

# Giftedness and ADHD: A systematic literature review

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The purpose of this study was to examine the scientific production of empirical articles regarding twice exceptionality – giftedness/ADHD – through a systematic review. The search was carried out in the Portal de Periódicos Capes, SciELO, and PePSIC databases, considering the publications between 2011 and 2021. The terms giftedness, high abilities, ADHD, twice exceptionality, and their counterparts in Portuguese were used as descriptors. We selected 27 articles based on pre-established inclusion criteria. Six categories of studies were identified: socio-emotional factors, interpersonal relationships, identification, inattention and hyperactivity, intelligence quotient, and educational support practices. The conclusion was that by having their individual needs met and school community support, gifted students with ADHD can academically succeed, have a positive self-concept and good interpersonal relationships.

*Keywords:* twice exceptionality, giftedness, ADHD, scientific production.

## **Sobredotación y TDAH: una revisión sistemática de la literatura**

Este estudio examinó, a través de una revisión sistemática de literatura, la producción científica de artículos empíricos sobre doble excepcionalidad – sobredotación/TDAH. La búsqueda se realizó en las bases de datos Capes, SciELO y PePSIC, considerando publicaciones entre 2011 y 2021. Se usaron los descriptores altas capacidades, TDAH y doble excepcionalidad y sus equivalentes en inglés. Con base en los criterios de inclusión preestablecidos, se seleccionaron 27 artículos. Fueron identificadas seis categorías de estudios: aspectos socioemocionales, relaciones interpersonales, identificación, desatención y hiperactividad, cociente intelectual y prácticas educativas de apoyo. Se concluyó que sobredotados con TDAH pueden presentar éxito académico, autoconcepto positivo y buenas relaciones interpersonales si son atendidos de acuerdo a sus necesidades individuales y con apoyo de la comunidad escolar.

*Palabras clave:* doble excepcionalidad, sobredotación, TDAH, producción científica.

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### **Superdotação e TDAH: uma revisão sistemática da literatura**

Este estudo examinou, por meio de uma revisão sistemática da literatura, a produção científica de artigos empíricos acerca da dupla excepcionalidade – superdotação/TDAH. A busca foi realizada nas bases de dados Portal de Periódicos Capes, SciELO e PePSIC, considerando as publicações entre 2011 e 2021. Utilizou-se os descritores superdotação, altas habilidades, TDAH e dupla excepcionalidade, bem como seus correspondentes em inglês. Foram selecionados 27 artigos, a partir dos critérios de inclusão pré-estabelecidos. Identificaram-se seis categorias de estudos: aspectos socioemocionais, relações interpessoais, identificação, desatenção e hiperatividade, quociente de inteligência e práticas educativas de atendimento. Concluiu-se que superdotados com TDAH podem apresentar sucesso acadêmico, auto-conceito positivo e bom relacionamento interpessoal se forem atendidos conforme suas necessidades individuais e com apoio da comunidade escolar.

*Palavras-chave:* dupla excepcionalidade, superdotação, TDAH, produção científica.

### **Surdouance et TDAH: une revue systématique de la littérature**

Nous examinons, à travers une revue systématique de la littérature, la production d'articles empiriques sur l'exceptionnalité – surdouance/TDAH. La recherche a été effectuée dans les bases Capes, SciELO et PePSIC, en considérant les publications entre 2011 et 2021. Les descripteurs talent, douance, TDAH et double exceptionnalité ont été utilisés. Vingt-sept articles ont été sélectionnés a partir de critères d'inclusion. Six catégories d'études ont été identifiées: aspects socio-émotionnels, relations interpersonnelles, identification, inattention et hyperactivité, quotient intellectuel et pratiques de soins éducatifs. On a conclu que les surdoués atteints de TDAH peuvent réussir à l'école, avoir une image de soi positive et de bonnes relations interpersonnelles s'ils sont pris en charge selon leurs besoins individuels et avec le soutien de la communauté scolaire.

*Mots-clés:* double exceptionnalité, douance, TDAH, production scientifique.

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In the last two decades, there has been a growing interest in conducting empirical studies involving gifted individuals who present behavioral, emotional, and learning difficulties, including Attention Deficit Hyperactivity Disorder – ADHD, autism spectrum disorder – ASD, central auditory processing disorder – CAPD, and dyslexia, simultaneously with high ability. In the literature, the overlap of these apparently antagonistic characteristics has been called twice exceptionality (Al-Hroub, 2020; Arizaga et al., 2016; Coutinho-Souto & Fleith, 2021; Gomez et al., 2020; Mullet & Rinn, 2015; Pfeiffer & Prado, 2021; Reis et al., 2021). According to Oourofino (2007), scholars in the field of giftedness have sought to understand the development process of twice-exceptional students because the combination of high intelligence, multiple potentials, and possible behavioral and/or emotional disorders is often a paradoxical finding in research involving gifted individuals.

Pfeiffer and Prado (2021) argue that there are different concepts of giftedness and, therefore, several ways of conceiving the phenomenon. Several authors have stated that giftedness is a developing process that depends on a multiplicity of factors for its manifestation, as it arises from the interrelationships between the individual and the environment (Gagné, 2004; Renzulli, 2016; Renzulli & Reis, 2021; Subotnik et al., 2012). Renzulli's Three-Ring Model (2016), for example, considers that giftedness is the result of the dynamic and non-homogeneous interaction among three dimensions: above-average ability, task commitment, and creativity. This author has proposed two types of giftedness: schoolhouse and creative productive giftedness. The first type is more easily identified through standardized tests or instruments that assess cognitive abilities and is usually related to traditional learning situations. The second describes aspects of human activity that concern the emergence of new, unusual, or original ideas and/or products that

are generally evaluated by judges or qualified peers. It is therefore a flexible phenomenon that emerges in certain people, at certain times and under certain circumstances (Renzulli, 2016).

ADHD has been understood in the literature as a neurobiological condition characterized by excessive movement, difficulty in controlling impulses, and/or a persistent pattern of inattention that affects the overall development of the individual (Drechsler et al., 2020; Oourofino, 2007; Padilla et al., 2018; Planton et al., 2021; Soroa et al., 2014). It refers to a heterogeneous and multifaceted condition resulting not only from biological factors but also from the relationship of the individual with the surrounding environment: family, school, and friends (Oourofino, 2007; Hinshaw, 2018). According to the Organisation for Economic Cooperation and Development (OECD, 2020), its global prevalence rate is estimated at 7.2% (although there are wide variations between and within countries), being one of the most frequent disorders in child and adolescent psychiatry (Drechsler et al., 2020; Padilla et al., 2018). In adulthood, symptoms related to a high level of distraction and low level of concentration for tasks that involve goal-directed behavior persist, as well as a reduced ability to keep up in the same activity, especially in tasks that involve low reward. The disorder can lead to academic problems and limitations in professional achievements, and also cause difficulties in social and family relationships and self-esteem (Planton et al., 2021).

