



The Future Evolution of the ADHD Diagnosis  
Where Will We Be in 2072?




Sam Goldstein, Ph.D.  
Assistant Clinical Professor,  
University of Utah School of Medicine  
Clinical Director,  
Neurology, Learning and Behavior  
Center

[www.samgoldstein.com](http://www.samgoldstein.com)  
[info@samgoldstein.com](mailto:info@samgoldstein.com)  
[@drsamgoldstein](https://twitter.com/drsamgoldstein)  
[@doctorsamgoldstein](https://www.facebook.com/doctorsamgoldstein)  
[@CommonSenseScience](https://www.youtube.com/channel/UC6m01111111111111111111)



Sam Goldstein, Ph.D.  
www.samgoldstein.com  
The Power Of Resilience



The 3<sup>rd</sup> International  
ADHD Congress 2022

1

---

---

---

---

---

---

---

---

Relevant Disclosure

- Editor in Chief, Journal of Attention Disorders
- Co-author of
  - Comprehensive Executive Functioning Inventory-Child and Adult
  - Cognitive Assessment System –1<sup>st</sup> Edition
  - Co-author Attention Disorders in Children 1<sup>st</sup> and 2<sup>nd</sup> Editions
  - Co-author Handbook of ADHD in Adults
  - Co-Editor Handbook of Executive Functioning
  - Co-Editor Handbook of Intelligence and Achievement Testing
  - Co-author Raising a Self-Disciplined Child
  - Compensated Speaker

2

---

---

---

---

---

---

---

---

My First Assessment!



3

---

---

---

---

---

---

---

---

### Goals for This Session

- Review the trends in ADHD diagnosis and treatment.
- Offer an overview from a neuropsychological perspective of ADHD.
- Offer a perspective of ADHD as a primary impairment in the development of self-discipline.
- Discuss child predictors of ADHD outcome in adulthood.
- Offer my view of ADHD in 2072.

---

---

---

---

---

---

---

---

4

### Diagnosis and Treatment of ADHD in the United States: Update by Gender and Race

Kathleen A. Fairman, Alyssa M. Peckham, David A. Sclar

First Published February 2, 2017 | Research Article | Find in PubMed | [Check for updates](#)  
<https://doi.org/10.1177/1087054716688534>

- Diagnoses of ADHD increased by 36% in adults and 18% in youth, and diagnosis + drug by 29% in female and 10% in male youths.
- ADHD diagnosis was 77% less likely among Black than White adults but 24% more likely among Black than White youths in 2012-2013. Conduct disorder (CD) in youths multiplied odds of diagnosis + drug by 3.31; interaction of Black race × CD by 3.78.
- Upward trends in ADHD diagnosis and treatment have continued but vary markedly by group.
- Studies of undertreatment/overtreatment are needed.

---

---

---

---

---

---

---

---

5

### Recent Developments

- Over a period of about two decades beginning in 1990, substantial upward trends in the rates of diagnosis and treatment for ADHD were observed in nationally representative samples of U.S. physician office visits obtained through the National Ambulatory Medical Care Survey.
- Several important developments have taken place in the last 20 years.
- These include the approval of several new ADHD drugs and formulations.
- The formation of the American Psychiatric Association (APA) *Diagnostic and Statistical Manual of Mental Disorders-5* Task Force in 2007, culminating in the publication of *Diagnostic and Statistical Manual of Mental Disorders (DSM-5; 5th ed. )*
- Updated guidelines, from the American Academy of Pediatrics and from the American Academy of Family Practice in 2012 (adults) and 2014.

---

---

---

---

---

---

---

---

6

### Recent Developments

- These changes may have increased the number of cases diagnosed and treated for ADHD in several ways.
- First, the age criteria for diagnosis broadened, both in the *DSM-5* (symptoms no later than age 12 years vs. age 6 years in the *Diagnostic and Statistical Manual of Mental Disorders* and in the AAP guidelines (age 4-18 years in 2011 vs. 6-12 years in 2001).
- Second, the *DSM-5* guidelines require adults and adolescents to display only five ADHD symptoms, rather than the six required for a diagnosis in children.
- Finally, a description of ADHD symptomatology in those aged 17 years or older was added to the *DSM-5* for clarity.

