive and need-thwarting constructs should be investigated.

While the Circumplex Model provides a macroscopic overview of need-supportive and need-thwarting teaching, it also supports a microscopic view. That is, need-supportive and need-thwarting teaching consist of different behaviors (e.g., providing students with meaningful choices is labelled as autonomy-supportive and more specifically as participative; Escriva-Boulley et al., 2021). In this regard, MDS-analyses are highly relevant, as MDS-analyses provide a visual representation of where each behavior lies on the Circumplex Model (Van Doren et al., 2023). This visualization helps determine, for instance, which behaviors are more need-supportive or need-thwarting (e.g., need-nurturing or need-enabling). Research using MDS-analyses based on student-measures (Burgueño et al., 2024), (pre- and in-service) teacher-measures (Escriva-Boulley et al., 2021), and observations (Van Doren et al., 2023) has already provided ample examples of where different behaviors lie on the Circumplex Model (see Figure 3 for an example). Building on this work, research could examine additional need-supportive and need-thwarting behaviors not yet positioned within the Circumplex, such as adjusting the pace of progress to students' needs, providing rewards, or offering positive feedback (Aelterman & Vansteenkiste, 2023).

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Figure 3

Example of MDS-analyses: Visualization of Different Need-Supportive and Need-Supportive and Need-Thwarting Behaviors on the Circumplex Model (Source: Van Doren et al., 2023).
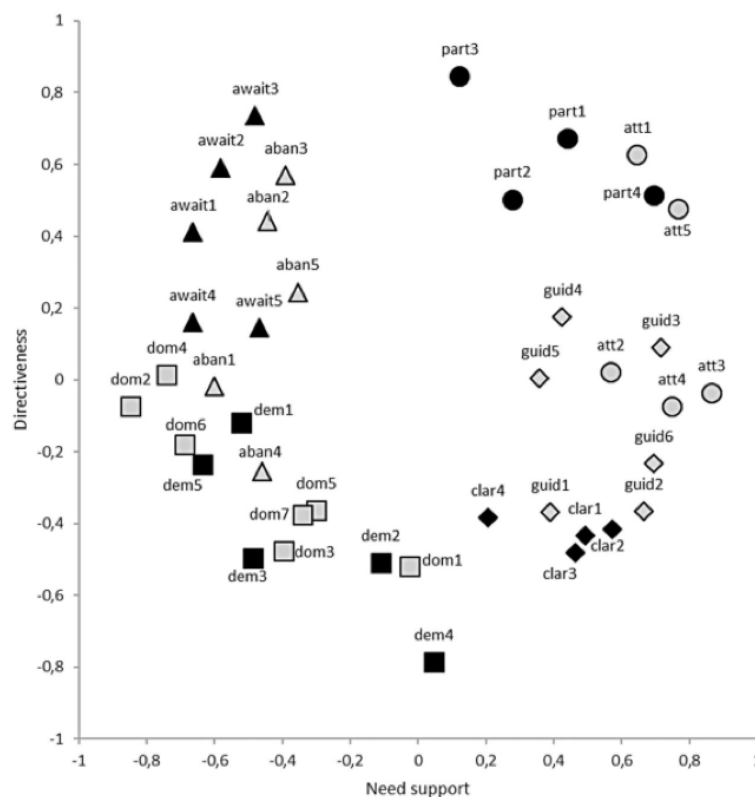
Note. Each point in the Figure represents a need-supportive or need-thwarting behavior. For example, "part 1" (= participative behavior one) entails the behavior offering option choice (see Supplementary Materials or Appendix 1: SIS-PE Coder of Van Doren et al., 2023). Part = participative, att = attuning, guid = guiding, clar = clarifying, dem = demanding, dom = domineering, aban = abandoning, await = awaiting

