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Risk and protective factors for healthy development in preschool children with ADHD: a qualitative bioecological study of key stakeholders' perspectives

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ABSTRACT

ADHD in preschoolers is sometimes misunderstood by stakeholders due to children's young age, preventing early diagnosis and interventions. This qualitative study explores protective and risk factors for their healthy development using thematic analysis applied to the bioecological model, and perspectives from five stakeholder groups ($N = 91$, 90.1% female; Portuguese-speaking; aged from 19 to 69 years): parents of children with ADHD ($n = 20$), psychologists ($n = 25$), pediatricians/child psychiatrists ($n = 9$), preschool teachers ($n = 16$) and adults with ADHD ($n = 21$). Participants answered five open-ended questions about concerns regarding diagnosis and development, and facilitators and barriers to healthy development. A total of 951 excerpts (f) were coded and organized into five themes according to Bronfenbrenner's bioecological model. The most cited themes were the Microsystem (n = 84; $f = 353$) and the Exosystem (n = 83; $f = 271$). Findings identify intervention targets across all levels of the bioecological model. Key subthemes include Parenting/Caregiving styles, Emotional/Behavioral difficulties, Diagnostic difficulties and practices and Knowledge and training. Stakeholders consistently viewed environmental support (such as school/family, healthcare and societal factors), multidisciplinary collaboration, and improved universal knowledge as more influential than ADHD symptoms alone in promoting healthy development. Interventions should go beyond parental training in behavior management to address comorbidities and associated difficulties. Importantly, more research on ADHD diagnosis in preschoolers is needed.

1. Introduction

Attention-Deficit/Hyperactivity Disorder (ADHD) is the most prevalent neurodevelopmental disorder in childhood (e.g., Sayal et al., 2018). Symptoms often emerge in the preschool years and tend to persist throughout the lifespan (e.g., Halperin & Marks, 2019) along with difficulties and comorbidities (e.g., O'Neill et al., 2017) that can be significantly impairing (e.g., Lahey et al., 2016). The impact of ADHD is substantial, extending beyond the individual to affect caregivers (e.g., Zhao et al., 2019), the school systems (including peers and [preschool] teachers, e.g., Godwin et al., 2022, Miklas et al., 2021), the medical system (e.g., Lahey et al., 2016), and global socioeconomic outcomes (Condo et al., 2022).

To mitigate present and future widespread negative outcomes (e.g., individual, family, economic), early interventions offer a promising approach given the heightened plasticity of the early years (Halperin & Healey, 2011). Guidelines recommend them for preschoolers even with an unclear diagnostic profile (Wolraich et al., 2019). Although diagnosis is recommended to be initiated at 4 years of age (Wolraich et al., 2019), it is often delayed until elementary school, with a "wait-and-see" approach causing ADHD to be overlooked in the preschool years (Halperin & Marks, 2019). Focusing on the preschool age range's risk and protective factors, beyond facilitating the selection of at-risk children, could inform the scope and nature of prevention programs, interventions, resource allocation, and governmental practices.

Reviews have attempted to systematize risk and protective factors within the preschool period (e.g., DC:0–5, Zero to Three, 2016; O'Neill et al., 2017), while longitudinal studies have sought to identify factors that contribute to the diverse developmental pathways of ADHD, including remission (e.g., Murray et al., 2022). Quantitative research is

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often constrained to focus on specific variables (frequently related to individuals and caregivers), potentially lacking a holistic scope. ADHD should be viewed as a dynamic developmental trajectory rather than a static condition (Halperin & Healey, 2011). The bioecological model (Bronfenbrenner & Morris, 2006) provides a comprehensive framework for examining influences on children's development at multiple levels, and has been successfully applied to ADHD (e.g., Miklas et al., 2021). This model, in its later version, is denominated the Process-Person-Context-Time model (PPCT model, Bronfenbrenner & Morris, 2006). The Process component refers to regular reciprocal interactions occurring over an extended period of time and constitute "the primary mechanism" in development (proximal processes); their nature varies according to individual and contextual characteristics. At the individual level, *demand* (e.g., age and gender), *resource* (e.g., mental, emotional and social resources) and *force* (e.g., temperament, motivation and persistence) characteristics influence interactions and the context. The Context level refers to four interrelated systems: the Microsystem (close relationships, were processes typically occur), the Mesosystem (the relationships between Microsystems), the Exosystem (individuals don't participate in them but they are indirectly influenced by them, e.g., parent's work) and the Macrosystem (e.g., culture). Finally, the Time level is divided into Microtime (the content of specific interactions), Mesotime (interactions' consistency), and Marcotime/Chronosystem (historical events).

Below, we examine risk and protective factors for the preschool period, specifically including the Individual level, and the Context systems.

1.1. Individual level

Most longitudinal studies find that severe symptoms in the preschool years are associated with poorer outcomes (e.g., Halperin & Marks, 2019). ADHD status has been linked to alterations in brain structures and neural circuits (e.g., Zou et al., 2025) and neuropsychological functioning. In the preschool years, ADHD is concurrently associated with broad neuropsychological assessments (Rajendran et al., 2015), IQ (Agnew-Blais et al., 2020; Lahey et al., 2016), and executive functions (EF, Agnew-Blais et al., 2020). However, these neuropsychological measures do not consistently predict later symptoms independently (Agnew-Blais et al., 2020; Lahey et al., 2016; Rajendran et al., 2015), except for the NEPSY's Statue sub-test applied at 4 years, which predicted ADHD at age 6 (Breaux et al., 2016).

ADHD is associated with a wide range of comorbidities and difficulties, with a multiple-deficit model warranting continuous investigation (Pennington, 2006). The combined presentation carries even greater comorbidity risk than Hyperactive/Impulsive (H/I) or Inattentive (IN) presentations (Addanki et al., 2023). These comorbidities concurrently constitute risk factors: language delays, deficits in sensory processing, Oppositional Defiant Disorder (ODD), conduct disorder, and anxiety elevation (Addanki et al., 2023; Lahey et al., 2016; Yochman et al., 2004). Their presence, particularly preschool behavior problems (i.e., ODD, aggressive behavior, and conduct problems), predict subsequent ADHD symptom trajectories (Lahey et al., 2016; Law et al., 2014; Sasser et al., 2015). Preschoolers' temperament dimensions are also associated with concurrent ADHD symptom severity (negative affect, surgency and effortful control, Peisch et al., 2025), and they longitudinally predict ADHD symptoms (effortful control, anger/frustration and temperament regulation and reactivity; Einziger et al., 2018; Rabinovitz et al., 2016; Willoughby et al., 2017).

School readiness impairment in the preschool years (but not cognition/general knowledge) is a risk factor present in most preschoolers with ADHD (Perrin et al., 2019) and constitutes a longitudinal risk for the persistence/severity of ADHD until adolescence (Murray et al., 2022). This relationship is bidirectional: IN persistence from preschool to elementary school was associated with poorer reading achievements in 8-year-olds (mediated by preschool language abilities, affected by inattention, O'Neill et al., 2016) and later academic difficulties (in 10–11-year-olds, Sasser et al., 2015).

Boys show a higher prevalence of ADHD (e.g., Murray et al., 2022; Sasser et al., 2015) and sex could be a risk factor. However, referral bias may favor their identification (Murray et al., 2022). Preschool girls with ADHD are at greater risk for adverse outcomes than boys in later years, including ODD, depression, and anxiety (Lahey et al., 2016). Late-onset ADHD cases tend to be female, display lower levels of conduct problems, higher levels of school readiness and IQ compared to persistent cases (Murray et al., 2022), suggesting a milder but impairing ADHD characterized by many of the same "hallmarks", and compensatory strengths in earlier years (Murray et al., 2022).

At the genetic level, ADHD is a highly heritable disorder (heritability ranging from 54% to 70%, Eilertsen et al., 2019), and genetic effects provide the most important contribution to stability of ADHD symptoms from toddlerhood to preschool age (Eilertsen et al., 2019). Birth complications such as low birth weight and prematurity may contribute to more severe developmental trajectories according to some longitudinal studies (e.g., Murray et al., 2022). A gene-environment interplay has been firmly established (e.g., Kian et al., 2022; Zou et al., 2025) and individuals with a genetic predisposition to ADHD are more likely to develop symptoms when exposed to environmental risk factors, especially prenatal ones (e.g., maternal smoking and substance use, birth complications; Kian et al., 2022). Still, prenatal risk factors cannot be confirmed as causal for ADHD (Sciberras et al., 2017).

