

**A Neglected and Untreated Population:
Addressing the Systemic Underdiagnosis of Females with ADHD**

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Abstract

ADHD is a neurobehavioral disorder that has been historically associated with young boys, although recent research has focused on bolstering the scarce selection of research on females with the disorder. I evaluated a large collection of articles that comprise the field's current stance on the general topic and analyzed key points of consensus that arose. Boys are disproportionately diagnosed with ADHD, but this fact is likely due to a combination of factors that disadvantage girls' diagnostic outcomes. Such factors include differences in symptom expression, the presence of comorbidities, gender norms, stereotypes, bias in diagnostic criteria, and the tendency to suppress symptoms to avoid public rejection. The complex interaction between these variables has led to a systematic neglect of females with ADHD that leaves many untreated and struggling with the sequelae.

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Introduction

Attention-deficit/hyperactivity disorder (ADHD) is a neurological disorder that presents itself in childhood, comprising three subtypes: predominantly hyperactive-impulsive type (ADHD-HI), predominantly inattentive type (ADHD-PI), and combined type (ADHD-C) (5th ed.; DSM–5; American Psychiatric Association [APA], 2013). ADHD was historically viewed as a childhood disorder, although recent research has revealed that the disorder affects many individuals across the lifespan (APA, 2013; Faraone et al., 2006; Simon et al., 2009).

Males are diagnosed with ADHD more frequently than females, with approximate male-to-female ratios ranging from 2:1 to 9:1 (APA, 2013; Nussbaum, 2012; Skogli et al., 2013). However, such ratios are confounded by the type of sample, as clinical samples consistently yield higher male-to-female ratios than population-based samples, suggesting disproportionate gender representation (Nussbaum, 2012; Ramtekkar et al., 2010; Skogli et al., 2013). Male-to-females ratios diminish to near equal levels approaching adulthood, though little evidence exists for a late onset of ADHD in women (Ahmad et al., 2019), suggesting that something else is the cause of the discrepancies in prevalence rates. Emerging evidence demonstrates that girls are older than boys on average upon diagnosis (Klefsjo et al., 2020; Quinn, 2005; Skogli et al. 2013; Walters, 2018) and that girls with ADHD tend to struggle with more internalizing symptoms than boys (Rucklidge & Tannock, 2001).

Additionally, comorbidities have immense implications for individuals with ADHD, with as many as 75% of children with ADHD likely to have a comorbid—or co-occurring—psychiatric condition (Barkley, 2006). Further, comorbid conditions such as anxiety and depression may present more complications for females with ADHD than males (Gershon, 2002). Trends in research illustrate the likelihood of a silent wave of females going undiagnosed

and untreated for ADHD (Walters, 2018). One study estimated that ADHD affects 32 million females worldwide, a number large enough to categorize the diagnosis of ADHD in females as a public health crisis (Staller & Faraone, 2006).

In this literature review, I aim to answer my proposed research question: What role does the existence of gender differences in the expression and clinical course of ADHD play in the systemic underdiagnosis and undertreatment of females with the disorder? In this review, if demographic data is known of specific groups, they will be referred to directly and precisely, such as women or adolescent boys. Conversely, if a statement is applicable to all ages and genders or the age of a group is unknown, the terms “males” and “females” will be used.

Method

Throughout the preparation of this literature review, special attention was given to the quality of sources included. Articles used herein were retrieved using the search engines PubMed and EBSCO*host*, on which results were limited to those with a publication date after January 1, 1990. One article was the exception to this rule (Tversky & Kahneman, 1974); this anachronism was unavoidable, as this piece was the most credible source available on its topic. The use of peer-reviewed journal articles and APA publications served as the foundation for establishing exclusion criteria. When applicable, certain sources were retrieved from the reference sections of other articles that had been found through the two main databases. Keywords central to my search were “ADHD or attention-deficit hyperactivity disorder,” accompanied by “gender or sex or males or females,” “symptom differences or symptomatology,” “comorbid or comorbidities or coexisting conditions,” and/or “prevalence or prevalence rates.” Various combinations of these keywords were entered into the two databases.

