Best Practices in Screening and Diagnosis of ADHD in Adults

Maggie Sibley, Ph.D.,
University of Washington
[2]Seattle Children's Hospital

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Part I: Diagnostic Landscape for ADHD in Modern Era

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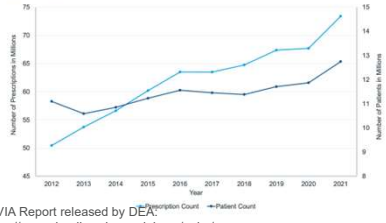
2

Sharp Increases in Help-Seeking for ADHD since 2020

Overall Trend in Stimulant Prescriptions

Figure 1. Projected Counts of Stimulant Prescriptions and Patients from 2012-2021



- Largest increases for
  - Adults ages 31-40
  - Women
  - Prescribed by Nurse Practitioners

IQVIA Report released by DEA: https://www.deadiversion.usdoj.gov/pubs/docs/IQVIA_Report_on_Stimulant_Trends_from_2012-2021.pdf

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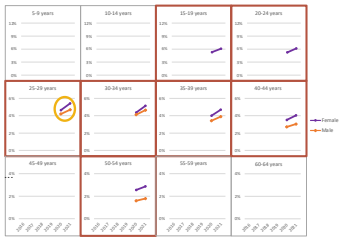
Data from CDC

Many Age Groups Had More than 10% Relative Increase in Prescription Stimulant Fills from 2020 to 2021



Danielson, M. L., Bohm, M. K., Newsome, K., Claussen, A. H., Kaminski, J. W., Grosse, S. D., & Robinson, L. R. (2023). Trends in Stimulant Prescription Fills Among Commercially Insured Children and Adults—United States, 2016–2021. *Morbidity and Mortality Weekly Report*, *72*(13), 327.

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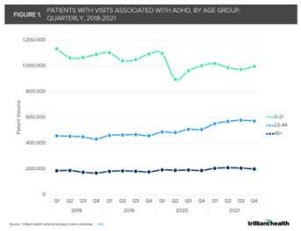
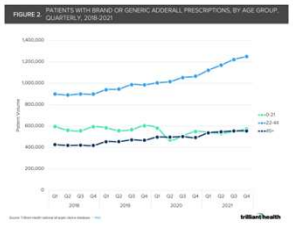
Trilliant Health National All Player Claims Database





https://www.trillianthealth.com/insights/the-compass/sharp-uptick-in-adderall-prescribing-for-adults-ages-22-44-amid-covid-19-pandemic

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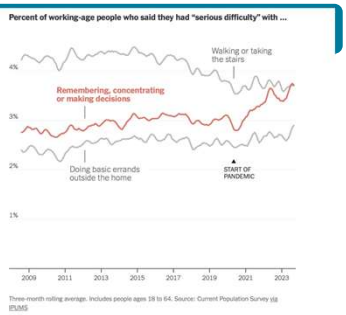
New York Times-Reported IPUMS Census Data

https://www.nytimes.com/2023/11/13/upshot/long-covid-disability.html



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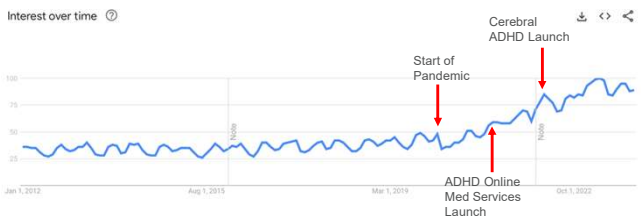
Google Trends: ADHD Search from 2012-Present



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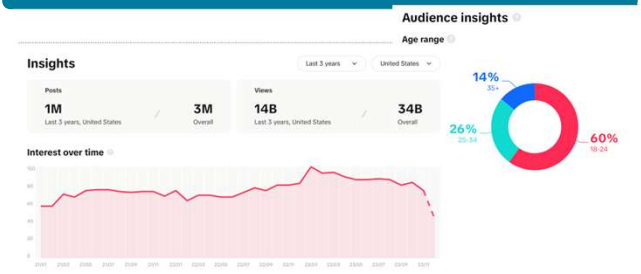
TikTok Trends for #ADHD



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Rise in Online ADHD Coaching (Informal Psychosocial Treatment)

Source: US National Survey on ADHD Coaching, 2025

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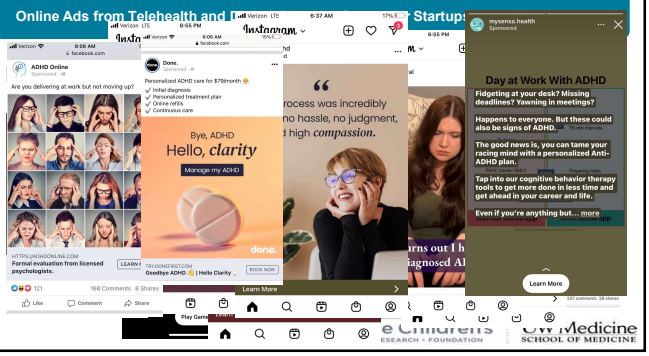
Online Ads from Telehealth and Startups



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Misinformation about ADHD online?

Original Research

TikTok and Attention-Deficit/Hyperactivity Disorder: A Cross-Sectional Study of Social Media Content Quality

TikTok et le trouble de déficit de l'attention avec hyperactivité : une étude transversale de la qualité du contenu des médias sociaux

Anthony Yeung, MD, FRCPC[1,2], Enoch Ng, MD, PhD[1] and Elia Abi-Jaoude, MD, PhD, FRCPC[1,3]

The Canadian Journal of Psychiatry / La Revue Canadienne de Psychiatrie

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SAGE

Only 21% of TikTok videos on ADHD are classified as useful—a majority are classified as misleading

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What does increased help-seeking and public interest mean for clinicians?

