Sci

MDPI

Article

Giftedness and Twice-Exceptionality in Children Suspected of ADHD or Specific Learning Disorders: A Retrospective Study

Sara Romano †, Dario Esposito *,†, Miriam Aricò, Elena Arigliani, Gioia Cavalli, Miriam Vigliante, Roberta Penge, Carla Sogos, Francesco Pisani and Maria Romani

Child Neurology and Psychiatry Unit, Department of Human Neuroscience, Sapienza University, Via dei Sabelli 108, 00185 Rome, Italy; sara.romano@uniroma1.it (S.R.); miriam.arico@uniroma1.it (M.A.); elena.arigliani@uniroma1.it (E.A.); gioia.cavalli@uniroma1.it (G.C.); miriam.vigliante@uniroma1.it (M.V.); roberta.penge@uniroma.it (R.P.); carla.sogos@uniroma1.it (C.S.); francesco.pisani@uniroma1.it (F.P.); maria.romani@uniroma1.it (M.R.)

* Correspondence: dario.esposito@uniroma1.it

† These authors contributed equally to this work.

Abstract: The expression "twice-exceptionality" has been used to describe conditions in which giftedness and specific disorders coexist. Our study offers a retrospective analysis of clinical reports of gifted children evaluated for suspected specific learning disorders (SLD) or attention-deficit/hyperactivity disorder (ADHD). The initial sample included 456 school-aged children referred to our clinic for suspected SLD and/or ADHD over a two-year interval. The inclusion criteria were: a General Ability Index score above 120 in the cognitive assessment; age 6–18 years; and not satisfying diagnostic criteria for autism spectrum disorder. Forty children were selected for the study. We grouped patients according to the final diagnosis: neurodevelopmental disorder (SLD and/or ADHD) (n = 15), psychopathological disorder (n = 8), mixed neurodevelopmental and psychopathological (n = 13), no emerging disorder (n = 4). The study included 36 (90%) males. Mean age was 9.3 years (SD 1.62). Mean Full-Scale Intelligence Quotient was 121.7 (SD 7.77), mean General Ability Index was 130.2 (SD 6.79). Furthermore, the cognitive assessment of the different groups highlighted a non-homogeneous profile in all groups, with lower scores on working memory and processing speed indexes. Our results support the hypothesis that difficulties in gifted children's adaptation to scholastic and social settings could be misinterpreted as a manifestation of a clear disease.

Keywords: high ability; giftedness; twice-exceptionality; attention-deficit/hyperactivity disorder; specific learning disorder

Citation: Romano, S.; Esposito, D.; Aricò, M.; Arigliani, E.; Cavalli, G.; Vigliante, M.; Penge, R.; Sogos, C.; Pisani, F.; Romani, M. Giftedness and Twice-Exceptionality in Children Suspected of ADHD or Specific Learning Disorders: A Retrospective Study. *Sci* **2024**, *6*, 23. https://doi.org/10.3390/sci6020023

Academic Editor: Cristoforo Comi

Received: 19 February 2024
Revised: 27 March 2024
Accepted: 8 April 2024
Published: 10 April 2024

1. Introduction

The concept of giftedness is still a matter of debate. One of the most crucial problems in its identification is the complexity of defining intelligence [1]. In 2010, the U.S. National Association for Gifted Children published a position paper stating that gifted individuals are those demonstrating "outstanding levels of aptitude or competence in one or more domains" [2]. However, this definition is still quite broad and not particularly useful in the process of identification of gifted children [1].

In fact, according to several authors, giftedness describes not only the top-performing students but also the ones who have the potential to demonstrate remarkable performance [3].

Cognitive performance has historically been the main factor to define giftedness and it still represents the most used domain in research [1]. From a psychometric point of view, the IQ mean score is 100 ± 15, and therefore, IQ scores at least two standard deviations above the population mean (≥130) have historically been considered cognitively gifted [4]. According to Ruf's classification, however, people with IQ scores between 117 and 129 might be considered "moderately gifted" [5]. Considering a lower threshold

of 120 IQ scores to define giftedness has also been supported by other authors, so as to identify more children with the potential to excel [4,6].

The term "twice-exceptional" first appeared in the work by Whitmore and Maker [7]. In defining what is twice-exceptionality, we considered an operational definition derived from that by Reis et al. [8]: intellectual giftedness was defined, considering IQ scores (and particularly the GAI score, preferred to the total IQ in subjects with suspected neurodevelopmental disorders); on the other hand, subjects to be considered twice-exceptional must also have a recognized disability (such as neurodevelopmental disorders (e.g., specific learning disorders [SLD], autism spectrum disorders [ASD], attention-deficit/hyperactivity disorder [ADHD]), emotional/behavioral disorders, and/or physical disabilities [8]). Given the broad definition of these terms, there is no clear consensus in the literature on what does or does not constitute twice-exceptionality [9].

However, the most investigated area involves children with giftedness and a neurodevelopmental condition. The co-occurrence of the two conditions may often cause a "masking phenomenon" [10]: the disorder may hide giftedness or vice versa [11].

Nonetheless, to avoid the overuse of the masking hypothesis, Lovett and Lewandowski proposed a more conservative and rigorously psychometric approach, with a cut-off score of 130 on the Full-Scale Intelligence Quotient (FSIQ) to define giftedness and performance in the bottom 10–15% in a subject area (e.g., writing, reading, calculation) to define an SLD, after ruling out alternative explanations (such as motivation) [12]. Toffalini et al. [13] suggested the use of the General Ability Index (GAI) to assess giftedness in children with an SLD. This index does not include working memory or processing speed subtests, can be appropriately used to evaluate cognitive abilities in children with SLD and better detect giftedness [4,14], and for this reason, it was adopted as the main cognitive parameter of this study.