Other exclusion criteria used to select my sources were as follows: a) the article was required to be written in English; b) the sample being studied had to consist of patients diagnosed with ADHD; and c) it was paramount that the study provided explicit data or recommendations on gender differences, comorbidities, and/or symptom profiles as they pertain to ADHD. Articles were selected up until November 5, 2021, thus allowing any articles written from January 1, 1990, to November 5, 2021, to be eligible for inclusion in the literature review. In total, 45 articles were collected and analyzed for potential relevance to the prevalence, discrepancies, and variance of ADHD based on gender. Each article was thoroughly evaluated for relevance and significance of content, then categorized into broad categories formulated based upon the information contained within the selected sources. The results of the aggregation of these sources and implications of such findings are discussed below.

Symptomatology Variance

Not every individual with a psychological disorder evidences the same cluster of symptoms. Differences in symptom expression are referred to as symptomatology, an aspect of ADHD that has experienced a recent surge in research, particularly as it relates to gender differences in the clinical course of the disorder. Only recently has the field directed its emphasis toward the gender disparity in research, consistent with the lack of consideration of gender differences in the DSM-5 itself (Hong et al., 2014; Klefsjo et al., 2020). However, such novel prevalence of studies supplementing the field has shed light on discrepancies in the way that males and females with ADHD express their symptoms.

Empirical Evidence of Symptomatologic Discrepancies

Classifying the diagnosis of females with ADHD as a public health concern introduces implications concerning unique symptom profiles. It is vital to first validate the existence of

gender differences in symptomatology. Many studies have confronted such differences, such as the work of Gaub and Carlson (1997), which outlined that girls with ADHD present greater intellectual impairment and decreased levels of externalizing behaviors than their male counterparts. A meta-analysis conducted by Gershon (2002) emphasized those findings and provided evidence that females with ADHD suffer from more internalizing problems than males, suggesting that comorbidities may produce a more problematic clinical course for females.

Unfortunately, without the overt presence of externalizing problems, females with ADHD are likely being under-identified (Mowlem et al., 2019a). One study went so far as suggesting that one-half to two-thirds of females with ADHD are undiagnosed (Walters, 2018), although this claim is not universally accepted (Gomez-Benito et al., 2019; Thomas et al., 2015). Nonetheless, the underdiagnosis of females with ADHD is evidenced by the large pool of data demonstrating clear differences in symptom expression based on gender. The most widely accepted variance is that females are more likely to experience symptoms of inattention, and they largely display less hyperactive or impulsive symptoms (Gershon, 2002; Nussbaum, 2012; Quinn, 2005; Sassi, 2010).

One particular study, conducted by Rucklidge and Tannock (2001), provided abundant evidence of gender differences in adolescents with ADHD. Rucklidge and Tannock (2001) found that the girls with ADHD were more impaired than ADHD boys on measures of depression, self-reported anxiety, distress, locus of control, and vocabulary scores. ADHD girls also reported more conduct and cognitive symptoms, in contrast with ADHD boys (Rucklidge & Tannock, 2001). In clear agreement with Rucklidge and Tannock (2001), Skogli et al. (2013) demonstrated nearly identical results in their study. Females with ADHD were found to have elevated levels of psychosocial impairment, internalizing symptoms, anxiety, depression, and conduct and

behavioral issues (Skogli et al., 2013). Another study suggested that females with ADHD are more impaired than ADHD males in measures of impulse control and working memory (Stibbe et al., 2020). These widespread findings introduce implications for the identification and treatment of ADHD, especially since ADHD boys are more likely to present with hyperkinetic and impulsive symptoms (Staller & Faraone, 2006). Moreover, Kok and colleagues (2016) discovered that girls with ADHD seem to struggle more with interpersonal issues as a result of the disorder, such as peer victimization, friendship, social skills and functioning, and bullying.

Differences in Symptom Thresholds

Another confounding variable in the identification and treatment of females with ADHD is the basic difference in biology. To clarify, it is suspected that even in healthy controls (i.e., individuals who do not meet criteria for ADHD), boys tend to display more hyperactive and stereotypic ADHD behavior than girls. Studies have both found and confronted the baseline levels of hyperactivity and related measures in healthy controls (e.g., Mowlem et al., 2019b; Nussbaum, 2012). A study by Mowlem et al. (2019b) suggests that girls with ADHD may have to present with more externalizing problems and a higher burden of emotional and behavioral issues before they can meet ADHD criteria. If this disparity is true, girls with moderate symptom loads can easily be overlooked, despite still facing less obvious elevated levels impairment.