- Good: Helps with self-recognition of symptoms, particularly among clinically under-represented groups:
  - Women
  - Ethnic/racial minority patients
  - Adults who were not diagnosed as children
  - Individuals with barriers to health care access
- Challenging:
  - Ascertaining if self and digital start-up diagnoses are appropriate
  - Increased help-seeking by those with less severe symptoms/impairments

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Is the prevalence of ADHD Rising?

- Diagnostic category has expanded in DSM-5 ---unclear if this is meaningful
  - 5 vs. 6 symptoms of IN/HI for adults
  - New adult descriptors of symptoms broadens conceptualization
  - Onset after age 7 (before age 12)
  - Impairment can onset later (symptoms before age 12, not impairment)
  - Symptoms, not impairment, in multiple settings
  - Autism not exclusionary

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Popular Media Takes….

The New York Times

The Age of Distracti-
pression

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Popular Media Takes…

The Washington Post
Democracy Dies in Darkness

Opinion | ADHD is an illness, not a lifestyle. Don't punish people for it.

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Popular Media Takes…

TIME

What's Driving the Demand for ADHD Drugs Like Adderall

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Popular Media Takes…

The Guardian

The lost girls: 'Chaotic and curious, women with ADHD all have missed red flags that haunt us'

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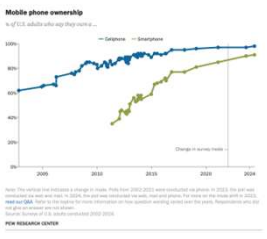
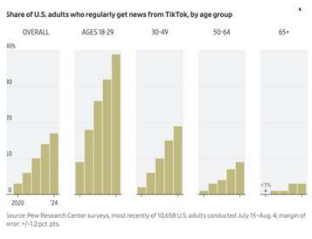
Can Digital Media Use Produce ADHD-Like Symptoms?





Source: Pew Research Center

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Can Digital Media Use Produce ADHD-Like Symptoms?

European Child & Adolescent Psychiatry (2024) 33:2503–2526
https://doi.org/10.1007/s00787-022-02130-3

REVIEW

Longitudinal associations between digital media use and ADHD symptoms in children and adolescents: a systematic literature review

Lisa B. Thorell[1] · Jonas Burén[1] · Johanna Ström Wiman[1] · David Sandberg[1] · Sissela B. Nutley[1]

Take Away Points:

- Bidirectional relationships between ADHD symptoms and digital media use
- May be direct or mediated by sleep, subsequent changes social patterns
- Reversible: take away digital media and attention returns to baseline
- People with ADHD will still be higher than the population norm

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Is the prevalence of ADHD Rising?

- Popular Media: Publicly proposed sources of rising rates of ADHD diagnoses
  - Newly self-recognized, true cases
  - Newly self-recognized, false cases (other diagnoses more appropriate)
  - Increased treatment seeking among long-term diagnosed
  - Stress-based exacerbation of symptoms among the mild/subthreshold
  - Neurobiological determinants: Long COVID?
  - Environmental determinants: digital media use?
  - Rise of Telehealth Start-ups
  - New practitioners in the fold with new diagnostic patterns
  - Increased practitioner awareness of ADHD

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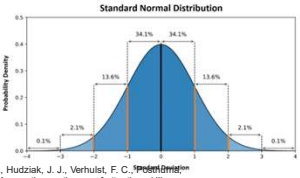
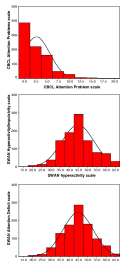
What is the nature of ADHD?

- Not a discrete taxon
- No biomarker/objective test for diagnosis
- Extreme end of normally distributed trait continuum (like hypertension, obesity)





Polderman, T. J., Derks, E. M., Hudziak, J. J., Verhulst, F. C., Posthuma, D., & Boomsma, D. I. (2007). Across the continuum of attention skills: a twin study of the SWAN ADHD rating scale. *Journal of Child Psychology and Psychiatry*, *48*(11), 1080-1087.

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Biological Bases for ADHD

- Genetic contributions to ADHD: Heritability estimated 70-80%
  - Polygenic components—additive contributions of many genes (correlations with population-level ADHD-like trait severity)
  - Rare genetic variations: also present in 10-15% of people with ADHD
- Dopaminergic and GABAergic brain systems implicated in ADHD beginning in early neural development
- White matter and gray matter abnormalities across a variety of brain regions
- Cognitive manifestations of brain differences are present related to executive functions, cognitive control
- Very heterogeneous neurosignatures of ADHD depending on the person

Cortese et al., 2025

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Why we diagnose ADHD at the Behavioral Level

- ADHD is a disorder defined by clinically meaningful behaviors
- Heterogeneity in cognitive and biological signatures (i.e., etiologies behind the behaviors)
  - Research substantiating cognitive and biological aspects of ADHD are based on correlations at the group level (not all individuals affected)
  - No single cognitive fingerprint of ADHD (some people with ADHD do very well on cognitive tasks)
  - Cognitive/brain tests cannot differentiate between ADHD are other disorders that impact same functions/abilities
  - Lead to false positives and missed diagnoses and can confuse clinicians

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Evidence for Trait-model of ADHD

- ADHD severity scores correlate with:
  - Poygenic risk scores
  - Neurocognitive measures
  - Impairment severity
- Trait ADHD severity influenced by both:
  - Genetic load
  - Environmental Factors
  - Multidimensionality: endophenotypes (sub-traits within the overarching trait that contribute)

Correlates at both the general population level and the clinical level—no discontinuity in this correlation is observed.