1.2. Microsystem

At home, activities matter: excessive media exposure is a risk factor for ADHD (e.g., Claussen et al., 2024; Murray et al., 2025); painting/drawing and playing games protect against externalizing scores while engaging in number/counting games increases risk, possibly due to the task's difficulty or insufficient scaffolding (Hoyne & Egan, 2024); and home literacy (e.g., reading to the child) protects against externalizing scores (Hoyne & Egan, 2024) and longitudinally improves socioemotional competences and reduces behavior problems, via linguistic abilities (Wirth et al., 2022).

Parental sensitivity and warmth are concurrently (Hoyne & Egan, 2024) and longitudinally (Claussen et al., 2024; Shelleby & Ogg, 2020) protective for ADHD, while negativity/harsh discipline and abuse are concurrent (Hoyne & Egan, 2024) and longitudinal (Claussen et al., 2024; Sellers et al., 2021) risk factors for ADHD.

The relationship between parenting styles and ADHD is bidirectional: while the first influences the second, preschool ADHD symptomatology also leads to a later decrease in parental warmth (Shelleby & Ogg, 2020) and increase in hostility (Sellers et al., 2021). ADHD considerably impacts parents' health and occupational and marital well-being, representing an intense emotional burden and a constant struggle with behavior management and routines (Corcoran et al., 2017). These effects may contribute to parental psychopathology (e.g., depression; Lin et al., 2025) among adults who may have ADHD and greater vulnerability to comorbidities (Thorsheim et al., 2025).

Early life adversities (i.e., abuse, neglect, household dysfunction, socioeconomic adversity, Zou et al., 2025) are risk factors for symptom expression, persistence and poorer outcomes, influencing ADHD pathogenesis through genetic and environmental interactions (Thorsheim et al., 2025; Zou et al., 2025). These environmental factors are cumulative and act synergistically and longitudinally, through chronic stress and related mechanisms in the child, disrupting neurodevelopmental processes (e.g., hypothalamic–pituitary–adrenal axis dysregulation) and altering brain networks involved in attention (Zou et al., 2025).

In preschool settings, high classroom quality (e.g., emotional and instructional support, organization) was associated with on-task behavior (Pianta et al., 2002), and, when sustained, gains across various domains (Broekhuizen et al., 2016; Burchinal et al., 2008; Gavrilova et al., 2024). Various forms of classroom physical activity

showed promising evidence for ADHD (Burkart et al., 2018; Webster et al., 2015; Wiebelhaus & Fryer Hanson, 2016) with a review across age ranges concluding cardio physical activity is protective (Den Heijer et al., 2016). Factors influencing distractibility and over-stimulation play a role, for example, high quantities of visual noise on walls (Godwin et al., 2022). Environmental interventions are promising but remain understudied regarding their effects on ADHD, with mixed evidence and a notable research gap (Tamblyn et al., 2023).

1.3. Mesosystem

Relationships between microsystems are illustrated through interactions between parents and schools. Having a child with ADHD (from kindergarten through adolescence) increases school demands on parental involvement through communications regarding problematic or school behavior (Montes & Montes, 2021). Those parents displayed increased attendance at parent-teacher conferences and meetings with counselors (Montes & Montes, 2021). These findings could represent an increased need for coordination (Montes & Montes, 2021), which could improve ADHD symptoms in the preschool years (Adiningtyas & Wahyuni, 2024) but is problematic considering parents of school-aged children with ADHD report feeling less welcomed and supported by their children's schools and teachers compared with parents of children without ADHD (Rogers et al., 2009).

1.4. Exosystem

Low socioeconomic status (SES) is a risk factor for ADHD (Russell et al., 2016). For example, maternal education in the preschool years is concurrently protective (Hoyne & Egan, 2024) and likely mediated by other factors (Russell et al., 2016).

The medical system's practices and guidelines also constitute the Exosystem. The sparse availability of standardized tests for the preschool age range (Merkt et al., 2020) and diagnostic criteria that may not be adequate for this period (Halperin & Marks, 2019) reflect a lack of investment in early ADHD identification. Delaying diagnosis likely delays early interventions and constitutes a risk factor, though guidelines recommend parental training in behavior management without a confirmed diagnosis (Wolraich et al., 2019). These interventions are effective (Wolraich et al., 2019), however, parents express frustration that they do not go beyond "the day-to-day stuff one has to do to survive" (Corcoran et al., 2017).

1.5. Macrosystem

Societal views on what is acceptable vary between cultures, and some authors suggest ADHD is a social construct (Tanner & Hsu, 2025). Ethnicity, because of its cultural component, has implications for normative equivalences, even in the same country (Meyer, 2005). Despite lower diagnostic and treatment rates in ethnic minority groups (e.g., because of fear of social stigma), teachers' and clinicians' cultural, racial, and language biases may contribute to the overidentification of disability and higher rates of ADHD symptoms among ethnic minority children (Slobodin & Masalha, 2020). However, many contemporary societies are becoming increasingly culturally diverse, as is the case of Portugal, the locale where the present study was conducted. In 2023, Portugal registered approximately 1 million foreign nationals with valid residence permits, representing close to 10% of the resident population; about half of foreign nationals came from Portuguese speaking countries (Instituto Nacional de Estatística, 2024, p.112).

1.6. Conclusion

Some literature reviews have tried to address risk and protective factors for healthy development of preschool children with ADHD (e.g., O'Neill et al., 2017). Extensive research has gone into studying individual factors leading to different developmental trajectories but, to a lesser extent, the relational, environmental, and societal factors involved. Authors concluded that the mechanisms through which important variables influence ADHD remain to be fully elucidated (Thorsheim et al., 2025; Zou et al., 2025) due to the lack of overlap in potentially mediating factors across studies (e.g., low SES, Russell et al., 2016). A holistic scope is needed, especially considering calls for preventive interventions focused on social determinants of health (e.g., Thorsheim et al., 2025; Zou et al., 2025) and that most studies encompass all age groups (e.g., Claussen et al., 2024; Montes & Montes, 2021) or focus mainly on the elementary period (e.g., Condo et al., 2022; Nikolas et al., 2015).

1.7. Current study: aim

This study aims to identify protective and risk factors for healthy developmental trajectories among preschool-aged children with ADHD – an understudied and urgent research area. The bioecological model (Bronfenbrenner & Morris, 2006) was applied with a qualitative method, enabling a multi-level approach unconstrained by a priori variable selection. Perspectives were gathered from five key stakeholders: psychologists, pediatricians/child psychiatrists, parents of children with ADHD, preschool teachers and adults with ADHD (often overlooked in developmental research), responding to calls for public patient involvement (de Wit et al., 2019) and providing stakeholders a platform to share recommendations and field-specific challenges, offering a holistic, first-hand view of developmental trajectories to guide prevention and intervention.

The Standards for Reporting Qualitative Research (SRQR, O'Brien et al., 2014) guidelines were applied. The checklist is provided as supplementary material (Table S1).

2. Method

2.1. Participants and procedure

A total of 91 participants (90.1% female) were included: psychologists (n = 25, M = 15.40 years of professional experience, SD = 7.01), pediatricians/child psychiatrists (n = 9, M = 25.89 years of professional experience, SD = 6.88), parents of children aged 6–12 diagnosed with ADHD (n = 20), preschool teachers (n = 16), and adults with ADHD (n = 21). The age criterion for parents ensured familiarity with the full preschool period and that their child had a diagnosis. Additional participants' sociodemographic characteristics are presented in Table 1.

Recruitment channels included professional associations ($n = 7$; for clinicians [i.e., psychologists and pediatricians/child psychiatrists] and preschool teachers), hospitals and clinics ($n = 55$; for clinicians and parents), schools ($n = 163$; for preschool teachers), direct professional e-mail contact ($n = 12$; for clinicians), and ADHD patient associations ($n = 3$; for parents and adults with ADHD). Participants were recruited in Portugal and responded in Portuguese, reflecting cultural/ethnical and organizational characteristics of the Portuguese speaking population. The study was approved by the ethics council of [University, ref. number blind for review] and the Portuguese Ministry of Education [ref. number blind for review], and written informed consent was obtained online from all participants prior to data collection, which occurred via Qualtrics between March and May 2024.