Nussbaum (2012) elaborates on this issue:

Because females demonstrate significantly fewer attention symptoms than do males, to be identified as having ADHD, they must demonstrate significantly more attention symptoms when compared with female peers than do males when compared with their male peers. As a result, it has been hypothesized that certain

females who are experiencing significant deficits in attention compared with other females are not receiving diagnoses. (p. 87)

It appears that two populations are being approached in a way that is only beneficial to one group and that special emphasis is not put on the clear differences in biology, despite having been exhibited in healthy controls (Achenbach et al., 1991). This difference allows boys to enjoy a diagnostic privilege while disadvantaging girls detrimentally. In a population sample of both referred and non-referred adolescents (i.e., those with and without ADHD, respectively), boys exhibited more externalizing behavior while girls exhibited more internalizing behavior, even when controlling for clinically referred individuals (Achenbach et al., 1991). This finding shows that even in unaffected children, externalizing problems and outward behavioral issues are more prevalent in boys. Combined with the information presented by Nussbaum (2012), this result suggests that girls must have elevated relative levels of impairment to receive diagnosis and treatment. Conversely, boys displaying lower levels of impairment are often promptly identified, with some studies even highlighting a possible overdiagnosis of boys (e.g., Bruchmüller et al., 2012; Ford-Jones, 2015). Overall, it seems that girls require greater deviations from typical behavior—and thus greater symptom loads—to reach a higher symptom threshold required for referral and diagnosis of ADHD (Mowlem et al., 2019a).

Parent and Teacher Ratings

An important factor in identifying the existence and impairment level of ADHD symptoms is using parent and teacher ratings to guide evaluation. Unsurprisingly, the trends in such ratings often reflect the differences in symptomatology expressed above. These parent and teacher ratings were studied by DuPaul et al. (2020), who discovered that hyperactive motor behaviors (e.g., fidgeting and running around) were more readily endorsed for boys, whereas

symptoms concerning verbal social behavior (e.g., talking excessively or interrupting) were more likely to be endorsed for girls. This variance demonstrates a definitive difference in the expression of hyperactivity in ADHD boys and girls, at the very least from a direct observer's standpoint.

Parent and teacher ratings identified females with ADHD as having more difficulties with attention, hyperactivity, anxiety, depression, social issues, oppositional behaviors, and conduct problems in one study (Rucklidge & Tannock, 2001). Despite such clear ratings completed by parents and teachers, the same parents and teachers reported that they did not view the ADHD females as more *impaired* than males, suggesting the existence of some form of rater bias.

Comorbidities

Overall Rates

Comorbidities offer unfortunate complications for many people with ADHD, regardless of gender. For the sake of this literature review, "comorbid" will be used to refer to any psychological conditions or impairments that co-exist with ADHD. Comorbidities have long received recognition from researchers as being immensely prevalent in those with ADHD, with sampled comorbidity rates ranging from 60-100% in myriad studies (Gillberg et al., 2004).

One particularly robust study by Anastopoulos et al. (2018) pooled data from 443 college students both with and without ADHD. Students with ADHD reported significantly higher rates of comorbidity than students without ADHD, with 55% of students with ADHD suffering from at least one comorbid condition and 31.8% suffering from two or more comorbidities. In comparison, the healthy controls only reported comorbidity rates of 11.2% and 4%, respectively. These data portray the overwhelming threat that comorbidities pose to individuals with ADHD.

Consulting the statistics, the students with ADHD in the study by Anastopoulos et al. (2018) were at approximately five times more of a risk for developing a comorbid condition than their typically developing peers. While these exact statistics are not generalizable, they offer evidence that suggests an increased risk of developing comorbidities for those with ADHD. Specifically, researchers have found evidence suggesting that individuals with ADHD suffer from depressive and anxiety symptoms at a higher rate than those without the disorder (Nelson & Liebel, 2017). Additionally, children with ADHD are at an increased risk of developing other psychological impairments such as tic disorders and learning disabilities (Spencer et al., 2007).

