

Identification and Prevalence of Twice-Exceptional Female Students in Al-Ahsa

Fatimah Mohammed Rashed Almas*  and

Fahad Ahmed Mohammed Alnaim 

Department of Special Education,
King Faisal University, Al-Ahsa,
Saudi Arabia

Abstract. This study investigates the prevalence of twice-exceptional students—those who are both gifted and have learning disabilities—among female elementary school students in Al-Ahsa, Saudi Arabia. These students possess outstanding abilities in academic or creative domains, while simultaneously experiencing difficulties in specific academic or developmental skills. Using a descriptive-analytical research design, the study targeted a purposive sample of 275 female students from 30 elementary schools who had been previously diagnosed with learning disabilities by qualified special education teachers. The identification process of twice-exceptional students followed a systematic three-phase approach. In the first phase, students demonstrating high academic achievement were shortlisted. In the second phase, their teachers completed the Teacher Rating Scale for the Behavioral Characteristics of Gifted Students with Learning Disabilities. In the third phase, students who met the criteria were administered Raven's Coloured Progressive Matrices to assess their cognitive ability. The results, analyzed using SPSS, revealed that 18.91% of the students with learning disabilities exhibited gifted characteristics. Furthermore, the findings showed no statistically significant differences between fourth and fifth graders in their responses to the second instrument, while statistically significant differences were found in the third instrument in favor of fifth-grade students. This study highlights potential disparities in the educational and psychological services provided to this population and emphasizes the need to develop more accurate diagnostic tools and implement specialized educational programs to support inclusive learning environments for twice-exceptional students.

Keywords: Twice exceptional; Gifted; Learning Disabilities; Identification; Prevalence; Elementary Education

*Corresponding author: Fatimah Mohammed Rashed Almas; fa.m95@hotmail.com

1. Introduction

Significant attention has been devoted by educational institutions and scholarly journals to the population known as Twice Exceptional (2e) students who simultaneously exhibit characteristics of giftedness and disabilities, such as learning difficulties, sensory impairments, or physical disabilities. This interest intensified following the enactment of the Individuals with Disabilities Education Improvement Act [IDEIA] in 2004, which formally affirmed that giftedness could coexist with a disability within the same individual (Abunayan, 2021).

A number of theoretical frameworks have contributed to explaining this phenomenon. Taylor's Multiple Talent Theory posits that every student in school is likely to achieve above-average performance in one or more of the multiple and diverse talent domains, and that all students can benefit from educational programs that focus on nurturing talents (Al-Jawalda & Al-Qamash, 2015; Al-Quraiti, 2014). Ronksley-Pavia's (2015) evolving model of twice-exceptionality builds on Gagné's view that giftedness is not limited to a single concept. It covers multiple areas such as general intelligence, innovation, creativity, leadership, and psychomotor abilities.

These areas may intersect with disabilities. The model also considers the environmental and societal factors that influence talent development. Another influential framework is Gardner's 1993 Theory of Multiple Intelligences, which proposes that there are eight distinct types of intelligence, and that individuals may possess one or more of these: linguistic, logical-mathematical, spatial, musical, bodily-kinesthetic, interpersonal, intrapersonal, and naturalistic (Davis et al., 2011).

Baldwin et al., (2015) defined 2e students as those who demonstrate exceptional ability alongside a disability, resulting in unique presentation patterns: (a) the exceptional ability masks the disability, (b) the disability masks the exceptional ability, or (c) both giftedness and disability mask each other, leading to neither being recognized or addressed. Similarly, Morris (2021) described them as students who combine giftedness with disabilities such as learning difficulties, sensory impairments, or physical disabilities.

Although the term "Twice-Exceptional" broadly encompasses gifted individuals with different types of disabilities, it can be narrowed down in academic research to specific subgroups (Lee & Olenchak, 2015). In the present study, the focus is on the subgroup of gifted female students with Learning Disabilities (LD). They are characterized by outstanding talent and high intellectual capacity, enabling them to achieve advanced levels of performance. Despite this potential, they face learning difficulties that reduce aspects of their academic achievement, often resulting in performance levels far below their intellectual ability (Maddocks, 2018; Stankovska & Rusi, 2014).

Buica-Belciu and Popovici (2014) describe this group as heterogeneous. They have advanced intellectual abilities, strong verbal skills, and the capacity to

understand abstract concepts. At the same time, they face weaknesses in basic academic skills such as reading and writing.

Gifted students with LD are also described as those who score high on intelligence tests and show clear signs of giftedness yet face learning difficulties that make some aspects of academic adaptation challenging. This requires coordinated efforts from educators and specialists to provide targeted support (Zaghloul & Al-Samadi, 2015). Gifted students with LD can be identified by selecting those who show academic learning difficulties along with signs of giftedness in cognitive and creative ability assessments. According to Al-Bakheet and Eissa (2012), these students share traits of both giftedness and disability, which qualifies them as 2e.

A multi-step process for identifying gifted students with LD, described in detail by McCoach et al. (2004), includes reviewing their academic records, observing the student in the classroom, administering individual IQ tests, applying achievement tests, analyzing portfolios, interviewing the student, and gathering perceptions from parents and teachers to guide decision-making.

One procedural framework proposed for upper elementary students begins with administering a nonverbal intelligence test followed by the Torrance Tests of Creative Thinking. Teachers, parents, or their peers may then complete nomination forms. In the final stage, standardized tools confirm the presence of LD and verify that the student does not have other impairments such as hearing, visual, or intellectual disabilities (Mahmoud, 2021). Students in this group often display significant deficits in one academic area, such as reading, writing, or mathematics yet possess cognitive abilities ranging from average to high. These strengths, as noted by Al-Sumairi (2021) and Al-Sawy (2020), may be evident in other academic subjects or in domains such as athletic skills, performing arts, or psychomotor abilities.

Gifted students with LD often excel in areas such as music, visual arts, problem-solving, rapid learning, strong memory, diverse interests, abstract thinking, and advanced communication skills. They also demonstrate exceptional language use and a vivid imagination, which is evident in their creative expression (Firat & Bildiren, 2023; Hopwood, 2019).

However, individuals in this category often face obstacles that make identification difficult within educational settings due to the diversity of their profiles. Some have mild learning difficulties alongside giftedness and may achieve satisfactory academic performance, which prevents them from being referred to either learning support or gifted programs (Krochak & Ryan, 2007). Others have severe learning difficulties alongside giftedness and are often referred only to learning support programs with their talents remaining unrecognized (McCoach et al., 2001). A third group, referred to as the "masked" subgroup, consists of students whose giftedness conceals their learning difficulties and whose difficulties conceal their giftedness, making them one of the largest unidentified subgroups of gifted students with LD (Brody & Mills, 1997).

Global interest in the 2e population aligns with the educational aspirations of the Kingdom of Saudi Arabia. Vision 2030 seeks to provide high-quality education for every student at all grade levels, with special care for individuals with disabilities (Council of Economic and Development Affairs, 2016). This vision is reflected in the efforts of King Abdulaziz and His Companions Foundation for Giftedness and Creativity, known as "Mawhiba," which promotes talent in scientific, artistic, and industrial fields. Since 2019, the International Conference on Twice-Exceptionality has provided a platform for discussion and produced recommendations related to identification methods and diagnostic procedures. The conference also highlighted the importance of fostering community collaboration among stakeholders (International Conference on Twice-Exceptionality, 2023).