Levy et al., 1997; Stergiakouli et al., 2015; Agha et al., 2024; Riglin et al., 2021; Das et al., 2012; Salum et al., 2014, McLennan, 2016

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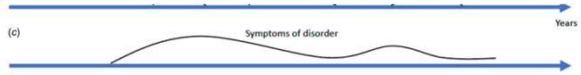
Is ADHD a fixed trait?

- Evidence for instability over time for individuals with and without ADHD
- May be influenced by environmental, biological, and psychological factors
- Diagnostic and trait instability, but chronic nature of disorder (typical for trait-based disorder)



Nordgaard et al., 2023; Balazs et al., 2014; Sibley et al., 2022

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Variable Patterns of Remission From ADHD in the Multimodal Treatment Study of ADHD

Margaret H. Sibley, Ph.D., L. Eugene Arnold, M.D., James M. Swanson, Ph.D., Lily T. Hechtman, M.D., Traci M. Kennedy, Ph.D., Elizabeth Owens, Ph.D., Brooke S.G. Molina, Ph.D., Peter S. Jensen, M.D., Stephen P. Hinshaw, Ph.D., Arunima Roy, Ph.D., Andrea Chronis-Tuscano, Ph.D., Jeffrey H. Newcorn, M.D., Luis A. Rohde, M.D., Ph.D., for the MTA Cooperative Group

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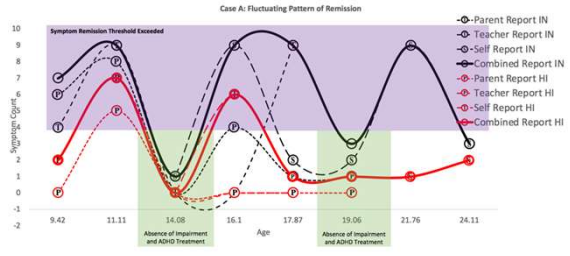
Case Example: Fluctuating Pattern



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Journal of Clinical Psychiatry

Original Research

Characteristics and Predictors of Fluctuating Attention-Deficit/Hyperactivity Disorder in the Multimodal Treatment of ADHD (MTA) Study

Margaret H. Sibley, PhD; Traci M. Kennedy, PhD; James M. Swanson, PhD; L. Eugene Arnold, MD; Peter S. Jensen, MD; Lily T. Hechtman, MD; Brooke S. G. Molina, PhD; Andrea Howard, PhD; Laurence Greenhill, MD; Andrea Chronis-Tuscano, PhD; John T. Mitchell, PhD; Jeffrey H. Newcorn, MD; Luis A. Rohde, MD, PhD; Stephen P. Hinshaw, PhD; and for the MTA Cooperative Group

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Can ADHD Symptoms go up and down with Environmental Factors?

- Points Added for
  - How many hours a week you work a job
  - How many hours a week you are in school
  - Level of financial independence/responsibilities
  - Number of dependents (offspring)
  - Living situation (on your own/with roommates, with parents/adult caregivers)

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Can Life Demands Trigger Fluctuations?

Table 3.
Relation Between Demands and ADHD Fluctuations in Multilevel Multinomial Models Within Fluctuating Group

	Persistence vs full remission				Persistence vs partial remission			
	b	SE	*P*[a]	OR	b	SE	*P*[a]	OR
Age[b]	0.08	0.02	<.001	1.09	−0.03	0.02	.111	0.97
Demands: between-person	0.46	0.18	.011	1.58	0.31	0.13	.016	1.36
Demands: within-person	0.25	0.12	.044	1.28	0.10	0.08	.198	1.10
Demands: within-person × age	−0.08	0.04	.041[c]	0.928	−0.03	0.02	.172	0.97

[a]Statistically significant *P* values noted in boldface.
[b]Grand mean-centered age was included as a covariate.
[c]Result was no longer significant in sensitivity analysis that included comorbidity in the model.
Abbreviations: ADHD = attention-deficit/hyperactivity disorder, b = unstandardized beta, OR = odds ratio, SE = standard error.

Between-person: Do people who tend to experience higher demands than peers (across all time points) have a higher frequency of ADHD persistence?

Within-person: When demands are particularly high for a person (compared to their own average), will the person be more likely to experience ADHD persistence?

HIGHER DEMANDS ARE ASSOCIATED WITH INCREASED REMISSION

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What are the arguments for using a strict diagnostic cut-off?

- Need to make yes/no decisions about:
  - Who is eligible for treatment?
  - Who can receive accommodations at school or work?
  - Justifying reimbursement for services
- Preserving boundaries of disorder:
  - Preserves the validity of ADHD as a medical condition
  - Reserves limited societal resources for those most in need

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How does one decide where the cut-off should lie?