3.2 The Circumplex Model as a Guide for Determining How to Investigate Need-Supportive and Need-Thwarting Teaching

The Circumplex Model also informs researchers on how they can approach their analyses. As the model inherently implies a graded, sinusoidal pattern of correlations between need-supportive and need-thwarting teaching and student outcomes, research can move beyond the question of which teaching style or approach uniquely predicts outcomes (Aelterman & Vansteenkiste, 2023). Although traditional variable-centered studies seeking to explain unique variance is valuable (e.g., Van Doren et al., 2024), this focus risks overlooking the fact that need-supportive and need-thwarting styles and approaches are meaningfully interrelated (Escriva-Boulley et al., 2021) and rarely occur in isolation (Van den Berghe et al., 2013). In line with the Circumplex Model, a complementary perspective is to focus on the overall pattern of correlations rather than isolated effects (Aelterman & Vansteenkiste, 2023).

In addition to investigating need-supportive and need-thwarting teaching through these variable-centered approaches, the Circumplex Model promotes the use of a person-centered

approach. Rather than categorizing PE teachers as need-supportive or need-thwarting, a person-centered approach recognizes that PE teachers combine different teaching styles to different degrees by identifying different profiles. Despite a person-centered approach better reflecting reality, limited studies have relied on this approach. Early studies investigated profiles consisting of two dimensions (e.g., autonomy and control, Haerens et al., 2017; structure and control, García-González et al., 2023), showing that PE teachers can be supportive and thwarting to varying degrees. Across these studies, four profiles emerged: high-quality (high support, low thwarting), low-quality (low support, high thwarting), high-quantity (high in both), and low-to-moderate quantity (low to moderate in both). The high-quality profile produced the most favorable student outcomes, while the low-quality profile resulted in the least optimal student outcomes. The low-to-moderate quantity profile generally outperformed the high-quantity profile (García-González et al., 2023; Haerens et al., 2017). Although recently research has tried to move this field forward by investigating multiple teaching dimensions (Burgueño et al., 2024; Fierro-Suero et al., 2025; Leo et al., 2022) and approaches (Diloy-Peña et al., 2025), to date no study has investigated all four dimensions or all eight approaches simultaneously within a single profile analysis.

3.3 The Circumplex Model as a Guide for Moving the Educational Literature Forward

It is important to consider how research guided by the Circumplex Model can meaningfully advance the educational literature. Understanding how need-supportive and need-thwarting teaching unfolds, is inherently complex, as teaching occurs within a dynamic, real-world context. The Circumplex Model captures this complexity through a fine-grained and graded approach, clarifying why certain need-supportive or need-thwarting approaches are more or less effective (i.e., need-nurturing or need-enabling, need-thwarting or need-depriving; Aelterman et al., 2019). Building on this perspective, research exploring when, for whom, and under what conditions specific teaching approaches and behaviors are most beneficial would be highly valuable. Such investigations could inform PE teachers on how to tailor their behavior to individual students, a process known as "calibration" (Vansteenkiste et al., 2019).

4. The Circumplex Model: A Guide for Practice

4.1. The Circumplex Model as a Guide for PE Teachers' Formative Professional Development

Beyond its theoretical contributions, the Circumplex Model also holds substantial practical relevance for PE teachers and educators. One of the most promising applications of the Circumplex Model lies in the opportunities for PE teachers' professional development initiatives. By translating the model into a visual profile, it becomes an accessible and reflective tool that can provide formative feedback. A PE teacher can complete a validated questionnaire (e.g., the Situations-in-School Physical Education; SIS-PE; Escriva-Boulley et al., 2021, see Supplementary Materials), to generate an individualized Circumplex profile. This profile visually illustrates the degree to which the PE teacher relies on need-supportive and need-thwarting approaches (see Figure 4 for an example). The PE teacher can then use their personalized profile to identify certain areas for improvement (e.g., strengthening their reliance on a participative approach, reducing their use of a demanding approach). For example, Bouten et al. (2023) developed an online intervention tool, in which PE teachers first complete the SIS-PE and based on their