To estimate the scope of the services and programs needed for gifted students with LD, the present study examines the prevalence of gifted female students with LD in schools. Determining the proportion and representation of this subgroup is important for interpreting the results and understanding their significance. When the prevalence rate is sufficiently high, it can guide policymakers in designing educational programs and teacher training initiatives.

These findings can also inform researchers investigating the identification of 2e students. Clear documentation of the methodology, tools, and procedures used to determine prevalence supports this effort. Producing accurate statistics on subpopulations of individuals with disabilities is considered to be a research priority in Saudi Arabia. Such data can be used regionally and internationally to compare trends, explain the differences in prevalence rates, and develop targeted solutions (King Salman Center for Disability Research, 2024).

2. Prevalence of LD

In the United States, students with LD between the ages of 6 and 21 represent approximately 38.2% of all students receiving special education services (U.S. Department of Education, 2019). In Saudi Arabia, estimates indicate that about 7% of school-aged students are enrolled in LD programs (Abunayan, 2021). Accurately determining prevalence is challenging in many countries. Each student with an LD has a unique profile, which leads to diverse educational and support needs. In addition, definitions, criteria, and assessment procedures vary across contexts (Al-Haj, 2012; Al-Tayyar, 2019). The presence of co-occurring conditions, such as Attention-Deficit/Hyperactivity Disorder (ADHD), further complicates diagnosis, requiring the use of more precise evaluation tools (Al-Najjar & Al-Ghoneimy, 2019).

The reported prevalence rates often reflect the number of students already receiving services in LD programs. However, some students have learning difficulties but do not receive special education services and remain undiagnosed (Abunayan, 2021). To address this gap, the Response to Intervention (RTI) model has been proposed as a school-wide approach to support all students. RTI involves improving the quality of instruction and assessment, identifying early signs of learning difficulties, and developing

individualized education plans for students who need them (Mellard et al., 2004; Scanlon, 2014; Buffum et al., 2010). In the broader Arab world, reliable national data on students with LD is limited. Where available, it is often the result of individual research efforts rather than systematic national reporting (Abunayan, 2020).

3. Prevalence of the 2e Population (Gifted Students with LD)

The prevalence of gifted students with LD will be reviewed according to the following three focal areas:

3.1 Studies Reporting the Prevalence of Gifted Students with LD Within the LD Population

Several studies have investigated the proportion of gifted students within the broader group of students with LD. In Saudi Arabia, a study by Al-Bakheet and Eissa (2012) found that 3.3% of elementary school students identified with LD in Riyadh exhibited signs of giftedness. In Bahrain, Al-Hajri (2015) reported a lower prevalence rate of 1.1% among students in the early years of elementary school who were identified as both gifted and having LD.

In Western contexts, Barnard-Brak et al., (2015) found that 9.1% of children with disabilities between the ages of six and twelve were also identified as gifted. Lovett and Sparks (2010) estimated that 5% of postsecondary students with LD demonstrated gifted characteristics. A study by Baum and Owen (1988) reported a notably higher prevalence, indicating that 36% of students with LD exhibited giftedness.

Further differentiation by academic domain was offered in a study by Bell et al. (2015), which found that 16% of students with LD were gifted in mathematics, while 24.5% were gifted in reading. Overall, in the United States, estimates of the prevalence of giftedness among students with LD range widely—from 1% to 20%—depending on the criteria and identification methods used (Maddocks, 2018; Maddocks, 2020; Morrison & Rizza, 2007).

3.2 Studies Reporting the Prevalence of Gifted Students with LD Within the Gifted Population

Some studies have investigated the prevalence of LD among students already identified as gifted. In Khartoum, Sudan, Mohammed (2016) found that 2.5% of elementary school students classified as gifted also had LD. In Kuwait, Al-Sayyid (2003) reported that among gifted students in middle school, 16% had reading difficulties, 12.3% had writing difficulties, and 18.5% experienced difficulties in mathematics.

In Oman, Al-Araimi (2011) estimated the prevalence of learning difficulties among gifted fourth- and fifth-grade students as follows: 10.22% had reading difficulties, 10.9% had mathematical difficulties, and 5.5% had writing difficulties. In Riyadh, Saudi Arabia, Mohammed and Al-Othman (2017) reported that 16.70% of gifted students exhibited LD.

In Western contexts, Munro (2002) reported that approximately 30% of gifted individuals had some form of disability. Similarly, Ronksley-Pavia (2014) found that 10% of the gifted population could be classified as 2e.

3.3 Studies Reporting the Prevalence of Gifted Students with LD Within the General Education Population

In Algeria, Benin and Benin (2018) conducted a study showing that gifted students with LD represented approximately 5% of the general secondary school student population. In the United States, research estimates suggest that between 300,000 and 360,000 children are identified as gifted with disabilities. According to the National Association for Gifted Children, this figure constitutes about 0.5% of individuals under the age of 18 (Baum et al., 2017).

A review of previous studies shows that estimated prevalence rates of gifted students with LD vary widely across the Arab world and Western countries. In some contexts, the rates are high, while in others, they are considerably lower. One reason for this variation is the degree of rigor or leniency applied in identification methods with students (Silverman, 2018). Another factor is the compensation ability of gifted students with LD, which enables them to conceal their areas of weakness and prevents an accurate diagnosis (Silverman, 2009).

Additional factors may contribute to these differences, including the variety of definitions used for both giftedness and LD, the difficulty of identifying patterns of 2e, and the overlap between the concepts of LD and low academic achievement (Al-Qadi, 2009). Differences in the theoretical foundations adopted by studies, as well as variations in tools, definitions, and targeted age groups, also play a role.

It is worth noting that gifted students with LD represent a relatively high-prevalence group worldwide compared to other categories of 2e students. This underscores the need to improve the pathways for their education and provide consistent support (Abu-Jado, 2013; Al-Samadi, 2015; Al-Zoubi & Al-Zoubi, 2020). Delays in evaluation or the use of diagnostic methods that do not align with their characteristics may hinder their development. Such shortcomings can lead to social and emotional challenges, including frustration, depression, feelings of inadequacy, and aggression (Cvitković & Stošić, 2022).

4. Significance of the Study

This study is significant as it provides reliable statistical data on the prevalence of gifted female students with LD, using appropriate diagnostic methods for identifying the 2e population. This data can support the promotion of inclusive education that ensures equal opportunities for all learners and empowers individuals with disabilities to develop and utilize their intellectual, artistic, and creative abilities. The findings may also inform educational policies and teaching practices that address the dual needs of this population by fostering their talents while addressing their learning challenges simultaneously. Furthermore, this study offers a valuable reference for future research, both locally and in regional and international comparative studies, thereby contributing to the broader knowledge base on 2e students.

