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The early signs of giftedness: the development of a preschool screening checklist

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Compared to other age groups, giftedness practices (i.e., screening, identification, or education) in the early ages are less widespread and more heterogeneous; but, for accurate screening of giftedness, its traits in the early ages must be refined. Existing tools mostly integrate teacher observations and parental input in the process. Using a two-stage sequential mixed-methods design, we developed and tested a 23-item giftedness adjectives checklist. Among the parents of formally identified gifted children, the most frequently reported early adjectives were Retentive (98%) and Curious (97%) and the least reported was Precocious Reader (34%). Comparative findings showed that gifted students scored significantly higher than nongifted students on all adjectives except Energetic and Sensitive. The highest effect sizes for the differences were for Quick Learner, Complex, and Perfectionist, respectively. Findings are discussed in relation to literature and suggestions are provided.

KEYWORDS

child development, giftedness, high intelligence, preschool, talent

Introduction

Even though scholars remark the difficulties associated with it (Duncan and Magnuson, 2011), giftedness in the early ages is a reviving interest among researchers (e.g., Bijl et al., 2025; Bildiren et al., 2022; Conejeros-Solar et al., 2024; Eroğlu-Garip et al., 2022; Kuznetsova et al., 2024; Renati et al., 2023). As Tannenbaum (1992) remarked, “giftedness in young children is a treasure [still] waiting to be fully uncovered” (p. 129); therefore, it should be focused on (Gagné, 2004; Huang, 2008; Sternberg and Davidson, 2005).

Compared to other developmental groups, giftedness practices in the early ages (i.e., screening, identification, or education) are less widespread and more heterogeneous (Hodges, 2025; see Table 1). Whereas many states in the US do not offer widespread screening or identification services for gifted preschoolers, a few states do. For example, the state of Colorado uses a multi-source evidence-based assessment system including cognitive and academic tests (e.g., the Desired Results Developmental Profile for Kindergarten-DRDP-K and the Riverside Early Assessment of Learning-LEAL), teacher observations, portfolios, social-emotional maturity indicators, and parental input (Colorado Department of Education, 2023). In the state of Washington, following family-teacher meetings, social-emotional screenings, and classroom teacher observations, Early Entrance to Kindergarten (EEK) is implemented for children under 5 years old (Seattle Public Schools, 2025). In Europe, Scotland uses multiple data sources such as teacher observations, learning records, portfolios, educational assessments, and data from health and social service units for identification (Scottish

TABLE 1 Early identification in the preschool terms in the United States.

Early identification	General tendencies and individual state examples	Additional information
Available	• A few states allow or mandate identification in the preschool term. • Colorado has a program for gifted preschoolers. • Florida mandates early identification in several counties or school districts. • Connecticut, Hawaii, Iowa, New Jersey, North Carolina, and Pennsylvania offer start up education but identification is often utilized as an entry to K-12 programs (preschool services are locally decided).	The states in this category usually allow acceleration (early enrollment to elementary school) for children under 6 years old or permit assessments and evaluations for locally offered programs.
Delayed until early grades in elementary school	• Many states such as Alabama (2nd grade) Mississippi (2nd grade), and Arkansas (3rd grade) delay their widespread identification processes. They do not offer statewide formal identification at the preschool term.	In the states in this category, private testing and private schools may be available in the preschool term for gifted youngsters.
Local/regional decisions	• States such as Indiana, Massachusetts, Missouri, New Hampshire, North Dakota, and Rhode Island hand over early identification decisions to local independent school districts.	No statewide standard identification is available.

Government Supporting Children’s Learning: Code of Practice, 2023). New South Wales (NSW) in Australia bases her identification on evidence obtained from teacher observations and anecdotal records (NSW Department of Education, 2025). In Queensland, multiple data sources (i.e., portfolios and parent observations) are used (Queensland Department of Education, 2024); whereas psychometric assessments (i.e., Wechsler Preschool and Primary Scale of Intelligence, Australian and New Zealand version) and reports from psychologists are taken into consideration in Victoria (Victoria Department of Education, 2025).

In summary, contemporary screening and identification practices are not widespread at the preschool level; nonetheless, all existing systems integrate teacher observations and parental input in the process. Our review showed the need for evidence-based, practical tools to guide teachers and parents in the screening process; therefore, we attempted to develop a screening checklist and provided initial properties.

Traits of giftedness in the early ages

For accurate screening of giftedness, its traits in the early ages must be refined (Huang, 2008). Literature provides a knowledge base on common indicators of giftedness among preschoolers in terms of cognitive, language, motor, and social-emotional domains. Cognitively, gifted preschoolers are usually described as displaying intense curiosity and eagerness to explore their environment (e.g., Adedoyin and Chisiyanuma, 2018; Eroğlu-Garip et al., 2022 Renati et al., 2023);. These children also have the potential to sustain attention for longer periods and perform well on complex tasks compared to their same-age peers (Eroğlu-Garip et al., 2022; Renati et al., 2023). Researchers emphasize that their attention is drawn to generate original

ideas and creative imagination with strong memory (e.g., Mendaglio, 2016; Moon, 2016 Renati et al., 2023);. About half of gifted preschoolers exhibit reading skills at early ages and have the capacity to process information quickly and efficiently (e.g., Bildiren, 2017; Mendaglio 2016, ; Renati et al., 2023).

Gifted preschoolers usually have richer vocabulary and perform better in receptive and expressive language (e.g., Bildiren, 2017; Renati et al., 2023). Similarly, some may perform better than their nongifted peers in motor development (Bildiren, 2017; Eroğlu-Garip et al., 2022). Gifted preschoolers also stand out with certain social-emotional traits such as being more emotional or sensitive, responsive, and empathetic (e.g., Mendaglio, 2016; Özbay and Palancı, 2011; Renati et al., 2023). They often exhibit perfectionism, a developed sense of humor, and a strong sense of justice (Özbay and Palancı, 2011; Renati et al., 2023).