- Clinicians have different view points.
  - Clinically meaningful?
  - Point at which a medical intervention is necessary?
  - Point at which a medical intervention is helpful?
  - Point at which the person cannot live adaptively in environment?
  - Point at which a person is, on average, under-performing compared to peers?
  - Experiencing major negative consequences do the trait severity?
  - Experiencing major or minor negative consequences?
  - Benefits of diagnosis outweigh risks?
    - Personal risk/benefit of patient versus societal risk/benefit (different)
    - Consider reserving limited societal resources to those who need them most

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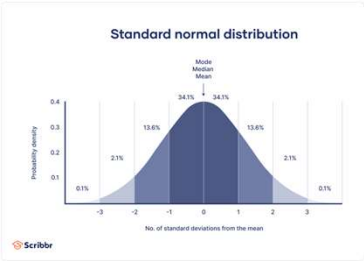
Diagnosing ADHD



- May be simple to diagnose ADHD at extreme of distribution
- Elevated but not extreme: diagnosis becomes more complicated
- Gray Zone: there is likely a defensible zone for threshold, not an absolute optimal point
- Clinicians must decide how inclusive or restrictive to be

Koi, 2021

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Prevalence of Symptoms versus Syndrome

- Song meta-analysis: prevalence of ADHD is 2.5% but prevalence of elevated symptoms of ADHD is 6.8%
- Chamberlain et al (2021): 86-90% of individuals who screen positive for ADHD do not end up with a diagnosis
  - Some individuals may lack impairment despite trait elevations
  - Some individuals may have trait elevations due to a comorbidity, requiring a different diagnosis

Song et al., 2021;
Chamberlain et al, 2021

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How do we Talk about ADHD Trait below the Clinical Threshold?

- Modern North American society has no language for ADHD-like behaviors besides the word "ADHD," which implies diagnosis
- Average U.S. adult between 20-40 endorses 3 of 18 symptoms of ADHD
- Average U.S. adult above 40 endorses 2 of 18 symptoms.
- 60% of the population has one or more symptoms of ADHD
- 20% have a collection of multiple ADHD-like symptoms
- UK: 17-26% of the population screened positive for ADHD on a symptom screener (elevated symptoms)

Adler et al., 2019; Arcos-Burgos et al., 2007; Chamberlain et al., 2021

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The Guardian

Matilda Boseley

Wed 20 Sep 2023 11.00 EDT

The problem is "ADHD the medical condition" must reduce your quality of life - otherwise, from a legal and medical perspective, you don't have it. But something about that feels so unfair; that this core part of who we are and how move through the world can only ever be defined by the impairment it causes us.

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Modern Societal Considerations

- Democratization of mental health: new questions about who gets to determine one's status as a person with a mental disorder (the individual or the medical professional?)
- Neurodiversity movement: strengthen patient view of ADHD as a fixed identity rather than a potentially unstable diagnostic category
- Online Information sharing: Expanding the definition of ADHD creating a discrepancy between the disorder's medical and popularized boundaries
- Scarcity of specialized services: Individuals may be seeking non-traditional forms of coping and support when they cannot access traditional services, these modalities may emphasize non-medical conceptualizations of ADHD

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How are the lives of people with elevated but not extreme ADHD-like concerns?

- May potentially have extreme ADHD at other times in their life
- Subthreshold ADHD typically not associated with ADHD's cognitive performance deficits, less prominent family history
- Associations with impairments and comorbidities compared to general population
- More likely to experience benefits of their symptoms (e.g., creativity, divergent thinking) than people with full syndrome ADHD
- Appear to respond to treatments the same as a person with ADHD
- Higher risk for substance use than general population

Boot et al., 2017; Faraone et al., 2006, 2007; Schneidt et al., 2020; Linssen et al., 2014

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Do Symptoms have to be impairing to be considered ADHD?

- DSM-5-TR says "yes"
- Criteria for a mental disorder:
  - Harm: (distress or disability)
  - Non-adaptive in the context of the patient
- DSM-5-TR requires an impairment/disability criterion
- Currently no distress criterion for ADHD
- Highly severe trait ADHD is nearly always associated with impairments, less severe may or may not be

APA, 2022; Mannuzza et al., 2011

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Do ADHD symptoms have to be maladaptive in context?

- Evolutionary Models posit that ADHD traits may have been previously adaptive leading to their status as common variant of human behavior
  - Environment may have rewarded high activity level, hypervigilance, spontaneous action
- Sociocultural environment has changed—but also more variable across individuals and contexts.
- ADHD traits may still be adaptive and unimpairing in some contexts
- Some individuals possess characteristics that mitigate impact of ADHD

Arcos-Burgos et al., 2007; Koi et al., 2021

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Implications for Clinicians—Assessing patients in the "gray zone"

- Gather as much information on a person as possible
- Position yourself to evaluate the risks and benefits of giving ADHD diagnosis
- Understand how the person came to question if they have ADHD
- Rely on empirically validated symptom measures, rather than yet-to-be confirmed popular notions of ADHD
- Move beyond self-report: gather informant reports and assess objective evidence of negative life consequences of ADHD symptoms
- Learn about the person's sociocultural and daily life environment—demands and expectations
- Assess impairment—historic, cumulative, and current
- What would be the value and likely impact of treatment be for this person?

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QUESTIONS and BREAK

- **Study Opportunity:** Mental Healthcare Provider Perspectives on ADHD Coaching
- **Who:** Any licensed healthcare or mental healthcare provider who provides direct services to individuals with ADHD
- **What:** A 1- to 2- minute anonymous survey on your perspectives on ADHD coaching
- **Why:** Help researchers studying the rise of ADHD coaching understand how healthcare providers feel about this rapidly emerging alternative form of care.