5. Purpose of the Study

The aim of this study is to identify the prevalence of gifted female students with LD in the upper elementary grades (fourth and fifth grades) in Al-Ahsa Governorate, in the Kingdom of Saudi Arabia. In addition, this study seeks to examine the differences between the mean responses of fourth- and fifth-grade students to two instruments: the Behavioral Characteristics of Gifted Students with Learning Disabilities (TRS-G/LD) and the Raven's Coloured Progressive Matrices Test.

6. Research Questions

The main research question of the study is: What is the prevalence of gifted female students with LD in the upper elementary grades (fourth and fifth grades) in Al-Ahsa?

From this main question, the following sub-questions are derived:

1. Are there statistically significant differences at the $\alpha = 0.05$ level in response to the TRS-G/LD attributable to differences in grade level (fourth vs. fifth grade) in elementary school?
2. Are there statistically significant differences at the $\alpha = 0.05$ level in response to the Raven's Coloured Progressive Matrices Test attributable to differences in grade level (fourth vs. fifth grade) in elementary school?

7. Study Methodology

7.1 Study Design

The study employed a descriptive-analytical design, as it both describes the phenomenon – namely, determining the prevalence of gifted female students with LD – and analyzes the differences between the results of fourth- and fifth-grade students regarding the study instruments.

7.2 Study Sample

The target population in the present study consisted of female students with LD in the fourth and fifth grades of elementary schools in Al-Ahsa Governorate. A total of 275 students were enrolled from 30 public schools offering LD programs under the supervision of the Al-Ahsa Department of Education. These schools are located in the Al-Hofuf, Al-Mubarraz, and Eastern Villages sectors, which together represent approximately 75% of all public elementary schools in the region that host LD programs. The schools included in the study had already reported the presence of female students with LD who demonstrated high academic achievement.

The focus on the fourth and fifth grades, classified as the upper elementary level, excluded the sixth grade because the chronological ages of its students ranged from 12.7 to 12.9 years. These ages exceed the age range specified for the Raven's Coloured Progressive Matrices Test, which is standardized for children up to 11 years old. The lower elementary grades (first, second, and third) were also excluded for two reasons. First, the formal diagnosis of LD typically begins in the second grade, which means that students in these grades have not spent enough time in school to accurately determine their academic strengths. Second, the identification of 2e students relies in part on academic achievement, a

process that requires monitoring performance over the longest possible period (Al-Jughiman, 2020). To cover the necessary period for this research, the second- and third-grade academic results were used for the fourth-grade students, and the third- and fourth-grade results were used for the fifth-grade students.

The final sample of 2e female students consisted of 52 participants. They were selected through purposive sampling, which involves choosing specific individuals who meet the predefined characteristics and criteria aligned with the research requirements. This method is often used in special education research due to the limited availability of suitable participants (Al-Rousan, 2014). The specific selection criteria and procedures used in this study are described in detail in Section 7.2.1.

7.2.1 Criteria for Selecting the Sample of 2e Students

The selection of the sample of gifted female students with LD was based on the following criteria:

1. The student must be officially enrolled in an LD program at a public elementary school, following parental consent and the administration of diagnostic assessments to confirm the presence of a learning difficulty in either mathematics, literacy, or both.
2. The student must be enrolled in either the fourth or fifth grade at a public elementary school offering an LD support program.
3. The student's chronological age must not exceed 11 years, in alignment with the age range specified for Raven's Coloured Progressive Matrices intelligence test. In the current study, the ages of the selected 2e students ranged from 8 to 11 years.
4. The student must meet the following three-part identification battery designed for recognizing 2e learners, as defined in this study:
 - A cumulative academic achievement score of 90% or higher for the two previous academic years. This ensures the monitoring of performance over an extended time frame, consistent with the identification guidelines for 2e students (Al-Jughiman, 2020). For fourth-grade students, academic records from grades two and three were reviewed, while for fifth-grade students, records from grades three and four were considered.
 - A rating above average on the TRS-G/LD.
 - An intelligence score of 110 or above on the Raven's Coloured Progressive Matrices test which, based on scoring keys, reflects above average to superior cognitive ability. Such scores are considered indicative of the intellectual potential that may coexist with LD, as noted by the Association for Children with Learning Disabilities (1985) in Al-Jughiman (2020). Several studies have also adopted this threshold for identifying students classified as gifted with LD (Al-Sawy, 2020; Mutawalli, 2021).

7.3 Research Instruments: Tools Used to Identify the 2e Population

Several studies (Hernández-Torrano & Tursunbayeva, 2016; McBee et al., 2014; National Association for Gifted Children, 2015) have adopted multiple criteria for identifying giftedness among students with LD. These criteria include

general academic achievements, Raven's Coloured Progressive Matrices intelligence test, and the TRS-G/LD.

7.3.1 Academic Achievement

One of the key indicators of giftedness among students with LD is their ability to achieve high academic performance relative to their peers, who typically perform at lower academic levels (McCoach et al., 2004). Numerous studies (Al-Sikhan & Maghrabi, 2021; Abdulmohsen, 2022; Altun & Yazici, 2014; Barabadi & Khajavy, 2020) have relied on academic achievement as a means of identifying gifted students.

7.3.2 Administration of the General Academic Achievement Measure

The initial stage of identifying 2e students involved reviewing school report cards from the previous two academic years (2022 and 2023) for each student in the target population of girls with LD. Students who achieved an academic average of 90% or higher were considered to have met this criterion. A total of 81 fourth-grade students met the standard, representing 55.5% of that grade level. Additionally, 65 fifth-grade students met the criterion, representing 50.4% of their cohort. This resulted in a total of 146 students, which accounts for 53.1% of the entire sample.

7.3.3 The TRS-G/LD: Description and Administration

The instrument consists of two dimensions: cognitive characteristics and psychological/social characteristics. It contains 20 items that are evenly distributed between the two dimensions. A student who obtains a standard score above the mean qualifies for classification as 2e (Al-Bakheet & Eissa, 2012). Numerous studies (Aba Al-Khail, 2011; Ibrahim, 2019; Abu Nasser & Al-Asmari, 2018; Salem, 2017; Eissa, 2018) have utilized teacher nomination checklists to identify 2e populations of gifted students with LD. The TRS-G/LD was utilized as an integral part of the identification process. The classroom teachers completed the scale individually for each student with LD who had passed the first criterion for identifying gifted students with LD.

Certain biases may occur among some teachers during the nomination process, which may be attributed to a lack of awareness regarding the characteristics of the targeted group. To address this, it is essential to provide all teachers with the necessary concepts to ensure accuracy in the identification process (Al-Jughiman, 2018). To ensure the reliability of the teacher evaluations, only teachers who had long-term familiarity with the students with LD—and with any indicators that might suggest the presence of giftedness—were selected. These teachers received direct training on how to use the instrument, including an explanation of each item, and were provided with a guide outlining the key domains related to the 2e population and the methods for identifying and recognizing them within the school context.

A total of 48 fourth-grade students met the standard, representing 59.3% of that grade level, while 32 fifth-grade students met the criterion, representing 49.2%. Altogether, 80 students passed this criterion, accounting for 29.1% of the total sample.