Unfortunately, twice-exceptionality sometimes brings twice the pain to children, especially in the academic field [15]. Twice-exceptional students might not be included in gifted education programs, when available, because their missed identification and/or misdiagnosis can occur in three different ways: (1) the student is recognized as gifted but his/her difficulties are not identified; (2) the student's difficulties (e.g., an SLD or ADHD) are identified but his/her talent is not recognized; or (3) both the giftedness and the difficulties remain unidentified [8,9]. Gifted children coming to clinical attention most often present with one of these disorder domains: ADHD, SLD, and autism spectrum disorder [16].

Our study aims to contribute to the clinical understanding of the impact of twice-exceptionality in a clinical sample of children suspected of SLD and/or ADHD, which are the largest diagnostic categories suspected in gifted school children [16].

2. Materials and Methods

2.1. Participant Characteristics

Data were obtained through a retrospective analysis of clinical reports of children assessed at our child neuropsychiatric unit from 2018 to 2019. The initial sample included 456 school-aged children who had been referred to our clinic for suspected SLD and/or ADHD. The inclusion criteria were (1) the presence of a GAI score above 120; (2) age at evaluation between 6 and 18 years; and (3) not satisfying diagnostic criteria for autism spectrum disorder.

2.2. Measures

The first step of our research consisted of a qualitative analysis of data about diagnostic evaluation, followed by a descriptive analysis of the sample. Then, we explored the cognitive functioning of children included in our sample by analyzing the age-appropriate Wechsler Intelligence Scale profiles (e.g., WISC-IV).

2.3. Medical History and Clinical Interviews

Data from medical history and clinical interviews with parents included child features, such as age, gender, educational status, presence/absence of neurodevelopmental disorders, and family features, including civil status, educational level, socioeconomic status (SES) evaluated using the Hollingshead Four Factor Index of Socioeconomic Status [17]; its raw scores range from 8 to 66, with higher scores reflecting higher SES.

2.4. Data from Diagnostic Hypothesis at Referral and Full Diagnostic Evaluation

We collected data about symptoms at referral, which orientated towards a specific neurodevelopmental disorder, and final diagnosis after the full diagnostic evaluation. The diagnostic evaluation registered in the clinical reports consisted of neuropsychological tests and rating scales, led by a multidisciplinary team of neuropsychiatrists, psychologists, and child neuro- and psychomotor therapists.

2.5. Measures of Child Intellectual Abilities

The WISC-IV provides an overall measure of intellectual functioning, i.e., the FSIQ, as well as composite indexes relating to four specific cognitive abilities (Verbal Comprehension [VCI], Perceptual Reasoning [PRI], Working Memory [WMI], and Processing Speed [PSI] indexes) and the GAI, derived from the VCI and the PRI subtests. We assumed that—consistently with current literature—high-ability or gifted children would show better performance on the VC and PR subtests rather than on the WM and PS ones [13]. This is especially true for children with twice-exceptionality. Moreover, we expected a more homogeneous cognitive profile in children not diagnosed with a neurodevelopmental or psychopathological disorder. Statistical analysis was performed using SPSS 26 software.

3. Results

3.1. Descriptive Analysis of the Sample

In the present study, 40 high-ability/gifted children were included out of the 456 patients (8.8%) referred to our department within two years. Among them, 36 children (90%) were males; the mean age was 9.3 years (SD 1.62), ranging from 7 to 13 years. All patients were in primary or secondary school, with most of them attending the second year of primary school (25%). Concerning sociodemographic variables, 72.5% of parents were married. As for parental SES, mothers presented a mean SES of 39.7 (SD 14.3), while fathers had a mean SES of 42.9 (SD 12.9), with no statistically significant difference ($p > 0.1$). The total mean SES value was 44 (SD 9.6), which indicates an average socioeconomic status.

3.2. Descriptive Analysis of the Diagnostic Categories

Considering the clinical symptoms at referral, we grouped gifted patients into three main categories: suspected SLD (12 patients), suspected ADHD (22 patients), and suspected mixed disorder SLD/ADHD (6 patients). According to the final diagnosis after the clinical assessment, patients could be divided into four groups: 15 patients (37.5%) were diagnosed with a neurodevelopmental disorder (SLD, ADHD or both), 8 (20%) with a psychopathological disorder (PD), 13 with both a neurodevelopmental disorder and a PD (32.5%); finally, in 4 cases (10%), the main criteria for clinical diagnosis was not satisfied, resulting in giftedness without any comorbid emerging disorder. Therefore, 90% of our sample could be defined as twice-exceptional, i.e., gifted children with a PD and/or neurodevelopmental disorder. In Table 1, there is detailed information about each diagnostic category.

Table 1. Our sample suspected diagnosis at referral and final diagnosis with comorbidities after complete diagnostic evaluation. ADHD: attention-deficit/hyperactivity disorder; SLD: specific learning disorder; PD: psychopathological disorder.

