

Article

Organisation of Early Childhood Education Environments: Validation of a Self-Report Instrument for Assessing Quality, Pedagogical Dynamics and Educators' Intentionality

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Abstract

The primary aim of this study was to validate a self-assessment instrument about the organisation of the Early Childhood Education and Care (ECEC) environment and to investigate how early childhood educators perceive their educational environments, including quality, intentionality (specifically, their anticipatory considerations in planning the ECEC environment) and pedagogical dynamics. The EduIn&Out Organisation of ECEC Environments Questionnaire was completed by 802 Portuguese ECEC educators (children's ages 3–6) and explored educators' perceptions of various aspects of the ECEC environment, including the quality of the organisation of the space, materials and equipment (both indoor and outdoor), time management and daily routines, family and child participation, coordination with the educational team and with the centre's leadership. It also gathers educators' characterisation of their pedagogical dynamics (routine flow, children's agency, and the use of indoor and outdoor contexts), associated with the quality of the educational environment, and educators' intentionality while considering different needs and interests when organising the educational environment. The tool demonstrated good psychometric characteristics. Educators reported higher quality in time and routine organisation, but lower quality in outdoor spaces, family and child participation and coordination with the centre's leadership. Enhanced quality was associated with more stimulating, child-centred routines that balanced indoor and outdoor activities. Overall, the characteristics of the instrument highlight its potential for supporting educators' reflection.

Keywords: early childhood education and care; quality; educational environment; time and routines; participation

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1. Introduction

The organisation of the educational environment, namely the indoor and outdoor spaces (equipment and materials), in addition to time and routines, is considered an essential element of the quality of the Early Childhood Education and Care (ECEC) context. It can promote the quality of interactions between children, their initiative and explorations (Bondioli & Nigito, 2011; Collins et al., 2023; Lopes da Silva et al., 2016). Thus, the organisation of space and time constitutes the interconnected dimensions of the educational environment that must be planned, organised, evaluated, and intentionally adjusted to contribute to children's well-being, development, and learning (Lopes da Silva et al., 2016). Additionally, research in educational environment organisation has highlighted the importance of a child-centred approach and the relevance of the participation of those involved in the educational community, including children, families, and other professionals (Blyth & Velissaratou, 2018; Van Liempd et al., 2018). More recently, research about the importance of outdoor spaces and their complementarity with indoor spaces has emerged as an essential object of analysis and reflection (Ozturk & Ozer, 2022; Tonge et al., 2019).

Although several studies have examined the quality and organisation of indoor spaces in Early Childhood Education and Care (ECEC), aspects of routine organisation and time management have received comparatively less attention. Moreover, relatively few studies consider indoor and outdoor spaces and time management as interconnected dimensions of the educational environment. Likewise, aspects related to participation and collaboration in the organisation of the educational environment—namely, the involvement of children and families, coordination within the pedagogical team, and alignment with the leadership of ECEC centres—have seldom been examined alongside the spatial and temporal organisation of educational settings. In addition, limited attention has been given to the pedagogical dynamics that emerge from the organisation of these elements, such as the rhythm and flow of daily routines, children's agency in shaping their learning experiences, and the intentional articulation between indoor and outdoor learning contexts. Existing research has relied predominantly on observational instruments to assess the quality of ECEC environments, whereas fewer studies have explored reflective self-assessment tools that allow educators to examine their own conceptions and practices and support professional reflection on the anticipatory considerations in planning the organisation of the educational environment.

While these elements have been addressed in the literature, they are rarely analysed as an integrated whole, particularly from the perspective of educators.

In summary, although the organisation of ECEC environments is widely acknowledged as a key element of educational quality, there remains a gap in the literature regarding validated self-report instruments, integrating spatial, temporal, participatory, and pedagogical dimensions, from the educators' perspective. In addition, little is known about how Portuguese ECEC educators perceive and implement the organisation of educational environments across these interrelated domains.

To address this gap, the present study was guided by the following research questions:

1. What are Portuguese ECEC educators' perceptions and practices regarding the organisation of the educational environment, specifically concerning quality, pedagogical dynamics and educators' intentionality—their anticipatory considerations in planning the ECEC environment?
2. What are the psychometric properties (factor structure, reliability, and validity) of the EduIn&Out Organisation of ECEC Environments Questionnaire as a self-report

measure of educators' perceptions and practices regarding the organisation of ECEC educational environments?

Therefore, this study aimed to analyse the psychometric properties of the EduIn&Out Organisation of ECEC Environments Questionnaire, a comprehensive instrument designed to assess early childhood educators' perceptions and practices regarding key dimensions of the organisation of the ECEC educational environment, including: the quality of its organisation; pedagogical dynamics associated with it; and educators' intentionality when considering different needs and interests in organising the educational environment. In addition, it aimed to explore Portuguese ECEC educators' perceptions and practices regarding the organisation of the educational environment through these three focuses.

1.1. Quality in Early Childhood Education and Care Environment

Quality in Early Childhood Education and Care (ECEC) is widely recognised as a key determinant of children's development, learning, and well-being. A substantial body of research demonstrates its benefits, both short- and long-term, across cognitive, social, and emotional domains (OECD, 2021; Sluiter et al., 2025). High-quality ECEC is associated with positive developmental trajectories and improved subsequent educational outcomes, particularly for children from socioeconomically disadvantaged backgrounds, simultaneously serving a compensatory and equity-enhancing role within educational systems (OECD, 2023; Melhuish et al., 2015). For these reasons, quality has become a central concern in international research and policy agendas, with increasing attention to the conditions under which early childhood education is planned, organised, and implemented.

However, this dominant framing of quality as an object of measurement and improvement has been problematised within a parallel body of literature. According to Dahlberg et al. (2013, 2024), the quality of early childhood education is not a universal or stable construct, but rather one that is inherently contextual, relational and continuously negotiated and democratically constituted among stakeholders. From this perspective, quality emerges through collective meaning-making processes, in which educational communities articulate and negotiate what counts as valuable education. Purposes and meanings of their practices in dialogue with diverse stakeholders, thereby being actively constructed through the participation of those involved in and affected by these educational settings.

Current theoretical and empirical frameworks conceptualise ECEC quality as a complex, multidimensional construct, encompassing both structural and process dimensions (S. Edwards, 2021; Rademacher et al., 2025). Structural quality refers to relatively stable characteristics, such as group size, adult-child ratios, educators' qualifications, and the physical conditions of educational settings. In contrast, process quality pertains to children's everyday experiences within these settings, including the quality of interactions, pedagogical practices, and the organisation of space, time, and routines (Eadie et al., 2024; OECD, 2021; Slot, 2018). Research has highlighted process quality as the primary predictor of children's learning and well-being, emphasising the importance of emotionally supportive, responsive, and child-centred pedagogical approaches in promoting high-quality ECEC provision (Burchinal, 2018; Rademacher et al., 2025; Slot, 2018).

Thus, more recent perspectives advocate for an integrated and systemic understanding of quality, framing it as a dynamic, context-sensitive, and continuously evolving process rather than a fixed or externally imposed standard (OECD, 2021; Sağlam et al., 2023). From this standpoint, quality emerges through reflective and collaborative practices involving educators, children, and families, and is sustained through ongoing,

structured processes of evaluation and improvement embedded in everyday pedagogical work (OECD, 2021). Such perspectives underscore the importance of informed professional judgement and collective reflection in fostering meaningful and sustainable quality development within Early Childhood Education and Care (ECEC) contexts (Philp-Clark & Grieshaber, 2024; Syslová, 2019).

Within this broader conceptual framework, the organisation of the educational environment constitutes a core dimension of both the structural and process quality (Eadie et al., 2024). It includes both the physical space and the everyday experiences it affords, consistently influencing early childhood education programmes and practices (Eadie et al., 2024), shaping children's opportunities to explore, interact, and engage actively in learning (S. Edwards, 2021; Tonge et al., 2019). The intentional and pedagogical organisation of space, materials, time, and routines has been shown to influence children's autonomy, initiative, and well-being, as well as the quality of pedagogical interactions within educational settings (Lopes da Silva et al., 2016; Slot, 2018). Well-organised environments typically combine accessibility, flexibility, and pedagogical coherence, enabling children to navigate the setting independently while supporting diverse forms of play, collaboration, and individual activity (Bondioli & Nigito, 2011; S. Edwards, 2021; Slot, 2018).

Given the significant impact of high-quality early childhood education on children's well-being and academic success, there has been a growing international interest in its evaluation. The quality of the educational environment in ECEC is typically assessed using a variety of instruments, primarily categorised as standardised observation scales (like the Early Childhood Environment Rating Scale—ECERS-R, of Harms et al., 2008; the Infant/Toddler Environment Rating Scale—ITERS, of Harms et al., 2017; and the Children's Physical Environment Rating Scale—CPERS, of Moore & Sugiyama, 2007), behaviour measurement tools (Classroom Assessment Scoring System—CLASS, of La Paro et al., 2004; and the Teaching Styles Rating Scale—TSRS, of McWilliam et al., 1998) and some formative instruments focused on context and specific processes (like Device for the Analysis and Evaluation of the Pedagogical Organization of Nursery Schools—DAVOPSI, focused on Time Management, of Nigito, 2011; and the Observation Grid of Outdoor Spaces in Early Childhood Education—GO-Exterior, of Bento, 2020). The reliance on standardised observation scales presents several problems because these instruments are often complex and expensive to implement, focus on certification over training and fail to adequately promote the deep, contextual reflection necessary for professional growth (Bondioli et al., 2023). Conversely, there is a clear need for easily administered instruments that focus on educators' self-assessment and reflection to foster continuous improvement and professional awareness (Gariboldi & Pugnaghi, 2018).

1.2. Educational Intentionality

Educational intentionality is key for early childhood educators to make deliberate, thoughtful decisions, which imply reflection on the purposes and meanings of their pedagogical practices and the ways in which they organise their actions (Australian Education Research Organization, 2025; Lopes da Silva et al., 2016). A scoping review concerning intentional teaching in ECEC indicates that decisions about intentional teaching are closely related to how the purposes of ECEC are defined in and through policy (Grieshaber et al., 2021). Complementary, latest findings suggest that “time, care, consideration, collaboration, and reflective practice are key factors for determining a more nuanced definition of intentional teaching practices within a contemporary framework” (Leggett, 2025, p. 1).

This underlines the importance of a systemic perspective (Bronfenbrenner & Morris, 2007), as educators' practices are influenced by a range of factors, including individual

beliefs and knowledge about how children learn, understanding of relevant curriculum aims and outcomes, subject-specific content expertise, awareness of the unique needs and characteristics of the children they work with (Australian Education Research Organization, 2025; Lopes da Silva et al., 2016).

Considering the educational environment as “the context that facilitates the development and learning process of each and every child, professional development, and relationships between the different stakeholders.” (Lopes da Silva et al., 2016, p. 5, educational intentionality is at the heart of the educational environment organisation in close relation to educators’ reflective practices, which play a central role in sustaining high-quality ECEC contexts (Douglass, 2019; S. Edwards, 2021; Slot, 2018).

Thus, educational intentionality and the reflective practices that sustain it enable educators to critically evaluate the alignment between pedagogical intentions, environmental arrangements, and children’s lived experiences, supporting informed decision-making and continuous professional learning (Douglass, 2019; Slot, 2018). The environment functions both as an object of reflection and a mediator of pedagogical action, allowing educators to adapt practices responsively and to enhance the coherence and intentionality of educational contexts (Douglass, 2019; S. M. Sheridan et al., 2009).

1.3. Fostering Participation Through Child-Centred Approaches

In line with participatory and child-rights-based perspectives, children are increasingly recognised as active participants and competent social actors within the educational environment (Bondioli & Nigito, 2011). Opportunities for children to express their views, make choices and influence aspects of space, activities and routines contribute to a stronger sense of belonging, agency, and engagement, while also enriching educators’ understanding of children’s perspectives (Bondioli & Nigito, 2011). However, contemporary childhood studies emphasise that safeguarding children’s rights requires moving beyond merely creating spaces for expression; it demands that children’s voices exert a tangible influence on their collaborative environments. As Pechtelidis et al. (2023) demonstrate through a public kindergarten case study, preschool children are fully capable of engaging in democratic decision-making regarding classroom space usage and the co-construction of group rules. This model of peer governance illustrates how children’s agency can actively shape the physical and social structures of their daily school life. Children’s participation thus emerges simultaneously as a core pedagogical principle and a key indicator of quality, closely intertwined with reflective practices and the intentional, continuous organisation of the educational environment (Bondioli & Nigito, 2011; S. Edwards, 2021).

Within ECEC research, child-centred approaches are widely recognised as a central feature of process quality, closely associated with relational, responsive, and participatory pedagogies (Bronfenbrenner & Morris, 2007; Pianta et al., 2016). Rooted in socio-constructivist and ecological perspectives, these approaches emphasise children’s active role in meaning-making, learning, and decision-making, recognising them as competent agents rather than passive recipients of educational input (Bronfenbrenner & Morris, 2007; Pianta et al., 2016). Empirical evidence consistently indicates that child-centred pedagogical practices—characterised by sensitivity to children’s interests, developmental levels, and emotional needs—are strongly associated with positive outcomes across cognitive, socio-emotional, and motivational domains (Burchinal, 2018; Hamre et al., 2014).