Completed questionnaires were transferred to MAXQDA (Version Plus 2024) and anonymized through Qualtrics-generated codes, chronologically ordered within each group and numbered.

2.2. Materials

Participants responded to a survey comprising five open-ended questions and a sociodemographic questionnaire. The four main questions were: (i) "From your perspective, please indicate your concerns

Table 1
Sample characteristics.

	Psychologists	Pediatricians/Child Psychiatrists	Parents	Preschool teachers	Adults with ADHD
N	25	9	20	16	21
n Female	20	8	19	16	19
Age (years)	39.04 (6.57)	53.22 (7.92)	40.15 (4.55)	48.69 (10.77)	36.14 (10.02)
Age range (years)	28–57	45–69	28–47	28–64	19–57
Education	–	–	–	–	–
n High School	–	–	7	–	9
n Bachelor or Master	21	9	13	15	9
n PhD	4	–	–	1	3
Professional Experience (years)	15.40 (7.01)	25.89 (6.88)	–	–	–
Experience with ADHD (years)	13.92 (7.32)	17.56 (5.50)	–	–	–
Age of child (years)	–	–	8 (1.38)	–	–
n female children	–	–	5	–	–
Age of child's diagnosis (years)	–	–	6.45 (1.36)	–	–
Age of diagnosis (years)	–	–	–	–	29.64 (13.16)

Note. Means are presented with standard deviations in parentheses.

regarding ADHD diagnosis in children aged 3 to 6"; (ii) "… your concerns regarding the development of children aged 3 to 6 with ADHD (diagnosed or not); (iii) "… the barriers to healthy development in children aged 3 to 6 with ADHD (diagnosed or not)"; and (iv) "… the facilitators for optimal development in children aged 3 to 6 with ADHD (diagnosed or not)"; and an optional (v) "Do you have any additional comments you wish to share with the research team?".

The sociodemographic questionnaire collected information on participants' age, gender and education. Clinicians reported years of professional experience and years working with ADHD. Parents reported their child's age, gender, and age at diagnosis. Adults provided their age at diagnosis.

2.3. Data analysis

Participants' descriptive statistics were computed using IBM SPSS Statistics (version 29). A hybrid thematic analysis was applied, combining a deductive codebook-based analysis grounded in the bioecological model (Bronfenbrenner & Morris, 2006) at the theme level, with reflexive interpretative analysis at the subtheme level. Analysis was conducted using MAXQDA (Version Plus 2024), which yielded excerpt frequency (*f*) and number of participants per code (n) to enable group comparison.

The analysis followed the six steps of Braun and Clarke (2022): (1) Researcher 1 and Researcher 2 independently familiarized themselves with the data; (2) the five open-ended questions were divided between Researcher 1 (questions [i], [ii], and [v]) and Researcher 2 (questions [iii] and [iv]); (3) (sub)theme searching: codes were created considering their positioning in the bioecological model (Bronfenbrenner & Morris, 2006), and were grouped to form comprehensive units at the subtheme level; (4) theme revision, within and across themes; (5) themes definition and naming; and (6) report production.

All coded segments were jointly reviewed at regular (most often weekly) meetings between the two researchers (steps 2–5), which have backgrounds in Pediatric Neuropsychology (Researcher 1) and Community Psychology (Researcher 2), allowing for continuous reflexivity throughout the discussion of every segment/sub-theme/theme. Researcher 3, which is has a background in Developmental Psychology, participated in discussions around steps 3 to 5 and contributed to resolving disagreements. Step 6 was led by Research 1, with a collaborative effort of Researcher 3. Quotes were selected by Researcher 1 based on the extent to which participants elaborated on them and the degree to which they captured related concepts.

3. Results

The results are presented according to the bioecological model (Bronfenbrenner & Morris, 2006), with each level representing a theme and its data-driven subthemes. In total, 951 excerpts were coded across five levels (Individual, Microsystem, Mesosystem, Exosystem, Macrosystem).

Considering participant and excerpts counts, the leading theme was the Microsystem (n = 84; *f* = 353), closely followed by the Exosystem (n = 83; *f* = 271) and the Individual level (n = 68; *f* = 240); the least cited was the Macrosystem (n = 17; *f* = 26). Results are presented in Fig. 1; excerpts accompanied by number and frequency of themes and subthemes are presented in Table 2. Results by group are provided in Tables S2 (Supplementary Material).

3.1. Individual level

Five subthemes were extracted: (i) Emotional/Behavioral difficulties; (ii) (Neuro)Development and associated difficulties; (iii) Socialization, integration and relationships; (iv) ADHD triad; and (v) (Non) Existence of comorbidities. All subthemes emerged in all groups except for (v) (Non)Existence of comorbidities, which was not mentioned by pediatricians/child psychiatrists and preschool teachers.

3.1.1. Emotional/behavioral difficulties

This subtheme includes internalizing symptoms such as low self-esteem, feelings of inadequacy, isolation, and (social) anxiety; and externalizing symptoms such as aggression and conflict, non-acceptance of authority, opposition, lack of self-control and explosive/excitable/unpredictable temperaments. Concerns over their persistence and widespread long-term impact are raised.

Some participants noted that coping and emotional regulation difficulties can arise in response to the environment (*"the child ends up frustrated and demotivated, with no desire to learn because they cannot understand why they are being judged"* [Mother 18], linking with Stigmatization)", and/or from the child's neurobiological characteristics (*"frustrated with their limitations, which ultimately leads to sadness, low self-esteem, and stress issues"* [Preschool teacher 5]).

3.1.2. (Neuro)development and associated difficulties

This subtheme encompasses cognitive, neuropsychological and (neuro)developmental characteristics of children with ADHD. These include academic and language difficulties, global and motor development, autonomy, sensory processing, autism, and sleep. Some positive features were mentioned, such as ease in learning about topics of interest, curiosity, less fear, and verbal fluency.

These were sometimes linked to other subthemes, for example, Intervention with the child: *"(we must) insist on the need for early interventions and modeling, adjusted to the context, to minimize the effect on learning skills and enable entry into (elementary) school with the tools and prerequisites necessary for a successful school trajectory, which will give them greater capacity to face the future"* (Pediatrician/Child psychiatrist 5).

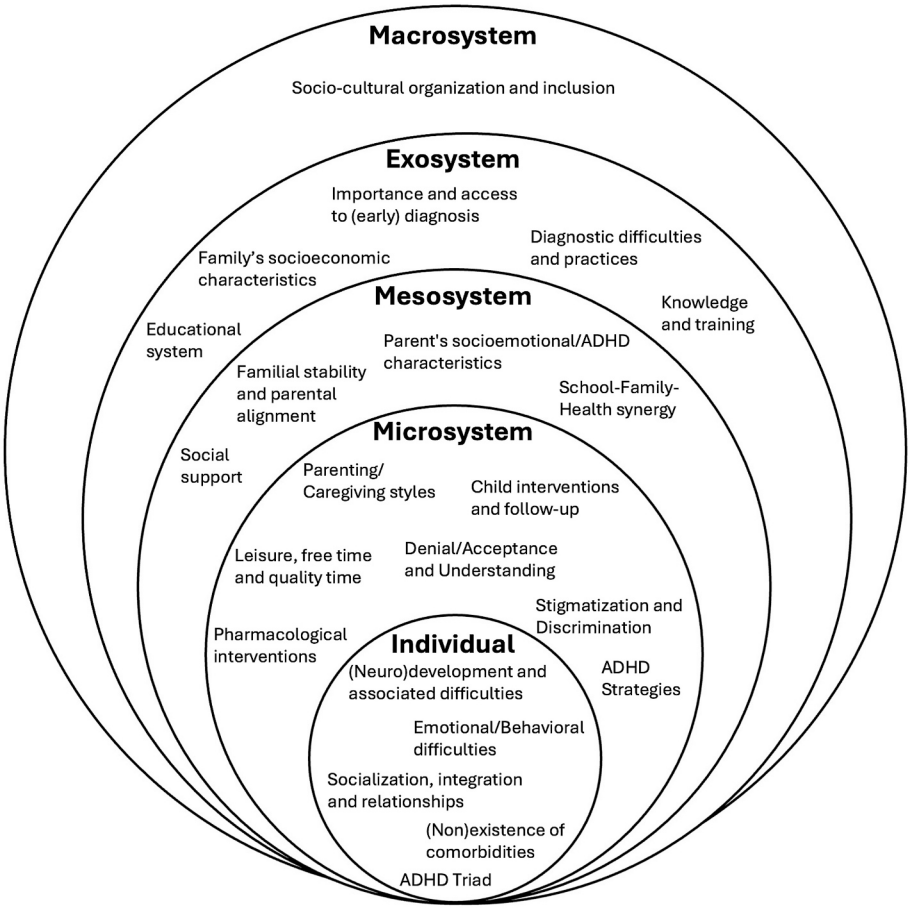


Fig. 1.