	Suspected Diagnosis at Referral, *n* (%)	Final Diagnosis, *n* (%)	Final Diagnosis Detailed, *n* (%)
SLD	12 (30)	20 (50)	SLD 11 (27.5)
			SLD + ADHD 1 (2.5)
			SLD + PD 8 (20)
ADHD	22 (55)	9 (22.5)	ADHD 3 (7.5)
			ADHD + SLD 1 (2.5)
			ADHD + PD 5 (12.5)
PD	-	21 (52.5)	PD 8 (20)
			PD + SLD 8 (20)
			PD + ADHD 5 (12.5)
No clinical diagnosis (NCD)	-	4 (10)	-

3.3. Cognitive Assessment of the Sample

Data about the cognitive assessment of our sample resulted in a mean FSIQ of 121.3 (SD 7.77) and a mean GAI of 130.2 (SD 6.79); the other indexes are shown in Table 2. As shown in Tables 2 and 3, the GAI score was significantly higher than the FSIQ score (t.52, $p < 0.05$). There was no significant correlation between VCI and the other indexes used to define FSIQ; on the other hand, PSI did not correlate with any index besides WMI and FSIQ. Comparing the detailed results among different diagnostic groups, children with PD showed significantly higher scores in WMI and PSI than children with ADHD or SLD ($p < 0.05$). There was no other statistically significant difference among indexes in these groups. To define the unitarity of IQ in the Italian version of the WISC-IV it was proposed that a difference higher than 39 IQ points between the highest and the lowest score reported by subjects in the 4 indexes (VCI, PRI, WMI, PSI) makes the FSIQ non-interpretable. Using this criterion, in our sample, 22 (55%) FSIQ profiles were non-interpretable; among them, the vast majority was included in the group with a neurodevelopmental disorder ($p < 0.01$).

Table 2. Data about the cognitive assessment of our sample. ADHD: attention-deficit/hyperactivity disorder; GAI: General Ability Index; FSIQ: Full-Scale Intelligence Quotient; NCD: no clinical diagnosis; SLD: specific learning disorder; PD: psychopathological disorder; PRI: perceptual reasoning index; PSI: processing speed index; WMI: working memory index, VCI: verbal comprehension index.

WISC-IV Indexes	Mean Score	SD	Diagnostic Groups	N.	Mean Score (SD)
FSIQ	121.3	7.77	SLD/ADHD	15	120.1 (7.97)
			PD	8	125.3 (6.68)
			SLD/ADHD/PD	13	120.9 (7.80)
			NCD	4	119.2 (4.44)
GAI	130.2	6.79	SLD/ADHD	15	130.3 (8.48)
			PD	8	129.1 (4.42)
			SLD/ADHD/PD	13	130.8 (6.17)
			NCD	4	130 (1.42)
WMI	106.7	13.22	SLD/ADHD	15	104.2 (11.41)
			PD	8	113.9 (7.49)
			SLD/ADHD/PD	13	106.2 (16.82)
			NCD	4	103.8 (6.84)

Table 2. *Cont.*

WISC-IV Indexes	Mean Score	SD	Diagnostic Groups	N.	Mean Score (SD)
PSI	97.7	15.01	SLD/ADHD	15	94.7 (14.20)
			PD	8	114.1 (12.05)
			SLD/ADHD/PD	13	91.5 (11.03)
			NCD	4	96.2 (7.15)
VCI	128.3	10.19	SLD/ADHD	15	130 (10.63)
			PD	8	123.7 (8.97)
			SLD/ADHD/PD	13	130.3 (9.82)
			NCD	4	124.5 (5.89)
PRI	124.0	10.68	SLD/ADHD	15	121.7 (11.5)
			PD	8	125.4 (7.05)
			SLD/ADHD/PD	13	124.2 (11.01)
			NCD	4	129 (8.34)

Table 3. R Correlations (Pearson's) between the main cognitive indexes. FSIQ: Full-Scale Intelligence Quotient, GAI: General Ability Index, PRI: perceptual reasoning index, PSI: processing speed index, SLD: specific learning disorder, WMI: working memory index, VCI: verbal comprehension index. *: $p < 0.05$.

	M (DS)	1.	2.	3.	4.	5.	6.
1. FSIQ	121.3 (7.77)	-	0.52 *	0.14	0.52 *	0.54 *	0.59 *
2. GAI	130.3 (6.79)	0.52 *	-	0.67 *	0.47 *	−0.08	−0.06
3. VCI	128.3 (10.19)	0.14	0.67 *	-	−0.24	−0.47 *	−0.17
4. PRI	123.9 (10.68)	0.52 *	0.47 *	−0.24	-	0.42 *	0.09
5. WMI	106.7 (13.22)	0.54 *	−0.08	−0.47 *	0.42 *	-	0.35 *
6. PSI	97.7 (15.01)	0.59 *	−0.06	−0.17	0.09	0.35 *	-

4. Discussion

4.1. Sociodemographic Observations

We observed a prevalence of males among our sample of gifted children (90%), which is consistent with other studies [18,19]. This result is influenced by the gender prevalence of males in both SLD (ratio ranging from 2:1 to 3:1) and ADHD (approximate ratio of 2:1) [20], as most of the sample (62.5%) was diagnosed with one of the two conditions. The most represented grade of referral was the third year of primary school (25%), which sets the end of the first stages of reading and writing acquisition according to the Italian school system [21].

Regarding sociodemographic variables, family SES was within the average, consistent with other research on the subject [19].