Researchers focusing on giftedness and the preschool period acknowledge that there may be difficulties in the identification process at early ages. Identification of giftedness at early ages usually yields inconsistent results (Duncan and Magnuson, 2011), developmental characteristics vary rapidly, and assessment tools are limited (Papadopoulos, 2021). Hodge and Kemp (2006) state that such complications prevent potentially gifted children from accessing effective and efficient education; however, identifying gifted children in the preschool period can make a difference in their cognitive, emotional, and social development (Baum et al., 2014).Therefore, researchers also point out that such difficulties can be overcome by comprehensively evaluating information obtained through multiple sources (e.g., Conejeros-Solar et al., 2024; Mossberg et al., 2024; Peters et al., 2019).

The process of gifted identification should be enriched by teacher/family input and observational reports (Mossberg et al., 2024). Such an approach also calls for clarifying the traits of

giftedness in the preschool period (Bijl et al., 2025). A systematic review with 77,705 children indicates that heterogeneity in identification criteria or reporting formats requires standardization (Kuznetsova et al., 2024). Therefore, the main objective of this study is to discover and examine the traits of gifted preschool children. In this regard, we sought answers to the following research questions:

1. What were the early traits of giftedness among children who are eventually identified as gifted in later ages?
2. Are there any significant differences among the early traits of giftedness between eventually identified gifted and nongifted children?

Method

Research design

We used a two-stage sequential mixed-methods design to expand on qualitative findings using quantitative analyses. Mixed-methods research combines quantitative and qualitative methods and allows the analysis of data from both to achieve more comprehensive outcomes. We collected data and systematically analyzed parental input on the indicators of giftedness via content analysis. We initially coded the raw data to generate a theme and four sub-themes from which we developed the indicators. We categorically examined and statistically tested the parental data. Figure 1 presents our two-stage data collection process.

Participants

We used multiple (i.e., criterion, snowball, and convenience) sampling procedures to identify participants. For the qualitative

phase, we found participants on the inclusion criterion of being a parent of at least one child who had been formally identified as gifted (i.e., criterion sampling). Through parents who met this criterion, we expanded our efforts to reach out to more parents who also met the criteria (i.e., snowball sampling).

To include parents who met the inclusion criteria, we informed several primary and middle school administrators and teachers about the study and asked them to refer any parents who would satisfy the criteria. Those parents who volunteered were included in the study after being informed and provided with consent (i.e., convenience sampling). The same procedures were followed to identify the parents of gifted and nongifted children for the quantitative phase.

In total, 6 parents joined the qualitative phase and 155 the quantitative phase. Participant details for the qualitative and quantitative phases are given in Table 2. The age range of participants in both phases is similar: 34–47 years in the qualitative phase, 30–50 years in the quantitative phase, respectively. Additionally, the proportion of mothers was higher in both phases.

Instruments

A semi-structured interview form

First, we conducted semi-structured interviews with the parents of gifted children to retrospectively talk about them. Consistent with literature, we asked parents to recall their observations (e.g., Eroğlu-Garip et al., 2022; Renati et al., 2023; Şenol, 2023). To minimize potential recall bias, we prepared a semi-structured interview form with four open-ended questions. The form was refined based on feedback received from two experts, one in gifted education and the other in educational measurement. The semi-structured interview questions were:

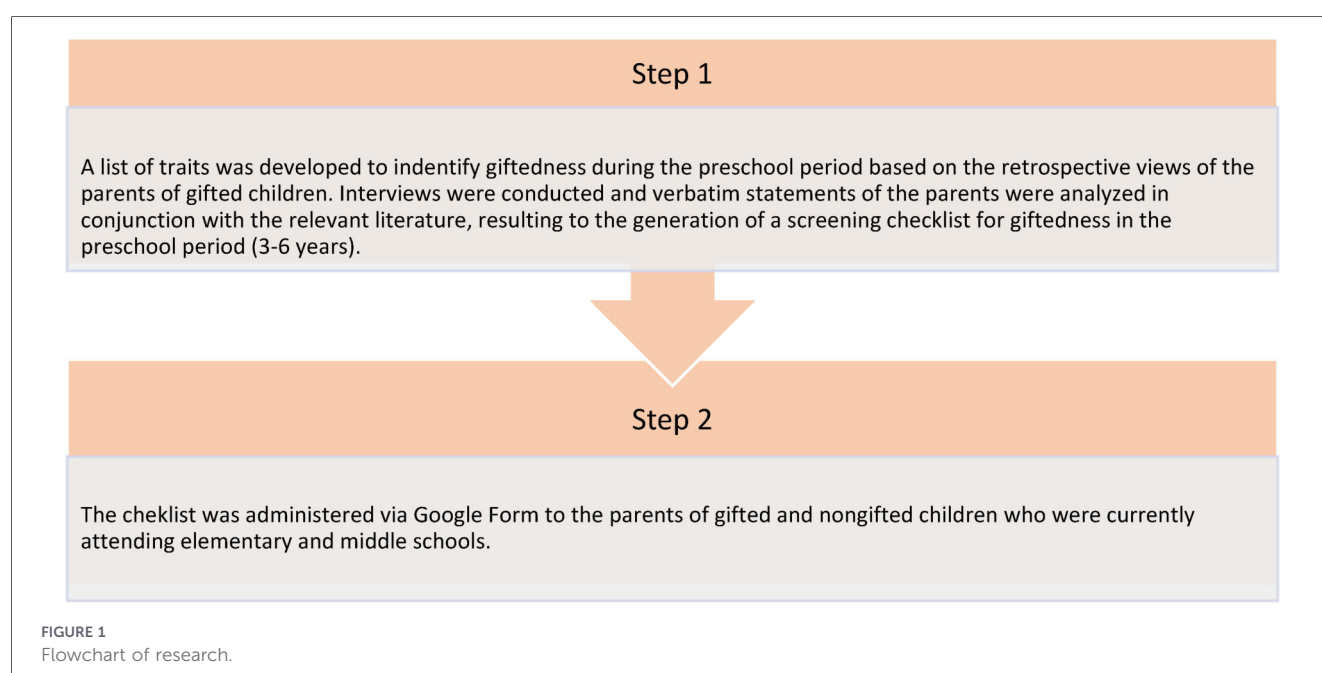


TABLE 2 Participant demographics on the qualitative and quantitative phases.