Gender-Specific Prevalence

Undoubtedly, individuals with ADHD suffer from comorbidities at an alarming rate; however, females uniquely experience comorbidities and are suspected of facing more problematic symptom profiles (Gershon, 2002). Females with ADHD particularly struggle with increased levels of anxiety, depression, and eating disorders (Quinn, 2008). Females with ADHD were found to have greater levels of comorbid internalizing symptoms than their male counterparts in a study by Skogli et al. (2013). That same study corroborated the findings of both Rucklidge and Tannock (2001) and Nelson and Liebel (2017), reporting that the ADHD females in their study exhibited more difficulties with anxiety and depression than ADHD males. Biederman and colleagues (2008) reported a high comorbidity between major depression and ADHD, which increased one's risk of substance abuse, anxiety disorders, suicidal ideation, and bipolar disorder.

It is important to acknowledge the widespread prevalence of comorbidities in females with ADHD because—in cases of comorbid anxiety and depression particularly—ADHD symptoms can be misidentified as characteristic of the comorbid conditions (Quinn & Madhoo,

2014). This misidentification can lead to the failure to diagnose ADHD correctly, which subsequently results in a lack of proper treatment to address an individual's complete symptom profile. Even when the comorbid conditions are treated, girls will continue to struggle if their underlying ADHD is not diagnosed and treated (Quinn, 2005).

The Dangerous Role of Biases and Stereotypes

As a result of gender-based discrepancies in the prevalence rates of ADHD, symptom thresholds for diagnosis, comorbidity profiles, and relative symptomatology, many scholars have pointed to bias as an explanatory factor (e.g., Gaub & Carlson, 1997; Gershon, 2002). Some researchers suggest that the significant impact of inattention and self-control issues on girls with ADHD is presently underestimated due to bias in the field (Soffer et al., 2008). In fact, scholars have pieced together specific potential biases that may plague the diagnostic path for many young girls.

Gender Bias and Stereotyping

Historically, ADHD has been commonly associated with hyperactive young boys, both in the general public and among researchers. Unfortunately, this stereotype has grown into an unintentionally catastrophic roadblock for many girls with ADHD. One study conducted by Ford-Jones (2015) found evidence suggesting that boys with certain sets of hyperactive symptoms likely serve as the foundation for the prototypical child with ADHD. In basing one's diagnostic decisions on a prototype, clinicians risk misdiagnosis and possibly exacerbating a patient's condition. Such misdiagnosis likely results from neglecting core ADHD symptoms in girls or the possible overdiagnosis of ADHD in boys.

Additionally, children diagnosed with ADHD are commonly associated with poorer academic performance and behavioral disturbances (Quinn & Madhoo, 2014). However, it is

theorized that many girls with ADHD effectively *mask* their symptoms—a process that requires much cognitive effort that can eventually contribute to decreased psychological health (Quinn, 2005). When girls mask their symptoms, they typically aim to conform to social roles expected of them. Often, this behavior can inadvertently contribute to girls' going undiagnosed as they appear as quiet, orderly individuals who perform well in school; however, Quinn (2005) argues that the presence of high academic performance should not negate an ADHD diagnosis.

This example of girls' turning their symptoms inward to avoid external rejection or judgment is representative of the core of the issue of underdiagnosis: the internalization versus externalization of ADHD symptoms. Providing further support, Quinn (2005) asserted that the pressure of filling social roles causes females to internalize and view problems as existing within themselves, as opposed to the externalization of boys, which shifts the responsibility of a problem to outside sources. As with many pervasive gender norms, this particular bias can often become a self-perpetuating stereotype. Young boys' and girls' conforming to the gender roles expected of them further confounds the issue and demonstrates the necessity and importance of further research on the implications of conformity on ADHD.