4.2. Cognitive Profiles

The main cognitive parameter used in the present study to identify giftedness was the GAI. As previously reported [13], the use of FSIQ in children with giftedness/SLD has been questioned, for the reason that—among the four indexes that constitute FSIQ—the WMI and PSI scores are often lower than VCI and PRI scores in both populations of gifted children [22] and children with SLD [23], often decreasing their absolute value of FSIQ. Moreover, while a lower performance on the WMI is strongly related to a central measure of intelligence in the general population [24], it has been shown that this correlation is less evident in children with SLD [23], therefore making the FSIQ less informative.

As expected, in our sample, GAI scores were significantly higher than FSIQ scores, and VCI and PRI scores were higher than WMI and PSI ones. These data are consistent with previous observations in gifted children [25]. Using GAI instead of FSIQ also increased the prevalence of giftedness from 5% to 8.8% in our initial clinical sample of 456 children. That is consistent with previous observations that using GAI in place of the FSIQ increases the percentage of giftedness from less than 1% to 3.75% in the general school population [13].

We aimed to find differences in cognitive performances among the four groups of our sample. It is difficult to establish a specific profile of gifted students with a neurodevelopmental disorder as they have a wide range of score variability [13,18]. We expected that the gifted group with a neurodevelopmental disorder would have a less homogeneous cognitive profile than other gifted children, as reported in the literature [26]. Using the abovementioned criteria to define the homogeneity of cognitive profiles [27], 55% of children in our sample had FSIQ non-interpretable as a unitary ability due to excessive variability between its four defining indexes (mainly because VCI or PRI > WMI or PSI). In particular, there was a statistically significant difference between children with SLD or ADHD and children without any neurodevelopmental disorder diagnosis ($p < 0.05$). This result is probably due to the well-known difficulties in working memory and executive functioning commonly found in children with ADHD or SLD [23,28]. However, it should also be noted that our gifted children without any comorbid neurodevelopmental condition—despite having higher WMI and PSI scores than children with ADHD/SLD—had lower WMI and PSI scores than GAI scores. This is supported by recent evidence in the general and pediatric gifted population, showing that a lesser percentage of gifted subjects achieve IQ scores ≥ 120 in WMI and PSI [4].

4.3. Diagnoses of Gifted Children

Data on the exact prevalence of twice-exceptional children are not uniform in the literature [29]. Some prevalence estimates of twice-exceptionality range from 2% to 20% of the gifted population [30]. In our sample of gifted patients, 85% of them could be considered twice-exceptional after the complete diagnostic evaluation. It is worth noting that all selected patients came to our observation on suspicion of SLD or ADHD. This may present a limitation for the generalizability of the results obtained. It should also be remembered that we focused our attention on children with ADHD or SLD; therefore, children with ASD were excluded from our sample, and this limits the generalizability of the study to all twice-exceptional patients requiring specialist evaluation. Our intent was to focus on a population with limited literature, demonstrating the complex interactions that can occur between hyperactivity/inattention, school difficulties, and cognitive giftedness.

On this point, there was a notable discrepancy between suspected and actual diagnoses (Table 1). At referral, all children were suspected of having SLD and/or ADHD, even if only 70% of these diagnoses were confirmed, with 37.5% of patients having either SLD or ADHD and another 32.5% having an SLD or ADHD associated with a PD. Other diagnoses included: isolated PD, specifically childhood emotional disorder [31] (20%), or no clinical diagnosis (10%). The referral for a suspected clinical diagnosis is a good index of family and school perceptions of gifted children, as it is known that they often have trouble in the educational context [15]. However, 15% of children without an actual diagnosis might be interpreted as confirmation of the idea that twice-exceptionality is often overly suspected in gifted children [12], because the perceived difficulties, especially in the academic field, could be interpreted as a red flag for specific disorders by parents and teachers.

Indeed, as for academic performance, in some cases, gifted students underachieve in school [7]. The most commonly used definition of underachievement in gifted students involves a discrepancy between ability and achievement [32]. Distinguishing among the causes of low academic performance is crucial because of the significantly different interventions that these several conditions require, ranging from general teaching measures to specific clinical interventions [33]. Among the reasons why gifted students might underachieve, one is that some of their intellectual needs cannot be met in the school

environment. That is especially true when an appropriately challenging curriculum is not delivered, therefore resulting in boredom and an overall disinterest in academics [32]. Other causes might involve a condition of twice-exceptionality.

4.4. Specific Learning Disorders and Giftedness

The majority of our sample was twice-exceptional due to an association between SLD and giftedness (50%). There are contradictory data in the literature about the association between giftedness and ADHD or SLD, and no definite prevalence data have been provided [34]. Defining the presence of an SLD in children with a high IQ is a matter of debate at different levels, and some educators are still reluctant to accept the idea that gifted children can have reading, writing, and mathematical difficulties [18]. However, currently, the frequency of difficulties in academic achievement of high-IQ children leads to the acceptance of the coexistence of SLD and giftedness [35]. The prevalence of giftedness and SLD is estimated to range from 1% to 5% of the total population of children with learning disabilities [36], which is similar to the prevalence in the general school population. On the other hand, Maddocks [37] found that 15.6% of a representative sample of school-age students were identified as both gifted and with SLD. The incongruence in the prevalence data of gifted SLD could be due to the different approaches used to diagnose SLD and to identify giftedness. The use of FSIQ as an indicator of general intelligence, indeed, reduces the probability of identifying a student with SLD as gifted; that is because WMI and PSI are usually significantly lower in SLD children [4,25]. As discussed in the Introduction, that is why several authors proposed the use of GAI as a better index to identify giftedness in children with a suspected SLD. Moreover, the theoretical models applied to diagnose SLDs may also contribute to substantially changing the prevalence of SLD in gifted children [38].