From a process quality perspective, child-centred approaches are enacted through intentional pedagogical choices that structure everyday interactions and the organisation of the educational environment. Flexible use of space and materials, the provision of opportunities for child-initiated activity, and adaptive structuring of time and routines

enable educators to respond meaningfully to emerging cues and interests, fostering autonomy, engagement, and sustained participation (Solang et al., 2024). Such environments support emotionally supportive and instructionally rich interactions, which research identifies as the most proximal mechanisms linking pedagogical practice to children's learning and well-being (Mashburn et al., 2008).

Importantly, child-centred approaches are closely intertwined with educators' reflective practices, as they require ongoing interpretation of children's perspectives and continuous adjustment of pedagogical strategies (Perlman et al., 2016; S. Sheridan, 2007). Reflection enables educators to critically examine how children's voices, choices, and experiences are represented in the organisation of space, routines, and activities, supporting more coherent and inclusive educational practices (Perlman et al., 2016; S. Sheridan, 2007). In this sense, child-centred pedagogy functions not only as a teaching approach but also as a quality lens through which the educational environment is continuously evaluated and refined, reinforcing participation as a central dimension of high-quality Early Childhood Education and Care (ECEC).

1.4. The Organisation of the Educational Environment in ECEC Contexts

Within child-centred and process-oriented approaches to ECEC quality, the organisation of indoor and outdoor spaces, together with daily routines, play a central role in shaping children's experiences and learning opportunities (Bento & Dias, 2017; Brussoni et al., 2015; Lopes da Silva et al., 2016). Indoor and outdoor environments offer distinct yet complementary affordances, supporting different forms of play, interaction, and exploration. While indoor spaces tend to facilitate more structured activities, symbolic play, and small-group interactions, outdoor environments are particularly conducive to physical engagement, sensory exploration, and peer collaboration, contributing to children's holistic development and well-being (Bento & Dias, 2017; Brussoni et al., 2015). The quality of these environments is therefore not defined solely by their physical characteristics, but primarily by the intentional and pedagogical way they are organised and integrated into everyday practice (Bondioli & Nigito, 2011; S. Edwards, 2021). In addition, it is widely acknowledged that ECEC contexts aim, through the intentional organisation of daily routines, not only to ensure the well-being of both adults and children, but also to create conditions that enable children to elaborate their lived experiences and develop a shared sense of time (Nigito, 2011). The time children spend in ECEC settings constitutes a meaningful temporal unit, within which it becomes possible to establish educationally significant episodes that unfold throughout its chronological progression (Bondioli, 2004).

1.4.1. Indoor and Outdoor Spaces

The physical environment encompasses all the elements of the indoor and outdoor ECEC spaces (design, size, density, furnishings, activity areas, distribution, and room characteristics) (Berti et al., 2019). However, it goes beyond mere settings for educational activities. The organisation and features of these environments are closely linked to the pedagogical approach, acting as a language that communicates educational values and shapes children's learning. This concept emphasises that, alongside families and education professionals, the features and organisation of space communicate educational meanings and significantly shape children's learning experiences in the early years (C. P. Edwards & Gandini, 2018).

Several studies have highlighted the interdependence between the physical, psychological, and social dimensions of ECEC environments. For instance, the availability of writing materials has been found to support children's literacy learning, but only when educators actively provide encouragement and guidance, indicating that physical

resources alone are insufficient to promote learning (Mashburn, 2008). Similarly, research emphasises that educational spaces are not fixed structures but are continuously co-constructed through everyday interactions between children and educators within the physical setting (Vuorisalo et al., 2015). Physical indoor spaces can thus be understood as representational spaces, shaped through ongoing negotiation and co-construction emerging from the meanings and practices of those who inhabit them, supporting both individual and collaborative learning (Strong-Wilson & Ellis, 2007; Vuorisalo et al., 2015). Consequently, all participants in ECEC services, children, families, educators and architects, should play an active role in constructing and redefining these spaces. This collaborative co-construction requires awareness of educational principles and close cooperation during both design and everyday use to ensure that spaces effectively support children's learning. By recognising and fostering this dynamic interplay, ECEC environments can be organised to maximise children's engagement, exploration and learning opportunities.

Outdoor environments, whether naturalised or not, have also been recognised for their unique benefits, offering opportunities for creative, meaningful engagement with the world (e.g., Sreelasky, 2019; Kwo et al., 2022; Wait & Aronsson, 2022). These spaces can be contexts that facilitate children's engagement, not only with each other, but also with their surroundings in a creative, contextualised and meaningful way (Sreelasky, 2019). In this sense, Wait (2019) refers to the value of outdoor learning experiences and opportunities being imbued with 'freedom, fun, authenticity, autonomy and physicality', considering them to be 'child-led, real-life experiential pedagogies, engaging the enthusiasm of children and adults' (p. 22). However, fully integrating outdoor spaces into educational practice depends on the attitudes and willingness of professionals, who may face challenges related to safety, resources, and confidence (Bilton, 2020; Bilton & Waters, 2017; Sakellariou & Banou, 2022).

Despite these obstacles, studies consistently highlight the benefits of outdoor learning. Most of these studies have confirmed the relationship between the use of outdoor spaces and children's physical activity levels and motor skills (e.g., Kwon et al., 2022; Martin et al., 2022). However, research shows much more holistic gains and learning opportunities of outdoor spaces that go beyond physical activity. Sreelasky (2019) states that natural, outdoor environments provide multiple affordances for children's meaning-making, offering a wide range of learning opportunities and identifying gains in literacy learning and development. In this regard, Prins et al. (2022) also state that their results indicate that children used more language and more complex language while playing in the nature-based playground. Similarly, Fleer et al. (2014) identify the multitude of opportunities to learn scientific concepts in the indoor and outdoor spaces of a kindergarten.

Recent research has highlighted the pedagogical potential of the interrelation between indoor and outdoor spaces, emphasising continuity and coherence across different learning contexts (Kiviranta et al., 2024; Sando, 2019). When transitions between spaces are thoughtfully planned, and routines are flexibly organised, children are better able to sustain engagement, transfer learning experiences, and exercise agency across settings (Kiviranta et al., 2024; Sando, 2019). Such continuity supports child-initiated activity and responsive interactions, allowing educators to extend learning processes beyond spatial boundaries and to adapt pedagogical strategies to children's interests as they emerge in both environments (Bento & Dias, 2017; Kiviranta et al., 2024). Effectively, there has been an emerging position that advocates an approach to the curriculum that avoids "competition" between indoor and outdoor learning (e.g., Beames et al., 2024; Porter, 2018). It considers the potential and possibilities of each context in order to maximise children's learning opportunities, emphasising that spending time in

naturalised outdoor spaces can benefit children's concentration, well-being (Wait & Aronsson, 2022) and motivation (Kwo et al., 2022).

1.4.2. Time Management and Routine

The goal of Early Childhood Education and Care (ECEC) settings is to ensure the well-being of both adults and children by effectively organising daily routines. This organisation not only promotes well-being but also allows children to process their experiences and develop a sense of shared time (Nigito, 2011). Routines operate as mediating structures that balance temporal coherence with adaptability and responsiveness (Fewster, 2010; Pereira et al., 2025). In high-quality ECEC contexts, routines are not conceived as rigid schedules, but as flexible frameworks that foster predictability, emotional security, and active participation, while simultaneously allowing space for exploration, negotiation, and change (Fewster, 2010; Pereira et al., 2025). The intentional alignment between routines and the organisation of indoor and outdoor environments further strengthens the pedagogical potential of space, supporting reflective practice and creating conditions for meaningful participation and sustained involvement throughout the daily life of the ECEC setting (S. Edwards, 2021; Fewster, 2010; Pereira et al., 2025).

Routines are organised in diverse ways by different actors, with some shaped primarily by institutional decisions and others emerging from more individualised choices (Pereira et al., 2025). These routines must be understood in their specificity and would benefit from broader participation to respond more effectively to the needs of all involved agents. Decision-making processes related to the organisation of time should therefore respect the distinct roles, competencies, and responsibilities of each participant in the shared task of responding to children's needs. Such processes must be open and dialogical, grounded in interaction and in the exchange and critical discussion of ideas, knowledge, information, and perspectives among all agents (Bondioli, 2013; Neves et al., 2017; Pereira et al., 2025).

Children's participation in the organisation and management of time is therefore a central pedagogical concern. This participation requires careful attention to children's needs and interests, as well as deliberate encouragement for them to be involved in defining and managing daily events and routines (Zorec & Vrankar, 2016). From this perspective, the organisation of time should not be viewed merely as a functional necessity, but rather as a formative educational experience. Malavasi and Zoccatelli (2013) emphasise that when time management supports listening, negotiation, and the reconstruction of meaning, it creates optimal conditions for openness to the unexpected, the unforeseen, and events that are unusual or unplanned.

1.5. Current Study

Research has consistently highlighted the organisation of the educational environment—namely, indoor and outdoor spaces, materials, time, and routines—as a central component of quality in Early Childhood Education and Care (ECEC). These dimensions shape children's opportunities for interaction, exploration, participation, and learning, and are closely connected to educators' intentional pedagogical decisions and reflective practices. While a substantial body of research has examined the quality of ECEC environments and the pedagogical interactions that occur within them, fewer studies have addressed how educators intentionally organise and integrate indoor and outdoor spaces, along with daily routines, as interconnected dimensions of the educational environment. Moreover, existing approaches to quality assessment rely predominantly on standardised observational instruments, which, although valuable, are

often complex, resource-intensive, and less oriented toward fostering educators' reflective self-assessment and professional learning.

In this context, there is a growing need for accessible tools that support educators in reflecting on their own practices and on the intentional organisation of the educational environment, while simultaneously generating research-based knowledge about these processes. Importantly, such reflection is conceptualised as a dialogical and situated practice, embedded in professional interaction and collective interpretation of pedagogical environments. In this sense, the instrument is an emerging proposal designed to support reflective processes and professional dialogue among ECEC educators, fostering shared meaning-making about educational environments and pedagogical intentionality. Accordingly, while the present study examines its psychometric properties as part of its ongoing development, the instrument is not intended as a definitive or standalone measure of quality. Rather, it is oriented towards informing and enriching understandings of practice within educational settings through educators' reflective engagement. Responding to this need, the present study pursued two main aims. The first was to analyse the psychometric properties of a self-assessment instrument addressing three interconnected sections—Quality of the Organisation of the ECEC environment, Intentionality (Needs and Interests Considered) of the Organisation of the ECEC environment, and Pedagogical Dynamics linked to the Organisation of the ECEC environment (see Figure 1). The second aim is to explore Portuguese ECEC educators' perceptions and practices regarding the organisation of the educational environment through these three foci. Therefore, five research questions guide our research: (1) Does the EduIn&Out Self-Assessment Tool present good psychometric properties? (2) What are Portuguese ECEC educators' perceptions about the quality of the organisation of the ECEC environments where they work? (3) What is their intentionality (specifically their anticipatory considerations in planning the organisation of the ECEC environment)? (4) How do Portuguese ECEC educators characterise the pedagogical dynamics (flowing, children's agency, and the use of indoor and outdoor contexts) that they intentionally promote in their ECEC environments? (5) Is there a relationship between the quality of the ECEC environment reported, early childhood educators' pedagogical dynamics, and the needs and interests considered when organising the ECEC environments?

Quality of the organisation of the ECEC environment	Anticipatory considerations in planning the organisation of the ECEC	Pedagogical dynamics linked to the organisation of the ECEC environment
- Indoor organisation - Outdoor organisation - Time and routines organisation - Family and child participation - Coordination with the pedagogical team - Coordination with the centre's leadership	- Children's needs - Curricular guidelines - Parent's and families - Centre resources - Centre financial interest	- Routine flow (orderly, chaotic, predictable, stimulant, repetitive) - Child agency (prevalence of activities proposed by adults vs children) - Use of indoor and outdoor contexts (prevalence of indoor vs outdoor activities)

Figure 1. Structure of the sections of the questionnaire used for this research.

2. Materials and Methods

2.1. Instruments

The EduIn&Out Organisation of ECEC Environments Questionnaire was developed based on the Portuguese Curricular Guidelines for Pre-School Education (Lopes da Silva et al., 2016), as well as on the findings of preliminary studies by Pereira et al. (2025) and Mata et al. (in press), which, through focus groups and questionnaires, identified the challenges experienced by professionals in organising the educational environment and routines management. The development of the tool was also informed by national and international literature on the assessment of educational environment quality and time management in early childhood education and care (e.g., Bento & Costa, 2022; Berti et al., 2019; Bondioli & Nigito, 2011; Early et al., 2010; Harms et al., 2008; Harrison et al., 2019; Leal et al., 2009; Manning et al., 2019).

The tool is the result of multiple team-based working sessions and a highly collaborative and rigorous development process. International and national experts were consulted and reviewed the items' relevance, ensured that each question contributes to the overall objectives, and helped us identify any potential biases in the questionnaire. The questionnaire was pre-tested with the target population to ensure face validity, identify potentially confusing or unclear items, and confirm its overall suitability (Pereira et al., 2026). The final version presented three different sections. The first section is a comprehensive scale that assesses educators' perceptions and practices regarding several dimensions of the quality of ECEC educational environments. The second section asks educators to reflect on their intentionality in organising the ECEC environment—the needs and interests considered in doing so. The last section invites educators to characterise the pedagogical dynamics of their ECEC environments. Next, we describe each section in detail.