3.1.3. Socialization, integration and relationships

This subtheme captures concerns over social difficulties and relationships. These include socialization, social skills, empathy (lack or above average), theory of mind, social participation, peer integration, and development of healthy, lasting peer friendships and relationships with adults.

3.1.4. ADHD triad

ADHD triad includes inattention (e.g., lack of motivation/persistence), hyperactivity and impulsivity. One mother links it to the emotional weight for the child: *"the child's «suffering» from being aware that they need to pay more attention or from not understanding that they get easily distracted when doing assigned tasks"* (Parent 14).

3.1.5. (Non)existence of comorbidities

This subtheme captures the high prevalence of comorbidities and their developmental impact, with their absence identified as a protective factor; linked here to ADHD strategies: *"if there is no associated intellectual deficit and adequate stimulation is provided, the child may have a normative development"* (Psychologist 12).

3.2. Microsystem

All seven subthemes were mentioned by all groups: (i) Parenting/Caregiving styles; (ii) Intervention with the child and professional follow-up; (iii) Denial/Acceptance and understanding; (iv) ADHD strategies; (v) Stigmatization and discrimination; (vi) Pharmacological interventions; and (vii) Leisure, free time and quality time.

3.2.1. Parenting/caregiving styles

This subtheme denotes parenting styles and their transposition to relationships with significant adults, such as preschool teachers. Emotional support (e.g., empathy, affection, patience, supporting the child's self-regulation, fostering their self-esteem) is key. As one adult states, *"they need respect, love, freedom to be themselves, and to develop at their own pace"* (Adult with ADHD 2). Another psychologist alerts to a middle ground: *"parents misinterpret conscious and positive parenting"* (Psychologist 9). Conversely, parenting/caregiving styles are sometimes described as aggressive (e.g., *"excessive criticism"* [Adult with ADHD 4]) or too permissive (e.g., excessive leniency and induction of dysfunction) and hands-off (e.g., lack of time and investment [in the child's progress]). Assertiveness and clear rules, balanced with flexibility, warmth and tolerance matter.

3.2.2. Child interventions and follow-up

Child interventions and follow-up reflect the need for regular interventions by specialized professionals. Some participants highlight the lack of available professionals and difficulty accessing them. These include (neuro)psychological, speech-language, and occupational therapy (e.g., cognitive stimulation, attention, EF and emotional regulation training, behavioral interventions and mindfulness). Two psychologists' accounts reveal a lack of consensus on current practices: *"(there is a) lack of interventions focused on behavior management"* (Psychologist 20) and *"early intervention is sometimes undervalued and focuses only on the behavioral aspects"* (Psychologist 23).

3.2.3. Denial/acceptance and understanding

This subtheme reflects denial of the child's difficulties or diagnosis, often manifested in unadjusted expectations by family and school.

Table 2
Excerpts of subthemes on risk and protective factors for the development of children with ADHD.

Themes	Subthemes	Excerpts
Individual (n = 68; *f* = 240)	**Emotional/Behavioral difficulties** (n = 49; *f* = 76)	"In my view, the greatest impact is emotional. The difficulty in doing the same things as children of the same age can cause frustration, low self-esteem, and a whole range of emotions that can severely condition and influence the child's emotional and social development" (Adult with ADHD 11).
	(Neuro)development and associated difficulties (n = 45; *f* = 80)	"We noticed difficulties in language development and even after [started] speaking, we felt that he made many mistakes and omissions that did not disappear even when corrected, and confused (…) basic mathematical concepts. Motor coordination was also a problem; he was a child who was very prone to accidents (bumping into obstacles, falling, etc.). In addition, he couldn't catch a ball, was slow to ride a bike and climb slides, and still avoids physical activity today" (Parent 17).
	Socialization, integration and relationships (n = 32; *f* = 39)	"Difficulties with social skills and forming bonds with peers" (Psychologist 16)."Little importance (is given), at an early age, to challenges in socialization." (Pediatrician/ Child psychiatrist 8).
	ADHD triad (n = 22; *f* = 36)	"Easily distracted by external stimuli" (Preschool teacher 14)."Concerns about cognitive, mental, and especially emotional development due to characteristics such as lack of attention, distraction, frequent forgetfulness, hyperactivity, impulsivity" (Adult with ADHD 15).
	(Non)existence of comorbidities (n = 7; *f* = 9)	"The absence of comorbidities (very rare)" (Psychologist 1).
Microsystem (n = 84; *f* = 353)	**Parenting/Caregiving styles** (n = 51; *f* = 91)	"Excessive easing or lack of investment in the child's development." (Psychologist 17);"Affection; clear routines and rules; parents able to regulate their children" (Psychologist 2).
	Child interventions and follow-up (n = 38; *f* = 57)	"Appropriate follow-up to help them develop strategies to minimize their difficulties" (Adult with ADHD 11)."Earlier psychotherapeutic interventions aiming at preventing/remedying the symptoms associated with ADHD" (Psychologist 24).
	Denial/Acceptance and understanding (n = 38; *f* = 54)	"… not to mention parents who simply refuse to accept what is evident and have never taken their child to see a psychologist or psychiatrist" (Adult with ADHD 1)."The only barrier is society and adults who deal with children with ADHD daily or children who deviate away from what adults consider acceptable behavior (being quiet and attentive and responding to everything that is asked of them without arguing, getting distracted, or playing around)" (Preschool teacher 1).
	ADHD strategies (n = 37; *f* = 59)	"During group work, he sits right next to me and we have code signs in gestures so that he understands he needs to pay attention. Direct questions and involvement" (Preschool teacher 15).
	Stigmatization and discrimination (n = 27; *f* = 43)	"Mostly, adults can label children from a very early age (lazy, talkative, restless, distracted, clumsy, stupid, etc.)" (Adult with ADHD 13)."Some kind of negative discrimination on the behalf of educators or teachers with less sensitivity in dealing with the disorder" (Adult with ADHD 19)."I am concerned about the stigma associated with the diagnosis" (Parent 10).
	Pharmacological interventions (n = 23; *f* = 25)	"The almost indiscriminate use of medication, often without intervention in the contexts and with the people in those contexts, in order to circumvent certain variables and improve the child's functionality, resorting to pharmacological intervention only as a last resort" (Psychologist 12).
	Leisure, free time and quality time (n = 16; *f* = 24)	"Little time with parents, excessive screen time, little free time, or few moments 'with nothing to do' that forces children to explore, search, and create. Above all, dealing with boredom and reversing it" (Psychologist 3).
Mesosystem (n = 30; *f* = 61)	**School-Family-Health synergy** (n = 17; *f* = 20)	"Family participation and involvement in school; sharing effective strategies to minimize difficulties" (Preschool teacher 7)."Holding parents responsible for their children's behavior" (Parent 3)."Lack of information from parents/family doctors" (Pediatrician/Child psychiatrist 5).
	Parent's socioemotional/ ADHD characteristics (n = 14; *f* = 22)	"Since ADHD is genetic, these children often have to deal with parents who also have ADHD—often undiagnosed and struggling with all the difficulties of parenting, exacerbated by their own symptoms (emotional dysregulation, impulsivity, difficulty focusing, poor time management, etc.)" (Adult with ADHD 14)."Parents often need psychological support or therapy to learn how to live with, or alleviate, their own suffering and the suffering of their child regarding their symptoms" (Psychologist 5).
	Familial stability and parental alignment (n = 11; *f* = 15)	"Having a stable and healthy family environment clearly contributes to and facilitates the development of children with ADHD" (Adult with ADHD 15). "Broken families – parents separated and in conflict with each other" (Preschool teacher 10).