Another fascinating dimension of gender differences in diagnostic likelihood was encountered in a study conducted by Klefsjo et al. (2020). Klefsjo and colleagues (2020) analyzed information from a database of adolescents with ADHD and found that girls were consistently older than boys upon diagnosis. Furthermore, in comparison with ADHD boys, girls with ADHD were found to be older upon their first clinic visit, more often referred to the clinic for emotional problems, and had more clinic visits on average before a diagnosis was given. These dismal results paint a clear picture of the experiences of girls with ADHD in clinical settings: more frequent visits, longer waiting periods for treatment, and more internalizing

problems. This study identifies critiques of the current diagnostic path and subsequent clinical course of ADHD girls, showcasing both the validity and the degree of the issue at hand.

In a study analyzing the developmental trajectories of patients with ADHD, Millenet et al. (2017) indicated a distressing function of expectations. The researchers suggested that gender-specific expectations of normative behavior in boys and girls can be harmful because girls must stray further from “normal” behavior to receive an ADHD diagnosis (Mowlem et al., 2019a). This finding likely entails altered perceptions of ADHD symptomatology in boys and girls based on what others expect of them. This sort of bias was identified by Millenet et al. (2019) and poses a psychosocial risk to youth with ADHD—especially girls—who may struggle to conform by suppressing their symptoms. Overall, the societal expectations of normative behavior comprise yet another domain in which bias and gender are all too relevant.

“Disruptive Boy” Stereotype

The “disruptive boy” stereotype, as coined by Mowlem et al. (2019b), is the overgeneralization of specific, often disorderly, ADHD symptom profiles as representative of every individual diagnosed with ADHD. This stereotype is highly suspected of adversely impacting females’ likelihood of being diagnosed, as it emphasizes symptoms more stereotypically seen in boys (Mowlem et al., 2019b). The potential for harm is immense; if girls are being expected to meet standards designed for hyperactive boys, only girls who are more “boy-like” and externalizing may receive necessary clinical attention.

Shockingly, the “disruptive boy” stereotype yields considerable power over those in a child’s diagnostic path, such as psychiatrists, parents, and teachers. In Rucklidge and Tannock’s (2001) study, parents and teachers rated adolescents with ADHD on various measures. Despite rating ADHD girls as impaired in a vast array of measures of psychopathology, neither the

parents nor the teachers rated the girls as more *impaired* than boys. This finding is extraordinarily intriguing as it points to bias even in the caregivers and authority figures in children's lives. While the study reported more overall psychological impairment for girls on various measures, some confounding variables nonetheless clouded the raters' perception of ADHD girls' impairment.

The reality of the "disruptive boy" stereotype for many is a more mellow "inattentive girl." An expert consensus indicated that the field requires more deliberate attention to be given to subtler expressions of ADHD that typically manifest in females (Young et al., 2020). Moreover, Young et al. (2020) explained that the "disruptive boy" stereotype exposes ways in which the field can improve, such as identifying girls with ADHD, regardless of the presence of externalizing or outwardly obvious symptoms. The "disruptive boy" stereotype is one mere example of the adversity many girls must overcome to receive adequate treatment for their neurodevelopmental disorders.

The Representativeness Heuristic

An alternative hypothesis suggests that the use of the representativeness heuristic among professionals along the diagnostic path exacerbates the effect of bias on diagnosis. The representativeness heuristic is often used when judging the probability of someone's or something's belonging to a specific category or process (Tversky & Kahneman, 1974). Tversky and Kahneman's (1974) theory of the heuristic explains that it is generally helpful, but misuse thereof often results in "severe and systematic errors" (p. 1125). Recent research has turned toward a theory in which the widespread misuse of the representativeness heuristic, paired with common stereotypical foundations for the heuristics themselves, is detrimental to many females' treatment paths.

Proponents of the theory, Bruchmüller et al. (2011) discovered evidence of the use of the representativeness heuristic in clinical practice. In this robust study, researchers sent case vignettes (i.e., summative descriptions of theoretical patients) to 1000 child psychologists, who were then asked to provide a diagnosis. Astoundingly, boys were found to be more readily diagnosed with ADHD than girls, even when they had identical symptom profiles. Bruchmüller and colleagues (2011) attributed this concerning trend to clinicians' reliance on the representativeness heuristic to identify a prototypical ADHD child. Both the existence of the systemic underdiagnosis of girls and overdiagnosis of boys were considered to be affected by the use of the representativeness heuristic (Bruchmüller et al., 2011).