Parent	Relation	Educational level	Age	Number of gifted children	Gender of gifted children	Coding
M1	Father	Associate degree	47	1	Boy	M1/F/B/AD
M2	Father	Bachelor	47	1	Boy	M2/F/B/BS
M3	Father	Bachelor	45	2	Girl & Boy	M3/F/GB/BS
W4	Mother	Bachelor	45	1	Boy	W4/M/B/BS
W5	Mother	Bachelor	46	1	Girl	W5/M/G/BS
W6	Mother	Masters	34	2	Girl & Boy	W6/M/GB/MS
			<i>f</i>	%	<i>M</i> _{age}	<i>SD</i> _{age}
Gifted	Mother		56	81.2	42.60	5.94
	Father		13	18.8		
	Total		89			
Nongifted	Mother		64	74.4	40.36	5.60
	Father		22	25.6		
	Total		88			
Total			177		41.49	5.11

M, man; W, woman; F, father; M, mother; B, boy; G, girl; AD, associate degree; BS, Bachelor's degree; MS: Master's degree.

1. What were your observations of your child during his/her early ages (preschool/kindergarten)?
2. What types of differences have you observed in your child (if any), and how did you interpret those differences?
3. Could you give me examples of situations in which your child differed from other children in cognitive, socio-emotional, language, and daily life skills? (Parents with more than one gifted child answered separately for each child.)
4. Could you tell me about your child's interests, peer relationships, and preschool experiences?

TABLE 3 Search terms used for systematic search.

Search terms with Boolean operators	
Giftedness terms	Gifted* OR giftedness* OR "special talent" OR "high intelligence" OR "high ability" OR talent*
AND	
Early childhood terms	Preschool* OR "early childhood"

Note. * indicates truncation and was used to capture different forms of the same keyword (e.g., child retrieves child, children, and childhood).

The Preschool Screening Checklist

We conducted literature searches across multiple electronic databases (ERIC, Sage Journals, Web of Science, and DergiPark) to identify peer-reviewed articles on giftedness in early childhood using keyword combinations developed with Boolean operators. The search keyword combinations used throughout the search process are presented in Table 3.

Using the keyword combinations presented in Table 3, the literature search was conducted across the selected databases. Figure 2 presents the study selection process, including the identification, screening, eligibility assessment, and inclusion of studies throughout the review process.

Studies were included if they met the following criteria: (a) examined characteristics of gifted children during early childhood (0–6 years), (b) were published in peer-reviewed journals, (c) employed an empirical research design (quantitative, qualitative, or mixed methods), (d) were written in English or Turkish, and (e) had full-text availability.

Studies were excluded if they (a) did not focus on gifted characteristics in early childhood, (b) lacked empirical data, (c) included participants outside the target age range, (d) did not

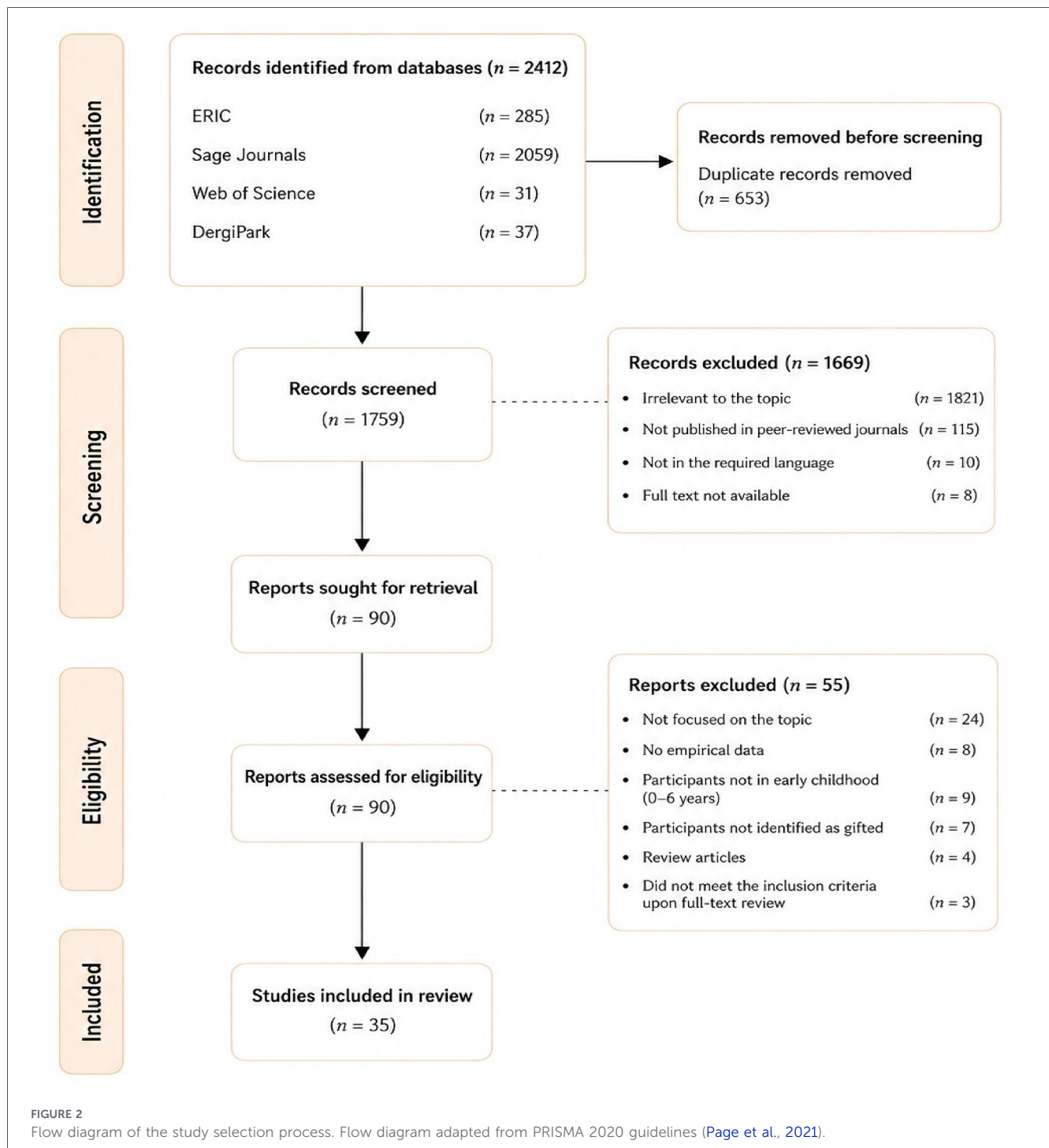
involve identified gifted participants, (e) were review studies, or (f) did not meet the inclusion criteria after full-text assessment.