In the case of gifted individuals with ADHD, the identification of twice exceptionality can be a very complex process for professionals, families, and teachers, due to the overlap between the imaginative and psychomotor over-excitabilities, characteristic of the gifted, and the symptoms of the disorder (Al-Hroub & Krayem, 2020; Rinn & Reynolds, 2012), as well as the existence of a wide range of possible interactions between the two conditions (Mullet & Rinn, 2015; Zaia et al., 2021). It is nevertheless important to highlight that, in the gifted, the manifestations of these behaviors are commonly related to repetitive and discouraging activities that cause low task involvement and low motivation (Leroux & Levitt-Perlman, 2000; Oourofino, 2007). In

the ADHD condition, they are the result of a persistent pattern of inattention and/or hyperactivity-impulsivity that has a direct negative impact on the person's academic, occupational, or social functioning (American Psychiatric Association [APA], 2014, World Health Organization [WHO], 2018). Overall, in the literature, gifted individuals with ADHD are described as individuals who show socio-emotional difficulties related to low self-esteem and low self-concept, oscillation between moments of concentrated and diffuse attention, tendency to mask their learning difficulties, social rejection by peers, intolerance to failure, and difficulty in completing tasks and following rules and instructions (Álvarez-Cárdenas et al., 2019; Arizaga et al., 2016; Foley-Nicpon et al., 2012; Fugate & Gentry, 2016; Lovecky, 2004; Moon, 2002; Oufino, 2007). Due to the complexity involved in the identification of twice exceptionality, an experienced multidisciplinary team should assess this condition, paying attention to individual positive characteristics and talent development, and not only to the limitations caused by ADHD (Pfeiffer & Prado, 2021).

Within an inclusive perspective, educational practices to support gifted students with ADHD should be based on the promotion of activities that take into account their strengths, and interests. These practices should also overcome students' difficulties by making the curriculum more flexible, personalizing learning, extending the time to complete activities, with respect for their asynchronous characteristics, formative assessment to check the learning, the practice of sports and art, and the construction of a systemized network of support based on the establishment of positive interpersonal relationships (Baum, 2009; Fugate & Gentry, 2016; Ritchotte & Zaghlawan, 2019; Send et al., 2016; Willard-Holt et al., 2013). Equipping teachers, specialized support professionals, colleagues, and parents with information on the topic of twice exceptionality can help in the process of identifying these individuals and, consequently, in the implementation of pedagogical practices and socio-emotional support that take into account their specific learning needs. The purpose of this study was to examine, through a systematic literature review, the scientific pro-

duction of empirical articles, from the last 10 years, on the theme of twice exceptionality regarding giftedness/ADHD published between July and December 2021. We hope this study might help researchers, educators, professionals, and families to understand cognitive, social, and emotional characteristics and needs of the gifted with ADHD and to implement identification strategies and educational practices for this group of twice-exceptional students.

## Method

This study was a systematic literature review, in which scientific publications in a given area or subject are analyzed, based on pre-defined eligibility criteria, to answer a specific research question in a comprehensive, unbiased and replicable manner. The research protocol, the inclusion and exclusion criteria, the selection of the studies, and the synthesis of the analyzed data are presented (Donato & Donato, 2019; Galvão & Pereira, 2014). Stage 1, involving the search procedures, consisted of the screening of articles published between 2011 and 2021 in three Brazilian databases: Journal Portal of the Coordination for the Improvement of Higher Education Personnel (CAPES), Scientific Electronic Library Online (SciELO), and Electronic Journals in Psychology (PePSIC). We used descriptors in Portuguese – *superdotação* and TDAH; *superdotação* and *transtorno de déficit de atenção e hiperatividade*; *altas habilidades* and TDAH; *altas habilidades* and *transtorno de déficit de atenção e hiperatividade* – and in English – gifted and ADHD; gifted and attention deficit hyperactivity disorder; giftedness and ADHD; giftedness and attention deficit hyperactivity disorder; twice exceptionality and ADHD; twice exceptionality and attention deficit hyperactivity disorder; gifted and learning disabilities; giftedness and learning disabilities; high ability, ADHD and twice exceptionality; high ability, attention deficit hyperactivity disorder and twice exceptionality. In the CAPES Journal Portal database, we selected the option only scientific articles, as well as the filter papers published in Brazilian

and international peer-reviewed journals. The other databases consulted publish only peer-reviewed articles and therefore did not require such a filter. In addition, regarding the search carried out in the CAPES Journal Portal, when the descriptors gifted and ADHD and gifted and attention deficit hyperactivity disorder were used, due to the large number of articles found and to refine the process of identification of papers most relevant to the purpose of this study, the filters gifted and attention deficit hyperactivity disorder were used to identify the most relevant articles. The same procedure was adopted for the descriptors gifted and learning disabilities and giftedness and learning disabilities, as the filter gifted has also been applied.

Stage 2, covering the procedures for the selection of articles, consisted in reading the titles of the 1,314 publications found to verify whether some studies overlapped. Regarding the distribution by database, most of the articles came from the CAPES Journal Portal ( $n=1.301$ ; 99.01%), followed by the SciELO platforms ( $n=9$ , 0.69%) and PePSIC ( $n=4$ ; 0.30%). In an initial analysis, 786 publications (59.82%) were excluded because they were duplicated. Furthermore, 463 articles (35.23%) were eliminated because they involved theoretical studies, literature review, meta-analysis, or they did not include gifted individuals with ADHD as participants of the study. In Stage 3, which included the procedures for reading and analyzing the abstracts, 65 articles were evaluated ( $n=4.95\%$ ), 64 of them from the CAPES Journal Portal and a single one from the SciELO platform, obtained through research with descriptors in English, according to the following pre-established criteria: (a) empirical study, (b) investigation of the relationship between giftedness and ADHD, using quantitative or qualitative research instruments, and (c) sample including gifted individuals with ADHD. Thus, out of 65 articles, 33 seemed to fit the criteria of the proposed research and were pre-selected and fully read. During the reading, it was verified that six of them did not meet the previously established inclusion criteria and were eliminated from the study.