(*continued on next page*)

Table 2 (*continued*)

Themes	Subthemes	Excerpts
	Social support (n = 4; *f* = 4)	"Creation of support and assistance networks, which can be accessed whenever necessary and are easily accessible" (Adult with ADHD 15).
Exosystem (n = 83; *f* = 271)	**Diagnostic difficulties and practices** (n = 49; *f* = 62)	"Difficulty in differentiating between parental difficulty in establishing limits and the child's difficulty in complying with the limits imposed. Difficulty in differentiating, especially around the age of 3–4, between normal variability in switching activities and/or focus and what is pathological, especially in less severe cases. Difficulty in distinguishing between brief eye contact due to ADHD and what occurs in level 1 ASD" (Pediatrician/Child psychiatrist 3)."It is essential to find ecological assessment measures and define the indicators of ADHD in this age group more specifically, without using school-age criteria. Identifying forms of inattentive presentation at these ages is a major challenge" (Psychologist 1).
	Knowledge and training (n = 47; *f* = 86)	"Not much info shared in schools and daycares. There's a stigma linked to misinformation" (Parent 10)."Provide doctors and educators/teachers with tools and knowledge. The lack of knowledge that most of these professionals have is absurd" (Adult with ADHD 21).
	Educational system (n = 37; *f* = 63)	"Large classes that prevent teachers from doing a good job and give children the attention they need" (Parent 5)."My biggest concern is that the lack of support for the education of neurodivergent people continues. Teachers do not have the capacity to teach a so-called normal class, let alone when there are children with ADHD" (Parent 9)."The inability of the education system to be flexible—all children must be the same and meet the same standards, even in preschool, where there are only curriculum guidelines" (Psychologist 12).
	Importance and access to (early) diagnosis (n = 32; *f* = 52)	"Lack of professionals (clinicians) with experience in identifying/diagnosing and intervening with preschool children with ADHD (or disruptive behaviors)" (Psychologist 25)."The fact that they do not have a diagnosis influences the way children are viewed (they are seen as badly behaved and lacking in rules)" (Preschool teacher 1)."The lack of a diagnosis in preschool clearly contributed to problems with self-esteem and anxiety, which carried over into the academic context of elementary school" (Parent 17).
	Family's socioeconomic characteristics (n = 7; *f* = 8)	"Good socio-economic resources of the family; parents' higher literacy" (Pediatrician/Child psychiatrist 5)."Not having money for appointments and medication" (Parent 13)."Low-income families cannot afford to resort to specialists" (Preschool teacher 7).
Macrosystem (n = 17; *f* = 26)	**Socio-cultural organization and inclusion** (n = 17; *f* = 26)	"Society is not prepared for difference" (Parent 9)."I am afraid that the world is moving too fast and my son needs a little more time to develop properly. I am afraid that society will not understand and respect him" (Parent 10)."The fact that parents have to seek diagnoses and help for that child in the private sector" (Parent 1).

Note. n = number of participants that mentioned this theme, *f* = frequency of excerpts coded. Themes are ordered according to their positioning on the Bio-ecological model, and subthemes are presented in descending order according to the number of participants mentioning them.

Understanding of ADHD, the child's individual profile (facilitated through diagnosis), and their behaviors (e.g., inhibition difficulties rather than rudeness) is a protective factor. As a preschool teacher highlighted, *"I am concerned that children (with ADHD) often have more abilities than those that stand out, and we are unable to help them further"* (Preschool teacher 15).

3.2.4. ADHD strategies

ADHD strategies encompass practices that facilitate (or hinder) children's engagement, learning, and development. These include ADHD-specific strategies (e.g., motor activity, keeping children away from distractors, maintaining proximity for redirection, and offering limited but child-chosen materials) and strategies that could benefit all children (e.g., predictability, routines, predefined free-time periods), adaptation to individual characteristics (e.g., weaknesses/strengths, respecting the child's rhythm, exploring creativity), engaging activities (consider interests), stimulating (cognitive) experiences, and learning opportunities (provide alternatives if needed).

Regarding communication with the child, a structured approach with repetition, using both auditory and visual supports, is encouraged. Tasks require structure, with strategies including work plans, phased study alternating motor breaks/activities with concentration activities, task subdivision, short achievable tasks, goal setting with rewards, and preventive/early identification of exhaustion signs.

3.2.5. Stigmatization and discrimination

This subtheme relates to stigma surrounding ADHD and its diagnosis, and concerns over children's early labeling (e.g., lazy, talkative, dumb, rude, restless), including low expectations of progress. An adult reports *"the child is blamed for being disorganized/inattentive/irresponsible due to lack of knowledge"* (Adult with ADHD 5), while a psychologist highlights labeling as a risk in itself: *"I receive many children with early indicators of ADHD, but I am always concerned that early diagnoses may condition the child's development in terms of academic opportunities"* (Psychologist 9). Discrimination, exclusion by peers and adults (e.g., from activities) and disrespect are reported (e.g., peers make fun of the child, bullying).

3.2.6. Pharmacological interventions

Pharmacological interventions, specifically psychostimulants, are viewed with ambivalence across participants. Limitations of early medication (e.g., limited authorized formulations complicate dosage adjustments; children's difficulty reporting side effects) and concerns about over-medication (e.g., being used as a first-line intervention) are discussed. Others emphasize their importance and talk about "de-

villainization". A mother emphasizes medication's importance while also expressing her own wish for alternative solutions: *"it seems to be a destructive diagnosis, where there are not many solutions other than medication (I know there are exceptions, and my son, for example, simply cannot function without medication), but we are also not given strategies to help either the children or their parents"* (Parent 18).

3.2.7. Leisure, free time and quality time

This subtheme emphasizes family quality time, time spent playing, time spent in nature, doing sports and cultural activities over excessive screen time and parental absence (due to work and adults' limited time), with boredom seen as an opportunity for exploration and invention.

As a preschool teacher observes, these changes could impact diagnostic practices: *"children are increasingly distracted. The constant presence of technologies at children's disposal has made it more difficult for them to wait, with 'immediacy' becoming the norm. Extra caution is needed to avoid banalizing what ADHD really is"* (Preschool teacher 13).

3.3. Mesosystem

Four subthemes were identified: (i) School-family-health synergy; (ii) Parents' socioemotional/ADHD characteristics; (iii) Familial stability and parental alignment; and (iv) Social support. Family stability and parental alignment were not mentioned by parents, while social support was not mentioned by preschool teachers; the remaining subthemes emerged in all groups.

3.3.1. School-family-health synergy

School-family-health synergy refers to the relationships and interactions among microsystems (family, preschool, therapists, and medical doctors). Emphasis is placed on multidisciplinary teams and collaboration (e.g., parent-school communication, skills training across contexts, receptiveness to and sharing of intervention strategies by parents/preschool teachers) over discreditation (e.g., blaming/stigmatizing parents, dismissing preschool teachers' observations) and disconnect (e.g., strictly demarcated professional domains, lack of information sharing between parents and medical doctors).

3.3.2. Parents' socioemotional/ADHD characteristics

This subtheme captures parental suffering, including emotional overwhelm, feeling unequipped to deal with the diagnosis, and parents' own ADHD; and highlights the need for psychological/family therapy and support. As exemplified by an adult: *"undiagnosed parents that are traumatized with a lifetime of failures and criticism (which they now see and repeat in their children)"* (Adult with ADHD 14).

3.3.3. Familial stability and parental alignment

This subtheme denotes family stability and routine consistency (which can be impacted by ADHD) and a structured environment, ranging from "families at war" to aligned parental practices and task division. As an adult explains, *"if applicable, both parents/caregivers should be in agreement and prioritize the child's well-being as much as possible. The family environment needs to be a safe and stable place where the child can trust, turn to, and feel protected and secure. To achieve this, it is important that neither parent/caregiver is overwhelmed with the child's education or household chores."* (Adult with ADHD 15).

3.3.4. Social support

Social support represents the families' social context: support networks and extended family. A Pediatrician/Child psychiatrist mentions "the family's social context" (Pediatrician/Child psychiatrist 5).

3.4. Exosystem

Five subthemes were extracted: (i) Diagnostic difficulties and practices; (ii) Knowledge and training; (iii) Educational system; (iv) Importance and access to (early) diagnosis; and (v) Family's socioeconomic characteristics. All subthemes emerged in all groups.