2.1.1. Early Childhood Education and Care Intentionality Scale

We developed a comprehensive scale that assesses early childhood educators' perceptions of intentionality (specifically their anticipatory considerations) and practices about six different dimensions of the ECEC educational environment: space and equipment (for both indoor and outdoor learning spaces); time management and routines (e.g., activity settings and rhythms, group management); family and children participation; coordination with the educational team; and coordination with the centre's leadership (see Figure 1). We intend to adopt a global, integrated perspective rather than focusing on only a few aspects, as previous studies have. The items were designed to reflect quality practices, based on Portugal's curriculum guidelines for preschool education—OCEPE (Lopes da Silva et al., 2016) and on other national and international studies addressing the assessment of educational environments and time use in ECEC (e.g., Bento, 2020; Bondioli & Nigito, 2011; Early et al., 2010; Harms et al., 2008; Harrison et al., 2019; Leal et al., 2009; Manning et al., 2019). Educators are asked to indicate, on a 1-to-7 Likert scale (1 = strongly disagree, 7 = strongly agree), the extent to which they agree that those practices are present in their everyday ECEC environment. Items are displayed in Table A1 in Appendix A.

Indoor Learning Environment Organisation

This dimension comprises 16 items and addresses educators' practices in organising the indoor learning space and materials. It includes items related to the promotion of children's autonomy, free movement and access to materials, opportunities for the development of competencies, diversity of materials, spatial flexibility, opportunities for managed risk, the existence of private spaces, the reflection of children's identities, the

presence of natural elements, the use of digital and technological materials, and the integration of shared areas and transition spaces into pedagogical planning.

Outdoor Learning Environment Organisation

This dimension, comprising 13 items, focuses on intentional practices related to the organisation of space and materials in the preschool's outdoor environment. The items are similar to those in the indoor environment section, adapted to the outdoor context.

Time and Routines Organisation

This dimension assesses practices related to the organisation of time and daily routines through 10 items. It includes questions addressing: children's autonomy in activity choice; opportunities for the development of competencies; the alignment between different activities and the time allocated to them (whole group, small groups, individual); flexibility and stability of routines; smooth and autonomous transitions; the impact of unpredictability; and the ability to anticipate the time required to meet the group's needs.

Participation of Families and Children in the Environment Organisation

This section, comprising 6 items, explores how children and families are listened to and involved in activity planning and in the organisation of spaces (indoor and outdoor) and materials, as well as in the adaptation of routines. Initially integrated within the dimensions addressing the intentionality (specifically their anticipatory considerations) of each structural element of environmental organisation (indoor space, outdoor space, and time and routines), the research team decided to separate items related to children's and families' participation into a distinct section to allow for more in-depth reflection.

Coordination with the Pedagogical Team

The seven items of this dimension focus on educators' autonomy in making decisions regarding the indoor learning environment and the organisation of time, as well as on their participation and collaboration with other members of the pedagogical team in managing spaces and routines.

Coordination with the Centre's Leadership

Three items assess the extent to which values and beliefs regarding the organisation of the educational environment are shared between educators and the Educational Centre leadership. For these items, a "don't know" response option was included due to difficulties reported by some educators during the pilot testing, who indicated that they were unfamiliar with the leadership's or coordination team's views on the organisation of the educational environment.

2.1.2. Intentionality: Anticipatory Considerations in Planning ECEC Environment

Educational intentionality refers to the deliberate, reflective decisions that educators make when planning, organising, and evaluating pedagogical practices and learning environments (Australian Education Research Organization, 2025; Lopes da Silva et al., 2016). It also encompasses the meanings educators attribute to their actions and the pedagogical sense they construct when interpreting and responding to educational situations. In this broader sense, intentionality is not limited to planning but involves a dynamic process that unfolds in action, including ongoing decision-making, adaptation to emerging situations, and reflection on practice.

Such intentionality requires educators to consider multiple sources of information and influence, including their pedagogical knowledge, curricular orientations, children's

characteristics and interests, and the broader institutional and social context in which educational practices take place (Australian Education Research Organization, 2025; Grieshaber et al., 2021; Lopes da Silva et al., 2016). From an ecological perspective, these decisions emerge within a complex system of interactions between children, educators, families, and institutional conditions, which together shape the organisation of the educational environment and the opportunities it offers for children's development and learning (Bronfenbrenner & Morris, 2007).

Within this conceptualisation, it is important to clarify that the present study operationalises intentionality in a more specific and delimited way. The intentionality section of the questionnaire focuses on the anticipatory dimension of pedagogical decision-making, namely the needs and interests that educators report considering when organising the educational environment. Specifically, educators are asked to indicate, on a 1-to-7 Likert scale (1 = strongly disagree, 7 = strongly agree), the extent to which they agree that the following five aspects are considered when organising the environment in their educational setting: children's interests, the Curricular Guidelines for Pre-School Education (OCEPE), parents'/families' requests, organisational resources, and financial interests (See Figure 1). This section is analysed on an item-by-item basis.

2.1.3. Pedagogical Dynamics Linked to the Organisation of the ECEC Environment

Within process-oriented perspectives on Early Childhood Education and Care (ECEC) quality, the organisation of the educational environment is understood not only in terms of its physical characteristics, but also through the dynamic processes that structure children's everyday experiences. Research has consistently highlighted that the rhythm and flow of daily routines, opportunities for children's agency and participation, and the intentional integration of indoor and outdoor learning contexts are key elements shaping children's engagement, exploration, and learning opportunities (Bondioli & Nigito, 2011; Collins et al., 2023; Tonge et al., 2019; Vitiello et al., 2012). Building on these theoretical perspectives, the questionnaire also includes a section that gathers educators' overall characterisation of their pedagogical contexts across three interrelated dimensions associated with the quality of the educational environment: the routine flow (rhythm of daily routines), children's agency (child or adult centre), and use of indoor and outdoor contexts (See Figure 1). This section is answered using a 7-point frequency scale, ranging from 1 (never) to 7 (very frequently). Each item is analysed individually.

2.1.4. Sociodemographic and Professional Information

For the present study, sociodemographic and professional information was collected, including gender, age, years of experience as an early childhood educator, the region in which participants are currently working, the type of educational setting (public or private), and the role performed (early childhood educator, pedagogical director, pedagogical coordinator). Information was also gathered on the number and age range of children in the educator's group in the current year, the pedagogical approaches with which participants identify (Modern School Movement, Waldorf Pedagogy, HighScope Model, Pedagogy of Participation, Reggio Emilia Approach, Project-Based Learning, Other), the educational levels offered at the educational centre where they work, and the number of children enrolled at the centre (fewer than 50, 50–100, 101–200, 201–300, more than 300).

2.2. Sample and Population

Our target population was Portuguese ECEC educators with experience in preschool education (3 to 6 years old), regardless of whether they are currently performing that function. After receiving a favourable opinion on the ethical and procedural issues from

both the Ethics Committee of the Research Management Centre of the authors' institution and the School-Based Survey Monitoring Service (Monitorização de Inquéritos em Meio Escolar—MIME) of the Ministry of Education, the link to access the questionnaire was sent to directors of educational institutions in mainland Portugal and the Islands, with a request that it be shared with educators. The questionnaire was preceded by an introductory note outlining the objectives of the research and presenting the informed consent. Eight hundred and two educators consented to participate anonymously and voluntarily; 617 were working as preschool educators at the time the questionnaire was completed, and 177 had experience in the field but were performing other functions or working as educators in other age groups. Because participation in the questionnaire was voluntary and participants could discontinue at any stage, the last section of the questionnaire had a lower response rate than the others.

The majority of participants were female (98.5%), in a percentage similar to that found in the Portuguese population (99%), according to PORDATA data for the 2023/2024 academic year— $\chi^2(1) = 0.06$, $p = 0.808$ (see Table 1). Participants ranged in age from 25 to 68 years ($M = 50$, $SD = 9.7$), with a distribution similar to that found in the population, in which most educators are between 40 and 59 years of age— $\chi^2(4) = 3.73$, $p = 0.444$ (see Table 1). Regarding professional experience, the sample ranged from 1 to 45 years of experience as educators ($M = 25.5$, $SD = 11.0$).

Table 1. Sample and population description.

Characteristics	Sample		Population	
	<i>f</i>	%	<i>f</i>	%
Gender				
Female	790	98.5	17,459	99.0
Male	9	1.1	183	1.0
Other	3	0.4	-	-
Age				
<30	20	2.5	491	2.8
30–39	90	11.2	2203	12.5
40–49	241	30.0	5116	29.1
50–59	274	34.2	5599	31.8
>60	177	22.1	4173	23.7
Sector				
Public	464	57.9	10,617	60.2
Private	338	41.1	7025	39.08
Portugal Region—NUTS II				
Alentejo	64	8.0	868	4.9
Algarve	28	3.5	750	4.3
Lisbon	273	34.0	6114	34.7
Centre	162	20.2	2661	15.1
North	227	28.3	5937	33.7
Madeira	27	3.4	651	3.7
Azores	21	2.6	661	3.7

Most participants in our sample work in public educational settings (57.9%), representing a proportion similar to that of the Portuguese population (60.2%)— $\chi^2(1) = 1.73$, $p = 0.189$ (see Table 1). Most participants in the study are currently working as early childhood educators (95.3%); additionally, 6.9% hold the position of pedagogical director, and 13.3% are also serving as pedagogical coordinators. Regarding educational qualifications, most educators hold a pre-Bologna bachelor's degree (63.1%); 11.2% hold a

postgraduate qualification; 21.2% hold a master's degree; 0.5% hold a doctoral degree; and 4.0% report other types of qualifications (short-cycle degrees or other specific training).

Although the sample is similar to the population in terms of gender, age, and type of educational setting, differences were found regarding the region in which participants work— $\chi^2(6) = 37.89$, $p < 0.001$ (see Table 1). The Alentejo and the Centre regions were overrepresented, whereas the North region is underrepresented (see Table 1).

On average, participants are educationally responsible for 20 children ($SD = 4$, $Max = 30$). Most work in heterogeneous learning environments with children spanning an age range of up to three years (from 3 to 6 years) (see Table 2). Participants work in educational centres that differ in the educational levels offered; however, most are employed in settings that provide only preschool (19.3%), nursery and preschool (27.9%), preschool and primary education (1st to 4th grade) (31.3%), or basic education (1st to 9th grade) together with preschool (7.2%). The majority work in relatively small preschools (fewer than 100 children) (see Table 2). Among the pedagogical approaches presented, the most used are the project-based approach and the Modern School Movement.

Table 2. Sample professional context description.

Characteristics	<i>f</i>	%
Children's Age Heterogeneity		
All children are the same age (homogeneity)	231	28.8
One year difference	120	15.0
Two-year difference	212	26.4
Up to a three-year difference	239	29.8
Educational levels in the school		
Nursery	293	36.5
Preschool	783	97.6
1st Cycle of Basic Education (1st to 4th grade)	412	51.4
2nd and 3th Cycle of Basic Education (5th to 9th grade)	111	13.8
Secondary Education (10th to 12th grade)	40	5.0
Number of children in the preschool		
Less than 50	254	31.7
Between 50 and 100	342	42.6
Between 101 and 200	166	20.7
Between 201 and 300	28	3.5
More than 300	12	1.5
Pedagogical Model		
Modern School Movement	299	37.3
Waldorf	30	3.7
High-Scope	158	19.7
Pedagogy of Participation	173	21.6
Reggio Emilia	122	15.2
Project-Based Learning	408	50.9

2.3. Data Analysis Procedures

Analyses were conducted using available data for each section of the questionnaire. Missing data were handled using listwise deletion within each analysis; therefore, sample sizes varied depending on the completeness of responses for the variables included.

The content validity of the questionnaire's sections was ensured through an extensive literature review, alignment with national curricular guidelines, expert consultation, and pilot testing with the target population. To examine the psychometric properties of the tool (Research Question 1), Sections 2 and 3—Intentionality (operationalised as

anticipatory considerations in planning the ECEC environment) and Pedagogical Dynamics—were analysed at the item level, given that the items were conceptualised to reflect distinct dimensions of educational practice, rather than a unified latent construct. Therefore, the quality of these sections was examined through item-level descriptive analyses to assess response variability and distribution. Section 1 of the tool was designed to assess latent constructs related to the quality of the organisation of the educational environment. Therefore, this section was operationalised as a multidimensional scale, and its psychometric properties were examined using confirmatory factor analysis and reliability and validity indices.

The construct validity of the Quality of the Organisation scale (Section 1) was assessed by confirmatory factor analysis. We used Mplus 8.4 weighted least square mean and variance (WLSMV) estimator and a polychoric correlation matrix, considered more appropriate for ordered categorical data (Li, 2016).

Given the absence of strong *a priori* evidence regarding (a) whether participation in the organisation of different structural elements of the educational environment (indoor space, outdoor space, and time and routines) constitutes a distinct dimension, and (b) whether coordination within the pedagogical team and coordination with school leadership represent empirically separable constructs, several competing measurement models were tested using confirmatory factor analysis.

Specifically, three theoretically plausible models were specified and compared. The first model comprised four dimensions, in which participation was integrated within the three structural dimensions (indoor space, outdoor space, and time and routines), and coordination with the pedagogical team and school leadership was modelled as a single factor. The second model comprised five dimensions, in which participation was specified as a separate factor, while coordination with the pedagogical team and with school leadership remained combined. The third model comprised six dimensions, in which participation was specified as an independent dimension and coordination with the pedagogical team and coordination with school leadership were modelled as two distinct factors.