In Stage 4, in which the 27 selected articles were analyzed, first, the studies were categorized, considering the year, number of publications, the country where the data were collected and the type of research carried out. Next, we examined the goals of the study, participants, and main results obtained, grouping the items into six categories: (a) the relationship between giftedness, ADHD, and socioemotional aspects; (b) inter-personal relations of the gifted with ADHD and other types of twice exceptionality; (c) the identification of the gifted with ADHD and other types of twice exceptionality; (d) the relationship between giftedness, attention deficit and hyperactivity; (e) the relationship between ADHD and intelligence quotient (IQ); and (f) educational support practices for gifted students with ADHD and other types of twice exceptionality.

## **Results**

The year with the highest number of publications was 2020 with five articles (18.51%), followed by 2021 with 4 (14.81%). In the years 2012, 2013, 2015, and 2016, there were three publications each (44.44%), and in the years 2017 and 2019, two articles each (14.81%). One article was published in 2011 and 2014 (7.40%). In 2018, no publications were identified on twice exceptionality – giftedness/ADHD – within the inclusion criteria established in this study. Although many studies were found, there was a greater concentration of publications between 2019 and 2021 (40.72%) and between 2015 and 2017 (29.62%), which suggests a rising trend of articles on the subject, especially in the last three years.

Regarding the country where the data were collected, 12 studies (44.44%) had data collected in the United States, followed by three investigations (11.11%) conducted in Brazil. Two studies (29.62%) were implemented in each of the following countries: The Netherlands, Canada, Chile, and Australia. We found one research (14.81%) about gifted individuals with ADHD carried out in countries such



as England, Jordan, Singapore, and Thailand. Regarding the type of research conducted, there was a greater predominance of quantitative studies with 16 articles (59.25%), followed by qualitative studies with nine publications (33.33%) and mixed methods research with two articles (7.40%).

Seven studies (25.92%) investigated the relationship between giftedness, ADHD, and socio-emotional aspects. Foley-Nicpon et al. (2012) examined, in the United States, the self-esteem and self-concept of gifted individuals with and without a co-existing diagnosis of ADHD. The study participants were 112 children and adolescents, between 6 and 18 years of age. To determine whether self-esteem and self-concept varied between the two groups, the following data collection tools were used: Behavioral Assessment System for Children – Second Edition (BASC-2) and Piers-Harris Children's Self-Concept Scale – Second Edition (PH-2). The results indicated that gifted participants with ADHD had lower scores on self-esteem, behavioral self-concept, and overall happiness measures than individuals without the disorder. Nevertheless, the two groups did not differ significantly in their perceptions of interpersonal relationships, self-sufficiency, and emotional stress. Similarly, self-concept in the specific areas of intelligence, physical appearance, ability to cope with anxiety, and popularity were similar between the two groups. It has been suggested that being identified as gifted can positively influence some aspects of the self-concept of individuals diagnosed with associated ADHD.

In the Brazilian scenario, Zaia et al. (2021) conducted a study to compare the profile of elementary school twice-exceptional students with students with an isolated diagnosis of giftedness, aiming to identify similarities and differences in measures of intelligence, creativity, and socio-emotional characteristics. The sample consisted of two groups. Group one included five twice-exceptional children, aged between 9 and 11 years, being three gifted children with ASD and two gifted children with ADHD. Group two was composed of 80 gifted children aged between 9 and 12 years. The following tools were administered: the Battery for the Assessment of High Ability/Giftedness, consisting

of four intelligence and two creativity subtests, and the Characteristics Identification Scale Associated with High Ability/Giftedness, a self-report instrument with 38 items grouped in two factors: socioemotional characteristics and cognitive characteristics. The results indicated that there were no significant differences between the groups for any factor in the instruments used. Based on the results found, the authors suggested that, especially in the case of twice-exceptional students, characteristics of giftedness may be acting as a protective factor given the difficulties caused by ASD or ADHD.

In Chile, Arizaga et al. (2016) conducted a multiple case study to explore the self-image of twice exceptional students. The study involved four male participants aged between 8 and 15 years: two gifted with ADHD and two gifted with ASD. The information was collected based on semi-structured interviews and analyzed through qualitative content analysis. The Raven Progressive Matrices Test was used to identify giftedness. The results indicated that the students built a self-image as individuals who presented both characteristics of high ability and difficulties, despite being formally unaware of their twice exceptionality condition. In addition, they demonstrated motivation for learning in activities that involved their area of interest but reported feeling bored with less challenging or repetitive tasks. The students were able to clearly outline a profile of themselves as individuals with discrepant characteristics.

The mixed methods study conducted by Fugate and Gentry (2016), involving five American gifted students with ADHD, aged between 12 and 13 years, examined the coping mechanisms these adolescents used to deal with the pressures experienced in the school context. For data collection, multiple tools were used: two standardized questionnaires (Early Adolescent Temperament Questionnaire-Revised – EAQT-R and Students Perceptions of Control Questionnaire – SPOCQ), documentary analysis, and interviews. Quantitative data showed that all participants presented above-average values in the behavioral subscale for aggression and depressive mood, as well as below-average levels of attention. The qualitative results revealed that the main factors affecting

the overall academic motivation of adolescents were problems of distraction and boredom for the performance of school tasks, including repetitive homework. At times, they related school to feelings of confusion, tension, and shame, which resulted in low self-esteem and motivation. To deal with such challenges, the adolescents relied mainly on the support of their parents and teachers to use their strengths to minimize their difficulties. In addition, the participants emphasized the importance of practicing sports, artistic or creative activities for the self-regulation of stress, which could contribute to increasing their motivation and, consequently, achieving success in school.

Cross et al. (2020) conducted a psychological autopsy of a gifted young American with ADHD at the age of 18 to understand suicide among talented students. According to the authors, the psychological autopsy – a qualitative in-depth case study approach – was used to explore the participant's life and death trajectory based on different sources of information: school and health records, online conversations with the girlfriend, personal notes, and interviews with the mother, friends, family, teachers and school counselors. The combination of different models and theories was used for data analysis: Suicide Trajectory Model (STM), White's Summary of Risk and Protective Factors, Suicide Psychache, and Interpersonal-Psychological Theory of Suicidal Behavior (IPTSB). The results highlighted that, during the transition from elementary education to secondary school, the student stopped using ADHD medication, stopped receiving specialized educational support, and was interacting with peers who had little interest in school activities, factors that were associated with decreased academic performance. In addition, he manifested signs of severe depression, refusal to continue therapy, and involvement with colleagues who used substances, aspects that may have contributed to his suicide. As preventive strategies, the importance of a protective environment in school and family that can support the development of coping skills and resilience in twice-exceptional students was emphasized.

