

ADHD in Women: A Review of Educational and Psychological Outcomes Through Early Adulthood

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WRITER'S COMMENT: Before I wrote my literature review, I wrote a case study for this course which focused on a close female friend of mine who received countless diagnoses before finally being diagnosed with ADHD in early adulthood. In an interview, she described her other diagnoses and how the symptoms overlapped with those of ADHD and obscured her primary diagnosis. Fascinated and appalled by her experience, when given the assignment I felt compelled to write my review on ADHD in girls and women. ADHD diagnoses are often overlooked or not considered to be a strong fit for many girls due to the lack of representation in ADHD diagnostic criteria and research, contributing to why my friend and countless other girls remain undiagnosed. It is my hope that the information in my review inspires researchers, clinicians, educators, and parents alike to consider females more substantially when looking at ADHD.

INSTRUCTOR'S COMMENT: Maria came to this assignment with the curiosity and careful thinking of a future graduate-level researcher. Wondering why and how women are (or are not) represented in contemporary ADHD research, Maria pursued her topic of interest within the framework of our research and writing assignment for the course: UWP 102H: Writing in Psychology and Human Development. Across several weeks of research, drafting, revising, and editing, Maria evolved her draft to bring it to the fully developed and successful final version you see here.

Because of the constraints of the quarter system, this assignment typically presents a significant writing challenge for most any undergraduate and Maria met that challenge. In our class, students were asked to write a (modified) literature review as a cumulative assignment by applying key principles from our writing course. Over a series of weeks, their aim was to produce a polished, selective (7-12 sources) review. From preliminary steps, such as identifying and revising a research question, to locating, reading, tracking and selecting sources, Maria grappled with the complexity of her topic and the iterative process of the review, yet she did not falter in her tasks. With input and feedback across each stage, Maria revised and edited her review with a steady determination to improve it. For example, at the tail end of our writing process, Maria applied sentence-level revisions to better match the style of academic discourse required for this genre; for instance, by applying grammatical and syntactic logic to polish the placement of keywords in her draft. Maria carefully adopted the academic diction, APA format, and structural conventions of a more comprehensive graduate-level literature review in her field, while also meeting the specific parameters for our more modest assignment. My instructor purpose was to allow students further practice in applying the writing process, this time to a key field-specific genre and imagined academic audience. This culminating writing experience in our course hopefully allows student writers a flexible confidence to pivot their writing skills for any rhetorical situation. I believe, and I hope Maria would agree, she is now well positioned to pursue graduate-level work in her field, psychology, having mastered the essential writer's tools and habits that will help her to thrive there.

—Wrye Sententia, University Writing Program

Introduction

The purpose of this review is to provide a more integrative approach to investigating how gender affects educational and psychological outcomes as well as ADHD symptoms and prevalence throughout

childhood, adolescence, and early adulthood. The research community, as it stands, is left without a holistic and comprehensive understanding of the differences between these outcomes across gender for several reasons. The first and most significant reason for these differences is that females are widely under-represented in ADHD literature, leaving research with a heavy bias towards male characterizations of the disorder (Murray et al., 2018). Without studies that utilize both males and females with ADHD, there is little opportunity to make substantial comparisons across gender lines. While recently the number of studies comprised of more diverse participants has increased, there are still few that focus on cross-gender analysis for more than one outcome area. Instead, most studies are conducted using male participants, with and without ADHD, and only assess predisposition to one outcome area, such as DuPaul et al. (2018), which focuses on educational outcomes.

Currie, Stabile, & Jones (2014) is an exception to the majority of ADHD research that lacks cross-gender analysis. While outcomes of those with ADHD are typically analyzed with respect to their non-ADHD counterparts, this study explicitly addressed differences in the outcomes of males and females who were being treated with ADHD stimulant medications. In a sample of Canadian school-aged children, it was found that females with high ADHD scores who received stimulant medication were more likely to develop depressive disorders and less likely to attempt post-secondary education than males with the same symptomology and treatment. Both boys of all ADHD scores and girls with moderate or low ADHD scores showed no significant differences in such outcomes when treated with stimulant medication (Currie et al., 2014). The use of gender analysis allows for generation of more functional data which can be used to create targeted interventions for school-aged females with severe ADHD symptoms taking stimulant medication. These types of specific results are more appropriate for informing interventions and should be the standard in future research practices.

