

A 2021 REVIEW BY HINSHAW ET AL.

Looking Back on 42 Years of Research on ADHD in Females

*Co-author Emily Rosenthal expands
on some key findings*

A

2021 review summarized and consolidated the findings of much of the research published from 1979 to early 2021 about females with ADHD. Lead author, ADHD expert and UC Berkeley Distinguished Professor of Psychology [Stephen P. Hinshaw, PhD](#), has conducted foundational studies of ADHD in females and extensive research on the condition in general.

Entitled “[Annual Research Review: Attention-deficit/hyperactivity disorder in girls and women: underrepresentation, longitudinal processes, and key directions](#),” the review looked at 131 publications, including primary research articles and review articles. It was published in the 2022 issue of the [Journal of Child Psychology and Psychiatry's](#) special annual research issue. ▶

The review discusses conceptual issues of prevalence, diagnostic practices, diversity, comorbidity and causal factors of ADHD in females; reasons why the general public isn't aware that ADHD exists in girls and women; predictors of and effects on adult outcomes in girls with ADHD; clinical implications of existing findings; and priorities for future research.



▶ The *Journal of Child Psychology & Psychiatry's Annual Research Review* is a special issue made up of in-depth reviews of research conducted on key topics in the field. The journal invites experts in different areas of pediatric mental health to write about specific topics. The 2022 issue recognized Hinshaw and his team.

“Compared to boys and men, girls and women with ADHD may have symptoms that are less noticeable to others....with symptoms such as difficulties with organization, focus and attention to detail.”

—Co-author and psychology doctoral student
Emily Rosenthal, UC Berkeley Clinical Science Program



It was co-authored by UC Berkeley psychology doctoral students (Clinical Science Program) and [Hinshaw Lab](#) members Emily A. Rosenthal and Sinclair M. O’Grady and research assistant Phuc T. Nguyen.

Conclusions

Rosenthal talked with us about this comprehensive look at more than four decades of research into ADHD in females – helping to flesh out the review’s conclusions and key points.

Based on their review of the literature, Hinshaw and his team concluded that:

- ***Girls meet diagnostic criteria for ADHD at just under half the rates of boys, a ratio that becomes much closer to equal by adulthood.***
- ***Girls and women with ADHD show a predominance of inattention and associated internalizing problems; boys and men display greater levels of hyperactive-impulsive symptoms and associated externalizing problems.***
- ***Sex differences in ADHD symptoms and related outcomes depend heavily on the clinical versus non-referred nature of the samples under investigation.***

In other words, how research participants are recruited – clinical samples versus population-based samples – strongly influence research findings, explains Rosenthal.

“People recruited for clinical samples are people who actively sought clinical care and/or diagnoses at clinical centers,” she says. “Those recruited for population-based samples are random people in the community who are not seeking care or diagnoses – even if they may potentially have the same diagnosis.”

- ***Females with ADHD experience, on average, serious impairments, with a particularly heightened risk for problems in close relationships and engagement in self-harm.***

Compared to women without ADHD, women diagnosed with the condition have – on average – more problems with employment and higher rates of unplanned pregnancy, teen motherhood and intimate partner violence, says Rosenthal.

“For example, one study we reviewed showed the rate of teen motherhood was 15 percent in women with ADHD and 3 percent in women without it,” she says. “Another study showed that 43 percent of women with ADHD experienced an unplanned pregnancy, compared to 11 percent in women without ADHD.”

- ***Clinicians may overlook symptoms and impairments in females because of less overt (but still impairing) symptom manifestations in girls and women and their frequent adoption of compensatory strategies.***

“Compared to boys and men, girls and women with ADHD may have symptoms that are less noticeable to others,” says Rosenthal. “This is because they often have an inattentive presentation of ADHD, with symptoms such as difficulties with organization, focus and attention to detail.”

“While those symptoms may cause problems in their lives, they can be overlooked by clinicians. Also, girls and women may develop strategies to compensate for these challenges, making their struggles even more difficult for others to notice.”

Key points, expanded

Their review of the literature led the team to summarize and consolidate these key points:

- ***Until recently, almost all research on ADHD has focused on boys and men, with female presentations having been largely overlooked in both clinical and research settings.***

Although there wasn't systematic research on ADHD in females until about 1979, Rosenthal says, prior to that there were a few case studies that documented females, as well as some epidemiological research.