We compared 15 items generated from the parent interviews with 23 items generated from the literature. All 15 interview-derived items were congruent with the literature-derived items (65.22%). Literature review led to the inclusion of the following items in the checklist: "Retentive (Strong Memory)," "Multi- interested," "Acquisitional (language)," "Hyperactive," "Empathetic," "Humorous," "Perfectionist," and "Righteous." Therefore, the final version of the Preschool Screening Checklist comprised 23 items across four developmental domains: Cognitive (*n* = 11), Language (*n* = 2), Motor (*n* = 2), and Social-emotional (*n* = 8). Each item is rated on a 5-point Likert scale: "Strongly Agree," "Agree," "Undecided," "Disagree," and "Strongly Disagree." The checklist takes approximately 10 min to complete.

Procedure

Semi-structured interviews

We scheduled the interviews by telephone communication with the parents. All interviews were one-on-one and



face-to-face by the first author. We obtained written and verbal informed consent prior to interviews and audio-recorded all interviews. The interviews were conducted between April 19, 2025, and May 2, 2025. The average interview duration was 24 min 33 s (standard deviation = 1 min 57 s).

We used content analysis for the interview data. First, we randomly assigned a number to each parent and transcribed the interview recordings. Statements in each participant's data set were voted positively by at least two researchers were coded. Then, we created subthemes from codes containing similar expressions. Finally, we derived a theme from the conceptual

representations corresponding to the subthemes. For each subtheme, findings were reported with direct quotations. In presenting quotations, we used the following coding schema: The first part indicates gender and parent number (e.g., W = Woman and M = Man), the second part the relationship to the child (i.e., M = Mother; F = Father), the third part gender of the child, and the last part educational status of the parent (i.e., AD = Associate's Degree, BA = Bachelor's Degree, MA = Master's Degree. For example, M1/F/B/AD indicates that the first participant was a man with an associate degree who is the father of a boy.

The Preschool Screening Checklist

To reach a more heterogeneous, larger sample, we transformed the checklist items into a Google Form and sent it to parents via WhatsApp or email, based on their preferences. The first section of the form included demographic questions. To determine children's diagnostic status, we included an additional question for the parents of nongifted children: "Does your child have any special need diagnosis (e.g., autism, learning difficulties, attention deficit and hyperactivity disorder, etc.)?" Those who responded positively to this question were excluded from further analyses ($n = 15$). The second section of the form included the Preschool Screening Checklist.

Examination of the data from 174 participants revealed that two did not consent to participate. Accordingly, data from 19 participants (10.92%) were excluded from the study. Thus, we analyzed data from 155 parents.

We compared statistical differences between gifted and nongifted children on the checklist items. We administered the checklist to the parents of gifted and nongifted children and compared the data using a non-parametric Mann–Whitney U -test. In addition, we calculated point-biserial correlation coefficient to assess the magnitude of the relationship (i.e., effect size). The themes from the qualitative phase formed the basis for the analyses in the quantitative phase.

We used descriptive statistics, including measures of central tendency and dispersion such as means and standard deviations. Prior to analysis, normality of the data was assessed. The results indicated that the data were not normally distributed; therefore, we used Mann–Whitney U -test for comparative analyses. In addition, we computed rank-biserial correlation coefficients to determine the effect sizes.

Validity and reliability

According to Lincoln and Guba (1986), enhancing trustworthiness in qualitative research requires credibility, transferability, dependability, and confirmability throughout the research process. Thus, we used different types of purposeful sampling (i.e., criterion sampling and snowball sampling) to ensure transferability. These methods allowed us access detailed information about the investigated phenomenon. Furthermore, we included direct participant quotations to support transferability. We also discussed the relationship between the study and findings from prior research to strengthen transferability. For dependability, the research procedures, stages of data collection and analysis, and the derivation of themes, categories, and interpretations were described in detail. For confirmability, we conducted in-depth interviews to obtain rich data.

We evaluated internal consistency of the checklist using McDonald's omega (ω), which indicates the extent to which the items reflect a common construct of giftedness, with values $\geq .70$ considered acceptable (Dunn et al., 2014). The internal consistency of the checklist items was $\omega = .920$, supporting that the checklist items are highly consistent. This finding suggests a strong internal consistency among the checklist items for the preschool period.

Ethical approval for this study was obtained from a university research ethics committee (Approval No: E-89647082-300-00003451327). Informed consent was obtained from all parents who participated in the interviews. For participants who completed the online survey via Google Forms, informed consent was collected on the first page of the form through a mandatory item asking whether they voluntarily agreed to participate in the study; responses indicating "No" were automatically excluded from the dataset and were not included in the analysis.