While Currie et al. (2014) was capable of performing cross-gender analysis, most studies conducted in the field are unable to analyze gender as a potential confound. Beyond the scope of stimulant medication in treating ADHD, the way in which outcomes of females differ from those of males is relatively unknown. The lack of studies that directly analyze gender demonstrates why this area of research is needed. Data was compiled from studies with a variety of methods that

reveal several areas in which gender appears to have a mediating effect on outcomes in people with ADHD. This specific focus is critical to the field to help inform future research and clinical practices to account for gender differences, especially those that have gone unnoticed due to the historical underrepresentation of women in research. The following literature review examines several potential targets of ADHD research and treatment in females, using educational and psychological outcomes to assess where further study and intervention may be warranted. However, this abridged review is unable to utilize the quantity of studies necessary to assess more potential target areas and to make detailed suggestions for further study and intervention due to the constraints of the assignment.

Methods

The methods of this review included the use of several databases to find relevant sources. These searches were conducted using Psychinfo (ProQuest), Psycharticles (ProQuest), Social Services (proquest), ERIC (EBSCO), Academic Search Complete (EBSCO), and PubMed. The references from relevant articles, including other literature reviews which were not in themselves used in this review, were also used to locate relevant studies. The search terms used include ADHD, Attention Deficit Hyperactivity Disorder, Attention Deficit/Hyperactivity Disorder, female, girl, gender, educational outcomes, social outcomes, health outcomes, adolescence, adulthood, late-onset, and late diagnosis. Articles that were selected for use in this review contained information on at least one outcome measure and explicitly mentioned females in their results. Articles more than five years old were not included to keep the literature as current as possible, nor were studies comprised of predominantly male subjects.

Information included in the results falls roughly into three main categories: gender difference, educational outcome, and psychological outcome. Due to the small amount of studies that directly analyzed gender as a confound, preferring to use comparison groups who were unaffected by ADHD, the outcomes in the latter two sections focus on outcomes more present in females with ADHD than their non-ADHD counterparts. Within educational outcomes, several measures were included such as college GPA, motivation, attempted post-secondary education, completed post-secondary education, and math scores.

Within psychological outcomes, depression and anxiety rates, self-harm and suicidality, and substance use and abuse were considered.

Results

Gender Differences in Symptoms and Course

There are a multitude of differences in how ADHD presents itself in males and females, including presentation of symptoms, prevalence, and persistence. In American children, about 15% of boys and 7% of girls have been diagnosed with the disorder, showing the diagnosis favors male-associated symptoms (Schwarz & Cohen as cited in Currie et al., 2014, p. 64). Other epidemiological studies, such as Willcut (2012), found that the gender ratio in children was as high as 3:1 favoring males during childhood (as cited in Murray et al., 2018, p. 1). Some have proposed that males are more diagnosed as children than females because the DSM criteria for ADHD are more geared towards symptoms of hyperactivity found in young males; others such as Gershon & Gershon (2002) suggest that young girls tend to show less disruptive behavior and therefore do not get referred to doctors by teachers and parents as often as boys do (as cited in Murray et al., 2018). These theories are supported by the gender ratios found in studies on ADHD diagnosis of clinically referred participants, which favor males by roughly 9:1 (Angola, Costello, Erkanli as cited in Vingilis et al., 2015 p. 2). The discrepancy between the diagnostic rate and referral rate in boys and girls highlights differences in how the disorder is viewed in children of each gender.

The gender ratio of ADHD in adults, however, has been estimated to be approximately 1:1—a stark change from childhood statistics (Murray et al., 2018). There is evidence both that boys lose their ADHD status and that girls maintain theirs during early adolescence. Many boys are diagnosed with ADHD-hyperactivity type by meeting criteria which specifically references classroom behaviors in childhood; when they no longer present with those same disruptive behaviors in adolescence they fail to meet enough diagnostic criteria to maintain the diagnosis (Williamson & Johnston as cited in Murray et al., 2018). Conversely, Owens et al. (2018) found that 74% of girls who are diagnosed with ADHD during childhood had symptoms persist past adolescence. Females who are diagnosed as children tend to maintain their disorder

into adolescence and adulthood whereas most males stop meeting criteria before adolescence.