A major takeaway from the study conducted by Bruchmüller et al.'s (2011) study is that the exact same symptom profile is evaluated differently in boys and girls on the sole basis of gender. It is vastly important that clinicians become aware of and actively try to avoid the use of heuristics and biases in practice. It is unethical and inequitable to use bias as a deciding factor in a child's diagnosis. Only through deliberate effort will this unfortunate phenomenon be mitigated in mental health professionals who remain responsible for the care of children.

The "Halo Effect"

As aforementioned, parent and teacher ratings of symptoms are tools frequently used during a patient's assessment for diagnosis. The ratings are especially vulnerable to the "halo effect," a bias in which teachers or parents make assumptions about an individual's behavior in other settings based on the presence of a desirable or undesirable behavior in one known situation (Hartung et al., 2006). Assumptions of desirable behavior occurring across domains are results of positive halo effects, while assumptions concerning undesirable behavior are due to negative halo effects (Hartung et al., 2006). It is theorized that both negative and positive halo

effects contribute to the widespread underdiagnosis of females with ADHD (Gershon, 2002; Rucklidge, 2008).

Gershon (2002) suggested that the presence of a halo effect can be harmful because disruptive behaviors are attended to while inattentive ones are often ignored, likely allowing many females to go unidentified with ADHD. This assertion is supported by Mowlem et al. (2019b), who suggested that emotional problems are viewed by parents and teachers as being less problematic than disorderly behaviors often seen in boys, which reduces girls' likelihood to be referred for treatment. These same researchers discovered evidence of this phenomenon by collecting parent ratings of ADHD symptoms and found gender-specific biases. Parents underreported the impairment of girls if they displayed less stereotypical ADHD behaviors, while the opposite trend was found for boys (Mowlem et al., 2019b). Mowlem et al. (2019b) explained that their findings have immense clinical implications and possibly indicate a systemic bias in the diagnostic process if parental reports are relied on too heavily and if adults involved in the process are not aware of gender biases.

Researchers have discovered fascinating trends in classroom behavior among ADHD children that provide insight into the development of the halo effect among teachers. One study conducted by Abikoff et al. (2002) compared control students' behaviors to those of students with ADHD and found that ADHD girls exhibited less rule-breaking and less disruptive behaviors than ADHD boys. Additionally, Abikoff et al. (2002) found evidence indicating that the decreased presence of disruptive externalizing behaviors in ADHD girls results from deliberate symptom suppression. Girls' suppressing symptoms to avoid social rejection possibly explains some variance in the diagnostic rates of boys and girls with ADHD because girls, more than boys, 'mask' ADHD symptoms and often appear "normal" (Abikoff et al., 2002). If teachers

see girls performing well in the classroom and not exhibiting disruptive or hyperkinetic behaviors, it is likely a positive halo effect can surface and bias a teacher's ratings of a girl's ADHD symptoms. Alternatively, negative halo effects can occur in situations where boys display disruptive behavior in class, thus influencing a teacher's perceptions and subsequent ratings of a boy's behavior. Both scenarios contribute to prototypical representations of children with ADHD as aforementioned, thus exacerbating the repercussions of reliance on the representativeness heuristic. Conversely, there is some debate in the field concerning the impact of halo effects. For instance, Alacha and Lefler (2021) suggested that negative halo effects alone do not contribute to inflated diagnosis rates in boys unless accompanied by the presence of a more severe disorder (e.g., conduct disorder or oppositional defiant disorder). Nonetheless, in boys specifically, it was found that parents are more likely to endorse ADHD symptoms if a child has a more severe disorder, suggesting inflated diagnosis rates of ADHD exist in that particular population (Alacha & Lefler, 2021). This supports my argument that the presence of negative halo effects in parent and teacher ratings of boys contributes in some part to the underdiagnosis of females with ADHD.