Findings

Semi-structured interviews

We interviewed the parents of gifted students ($n = 6$) to identify giftedness traits in the preschool period and analyzed the data using content analysis (see Table 4). As shown in Table 5, data were clustered under one theme, four subthemes, and 15 items. Precocious Reader, Complex, and Quick Learner emerged most as prominent.

The Preschool Screening Checklist

We quantitatively analyzed the parental data of both gifted and nongifted children. Results are presented in Table 5. Among the parents of gifted children, the most frequently reported adjectives were from the cognitive subtheme: Retentive (98%) and Curious (97%). In contrast, the least reported was Precocious Reader (34%). Among the parents of nongifted children, the most frequently reported adjective was Curious (97%) and the least mentioned was Precocious Reader (59%). Comparative findings for the two parental groups are presented in Table 5. As the table shows, gifted students scored significantly higher than nongifted students on all adjectives except Energetic and Sensitive. The highest effect sizes were for Quick Learner ($U = 1456$, $r = -.51$, $p < .001$), Complex ($U = 1,570$, $r = -.47$, $p < .001$), and Perfectionist ($U = 1,582$, $r = -.47$, $p < .001$).

Discussion

Our primary purpose was to identify traits associated with giftedness in the preschool period and examine recalled parental observations, whether children who are later formally identified as gifted differed from nongifted children on these early traits. Based on the qualitative findings and literature review, we developed a 23-item Preschool Screening Checklist ($n = 15$ items from parents and $n = 8$ items from literature). All adjectives derived from parental observations were supported by literature.

In the qualitative phase, the parents of gifted child(ren) highly endorsed most adjectives, ranging from 67% (Curious) to 98% (Quick Learner). The least agreed adjective was Precocious Reader (33%). In the quantitative component, we compared children with and without giftedness identification on the checklist items. The findings indicate that, except for Energetic ($p = .36$), gifted children scored significantly higher than

TABLE 4 Parental recollections of the early signs of giftedness in gifted children.

Theme	Sub theme	Code	f	Sample verbatim statement
Characteristics displayed by gifted children during the preschool years	Cognitive	Curious	3	“He was a curious child, always watching documentaries, still does.” (M1/F/AD) “So, they’re constantly asking questions. They’re very curious, and they’ve been that way since they were babies.” (W6/M/MS) “She was very keen on research. He was enthusiastic about many things. Even now, for example, he is learning the violin. He has an interest in that sort of thing too.” (M3/F/BS)
		Quick learner	5	“She was a fast learner.” (M3/F/BS). “He was learning very quickly, which caught the attention of the teachers.” (W4/M/BS). “My daughter was ahead of the flow and always learned quickly.” (W6/M/MS). “For example, whatever they needed to learn, they learned it all very easily.” (W6/M/MS). “Because he was predisposed to listening, he learned what he listened to immediately.” (M1/F/AD)
		Early reader	5	“He knew how to read and how to do math before he started first grade.” (W4/M/BS). “She learned to read on her own during preschool.” (W5/M/BS). “They both learned to read and write; my son was probably 4 or 4 and a half years old, and my daughter was 4. They learned to read and write on their own, without any effort...” (W6/M/MS) “My daughter was a fast learner. For example, she learned to read before she started school.” (M3/F/BS)
		Mathematically Skillful	3	“When he was in kindergarten, he knew all the numbers. He knew addition and subtraction; he could do calculations.” (M1/F/AD). “My son learned numbers and figures very quickly.” (M2/F/BS). “He was ahead in English, mathematics and Turkish before he even started school.” (W4/M/BS)
		Attentive	1	“She was a very careful child.” (M3/F/BS) “I’m good at puzzles too, but he could see things differently...He could distinguish between shades of green – not on this side, Dad, on that side – he could tell the difference.”
		Creative	1	“He had a vivid imagination still does.” (W4/M/BS) “He had such a creative imagination...(In his paintings) he drew everything down to the smallest detail. For example, where would the arrow go, where would it hit? He would draw cities. In cities, there are cars, then there are roads. Then there are traffic lights.” (M1/F/AD).
		Complex	5	“Even though he was still young, he could quickly find color distinctions, such as different shades of green, with thousand-piece puzzles look, this color is here, this color is there.” (M1/F/AD) “My son was doing puzzles with lots of pieces, very fast.” (M2/F/BS) “He had a 1,000-piece Lego set; he loved playing with Lego.” (W4/M/BS) “She wanted to find challenging work, that is, always.”(W6/M/MS) “She was always bored at kindergarten. There was a folding chair she would always climb into... You know, they make them do very standard things. The activities were very basic.” (W5/M/BS)
		Observer	1	“I used to take my daughter to the park every day. She would look at the leaves on the ground, how different they were, how big or small. She would always do something in the park, finding and examining the animals in the grass, and building houses for them out of leaves.” (W5/M/BS)
		Abstract Thinker	1	“He could do the math in his head without writing it down.” (M1/F/AD)
	Social-Emotional	Emotional	1	“So is he having problems with you? He’s conflicted with us, his sister, and his friends, he can’t control himself, for example, yesterday his teacher changed his place, I mean, would anyone cry about that?...He was a more withdrawn child when he was little too. He was a child who cried more.” (M3/F/BS) “He was a very emotional kid. He still is.” (W4/M/BS)
		Mature	1	“I said to my daughter, “Go and see how beautifully your friends are running.” She was much more mature than the other children. She would say, “Why should I run, Mum?”” (W5/M/BS) “There was a child in her class, and everyone complained about him. That child only listened to my daughter. My daughter would say, ‘I tell

(Continued)