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PART 2: Screening and Diagnostic Practices

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Best Practices Screening


Journal of Affective Disorders Reports

Review Article

Screening tools for adult ADHD patients in primary care

Johanna Louise Ganzenmüller, Cora Ballmann, Regina Margarethe Wehrstedt von Nessen-Lapp, Marcel Schulze, Linda Sanftenberg, Mathias Berger, Alexandra Philipsen, Jochen Gensichen

- No screening tools for ADHD are excellent
- ADHD is too complicated for simple screeners to be sufficient for accurate diagnosis.
- Options with most evidence:
  - ASRS- DSM-5 (Free): 6 item screener (first six items) https://adhdscreeneronline.com

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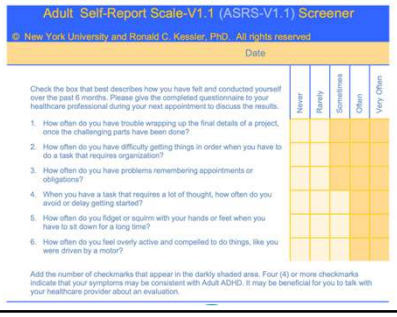
DSM-IV ASRS---DSM-5 is Confidential unless you sign up for access


Adult Self-Report Scale-V1.1 (ASRS-V1.1) Screener

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Date

Check the box that best describes how you have felt and conducted yourself over the past 6 months. Please give the completed questionnaire to your healthcare professional during your next appointment to discuss the results.

	Never	Rarely	Sometimes	Often	Very Often
1. How often do you have trouble wrapping up the final details of a project, once the challenging parts have been done?					
2. How often do you have difficulty getting things in order when you have to do a task that requires organization?					
3. How often do you have problems remembering appointments or obligations?					
4. When you have a task that requires a lot of thought, how often do you avoid or delay getting started?					
5. How often do you fidget or squirm with your hands or feet when you have to sit down for a long time?					
6. How often do you feel overly active and compelled to do things, like you were driven by a motor?					

Add the number of checkmarks that appear in the darkly shaded area. Four (4) or more checkmarks indicate that your symptoms may be consistent with Adult ADHD. It may be beneficial for you to talk with your healthcare provider about an evaluation.

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When is Screening Advised?

- Universal Screening not advised
  - Most people who screen positive do not have ADHD
  - May place high burden on systems with a duty to follow-up on many positive screens
  - May cause diagnostic confusion when follow-up is not possible
  - Screening tools for ADHD do not meet accuracy thresholds (and probably never will)
- Screen in adults with clear risk factors for ADHD:
  - Depression/suicidal thoughts and behaviors
  - Personality Disorders
  - Substance Use Disorders
  - Impulse Control Disorders

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When is Screening Advised?

- Screen in settings shown to over-represent individuals with ADHD:
  - Prisons
  - Substance use treatment centers
  - Legal system (family court)
  - Mental health clinics
- Screen when patients show ADHD-like behaviors
  - Forgetting/late to appointments
  - Disorganization
  - Motivation problems
  - Difficulty following through on intentions

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ADHD Diagnosis

- Not made based on screening alone
- The DSM-5 A-E criteria should be applied when diagnosing ADHD in the U.S.
- Diagnostic evaluations should be conducted by:
  - Licensed (mental) health care provider
  - Expertise in adult ADHD assessment
  - Has enough time to adequately perform necessary steps in diagnostic process

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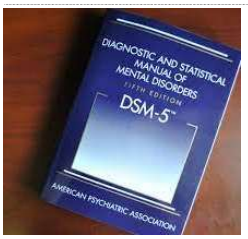
DSM-5 Criteria for ADHD: How to Measure the Presence of ADHD Symptoms



A. Five symptoms of IN and/or HI from a list of 9 IN and 9 HI symptoms

B. Several symptoms present prior to age 12

C. Several symptoms present in two or more settings

D. Clear evidence that symptoms cause significant impairment

E. Symptoms are not better explained by another mental disorder or substance use

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DSM-5: List of Psychometrically Validated Behaviors Indicative of Trait Levels

1. Often fails to give close attention to details or makes careless mistakes in schoolwork, at work, or during other activities (e.g., overlooks or misses details, work is inaccurate).
2. Often has difficulty sustaining attention in tasks or play activities (e.g., has difficulty remaining focused during lectures, conversations, or lengthy readings).
3. Often does not seem to listen when spoken to directly (e.g., mind seems elsewhere, even in the absence of any obvious distraction).
4. Often does not follow through on instructions and fails to finish schoolwork, chores, or other responsibilities or duties in the workplace (e.g., starts tasks but quickly loses focus and is easily sidetracked).
5. Often has difficulty organizing tasks and activities (e.g., difficulty managing sequential tasks; difficulty keeping materials and belongings in order; messy disorganized work; has poor time management; fails to meet deadlines).
6. Often avoids, seems to dislike, or is reluctant to engage in tasks that require sustained mental effort (e.g., schoolwork or homework; for older adolescents and adults, preparing reports, completing forms, or reviewing lengthy papers).
7. Often loses things necessary for tasks or activities (e.g., school materials, pencils, books, tools, wallets, keys, paperwork, eyeglasses, mobile telephones).
8. Is often easily distracted by extraneous stimuli (for older adolescents and adults, may include unrelated thoughts.).
9. Is often forgetful in daily activities (e.g., doing chores, running errands; for older adolescents and adults, returning calls, paying bills, keeping appointments).
10. Often fidgets with or taps hands or feet or squirms in seat.
11. Often leaves seat in situations when remaining seated is expected (e.g., leaving his or her place in the classroom, in the office or other workplace, or in other situations that require remaining in place).
12. Often runs about or climbs in situations where it is inappropriate. (Note: In adolescents or adults, may be limited to feeling restless).
13. Often unable to play or engage in leisure activities quietly.
14. Is often "on the go," acting as if "driven by a motor" (e.g., is unable to be or is uncomfortable being still for an extended time, as in restaurants, meetings; may be experienced by others as being restless and difficult to keep up with).
15. Often talks excessively.
16. Often blurts out an answer before a question has been completed (e.g., completes people's sentences; cannot wait turn in conversations).
17. Often has difficulty waiting his or her turn (e.g., while waiting in line).
18. Often interrupts or intrudes on others (e.g., butts into conversations, games, or activities; may start using other people's things without asking or receiving permission; for adolescents or adults may intrude into or take over what others are doing).