Moreover, females are more likely to be diagnosed for the first time in adolescence, often self-referring upon becoming aware of more internalized symptoms, including those for comorbid disorders (Nussbaum as cited in Ahmad, Owens, and Hinshaw, 2019). However, there has been controversy within ADHD discourse over the reliability of these late-onset (past age 11) ADHD cases. According to Ahmad et al. (2019), most who self-refer in adolescence or early adulthood do so because of comorbid disorders or a substance abuse problem that have symptoms which overlap with ADHD. These comorbidities most likely better account for the symptoms than ADHD does, making a large majority (99%) of the cases of late-onset ADHD questionable. Therefore, there is some evidence suggesting late-onset ADHD may be less common than current research otherwise implies.

Educational Outcomes

ADHD has been linked with decreased educational attainment in both all-female and equally male-female representative samples. Due to the lack of longitudinal and gender-based studies on educational outcomes, there are limited associations between ADHD, gender, and education that have been studied. Additionally, the methods and populations used in studies are highly varied, which makes meaningfully integrating the results of the studies reviewed particularly difficult.

In an all-female longitudinal study beginning in childhood, Owens et al. (2017) found that women with ADHD have significantly lower measures of educational attainment such as highest degree earned, verbal and math scores, and total years of education completed. The extent to which ADHD persisted well into adolescence and/or adulthood had no bearing on education attainment (Owens et al., 2017). Owens et al. (2017) also hypothesized that those few girls who “grow out of” their diagnoses by early adolescence may not face the same negative outcomes—including educational attainment—as those who don’t, though there was no empirical evidence from their study used to support that claim.

Moreover, DuPaul et al. (2018) had a subject pool comprised of a roughly even amount of male and female university students and reported similar findings. While symptom severity did not moderate academic outcomes, ADHD diagnosis did. From measures like mean GPA to

motivation scores, those with ADHD were at significantly higher risk for poor outcomes than those without (DuPaul et al., 2018). Students with ADHD also attempted and earned fewer credits and were more likely to have withdrawn from a course than controls. Additionally, 9.1% of students with ADHD dropped out of college as compared to 3.3% of their non-ADHD counterparts (DuPaul et al., 2018).

Psychological Outcomes

1. Depression and Anxiety

Increased rates of depressive and anxiety disorders have been found in ADHD populations, especially in adolescent females. Females with ADHD self-refer in adolescence for symptoms related to both ADHD and comorbid disorders at increased rates (Williamson & Johnston as cited in Murray et al., 2018 p. 1). Self-referral later in adolescence shows both that women are less likely to be correctly diagnosed with ADHD as children, and that they are also more likely to suffer from other conditions such as depression and anxiety. It has been estimated that 31.3% of women with ADHD have also been positively screened for Major Depressive Disorder (MDD) compared to 14.1% of women without ADHD (Fuller-Thomson, Lewis, & Agbeyaka, 2016). Similarly, women with ADHD were about 4 times as likely to experience Generalized Anxiety Disorder (GAD) than women without (35.6% vs 9.9%) (Fuller-Thomson et al., 2016).

Fedele et al. (2012) suggests that societal expectations lead girls to internalize their feeling in such a way that fosters low self-esteem, which contributes to the heightened rates of internalizing disorders such as Generalized Anxiety Disorder (GAD) and Major Depressive Disorder (MDD) later in life (as cited in Fuller-Thomson et al, 2016, pp. 923-924). Difficulty self-regulating is a common symptom of ADHD, predisposing girls with the disorder to struggle to meet expectations of how they should react in social situations. This likely results in feelings of self-blame, which helps account for the increased prevalence rates of anxiety and depressive disorders.

2. Self-Harm and Suicidality

Rates and severity of self-harmful behaviors as well as rates of suicidal ideation and suicide are more higher among females with ADHD. There are several compounding factors that put females with

ADHD at particularly high risk of these behaviors. First, ADHD results in decreased ability to regulate response inhibition, resulting in impulsive behaviors (Owens et al. 2017). Impulsivity is a risk factor for self-harm, which was found to occur significantly more in females with ADHD than those without, even when controlled for comorbidities (Owens et al 2017). However, those comorbidities correlated with self-harm behaviors are also more prevalent in females with ADHD. Those with ADHD are more at risk for developing both internalizing and externalizing disorders, such as depression and conduct disorder, respectively (Owens et al 2017). While internalizing and externalizing disorders by themselves already increases the odds of self-harm and suicidality, that effect is amplified when combined with the behavioral inhibition associated with ADHD (Swanson, Owens, & Hinshaw 2014). This pattern is particularly salient for females with ADHD, as they are more likely to develop internalizing disorders than their male counterparts and are thus also at higher risk of suicidal thoughts and tendencies (Ahmad et al., 2019; Swanson et al., 2014).