Bias in Diagnostic Criteria

The DSM-5 and Stereotypical Presentations of ADHD

Adherence to the DSM-5 criteria is necessitated in clinical practice and diagnostic processes. However, many researchers have begun to question the appropriateness of the diagnostic criteria for all children with ADHD. The diagnostic criteria, as laid out by the DSM-5, are the foundation used by professionals in the field to identify patients with ADHD. The first major critique of the diagnostic criteria is of the data that informed the writing of the criteria. In the previous edition of the manual, the DSM-IV, diagnostic criteria were based primarily on

observations of mostly young boys (Lahey et al., 1994). The updated version, the DSM-5, built on its predecessor based on a series of field studies that consisted of a majority of males (Clarke et al., 2013). The consensus of those concerned appears to be that the DSM-5 may not have adequate standards set to evaluate girls if the criteria themselves are historically and systematically built on samples of males. As previously demonstrated in this literature review, girls and boys undoubtedly express ADHD symptoms differently, and thus cannot effectively be evaluated by standards biased by a different population.

A second major critique of the DSM-5 diagnostic criteria concerns the gender differences in threshold levels required for an ADHD diagnosis. As previously discussed, ADHD girls seem to require more impairment compared to healthy girls than ADHD boys necessitate compared to healthy boys to receive a diagnosis (Mowlem et al., 2019b; Nussbaum, 2012). Because only the most noticeable girls with ADHD most often receive diagnoses, it has been posited that the diagnostic criteria are biased towards a male presentation of ADHD, which has broader clinical implications for sex role socialization (Mowlem et al., 2019a). A third critique of the diagnostic process is that standardized rating scales used to assess patients feature items that yet again predominantly favor a male presentation of the disorder (Hinshaw et al., 2021; Millenet et al., 2017; Soffer, et al., 2007). Scholars in the field have criticized the overwhelming lack of female-relevant items, such as distinguishing between overt hyperactivity (e.g., running around) and the subtler presentation seen in females (e.g., talking excessively) (Hinshaw et al., 2020; Rucklidge, 2008; Young et al., 2020). Many researchers have started to question why such small symptom classification alterations have not yet been made to the DSM-5.

A fourth critique of the cross-gender applicability of the DSM-5 diagnostic criteria concerns the stereotypic framing of ADHD behaviors. Ohan and Johnston (2005) conducted a

study to address the biased nature of the criteria items. In the study, mothers were asked to rate how gender-specific and problematic they found the DSM-IV symptoms of ADHD to be. The results showed that mothers unquestionably perceived the symptoms of ADHD to be descriptive of boys in general (Ohan and Johnston, 2005). This is a major concern because parents and teachers are key to the diagnostic process, so if mothers assume ADHD traits are representative of boys, they are less likely to consider getting young girls evaluated for the disorder, thus decreasing the referral rates of girls further. An additional critique outlines that the prominence of emotional problems is a partial explanatory principle for the difference in diagnosis rates (Mowlem et al., 2019b). In other words, girls are more likely to be diagnosed with ADHD if they have prominent externalizing issues, which has implications for the female phenotype and whether emotionality is more central to it than that of males. This means that girls can express their difficulties in a different, more emotional way than boys do, which suggests that an aspect of emotionality would likely aid in the identification and diagnosis of females with ADHD.

Researchers caution that females are likely receiving inadequate treatment as a result of the bias that exists in diagnostic criteria (Mowlem et al., 2019b; Nussbaum, 2012). Mowlem et al. (2019) suggest that the current DSM-5 diagnostic criteria contribute to females receiving alternate diagnoses in relation to their internalizing symptoms (e.g., anxiety or depression), and that females' diagnoses are often delayed. In agreement, Nussbaum (2012) stressed that females are being diagnosed with other forms of psychopathology like bipolar disorder or dysthymia and that many are receiving inappropriate treatment for their underlying ADHD. In general, scholars concur that many females are likely misdiagnosed, diagnosed later on average, or not diagnosed at all due to problems with the DSM-5 diagnostic criteria.