In our sample, we used inter-peer deviation criteria—traditionally used in Italy for diagnosing SLDs [21]—which are based on the discrepancy from the average in specific learning skills. This is a highly debated point in the literature, which is why it seems more useful to utilize inter-peer statistical deviation criteria rather than the IQ–achievement discrepancy, as also suggested by the DSM-5 and the National Italian Consensus Conference on Specific Learning Disorder [20,21]. Additionally, in support of the SLD diagnosis, the assessment of WMI and PSI appeared useful, which did not fall under our definition of giftedness based on GAI and which instead are often significantly reduced in patients with SLD. We have discussed this point in the study.

More children were diagnosed with SLD (20.50%) than those presenting with an initial suspicion of a learning disorder (12.30%), which could be partially explained by the masking phenomenon, so that gifted children tend to "mask" their academic difficulties thanks to their high cognitive abilities. It should be noted that 25% of children with SLD also received a diagnosis of PD, which is consistent with the available literature about SLD and its increased risk of both internalizing and externalizing psychopathological disorders [39].

4.5. Attention-Deficit/Hyperactivity Disorder and Giftedness

Several authors report that the prevalence of ADHD in the gifted population is between 9.4 and 10%, consistent with the prevalence of ADHD in the general population [40,41]. However, as reported by Webb et al. [42], a presumed 25–50% of gifted children diagnosed with ADHD fail to meet more rigorously defined ADHD diagnostic criteria. Moreover, gifted children are more prone to "boredom", as they are often not challenged enough by the educational context, and they are also very active and overexcitable to any input [43]. Gifted children often feel a "rage to master" the domains in which they are most capable, appearing sometimes impulsive or oppositional [44] or paying less attention to topics that are not interesting to them. In some cases, distinguishing between boredom and inattention, overexcitability and hyperactivity, quick answers and impulsivity is not an easy task [45]. Many studies assert that despite the overlap of these behaviors, ADHD in gifted children is overdiagnosed [40,43,44,46].

Probably due to this overlap in symptoms [45], in our sample, ADHD was confirmed only in 22.5% of gifted children despite being the main clinical concern at referral (55%). Among gifted children, these behaviors can be related to asynchronous development [47], boredom in the classroom [48], or overexcitability [49]. However, it has been suggested that if symptoms of hyperactivity or inattention are present, it is beneficial to diagnose and treat ADHD because it can lead to significant functional impairment [40,46]. Gifted ADHD children do indeed tend to repeat grades more than others, have lower scholastic achievements, need more intensive academic support, have more comorbid psychopathology, and are rated by parents as having more functional impairments across several domains [40]. Despite not being statistically significant due to the small sample size, in our sample, it is confirmed that most gifted ADHD children (55.5%) also had a comorbid PD; in comparison, only 40% of gifted SLD children had a PD.

4.6. Psychopathological Disorders and Giftedness

Several studies underline the potential vulnerability of gifted children to socio-emotional difficulties, including poor peer relationships, depression, and anxiety [50–52]. Bénony et al. [53] suggested that gifted children manifested a lack of self-esteem and depressive symptoms, probably due to the so-called internal and social dyssynchronism [54]. However, other studies highlighted that gifted children show decreased levels of psychopathology, because of better adaptive competencies, supporting the idea that giftedness is a protective factor against both internalizing and externalizing problems [51,55,56]. A possible explanation of this incongruence in the literature is provided by Shaywitz et al. [57], who found that highly intellectually gifted students (IQ = 140–154) display higher levels of behavioral problems compared to a group of low-intellectually gifted students (IQ = 124–139). According to these findings, it should be noted that the gifted population is not a homogenous group, and various difficulties may be identified when different levels of giftedness are considered. In our sample, there were only four children with GAI scores $\geq$ 140 (two with a diagnosis of PD and two with ADHD/SLD); therefore, no significant conclusion can be derived regarding this subgroup. In our sample, 52.5% of children received a diagnosis of a PD (including both internalizing—e.g., anxiety, depression—or externalizing—e.g., oppositional-defiant disorder—disorders). Despite the limited number of cases, as expected, most children with PD had a comorbidity with ADHD or SLD (13 children; 32.5% of the whole sample). Considering in particular children with SLD, it should be noted that, according to Beckmann and Minnaert [15], they seem to demonstrate a duality in their non-cognitive characteristics. In particular, they show high levels of negative emotions, negative attitudes, low self-perceptions, and adverse interpersonal relationships. However, they exhibit high levels of motivation, great resilience, and coping skills.

5. Conclusions

The clinical considerations arising from our study may offer some useful clues regarding giftedness and twice-exceptionality. Firstly, it should be noted that giftedness could determine marked difficulties in children's school and social adaptation even in the absence of definite disorders. This is also supported by the fact that 10% of our patients did not receive any clinical diagnosis besides giftedness, even considering the selection bias of being in a clinical setting. Thus, twice-exceptionality risks being overlooked in gifted children. However, it should be remembered that giftedness might require special educational needs, such as differentiated learning strategies and teaching methods in class.

Concerning the cognitive functioning of our sample, all groups (including the one with no final diagnosis) reported lower scores on the WMI and PSI tasks. This represents a confirmation that the specific vulnerabilities in cognitive functioning are giftedness-related. However, twice-exceptional children with ADHD or SLD showed even more non-homogeneous cognitive profiles (FSIQ often being non-interpretable as a unitary measure).