TABLE 4 Continued

Theme	Sub theme	Code	f	Sample verbatim statement
				him to stop, and he stops. But I don't want to use this all the time. Because I don't want him to get used to it. I only use it for very important things." (W6/M/MS)
		Sensitive	1	"She was very sensitive to what was going on around them. She was a child with a heightened awareness compared to other children. The child's awareness was so high that even as a baby, she could distinguish between maternal and nanny care. When the nanny arrived, the baby's face would fall." (W5/M/BS) "Their food choices are also very clear, for example, I eat this and I don't eat that. They've both been like this since they were little, so their awareness is high." (W6/M/MS)
		Leader	4	"Shows and events were always at the forefront. She was an enterprising child with a leadership spirit." (M3/F/BS) "He was a natural leader socially. He could manage children older than himself." (W4/M/BS) "He had control, he had influence over people." (W6/M/MS) "For example, when he was at kindergarten, if he went to the park, he would immediately jump right into the whole environment and make friends. He could immediately start a game and join in." (M1/F/AD)
	Motor	Dexterious	1	"He drew very well. There was a lot of detail in his drawings, and there still is.. He was creating various beautiful pictures. Mostly watercolors. He was creating different types of pictures. He was mostly drawing monsters. Not the landscape pictures we know, but monsters. He was drawing things related to war, hitting, building things, reflecting his own feelings....(In his paintings) he drew everything down to the smallest detail. For example, where would the arrow go, where would it hit? He would draw cities. In cities, there are cars, then there are roads. Then there are traffic lights."" (M1/F/AD)
	Language	Acquisitional (Language)	2	"He started talking very early. He had his own words and would invent new ones." (W4/M/BS) "I can say that they both started talking and making logical sentences very early." (W6/M/MS)

nongifted on all adjectives. These results align with similar findings in the literature (e.g., [Bildiren, 2017](#); [Renati et al., 2023](#)).

From a cognitive standpoint, gifted children differed from their nongifted peers on all cognitive adjectives. They scored significantly higher on quick learning, preference for complexity and mathematics. Literature frequently emphasizes that the cognitive development of gifted children is more advanced from early ages (e.g., [Bildiren, 2017](#); [Dağlıoğlu et al., 2010](#); [Renati et al., 2023](#)). Consistent with this, we found that quick learning is a distinctly differentiating trait in the early period. [Aşık and Zelyurt \(2021\)](#) and [Renati et al. \(2023\)](#) also identified quick learning and strong motivation to learn during early childhood. These results suggest that quick learning may be one of the most salient early markers of giftedness.

We also found that preference for complexity was significantly higher among gifted children. Similarly, [Wilson \(2015\)](#) found that gifted children spent more time in functional play centers and engaged in more complex play activities. [Barnett and Fiscella \(1985\)](#) reported that gifted preschoolers exhibited more varied and innovative interactions in play contexts. Another finding of this study is that gifted children differed significantly from their nongifted peers in terms of high mathematical interest. Similarly, [Adedoyin and Chisiyanwa \(2018\)](#) found, in a study of 100 preschool teachers, that high interest in arithmetic concepts was among the primary factors predicting numerical giftedness in young children's arithmetic skills, emphasizing that such

interest is not merely an individual inclination but a critical variable to be considered in curriculum and instruction. A recent systematic review focusing on ages 0–6 likewise identified early indicators in language–mathematics–problem solving ([Conejeros-Solar et al., 2024](#)). Another systematic review of 104 studies involving 77,705 children aged 5–18 years across more than 25 countries also showed that school-age gifted children surpassed peers in verbal working memory, inhibition, attentional shifting, and geometric problem-solving, and distinct neural response speeds on demanding tasks ([Kuznetsova et al., 2024](#)).

Several additional cognitive traits were identified in the study (intense curiosity, sustained attention, abstract thinking, strong and creative imagination, excellent memory, early reading, broad interests, keen observation). Literature indicates that gifted children more frequently exhibit continuous observation, intense curiosity, broad knowledge, and sustained attention ([Bildiren, 2017](#)). [Gottfried et al. \(2006\)](#) reported that gifted children display a multifaceted pattern of cognitive development, with high performance in verbal, quantitative, and memory measures, and differentiation from peers in goal-directedness, object orientation, and sustained attention. [Renati et al. \(2023\)](#) also found learning speed and strong memory to be trait.

These findings demonstrate that gifted children may differ from their peers early in cognitive development, a conclusion supported by prior research (e.g., [Bildiren, 2017](#); [Renati et al.,](#)

TABLE 5 Distribution and comparison of the preschool screening checklist items among gifted and nongifted children.