Potential Recommendations for the DSM-5

In response to this issue, many suggest that the DSM-5 could benefit from including gender-specific considerations as it pertains to diagnosing ADHD (e.g., Hong et al., 2014; Klefsjo et al., 2020; Quinn, 2005). Scholars are calling for more research to focus on the development of gender-appropriate, female-relevant items to be included in diagnostic criteria and other diagnostic tools, such as parent and teacher ratings (Ohan and Johnston, 2005; Rucklidge, 2008). Some female-sensitive items have been specifically identified as suitable for use in diagnostic practices, though they have not been implemented. Ohan and Johnston (2005) suggested including items such as ‘giggles and/or talks excessively’, ‘changes friends impulsively or without thinking’, and ‘doodles instead of completing classwork’ in diagnostic practices. These items highlight the internal and subtle manifestations of ADHD that are far less noticeable than current diagnostic items such as ‘often runs about or climbs in situations where it is not appropriate’ and ‘often interrupts or intrudes on others’ (APA, 2013).

Nevertheless, the clearest sentiment in the field is that clinicians must be made aware of the gender differences that exist in the expression of ADHD. Quinn (2005) advocated for clinicians to be aware of the various different presentations of ADHD to increase the likelihood of accurate and timely diagnosis for females. In their annual research review, Hinshaw et al. (2021) indicated that it would be beneficial to include diagnostic items that support both male- and female-specific manifestations of ADHD. The authors continued on to recommend that more emphasis be placed on the detection of inattention, disorganization, and symptom suppression/compensation in young girls (Hinshaw et al., 2021).

Recently, the issue was addressed as Young et al. (2020) developed an expert consensus and established an aggregate of professional opinions which detailed their recommendations for

combatting the likely underdiagnosis of females with ADHD. Early intervention, emphasis on a subtler, internalizing symptomatology, and the development of a complex and flexible lifespan model of care were recommended by Young et al. (2020) at the conclusion of their consensus. Some authoritative sources, such as Klefsjo et al. (2020), call for less strictness in the diagnostic criteria in terms of contexts. To elaborate, the DSM-5 requires that a patient experiences impairment in two or more contexts (e.g., school or home) for that patient to receive a diagnosis (APA, 2013). Among others, Klefsjo et al. (2020) suggested that these criteria be diminished because of the high prevalence of girls suppressing or masking their symptoms in social situations, as demonstrated by Abikoff et al. (2002). It has been argued that girls often only show subtle symptoms at school which can delay or impede a girl's potential for diagnosis. Alternatively, Nussbaum (2012) explained that the criteria requiring multiple contexts is valid and must remain in place to avoid the risk of overidentification and misdiagnosis of healthy children if the threshold is lowered. Nonetheless, it is evident that some sort of change to the current diagnostic practices is warranted as the field in its current state is allowing girls to go unnoticed and untreated for a disorder that results in heightened impairment. Whether the diagnostic criteria as laid out in the DSM-5 is reevaluated and revised or clinicians are simply required to be aware of the implications the gender differences in ADHD have, something must be done to right this systemic and harmful wrong against girls.

Conclusion

Taking into consideration the adversity girls are required to overcome to receive a diagnosis for ADHD, it is my informed opinion that females are going undiagnosed and untreated for their underlying ADHD due to systemic diagnostic issues. Girls are difficult to identify as having ADHD because of the prevalence of a primarily inattentive presentation,

largely internalized symptomatology, the presence of comorbid conditions, and the reliance on compensatory strategies to suppress or mask core ADHD symptoms that typically necessitate referral. I believe that until deliberate, foundational changes are made to the way ADHD is diagnosed, young boys will continue to be diagnosed at far greater rates than any other population while females will continue to be left behind. This disorder, previously and erroneously thought to be one typical of young boys, has been confounded by discrepancies in prevalence rates that showcase both gender and age differences unexplainable by normal variance. ADHD continues to exist as a neurobehavioral disorder that afflicts many over the lifespan and affects up to 32 million females worldwide (Staller and Faraone, 2006), making the timely and thorough diagnosis of females with ADHD a major public health concern. Recent data demonstrates how biases, stereotypes, comorbidities, gender norms, and diagnostic criteria have systemically disadvantaged females and their likelihood to receive adequate treatment for their afflictions. It is pertinent that the DSM-5 diagnostic criteria be reevaluated and that parents, teachers, clinicians, and any other adults key to the diagnostic practices for ADHD are made aware of the varying presentations of ADHD to make reparations for the neglect girls and women have historically and consistently faced.

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