Moreover, both gifted children with and without ADHD or SLD in our sample also showed frequent comorbidity with psychopathological conditions (52.5%). This is probably

due to the developmental dyssynchrony, i.e., the marked discrepancy between the child's advanced intelligence and his/her physical and affective maturation, which coincides with chronological age.

We can conclude that the adaptation difficulties of gifted and twice-exceptional children require the attention of professional figures. Along with the vulnerability associated with giftedness per se, comorbid disorders that sometimes are not recognized may hinder children's adaptation abilities. This makes it clear that the correct diagnosis of twice-exceptionality may be helpful to provide: (1) adequate measures for academic and social support; (2) specific intervention programs for the high risk of comorbid psychopathological disorders; and (3) targeted strategies for the specific disorders in comorbidity.

Finally, we recognize that the lack of long-term follow-up represents a limitation of our study, as it restricts the depth of our understanding regarding the developmental trajectories of gifted children over time. While our findings offer valuable insights into their immediate cognitive and socio-emotional functioning, a longitudinal perspective would provide a more comprehensive understanding of how these trajectories evolve over the lifespan. In light of this limitation, future research efforts should aim to incorporate longitudinal designs to explore the enduring effects of giftedness and to evaluate the effectiveness of interventions tailored to this population.

Author Contributions: Conceptualization, M.R. and C.S.; methodology, D.E.; software, D.E.; validation, M.A., E.A. and M.V.; formal analysis, G.C.; investigation, D.E. and S.R.; resources, M.R., R.P. and F.P.; data curation, D.E. and S.R.; writing—original draft preparation, D.E. and S.R.; writing—review and editing, M.A., E.A. and M.V.; visualization, S.R.; supervision, D.E.; project administration, M.R.; funding acquisition, F.P. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki, while ethical review and approval were waived for this study due to its retrospective design and negligible risk because of the involvement of existing collections of records that contain only non-identifiable data about human beings (National Statement on Ethical Conduct in Human Research, paragraphs 5.1.22 and 5.1.23).

Informed Consent Statement: The National Statement on Ethical Conduct in Human Research (paragraphs 5.1.22 and 5.1.23) defines research that can be exempted from ethics review as negligible risk research that involves the use of existing collections of data or records that contain only non-identifiable data about human beings.

Data Availability Statement: Research data are not shared due to privacy restrictions.

Conflicts of Interest: The authors declare no conflicts of interest.

References

1. Carman, C.A. Comparing Apples and Oranges: Fifteen Years of Definitions of Giftedness in Research. *J. Adv. Acad.* **2013**, *24*, 52–70. [CrossRef]
2. National Association for Gifted Children. Redefining Giftedness for a New Century: Shifting the Paradigm. *J. Adv. Acad.* **2010**, *22*, 6–8.
3. Gagné, F. *Differentiating Giftedness from Talent: The DMGT Perspective on Talent Development*; Routledge: New York, NY, USA, 2020; ISBN 978-1-00-308879-0.
4. Pezzuti, L.; Farese, M.; Dawe, J.; Lauriola, M. The Cognitive Profile of Gifted Children Compared to Those of Their Parents: A Descriptive Study Using the Wechsler Scales. *J. Intell.* **2022**, *10*, 91. [CrossRef]
5. Ruf, D.L. *5 Levels of Gifted: School Issues and Educational Options*; Great Potential Press: Tucson, AZ, USA, 2009; ISBN 978-0-910707-98-5.
6. Crabtree, L.M.; Richardson, S.C.; Lewis, C.W. The Gifted Gap, STEM Education, and Economic Immobility. *J. Adv. Acad.* **2019**, *30*, 203–231. [CrossRef]
7. Whitmore, J.; Maker, C. *Intellectual Giftedness in Disabled Persons*; Aspen Publishers: Tianjin, China, 1985.
8. Reis, S.M.; Baum, S.M.; Burke, E. An Operational Definition of Twice-Exceptional Learners: Implications and Applications. *Gift. Child Q.* **2014**, *58*, 217–230. [CrossRef]
9. Foley-Nicpon, M.; Assouline, S.G.; Colangelo, N. Twice-Exceptional Learners: Who Needs to Know What? *Gift. Child Q.* **2013**, *57*, 169–180. [CrossRef]
10. Silverman, L.K. Gifted Children with Learning Disabilities. *Handb. Gift. Educ.* **2003**, *3*, 533–543.