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Empirically-Supported Practice: Start with Detailed Patient Interview

- Often 90 minutes or longer is required
  - Health and mental health history
  - Timeline of symptom onset
  - Contexts where symptoms emerge
  - Examples of impairment (may ask to provide concrete evidence)
  - Should assess for mimics

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ADHD ADHD Diagnostic Interviews

- Adult ADHD-Specific Structured Diagnostic Interviews:
  - Diagnostic Interview for ADHD in adults DSM-5 (DIVA-5) http://www.divacenter.eu **For Purchase but Low Cost**
  - Adult ADHD Clinical Diagnostic Scale (ACDS): TOVCommunications@nyulangone.org **Must pay for formal training**
  - ACE+: *www.psychology-services.uk.com* **Free**
- Comprehensive Clinical Interviews with ADHD Modules
  - The Mini International Neuropsychiatric Interview (M.I.N.I. 7.0.2). https://harmresearch.org/adult-mini/ **Must pay for formal training**
  - Structured Clinical Interview for DSM-5 (SCID-5) https://www.appi.org//products/structured-clinicalinterview-for-dsm-5-scid-5 **For Purchase**

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Integrate with Informant Ratings

- Gather informant rating scales (symptom and impairment) from loved ones or people who know the patient well
  - Parents
  - Siblings
  - Spouse
  - Close friends
  - Coworkers
- Include an informant rating from childhood when possible

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Available Self Report and Informant Scales

- Self and Informant ADHD Rating Scales of Adult Symptoms
  - Adult ADHD Self-Report Scale (ASRS) DSM-5 Version: https://adhdscreeneronline.com **Free**
    - **DSM-IV version: instant access-** https://www.hcp.med.harvard.edu/ncs/asrs.php
  - Conners' Adult ADHD Rating Scales CAARS (DSM-IV): **purchase through Multi-health Systems Inc (you need to contact them--no link)**
  - Barkley Adult ADHD Rating Scale IV BAARS (DSM-IV): **purchase through Guilford Press-** https://www.guilford.com/books/Barkley-Adult-ADHD-Rating-Scale-IV-BAARS-IV/Russell-Barkley/9781609182038?srsltid=AfmBOoplirSt85ZnMD-gOpy8TNBx8e-DEQocZ8HzelggnqYhN4w__5dW
  - Brown Attention Deficit Disorder Symptoms Scale BAADS (DSM-IV): **purchase through Pearson-** https://www.pearsonassessments.com/en-us/Store/Professional-Assessments/Behavior/Executive-Function/Brown-Executive-Function-Attention-Scales/p/100001978#.
  - Wender Rheimherr Adult Attention Deficit Disorder Scale: **Free but not DSM based-** email Barrie Marchant: barriemarchant@aol.com

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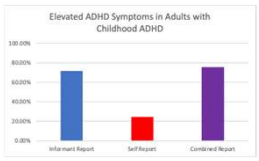
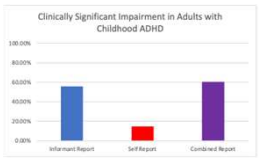
Self-awareness of Symptoms: Adults with longstanding history of ADHD





Sibley et al., 2012; Pittsburgh ADHD Longitudinal Study

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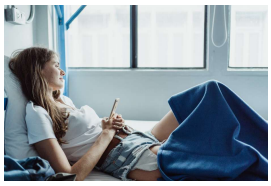
Informant Report Alone is Insufficient: Some Symptoms are Internal

- Daydreaming
- Focus Problems
- Restlessness
- Aversion to boredom
- Distractibility



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How to combine across reporters?

- An "or" rule has the most research support for avoiding misdiagnosis:
  - Count a symptom if present if endorsed by any informant
  - Overdiagnosis will be curbed by requirement that impairment also be present

DSM Symptom Based on Assessment	SCID-5	Self ASRS	Partner ASRS	Endorsed
Inattention				
Easily distracted				
Fails to finish things started / Difficulty following instructions				
Difficulty sustaining attention				
Doesn't listen				
Loses things necessary for activities				
Makes a lot of careless mistakes				
Avoids/dislikes tasks the require sustained mental effort				
Disorganized / Difficult organizing tasks				
Forgetful / Forgetful in daily activities				
Hyperactivity / Impulsivity				
Fidgets / Squirms				
Difficulty remaining seated				
Difficulty awaiting turn				
Blurts out answers before the question in completed				
Difficulty playing quietly				
Talks excessively				
Interrupts or intrudes on others				
Runs/climbs excessively				
"On the go" or "Driven by motor"				
# of **Inattention** Symptoms Determined by Clinician	0			
# of **Hyperactivity-Impulsivity** Symptoms Determined by Clinician	0			
Currently Taking Medication				
If Yes, What Medication (dosage)				
Past diagnosis				

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Adult-referred versus childhood-referred for ADHD

- Adult self-referred (less common incidence in population, but most common public narrative of adult ADHD)
  - Higher proportion of women than men
  - Treatment-interested
  - High rates of comorbid anxiety
  - Lower levels of impairment
  - More distressed by symptoms
  - Able to successfully manage higher levels of demands

Barkley et al., 2010, 2011

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Over-interpretation of normative variations in attention

- Individuals without ADHD tend to over-report symptoms compared to informant report and observations.
- Some may be vulnerable to misattributing normative, unimpairing, variations in attention as ADHD
  - Normative difficulties paying attention during highly unstimulating tasks
  - Difficulties paying attention when sleep was poor or hungry
  - Normative difficulties paying attention when experiencing a stressor
  - High expectations for one's own performance/desire to optimize
  - Normative difficulties keeping up when demands are too high