3.4.1. Diagnostic difficulties and practices

A clear concern about overdiagnosis and the importance of a "correct" diagnosis (including a complete evaluation of the child's profile) stand out. The difficulties encompass (1) subjective or inadequate diagnostic criteria for the early years; (2) diagnosis in girls and over-reliance on behavioral/academic difficulties for diagnosis; (3) differential diagnosis and/or comorbidities (e.g., mild ASD vs./and ADHD; sensory sensitivities); (4) distinguishing typical from atypical behaviors and context-driven from neurodevelopmental differences; (5) lack of diagnostic tools/scales, over-reliance on questionnaires/parents' reports, children's limited language and self-knowledge. As a pediatrician/child psychiatrist shares, "*ADHD is very prevalent, and symptoms in preschool children are often overlooked. As a pathology, it is a "great pretender" with manifestations that can evoke other diagnoses (which may, however, coexist in comorbidity)*" (Pediatrician/Child psychiatrist 6); and a psychologist concludes: *"from ages 3 to 6, children are too young for such definitive diagnoses"* (Psychologist 6).

3.4.2. Knowledge and training

This subtheme encompasses training on ADHD and how to handle affected children: parental interventions, psychoeducation, awareness-raising to clarify diagnosis and dispel myths (through direct training and communication channels). The target population is broad: parents, preschool teachers, school staff, and medical doctors.

A mother mentions *"strategies given to the family, they are non-existent"* (Parent 18), while another says there is a *"lack of knowledge on the part of the teaching staff (they discredit the diagnosis)"* (Parent 19). An adult writes more broadly, saying: *"the majority still does not believe in ADHD and says that we just need to organize ourselves better and that our behaviors are due to lack of willpower and laziness"* (Adult with ADHD 21).

3.4.3. Educational system

The Educational System subtheme concerns its limitations: (i) poor or inadequate school facilities and equipment (e.g., insufficient play space and quiet spaces in classrooms, excess of visual stimuli on walls/ceilings); (ii) large class sizes (averaging 25), hindering individualized support; (iii) lack of trained professionals (e.g., regular multidisciplinary school-based intervention even without diagnosis, psychological support for teachers); (iv) adaptation of curricula according to the children's motivations, with more practical, vocational, artistic, physical, outdoor and exploratory activities (vs. educational inflexibility, rigidly structured activities and too much time spent in classrooms). A preschool teacher reports feeling overwhelmed: *"lack of psychologists for these age groups in schools… for the past 10 years, I have also had two autistic students per class on average, and no support from assistants or psychologists. Special education is only 45 min per week in the classroom. Very poor school facilities"* (Preschool teacher 15).

3.4.4. Importance and access to (early) diagnosis

Early diagnosis (including comorbidities) can have beneficial effects on children's development, enabling early interventions, parental coaching, and delayed elementary school entry when needed, preventing future academic and emotional difficulties (e.g., self-esteem). Access to early diagnosis is described as difficult due to a lack of facilities and professionals, long waiting times for assessment consultations, and medical doctors not valuing early symptoms. Early referrals by schools and parents are encouraged. An adult and mother recounts *"it was diagnosed quite late, and I realized that my daughter was only diagnosed because I knew the characteristics and was able to identify them"*, they continue, *"my daughter's pediatrician literally laughed in our faces when we mentioned ADHD, saying she was just immature. We were only referred to a specialist because we insisted"* (Adult with ADHD 21).

3.4.5. Family's socioeconomic characteristics

Family's socioeconomic characteristics captures the role of the families' literacy and financial resources in accessing diagnosis, interventions (including for comorbidities) and medication, which can be prohibitively expensive. As a mother highlights: "(they) *are very expensive and require a huge financial effort on the part of our family*" (Parent 10).

3.5. Macrosystem

The Macrosystem had one subtheme: (i) Socio-cultural organization and inclusion, which was mentioned by all groups.

3.5.1. Socio-cultural organization and inclusion

This subtheme captures the weight of public policies and the societal culture in supporting children with ADHD. Participants advocate increased government support through shorter parental working hours without any corresponding reductions in their salaries, increased co-payments for medication and consultations, and increased support for the public health and school systems. Participants note that society is not ready to embrace social inclusion or understand neurodivergence. *"Schools and the society are not prepared for these children who have so much to offer"* (Preschool teacher 12).

3.6. Differences between stakeholder groups

Considering the overall sample, the subthemes cited by most participants were Parenting/Caregiving styles; in second place Diagnostic difficulties and practices and Emotional/Behavioral difficulties, and in third place, Knowledge and training. By excerpt frequency, Parenting/Caregiving styles led again, followed by Knowledge and training, then (Neuro)development and associated difficulties.

All pediatricians/child psychiatrists mentioned Diagnostic difficulties and practices (n = 9; $f = 13$), followed by (Neuro)development and associated difficulties (n = 8; $f = 13$) and Emotional/Behavioral difficulties (n = 7; $f = 10$).

Similarly, most psychologists mentioned Diagnostic difficulties and practices (n = 18; $f = 21$), followed by (Neuro)development and associated difficulties (n = 15; $f = 23$) and Emotional/Behavioral difficulties (n = 15; $f = 19$), and in third place, Parenting/Caregiving styles (n = 14; $f = 27$).

For parents, the subtheme mentioned by most was Knowledge and training (n = 14; $f = 27$), followed by Emotional/Behavioral difficulties (n = 11; $f = 15$) and Denial/Acceptance and understanding (n = 10; $f = 13$).

Most preschool teachers mentioned Parenting/Caregiving styles (n = 11; $f = 17$), followed by ADHD strategies (n = 10; $f = 16$), the Educational system (n = 8; $f = 16$) and Diagnostic difficulties and practices (n = 8; $f = 10$).

Among adults with ADHD, the subtheme most mentioned was Parenting/Caregiving styles (n = 14; $f = 29$), followed by Emotional/Behavioral difficulties (n = 12; $f = 23$) and Denial/Acceptance and understanding (n = 12; $f = 18$), then Diagnostic difficulties and practices (n = 11; $f = 15$).

4. Discussion

The primary objective was to identify protective and risk factors that contribute to healthy development in children with ADHD, in line with recommendations from key stakeholders and the bioecological model. This study provides evidence for its Process-Person-Context-Time model (e.g., Bronfenbrenner & Morris, 2006; Tudge et al., 2009). Proximal processes are reflected in our study's Microsystem, shaped by the context (e.g., Meso, Macro and Exosystems) and the Person (individual characteristics); while temporal characteristics are present throughout the findings. Consistently, the Microsystem and the Exosystem were cited by almost all participants and were the most cited, reflecting the importance of adult-child relationships and indirect external factors that influence the child's environment (e.g., the medical system; stakeholders' knowledge about ADHD), respectively.

4.1. The individual level

The associated difficulties and comorbidities were mentioned most (e.g., emotional, behavioral, academic, ASD) at this level. The ADHD symptom triad represents only a small fraction of mentions. This result illustrates the high prevalence and impact of such difficulties and comorbidities in children with ADHD (e.g., Addanki et al., 2023). Congruently, studies found that preschool behavior problems (i.e., ODD, aggressive behavior, and conduct problems), predicts subsequent ADHD symptom trajectories, including H/I across ages 7–18 (Lahey et al., 2016), IN in 8- to 9-year-olds (Sasser et al., 2015), and diagnostic stability in elementary school (Law et al., 2014). Furthermore, preschoolers with ADHD are at longitudinal risk of social problems (bullying and being a bully-victim) in elementary school, with risk amplified by an ODD comorbidity (O'Neill et al., 2017); and peer and conduct problems distinguished severe/persistent ADHD trajectories from unaffected trajectories (Murray et al., 2022). Guidelines recommend a complete assessment of the child's profile and parental training in behavior management, even for children with an unclear diagnosis (Wolraich et al., 2019). However, findings indicate parents' frustration with the limits of those trainings (Corcoran et al., 2017). This study strengthens calls for addressing all difficulties and comorbidities. Importantly, some comorbidities (e.g., motor coordination problems) tend to be left untreated in the school years, especially in children exhibiting anxiety or conduct disorder – these children probably receive behavioral interventions instead (Fliers et al., 2010). Our results indicate that this might be true in the preschool years. This is problematic because interventions targeting associated difficulties could alleviate a wide range of individual risk factors, including task persistence, potentially synergistically and across levels of development. For example, if a child struggles with fine motor skills, he/she probably will avoid tasks requiring it. Emotional/Behavioral problems could impact Socialization, integration, and relationships (e.g., the use of positive emotion regulation strategies was associated with peer acceptance in preschool, Liang et al., 2025), and children's characteristics impact parenting styles (Sellers et al., 2021; Shelleby & Ogg, 2020). Furthermore, research found that internalizing symptoms predicted diagnostic stability (Law et al., 2014) and distinguished persistent from unaffected trajectories (Murray et al., 2022).