7.3.4 Reliability of the TRS-G/LD

A study by Al-Bakheet and Eissa (2012) was conducted in Riyadh, Saudi Arabia, to identify gifted students with LD from among the population of elementary school students receiving LD services. The validity of the TRS-G/LD was established by presenting it to three expert judges specializing in gifted education and LD, all of whom confirmed its appropriateness. Item-dimension correlations were calculated, with most items showing statistical significance at the 0.01 level, with three items at the 0.05 level. Reliability was confirmed using the Cronbach's alpha coefficient, which reached 0.79.

Given the geographical and cultural proximity between Riyadh and Al-Ahsa, the present study did not conduct a new validity or reliability assessment for the TRS-G/LD and instead relied on the psychometric evidence reported by Al-Bakheet and Eissa.

7.3.5 Raven's Coloured Progressive Matrices Test: Description and Administration

The Raven's Coloured Progressive Matrices Test was selected because it is particularly suitable for use with special education populations, especially students with LD who often experience linguistic challenges. The inclusion of coloured illustrations makes the test more engaging and effective at capturing their attention (Jalal & Mashakheel, 2007).

This test was administered to the 80 students who had passed the previous two criteria, forming the final stage of the triadic identification battery. Upon completion, the number of students identified as 2e—gifted with a learning disability—was determined. A total of 29 fourth-grade students met the intelligence criterion, representing 60% of that subgroup, while 23 fifth-grade students met the standard, representing 50.4%. This resulted in a final count of 52 2e students, corresponding to 18.91% of the total population of students with LD in the study.

7.3.6 Reliability of the Raven's Coloured Progressive Matrices Test

Jalal and Mashakheel (2007) conducted their study on a sample of elementary school students to establish the validity and reliability of the Raven's Coloured Progressive Matrices Test. Test validity was examined using the age differentiation criterion, which revealed statistically significant differences at the 0.05 level in favor of older age groups. Reliability was calculated using Cronbach's alpha, yielding a high value of 0.89.

Given the scientific, social, and economic similarities among Gulf countries, and considering that the test is regarded as suitable for application across various populations with diverse cultural backgrounds (Daley et al., 2003; Langene et al., 2022), the present study adopted the version standardized for the Kingdom of Bahrain by Jalal and Mashakheel for use with the study sample.

8. Data Collection Procedures

The identification tools for gifted female students with LD were administered within the school setting to the study participants directly. The data collection took place over the course of one academic semester, spanning approximately three months through multiple visits to each school individually. First, the files of fourth- and fifth-grade students with LD were reviewed, and those who met the first criterion were identified. Second, designated teachers in each school were instructed on how to administer the second criterion (TRS-G/LD) and subsequently completed the instrument individually for each student who had passed the first criterion.

Third, the completed TRS-G/LD forms were collected from the teachers, the scores were calculated, and students meeting the required cutoff score were identified. Fourth, the Raven's Coloured Progressive Matrices Test was administered to the students who had met the required score following the TRS-G/LD. Following this step, the final number of students meeting all three criteria was determined, and the prevalence of gifted female students with LD was calculated in relation to the total number of students with LD in the sample.

9. Results

The statistical analyses employed to address the research questions included descriptive statistics (percentages, means, standard deviations) and inferential statistics using an independent samples t-test at the $\alpha = 0.05$ significance level.

9.1 Prevalence of Gifted Female Students with LD

The primary research question sought to determine the prevalence of gifted female students with LD in the upper elementary grades (fourth and fifth) in Al-Ahsa. Out of the 275 students with LD in the sample, a total of 52 were identified as 2e, representing 18.91% of the target population.

The identification process revealed that 80 students (29.1% of the sample) passed the first two identification criteria and advanced to the Raven's Coloured Progressive Matrices test. Of these, 48 were fourth-grade students (59.3% of those who advanced) and 32 were fifth-grade students (49.2%). After applying the final criterion, 29 fourth-grade students (60% of that subgroup) and 23 fifth-grade students (50.4% of that subgroup) met the intelligence threshold for classification as 2e students. This percentage is relatively high compared to some of the previous studies and aligns with the higher end of the global prevalence estimates for this population.

9.2 Differences in the TRS-G/LD Scores by Grade Level

The first sub-question examined whether there were statistically significant differences in the scores in response to the TRS-G/LD between fourth- and fifth-grade students. The independent samples t-test results are presented in Table 1.

Table 1: Independent samples *t*-test results for the differences between fourth- and fifth-grade students in response to the TRS-G/LD

Measure	Grade Level	N	Mean	Std. Deviation	<i>t</i>	Sig. (p)
TRS-G/LD	Fourth	49	47.73	4.92	1.052	.296
	Fifth	31	46.58	4.54		

The analysis showed no statistically significant differences between grade levels ($p > .05$). The close mean scores and overlapping standard deviations suggest that teachers perceived the behavioral characteristics of giftedness among students with LD in a similar manner across both grade levels. This consistency may be attributed to their close age range and shared upper elementary school learning environment.

9.3 Differences in the responses to Raven's Coloured Progressive Matrices Test by Grade Level

The second sub-question assessed whether there were statistically significant differences in the scores in response to Raven's Coloured Progressive Matrices test between fourth- and fifth-grade students. The results are presented in Table 2.

Table 2: Independent samples *t*-test results for the differences between fourth- and fifth-grade students in response to Raven's Coloured Progressive Matrices Test

Measure	Grade Level	N	Mean	Std. Deviation	<i>t</i>	Sig. (p)
Raven	Fourth	29	30.90	2.45	2.214	.031
	Fifth	23	32.17	1.70		

The analysis revealed a statistically significant difference in favor of fifth-grade students ($p < .05$). The higher mean score for fifth graders suggests a developmental advantage in nonverbal reasoning ability, which may be linked to greater cognitive maturity, broader learning experiences, and the acquisition of more advanced problem-solving strategies with age.

10. Discussion

10.1 Prevalence of Gifted Female Students with LD

This section discusses the findings related to the main research question, which sought to determine the prevalence of gifted female students with LD in the upper elementary grades (fourth and fifth grades) in Al-Ahsa. The results revealed that the number of 2e students (gifted female students with LD) was 52, representing 18.91% of the total number of female students with LD enrolled in public elementary schools in Al-Ahsa Governorate offering learning disability programs ($N = 275$).

The prevalence rate reported in the present study (18.91%) is higher than expected when compared to previous studies with similar objectives, which sought to determine the proportion of gifted students within the broader population of students with LD. For example, Al-Hajri (2015) reported a rate of 1.1%, while Al-Bakheet and Eissa (2012) reported a rate of 3.3%. In the post-secondary context, Sparks and Lovett (2010) reported a rate of 5%. The rate observed in this study also falls within the range of international prevalence

rates. For instance, Baum and Owen (1988) reported 36%, while Bell et al. (2015) identified 16% for students gifted in mathematics and 24.5% for those gifted in reading. Moreover, Maddocks (2018, 2020) and Morrison and Rizza (2007) indicated that the global prevalence rates for gifted students with LD generally range from 1% to 20%.