Barkley et al 2010; Sibley et al., 2012

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The American Journal of Psychiatry

Late-Onset ADHD Reconsidered With Comprehensive Repeated Assessments Between Ages 10 and 25

Margaret H. Sibley, Ph.D., Luis A. Rohde, M.D., James M. Swanson, Ph.D., Lily T. Hechtman, M.D., Brooke S.G. Molina, Ph.D., John T. Mitchell, Ph.D., L. Eugene Arnold, M.D., Arthur Caye, Traci M. Kennedy, Ph.D., Arunima Roy, Ph.D., Annamarie Stehli, M.P.H., for the Multimodal Treatment Study of Children with ADHD (MTA) Cooperative Group

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Results

	Adult Sample	
	%	n
Meets DSM-5 ADHD *symptom* criteria	19.7%	47
+ clinically significant impairment	16.7%	40
+ late-onset	10.0%	24
+ not due to substance abuse	4.1%	10
+ not attributable to other mental disorder	1.3%	3
+ cross-situational symptoms	0.8%	2
Absence of subthreshold childhood symptoms (less than 3 childhood symptoms of IN and H/I)	0.8%	2[a]

Note. Symptom criteria were counted using an "or" rule that considered information from all available informants (e.g., parent, self, teacher). Designated period was either adolescence or adulthood. Cross-situationality was inferred from multiple raters and consulting interview questions about context as needed. [a]One case was first assessed at age 12, at which point there were not subthreshold symptoms.

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What about cognitive tasks of attention? (Do not use in ADHD diagnosis)

- Examples:
  - Qb test (FDA approved)
  - CPT (Conners CPT)
  - Delis-Kaplan (DKEFS)
- Measure cognitive abilities that ***only correlate partially*** with behavioral ADHD symptoms
- Do not have adequate psychometric properties for detecting ADHD (many false negatives—high IQ people can ace these tests—and false positives—sleepy people, depressed people, etc, can fail these tests)
- Create diagnostic confusion
- Costly, burdensome (do not add information to what's caught on behavioral checklists).
- Why do people use them?: Give a perception of being objective--but they are not…
- Guidelines do not endorse these measures!

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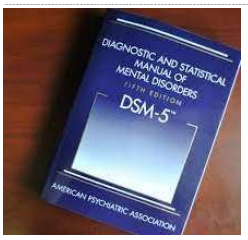
DSM-5 Criteria for ADHD: DEFINED BY IMPAIRMENT SEVERITY AND STABILITY



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American Psychiatric Association, 2013

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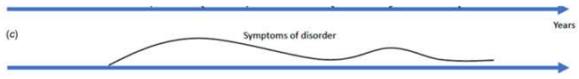
Is ADHD a fixed trait?

- Evidence for instability over time for individuals with and without ADHD
- May be influenced by environmental, biological, and psychological factors
- Diagnostic and trait instability, but chronic nature of disorder (typical for trait-based disorder)



Nordgaard et al., 2023; Balazs et al., 2014; Sibley et al., 2022

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Measuring Childhood Onset

- B. Several symptoms present prior to age 12
  - Either---use a tool like DIVA-5 that queries age of symptom onset
  - Give a retrospective childhood questionnaire to parent
    - Limited validity---but only several symptoms need to be present
- Wender-Utah Rating Scale-25 (WURS-25)- **Free:** Email Barrie Marchant: barriemarchant@aol.com
- Or administer any childhood ADHD symptom scale (Like Vanderbilt, SNAP) and ask parent to retrospectively fill out

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The American Journal of Psychiatry

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DID ANYONE WITHOUT ADHD IN CHILDHOOD DEVELOP ADHD IN ADOLESCENCE OR ADULTHOOD?

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What percentage of the non-ADHD comparison participants demonstrated evidence of "late-onset" ADHD?

	Adolescent-Onset		Adult-Onset	
	%	n	%	n
Meets DSM-5 ADHD symptom criteria	40.2%	96	19.7%	47
+ clinically significant impairment	13.4%	32	16.7%	40
+ late-onset	8.8%	21	10.0%	24
+ not due to substance abuse	7.5%	18	4.1%	10
+ not attributable to other mental disorder	5.4%	13	1.3%	3
+ cross-situational symptoms	2.5%	6	0.8%	2
Absence of subthreshold childhood symptoms (less than 3 childhood symptoms of IN and H/I)	1.3%	3	0.8%	2[a]

Note. Symptom criteria were counted using an "or" rule that considered information from all available informants (e.g., parent, self, teacher). Designated period was either adolescence or adulthood. Cross-situationality was inferred from multiple raters and consulting interview questions about context as needed. [a]One case was from assessed at age 12, at which point there were not subthreshold symptoms.