7

---

---

---

---

---

---

---

---

### Recent Developments

- *Large increases in ADHD diagnosis and treatment among adults.* From 1995-1996 to 2007-2008, the number of office visits at which an ADHD diagnosis was made increased from 3.1 to 14.5 per 1,000 U.S. adults (aged 20 years or older).
- *Greater rates of increase in ADHD diagnosis and treatment among female than male children and teens (aged 5 to 18 years).*
- *Lower rates of diagnosis and treatment for non-White than White populations.*

8

---

---

---

---

---

---

---

---

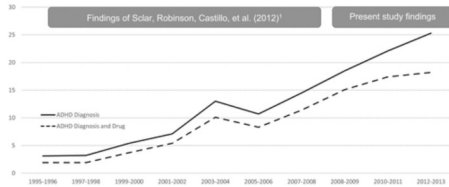


Figure 1. ADHD diagnosis and pharmacotherapy per 1,000 population: U.S. office visits for adults aged ≥20 years.

9

---

---

---

---

---

---

---

---

### What is Attention Deficit Hyperactivity Disorder (ADHD)?

- ADHD appears to primarily involve a difference in the maturation of the the basal ganglia, cerebellum and the frontal lobes of the brain.
- Co-morbidity or co-occurrence of other developmental, emotional and behavioral conditions with ADHD often complicates our understanding of the core problem.
- The primary symptoms of ADHD (excessive impulsive, inattentive and restless behavior) leads to a nearly infinite number of consequences in every aspect of life.



10

---

---

---

---

---

---

---

---

Current diagnostic criteria specify that ADHD involves difficulties with inattention and/or hyperactivity/impulsivity.

Researchers using statistical analyses have consistently found support for an inattention factor in both children and adults.

Findings have been mixed regarding whether hyperactivity and impulsivity reflect one or two dimensions.

11

11

---

---

---

---

---

---

---

---

ADHD appears to be a condition stemming in part from inefficient operation of the brain relative to task and environmental demands leading to poor execution of behavior.

It is not a disease nor illness. It reflects an immaturity in the pace children develop self-control and self-discipline.

12

12

---

---

---

---

---

---

---

---

Neither the level of impairment nor the life outcome for those individuals with ADHD is very well predicted by the diagnosis, symptoms or treatments.

13

---

---

---

---

---

---

---

Symptom relief is insufficient to assure good adult outcome for ADHD.

Strengths not weaknesses are the best predictors of what all of our lives will be.

14

---

---

---

---

---

---

---

The Symptoms of ADHD Lead to a Nearly Infinite Number of Consequences

15

---

---

---

---

---

---

---

ADHD acts as a catalyst fueling other developmental and environmental risk factors.

16

---

---

---

---

---

---

---

ADHD is a condition resulting from poor self-discipline, reflecting exaggeration of normal behavior.

17

---

---

---

---

---

---

---

### Self-discipline

- The ability to inhibit.
- The ability to delay.
- The ability to separate thought from feeling.
- The ability to separate experience from response.
- The ability to consider an experience and change perspective.
- The ability to consider alternative responses.

18

---

---

---

---

---

---

---

Self-discipline

- The ability to choose a response and act successfully towards a goal.
- The ability to change the response when confronted with new data.
- The ability to negotiate life automatically.
- The ability to track cues.

---

---

---

---

---

---

---

---

19

Children with poor self-discipline aren't clue-less

They are unfortunately often cue-less!

---

---

---

---

---

---

---

---

20

Poor Self-discipline is synonymous with. . .

Poor Self-control

---

---

---

---

---

---

---

---

21

Poor self-discipline leads to

Impulsive behavior

22

---

---

---

---

---

---

---

---

Conditions under which inattention is observed:

- Repetitive
- Effortful
- Uninteresting
- Not chosen

23

---

---

---

---

---

---

---

---

Conditions under which problems with consequences are observed:

- Delayed
- Infrequent
- Unpredictable
- Lacking saliency

24

---

---

---

---

---

---

---

---



### Childhood Predictors of Adult Outcome

- Earlier studies found that co-occurring aggression, conduct problems and severity in ADHD symptoms in childhood predicted persistence of ADHD into adolescence and adulthood.
- Other longitudinal studies have also suggested socio-economic status (SES) as an important predictor for persistence of ADHD symptoms in children and outcome severity in early adolescence. However, this finding has not always been replicated.