4.2. The microsystem

Parenting/Caregiving styles was the subtheme most mentioned by participants. This might mean improving how parents and preschool teachers relate to children, potentially improving children's ADHD (e.g., Claussen et al., 2024; Pianta et al., 2002) and related difficulties (Burchinal et al., 2008). Previous research showed that sustained high classroom quality enhanced inhibition (Gavrilova et al., 2024), pre-academic, language and social skills (e.g., Burchinal et al., 2008) and predicted behavior problem scores (Broekhuizen et al., 2016). Fostering those relationships could be achieved through parental/preschool teacher training (Knowledge and training), cascading into Denial/Acceptance, understanding and reduced Stigmatization.

Parenting/Caregiving styles may also be influenced by Mesosystem subthemes (Family stability/Parental alignment; Parents' socioemotional/ADHD characteristics), warranting intervention: therapeutic (parental/family therapy) or supportive (through the state's impact on Family's socioeconomic organization, Social support, and Socio-cultural inclusion).

Parental involvement was referred to in Parenting/Caregiving styles; however, its association with ADHD symptomatology was absent in the

preschool years (Shelleby & Ogg, 2020) except through engagement in parental behavior management training (Wolraich et al., 2019); in elementary school, it can have detrimental effects on academic achievement (Condo et al., 2022) and might increase genetic influences on ADHD (Nikolas et al., 2015). Our results align with the literature, warranting caution regarding parental involvement and calling for research into the quality and moderating factors (e.g., parenting styles, parents' socioemotional/ADHD characteristics).

Therapeutical Interventions and professional follow-ups are protective factors according to the present results, in line with recommendations. Findings underscore the need for accessible early interventions that go beyond parental training. When interventions are inaccessible and the child's functioning is moderately or severely impacted, medication can be considered in 4- to 5-year-olds (Wolraich et al., 2019). This is probably the case for many families in Portugal since the private sector accounts for an important part of ADHD care (Filipe, 2020) and pediatricians revealed structural gaps in psychopedagogical and long-term therapeutic support for ADHD (Borges, 2006, In Filipe, 2020). Our results indicate that care remains difficult to access due to financial strain and lack of professionals working in the field. Ambivalent views on medication highlighted in this study probably add to the reported stigma. Medication can be viewed as a balance between side effects and the child's protection from repeated failure (Wolraich et al., 2019), potentially increasing their capacity to develop skills.

Denial/Acceptance and Understanding of the child could be facilitated by diagnosis, which gives caregivers an understanding of their child's profile (including strengths) and an opportunity to form realistic, attuned expectations. This should be a key component when clinicians deliver assessment results and should be further addressed in Parental/Family therapy and psychoeducation (Knowledge and training) if needed.

Pedagogical and ADHD strategies function as protective factors and imply some degree of Knowledge and Understanding of the child's characteristics. Some of those strategies were identified (e.g., rules and routines [Miklas et al., 2021]; sitting near the preschool teacher and receiving direct support [Adiningtyas & Wahyuni, 2024]) and could be applied uniformly across preschools and families, potentially benefiting typically developing children (Christiansen et al., 2015). In fact, a calmer atmosphere should be targeted for the benefit of all, because studies point to disruptions by peers (e.g., children crying, talking) as hindering other preschoolers' attention (Godwin et al., 2022; Wiebelhaus & Fryer Hanson, 2016).

Stigmatization and discrimination are risk factors. It is commonly agreed that having those negative attitudes is detrimental; however, awareness-raising about some of the most insidious behaviors could help stakeholders understand their impact (e.g., labeling the child as lazy). Additionally, the presence of Stigmatization and discrimination could hinder the deployment of resources and support needed.

The types of activities children engage in can be a risk factor for their development, especially screen use (congruent with the literature, e.g., Murray et al., 2025). Free-time activities can be protective, especially sports, with promising evidence in older children regarding ADHD and socio-emotional outcomes (Den Heijer et al., 2016), and some evidence for the preschool period (e.g., Burkart et al., 2018). These findings, combined with the literature, indicate that parents are generally aware of screens and sports (Golos et al., 2025), but likely lack the strategies and guidance to implement proven protective factors, reiterating the need for Knowledge and training. Our study suggested that time in nature was protective, but more research is needed (Tamblyn et al., 2023).

4.3. The Mesosystem

School-Health-Family synergy is congruent with recommendations (e.g., Wolraich et al., 2019) and stakeholders' views (Moldavsky & Sayal, 2013). Parents' socioemotional/ADHD characteristics are corroborated by the literature (e.g., Lin et al., 2025). For Family stability and Social support, protective effects on ADHD severity, school engagement and peer relationships were found in elementary school (e.g., Duh-Leong et al., 2020). In the early years, one study linked non-parental caregiving (e.g., by grandparents) to ADHD symptoms, but causation remains unestablished (Tong & Kawachi, 2021), and more research is needed.

4.4. The exosystem

The second-most-mentioned code pertains to the challenges and concerns about ADHD Diagnosis in the preschool years. It is the code most cited by clinicians and ranks among the top 3 codes mentioned by adults with ADHD and preschool teachers. This risk factor could be addressed by the scientific community (e.g., through the creation of new assessment tools and improvement of guidelines) and training of clinicians (e.g., there is a misconception that high levels of hyperactivity are normative in typically developing preschoolers, Wolraich et al., 2019). The subtheme Importance and access to (early) diagnosis reiterates this need.

Knowledge and training appear as a cornerstone of the bioecological model applied to preschool ADHD, penetrating directly or indirectly across levels. It directly cascades into the Microsystem: by shaping the way close adults relate to children (Parenting/caregiving styles), by impacting caregivers' tools (ADHD strategies), by increasing Acceptance and understanding and decreasing Stigmatization and discrimination, and by improving the quality and scope of therapeutic Interventions with the child. The effects of Knowledge and training extend to all subthemes of the Exosystem and Mesosystem: (i) by driving and sharing scientific evidence, facilitating Diagnostic practices, Early diagnosis, and Interventions, (ii) through fostering School-Family-Health synergy, (iii) by informing Educational system's practices and (iv) through Socio-cultural organization and inclusion, reflecting the state's role in supporting families (Family's socioeconomic characteristics, Russell et al., 2016), the medical system (more professionals, better financial access to child/parent/family care – influencing Familial stability and parental alignment), and the educational system.

In the Educational system, the results call for alternative teaching practices (e.g., play focused). The literature shows that the Play-Based Full Day Kindergarten, implemented in Ontario, Canada, was judged by educators as generally beneficial for preschoolers with ADHD, and offered advantages (e.g., allows movement and exploration, provides children with choices), but the lack of structure, busyness and distracting stimuli can be challenging for preschoolers with ADHD (Miklas et al., 2021). These challenges align with our study's findings and the literature on the need for calming spaces (recommended by preschool teachers; Miklas et al., 2021) and a reduction in visual noise/wall coverage (Godwin et al., 2022). A more structured approach to curriculum changes was used in another study (i.e., embedded learning-based movement), including motor skills and cooperative play, which improved visual-motor coordination and self-regulation, both of which were correlated (Duman & Ozkur, 2019). However, all strategies must be thoroughly studied to ensure their adequacy. Elementary classroom tools such as fidget toys and elastic bands show mixed or context-dependent results and may be detrimental in some cases (Driesen et al., 2023; Miklas et al., 2021; Seifert & Metz, 2017). Environmental interventions are promising but understudied with mixed evidence (Tamblyn et al., 2023), despite being recommended by stakeholders.