Each model fit was assessed using the following indices and minimum criterion for an acceptable level of fit for samples larger than 250 participants in models with more than 30 items: chi-square (X^2) small (relative to the degree of freedom) or non-significant p-value; comparative fit index (CFI) and Tucker–Lewis index (TLI) higher than 0.90; root mean square error of approximation (RMSEA) lower than 0.07; and standardised root mean residual (SRMR) lower than 0.08 (Hair et al., 2014). Factor weights and item reliability determined the quality of the model's local adjustment.

To assess the reliability of each dimension, we used McDonald's omega (ω) and an index of construct replicability (H), following the approach described by Morin et al. (2020). Values close to or higher than 0.70 were considered adequate, indicating convergent validity and internal consistency. We calculated the average variance extracted (AVE), which should be 0.50 or greater to suggest adequate convergent validity. Discriminant validity was evaluated by comparing AVE estimates between pairs of factors: for each pair, AVE values should exceed their maximum shared variance (MSV), and the square root of the AVE ($\sqrt{\text{AVE}}$) must be greater than the correlation between the two factors (Morin et al., 2020).

Factor scores for the final model were calculated by averaging the items comprising each factor. Descriptive statistics (mean and standard deviation) were computed for each of the identified Quality of the Organisation of ECEC dimensions, and for each of the items in Sections 2 and 3 to answer Research Questions 2, 3 and 4. Additionally, repeated-measures analysis of variance (ANOVA) and pairwise comparison with Bonferroni corrections were performed to compare mean differences between items and dimensions.

Finally, to answer our last research question, we calculated correlation coefficients between these dimensions and the items in Sections 2 and 3.

3. Results

3.1. Psychometric Properties of the Questionnaire

Regarding Section 1—Quality of the Organisation of ECEC Environment—the confirmatory analysis (CFA) showed that one item from the routines scale (“The unpredictability of certain situations can make it difficult to maintain a stable rhythm throughout the day”) did not load adequately on the quality scale. This result may be explained by the fact that the item refers to perceived difficulties or constraints rather than to the quality of routine organisation itself, which is inconsistent with the scale’s conceptual focus. Consequently, it was removed from the scale.

The goodness-of-fit indicators of all the models tested after removing this item are reported in Table 3. As we can see, the six-factor model presented more adequate fit levels. Separating the participation dimension and distinguishing coordination with the pedagogical team from coordination with educational centre leadership resulted in improved model fit and, consequently, stronger evidence of structural validity. The factor weights for the six model factors are presented in Appendix A (Table A1).

Table 3. Confirmatory factor analysis of the quality of the organisation of the ECEC environment scale.

Model	χ^2	DF	p	χ^2/df	RMSEA [IC90]	CFI	TLI	SRMR
4 Factors	9216.63	1371	<0.001	6.72	0.084 [0.083, 0.086]	0.857	0.850	0.069
5 Factors	7741.74	1367	<0.001	5.66	0.076 [0.075, 0.078]	0.884	0.878	0.065
6 Factors	6591.84	1362	<0.001	4.84	0.069 [0.068, 0.071]	0.904	0.900	0.058
6 Factors + FGSR *	6699.51	1365	<0.001	4.90	0.070 [0.068, 0.071]	0.903	0.898	0.059
5 Factors **	7272.39	1367	<0.001	5.32	0.073 [0.072, 0.075]	0.892	0.887	0.062

Note. * hierarchical model with 6 factors and a second-order factor integrating indoor organisation and time and routine organisation. ** model integrating indoor and routines; Hair et al. (2014) recommended values for $N > 250$ and $m > 30$: χ^2 with significant p -values expected (but $\chi^2/df < 5$); CFI (Comparative fit index) or TLI (Tucker–Lewis index) > 0.90 ; SRMR (standardised root mean residual) < 0.08 ; RMSEA (root mean square error of approximation) < 0.07 .

The internal structure of the scale is well supported, with solid reliability estimates and adequate average variance extracted (AVE) values (See Table 4). Four dimensions also demonstrate clear conceptual separation, providing evidence of discriminant validity. On the other hand, the indoor learning space organisation and time and routines organisation dimensions show high correlations ($r = 0.82$) and do not fully meet discriminant validity criteria ($MSV > AVE$; $\sqrt{AVE} < r$). It is possible that participants do not perceive these domains as fully distinct. This overlap is theoretically understandable given the natural interdependence between the physical and temporal aspects of the educational environment organisation. To further examine this overlap, an alternative second-order model was tested, in which both dimensions loaded onto a broader organisational factor. However, this solution did not improve model fit relative to the original six-factor structure (See Table 4). Another model combining these two dimensions into a single factor was also tested and yielded poorer fit indices. Accordingly, the decision was made to retain the two dimensions as separate factors, as they represent conceptually distinct constructs and provide complementary and meaningful information. Although closely related in practice, the organisation of physical space and the organisation of time and routines involve distinct pedagogical processes and may therefore contribute differently to the quality of the ECEC environment. The second-order findings further

support the interpretation that these dimensions share common organisational features while still capturing distinguishable aspects of the organisation of the ECEC environment. Furthermore, merging these dimensions would have resulted in an uneven distribution of items across factors, thereby compromising the scale's proportional balance.

Table 4. Results of the confirmatory factor analysis (Estimator: WLSMV).

Dimensions	N. of Items	ω	H	AVE	$\sqrt{\text{AVE}}$	MSV	ASV	Higher Correlation
Indoor Organisation	16	0.95	0.95	0.52	0.72	<u>0.67</u>	0.47	<u>0.82</u>
Outdoor Organisation	13	0.95	0.96	0.61	0.78	0.47	0.40	0.69
Time and Routines Organisation	9	0.93	0.94	0.61	0.78	<u>0.67</u>	0.45	<u>0.82</u>
Family and Child Participation	6	0.92	0.93	0.65	0.80	0.55	0.44	0.74
Coordination with the Pedagogical Team	7	0.94	0.95	0.68	0.83	0.51	0.46	0.71
Coordination with the centre's leadership	3	0.95	0.95	0.86	0.93	0.51	0.31	0.71

Note. Morin et al. (2020) recommended values: McDonald's omega (ω) and an index of construct replicability (H) > 0.70; AVE (average variance extracted) > 0.50; AVE > MSV (maximum shared variance); $\sqrt{\text{AVE}}$ > higher correlation between factors. Underlined values denote results that fall outside the recommended range.

Regarding Sections 2 and 3 (Intentionality and Pedagogical Dynamics), a descriptive analysis of educators' responses to the items indicated that the entire 1–7 points answer scale was used (See Table 5). Item-level analyses suggested adequate variability across response options, with no severe floor or ceiling effects (no category included 80% of answers) (See Appendix A Tables A2 and A3). Skewness and kurtosis values were within acceptable ranges ($|sk| > 2$; $|ku| > 7$), supporting the descriptive adequacy of the items. Only two items in Section 2 showed higher negative skewness, which was expected, given that they concern considering children's needs and interests, and OCEPE guidelines (Lopes da Silva et al., 2016), when organising the educational space. These items exhibited skewness close to -2 , with approximately 60% of participants selecting the highest response category ("completely agree"), reflecting the normative nature of these practices within ECEC settings.

In summary, the analysis of the characteristics of these instruments showed the adequacy of the initial conceptual foundation of the items, validating the three scales used for this research, which are presented schematically in Figure 1.

Next, we will proceed with an analysis of the characteristics of the participants' responses to each of the scales and the relationships between them.

Table 5. Descriptive analysis of intentionality and pedagogical dynamics.

Items	N	M	SD	Min	Max	Sk	Ku
Intentionality							
Children's needs	802	6.4	1.0	1	7	−1.9	4.4
Curricular Guidelines	802	6.4	0.9	1	7	−2.0	5.8
Parents/Family solicitations	802	5.2	1.3	1	7	−0.6	0.2
Educational centre's resources	802	5.7	1.2	1	7	−0.9	0.3
Educational centre's financial interest	802	5.0	1.5	1	7	−0.6	0.3
Pedagogical Dynamics							
<i>Routine Flow</i>							
Orderly	757	5.3	1.3	1	7	−1.1	1.7
Chaotic	757	2.2	1.4	1	7	1.1	0.6
Predictability	757	4.8	1.4	1	7	−0.6	0.4
Stimulant	757	5.9	1.0	1	7	−1.1	2.5
Repetitive	757	4.0	1.6	1	7	−0.2	−0.6

<i>Child Agency</i>							
Prevalence of activities proposed by children	757	5.2	1.2	1	7	−0.6	0.3
Prevalence of activities proposed by adults	757	4.3	1.4	1	7	−0.4	0.0
Balance between activities proposed by adults and children	757	5.7	1.2	1	7	−0.9	0.6
<i>Use of indoor and outdoor contexts</i>							
Prevalence of indoor activities	757	4.7	1.4	1	7	−0.7	0.3
Prevalence of outdoor activities	757	4.7	1.3	1	7	−0.4	0.3
Balance between indoor and outdoor activities	757	5.7	1.3	1	7	−1.0	0.8
Different indoor and outdoor activities	757	5.5	1.2	1	7	−0.9	0.9
Continuity between activities started in one space and moving to another	757	5.4	1.3	1	7	−0.9	0.9

Note. Min. = Minimum; Max = Maximum; M = Mean; SD = Standard Deviation; Sk = Skewness, Ku = Kurtosis.

3.2. Quality of the Organisation of the ECEC Environment

As referred previously, this scale intends to assess early childhood educators' perceptions of their intentionality (specifically their anticipatory considerations in planning the ECEC environment) and practices about six different dimensions of the ECEC educational environments' quality: indoor organisation; outdoor learning spaces; time management and routine; family and child participation; coordination with the pedagogical team; and coordination with the centre's leadership.

Descriptive statistics of each dimension of the quality of the organisation of the ECEC environment are presented in Table 6. Results indicated that almost the entire scale was used. An ANOVA with a repeated-measures design was used to test differences among the levels of each dimension— $F(5,702) = 220.01$, $p < 0.001$, $\eta_p^2 = 0.61$. Pairwise comparisons indicated that educators reported significantly higher perception of quality in their organisation of time and routines ($M = 6.1$) when compared to every other dimension ($p < 0.001$). Similarly, high levels of perceived quality were observed in the dimension of indoor space organisation and coordination with the pedagogical team ($M = 6.0$ and 5.9 , respectively). The dimensions regarding participation and coordination with the centre's leadership had similar levels ($M = 5.3$ and 5.7 , respectively), significantly lower than the dimensions presented so far ($p < 0.001$). The lowest scores ($M = 4.8$) were found for the organisation of outdoor spaces ($p < 0.001$). It is worth noting that, given the seven-point scale, the group averages are not very close to the maximum value. On the other hand, the lower averages, although close to the midpoint of the scale, are always above it.

Table 6. Descriptive analysis of the quality of the organisation.

Quality Dimensions	N	M	SD	Min	Max	Sk	Ku
Indoor Organisation	802	5.9	0.9	1.8	7	−1.1	1.3
Outdoor Organisation	802	4.8	1.3	1	7	−0.5	0.2
Time and Routines Organisation	802	6.1	0.8	2	7	−1.2	2.1
Family and Child Participation	802	5.3	1.1	1	7	0.7	0.7
Coordination with the Pedagogical Team	802	6	1.2	1	7	−1.2	1.5
Coordination with the centre's leadership	802	5.7	1.6	1	7	−1	0.3

3.3. Intentionality: Anticipatory Considerations in Planning the Organisation of the ECEC Environment

This section of the questionnaire aimed to identify which needs and interests are considered by educators when organising the educational environment, tapping five main areas of information: children's interests, the Curricular Guidelines for Pre-School Education (OCEPE, Lopes da Silva et al., 2016), parents'/families' requests, organisational resources, and financial interests.

An ANOVA with a repeated-measures design was used to test differences among the levels of each factor considered when organising the ECEC environment— $F(4,798) = 247.91$, $p < 0.001$, $\eta_p^2 = 0.55$. According to educators' perceptions, the organisation of the ECEC environments was more centred in children's needs and the curricular guidelines ($M = 6.4$ for both factors), followed by the educational centre's resources ($M = 5.7$). Family's need and solicitation and the centre's financial interest were considered less important but still present as relevant factors to consider ($M = 5.16$ and 5.0 , respectively).

3.4. Educators' Characterisation of Pedagogical Dynamics in ECEC Environments

Educators characterised their pedagogical dynamics in three main focuses: routine flow, children's agency, and use of indoor and outdoor contexts.

3.4.1. Routine Flow

The descriptive results presented in Table 5 and in Table A3 of Appendix A indicate that educators describe their routines in a highly diverse manner. The ANOVA results indicated that there were differences among the frequency of each routine flow described by the participants— $F(4,753) = 664.91$, $p < 0.001$, $\eta_p^2 = 0.78$. Educators describe their learning routine's flow as being more frequently stimulating ($M = 5.9$), followed by orderly ($M = 5.3$), predictable ($M = 4.8$), and repetitive ($M = 4.1$) (all significantly different, $p < 0.001$). They rarely described their day-to-day routine as chaotic ($M = 2.2$). Since we used a seven-point answer scale, it is clear that the group averages are not very high. On the other hand, the lower averages are at the midpoint of the scale or below it, indicating a low perception of the presence of these dynamics in these contexts.

3.4.2. Children Agency

The means of the items in this section were not very high, ranging from 4.3 to 5.7. The ANOVA results also identified differences among the frequency of prevalence of children's agency— $F(2,755) = 203.42$, $p < 0.001$, $\eta_p^2 = 0.35$. Educators describe their pedagogical dynamic as being more frequently a balance between activities proposed by adults and children ($M = 5.7$) or with prevalence of activities proposed by the children ($M = 5.24$). The prevalence of activities proposed by adults is lower ($M = 4.30$). All items were significantly different ($p < 0.001$).