“ADHD is stereotypically viewed as a disorder for boys and one that is indicated by hyperactivity/impulsivity, leading to a lack of diagnosis and representation in research of females with the disorder,” she explains. “In the past 40 years or so, most samples for studying ADHD have had few female participants.”

- ***In childhood, the prevalence of ADHD in boys is 2 - 2.5 times higher than its prevalence in girls. By adulthood, this ratio becomes closer to equal.***

The second full paragraph on page 2 of the article cites a number of studies and breaks down this point.

- ***Females are more likely to present inattention symptoms and associated internalizing problems, whereas males are more likely to display hyperactive-impulsive symptoms and associated externalizing problems.***

In addition to not paying attention, symptoms of inattention include disorganization, forgetfulness, lack of attention to details, losing things and lack of follow-through, says Rosenthal. Internalizing problems include anxiety and depression.

“Externalizing symptoms include aggression, hostility and delinquency,” she says. “Disorders considered part of the ‘externalizing spectrum’ include oppositional defiant disorder and conduct disorder.”

It's important to note that in addition to ADHD having a spectrum of possible symptoms, it also can range in severity from one person to another.

“Some people experience ADHD symptoms that are chronic and extreme, while others have less severe symptoms that improve with time,” Rosenthal says.

- ***ADHD is highly impairing in girls during childhood and adolescence regarding major domains of life functioning, with longitudinal studies showing these impairments to persist through adulthood. Notably, self-harm continues to be a major impairment in girls and women with ADHD throughout adolescence and adulthood.***

When analyzing self-harm among females with ADHD, the research team reviewed studies that looked at both non-suicidal self-injury (NSSI) and suicidal behavior. NSSI behaviors are intended to harm the self without the intention of causing death, and they include cutting, hitting and burning oneself.

“NSSI tends to be higher in girls with the combined type of ADHD, in which significant symptoms of both inattention and hyperactive/impulsivity are present,” she says. “One study we looked at suggests that ADHD in females – especially when it involves hyperactive/impulsive symptoms – can increase the risk of self-harm when there is also emotion dysregulation.” ▶

- ***Ongoing efforts exploring developmental pathways and causal mechanisms linking female presentation of ADHD to long-term outcomes will further scientific understanding and foster responsive interventions.***

In other words, Rosenthal says, “research that explores long-term outcomes of ADHD in girls and women – especially work that investigates how and why the disorder contributes to difficulties across the life span – will improve treatment and help females who have ADHD.”

Additional research of ADHD in females is necessary to better identify, diagnose and when appropriate, intervene. “We’re doing a better job than in the past, but we don’t know as much as we would like to about how ADHD impacts girls and women, especially into adulthood,” says Rosenthal. “Work by Dr. Hinshaw’s lab and others have tried to fill this gap in knowledge.”

“Most diagnostic criteria were initially developed to describe boys. The perception that ADHD presents only in hyperactive boys is not correct – although that is true for some kids – and means that youth and even adults with more inattentive presentations of the disorder, especially girls and women, might be overlooked,” she explains.

▶ To learn more about this issue beyond the referenced academic articles on pages 9-13 of the research review, Rosenthal recommends “[Risk Factors and Recommendations for Parents](#),” a CHADD article by Hinshaw Lab alum Jocelyn Meza, PhD, now an assistant professor of psychiatry and biobehavioral sciences in the David Geffen School of Medicine at UCLA.

“The research so far shows that on average, females with ADHD may have different symptoms and different outcomes than males,” concludes Rosenthal. “It’s critical that we know more about ADHD’s impact in girls and women at all stages of development so we can better help them receive accurate diagnoses, effective treatment and positive outcomes.” 🧠

Emily Rosenthal is a third-year graduate student in the UC Berkeley Clinical Science Program. Her research focuses on ADHD across the lifespan, particularly in adolescence and young adulthood. She is interested in understanding the factors that contribute to co-occurring emotional challenges in individuals with ADHD.

Read the commentary “[ADHD in girls and women: a call to action - reflections on Hinshaw et al. \(2021\)](#)” by ADHD expert Andrea Chronis-Tuscano, PhD, of the University of Maryland Department of Psychology.