Sub theme	Trait	Adjective	Strongly Agree <i>f</i> - %	Agree <i>f</i> - %	Undecided <i>f</i> - %	Disagree <i>f</i> - %	Strongly Disagree <i>f</i> - %	<i>U</i> value	<i>p</i>	<i>r</i> _b
Cognitive	Curiosity	Curious	57-82 [46-54]	10-15 [33-38]	2-3 [3-4]	0 [3-4]	0 [0]	2,097	< .001	-0.29
	Attention	Attentive	40-58 [15-17]	15-22 [38-44]	8-12 [14-16]	4-6 [18-22]	2-2 [1-1]	1,793	< .001	-0.40
	Abstract thinking	Abstract thinker	35-51 [19-22]	27-39 [33-38]	5-7 [24-28]	2-3 [10-11]	0 [1-1]	2,032	< .001	-0.32
	Creative imagination	Creative	41-59 [35-41]	20-29 [32-37]	7-10 [10-12]	1-1 [9-10]	0 [0]	2,341	0.01	-0.21
	Memory	Retentive	57-83 [42-49]	10-15 [30-35]	2-2 [8-9]	0 [6-7]	0 [0]	1,953	< .001	-0.34
	Reading skill	Early reader	31-45 [12-14]	11-16 [15-17]	4-6 [8-9]	19-28 [37-43]	4-5 [14-17]	1,869	< .001	-0.37
	Rapid learning	Rapid learner	54-78 [29-34]	14-20 [23-27]	1-1 [24-28]	0 [10-11]	0 [0]	1,456	< .001	-0.51
	Challenge/complexity	Complex	47-68 [22-26]	14-20 [27-31]	6-9 [21-24]	2-3 [14-17]	0 [2-2]	1,570	< .001	-0.47
	Wide interest	Multi-interested	36-52 [21-24]	20-29 [28-33]	11-16 [15-17]	2-3 [20-24]	0 [2-2]	1,898	< .001	-0.36
	Mathematical ability	Mathematically skillful	39-57 [17-20]	20-29 [31-36]	6-9 [14-16]	4-5 [19-22]	0 [5-6]	1,640	< .001	-0.45
Language	Observation skills	Observer	54-78 [31-36]	13-19 [40-47]	2-3 [11-13]	0 [3-4]	0 [0]	1,687	< .001	-0.43
	Language development	Acquisitional (language)	40-58 [22-26]	15-22 [33-38]	10-15 [17-20]	2-3 [13-15]	2-3 [1-1]	1,848	< .001	-0.38
	Rich vocabulary	Vocabulary rich	39-57 [30-35]	22-32 [29-34]	7-10 [13-15]	1-1 [13-15]	0 [1-1]	2,291	0.01	-0.23
	Dexterity	Dexterous	33-48 [26-30]	15-22 [18-21]	12-17 [17-20]	9-13 [19-22]	0 [6-7]	2,195	0.004	-0.26
	Hyperactivity (energy)	Hyperactive	33-48 [31-36]	16-23 [30-35]	10-15 [14-16]	9-13 [8-9]	1-1 [3-4]	2,723	0.36	-0.08
Social-emotional	Empathy	Empathetic	33-48 [25-29]	22-32 [30-35]	9-13 [20-23]	5-7 [10-11]	0 [1-1]	2,287	0.01	-0.23
	Emotionality	Emotional	47-68 [32-37]	13-19 [36-42]	5-7 [12-14]	4-6 [6-7]	0 [0]	2,134	0.001	-0.28
	Sensitivity	Sensitive	43-62 [40-47]	17-25 [28-33]	6-9 [13-15]	3-4 [4-5]	0 [1-1]	2,490	0.06	-0.16
	Humor	Humorous	32-46 [15-17]	24-35 [25-29]	12-17 [23-27]	1-1 [20-23]	0 [3-4]	1,644	< .001	-0.45
	Perfectionism	Perfectionist	34-49 [9-11]	18-26 [27-31]	10-15 [23-27]	7-10 [25-29]	0 [2-2]	1,582	< .001	-0.47
	Morality	Righteous	46-67 [24-28]	16-23 [40-47]	6-9 [15-17]	1-1 [7-8]	0 [0]	1,813	< .001	-0.39
	Maturity	Mature	41-59 [22-26]	17-25 [40-47]	6-9 [15-17]	4-6 [8-9]	1-1 [1-1]	2,021	< .001	-0.32
	Leadership	Leader	42-61 [29-34]	14-20 [26-30]	9-13 [10-11]	3-4 [20-23]	1-1 [1-1]	2,036	< .001	-0.31

Within brackets are frequencies and percentages for nongifted students, respectively. Mann-Whitney *U*-tests are two-tailed. Negative *r*_b values show that gifted group scored higher. *p* values are not adjusted. *r*_b represents ranked point-biserial correlations coefficient.

2023). Giftedness observed in rapid learning, intense curiosity, abstract thinking, and keen observation is not limited to cognitive speed and memory but is also related to higher-order processes such as problem solving, attraction to complexity, and creative imagination. Therefore, these early differences should be recognized in educational programs, and appropriate learning environments should be provided (Darga and Ataman, 2021; Kuo et al., 2011).

With respect to language development, gifted children differed significantly on early reading, early language development, and advanced vocabulary. The literature similarly notes that gifted children often surpass their peers in language development (Bildiren, 2017; Gottfried et al., 2006). Wilson (2015) found that gifted preschoolers spent more time in literacy-related centers (e.g., library and writing). Bildiren (2017) reported early speaking and rich vocabulary among the most salient early features of gifted children. Eroğlu-Garip et al. (2022) found that gifted children had advanced language skills and frequently asked probing questions (“what,” “why,” and “how”) involving abstract concepts and specific topics. Aşık and Zelyurt (2021) likewise reported advanced language development from early ages among officially identified gifted children aged 7–15.

The finding regarding advanced vocabulary is consistent with similar results in the literature. Gottfried et al. (2006) showed that gifted children demonstrate more advanced receptive language skills from age one and later outperform peers in both receptive and expressive language. These findings indicate early differentiation in language development among gifted children, supported by both family observations (Aşık and Zelyurt, 2021; Bildiren, 2017; Eroğlu-Garip et al., 2022) and school observations (Wilson, 2015). Such giftedness is related not only to vocabulary richness but also to higher-order cognitive processes such as abstract thinking, inquisitive questioning, and inclination toward literacy (Eroğlu-Garip et al., 2022). Consequently, early differentiation in language development should be recognized and systematically supported in educational programs.

In terms of motor development, gifted children differed significantly from their nongifted peers in dexterity. Bildiren (2017) and Mushkina et al. (2020) emphasized that gifted preschoolers particularly stand out in drawing. Dağlıoğlu et al. (2010) found, in a sample of 60 children (20 gifted, 40 nongifted; ages 4–5), that gifted children—especially girls—produced more advanced and detailed drawings than peers. Harisson (2000), in a study of seven gifted children aged 1–8, reported an earlier transition from the symbolic to schematic stage and higher levels of detail and realism. Collectively, these findings indicate that gifted children diverge from peers in motor development, particularly in detailed drawings.

Another result of the study was that there was no significant difference between gifted and nongifted children on hyperactivity. The literature does not provide findings that directly support or contradict this result. However, views on motor skills vary. Some studies report that gifted children have more advanced motor skills at early ages (Bildiren, 2017; Eroğlu-Garip et al., 2022), and Mushkina et al. (2020) argue that athletic skills are among standout areas in preschool. In contrast, Renati et al. (2023) reported no early advancement in motor development among 5–14-year-old gifted children and

highlighted asynchrony: Advanced cognitive and social skills alongside less advanced motor skills.