---

---

---

---

---

---

---

---

25

### Childhood Predictors of Adult Outcome

More recent studies focusing on larger cohorts of ADHD participants and a wider range of childhood risk factors reveal that other psychiatric comorbidities, oppositional defiant disorder, anxiety disorder and family factors including maternal psychopathology and psychosocial adversity significantly predicted persistence of ADHD in adolescence and adulthood.

---

---

---

---

---

---

---

---

26

### Childhood Predictors of Adult Outcome

- Moving beyond behavioral and family factors, the predictive values of neurocognitive functions such as working memory, inhibition and response variability in ADHD persistence have been reported in a few studies, although a limited range of cognitive measures and short follow-up intervals were used. Initial evidence in children suggests that cognitive functions in early childhood may predict future ADHD symptoms or diagnosis a few years later.
- General cognitive ability (IQ) in early childhood predicted later ADHD symptoms measured in middle childhood (age 7.5) or in early adolescence (age 14) but this was not replicated in another follow-up study in adolescence (ages 12-18), which found childhood IQ and social class to predict conduct disorder outcomes rather than ADHD scores or diagnosis.

---

---

---

---

---

---

---

---

27

### Childhood Predictors of Adult Outcome

- Overall the findings across these studies have been mixed, perhaps reflecting differences in study design, variables examined and the definitions of ADHD applied.
- Furthermore, none of these studies examined whether cognitive impairments in children with ADHD predicted future ADHD outcome in older adolescents and young adults.
- Further studies are therefore needed to clarify the predictors of persistence and remission of ADHD.

---

---

---

---

---

---

---

---

28

### Childhood Predictors of Adult Outcome

- The severity of childhood ADHD symptoms, as reported by parents, is a strong predictor for ADHD outcome at follow up.
- Co-occurring symptoms, such as social and emotional functioning or oppositional behaviors rated by parents, also predicted more severe symptoms and impairment at follow up. However, the predictive value of these co-occurring symptoms became trivial once childhood ADHD symptoms were controlled for, suggesting that the co-occurring problems are related to the severity of ADHD symptoms.

---

---

---

---

---

---

---

---

29

### Childhood Predictors of Adult Outcome

- Teacher ratings of childhood ADHD symptoms and co-occurring symptoms does not predict parent interview-based ADHD symptoms or diagnosis at follow up.
- The validity of teacher reports in older children or adolescents may also be compromised.
- The stability of ADHD symptoms is also evident from objective actigraph measures of activity level, which are not subject to rater bias effects.

---

---

---

---

---

---

---

---

30

### My View of the Future of the ADHD Diagnosis

- Inattentive Type will shift to Sluggish Cognitive Tempo.
- The Hyperactive-Impulsive type will be renamed as an Impulse Control Disorder of Childhood.
- A better set of adult symptoms will be used.
- SPECT and other scanning methods will not be used.
- EEG and other quantified measures will not be used.

---

---

---

---

---

---

---

---

31

### My View of the Future of the ADHD Diagnosis

- An fMRI/FNCI may find a place when sufficient data exists.
- The diagnosis will shift from symptom count thresholds to an algorithm based threshold.
- Parent and Teacher reports based on well validated questionnaires will continue to be the primary path of diagnosis.
- Concepts of efficient self-regulation and executive functioning (strategy behaviors) may find their way into the diagnostic criteria.
- ADHD will continue in the USA as an ADA qualifying condition.

---

---

---

---

---

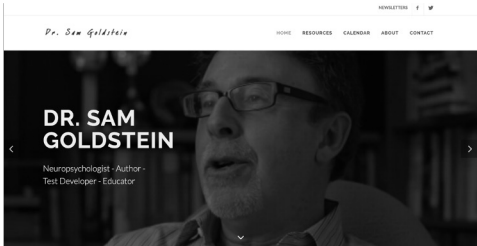
---

---

---

32

www.samgoldstein.com




---

---

---

---

---

---

---

---

33



34

---



---



---



---



---



---



---



## Questions?

-  [www.samgoldstein.com](http://www.samgoldstein.com)
-  [info@samgoldstein.com](mailto:info@samgoldstein.com)
-  [@drsamgoldstein](https://twitter.com/drsamgoldstein)
-  [@doctorsamgoldstein](https://facebook.com/doctorsamgoldstein)
-  [@CommonSenseScience](https://tiktok.com/@CommonSenseScience)

TEDx: <https://www.youtube.com/watch?v=isfw8JJ-eWM>

35

---



---



---



---



---



---



---