11. Ruban, L.M. Identification and Assessment of Gifted Students with Learning Disabilities. *Theory Pract.* **2005**, *44*, 115–124. [CrossRef]
12. Lovett, B.J.; Lewandowski, L.J. Gifted Students with Learning Disabilities: Who Are They? *J. Learn. Disabil.* **2006**, *39*, 515–527. [CrossRef]
13. Toffalini, E.; Pezzuti, L.; Cornoldi, C. Einstein and Dyslexia: Is Giftedness More Frequent in Children with a Specific Learning Disorder than in Typically Developing Children? *Intelligence* **2017**, *62*, 175–179. [CrossRef]
14. Rowe, E.W.; Kingsley, J.M.; Thompson, D.F. Predictive Ability of the General Ability Index (GAI) versus the Full Scale IQ among Gifted Referrals. *Sch. Psychol. Q.* **2010**, *25*, 119–128. [CrossRef]
15. Beckmann, E.; Minnaert, A. Non-Cognitive Characteristics of Gifted Students With Learning Disabilities: An In-Depth Systematic Review. *Front. Psychol.* **2018**, *9*, 348632. [CrossRef] [PubMed]
16. Foley-Nicpon, M.; Assouline, S.G. High Ability Students with Coexisting Disabilities: Implications for School Psychological Practice. *Psychol. Sch.* **2020**, *57*, 1615–1626. [CrossRef]
17. Hollingshead, A.B. *Four Factor Index of Social Status*; Yale University: New Haven, CT, USA, 1975.
18. Assouline, S.G.; Foley Nicpon, M.; Whiteman, C. Cognitive and Psychosocial Characteristics of Gifted Students With Written Language Disability. *Gift. Child Q.* **2010**, *54*, 102–115. [CrossRef]
19. Maddocks, D.L.S. Cognitive and Achievement Characteristics of Students From a National Sample Identified as Potentially Twice Exceptional (Gifted With a Learning Disability). *Gift. Child Q.* **2020**, *64*, 3–18. [CrossRef]
20. American Psychiatric Association DSM-5 Task Force. *Diagnostic and Statistical Manual of Mental Disorders: DSM-5*, 5th ed.; American Psychiatric Association: Washington, DC, USA, 2013.
21. Lorusso, M.L.; Vernice, M.; Dieterich, M.; Brizzolara, D.; Mariani, E.; De Masi, S.; D'Angelo, F.; Lacorte, E.; Mele, A. The Process and Criteria for Diagnosing Specific Learning Disorders: Indications from the Consensus Conference Promoted by the Italian National Institute of Health. *Ann. Ist. Super. Sanita* **2014**, *50*, 77–89. [CrossRef] [PubMed]
22. Kaufman, A.S.; Flanagan, D.P.; Alfonso, V.C.; Mascolo, J.T. Test Review: Wechsler Intelligence Scale for Children, Fourth Edition (WISC-IV). *J. Psychoeduc. Assess.* **2006**, *24*, 278–295. [CrossRef]
23. Giofrè, D.; Cornoldi, C. The Structure of Intelligence in Children with Specific Learning Disabilities Is Different as Compared to Typically Development Children. *Intelligence* **2015**, *52*, 36–43. [CrossRef]
24. Engle, R.W.; Tuholski, S.W.; Laughlin, J.E.; Conway, A.R.A. Working Memory, Short-Term Memory, and General Fluid Intelligence: A Latent-Variable Approach. *J. Exp. Psychol. Gen.* **1999**, *128*, 309–331. [CrossRef]
25. Molinero, C.; Mata, S.; Calero, M.D.; García-Martín, M.B.; Araque-Cuenca, A. Usefulness of WISC-IV in Determining Intellectual Giftedness. *Span. J. Psychol.* **2015**, *18*, E60. [CrossRef]
26. Saklofske, D.H.; Prifitera, A.; Weiss, L.G.; Rolfhus, E.; Zhu, J. Clinical Interpretation of the WISC-IV FSIQ and GAI. In *WISC-IV Clinical Use and Interpretation*; Elsevier: Amsterdam, The Netherlands, 2005; pp. 33–69.
27. Orsini, A.; Pezzuti, L.; Hulbert, S. The Unitary Ability of IQ in the WISC-IV and Its Computation. *Personal. Individ. Differ.* **2014**, *69*, 173–175. [CrossRef]
28. Areces, D.; Dockrell, J.; García, T.; González-Castro, P.; Rodríguez, C. Analysis of Cognitive and Attentional Profiles in Children with and without ADHD Using an Innovative Virtual Reality Tool. *PLoS ONE* **2018**, *13*, e0201039. [CrossRef] [PubMed]
29. Lovett, B.J.; Sparks, R.L. The Identification and Performance of Gifted Students with Learning Disability Diagnoses: A Quantitative Synthesis. *J. Learn. Disabil.* **2013**, *46*, 304–316. [CrossRef] [PubMed]
30. Ronksley-Pavia, M. Twice-Exceptionality in Australia: Prevalence Estimates. *Australas. J. Gift. Educ.* **2020**, *29*, 17–29.
31. F93.9-Childhood Emotional Disorder, Unspecified-ICD List 2023. Available online: https://icdlist.com/icd-10/F93.9 (accessed on 13 January 2023).
32. Reis, S.M.; McCoach, D.B. The Underachievement of Gifted Students: What Do We Know and Where Do We Go? *Gift. Child Q.* **2000**, *44*, 152–170. [CrossRef]
33. Eklund, K.; Tanner, N.; Stoll, K.; Anway, L. Identifying Emotional and Behavioral Risk among Gifted and Nongifted Children: A Multi-Gate, Multi-Informant Approach. *Sch. Psychol. Q. Off. J. Div. Sch. Psychol. Am. Psychol. Assoc.* **2015**, *30*, 197–211. [CrossRef] [PubMed]
34. Kontakou, A.; Dimitriou, G.; Panagouli, E.; Thomaidis, L.; Psaltopoulou, T.; Sergentanis, T.N.; Tsitsika, A. Giftedness and Neurodevelopmental Disorders in Children and Adolescents: A Systematic Review. *J. Dev. Behav. Pediatr.* **2022**, *43*, e483. [CrossRef] [PubMed]
35. The No Child Left Behind Act of 2001. Available online: https://www2.ed.gov/about/offices/list/oii/nonpublic/nclbinfo.html (accessed on 27 March 2024).
36. van Viersen, S.; Kroesbergen, E.H.; Slot, E.M.; de Bree, E.H. High Reading Skills Mask Dyslexia in Gifted Children. *J. Learn. Disabil.* **2016**, *49*, 189–199. [CrossRef] [PubMed]
37. Maddocks, D.L.S. The Identification of Students Who Are Gifted and Have a Learning Disability: A Comparison of Different Diagnostic Criteria. *Gift. Child Q.* **2018**, *62*, 175–192. [CrossRef]
38. Sparks, R.L.; Lovett, B.J. Objective Criteria for Classification of Postsecondary Students as Learning Disabled: Effects on Prevalence Rates and Group Characteristics. *J. Learn. Disabil.* **2009**, *42*, 230–239. [CrossRef]