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generated Circumplex profile choose one to two specific strategies to work on (see Bouten et al., 2023 for details).
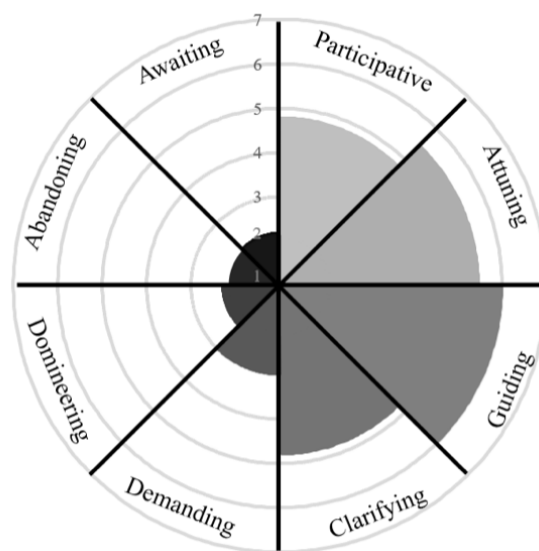
Additionally, students can also fill in a questionnaire to get a Circumplex profile based on students' perceptions (e.g., student version of the SIS-PE; see Supplementary Materials; Burgueño et al., 2024). That way, PE teachers do not only receive feedback based on their self-perception but also on how their students experience their teaching. Comparing these two perspectives can provide meaningful insights, as discrepancies between self-perceptions and student perceptions can stimulate meaningful reflection (Bouten et al., 2023). Importantly, this feedback should be seen as formative, not summative. The aim is not to judge PE teachers but to stimulate reflection and invite PE teachers to consider how their interactions translate to students.

Relying on the Circumplex Model as a foundation for professional development initiatives and intervention work is highly promising, as it allows to enhance need-supportive behaviors while simultaneously reducing need-thwarting ones. Previous intervention studies have primarily focused on improving autonomy support (see Raabe et al., 2019 for a review) and to a lesser extent structure (e.g., Cheon et al., 2020). Although these interventions have been proven effective, the question remains whether simultaneously focusing on enhancing need-supportive and reducing need-thwarting teaching is even more effective.

4.2. The Circumplex Model as a Guide for Interpreting Teaching

One reason the Circumplex Model is so useful in practice is its graded and dynamic approach, which mirrors the complexity of real-world teaching. The model's circular structure shows that need-supportive teaching can, when misapplied, transition toward need-thwarting teaching

(Aelterman & Vansteenkiste, 2023). The proximity of a participative approach to an awaiting approach illustrates that being participative can potentially shift toward an attitude that is too open and permissive, thus becoming awaiting. For instance, students may feel overwhelmed by too many choices as they lack the competencies to decide effectively (Patall et al., 2010). In such cases, the freedom to choose may not lead to need satisfaction because it might be perceived as chaotic (Vansteenkiste et al., 2020). Indeed, the effectiveness of providing students with choices depends on several factors, such as the type of choice (e.g., option vs. action choice; De Muynck et al., 2019), the meaningfulness of the options (Pan & Gauvain, 2012), and the number of options offered (Patall et al., 2010).

Similarly, a clarifying and demanding approach sit side by side, showing that when clarity becomes too rigid, it may shift towards a pressuring environment and might become demanding (Aelterman et al., 2019). Interestingly, research investigating the demanding approach has shown that its effects might depend on several factors. For example, Bouten et al. (2025) found that among Flemish students, perceptions of demanding teaching were not significantly related to need frustration. Among Spanish students, however, perceptions of such an approach were surprisingly negatively related to need frustration. A possible explanation is that teacher authority is culturally valued in Spain and seen as a sign of commitment (Bouten et al., 2025; Diloy-Pena et al., 2024b). Interpreted differently, Spanish students might perceive PE teachers' demanding behaviors more as clarifying behaviors due to their cultural background.