The study conducted by Rinn and Reynolds (2012) examined the relationship between the characteristics of over-excitability (OEs) and

the symptoms of ADHD among American gifted individuals. In total, 116 adolescents (73 males and 43 females) from the 7th to 10th grade, aged 12 to 16 years, answered the Overexcitabilities Questionnaire - Two (OEQ-II) and Conners' ADHD/DSM-IV Scales - Adolescent (CADS-A) to evaluate ADHD. The results indicated that, among the five types of OEs (emotional, psychomotor, sensory, imaginative, and intellectual), the imaginative OE was the only type that presented a relationship with all the indices of Conners' ADHD/DSM-IV scale. According to the authors, individuals who demonstrate higher levels of imaginative OE are more likely to exhibit symptoms characteristic of ADHD, which could increase the likelihood of an incorrect diagnosis of the disorder, as manifestations of over-excitability may be mistakenly understood as behaviors indicative of ADHD.

A study by Al-Hroub and Krayem (2020) also investigated the relationship between OE characteristics and ADHD symptoms and explored gender differences between OE types in gifted adolescents in Jordan. The study included 265 students (91 females and 174 males) from the 9th to 11th grade aged between 14 and 18 years. They all answered the Overexcitability Questionnaire-Two (OEQ-II) and the Conners 3rd Edition Self-Report Scale (ADHD / DSM-V) for evaluation of ADHD. The canonical correlation analysis revealed a significant relationship between the OE and ADHD constructs. Significant but weak positive correlations were found between psychomotor OE and hyperactive-impulsive ADHD and between imaginative OE and ADHD subtypes. A significant but weak negative correlation was also found between intellectual OE and inattentive ADHD scores. In addition, there was also a significant correlation between the OE and ADHD constructs concerning the participants' gender. Girls showed higher levels of intensity than boys in emotional, sensory, and imaginative OEs, while boys showed higher intensity levels in psychomotor OE. No significant gender difference was found for the participants' intellectual OE. It was highlighted that, in the gifted, the coexistence and overlap between the OEs' characteristics and the symptoms of ADHD can lead to an incorrect diagnosis of the disorder.

Five studies (18.51%) examined the interpersonal relationships of gifted individuals with ADHD and other types of twice exceptionality. Wang and Neihart (2015) investigated how external factors – support from parents, teachers, and peer influences – contribute to the academic success of twice-exceptional students in Singapore. Six male secondary school students participated in the study, aged between 13 and 15 years, identified with different types of twice exceptionality (ADHD, CAPD, emotional disorders, and specific learning disorders). The information was collected from in-depth semi-structured interviews and interpreted through phenomenological analysis. Twice-exceptional students perceived the support of parents, teachers, and colleagues as one of the factors that most contribute to their good academic performance, as these people influence three behavioral and psychological variables related to success: use of learning strategies, academic engagement, and academic self-efficacy. The participants specifically perceived peer support as the factor with the greatest influence on social adjustment, academic performance, and overall well-being.

Conejeros-Solar et al. (2021) explored the perceptions of close friends of students with twice exceptionality about their friendship, characteristics, and relationship with classmates and teachers in Chile. The study involved 17 school friends (10 males and 7 females, aged between 10 and 13 years) close to twice-exceptional students: nine gifted with ADHD and eight gifted with ASD. Data were collected through semi-structured interviews and analyzed through qualitative content analysis. The results revealed the construction of a profound relationship of friendship based on empathy and the sharing of common academic activities and interests, in addition to the establishment of mutual help to face the difficulties encountered, especially in the school context. In addition, the friends were able to recognize the potential and strengths of students with twice exceptionality, both in academic and socio-emotional terms. Concerning the relationship with teachers, friends mentioned that the most recurring episodes related to teachers punishing twice-exceptional students for not paying attention to school activities. Few friends reported situations of good relationships

between teachers and twice-exceptional students. As suggested, friends can serve as a safety net for twice exceptional students by providing them with support in overcoming their difficulties, understanding their characteristics, and supporting them in their socio-emotional needs.

Foley-Nicpon et al. (2017) conducted an intervention study, in a North American summer program, to investigate the relationship between goal orientation and the quality of friendship in a group of high ability students with self-related social difficulties enrolled between the 3rd and 7th grade of elementary school. The students in the intervention group ( $n=28$ , 12 of them with ADHD, ASD, emotional disorders, or invasive developmental disorder) were exposed to talent development opportunities in their domain area and social skills interventions, while students in the control group ( $n=9$ ) did not participate in the intervention proposal. The Patterns of Adaptive Learning Scales (PALS) and Friendship Qualities Scale (FQS) were used as tools. The results suggested that social skills interventions had a significant and positive impact on participants' willingness to seek help in their friendships compared to the control group. This effect was not found for the quality of companionship, conflict, security, or closeness though. For the participants in the intervention group, higher levels of performance goal orientation were related to a lesser quality of closeness in their friendships, suggesting that if the students are academically driven to outperform their peers, this may negatively affect their ability to establish close bonds with peers.

In the United States, Neumeister et al. (2013) investigated the role early caregivers play in promoting the academic success of students with twice exceptionality. Ten mothers of adolescents and adults identified with different types of twice exceptionality (ADHD, ASD, and specific learning disorders – aged between 11 and 35 years) participated in the study. The information was collected through in-depth semi-structured interviews (face-to-face or online) and analyzed using grounded theory. The results indicated that mothers played a key role in promoting their children's academic success by recognizing their potential and difficulties and taking responsibility for the development of their talent. They

ensured that the children had access to proper professional follow-up and specialized educational support, which provided them with the development of healthy perceptions of their limitations and abilities and the security necessary to commit to their learning.

In Australia, Ronksley-Pavia et al. (2019) proposed a narrative case study to explore the experiences of twice-exceptional students within and beyond the school context. The research participants were eight children and adolescents (five males and three females, aged between 9 and 16 years) with different types of twice exceptionality (ADHD, ASD, CAPD, specific learning difficulties, and emotional disorders). The information was collected through semi-structured interviews with students, with the support of a memory box containing personal objects the participants had chosen, interviews with parents, field notes, observations, and documentary analysis of students' school reports and expert assessments. The interviews were transcribed, analyzed, and presented as narratives that outlined the central themes for the analysis of research information. The results revealed that the stigma of twice exceptionality played a consistent role in the students' social, emotional, and educational experiences. All participants reported continuous negative experiences that usually involved difficulties in interpersonal relationships, especially at school with peers and teachers. They reported feeling different from the other students because they faced situations of prejudice, discrimination, and bullying, concerning their giftedness as well as their difficulties or limitations. Despite their negative experiences, the twice-exceptional students developed resiliency and pursued their lives in and beyond school.