3.4.3. Use of Indoor and Outdoor Contexts

There were also differences in the frequency of use of indoor versus outdoor contexts— $F(4,753) = 111.21$, $p < 0.001$, $\eta_p^2 = 0.37$. Higher levels of reported frequencies were observed in the items "balance between indoor and outdoor activities", "different indoor and outdoor activities" ($M = 5.7$ and 5.5 , respectively, $p = 0.999$), followed closely by the item "continuity between activities started in one space and moving to another" ($M = 5.4$, $p < 0.001$ and $p = 0.075$, respectively). Lower levels are reported by the items "prevalence of indoor activities" and "prevalence of outdoor activities" ($M = 4.7$ for both items). The means of the last two items were significantly different from those of the other three ($p < 0.001$).

3.5. Relationship Between the Variables in the Study

The correlations between the different variables of Intentionality (operationalised as anticipatory considerations in planning the ECEC environment), Pedagogical Dynamics and the Quality of the Organisation Environment dimensions are presented in Table 7. When analysing these correlations, we can identify a clear pattern among the strongest correlations between specific items of Intentionality and Pedagogical Dynamics, with the various dimensions of the Quality Scale. The items of Intentionality most strongly

associated with the Quality were children's needs ($r = [0.35, 0.51]$) and curricular guidelines ($r = [0.26, 0.48]$). In turn, the items of Pedagogical Dynamics with the strongest correlations were a stimulant routine ($r = [0.35, 0.62]$), the prevalence of activities proposed by children ($r = [0.27, 0.57]$), the balance between activities proposed by adults and children ($r = [0.28, 0.56]$), the balance between indoor and outdoor activities ($r = [0.36, 0.51]$), and continuity between activities started in one space and moving to another ($r = [0.30, 0.51]$). Among these correlations, the lowest values were always with the quality dimension of collaboration with the centre's leadership. The highest values appeared distributed across the quality dimensions associated with indoor organisation, time and routine organisation, and participation. Although often low and not always significant, there were negative correlations between the Quality dimensions and perceptions of a chaotic environment, the prevalence of activities proposed by adults, and the prevalence of indoor activities.

Table 7. Descriptive statistics of the quality dimensions and correlation coefficients with needs and interests and pedagogical dynamics.

Intentionality and Pedagogical Dynamics	Quality of the Organisation of the ECEC Environment					
	Indoor	Outdoor	Time & Routines	Participation	Coordination Pedagogical Team	Coordination Centre's Leadership
Intentionality						
Children's needs	0.51 **	0.36 **	0.49 **	0.39 **	0.46 **	0.35 **
Curricular Guidelines for Pre-School Education (OCEPE)	0.47 **	0.29 **	0.48 **	0.35 **	0.37 **	0.26 **
Parents/Family solicitations	0.26 **	0.23 **	0.24 **	0.41 **	0.29 **	0.23 **
Educational centre's resources	0.43 **	0.34 **	0.32 **	0.25 **	0.30 **	0.27 **
Educational centre's financial interest	0.18 **	0.12 **	0.10 **	0.08 *	0.16 **	0.16 **
Pedagogical Dynamics						
Routine Flow						
Orderly	0.27 **	0.16 **	0.34 **	0.20 **	0.25 **	0.15 **
Chaotic	−0.27 **	−0.14 **	−0.30 **	−0.10 **	−0.21 **	−0.11 **
Predictability	0.13 **	0.12 **	0.17 **	0.11 **	0.14 **	0.11 **
Stimulant	0.59 **	0.41 **	0.62 **	0.50 **	0.50 **	0.35 **
Repetitive	−0.12 **	−0.09 *	−0.10 **	−0.07	−0.06	−0.02
Child Agency						
Prevalence of activities proposed by children	0.48 **	0.31 **	0.51 **	0.57 **	0.38 **	0.27 **
Prevalence of activities proposed by adults	−0.13 **	−0.03	−0.11 **	−0.15 **	0.03	0.04
Balance between activities proposed by adults and children	0.47 **	0.35 **	0.56 **	0.48 **	0.44 **	0.28 **
Use of indoor and outdoor contexts						
Prevalence of indoor activities	−0.02	−0.08 *	0.00	−0.07	0.05	0.06
Prevalence of outdoor activities	0.27 **	0.32 **	0.29 **	0.34 **	0.29 **	0.19 **
Balance between indoor and outdoor activities	0.46 **	0.46 **	0.51 **	0.48 **	0.47 **	0.36 **
Different indoor and outdoor activities	0.33 **	0.27 **	0.37 **	0.28 **	0.34 **	0.25 **
Continuity between activities started in one space and moving to another	0.49 **	0.38 **	0.51 **	0.51 **	0.49 **	0.30 **

* $p < 0.050$; ** $p < 0.050$.

4. Discussion

This study was guided by five research questions to examine the psychometric properties of a newly developed instrument and to explore ECEC educators' perceptions and practices regarding the organisation of the educational environment.

Regarding the first research question—whether the EduIn&Out Self-Questionnaire demonstrates adequate psychometric properties—the confirmatory factor analysis (CFA)

of the tested models indicated that only the six-factor model met adequate goodness-of-fit criteria. This model tapped six different theoretical dimensions of quality as independent, valid factors. The factor loadings were almost all over 0.60, and the McDonald's omega (ω) ranged between 0.92 and 0.95, indicating higher levels of reliability. The instrument and its sections covers several indicators of the perceived quality of the organisation of space, materials, time and routines, and of the different interactions developed within educational settings, which are crucial elements in ECEC contexts to promote children's autonomy, initiative, well-being and development (Burchinal, 2018; Eadie et al., 2024; Lopes da Silva et al., 2016; OECD, 2021; Slot, 2018; Rademacher et al., 2025). In addition, it is an easy-to-answer instrument that can be adapted and used by educators and may promote a reflective and dialogical attitude (individual and collective) towards practices and contexts. This can foster a meaningful and sustainable quality development within ECEC contexts (Philp-Clark & Grieshaber, 2024; Syslová, 2019). The psychometric properties of the Intentionality (operationalised as anticipatory considerations in planning the ECEC environment) and Pedagogical Dynamics sections of the instrument were analysed at the item level. Results indicate adequate variability across response options, suggesting that they capture different perceptions among participants.

Our second research question 2 aimed to characterise educators' perceptions about the quality of the organisation of the ECEC contexts where they work. Results showed that the quality dimensions with the highest scores were Time and Routines, Coordination with the Pedagogical Team, and Indoor Organisation, all with values around 6 on a scale with a maximum value of 7. These results indicate, on the one hand, a very positive perception in these dimensions, although there is still room for improvement. It is known that these aspects are directly associated with what the authors call process quality, which is directly related to pedagogical experiences and interactions (Eadie et al., 2024; Slot, 2018). Given that the basis for quality also involves reflective and collaborative practice, in which the other members of the pedagogical team are fundamental (OECD, 2021; Philp-Clark & Grieshaber, 2024; Syslová, 2019;), this high level of autonomy and collaboration within the pedagogical team is an important factor. On the other hand, the high values regarding the organisation of the activity room, time and routines are important to consider. Much of the work carried out in ECEC contexts is implemented in the indoor activity room, where time management and routines are a central element (Lopes da Silva et al., 2016; Strong-Wilson & Ellis, 2007; Vuorisalo et al., 2015) associated with opportunities for children's involvement, exploration and interaction, which are fundamental to their development, learning and well-being (S. Edwards, 2021; Fewster, 2010; S. Edwards, 2021; Pereira et al., 2025; Tonge et al., 2019).

However, the scores for educators' perceptions of the quality of the dimensions related to Outdoor Organisation and Participation of Children and Families were relatively low, raising questions about these important issues as conditions for high quality in educational contexts (Bondioli & Nigito, 2011; Lundy, 2007). Lundy (2007) states that it is not enough to give children a voice. Four aspects must be considered: 'Space, Voice, Audience and Influence'. This full participation of the child is a condition for a child-centred pedagogy that considers children's agency and competence; only then can it consider each child's needs, thereby creating conditions for their development (Lopes da Silva et al., 2016; Pianta et al., 2016). In this context, shifting the paradigm from merely granting a voice to ensuring genuine operational influence is paramount. A concrete example of how this shift occurs in practice can be drawn from the public kindergarten case analysed by Pechtelidis et al. (2023). Their study demonstrated how preschool children can actively participate in decisions regarding classroom space usage and group

rules, establishing a model of peer governance that directly contributes to the collaborative management of shared educational spaces.

In this context, shifting the paradigm from merely granting a voice to ensuring genuine operational influence is paramount. A concrete example of how this shift occurs in practice can be drawn from the public kindergarten case analysed by Pechtelidis et al. (2023). Their study demonstrated how preschool children can actively participate in decisions regarding classroom space usage and group rules, establishing a model of peer governance that directly contributes to the collaborative management of shared educational spaces. In addition, family participation is a widely studied topic, where the benefits associated with it are clearly identified, namely when these benefits are shared by all those involved—children, families, professionals (Jeynes, 2025; Višnjić Jevtić, 2023). This is also a central element in the quality of educational contexts and, in the perception of these professionals, is not yet being achieved. Our data showed that participation is a domain that educators report is not well attained and needs improvement.

The Outdoor Organisation dimension had the lowest scores, indicating poorer quality of outdoor spaces from these professionals' perspective. Knowing that the items in this dimension referred to organisation, materials, opportunities for exploration, flexibility, natural elements, and autonomy, we can conclude that these spaces may not provide conditions for a stimulant, powerful, and beneficial use (Sreelasky, 2019; Kwo et al., 2022). The potential of outdoor spaces depends largely on their exploration being under the control of the child, providing multiple affordances so that this contact, exploration, experiences and richness can have a significant impact on children's development and learning (Fleer et al., 2014; Martin et al., 2022; Prins et al., 2022; Sreelasky, 2019; Wait, 2019). However, this emphasis on child-led autonomy must be balanced with the critical role of the professional. As Speldewinde et al. (2025) demonstrate in their study of nature playgroups and bush kinders, outdoor learning environments become highly productive pedagogical spaces for early childhood science education when children's self-directed play is dynamically coupled with skilled, confident educator facilitation. Thus, the lower scores observed in our sample may reflect not only structural deficits in outdoor spaces but also constraints surrounding educators' attitudes, confidence, and pedagogical scaffolding in open-air environments. To better understand these lower values in the dimensions of the organisation of outdoor spaces and even children's participation, we can look to the results of the Pedagogical Dynamics dimensions. According to educators, there is a balance between indoor and outdoor activities, although activities in one context or the other can still often be differentiated. It therefore seems that it is not possible to achieve the pedagogical potential arising from full, coherent complementarity and interconnection, and from a continuous flow between these two contexts, as described by Kiviranta et al. (2024) and Sando (2019). It is known that this continuity also depends greatly on activities initiated by the child (Bento & Dias, 2017), but educators' perceptions of children's agency and participation in their educational ECDC contexts are not a strong dimension of quality and may compromise outdoor experiences.

When asked about their anticipatory planning considerations and organising the educational environment (i.e., the needs and interests considered—Research Question 3), it was interesting to note a similar emphasis on the specific needs of children and the curriculum guidelines for pre-school education (OCEPE, Lopes da Silva et al., 2016). Although preschool education is not compulsory in Portugal, attendance rates are quite high for the various age groups: 3 years (83.8%), 4 years (96.4%), 5 years (99.9%) (DGEEC, 2025), and there are curriculum guidelines under the responsibility of the Ministry of Education (OCEPE, Lopes da Silva et al., 2016). Our results seem to indicate a clear intention among educators to use OCEPE to plan their pedagogical approach. Due to their

structure, these guidelines are intended to be a guiding document rather than a prescriptive one, supported by four fundamental principles that underpin the image of the child and the principles of action for educators. These foundations of childhood pedagogy emphasise responsibility in responding to all children, with a focus on children's competence and participation, within a holistic logic of articulating knowledge that conceives development and learning as inseparable aspects (Lopes da Silva et al., 2016). These curriculum guidelines contain several sections that raise questions and call on professionals to reflect on their contexts, their practice, and to identify improvements in these areas. As Douglass (2019) and Slot (2018) state, this questioning is fundamental to the development of reflective practices, which enable educators to make decisions considering the specific nature of their contexts and also contribute to their professional development. With a pedagogical framework that informs, supports, organises information, and encourages reflection, opportunities are created for professionals to adapt their practices in response to the needs of their work contexts (S. M. Sheridan et al., 2009), which appears to be the case according to the results obtained in this study. However, there still seems to be some difficulty in meeting the needs and requests of families. The lower scores in child and family participation point to opportunities for growth in moving towards a model where quality is understood as an inherently relational, contextual, and democratically constituted construct (Dahlberg et al., 2024). An alternative perspective has emerged, supported by the concept of partnership in the school/family relationship, and has highlighted the importance of going beyond occasional collaborations or participation (Mata & Pedro, 2021). The concept of partnership is supported by shared visions, trusting families' agency and competence as educators, respect, bidirectional and positive communication, and the demands of knowledge, motivation, time, and determination to implement (Albright & Weissberg, 2010; Clarke et al., 2010; Cox-Peterson, 2011). Therefore, the findings indicate opportunities for further development in educators' competencies and quality practices in this domain.