The variation in prevalence rates between the present study and previous research can be attributed to several factors. One primary reason is the difference in the tools used to identify giftedness among students with LD in each study. This can be explained by the fact that giftedness is a broad construct encompassing multiple domains, and researchers adapt their measurement tools to align with the objectives of their studies. As a result, the choice of instruments may lead to either higher or lower reported prevalence rates. This aligns with the assertion of Jarwan and Al-Abadi (2014) that giftedness is a multifaceted concept with diverse and varied measurement approaches. Differences in sample characteristics, such as age, gender, educational environment, and grade level also contribute to these variations.

In addition, variations in classification criteria across countries for identifying students with LD, gifted students, and 2e students play a role in these differences. Ronksley-Pavia (2015) emphasized that both giftedness and disability are dynamic rather than fixed traits within individuals and across populations. Cultural and social contexts play a significant role in shaping and classifying the characteristics of 2e individuals, as well as in defining the scope of giftedness and disability and determining who is included in this category. Furthermore, community and school-level awareness of the characteristics of 2e students, along with the comprehensiveness of diagnostic tools in addressing both LD and the distinct aspects of giftedness, can influence identification rates.

In explaining why, the prevalence in the present study was relatively high, it is important to note that the sample consisted of students with LD who had already been formally diagnosed. This may be linked to limitations in the diagnostic practices used in schools, such as the lack of a comprehensive scientific methodology incorporating diverse and multiple tools for identifying students with LD. As a result, some students in general education may have been classified as having LD due to low academic performance or emotional and psychological challenges stemming from factors unrelated to learning disorders.

At the same time, gifted students with LD may have been overlooked in identification processes because their giftedness masked their learning difficulties. Such students might instead be placed in gifted programs, remain unidentified, or be excluded from both gifted education and special education services, thereby missing opportunities to benefit from targeted support in either domain. Given the diversity of the subgroups within the population of gifted students with LD—which include those with mild LD, those with severe LD, and those with hidden or masked forms of giftedness—the 2e students in the present study fall into the masked category. In this group, the presence of LD prevents the direct recognition of gifted traits. Although these students achieve

high academic grades and possess a high level of intelligence, such elevated cognitive abilities are often unnoticed by their teachers. This masking characteristic is among the most prevalent traits in this population, as noted by Brody and Mills (1997). Therefore, there is a clear need for specialists who are well-versed in the characteristics and subcategories of 2e students to ensure accurate identification.

10.2 Differences in response to the TRS-G/LD by Grade Level

This section discusses the findings related to the first sub-question, which examined whether there are statistically significant differences at the $\alpha \leq 0.05$ level in response to the Teacher Rating Scale for the TRS-G/LD attributable to differences in grade level (fourth vs. fifth grade) in elementary school. The results indicated no statistically significant differences between the two grade levels. This finding aligns with the results of Al-Araimi (2011).

One possible explanation is that students with LD, regardless of whether they possess high or average intelligence, often encounter persistent challenges when acquiring specific academic skills (Lovett & Sparks, 2010). They may also struggle to form effective social relationships with their peers (Estell et al., 2008) and tend to maintain a low self-concept (Heiman & Olenik-Shemesh, 2020). Similarly, Ibrahim (2018) concluded that students with LD experience declines in their overall, academic, and social self-concepts due to negative experiences. High expectations from others for their academic performance, combined with their limited learning capacities, can exacerbate these challenges.

These students often exhibit characteristics such as difficulties when organizing information, deficits in self-monitoring and self-regulation, and challenges when problem-solving and evaluating completed tasks (Lerner & Johns, 2012). Such difficulties can be attributed to the academic challenges and societal pressures they face both inside and outside the school environment. Another explanation lies in the age characteristics of the study sample, which was limited to fourth- and fifth-grade students in elementary school. These two grades may fall within the same developmental stage, meaning that their characteristics are less likely to be significantly influenced by the grade level factor.

10.3 Differences in response to the Raven's Coloured Progressive Matrices Test by Grade Level

This section discusses the findings related to the second sub-question, which examined whether there are statistically significant differences at the $\alpha \leq 0.05$ level in response to the Raven's Coloured Progressive Matrices attributable to differences in grade level (fourth vs. fifth grade) in elementary school. The results revealed significant differences in favor of fifth-grade students, who achieved a higher mean score.

One possible explanation for this outcome lies in the natural development of cognitive abilities as students grow older. The accumulation of experience, knowledge, and information over time contributes to increased intelligence scores. This interpretation is consistent with Cross and Coleman (2014), who

noted that general abilities can evolve and become more focused with age and progression through educational stages.

11. Implications For How Educational Systems Can Adopt Practical Changes for the Identification of 2e Students

Based on the study's findings, enhancing the identification of 2e students requires early screening conducted by a multidisciplinary team, including teachers, parents, students, school leaders, and specialists. This process should target both LD and giftedness within general education, gifted programs, and special education centers.

A comprehensive scientific approach is essential, employing assessment tools that measure multiple dimensions of giftedness while simultaneously identifying learning difficulties. In addition, continuous professional development is needed for general education teachers, LD specialists, and gifted education teachers. Such training should equip them to recognize students who exhibit indicators of both giftedness and learning difficulties at an early stage, thereby improving accuracy in identification and ensuring appropriate educational support.

12. Study Limitations

Several factors constrained the identification procedures for the 2e population in this study. Primarily, the tools used focused exclusively on measuring giftedness, while relying on pre-existing diagnoses for LD. This was due to the limited time and resources available, which prevented direct assessment of LD among gifted students with such difficulties. As a result, the participants were selected from the official records of elementary public schools with LD programs where they had been identified by specialist teachers using Ministry-approved tools. These tools included developmental skills tests and Ministry diagnostic tests on the Arabic language and mathematics.

Cultural norms requiring gender-segregated schooling restricted the sample to female students, which may limit the generalizability of the findings to male populations. Additionally, the prevalence rate may differ in reality, as some gifted students with LD may remain unidentified in regular classrooms, while others in gifted programs may also have undiagnosed learning difficulties. To broaden the scope of future research on identifying undiagnosed 2e students in schools or gifted programs, diagnostic models could be developed that draw on multiple sources and account for cultural differences in both regional and international contexts. Such models should capture the diverse dimensions of student giftedness while also incorporating dual-dimension assessment tools that measure giftedness and LD simultaneously.

A multi-faceted approach could be adopted, combining group assessments, in-depth individual diagnostics, achievement and performance-based measures, and qualitative tools to identify areas of giftedness and diagnose learning difficulties (Al-Jughiman, 2020; Krochak & Ryan, 2007). Future studies should

focus on more diverse samples across different educational settings, such as general education, gifted classes, and special education programs.

Additionally, research could evaluate parenting practices to gauge awareness of the characteristics of this population and strategies for early identification, as well as to explore the role of peers in recognizing and appreciating their classmates' talents. Comparative studies of international diagnostic models could also help determine best practices for identifying this group and assess their applicability in other educational contexts.