Four studies (14.81%) focused on the identification of gifted individuals with ADHD and other types of twice exceptionality. In Thailand, the research carried out by Thongseiratch and Worachotekamjorn (2016) compared the number of ADHD cases defined by DSM-IV with the diagnostic criteria adopted in DSM-V in children with a high IQ who had learning or behavioral problems. In a pediatric outpatient clinic of a Thai university, 825 children (under 15 years of age) had their medical records analyzed and answered the Thai version

of the Wechsler Intelligence Scale for Children (WISC-III). Of this total, 28 children were identified with  $IQ \geq 120$ , 16 (61%) of whom met the DSM-IV criteria for the ADHD diagnosis. When using the DSM-V, the number of cases of children with high IQ identified with ADHD increased to 20 though, and it is important to mention that the four participants who were included in the new criteria were all male. According to the authors, in the sample analyzed, the application of the DSM-V diagnostic criteria may have increased the number of individuals identified with high intelligence and ADHD (by up to 14%) based on two hypotheses: (a) the expansion of the age criterion of onset of symptoms for the period from 7 to 12 years in DSM-V, which led to an increase by three cases – all of them of the inattentive ADHD type; and (B) the inclusion of the invasive developmental disorder criterion, which caused an additional increase by one case. The results found cannot be generalized to the general population, as the study was conducted only with children previously identified with learning or behavioral problems and with a sample of only 28 participants with high IQ (3.4% of the total sample).

Dare and Nowicki (2015) examined how parents went through the experience of identifying twice exceptionality in their children in Canada. Five parents (four women and one man) of adolescents and adults with different types of twice exceptionality (ADHD, ASD, specific learning disorders, and behavioral/emotional disorders – aged between 11 and 20 years) participated in the survey. The data were collected based on phenomenological interviews and analyzed using NVivo 10 qualitative data analysis software. Overall, parents reported that the process of identifying twice exceptionality was initiated due to the social, emotional, behavioral, and learning difficulties their children faced in the school context. In all cases, they sought support from specialized private professionals to better assess and understand the characteristics their children presented. From the parents' perspective, having a child identified as highly capable and having difficulties can represent a challenging, confusing, and frustrating experience.



In Brazil, Silva et al. (2021) conducted a neuropsychological evaluation of a 51-year-old adult to investigate a possible diagnosis of twice exceptionality giftedness/ADHD. The qualitative single case study approach was adopted based on the combination of several instruments: semi-structured interview, Wechsler Adult Intelligence Scale, Barkley's Deficits in Executive Functioning Scale (BDEFS for Adults), The Rey Auditory-Verbal Learning Test, Rey's Complex Figure Test, The Attention Battery for Adults, Word and Pseudoword Reading Competence Test, Word and Pseudoword Writing Task, and Attention Deficit Disorder and Hyperactivity Scale – Adolescents and Adults Version. The data were grouped according to the neurocognitive skills evaluated: intelligence, cognitive executive functions, school skills, and socio-emotional skills. The results of the neuropsychological evaluation revealed that the participant presented high IQ associated with deficits in executive functions and socio-emotional abilities, which confirmed the diagnostic hypothesis of giftedness/ADHD. It was emphasized that the late identification of twice exceptionality harmed the participants' well-being and quality of life, especially concerning emotional aspects.

In England, Dimitriadis et al. (2021) explored teachers' knowledge, experience, and confidence in recognizing different types of twice-exceptional students (ADHD, ASD, specific learning disorders, and emotional disorders), talented in mathematics. The study participants were 29 teachers from the early years of elementary school with and without additional training in gifted education, 15 of whom came from the mainstream education class, 13 were experienced in attending to students talented in mathematics and one had experience in both functions. The data were collected electronically through the Classroom-Teacher Questionnaire and analyzed using descriptive and inferential statistics. Data analysis indicated that both groups presented lower levels of knowledge regarding the term twice exceptionality and greater familiarity with the specific types of giftedness/ADHD and giftedness/ASD. There were no differences between the two groups regarding the experience of working with twice-exceptional students. Trained teachers were no more confident than those without training

concerning the self-reported ability to identify specific types of twice exceptionality. The results found raised concerns about the effectiveness of training for teachers in gifted education.

Four studies (14.81%) examined the relationship between giftedness, inattention, and hyperactivity. The research by McCoach et al. (2020) examined whether gifted students identified as underachievers they were more prone to manifesting symptoms of ADHD. As tools, the ADHD-IV Rating Scales were used for parents and teachers and the School Achievement Attitudes Survey –Modified (SAAS-R) for students. The study participants were 212 students from 85 different American schools between the ages of 9 and 17, starting in the 5th year of elementary school. The results revealed that more than half of the gifted students with low performance met the diagnostic criteria for ADHD based on the teachers' responses and that almost 30% of them met the same criteria according to the parents' reports. Although parents and teachers rated the students similarly on the hyperactivity scale, teachers rated students as more inattentive than parents. In addition, students whose parents granted high scores of inattention also presented lower scores in three subscales of SAAS-R: self-efficacy, goal evaluation, and self-regulation, the latter being more strongly related to inattention. It was shown that both parents and teachers identified high levels of inattention in 19% of the sample both at home and at school, suggesting that a high proportion of the gifted identified as underachievers may be diagnosed with ADHD.

The research proposed by Gomez et al. (2020), involving 507 children and adolescents in Australia, aged 6 to 17 years, investigated inattention and hyperactivity/impulsivity behaviors in gifted individuals with and without ADHD. Participants were divided into four groups: ADHD ( $n=350$ ), gifted ( $n=15$ ), gifted/ADHD ( $n=18$ ), and clinical controls ( $n=124$ ). The Wechsler Intelligence Scale for Children (WISC-IV), Anxiety Disorders Interview Schedule for Children (ADISC-IV), and Strengths and Weaknesses of ADHD-Symptoms and Normal Behavior Scale (SWAN) were used as research tools. The results revealed that the group composed of individuals with ADHD

presented higher scores for inattention and similar scores for hyperactivity/impulsivity compared to the gifted/ADHD group. For most symptoms of inattention and hyperactivity/impulsivity, ADHD groups (ADHD and gifted/ADHD) had higher scores than non-ADHD groups (control and gifted without ADHD). According to the authors, the results indicate that: (a) gifted individuals tend to be less inattentive than non-gifted individuals with ADHD, and (b) gifted individuals with ADHD seem to differ from gifted individuals without ADHD concerning specific hyperactive/impulsive behaviors, such as modulation of motor and verbal activity and reflection on issues. In clinical terms, it was emphasized that different criteria should be applied for the diagnostic confirmation of ADHD among the gifted, as professionals can focus only on the symptoms of inattention and hyperactivity/impulsivity when evaluating individuals with high intelligence, thus disregarding the characteristics of high ability.