Regarding how Portuguese ECEC educators characterise the pedagogical dynamics (flowing, children's agency, and the use of indoor and outdoor contexts) that they intentionally promote in their ECEC environments (Research Question 4), we found that routines were essentially characterised as quite stimulating, with an average close to six (maximum 7). It therefore seems that, in the educators' perception, the routines implemented facilitate the occurrence of what Bondioli (2004) calls significant episodes. These allow children to process their experiences and build shared and meaningful moments (Nigito, 2011). To ensure the children's agency is reflected in the proposed activities, it was suggested that this be done in a balanced way alongside the professionals' proposals. Considering children as active and competent participants is not always easy and can only be achieved by giving them a voice, allowing them to make choices and contributing to the management of spaces, routines and activities (Bondioli & Nigito, 2011; Neves et al., 2017; Pereira et al., 2025). In ECEC, this is considered fundamental to contributing to children's sense of belonging, their effective involvement and participation. As Lundy (2007) argues, offering children a voice is insufficient if it does not actively influence the co-construction and management of educational spaces and events (Bondioli & Nigito, 2011; Zorec & Vrankar, 2016). Although professionals have indicated that this balance exists in the proposed activities, without excessive adult control, it is important to understand how this shared action is implemented in indoor activities, for what types of activities and how often.

Regarding the daily use of different spaces (indoor/outdoor), there is still some segmentation. These educators reported carrying out activities in a balanced way in both types of spaces, but there is also a predominant perception of distinct activities, sometimes

with some temporal continuity. Thus, there does not seem to be true integration or dynamic interaction between indoor and outdoor spaces. This result may reflect the fact that these two types of spaces are often viewed and analysed in the literature and research as segmented and separate (e.g., Berti et al., 2019; Gkloumpou & Germanos, 2022; Wait & Aronsson, 2022). However, there are already authors who emphasise the importance of their articulation (e.g., Kiviranta et al., 2024). This articulation requires planning, intentionality, and knowledge so that it is possible to overcome the “competition” and overvaluation of some spaces over others (e.g., Porter, 2018), and to look at the potential of each and the learning opportunities they provide (Wait & Aronsson, 2022). Some attempts have already been made in this regard, seeking to highlight how the curriculum and its guidelines, often designed to be implemented in the classroom, can also be addressed outside the classroom, aiming to encourage this strategic and dynamic interaction between contexts with a view to integration (Beames et al., 2024; Thornton, 2022).

The last research question examined the relationships among quality, intentionality (specifically, educators’ anticipatory considerations in planning the organisation of the ECEC environment), and pedagogical dynamics (Research Question 5). The results showed great consistency in the correlations found. For intentionality (Needs and Interests considered), the strongest correlations with the quality dimensions emerged for indicators related to caring for children’s needs and to official curriculum guidelines (OCEPE) (Lopes da Silva et al., 2016). We have previously referred to these indicators and their importance for the quality of the educational response in ECEC contexts. This careful consideration of children’s needs is closely linked to child-centred approaches, enabling constant adjustment to the pedagogical action implemented (Perlman et al., 2016; S. Sheridan, 2007). Time management and routines must also be associated with identifying and understanding children’s needs, supported by constant listening, negotiation, and reflection, to achieve greater adaptation and responsiveness (Fewster, 2010; Pereira et al., 2025).

Regarding the correlations between pedagogical dynamics and quality dimensions, we highlight those that are positively associated and those that are negatively associated. A stimulating routine clearly emerges as strongly associated with quality. This seems consistent with the literature, since a stimulating routine is one that is not rigid but adaptable, providing time and opportunity for children to actively explore the affordances and pedagogical potential of spaces according to their interests (Fewster, 2010; Gariboldi, 2002). The predominance of child agency and the balanced use of outdoor and indoor activities also correlated positively with quality, whereas the predominance of adult activity proposals or indoor activities correlated negatively with quality. Effectively, routines described as less chaotic, ordered, and stimulating contribute to a sense of security and maximise learning opportunities (Berti et al., 2019; Santos, 2017). When routines incorporate greater child agency, they directly support emotional development, autonomy, and self-regulation (Pereira et al., 2025; Santos, 2017), as well as deeper engagement (Vitiello et al., 2012). Furthermore, integrating purposeful use of both indoor and outdoor spaces enhances children’s development, providing opportunities for exploration, adventure, physical activity, and contact with nature (Berti et al., 2019). In sum, the alignment between these correlations and previous evidence on quality educational environments supports the construct validity of our quality scale.

5. Conclusions

This study presents some limitations that should be considered when interpreting the findings. Crucially, the data were based entirely on educators’ self-reported perceptions, which may be influenced by subjective interpretations of their own practices

and by social desirability bias—a factor that warrants a more cautious interpretation of the highly endorsed items and could lead to discrepancies between reported and enacted practices. The data were based on educators' self-reported perceptions, which may be influenced by subjective interpretations of their practices and by social desirability bias, potentially leading to discrepancies between reported and enacted practices. However, this characteristic is consistent with the purpose of the instrument, which was designed as a simple and accessible self-assessment tool aimed at supporting educators' reflection on the organisation of the educational environment. Future studies could complement these data with observational measures in order to further examine the relationships between educators' perceptions and the practices enacted in ECEC contexts. Additionally, the study focused on Portuguese ECEC settings, which may limit the generalisability of the findings to other educational systems and cultural contexts. Although participants were recruited from different regions of Portugal, the sample distribution was not fully balanced across regions, with an overrepresentation of participants from Alentejo and the Centre and an underrepresentation from the North. This imbalance may limit the generalisability of the descriptive findings across all Portuguese ECEC contexts. Further research involving diverse contexts would contribute to strengthening the evidence regarding the applicability of the instrument.

Despite these limitations, the findings of this study provide relevant contributions to research and practice in Early Childhood Education and Care (ECEC). Early Childhood Educators are considered primary agents responsible for creating and sustaining a high-quality environment that directly impacts children's learning and development. As children learn in an active way, they require contexts that enable them to make choices and offer the freedom to explore their curiosities. In this sense, the opportunities provided by the educational environment are essential to ensuring that such learning occurs. In this study, a quality analysis scale was developed for early childhood education contexts. It not only considered the key aspects identified in the literature for organising the educational environment but also demonstrated good psychometric properties across its specific sections. It is known that professionals' reflective capacity regarding their educational practice is fundamental to sustaining their intentionality (S. Edwards, 2021; Slot, 2018). Reflection and continuous questioning of practices are critical, requiring conditions (time, opportunities, instruments) to analyse actions and contexts (Santos, 2017). Involvement in reflective practices on environmental issues can improve their awareness regarding space use and the educational potential of the physical environment (Berti et al., 2019). Given its characteristics, this instrument can be a good starting point for developing a reflective tool for professionals in the context, going beyond its value as a research tool.

Our findings also showed that educators perceived quality differently across domains. Educators reported relatively positive perceptions regarding the organisation of indoor spaces and the management of time and routines. However, weaker results emerged regarding the organisation of outdoor environments and the participation of children and families. In practice, the findings also suggest some difficulties in integrating activities developed in indoor and outdoor contexts. This points to the need for further development in attitudes, conceptions, and pedagogical practices concerning the learning potential of outdoor environments, so that a more fluid pedagogical dynamic can be established, taking advantage of the specific affordances that each context offers. These aspects represent central themes for both initial teacher education and continuous professional development, fostering increasingly high-quality ECEC contexts that provide rich learning experiences for children.

Overall, these findings highlight the importance of supporting educators' reflective practices and professional learning in relation to the intentional organisation of

educational environments, particularly regarding the pedagogical integration of indoor and outdoor contexts. In this sense, the EduIn&Out Self-Assessment Questionnaire may be a useful tool to support reflective practice and quality development in ECEC settings.

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Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki and approved by the Institutional Ethics Committee of Ispa-Instituto Universitário (protocol code I-005-02-25 from 13 March 2025).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The dataset generated during the current study is not publicly available but is available from the corresponding author upon request.

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Abbreviation

The following abbreviations are used in this manuscript:

ECEC Early Childhood Education and Care

Appendix A

Table A1. EduIn&Out Self-Assessment Tool Items and Confirmatory Factor Analysis Loadings.

Items	Loadings
Indoor organisation	
The organisation of the indoor learning space promotes children’s autonomy.	0.874
Children can move freely around the indoor learning space and access materials independently.	0.790
The organisation of the indoor learning space provides multiple opportunities for children to develop competencies across the different areas and domains of the OCEPE.	0.823
The materials are diverse and stimulate children’s curiosity and exploration.	0.825
There are sufficient materials in the indoor learning space for all children in the group.	0.677
New materials are introduced regularly for the children.	0.716
The organisation of the indoor learning space is flexible and is restructured according to the interests and needs of the children/group.	0.789
The indoor learning space allows children to experience moments of managed risk.	0.609
The indoor learning space includes areas or spaces that provide children with opportunities for withdrawal and privacy.	0.65

The indoor learning space reflects children's identities and the diversity of their experiences through their original work (e.g., stories created by the children, their own writing, original artistic productions).	0.735
The spaces include a variety of natural elements (e.g., insects, small animals, a range of plants).	0.643
Technological materials are used to support and extend indoor learning space activities and themes (e.g., tablets, cameras, microscopes, telescopes).	0.497
Common areas of the preschool (e.g., library, gymnasium, other shared spaces) are incorporated into pedagogical planning.	0.68
Transitional spaces (e.g., corridors or entrances) are intentionally used to make the group's experiences visible.	0.722
Transitional spaces (e.g., corridors or entrances) are used intentionally to extend the group's activities.	0.685
The materials available in the indoor learning space include natural and reused materials.	0.728
Outdoor organisation	
The organisation of the outdoor space promotes children's autonomy.	0.885
Children are able to move freely in the outdoor space and independently access materials and equipment.	0.782
The organisation of the outdoor space provides multiple opportunities for children to develop competencies across the different areas and domains of the OCEPE.	0.875
The materials and equipment are diverse and stimulate children's curiosity and exploration.	0.864
There are sufficient materials in the outdoor space for all children in the group.	0.762
New materials are introduced regularly for the children.	0.784
The organisation of the outdoor space is flexible and is restructured according to the interests and needs of the children/group.	0.821
The outdoor space allows children to experience moments of managed risk.	0.781
The outdoor space includes areas or zones that provide children with opportunities for withdrawal and privacy.	0.592
The outdoor space reflects children's identities and the diversity of their experiences through their original work (e.g., stories created by the children, their own writing, original artistic productions).	0.734
The outdoor space includes a variety of natural elements (e.g., insects, small animals, a range of plants).	0.779
Technological materials are used in the outdoor space to support and extend indoor learning activities and themes (e.g., tablets, cameras, microscopes, telescopes).	0.523
The materials available in the outdoor space include natural and reused materials.	0.854
Time and routines organisation	
Children have autonomy to choose the activities they engage in during their daily routines.	0.8
The daily routine is organised on the same day, allowing children to participate in decision-making.	0.603
The organisation of time and routines provides multiple opportunities for children to develop competencies across the different areas and domains of the OCEPE.	0.883
Throughout the day, differentiated time formats are provided, including whole-group, small-group, pair, and individual activities.	0.835
There is flexibility to adjust the routine in response to the interests and needs of the children/group.	0.795
Transitions between activities are smooth and calm and respect children's pace, avoiding abrupt interruptions of what children are doing.	0.800
During transition moments, children know what to do or where to go without relying on the adult.	0.738
The routine includes a structure that provides the stability children need.	0.783
The unpredictability of certain situations can make it difficult to maintain a stable rhythm throughout the day.	Removed
It is possible to anticipate and organise the time required to meet the needs of the group.	0.730
Participation	
Children are listened to and participate in the planning of activities.	0.899
Families are consulted in order to adjust the routine so as to better respond to their needs and those of the children.	0.750
Children are listened to and participate in the organisation of the outdoor space and in the selection of materials.	0.841
Families' opinions and ideas are taken into consideration in the organisation and use of the outdoor space or in the development of activities in natural settings.	0.763
Children are listened to and participate in the organisation of the indoor learning space and in the selection of materials.	0.888
Families' opinions and ideas are taken into consideration in the organisation and functioning of the indoor learning group.	0.659
Coordination with the Pedagogical Team	
I have autonomy to make decisions regarding the organisation of the indoor learning space environment.	0.880
I have autonomy to make decisions regarding the organisation of time.	0.778
I actively participate with the educational team in decision-making regarding the organisation of shared and outdoor spaces within the educational setting.	0.873

I actively participate with the educational team in decision-making regarding the organisation of time at the educational setting (extracurricular activities, celebrations, arrivals and departures, meals).	0.832
Within the pedagogical team, we think about and discuss the organisation of materials and educational spaces.	0.881
Within the pedagogical team, we think about and discuss the organisation of time and routines.	0.869
There is collaborative work with educators from specialised areas (for example, music, English, physical education, swimming) to ensure continuity in the work developed with the group of children.	0.652
Coordination with the Centre's Leadership	
I share the leadership's/coordination team's vision regarding the best way to organise and manage the indoor learning space.	0.891
I share the leadership's/coordination team's vision regarding the best way to organise, manage, and use the outdoor space (e.g., naturalised environments; risk and safety; exploration).	0.945
I share the leadership's/coordination team's vision regarding what is important in the planning and management of routines.	0.945

Table A2. Frequency of responses for items in Section 1 (N = 802).