Women with ADHD were more than three times as likely as those without to have thoughts of suicide—45.8 % and 13.8%, respectively—and were also found to have more frequent and severe self-harm behaviors (Fuller-Thomson et al, 2016; Swanson et al, 2014). Moreover, women whose ADHD extended past childhood reported more diverse and severe methods of self-harm than those with transient ADHD and comparison groups, which did not significantly differ (Swanson et al., 2014). Those with either transient or persistent ADHD had elevated rates of suicide attempts with respect to all-female comparison groups (Swanson et al., 2014). Suicidality and non-suicidal self-injury pose a significantly higher risk to women with ADHD, especially those who have severe symptoms and whose symptoms persist past childhood.

3. Drug Use

Reports on drug use and abuse rates show mixed results in both male and female populations. These studies used a wide range of methods and populations to estimate drug use and abuse, which likely explains the variety in their results. While drug use is widely believed to be more common in women with ADHD, not all studies cite significant rates of drug abuse. A risk factor for substance abuse, impulsivity is a quintessential characteristic of ADHD and could help explain the

increased rate of substance use and possible abuse in ADHD patients (Owens et al., 2017). One study found that children with ADHD are more likely to use cocaine, marijuana, and nicotine products, but not alcohol, as young adults (Lee, Humphreys, Flory, Liu, & Glass as cited in Vingilis et al., 2015). Another with an all-female subject pool estimated that drug/alcohol abuse was present in 39.1% of participants with ADHD, versus 16.2% for controls, and that cigarettes were used roughly twice as often by those with ADHD (Fuller-Thomson et al., 2016). A third study found no such significant difference in rate of substance abuse among women with and without ADHD but did find discrepancies in cocaine and marijuana use (Vingilis et al., 2015). Despite the lack of consensus among these studies, there is some evidence to suggest ADHD increases the risk of drug use and/or abuse.

Discussion/Conclusion

This review used studies related to psychological and educational outcomes in females with ADHD to construct a general overview of how these outcomes are mediated by gender. Current available literature that examines gender-mediated outcomes tends to apply methods which are highly variable. Some research utilized all-female subject pools while others used groups that were more mixed; there were longitudinal studies that followed young children through adulthood and there were studies that focused more specifically on childhood, adolescence, or young adulthood. In this way, the results of this review may be generalized to many populations but are difficult to compare directly. Searches were limited to studies that used at least predominantly female populations, a small proportion of the overall ADHD research, and as such elimination of studies based on subject or methods was not possible.

In order to find more reliable data, additional studies that follow children into adulthood and even old age and that measure a variety of factors are necessary. Such studies would be significantly more comprehensive, measuring diagnostic severity and course of ADHD as well as intensity/prevalence of outcomes throughout time. Additionally, statistical analysis of equally male/female representative studies should focus on gender as well as presence of diagnosis to assess if gender is in fact a confound. A meta-review which analyzes the differences between male- and female-based data should also be conducted to determine

which facets of the disorder and which outcomes are mediated by gender. Ideally, future research would be conducted in socioeconomically and ethnically diverse populations and acknowledge more genders to provide a more robust understanding of gender's effect on outcomes of those with ADHD.

While female outcomes are difficult to directly compare to male outcomes, the results of this study have implications in treatment and educational interventions for girls and women with ADHD. As women with ADHD are commonly less educated than their male counterparts, interventions in education targeted specifically to females with the disorder are needed (Vingilis et al., 2015). Analysis of educational outcomes in college students with ADHD points to early interventions being the most successful (DuPaul et al., 2018). Clinical interventions should focus on early and routine screening for comorbidities, such as symptoms consistent with MDD, GAD, and substance use/abuse to allow for early diagnosis and treatment. Additionally, similar preventative measures should be taken to avoid self-injurious behaviors and suicidality. Moreover, increased awareness among parents, teachers, and medical professionals that adolescence has been identified as a critical time period for escalation of symptoms in females would be beneficial (Murray et al., 2018). While this review offers several potential areas where interventions are critical, it is very probable that there are additional areas that have yet to be revealed.

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