In the United States, Fugate et al. (2013) evaluated working memory and creativity in two groups of gifted students: one with ADHD characteristics ( $n=17$ ) and the other without ADHD characteristics ( $n=20$ ), both equivalent in fluid intelligence. Participants were between 10 and 17 years old and attended elementary or high school. The instruments used were the Torrance Test of Creative Thinking (TTCT) and Woodcock-Johnson III Normative Update Cognitive Abilities (WJ III COG NU) to assess the working memory. The results indicated that gifted students with ADHD presented weaker working memory and greater creative potential than gifted students without ADHD. It was pointed out that lower working memory was associated with higher scores on the ADHD index and inattention subscale. In addition, a negative relationship was found between the working memory and the creativity index in both groups, demonstrating that the weaker the working memory, the greater the creativity. Based on the results, it was suggested that, in the case of gifted students with ADHD, the combination of inattention and hyperactivity could contribute to creativity.

The exploratory study conducted by Wood (2012) evaluated the perceptions of American parents and teachers regarding the behaviors of gifted students who could be diagnosed with ADHD when examining their responses to Conners 3 Rating Scales. Twenty-six parents and seven teachers answered the instrument, which resulted in a data set of 21 students in the 2nd and 3rd grades of elementary school. Data analysis revealed average scores in the parents' and teachers' assessments of inattention, hyperactivity/impulsivity, executive functioning, and learning problems. In addition, the evaluations performed were not significantly correlated, and there were no significant differences between the parents' and teachers' evaluations of the students' behavior. The author pointed out that the low correlations between the assessments suggest that the scale used does not show sufficient elements to confirm a definite diagnosis of ADHD in gifted individuals. This highlights the need for further investigation of the instrument's psychometric properties for this purpose.

Four studies (14.81%) analyzed the relationship between ADHD and IQ. Katusic et al. (2011) compared the characteristics of children with ADHD with high IQ ( $IQ \geq 120$ ) and children with normal IQ ( $80 \leq IQ < 120$ ) and low IQ ( $IQ < 80$ ) in a long-term population-based study in the United States ( $n=5718$ ) from childhood to adolescence. IQ scores were checked longitudinally between the ages of 6 and 18 years, using the Wechsler Intelligence Scales for Children, while academic performance was assessed using the Woodcock-Johnson Tests of Achievement. No significant differences were found between groups with high ( $n=34$ ), normal ( $n=276$ ) or low IQ ( $n=21$ ) concerning the average age at which the diagnostic criteria of ADHD were met and the rates of comorbid conditions, including learning difficulties, psychiatric disorders, and substance abuse. Compared to children with normal or low IQ, those with a high IQ had higher reading performance and had mothers with higher levels of education. It was suggested that the characteristics of ADHD are similar in children with high, normal, or low IQ, although high IQ may favor some academic outcomes, such as reading performance.

Minahim and Rohde (2015) proposed two cross-sectional studies to evaluate the presence of ADHD symptoms in Brazilian children and adults with high IQ. Seventy-seven adults ( $IQ > 98$ ) were evaluated based on the Adult Self-Report Scale (ASRS-18) for ADHD symptoms and the Modified Waldrop Scale for Minor Physical Anomalies (MPAs). Teachers evaluated the ADHD symptoms of 39 children ( $IQ > 99$ ) from the 1st to the 5th grade of elementary school and a compatible control group ( $IQ < 90$ ), using the translated version of the Swanson, Nolan, and Pelham IV Rating Scale (Snap-IV). In all groups, IQ was measured using the Raven Progressive Matrices Test. In adults, the frequency of cases positive for ADHD was 37.8% and the total score for MPAs was significantly associated with ADHD. In children, the frequency of positive cases for ADHD was 15,38% in the group of individuals with high IQ and 7,69% in the control group. A high frequency of ADHD symptoms was observed in both adults and children with high intelligence, as well as in the control group. In addition, the significant association between MPAs and ADHD suggests that a neurodevelopmental condition underlies these symptoms.

The cohort study by Rommelse et al. (2017), involving 2,221 Dutch children and adolescents aged between 10 and 12 years, investigated whether there is a relationship between high (or low) IQ and ADHD – or other related problems – when compared with individuals of average intelligence. Four data collection tools were used: Revised Wechsler Intelligence Scale (WISC-R), Parent-Reported Child Behavior Checklist for School-Age Children (CBCL/6-18), Youth Self-Report to ADHD, and Teacher Report Form to ADHD. A high intelligence score was more strongly related to minor attention problems and, to a lesser degree, to hyperactivity/impulsivity problems, with a higher rate of discrepancy between high IQ ranges when compared to average IQ. Attention problems were the most common predictors of functional impairments at school: school progress, additional phone calls to parents due to children's school problems, and performance below ability, including in individuals with high IQ.

Also in the Netherlands, the study by Cadenas et al. (2020) examined the cognitive correlates of ADHD in highly intelligent children and adolescents with ADHD. Two independent samples ( $n=204$  and  $n=84$ ) were combined into four groups: (a) children and adolescents with high intelligence quotient ( $IQ \geq 120$ ) and ADHD, (b) control participants with high intelligence, (c) ADHD participants with average intelligence ( $IQ$  between 90 and 110), and (d) control participants with average intelligence. The instruments used were: Revised Conners' Parent Rating Scale (CPRS-R), Revision and Restandardization of the Conners Teacher Rating Scale (CTRS-R), Diagnostic Interview Schedule for Children Version IV (DISC-IV), Wechsler Intelligence Scale for Children (WISC-III), and Wechsler Adult Intelligence Scale (WAIS-III). When analyzing the main effects of ADHD, IQ, and the interaction between both on cognitive performance, IQ did not moderate the differences between the control groups with ADHD. Overall, highly intelligent children and adolescents with ADHD presented similar cognitive performance to the averagely intelligent subjects in the control group. It was concluded that the cognitive profile of ADHD is similar both in individuals with high and with average intelligence, although cognitive deficits related to ADHD can be more easily neglected in the population with high intelligence than in the group of individuals with average intelligence.