Needs and Interests Considered in Environment Organisation	Educadors' Responses (%)						
	1	2	3	4	5	6	7
Childres needs	0.1	0.7	1.2	3.2	9.9	24.4	60.3
Curricular Guidelines for Pre-School Education	0.4	0.2	0.6	2.9	9.9	28.6	55.5
Parents/Family solicitations	1.5	1.7	7.1	18.8	28.7	23.9	18.2
Educational centre's resources	0.2	1.1	4.0	11.6	20.4	31.8	30.8
Educational centre's financial interest	3.2	2.5	7.0	20.9	27.7	22.4	16.2

Table A3. Frequency of responses for items in Section 3 (N = 757).

Pedagogical Dynamics	Educadors' Responses (%)						
	1	2	3	4	5	6	7
Routine Flow							
Orderly	3.2	1.5	3.2	13.9	29.3	33.4	14.6
Chaotic	41.7	24.0	14.9	12.0	4.9	1.3	1.1
Predictability	3.0	2.8	7.7	24.7	30.5	21.5	9.8
Stimulant	0.5	0.3	0.8	6.7	21.4	41.0	29.3
Repetitive	9.9	8.2	15.5	24.7	23.6	11.5	6.6
Child Agency							
Prevalence of activities proposed by children	0.8	1.3	5.4	18.8	29.1	29.1	15.6
Prevalence of activities proposed by adults	5.2	6.3	12.0	29.9	27.5	15.1	4.1
Balance between activities proposed by adults and children	0.7	0.5	3.2	14.1	19.3	33.3	28.9
Use of indoor and outdoor contexts							
Prevalence of indoor activities	4.9	4.1	6.3	25.8	27.7	24.2	7.0
Prevalence of outdoor activities	2.6	2.6	8.7	28.4	30.4	17.8	9.4
Balance between indoor and outdoor activities	0.8	0.7	4.6	11.8	18.8	33.3	30.1
Different indoor and outdoor activities	1.1	1.2	2.6	14.7	23.8	31.7	25.0
Continuity between activities started in one space and moving to another	1.6	0.8	4.9	15.1	25.2	31.8	20.6

References

- Albright, M., & Weissberg, R. (2010). School-family partnerships to promote social and emotional learning. In S. Christenson, & A. Reschly (Eds.), *Handbook of school-family partnerships* (pp. 246–265). Routledge.
- Australian Education Research Organization. (2025). *Play-based learning with intentionality. Discussion paper*. Available online: <https://www.edresearch.edu.au/sites/default/files/2025-04/play-based-learning-with-intentionality-aa.pdf> (accessed on 28 January 2026).
- Beames, S., Higgins, P., Nicol, R., & Smith, H. (2024). *Outdoor learning across the curriculum. Theory guidelines for practice*. Routledge.
- Bento, G. (2020). *Grelha de observação de espaços exteriores em educação de infância: GO-exterior*. UA Editora, Universidade de Aveiro, Serviços de Documentação, Informação Documental e Museologia. <https://doi.org/10.34624/822g-w564>.

- Bento, G., & Costa, J. A. (2022). Outdoor spaces design in early childhood settings—Analysing opportunities for children’s play in Portugal. *International Journal of Play*, 11(3), 270–288. <https://doi.org/10.1080/21594937.2022.2101274>.
- Bento, G., & Dias, G. (2017). The importance of outdoor play for young children’s healthy development. *Porto Biomedical Journal*, 2(5), 157–160. <https://doi.org/10.1016/j.pbj.2017.03.003>.
- Berti, S., Cigala, A., & Sharmahd, N. (2019). Early childhood education and care physical environment and child development: State of the art and reflections on future orientations and methodologies. *Educational Psychology Review*, 31(4), 991–1021. <https://doi.org/10.1007/s10648-019-09486-0>.
- Bilton, H. (2020). Values stop play? Teachers’ attitudes to the early years outdoor environment. *Early Child Development and Care*, 190(1), 12–20. <https://doi.org/10.1080/03004430.2019.1653548>.
- Bilton, H., & Waters, J. (2017). Why take young children outside? A critical consideration of the professed aims for outdoor learning in the early years by teachers from England and Wales. *Social Sciences*, 6(1), 1. <https://doi.org/10.3390/socsci6010001>.
- Blyth, A., & Velissaratou, J. (2018). *OECD school user survey: Improving learning spaces together*. OECD Publishing.
- Bondioli, A. (2004). A observação do contexto educativo: Uma perspetiva de pesquisa sobre os tempos do cotidiano [The observation of the educational context: A perspective of research on everyday times]. In A. Bondioli (Org.), *O tempo no cotidiano infantil: Perspectivas de pesquisa e estudos de caso* (pp. 19–29). Cortez. <https://doi.org/10.1590/S0100-15742005000300012>.
- Bondioli, A. (2013). Construir compartilhando a qualidade: A contribuição das partes interessadas [Building by sharing quality: The contribution of stakeholders]. In A. Bondioli, & D. Savio (Eds.), *Participação e qualidade em educação da infância* (pp. 25–49). UFPR.
- Bondioli, A., Moro, C., & Castelo Branco, J. (2023). Apresentação: Sobre o debate acerca da qualidade e da avaliação em Educação Infantil. *EDUR—Educação em Revista*, 39, e41763. <https://doi.org/10.1590/0102-469841763>.
- Bondioli, A., & Nigito, G. (Eds.) (2011). *Tiempos, espacios y grupos. El análisis y la evaluación de la organización en la escuela infantil: DAVOPSI*. GRAÓ.
- Bronfenbrenner, U., & Morris, P. A. (2007). The bioecological model of human development. In *Handbook of child psychology* (Vol. 1). John Wiley & Sons.
- Brussoni, M., Gibbons, R., Gray, C., Ishikawa, T., Sandseter, E. B. H., Bienenstock, A., Chabot, G., Fuselli, P., Herrington, S., Janssen, I., Pickett, W., Power, M., Stanger, N., Sampson, M., & Tremblay, M. S. (2015). What is the relationship between risky outdoor play and health in children? A systematic review. *International Journal of Environmental Research and Public Health*, 12(6), 6423–6454. <https://doi.org/10.3390/ijerph120606423>.
- Burchinal, M. (2018). Measuring early care and education quality. *Child Development Perspectives*, 12(1), 3–9. <https://doi.org/10.1111/cdep.12260>.
- Clarke, B., Sheridan, S., & Woods, K. (2010). Elements of healthy family-school relationships. In S. Christenson, & A. Reschly (Eds.), *Handbook, school-family partnerships* (pp. 61–79). Routledge.
- Collins, T. J., Jones, R. A., & Tonge, K. L. (2023). Educator perceptions of free-flowing routines in early childhood education and care. *Journal of Early Childhood Research*, 21(2), 147–161. <https://doi.org/10.1177/1476718X221145476>.
- Cox-Peterson, A. (2011). *Educational Partnerships. Connecting schools, families, and the community*. SAGE.
- Dahlberg, G., Moss, P., & Pence, A. (2013). *Beyond quality in early childhood education and care: Languages of evaluation* (3rd ed.). Routledge.
- Dahlberg, G., Moss, P., & Pence, A. (2024). CIEC colloquium: Reflections on beyond quality at 25 years. *Contemporary Issues in Early Childhood*, 25(1), 131–145. <https://doi.org/10.1177/14639491231222510>.
- DGEEC (2025). *Educação em números—Portugal 2025*. Direção Geral de Estatísticas em Educação e Ciência. Available online: <https://www.dgeec.medu.pt/api/ficheiros/68d12a159864c806146a8494> (accessed on 30 December 2025).
- Douglass, A. L. (2019). Leadership for quality early childhood education and care. In *OECD education working papers*. OECD Publishing. <https://doi.org/10.1787/6e563bae-en>.
- Eadie, P., Page, J., Levickis, P., Elek, C., Murray, L., Wang, L., & Lloyd-Johnsen, C. (2024). Domains of quality in early childhood education and care: A scoping review of the extent and consistency of the literature. *Educational Review*, 76(4), 1057–1086. <https://doi.org/10.1080/00131911.2022.2077704>.
- Early, D. M., Iruka, I. U., Ritchie, S., Barbarin, O. A., Winn, D. C., Crawford, G. M., Frome, P. M., Clifford, R. M., Burchinal, M., Howes, C., Bryant, D. M., & Pianta, R. C. (2010). How do pre-kindergarteners spend their time? Gender, ethnicity, and income as predictors of experiences in pre-kindergarten classrooms. *Early Childhood Research Quarterly*, 25(2), 177–192. <https://doi.org/10.1016/j.ecresq.2009.10.003>.
- Edwards, C. P., & Gandini, L. (2018). The Reggio Emilia approach to early childhood education. In *Handbook of international perspectives on early childhood education* (pp. 365–378). Routledge.

- Edwards, S. (2021). Process quality, curriculum and pedagogy in early childhood education and care. In *OECD education working papers* (No. 247). OECD Publishing. <https://doi.org/10.1787/eba0711e-en>.
- Fewster, C. (2010). Designing routines and transitions with children in early childhood settings. *Educating Young Children: Learning and Teaching in the Early Childhood Years*, 16(2), 42–44. Available online: <https://search.informit.org/doi/10.3316/informit.385088598607240> (accessed on 27 March 2026).
- Fleer, M., Gomes, J., & March, S. (2014). Science learning affordances in preschool environments. *Australasian Journal of Early Childhood*, 39(1), 38–48. <https://doi.org/10.1177/183693911403900106>.
- Gariboldi, A. (2002). Os tempos cotidianos na pré-escola: As formas da sociabilidade. In A. Bondioli (Ed.), *O tempo no cotidiano infantil* (pp. 97–104). Cortez Editora.
- Gariboldi, A., & Pugnaghi, A. (2018). Relação educativa, avaliação e trabalho de equipe. *Revista Linhas*, 19(40), 94–115.
- Gkloumpou, A., & Germanos, D. (2022). The importance of classroom cooperative learning space as an immediate environment for educational success. An action research study in Greek Kindergartens. *Educational Action Research*, 3(1), 61–75. <https://doi.org/10.1080/09650792.2020.1771744>.
- Grieshaber, S., Krieg, S., McArdle, F., & Sumsion, J. (2021). Intentional teaching in early childhood education: A scoping review. *Review of Education*, 9(3), e3309. <https://doi.org/10.1002/rev3.3309>.
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2014). *Multivariate data analysis* (Pearson new international edition). Pearson Education Limited.
- Hamre, B., Hatfield, B., Pianta, R., & Jamil, F. (2014). Evidence for general and domain-specific elements of teacher–child interactions: Associations with preschool children’s development. *Child Development*, 85(3), 1257–1274. <https://doi.org/10.1111/cdev.12184>.
- Harms, T., Clifford, R., & Cryer, D. (2008). *Escala de avaliação do ambiente em educação de infância* (Edição Revista (Centro de Psicologia da Universidade do Porto—Investigação Desenvolvimental, Educacional e Clínica em Crianças e Adolescentes, Trad.)). Livpsic/Legis Editora. (Original work published 1998).
- Harms, T., Cryer, D., Clifford, R. M., & Yazejian, N. (2017). *Infant/Toddler environment rating scale* (3rd ed.). Teachers College Press.
- Harrison, L. J., Wong, S., Press, F., Gibson, M., & Ryan, S. (2019). Understanding the work of Australian early childhood educators using time-use diary methodology. *Journal of Research in Childhood Education*, 33(4), 521–537. <https://doi.org/10.1080/02568543.2019.1644404>.
- Jeynes, W. H. (2025). What we now know about parental engagement, which will guide the future. *Education and Urban Society*, 57(5), 444–461. <https://doi.org/10.1177/00131245251317999>.
- Kiviranta, L., Lindfors, E., Rönkkö, M. L., & Luukka, E. (2024). Outdoor learning in early childhood education: Exploring benefits and challenges. *Educational Research*, 66(1), 102–119. <https://doi.org/10.1080/00131881.2023.2285762>.
- Kwo, M., Browning, M., & Penner, M. (2022). Refueling students in flight: Lessons in nature may boost subsequent classroom engagement. In R. Jucker, & J. Au (Eds.). *High-quality outdoor learning. Evidence-based education outside the classroom for children, teachers and society* (pp. 67–94). Springer. https://doi.org/10.1007/978-3-031-04108-2_4.
- Kwon, S., Tandon, P.S., O’Neill, M., & Becker, A.B. (2022). Cross-sectional association of light sensor-measured time outdoors with physical activity and gross motor competency among U.S. preschool-aged children: The 2012 NHANES National Youth Fitness Survey. *BMC Public Health*, 22(833), 2–9. <https://doi.org/10.1186/s12889-022-13239-0>.
- La Paro, K. M., Pianta, R. C., & Stuhlman, M. (2004). The classroom assessment scoring system: Findings from the prekindergarten year. *The Elementary School Journal*, 104(5), 409–426. <https://doi.org/10.1086/499760>.
- Leal, T., Gamelas, A. M., Abreu-Lima, I., Cadima, J., & Peixoto, C. (2009). Qualidade em educação pré-escolar. *Psicologia*, 23(2), 43–54. <https://doi.org/10.17575/rpsicol.v23i2.326>.
- Leggett, N. (2025). Intentional teaching and the intentionality of educators: Time for careful, considerate, collaborative, and reflective practice. *Early Childhood Education Journal*, 53, 1–9. <https://doi.org/10.1007/s10643-023-01550-3>.
- Li, C. H. (2016). Confirmatory factor analysis with ordinal data: Comparing robust maximum likelihood and diagonally weighted least squares. *Behavior Research Methods*, 48(3), 936–949. <https://doi.org/10.3758/s13428-015-0619-7>.
- Lopes da Silva, I., Marques, L., Mata, L., & Rosa, M. (2016). *Orientações curriculares para a educação pré-escolar*. Direção-Geral da Educação. Available online: https://www.dge.mec.pt/ocepe/sites/default/files/Orientacoes_Curriculares.pdf (accessed on 27 March 2026).
- Lundy, L. (2007). “Voice” is not enough: Conceptualising article 12 of the United Nations convention on the rights of the child. *British Educational Research Journal*, 33(6), 927–942. <https://doi.org/10.1080/01411920701657033>.
- Malavasi, L., & Zoccatelli, B. (2013). *Documentar os projetos nos serviços educativos* [Document projects in educational services]. APEI—Associação de Profissionais de Educação de Infância.