39. Ghislanzoni, L.; Tobia, V.; Gambarini, A.; Rossi, E.; Tombini, G.; Ogliari, A. The Psychopathological Profile of Children with Specific Learning Disorders: The Point of View of Children and Their Mothers. *Eur. J. Spec. Needs Educ.* **2022**, *37*, 89–103. [CrossRef]
40. Antshel, K.M. Attention-Deficit Hyperactivity Disorder in the Context of a High Intellectual Quotient/Giftedness. *Dev. Disabil. Res. Rev.* **2008**, *14*, 293–299. [CrossRef]
41. Chae, P.K.; Kim, J.-H.; Noh, K.-S. Diagnosis of ADHD Among Gifted Children in Relation to KEDI-WISC and T.O.V.A. Performance. *Gift. Child Q.* **2003**, *47*, 192–201. [CrossRef]
42. Webb, J.T.; Goerss, J.; Amend, E.R.; Webb, N.E.; Beljan, P.; Olenchak, F.R. Diagnosis or Misdiagnosis. *Underst. Our Gift.* **2006**, *18*, 15–17.
43. Hartnett, D.N.; Nelson, J.M.; Rinn, A.N. Gifted or ADHD? The Possibilities of Misdiagnosis. *Roeper Rev.* **2004**, *26*, 73–76. [CrossRef]
44. Baum, S.M.; Olenchak, F.R.; Owen, S.V. Gifted Students with Attention Deficits: Fact and/or Fiction? Or, Can We See the Forest for the Trees? *Gift. Child Q.* **1998**, *42*, 96–104. [CrossRef]
45. Mullet, D.R.; Rinn, A.N. Giftedness and ADHD: Identification, Misdiagnosis, and Dual Diagnosis. *Roeper Rev.* **2015**, *37*, 195–207. [CrossRef]
46. Antshel, K.M.; Faraone, S.V.; Stallone, K.; Nave, A.; Kaufmann, F.A.; Doyle, A.; Fried, R.; Seidman, L.; Biederman, J. Is Attention Deficit Hyperactivity Disorder a Valid Diagnosis in the Presence of High IQ? Results from the MGH Longitudinal Family Studies of ADHD. *J. Child Psychol. Psychiatry* **2007**, *48*, 687–694. [CrossRef]
47. Silverman, L.K. The Construct of Asynchronous Development. *Peabody J. Educ.* **1997**, *72*, 36–58. [CrossRef]
48. Gallagher, J.; Harradine, C.C.; Coleman, M.R. Challenge or Boredom? Gifted Students' Views on Their Schooling. *Roeper Rev.* **1997**, *19*, 132–136. [CrossRef]
49. Mendaglio, S. Overexcitabilities and Giftedness Research: A Call for a Paradigm Shift. *J. Educ. Gift.* **2012**, *35*, 207–219. [CrossRef]
50. Eren, F.; Çete, A.Ö.; Avcil, S.; Baykara, B. Emotional and Behavioral Characteristics of Gifted Children and Their Families. *Arch. Neuropsychiatry* **2018**, *55*, 105–112. [CrossRef]
51. Francis, R.; Hawes, D.J.; Abbott, M. Intellectual Giftedness and Psychopathology in Children and Adolescents: A Systematic Literature Review. *Except. Child.* **2016**, *82*, 279–302. [CrossRef]
52. Wellisch, M.; Brown, J. An Integrated Identification and Intervention Model for Intellectually Gifted Children. *J. Adv. Acad.* **2012**, *23*, 145–167. [CrossRef]
53. Bénony, H.; Van Der Elst, D.; Chahraoui, K.; Bénony, C.; Marnier, J.-P. Link between depression and academic self-esteem in gifted children. *L'Encephale* **2007**, *33*, 11–20. [CrossRef] [PubMed]
54. Terrassier, J.C. The dyssynchrony syndrome (author's transl). *Neuropsychiatr. Enfance Adolesc.* **1979**, *27*, 445–450. [PubMed]
55. Martin, L.T.; Kubzansky, L.D.; LeWinn, K.Z.; Lipsitt, L.P.; Satz, P.; Buka, S.L. Childhood Cognitive Performance and Risk of Generalized Anxiety Disorder. *Int. J. Epidemiol.* **2007**, *36*, 769–775. [CrossRef] [PubMed]
56. van Weel, C.; Schellevis, F.G. Comorbidity and Guidelines: Conflicting Interests. *Lancet Lond. Engl.* **2006**, *367*, 550–551. [CrossRef] [PubMed]
57. Shaywitz, S.E.; Holahan, J.M.; Freudenheim, D.A.; Fletcher, J.M.; Makuch, R.W.; Shaywitz, B.A. Heterogeneity Within the Gifted: Higher IQ Boys Exhibit Behaviors Resembling Boys With Learning Disabilities. *Gift. Child Q.* **2001**, *45*, 16–23. [CrossRef]