Three studies (11.11%) investigated educational support practices for gifted students with ADHD and other types of twice exceptional-ity. The mixed-methods study by Willard-Holt et al. (2013) in Canada investigated the perspectives of 16 twice-exceptional students (ADHD, ASD, specific learning disorders, emotional, behavioral, sensory, physical, and/or neurological disorders – aged between 10 and 23 years) on the most recommended learning strategies for meeting their educational needs according to the literature. For data collection, an adaptation of the Possibilities for Learning Survey and in-depth interviews was used. Quantitative data indicated that, for two-thirds or more of the participants, 18 learning strategies were considered very beneficial, 14 of which were grouped into two major themes: having

control over their learning and complex ideas and ways of thinking about them. The qualitative results revealed that, from the students' perspective, their school experiences did not offer them the necessary strategies for the development of their full potentials, such as study skills, organization and time management, use of technology to assist in communication and adoption of separate spaces for testing or relaxation activities. Nevertheless, they considered themselves capable of using their strengths to compensate for their difficulties.

Baum et al. (2014) proposed a case study in an American private school to understand the experiences of twice-exceptional students during the implementation of a curriculum model focused on talent development and positive psychology. Ten students from the final years of elementary school (eight males and two females, aged between 11 and 13 years) with different types of twice exceptionality (ADHD, Asperger's disorder, and behavioral/emotional disorders) participated in the research. The data were collected through semi-structured interviews with students and teachers, focus groups with parents, and documentary analysis of the students' school trajectory. Qualitative inductive analysis was applied to interpret the information. The results showed that the model used in the school promoted the development of the students' cognitive, emotional, and social aspects by providing them with a psychologically safe environment, an appropriate amount of time to develop, and a construction of positive relationships with teachers, peers, and members of their families. In addition, tolerance is needed to deal with their asynchronous characteristics, as well as teaching based on the promotion of talent and strengths, with appropriate support from mentors, teachers, and specialized professionals. Educational support for twice-exceptional students should be based on the valuation of their strengths and areas of interest, as well as on the acceptance and overcoming of their difficulties.

The intervention study by Ritchotte and Zaghlawan (2019) promoted a training with parents of twice-exceptional children encouraging them to use superior inquiry strategies, based on Bloom's taxonomy, during a shared reading routine at home. The study participants were

four American children with different types of twice exceptionality (ADHD, ASD, CCP, visual impairment, emotional disorders - aged between 5 and 7 years) and their respective mothers. The instruments adopted to identify giftedness were the Raven's Coloured Progressive Matrices, the Peabody Picture Vocabulary Test, Version 4 (PPVT-4), and the Scales for Identifying Gifted Students (SIGS) for parents. The results indicated that the mothers managed to learn and implement the strategy reliably, as all of them dramatically increased the use of superior inquiries during shared reading with their children. In addition, the complexity of each child's verbal responses increased and was maintained over time.

## **Discussion**

Overall, studies that investigated the relationship between giftedness, ADHD, and socio-emotional aspects indicated that gifted students with ADHD have lower scores on the self-esteem and self-concept measures (Foley-Nicpon et al., 2012; Fugate & Gentry, 2016), which in some cases can result in aggressive behaviors and depressive symptoms, especially in adolescence and early adulthood (Cross et al., 2020; Fugate & Gentry, 2016). These individuals commonly face difficulties in regulating their emotions and are perceived in their interactions as immature, annoying, temperamental, or unpredictable, leading to a certain degree of social rejection by peers (Lovecky, 2004; Moon, 2002) and, consequently, interpersonal relationship difficulties. According to Foley-Nicpon et al. (2012), early interventions related to these students' socio-emotional aspects can minimize relationship problems, improve academic performance and future professional outcomes.

Regarding the socio-emotional aspects, an overlap was also observed between the characteristics of psychomotor and imaginative over-excitability and ADHD symptoms due to the manifestation of similar behaviors of hyperactivity and inattention, which can lead to the



establishment of inaccurate diagnoses and, therefore, to the mistaken identification of both giftedness and disorder (Al-Hroub & Krayem, 2020; Rinn & Reynolds, 2012). Nevertheless, it should be noted that, in gifted students, often, these behaviors are related to repetitive activities, or to the school's hardly challenging curriculum, which causes a lack of interest and low task engagement (Leroux & Levitt-Perlman, 2000; Ourofino, 2007). On the other hand, in the disorder, it is the result of a persistent pattern of inattention and/or hyperactivity-impulsivity - which interferes with functioning and development - characterized by low tolerance to frustration, anxiety, impulsivity, inability to focus, and disorganization (APA, 2014). In gifted students with ADHD, then, the combination between the social and emotional factors of both conditions can lead to three distinct interaction possibilities: (a) when the giftedness masks the ADHD and serves as a protective factor in the face of difficulties, (b) when the ADHD overshadows the giftedness and increases the likelihood of socioemotional difficulties and low academic performance, and (c) when both diagnoses interact and none of them is recognized (Mullet & Rinn, 2015; Zaia et al., 2021). Consequently, in the specific case of the twice exceptionality condition, the individual may exhibit a very heterogeneous pattern in cognitive, behavioral, and socio-emotional terms.

Thus, in the studies analyzed, the identification of gifted students with ADHD can be a very complicated and challenging process for professionals, families, and teachers given the similarity between the features of both conditions and the range of possible interactions between them, therefore proving that there is a unique profile that can be utilized to describe all individuals with this type of twice exceptionality (Dare & Nowicki, 2015; Silva et al., 2021; Thongseiratch & Worachotekamjorn, 2016). Nevertheless, for the identification of gifted students with ADHD, it is important to consider that they swing between moments of concentrated and diffuse attention, tend to mask their learning difficulties, clearly perceive both the high abilities and difficulties of the disorder, socio-emotional immaturity, intolerance to failure, and difficulty to complete tasks and follow instructions

(Álvarez-Cárdenas et al., 2019; Arizaga et al., 2016; Lovecky, 2004; Moon, 2002; Ourofino, 2007). Gifted students present concentrated attention, with a high level of productive energy in the activities of their interest, persistent and goal-driven behavior, self-acceptance without concern with social standards, yet with creative daydreaming and advanced moral development (Fleith, 2007; Fleith & Prado, 2022; Ourofino, 2007). Individuals with ADHD only, on the other hand, commonly face difficulties to maintain their attention, lack of persistence, constant concern, learning difficulty, and low academic performance (APA, 2014; WHO, 2018).

It is also emphasized that, according to Pfeiffer and Prado (2021), the identification of twice exceptionality should be conducted by an experienced multidisciplinary team, considering not only the students' difficulties but also their strengths, focusing on the positive aspects of human nature and global development based on cognitive, behavioral, social, and emotional aspects. Thus, the evaluation process is essential to support the adequate service to the specific needs of each individual (Mullet & Rinn, 2015; Zaia et al., 2021), as the early identification of giftedness and ADHD can avoid challenges related mainly to low self-esteem, depression, relationship difficulties, inattention, aggressiveness and impulsivity (Cross et al., 2020; Fugate & Gentry, 2016; Silva et al., 2021; Gomez et al., 2020; McCoach et al., 2020).