Such efforts could contribute to revising educational policies to better support 2e students and nurture their talents. Action research involving collaboration between teachers from different specialties and experts in gifted education and special education—both in government and the private sector—could facilitate the exchange of expertise on effective strategies for identifying undiagnosed LD and hidden talents in students with such challenges. Furthermore, integrating technology, including artificial intelligence applications and data analytics, into the identification process could enable the ongoing tracking of student development to detect signs of giftedness and learning difficulties. Analyzing academic records for masked patterns could also enhance early and accurate recognition.

13. Conclusion

The prevalence of 2e female students in the fourth and fifth grades of elementary schools in Al-Ahsa Governorate was found to be 18.91%. This percentage may serve as an important indicator for strengthening support for this group and for increasing educational and research engagement concerning their needs. The results also revealed no statistically significant differences attributable to grade level (fourth vs. fifth) in response to the TRS-G/LD, whereas statistically significant differences were found in response to the Raven's Coloured Progressive Matrices Test, favoring fifth-grade students, who achieved a higher mean score.

However, the relatively high prevalence rate observed in this study may be partly attributed to the reliance on a limited set of tools for identifying students with LD. Therefore, it is necessary to refine the procedures for identifying gifted students with LD by adopting scientifically grounded methodologies supported by research, which simultaneously addresses multiple dimensions of giftedness and aspects of disability. It is also essential to improve the diagnostic procedures for LD more broadly, ensuring the inclusion of all students who show indications of having such difficulties.

This study also recommends expanding future research to enhance and validate identification procedures for gifted students with LD. This includes developing multi-source diagnostic models that account for cultural differences and assess both giftedness and LD. Future studies should also compare identification outcomes across different educational settings, as well as between male and female students at both local and international levels. Such efforts could

improve the accuracy and reliability of the identification processes used and contribute to establishing evidence-based standards for defining this population.

14. Ethical Considerations

The researchers affirm their adherence to the ethical standards of scientific research, including obtaining all of the necessary official approvals prior to administering the study instruments, ensuring the confidentiality of both the participant's information and the data, and granting the participants the freedom to choose whether or not to participate.

15. Acknowledgment

This work was supported by the Deanship of Scientific Research, Vice Presidency for Graduate Studies and Scientific Research, King Faisal University, Saudi Arabia [Grant No. KFU250977].

16. References

- Aba Al-khail, A. (2011). Coping strategies for school-related stress among a sample of gifted students and gifted students with learning disabilities at the intermediate stage: A diagnostic study. *Arab Studies in Education and Psychology*, 5(4), 81-126.
- Abdumohsen, A. (2022). Validity of teachers' nominations for gifted students in light of some criteria for giftedness and excellence among a sample of second-stage basic education students in Assiut Governorate: A correlational-comparative study. *Journal of the Faculty of Education - Ain Shams University*, 46(3), 121-180. <https://doi.org/10.21608/JFEPS.2022.258981>
- Abu-Jado, M. (2013, November 16-17). *Gifted students with learning disabilities* [Paper presentation]. The 10th Arab Scientific Conference for the Care of Gifted and Outstanding Students - Standards and Indicators of Excellence: Educational Reform and the Care of Gifted and Outstanding Students, University of Dammam.
- Abu Nasser, F., & Al-Asmari, T. (2018). Implicit theories of intelligence and giftedness and their relationship to academic self-efficacy among gifted students with learning disabilities in the Eastern Province. *International Specialized Educational Journal*, 7(8), 105-117. <https://doi.org/10.36752/1764-007-008-008>
- Abunayan, I. (2021). *Learning disabilities: From history to services*. King Saud University Press.
- Al-Araimi, W. (2011). *The prevalence of academic learning difficulties in reading, writing, and mathematics among gifted and learning-disabled students in Oman* [master's thesis, Arabian Gulf University]. Dar Almandumah Database.
- Al-Bakheet, S., & Eissa, Y. (2012). A survey study to identify gifted children with learning disabilities in learning difficulties programs in Riyadh. *Journal of Psychological and Educational Sciences*, 13(4), 307-332.
- Al-Haj, M. (2012). *Learning difficulties: The hidden disability – Concept, diagnosis, and treatment*. Al-Yazouri Publishing.
- Al-Hajri, A. (2015). Developing a scale for identifying gifted students with learning disabilities in early elementary education in Bahrain. *Journal of Educational and Psychological Sciences*, 16(1), 13-42. <https://doi.org/10.12785/JEPS/160101>
- Al-Jawalda, F., & Al-Qamash, M. (2015). *Special Education for the Gifted*. Dar Al-Issar Al-Ilmi for Publishing and Distribution.
- Al-Jughiman, A. (2018). *Comprehensive guide for planning programs for gifted students*. Obeikan Publishing.

- Al-Jughiman, A. (2020). Twice-exceptional learners: Hidden talents. In A. Al-Jughiman & A. Abu Saker (Eds.), *Comprehensive encyclopedia on disability: Twice-exceptional learners* (pp. 1–307). Jarir Bookstore.
- Altun, F., & Yazici, H. (2014). Perfectionism, School Motivation, Learning Styles and Academic Achievement of Gifted and Non-Gifted Students. *Croatian Journal of Education*, 16(4), 1031–1054. <https://doi.org/10.15516/cje.v16i4.559>
- Al-Najjar, A., & Al-Ghonimy, H. (2019). *Reading and writing difficulties in children*. International Publishing House for Publishing and Distribution.
- Al-Qadi, A. (2009). *Gifted individuals with special needs: Who are they? How do we identify them? And what are the methods for their care and guidance*. Dar Al-Hikmah.
- Al-Quraiti, A. (2014). *Gifted and outstanding students: Their characteristics, identification, and care*. Alam Al-Kutub.
- Al-Rousan, F. (2014). *Research Design in Special Education*. Dar Al Fikr Publishers and Distributors.
- Al-Samadi, J. (2015, May 19-21). *Twice-exceptional students: Gifted students with disabilities* [Paper presentation]. The Second International Conference for Gifted and Talented, United Arab Emirates University, United Arab Emirates.
- Al-Sawy, R. (2020). The effectiveness of a program based on the questioning strategy to develop problem-solving skills among gifted children with learning disabilities. *Journal of Childhood and Education*, 12(44), 187–288. <https://doi.org/10.21608/FTHJ.2020.171709>
- Al-Sayyid, T. (2003). *The prevalence of academic learning disabilities among intellectually gifted students in grade 8 in Kuwait: An exploratory study* [master's thesis, Arabian Gulf University]. Dar Almandumah Database.
- Al-Sikhan, J., & Maghrabi, M. (2021). Perfectionism and its relationship to academic achievement among gifted and non-gifted high school students. *Journal of Special Education and Rehabilitation*, 13(44), 80–130.
- Al-Sumairi, Y. (2021). The level of elementary school teachers' awareness of modern instructional strategies that meet the needs of gifted students with learning disabilities. *Saudi Journal of Special Education*, (18), 19–48. <https://doi.org/10.33948/1640-000-018-001>
- Al-Tayyar, S. (2019). *Self-concept among elementary school girls with learning disabilities* [master's thesis, King Saud University]. Dar Almandumah Database.
- Al-zoubi, S. M., & Al-zoubi, S. M. (2020). Prevalence of Articulation Errors among Jordanian Gifted Students with Dyslexia. *Journal for the Education of Gifted Young*, 8(1), 533–548. <https://doi.org/10.17478/jegys.682635>
- Baldwin, L., Baum, S., Pereles, D., & Hughes, C. (2015). Twice-Exceptional Learners The Journey Toward a Shared Vision. *Gifted Child Today*, 38(4), 206–214. <https://doi.org/10.1177/1076217515597277>
- Barabadi, E., & Khajavy, G. H. (2020). Perfectionism and Foreign Language Achievement: The Mediating Role of Emotions and Achievement Goals. *Studies in Educational Evaluation*, 65, 1–57. <https://doi.org/10.1016/j.stueduc.2020.100874>
- Barnard-Brak, L., Johnsen, S. K., Hannig, A. P., & Wei, T. (2015). The Incidence of Potentially Gifted Students Within a Special Education Population, *Roeper Review*, 37(2), 74–83. <https://doi.org/10.1080/02783193.2015.1008661>
- Baum, S., & Owen, S. V. (1988). High Ability/Learning Disabled Students: How Are They Different? *Gifted child quarterly*, 32(3), 312–326. <https://doi.org/10.1177/001698628803200305>
- Baum, S. M., Schader, R. M., & Owen, S. V. (2017). *TO Be Gifted & Learning-Disabled Strength-Based Strategies for Helping Twice-Exceptional Students With LD, ADHD, ASD, and More* (3th ed.). Taylor & Francis Group. <https://doi.org/10.4324/9781003236160>