4.5. The macrosystem

The subtheme Socio-cultural organization and inclusion represents societal views and the state's support regarding ADHD. Stakeholders call the state to increase funding to (i) the medical system, increasing Access to early diagnosis and Interventions, (ii) the Educational system, promoting effective inclusive education and resource allocation, and (iii) families with affected children, fostering Family's socioeconomic and

Socioemotional characteristics and consequently families' availability, both emotional (through stress reduction) and physical (through time with the child). Regarding the state's role in supporting the medical system and affected families, it is congruent with an OECD report (2023): Portugal is one of countries with the highest out-of-pocket health spending as a share of household consumption, exceeding 5%, with outpatient care accounting for 50% of those out-of-pocket expenses – the highest share in the OECD (OECD, 2023).

On societal views on inclusion, literature is congruent. Montes and Montes (2021) reported reduced participation of children with ADHD across some community activities (e.g., school/sport events, library visits, plays/concerts), compared to typically developing children. The authors hypothesized that parents of children with ADHD have fewer psychological and time resources, or that some out-of-home settings lack the accommodations to foster family participation and reduce parental stress.

4.6. Differences between stakeholder groups

Group analysis highlighted the needs of stakeholders. Both clinician groups primarily cited Diagnostic difficulties and practices as a risk factor, followed by children's Emotional/Behavioral and (Neuro) Developmental characteristics. These findings highlight the urgent need for research on diagnostic criteria and assessment instruments, and clinician Training (e.g., differential diagnosis). Psychologists also mentioned Parenting/Caregiving styles, reflecting their understanding of parenting styles' impact and their professional practice.

Parents focus on their children's Emotional/Behavioral difficulties, suggesting these have the greatest impact across caregivers and children and therefore might represent the most widespread and urgent individual-level target. Consistently, the most frequently cited issue was Knowledge and training (parental/teacher training and psychoeducation), suggesting that caregivers and others likely lack such training. Thirdly, Denial/acceptance, which is absent when there is no knowledge or understanding of the child's characteristics (facilitated through diagnosis), was frequently cited.

Both preschool teachers and adults with ADHD mention, first and foremost, Parenting/Caregiving styles, highlighting the importance of close relationships. Preschool teachers next cited ADHD strategies, reflecting their efficacy and relevance to professional practice, followed by Diagnostic difficulties; they reported struggling to identify children who need increased support, and some worry about overdiagnosis. To circumvent this, preschool teachers would benefit from Knowledge about diagnostic criteria and a deconstruction of myths (Halperin & Marks, 2019).

Adults with ADHD, after Parenting/Caregiving styles, mention Emotional/Behavioral difficulties, representing the high impact of these difficulties on their lives and the need for further interventions focused on the emotional components of ADHD rather than only behavioral problems, congruent with parents' views. With the same number of mentions, Denial/Acceptance and understanding appears, showing the importance of accepting and understanding the children's profile, despite highly cited Diagnostic difficulties that impede this process.

The (Non)Existence of comorbidities was not mentioned by pediatricians/child psychiatrists and preschool teachers, likely because they specified comorbidities, allowing for coding (e.g., [Neuro]Development). Preschool teachers did not mention Social support, consistent with its low frequency. Parents did not mention Family stability and parental alignment. This could reflect its low occurrence in our sample or social desirability bias, as parents may be reluctant to acknowledge relationship difficulties or their impact.

4.7. Limitations of the present study

Parents and adults with ADHD might not be representative of the population, given that the vast majority were female. Greater maternal engagement in such research is common (Fabiano, 2007). In the adults' group, the sex imbalance is concerning, as most participants were female despite higher ADHD prevalence in males. This could reflect an increased incidence of diagnoses in adult women, recently surpassing men (Grøntved et al., 2025). People recently diagnosed might engage more in the social media communities used for recruitment. The predominantly female composition of these groups, in addition to the professional groups (consistent with their predominance in professional settings) contributed to a sex imbalance in the total sample. This may have influenced the findings, as some studies suggest that women tend to show greater self-reported emotional empathy than men (Rueckert et al., 2011). Consequently, paternal and male adults with ADHD views are warranted investigation.

Furthermore, parents and adults could present with social desirability bias, and adults with ADHD could present with memory biases. Adults and parents who responded were especially engaged in communities and may not be representative of those groups. The pediatricians/child psychiatrists' group was notably smaller, with only nine participants. This later limitation might be due to pediatricians'/child psychiatrists' limited availability due to high workloads, and overall lack of clinicians, as highlighted by the findings.

Ethnicity was not collected due to ethical reasons, even though it can have implications on ADHD diagnosis and treatment (Slobodin & Masalha, 2020). Ethnicity specifically did not appear in the results, possibly due to participants not being concerned by this topic, i.e., the vast majority, or all, were Portuguese nationals; at least, they were Portuguese speaking due to the questionnaire's language. Further research is needed on this topic in the Portuguese context, which has a considerable migrant population (Instituto Nacional de Estatística, 2024).

Some subthemes could pertain to multiple systems, reflecting the dynamic and reciprocal interactions of the Bioecological model (Tudge et al., 2009). Written answers did not allow for clarification of meaning. Both limitations were addressed by a thorough discussion of all segments.

As this study focused on protective and risk factors rather than an in-depth analysis of the Bioecological model, some aspects of the Process-Person-Context-Time model, especially Time, were not systematically addressed despite appearing in the findings. Micro-time's presence was not directly coded, although evidence of it is present (e.g., the diagnostic event altering children's perception and treatment). Meso-time (consistency of interactions and activities) is present in some subthemes (e.g., interventions), and macro-time (the Chronosystem) was excluded to avoid redundancy with subthemes (e.g., screen usage in the Microsystem).

Finally, these findings and recommendations represent stakeholders' perceptions and not evidence for their effectiveness. Implementation should always consider literature dedicated to assessing the effectiveness of such interventions.

4.8. Conclusion

This study systematizes protective and risk factors for preschool-aged children with ADHD, using the Bioecological model as a framework. As Bronfenbrenner and Morris (2006) have stated, proximal contexts are "engines of development", shaped by individuals (e.g., children and their caregivers) and environmental factors. This study supports interventions addressing children's varied difficulties (e.g., emotional, language, motor, etc.) alongside caregiver factors (e.g., fostering appropriate parenting styles and parent's and couples' emotional wellbeing, management of their ADHD [if applicable], family/school/healthcare collaboration) and broader contextual factors (e.g., improvements of the educational and the medical systems). More research is needed regarding the efficacy of such interventions. Importantly, Knowledge and training appeared as a cornerstone, influencing subthemes across all systems and receiving far more mentions than

direct child interventions. It should be widespread, for example through sensitization/prevention campaigns raising ADHD awareness, and training of professionals and parents, to achieve maximum cascading benefits, and universal (Oberklaid et al., 2013), possibly reducing stigma (Christiansen et al., 2015). Without sufficient knowledge, the state is unlikely to make the necessary changes that would increase other protective factors. This is especially relevant considering delays and difficulties in early diagnosis. Knowledge and training could protect preschoolers with ADHD who are only diagnosed when entering elementary school. The refinement of diagnostic criteria for ADHD in the preschool years and the development of new assessment tools are urgent, relating to a need for increased knowledge. Clinicians report marked difficulties with differential diagnosis, for example, in distinguishing between symptoms arising from the environment and those with a neurobiological underpinning.

In Sweden, the implementation of the PLUSS model (Gustafsson et al., 2022), based on Bronfenbrenner's bioecological model, showed promising preliminary results by encompassing early detection within a multi-professional referral pathway (including SDQ scores [Goodman, 2001]) and group training for parents (focusing on understanding the children's difficulties, helpful tools and harmonious interactions) and preschool teachers (regarding cooperation with parents, who are also invited, and neurodevelopmental difficulties). Implementing a similar model in Portugal could support early identification and interventions.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Software used in this study included Qualtrics (data collection), MAXQDA Version Plus 2024 (qualitative analysis), and IBM SPSS Statistics Version 29 (descriptive statistics).

Ethical Statement: This study received approval prior to data collection from the Ethics Committee of Iscte-University Institute of Lisbon (Ref. 136/2023) and the Portuguese Ministry of Education (Ref. 1429700001). Participants filled out an online informed consent form via *Qualtrics* and were debriefed, prior to and after data collection, respectively.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.childyouth.2026.109330.

Data availability

The data that has been used is confidential.

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