Overall, certain autonomy-supportive behaviors (e.g., participative) lie closely to chaotic ones (e.g., awaiting), and some structuring behaviors (e.g., clarifying) can slip into control (e.g., demanding). These potential "pitfalls" of one approach to another, do not concern autonomy support and structure itself, but rather its misapplication in practice. For instance, what may be intended as setting well-meant expectation (e.g., behavior of a clarifying approach) can nevertheless be perceived as pressure to meet certain goals (e.g., behavior of a demanding approach). Similarly, some students may interpret an awaiting attitude as an opportunity to take initiative, while others may feel lost or unsupported. These differences likely depend on personal factors (Aelterman et al., 2019). This highlights that students' interpretations (i.e., student perception) of their PE teacher's behavior determine whether they experience that behavior as supportive or thwarting. It is important to note that this does not necessarily diminish the overall importance of these approaches. Rather, it suggests that their effectiveness is more nuanced (e.g., need-enabling or need-depriving), depending on how it is implemented and perceived (Aelterman et al., 2019; Aelterman & Vansteenkiste, 2023).

5. The Circumplex Model's Challenges

The overview above highlights the added value of the Circumplex Model for both research and practice. Its graded and fine-grained approach has revealed new and intriguing insights. However, the Circumplex Model also holds a few challenges that warrant further investigation.

For instance, the close interrelations between neighboring approaches can lead to multicollinearity issues. Similarly, some approaches may overlap with one another (e.g., attuning and guiding; Delrue et al., 2019; Escriva-Boulley et al., 2021; Van Doren et al., 2023), which complicates distinguishing between these constructs in statistical analyses (e.g., factor analyses). Although Burgueno et al. (2024) recently provided support for the four-factor (i.e., four dimen-

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sions) and eight-factor (i.e., eight approaches) structure of the Circumplex Model using bifactor exploratory structural equation modeling (ESEM), evidence remains limited.

A second criticism of the Circumplex Model is its current focus on four of the six broader dimensions, omitting the relatedness-supportive and relatedness-thwarting dimensions (Sparks et al., 2017). Although relatedness support has been argued to overlap with autonomy support (Ryan & Deci, 2017, 2023; Vansteenkiste et al., 2020) and plays a more distal role in supporting students (Deci & Ryan, 2000), researchers have advocated for exploring relatedness-supportive and -thwarting dimensions in relation to the Circumplex Model (Aelterman & Vansteenkiste, 2023).

6. Key Takeaways

In sum, the Circumplex Model offers a promising, SDT- and evidence-based framework for capturing the full complexity of need-supportive and need-thwarting teaching. Its graded and fine-grained approach provides deeper insights into how different teaching dimensions are interrelated and influence student outcomes. The Circumplex Model provides a guide for research by clarifying which constructs to examine, which analyses to use, and how to meaningfully move the educational field forward. At the same time, it informs practice by guiding professional development and interventions in a formative way. The Circumplex Model identifies potential pitfalls that can arise when approaches are misapplied, illustrating that their effectiveness depends on implementation and interpretation. Although the Circumplex Model's strengths present certain challenges, they also offer valuable avenues for future research. Ultimately, the Circumplex Model invites researchers and practitioners to use it as a unifying model that bridges theory and practice.

Supplementary Materials

A PE–specific questionnaire that assessess need-supportive and need-thwarting teaching, the SIS-PE (see Table 2 of Escriva-Boulley et al., 2021), is available in both student and teacher versions and can be accessed online in Dutch, French, and Spanish (https://selfdetermination-theory.org/situations-in-school-physical-education-sis-pe/). In addition, the SIS-PE-Coder (see Appendix 1 of Van Doren et al., 2023) provides a complementary observational instrument for coding PE teachers' need-supportive and need-thwarting teaching behaviors and can be downloaded online (https://selfdeterminationtheory.org/situations-in-school-physical-education-sis-pe/).

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