- Manning, M., Wong, G. T. W., Fleming, C. M., & Garvis, S. (2019). Is teacher qualification associated with the quality of the early childhood education and care environment? A meta-analytic review. *Review of Educational Research*, 89(3), 370–415. <https://doi.org/10.3102/0034654319837540>.
- Martin, A., Brophy, R., Clarke, J., Hall, C., Jago, R., Kipping, R., Reid, T., Rigby, B., Taylor, H., White, J., & Simpson, S. (2022). Environmental and practice factors associated with children's device-measured physical activity and sedentary time in early childhood education and care centres: A systematic review. *International Journal of Behavioral Nutrition and Physical Activity*, 19, 84. <https://doi.org/10.1186/s12966-022-01303-2>.
- Mashburn, A. J. (2008). Quality of social and physical environments in preschools and children's development of academic, language, and literacy skills. *Applied Developmental Science*, 12(3), 113–127. <https://doi.org/10.1080/10888690802199392>.
- Mashburn, A. J., Pianta, R. C., Hamre, B. K., Downer, J. T., Barbarin, O. A., Bryant, D., Burchinal, M., Early, D., & Howes, C. (2008). Measures of classroom quality in prekindergarten and children's development of academic, language, and social skills. *Child Development*, 79(3), 732–749. <https://doi.org/10.1111/j.1467-8624.2008.01154.x>.
- Mata, L., Nóbrega Santos, N., Pereira, M., & Brito, A. T. (in press). Educational environment in preschool: Educators' self-efficacy. *Revista Colombiana de Educación*.
- Mata, L., & Pedro, I. (2021). *Participação e envolvimento das famílias: Construção de parcerias em contextos de educação de infância*. Ministério da Educação/Direção-Geral da Educação. Available online: <https://www.dge.mec.pt/sites/default/files/EInfancia/documentos/participfamilias.pdf> (accessed on 27 March 2026).
- McWilliam, R. A., Scarborough, A. A., Bagby, J. H., & Sweeney, A. L. (1998). *Teaching styles rating scale*. Frank Porter Graham Child Development Center, University of North Carolina at Chapel Hill.
- Melhuish, E., Ereky-Stevens, K., Petrogiannis, K., Ariescu, A., Penderi, E., Rentzou, K., Tawell, A., Slot, P., Broekhuizen, M., & Leserman, P. (2015). A review of research on the effects of early childhood education and care (ECEC) on child development. In *Curriculum quality analysis and impact review of European early childhood education and care*. CARE—European early childhood education and care publications. CARE—European Early Childhood Education and Care.
- Moore, G.T., & Sugiyama, T. (2007). The Children's Physical Environment Rating Scale (CPERS): Reliability and validity for assessing the physical environment of early childhood educational facilities. *Children, Youth and Environments*, 17(4), 24–53.
- Morin, A. J. S., Myers, N. D., & Lee, S. (2020). Modern factor analytic techniques. In G. Tenenbaum, & R. C. Eklund (Eds.), *Handbook of sport psychology* (4th ed., pp. 1044–1073). John Wiley & Sons, Inc.
- Neves, V. F. A., Goulart, M. I. M., & Santos, S. V. S. (2017). A conjugação de diferentes temporalidades na construção da ideia de qualidade na Educação Infantil [The intertwining of different temporalities in the construction of the idea of quality in Early Childhood Education]. *RELAdEI: Revista Latinoamericana de Educación Infantil*, 6(1–2), 42–60. Available online: <https://revistas.usc.gal/index.php/reladei/article/view/4999> (accessed on 30 December 2025).
- Nigito, G. (2011). Por una pedagogía de la temporalidad [For a pedagogy of temporality]. In A. Bondioli, & G. Nigito (Eds.), *Tiempos, espacios y grupos. El análisis y la evaluación de la organización en la escuela infantil: DAVOPSI* (pp. 73–98). GRAÓ.
- OECD (2021). *Starting Strong VI: Supporting meaningful interactions in early childhood education and care, starting strong*. OECD Publishing. <https://doi.org/10.1787/f47a06ae-en>.
- OECD (2023). *Education at a Glance 2023: OECD indicators*. OECD Publishing. <https://doi.org/10.1787/e13bef63-en>.
- Ozturk, Y., & Ozer, Z. (2022). Outdoor play activities and outdoor environment of early childhood education in Turkey: A qualitative meta-synthesis. *Early Child Development And Care*, 192(11), 1752–1767. <https://doi.org/10.1080/03004430.2021.1932865>.
- Pechtelidis, Y., Kozaris, I., Pantazidis, S., & Bottonaki, A. (2023). Sowing the seeds of commons in education: Three case studies from the Horizon Project 2020 SMOOTH. *Social Sciences*, 12(10), 581. <https://doi.org/10.3390/socsci12100581>.
- Pereira, M., Fernandes, C., Brito, A. T., Santos, N. N., Pereira, B., & Mata, L. (2026). De dentro para fora da equipa com o EduIn&Out: Construindo um questionário sobre a organização de ambientes em contextos de educação pré-escolar [From within the team to the outside with eduin&out: Developing a questionnaire on the organisation of environments in early childhood education contexts]. In N. Ferreira, & Brito, A. T. (Eds.), *Atas do II colóquio internacional de reflexão sobre práticas integradas em educação*. ISPA.
- Pereira, M., Santos, N. N., Brito, A. T., & Mata, L. (2025). Time and routines organization in early childhood education and care—Participation, opportunities, and constraints. *Journal of Research in Childhood Education*, 40, 391–410. <https://doi.org/10.1080/02568543.2025.2461545>.
- Perlman, M., Falenchuk, O., Fletcher, B., McMullen, E., Beyene, J., & Shah, P. S. (2016). A systematic review and meta-analysis of a measure of staff/child interaction quality (the classroom assessment scoring system) in early childhood education and care settings and child outcomes. *PLoS ONE*, 11(12), e0167660. <https://doi.org/10.1371/journal.pone.0167660>.

- Philp-Clark, C., & Grieshaber, S. (2024). Teacher critical reflection: What can be learned from quality research? *The Australian Educational Researcher*, 51(2), 697–717. <https://doi.org/10.1007/s13384-023-00619-7>.
- Pianta, R., Downer, J., & Hamre, B. (2016). Quality in early education classrooms: Definitions, gaps, and systems. *The Future of Children*, 26(2), 119–137. <https://doi.org/10.1353/foc.2016.0015>.
- Porter, H. (2018). *Educating outsider. Curriculum linked outdoor learning ideas for primary teachers*. Bloomsbury.
- Prins, J., Wilt, F., Santen, S., Veen, C., & Hovinga, D. (2022). The importance of play in natural environments for children’s language development: An explorative study in early childhood education. *International Journal of Early Years Education*, 31(2), 450–466. <https://doi.org/10.1080/09669760.2022.2144147>.
- Rademacher, A., Bäker, N., von Düring, U., Hiltunen, V., & Goagoses, N. (2025). The effects of early childhood education and care quality on academic competences in early primary school: A systematic review and meta-analysis. *European Journal of Psychology of Education*, 40(4), 110. <https://doi.org/10.1007/s10212-025-01005-w>.
- Sağlam, M., Çelik, O. T., Tunç, Y., Kahraman, Ü., Açar, D., & Candemir, B. (2023). Meta-thematic analysis of quality in early childhood education and care. *Humanities and Social Sciences Communications*, 10(1), 966. <https://doi.org/10.1057/s41599-023-02491-3>.
- Sakellariou, M., & Banou, M. (2022). Play within outdoor preschool learning environments of Greece: A comparative study on current and prospective kindergarten educators. *Early Child Development and Care*, 192(6), 887–903. <https://doi.org/10.1080/03004430.2020.1813123>.
- Sando, O. J. (2019). The outdoor environment and children’s health: A multilevel approach. *International Journal of Play*, 8(1), 39–52. <https://doi.org/10.1080/21594937.2019.1580336>.
- Santos, A. M. M. (2017). *Os tempos em educação de infância* [The times in early childhood education]. [Master’s thesis, Escola Superior de Educação de Lisboa]. Repositório Científico do Politécnico de Lisboa. Available online: <http://hdl.handle.net/10400.21/8031> (accessed on 30 December 2025).
- Sheridan, S. (2007). Dimensions of pedagogical quality in preschool. *International Journal of Early Years Education*, 15(2), 197–217. <https://doi.org/10.1080/09669760701289151>.
- Sheridan, S. M., Edwards, C. P., Marvin, C. A., & Knoche, L. L. (2009). Professional development in early childhood programs: Process issues and research needs. *Early Education and Development*, 20(3), 377–401. <https://doi.org/10.1080/10409280802582795>.
- Slot, P. (2018). *Structural characteristics and process quality in early childhood education and care: A literature review* (OECD Education Working Papers, 176). OECD Publishing. <https://doi.org/10.1787/edaf3793-en>.
- Sluiter, R. M., Fukkink, R. G., & Fekkes, M. (2025). The Impact of process quality in early childhood education and care on socio-emotional development: A meta-analysis of longitudinal studies. *International Journal of Environmental Research and Public Health*, 22(5), 775. <https://doi.org/10.3390/ijerph22050775>.
- Solang, D. J., Yunus, M., Rukmini, B. S., Kurnia, K., & Umam, K. (2024). The impact of early childhood education on long-term outcomes. *The Journal of Academic Science*, 1(4), 350–361. <https://doi.org/10.59613/7pvaa271>.
- Speldewinde, C., Infantino, S., & Campbell, C. (2025). Facilitated play in nature playgroups: An opportunity for early childhood science education. *Education Sciences*, 15(12), 1634. <https://doi.org/10.3390/educsci15121634>.
- Sreelasky, J. (2019). A forest-based environment as a site of literacy and meaning making for kindergarten children. *Literacy*, 53(2), 95–101. <https://doi.org/10.1111/lit.12155>.
- Strong-Wilson, T., & Ellis, J. (2007). Children and place: Reggio Emilia’s environment as third teacher. *Theory Into Practice*, 46(1), 40–47. <https://doi.org/10.1080/00405840709336547>.
- Syslová, Z. (2019). The relation between reflection and the quality of a preschool teacher’s education performance. *International Journal of Child Care and Education Policy*, 13(4), 4. <https://doi.org/10.1186/s40723-019-0060-y>.
- Thornton, A. (2022). *Teaching the primary curriculum outdoors—Learning through landscapes*. Corwin.
- Tonge, K., Jones, R., & Okely, A. (2019). Quality interactions in early childhood education and care center outdoor environments. *Early Childhood Education Journal*, 47, 31–41. <https://doi.org/10.1007/s10643-018-0913-y>.
- Van Liempd, H. I. M., Oudgenoeg-Paz, O., Fukkink, R. G., & Leseman, P. P. (2018). Young children’s exploration of the indoor playroom space in center-based childcare. *Early Childhood Research Quarterly*, 43, 33–41. <https://doi.org/10.1016/j.ecresq.2017.11.005>.
- Višnjić Jevtić, A. (2023). Collaboration theory: ECEC leading families to lead their own partnerships with ECEC. In A. R. Sadownik, & A. Višnjić Jevtić (Eds.), *(Re)theorising more-than-parental Involvement in early childhood education and care* (Vol. 40, pp. 127–141). International perspectives on early childhood education and development. Springer. https://doi.org/10.1007/978-3-031-38762-3_7.

- Vitiello, V. E., Booren, L. M., Downer, J. T., & Wiliford, A. P. (2012). Variation in children's classroom engagement throughout a day in preschool: Relations to classroom and child factors. *Early Childhood Research Quarterly*, 27(2), 210–220. <https://doi.org/10.1016/j.ecresq.2011.08.005>.
- Vuorisalo, M., Rutanen, N., & Raittila, R. (2015). Constructing relational space in early childhood education. *Early Years*, 35(1), 67–79. <https://doi.org/10.1080/09575146.2014.985289>.
- Wait, S. (2019). Teaching and learning outside the classroom: Personal values, alternative pedagogies and standards. In S. Wait (Ed.), *Outdoor learning research. Insights into forms and functions* (pp. 8–23). Routledge.
- Wait, S., & Aronsson, J. (2022). Some impacts on health and wellbeing from school-based outdoor learning. In R. Jucker, & J. Au (Eds.), *High-quality outdoor learning. Evidence-based education outside the classroom for children, teachers and society* (pp. 171–191). Springer. <https://doi.org/10.1007/978-3-031-04108-2>.
- Zorec, M. B., & Vrankar, V. (2016). Children's participation at daily routine in Slovene preschools. *SHS Web of Conferences ERPA*, 31, 1014. <https://doi.org/10.1051/shsconf/20163101014>.

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