These results suggest that motor development in giftedness does not follow a unitary profile but may vary. Whereas a clear advantage appears in detailed drawing, the absence of a difference in hyperactivity indicates that motor development may not be a generalized trait for giftedness. This implies a greater role for individual differences and cautions against relying on motor indicators alone in identification. Thus, multiple motor skills should be considered together.

Regarding socio-emotional features, gifted children differ significantly from peers in Perfectionism, Humor, and Morality. They also show moderate differences in Emotionality, Sensitivity, and Empathy. For sensitivity, the difference was marginally significant. Various studies have reported socio-emotional differences favoring gifted children. For example, França-Freitas et al. (2014) found higher general social skills among gifted children aged 8–12. Şenol (2023) reported that gifted children stood out in sense of justice and perfectionism. Renati et al. (2023) found that morality and perfectionism were prominent in the emotional profiles of gifted children aged 5–14 years. Finally, Bildiren (2017) noted age-atypically mature behaviors among gifted children and Papadopoulos (2021) identified perfectionism and morality as two core socio-emotional traits.

Conversely, whereas some studies report clear differences in emotionality, sensitivity, and empathy (e.g., Papadopoulos, 2021; Renati et al., 2023), others report moderate or limited differences (França-Freitas et al., 2014), consistent with the present findings. Such discrepancies may stem from the sensitivity of socio-emotional adjustment to contextual factors such as parenting styles and school climate (Papadopoulos, 2021) as well as heterogeneity and asynchrony within gifted populations (Altman, 1983).

For sensitivity, differences were marginal. Studies based on parental reports tend to find more pronounced differences in emotionality and sensitivity (e.g., Renati et al., 2023), whereas studies using child self-reports find weaker or non-significant differences in empathy and sensitivity (e.g., França-Freitas et al., 2014). These discrepancies suggest that (i) age range (Renati et al., 2023), (ii) information source (parent-child-teacher) (Altman, 1983), and (iii) conceptual/measurement definitions (emotionality vs. sensitivity) (França-Freitas et al., 2014) may affect results.

Beyond these findings, the literature indicates that although gifted children often have advanced socio-emotional awareness from early ages, they may require support in regulating intense affect, perfectionism, and sensitivity (Altman, 1983; França-Freitas et al., 2014; Papadopoulos, 2021; Renati et al., 2023). Asynchrony, intense emotional experiences, and high expectations can create vulnerability to stress and frustration [Altman, 1983; National Association for Gifted Children (NAGC), 2025; Papadopoulos, 2021]. Therefore, early education and guidance efforts should also emphasize supporting socio-emotional balance (NAGC, 2025).

Conclusion

The findings of the present study contribute to the literature on early giftedness by suggesting that giftedness in early

childhood may be better understood as a developmental and multidimensional phenomenon rather than a fixed trait. The identified characteristics indicate that early signs of giftedness may not be limited to cognitive abilities alone. Given the asynchronous developmental patterns frequently observed among gifted children, identifying these characteristics at an early stage may help recognize strengths that could otherwise remain overlooked. In this respect, the present study provides empirical evidence regarding early indicators of giftedness and offers a practical contribution to early identification efforts.

In sum, human development is a multidimensional and tightly interrelated process (Berk, 2009). Dai (2017) conceptualizes giftedness not as a fixed attribute but as a developmental system evolving through interactions among person, task, context, and time. In this context, it is critical that gifted children are supported not only in cognitive domains but also in language, motor, and socio-emotional domains (Clark, 2013). The asynchrony commonly observed in early childhood can be confusing for both parents and educators. This may lead to unrecognized or insufficiently supported strengths and, consequently, neglected talents (Altman, 1983; Wellisch, 2019). Therefore, comprehensive early identification, accurate interpretation of developmental differences, and tailored support programs are essential for gifted children at early ages (Wellisch, 2019). Bijl et al. (2025) highlight the insufficiency of professional training and materials for identifying gifted children in early childhood and underscore the need for practical tools. In this regard, the development of the checklist constitutes an original contribution that addresses a significant gap in literature. The screening checklist developed within the scope of the study is presented in Appendix A.

Limitations

With the abovementioned contribution to literature, the study has a few limitations. First, the data is based on recalled parental observations of the preschool years. This may have increased recall bias and social desirability. Second, although early giftedness traits were derived from the literature and parental observations, validity was examined solely via parental reports. The absence of multiple informants such as teachers or other professionals introduces the likelihood of common-method bias. Future research should employ longitudinal designs, multiple informants, naturalistic observations, larger and more diverse samples, and comprehensive psychometric validation.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

The studies involving humans were approved by Hacettepe University Graduate School of Educational Sciences Research Ethics Committee (Approval No: E-89647082-300-00003451327).

The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

SZV: Data curation, Conceptualization, Investigation, Writing – review & editing, Writing – original draft. MB: Supervision, Writing – review & editing, Writing – original draft, Formal analysis, Data curation, Conceptualization, Methodology. SO: Writing – original draft, Writing – review & editing, Conceptualization, Investigation, Supervision.

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Appendix A

The Early Signs of Giftedness Screening Checklist.

For each of the following characteristics, select the option that best describes your child or student (you can choose as many as you want).

Sub theme	Adjective	Yes	No
Cognitive	Curious		
	Attentive		
	Abstract thinker		
	Creative		
	Retentive		
	Early reader		
	Rapid learner		
	Complex		
	Multi-interested		
	Mathematically skillful		
	Observer		
Language	Acquisitional (language)		
	Vocabulary rich		
Motor	Dexterous		
	Hyperactive		
Social-emotional	Empathetic		
	Emotional		
	Sensitive		
	Humorous		
	Perfectionist		
	Righteous		
	Mature		
	Leader		