- Bell, S. M., Taylor, E. P., McCallum, R. S., Coles, J. T., & Hays, E. (2015). Comparing Prospective Twice-Exceptional Students with High-Performing Peers on High-Stakes Tests of Achievement. *Journal for the Education of the Gifted*, 38(3), 294-317. <https://doi.org/10.1177/0162353215592500>
- Benin, A., & Benin, I. (2018). The Detection of Gifted students with learning difficulties in the Algerian school Secondary period model. *Journal of Psychological and Educational Sciences*, 6(2), 32-54.
- Brody, L. E., & Mills, C. J. (1997). Gifted Children with Learning Disabilities: A Review of the Issues. *Journal of Learning Disabilities*, 30(3), 282-286. <https://doi.org/10.1177/002221949703000304>
- Buffum, A., Mattos, M., Weber, C. (2010). The why behind RTI Education Leadership, 68(2), 10-16. Google Scholar, ISI. <http://www.ascd.org/el/articles/the-why-behind-rti>
- Buica-Belciu, C., & Popovici, D. V. (2014). Being twice exceptional: gifted students with learning disabilities. *Procedia - Social and Behavioral Sciences*, 127, 519-523. <https://doi.org/10.1016/j.sbspro.2014.03.302>
- Council of Economic and Development Affairs. (2016). *Vision 2030 media document - Human Capability Development Program*. https://www.vision2030.gov.sa/media/es1pkuvo/hcdp-delivery-plan_ar.pdf
- Cross, T., & Coleman. (2014). School-Based Conception of Giftedness. *Journal for the Education of the Gifted*, 37, 94-103. <https://doi.org/10.1017/cbo9780511610455.005>
- Cvitković, D., & Stošić, J. (2022). Gifted Students with Disabilities. *Croatian Journal of Education*, 24(3), 949-986. <https://doi.org/10.15516/cje.v24i3.4470>
- Daley, T. C., Whaley, S. E., Sigman, M. D., Espinosa, M. P., & Neumann, C. (2003). IQ ON THE RISE The Flynn Effect in Rural Kenyan Children. *American Psychological Society*, 14(3), 215-219. <https://doi.org/10.1111/1467-9280.02434>
- Davis, K., Christodoulou, J., Seider, S., & Gardner, H. (2011). *The theory of multiple intelligences*. In R.J. Sternberg & S.B. Kaufman (Eds.), *Cambridge Handbook of Intelligence* (pp. 485-503). Cambridge, UK; New York: Cambridge University Press. <https://ssrn.com/abstract=2982593>
- Eissa, Y. (2018). Emotional intelligence and its relationship to social competence among gifted students with learning disabilities. *Journal of Educational Sciences*, (14), 209-274.
- Estell, D. B., Jones, M. H., Pearl, R., Van Acker, R., Farmer, T. W., & Rodkin, P. C. (2008). Peer Groups, Popularity, and Social Preference Trajectories of Social Functioning Among Students with and Without Learning Disabilities. *Journal of Learning Disabilities*, 41(1), 5-14. <https://doi.org/10.1177/0022219407310993>
- Firat, T., & Bildiren, A. (2023). The characteristics of gifted children with learning disabilities according to preschool teachers. *An International Research Journal*, 34(4-5), 921-937. <https://doi.org/10.1080/09575146.2022.2034755>
- Heiman, T., & Olenik-Shemesh, D. (2020). Social-Emotional Profile of Children with and without Learning Disabilities: Relationships with Perceived Loneliness, Self-Efficacy and Well-Being. *International Journal of Environmental Research and Public Health*, 17(20), 1-15. <https://doi.org/10.3390/ijerph17207358>
- Hernández-Torrano, D., & Tursunbayeva, X. (2016). Are teachers biased when nominating students for gifted services? Evidence from Kazakhstan. *High Ability Studies*, 27(2), 165-177. <https://doi.org/10.1080/13598139.2015.1108187>
- Hopwood, K. A., (2019). *Twice-Exceptionality: Teachers' Awareness and Training About Twice-Exceptionality and Their Effects on the Academic, Social and Emotional Outcomes of Students*. [Doctoral dissertation, Concordia University Irvine]. ProQuest Dissertations and Theses Global.