Concerning the interpersonal relationships, in most of the studies conducted, the support of friends, family, and teachers was an essential factor for promoting academic success, strengthening socio-emotional aspects, and overcoming the relationship difficulties gifted students with ADHD face in the school context (Conejeros-Solar et al., 2021; Foley-Nicpon et al., 2017; Neumeister et al., 2013; Wang & Neihart, 2015). For gifted/ADHD individuals, the consolidation of bonds of friendship can contribute to the decrease of social isolation and the improvement of emotional well-being (Wang & Neihart, 2015), particularly when approaching peers with interests similar to theirs (Lovecky, 2004). Managers, teachers, and support professionals in school play a fundamental role in building a welcoming and individual-

ized learning environment that takes into account both these students' areas of interest and the overcoming of their difficulties caused by the disorder (Baum, 2009; Baum et al., 2014). Concerning the family, parents are also key players in developing their children's talent by valuing their potential and supporting them in overcoming their limitations, providing proper professional assessment and access to specialized educational service (Delou, 2007; Neumeister et al., 2013).

Regarding the relationship between giftedness, inattention, and hyperactivity, gifted individuals with ADHD have higher scores for most symptoms of inattention and hyperactivity/impulsivity compared to gifted individuals without the disorder (Gomez et al., 2020), which may cause so-called underachievement or low performance (McCoach et al., 2020, Tentes et al., 2016). According to Tentes et al. (2016), the manifestation of this condition can turn into a very frustrating process for parents, teachers, and the students themselves as, in general, gifted students are expected to present high academic performance. In this sense, the authors highlight that the antagonism between previously revealed potential and current performance displayed can put the gifted underachievers in a situation of risk and socio-emotional vulnerability, to the extent that the expectations surrounding high ability are not confirmed in school and social life due to the overlap of difficulties caused by ADHD.

The studies also revealed that the characteristics and symptoms of ADHD manifest similarly in individuals with high and medium intelligence (Cadenas et al., 2020; Katusic et al., 2011; Minahim & Rohde, 2015), which may hinder the identification of giftedness by the family and the school as, in this case, students with high intelligence tend to be recognized only by their manifestation of the attributes of the disorder. In this situation, ADHD generally masks giftedness by increasing the externalization of socio-emotional difficulties and reducing academic performance to medium levels (Mullet & Rinn, 2015). If the disorder stands out compared to high ability, the referral to a gifted educational service will hardly ever happen. This may cause damage to the development of these students' full academic potential.

In studies that examined the educational practices for gifted students with ADHD, it was emphasized that the academic success of these students depends on a learning environment appropriate to their singularities and peculiarities, with the appropriate support of mentors, teachers, and specialized support professionals (Baum et al., 2014; Ritchotte & Zaghlawan, 2019; Willard-Holt et al., 2013). Educational interventions aimed at this population should be based on the development of their talent, and on the promotion of activities that take into account their areas of interest, as hardly stimulating environments that focus on activities that require mere knowledge reproduction can lead to a lack of motivation and poor academic performance (Arizaga et al., 2016; Fugate & Gentry, 2016). Thus, services for students with twice exceptionality – giftedness/ADHD – need to use teaching strategies that enhance their strengths and, at the same time, promote the overcoming of their difficulties, through flexibilization and differentiation of the curriculum, personalization of learning, an extension of time for the completion of activities, and respect for their asynchronous characteristics. Furthermore, family involvement, focus on talent development, formative assessment for the verification of learning, the practice of sports, artistic or creative activities, and the promotion of a psychologically healthy environment based on positive social relationships with parents, peers, and teachers should be considered (Baum, 2009; Fugate & Gentry, 2016; Ritchotte & Zaghlawan, 2019; Send et al., 2016; Willard-Holt et al., 2013).

Another aspect that stands out is the small number of Brazilian empirical studies on twice exceptionality regarding giftedness/ADHD considering the databases investigated, as only three Brazilian studies have focused on the topic (Minahim & Rohde, 2015; Silva et al., 2021; Zaia et al., 2021). In the ten countries where the studies were conducted, the United States leads the number of investigations (44.44%), which represents almost half of the studies analyzed. Most studies involved children and adolescents in elementary and middle school ( $n=22$ , 81.48%), and only five studies included gifted adults with ADHD (18.51%). In addition, a single study investigated twice exceptionality

– giftedness/ADHD – in female adolescents (Fugate & Gentry, 2016), and none examined the phenomenon exclusively in black or mulatto participants.

Nevertheless, it is relevant to emphasize that studies on female talent are essential to promote gender equality in contemporary times, as many obstacles persist regarding wage equity, female representativeness in engineering and technology, and distribution of housework between men and women (Prado & Fleith, 2020). As for the proposition of research involving gifted black and mulatto individuals with ADHD, it is emphasized, according to Novak and Jones (2021), that identification services and programs to assist talented students are disproportionate in favor of whites. This evidences that the development of gifted black individuals in an equitable and anti-racist perspective needs further support. Regarding the distribution of the studies by age group, it is important to conduct more studies with twice-exceptional adults, giftedness being a dynamic and flexible phenomenon that occurs throughout life (Renzulli, 2016).

Based on the studies presented, for future research, we suggest more intervention research regarding educational practices for twice-exceptional students. These studies should promote their talent, their area of interest, and their socio-emotional well-being, with the appropriate support of parents and specialized professionals at school. In addition, longitudinal empirical studies involving female, black and adult participants can contribute to the talent development of twice-exceptional individuals, who have received little attention in the literature, especially in the Brazilian context. Finally, the search for articles should include other databases and a broader period. Limitations of this research involve the non-inclusion of studies based on Master's theses and doctoral dissertations that were not published as articles, as well as studies in languages other than Portuguese, Spanish or English. It is concluded that gifted students with ADHD can have academic success, high self-esteem, positive self-concept, and good relationship with family, teachers, and friends if they are being served according to their particularities, individual learning needs and with the support of the

entire school community (Arizaga et al., 2016; Baum et al., 2014; Bunies-Solar et al., 2021; Foley-Nicpon et al., 2012, 2017; Fugate et al., 2013; Neumeister et al., 2013; Ritchotte & Zaghlawan, 2019; Rommelse et al., 2017; Wang & Neihart, 2015; Willard-Holt et al., 2013).

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