- <https://www.proquest.com/openview/c3e110bd104b8269b663e24aee9381ca/1?pq-origsite=gscholar&cbl=18750&diss=y>
- Ibrahim, A. (2019). *Program for the development of emotional intelligence and its impact on the self-efficacy of gifted students with learning disabilities* [master's thesis, University of Ain Shams].
- Ibrahimi, S. (2018). Self-concept and psychological adjustment among students with learning difficulties. *Journal of Psychological and Educational Sciences*, 6(1), 145–160.
- International Conference on Twice-Exceptionality. (2023). *Conference Information*. <https://www.aleradah.org.sa/ar/Events/Details/20008>
- Jalal, A., & Mashakheel, H. (2007). *Colored Progressive Matrices*. University of Bahrain.
- Jarwan, F., & Al-Abadi, Z. (2014). The effect of an educational program based on the Creative Problem-Solving strategy in developing creative thinking skills among gifted students with learning disabilities. *Arab Universities Union Journal for Education and Psychology*, 12(1), 11–43.
- King Salman Center for Disability Research. (2024). *Research priorities*. <https://www.kscdr.org.sa/ar/research>
- Krochak, L. A., & Ryan, T. G. (2007). The Challenge of Identifying Gifted/Learning Disabled Students. *International Journal of Special Education*, 22(3), 44–53.
- Langene, A. M., Wil Kramer, A., van den Bos, W., & Huizenga, H. M. (2022). A shortened version of Raven's standard progressive matrices for children and adolescents. *British Journal of Developmental Psychology*, 40, 35–45. <https://doi.org/10.31234/osf.io/fnjh2>
- Lee, K. M., & Olenchak, F. R. (2015). Individuals with a gifted/attention deficit/hyperactivity disorder diagnosis: Identification, performance, outcomes, and interventions. *Gifted Education International*, 31(3), 185–199. <https://doi.org/10.1177/0261429414530712>
- Lerner, J. W., & Johns, B. (2012). *Learning Disabilities and Related Mild Disabilities Characteristics, Teaching Strategies, and New Directions*. Wadsworth Cengage Learning.
- Lovett, B. J., & Sparks, R. L. (2010). Exploring the Diagnosis of "Gifted/LD": Characterizing Postsecondary Students with Learning Disability Diagnoses at Different IQ Levels. *Journal of Psychoeducational Assessment*, 28(2), 91–101. <https://doi.org/10.1177/0734282909341019>
- Maddocks, D. L. S. (2018). The Identification of Students Who Are Gifted and Have a Learning Disability: A Comparison of Different Diagnostic Criteria. *Gifted Child Quarterly*, 62(2), 175–192. <https://doi.org/10.1177/0016986217752096>
- Maddocks, D. L. (2020). Cognitive and Achievement Characteristics of Students from a National Sample Identified as Potentially Twice Exceptional (Gifted with a Learning Disability). *Gifted Child Quarterly*, 64(1), 3–18. <https://doi.org/10.1177/0016986219886668>
- Mahmoud, M. (2021). A conceptual framework for diagnosing gifted students with reading difficulties in the last three grades of elementary school. *Journal of Special Needs Sciences*, 3(5), 2293–2305. <https://doi.org/10.21608/jshm.2020.40810.1055>
- McBee, M. T., Peters, S. J., & Waterman, C. (2014). Combining Scores in Multiple-Criteria Assessment Systems: The Impact of Combination Rule. *Gifted Child Quarterly*, 58(1), 69–89. <https://doi.org/10.1177/0016986213513794>
- McCoach, D. B., Kehele, T. J., Bray, M. A., & Siegle, D. (2001). Best Practices in The Identification of Gifted Students with Learning Disabilities. *Psychology in the Schools*, 38(5), 403–411. <https://doi.org/10.1002/pits.1029>
- McCoach, D. B., Kehle, T. J., Bray, M. A., & Siegle, D. (2004). The Identification of Gifted Students with Learning Disabilities: Challenges, Controversies, and Promising Practices. In T. M. Newman & R. J. Sternberg (Eds.), *STUDENTS WITH BOTH GIFTS AND LEARNING DISABILITIES Identification, Assessment, and Outcomes*

- (pp. 31-47). Springer Science+Business Media. https://doi.org/10.1007/978-1-4419-9116-4_3
- Mellard, D. F., Deshler, D. D., & Barth, A. (2004). LD identification: It's not simply a matter of building a better mousetrap. *Learning Disability Quarterly*, 27(4), 229-242. <https://doi.org/10.2307/1593675>
- Mohammed, A. (2016). Identification of academic and cognitive learning disabilities among gifted and talented students in Khartoum. *International Specialized Educational Journal*, 5(5), 324-337. <https://doi.org/10.12816/0044112>
- Mohammed, A., & Al-Othman, A. (2017). Identification of gifted students with learning disabilities enrolled in gifted education programs in Riyadh. *Saudi Journal of Special Education*, 6, 19-45. <https://doi.org/10.33948/1640-000-006-001>
- Morris, E. (2021). *Teaching twice-exceptional learners*. Free spirit.
- Morrison, W. F., & Rizza, M. G. (2007). Creating a Toolkit for Identifying Twice-Exceptional Students. *Journal for the Education of the Gifted*, 31(1), 57-76. <https://doi.org/10.4219/jeg-2007-513>
- Munro, J. (2002). Understanding & Identifying Gifted Learning-Disabled Students. *Australian Journal of Learning Disabilities*, 7(2), 20-30. <https://doi.org/10.1080/19404150209546698>
- Mutawalli, W. (2021). Modeling the causal relationship between fluid intelligence, working memory, and cognitive flexibility among a sample of gifted elementary students with learning disabilities in Riyadh. *Islamic University Journal of Educational and Psychological Studies*, 29(4), 381-408. <https://doi.org/10.33976/IUGJEPS.29.4/2021/16>
- National Association for Gifted Children. (2015). *State of the states in gifted education: 2014-2015*. <https://files.eric.ed.gov/fulltext/ED608027.pdf>
- Ronksley-Pavia, M., (2014). An Empirical investigation of twice-exceptional research in Australia: Prevalence estimates for gifted children with disability. *ResearchGate*. <https://doi.org/10.13140/2.1.1456.4160>
- Ronksley-Pavia, M., (2015). A Model of Twice-Exceptionality: Explaining and Defining the Apparent Paradoxical Combination of Disability and Giftedness in Childhood. *Journal for the Education of the Gifted*, 38(3), 318-340. <https://doi.org/10.1177/0162353215592499>
- Salem, Y. (2017). *The effectiveness of a training program on emotional intelligence skills in improving social competence among gifted children with learning disabilities* [Doctoral dissertation, Kafr El-Sheikh University - Faculty of Education]. Dar Almandumah Database. <http://search.mandumah.com/Record/1040979>
- Scanlon, D. M. (2014). Assessing RTI Strategies: The Trouble with Packaged and Scripted Interventions. *Reading Today*, 31(1), 20-21.
- Silverman, L. K. (2009). The Two-Edged Sword of Compensation: How The Gifted Cope with Learning Disabilities. *Gifted Education International*, 25(2), 1-5. <https://doi.org/10.1177/026142940902500203>
- Silverman, L. K. (2018). Hidden Treasures: Twice Exceptional Students. In. B. Wallace & D.A. Sisk & J. Senior (Eds.), *Gifted and Talented Education* (pp. 144-158). The SAGE. <https://doi.org/10.4135/9781526463074.n14>
- Stankovska, G., & Rusi, M. (2014). *Cognitive, Emotional and Social Characteristics of Gifted Students with Learning Disability* [Paper presented]. the Annual International Conference of the Bulgarian Comparative Education Society, Bulgarian Comparative Education Society, Sofia and Nessebar, Bulgaria. <https://eric.ed.gov/?id=ED597987>
- U.S. Department of Education. (2019). *41st Annual Report to Congress on the Implementation of the Individuals with Disabilities Education Act, 2019*. <https://eric.ed.gov/?id=ED605108>
- Zaghloul, I., & Al-Samadi, A. (2015). *Gifted Individuals with Special Needs*. Dar Al Shorouk for Publishing and Distribution.