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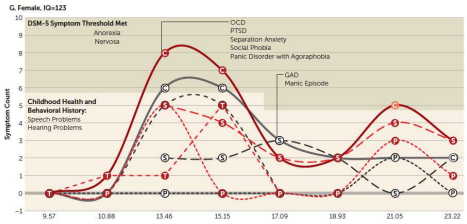
Adult-Onset Case Example



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Symptoms in the clinical range on past DSM-5

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Late-Onset ADHD is Not Late-Identified ADHD

- Late-identified ADHD
  - Symptoms were present in childhood but unnoticed
  - Symptoms were present in childhood but un-impairing
  - First comes to clinical attention in adolescence of adulthood
  - Successfully trace symptoms back to childhood

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Some Factors Leading ADHD to Be Missed in Childhood

- Low environmental demands in childhood
- High intellectual capacity
- Extensive support by teachers or caregivers
- Sex-differences in expression of ADHD

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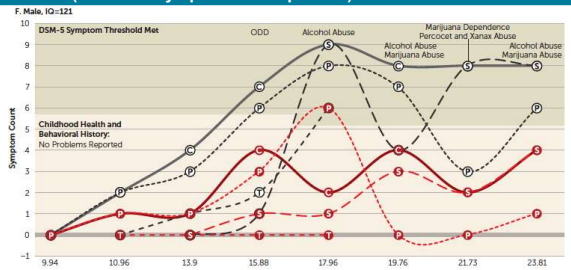
Some later-onset ADHD may genuinely not be present at. Clinical level in Childhood (but some symptoms were present)



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Cross-setting Symptoms

- C. Several symptoms present in two or more settings
- Often can be gauged by the A-criterion symptom checklists
  - Tools like DIVA-5 will specifically ask in what settings the symptoms are present
  - Several is usually interpreted as “three or more” of either IN or H/I

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Impairment Criteria

- D. Clear evidence that symptoms cause significant impairment
- *Best Practices:*
  - Consider multiple informants
  - Use empirically validated impairment rating scales
  - Review objective evidence of impairment (college student grades, employment records, driving records, relationship history etc.)
  - Are the symptoms preventing the adult from adaptive functioning in their environment?

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Impairment criterion holds the diagnostic threshold

- Criteria for a mental disorder:
  - Harm: (distress or disability)
  - Non-adaptive in the context of the individual
- DSM-5-TR requires an impairment/disability criterion
- Currently no distress criterion for ADHD (can diagnosis with Unspecified ADHD—a subthreshold DSM-5 code)
- Highly severe trait ADHD is nearly always associated with impairments, less severe may or may not be

APA, 2022; Mannuzza et al., 2011

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Impairment Empirically Supported Assessment Measures

- Adult ADHD diagnostic Interviews (also discuss impairment):
- Impairment Rating Scales (should get informant report)
  - Barkley Functional Impairment Scale (BFIS): **purchased** from Guilford Press: https://www.guilford.com/books/Barkley-Functional-Impairment-Scale-BFIS-for-Adults/Russell-Barkley/9781609182199?srsltid=AfmBOorL_72P-sQEcuhWlrPFLLZ3NUDyLZ0wiNWDZExOegMmvAIUz7ZJ
  - Adult Impairment Rating Scale (IRS) **Free:** https://yfrp.pitt.edu/resources/resources-educators-healthcare-professionals/adhd-resources-professionals
  - WEISS FUNCTIONAL IMPAIRMENT RATING SCALE (WFIRS): **Free:** https://www.caddra.ca/wp-content/uploads/WFIRS-S.pdf

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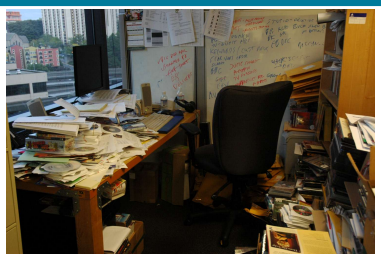
Impairment: Why Informant Report can be Meaningful



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What kinds of impairments will you find above the clinical threshold?

- Educational underachievement
- Early and/or heavy drug use
- Chronic traffic collisions
- Unplanned pregnancies
- Legal problems
- Employment instability
- Disrupted or trouble maintaining meaningful social relationships
- Intimate partner violence
- Financial turmoil or instability
- Instability in living situations
- Unpaid debts, difficulty paying bills on time
- Unsafe behaviors
- Parenting Problems: Neglect, Harshness, Exposure to Inappropriate Situations, Inconsistently providing for child's basic needs

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Interpreting Impairment (threshold)

- May want to consider an "and rule" when thinking about impairment
  - Both the self and the parent report impairment (prevents overinterpretation of normative imperfections) –offsets the more liberal "or" rule used for symptom presence
- Impairment is not "whether someone is living up to potential" it is whether the individual is significantly impacted in ability to function adaptively in domains daily life functioning by symptoms
- Most individuals with elevated ADHD symptoms are not sufficiently impaired for the clinical diagnosis of ADHD.
- Could this individual benefit significantly from treatment? Or are they functioning sufficiently with existing coping skills?

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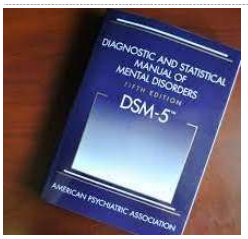
DSM-5 Criteria for ADHD: Critical Emphasis on Differential Diagnosis



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ADHD has Many Mimics

- Overly demanding lifestyles
- Sleep problems
- High Stress
- Anxiety
- Depression
- Cognitive effects of alcohol or drugs (intoxication or withdrawal)
- Cognitive effects of aging
- Hormonal changes (perimenopause, menstrual cycle, puberty)
- Physical conditions (thyroid, cardiac, obesity)
- Medication side effects
- Unhealthy diet or lack of exercise
- Long-term cognitive effects of trauma or adverse life experiences

HOWEVER:

Many of these conditions are also commonly comorbid with ADHD

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Investigating the E Criterion-Screen and Refer for Further Assessment as Needed

- Comprehensive Assessment of Full Range of Psychiatric Disorders is Helpful
  - Use of a DSM-5 Comprehensive Psychiatric Interview (ex: MINI Psychiatric Interview, SCID-5)
- Need to rule out aging or physical conditions (especially in middle age, during hormonal transitions, or in older adults)
- Rule out learning problems or other neurodevelopmental disorders in younger adults
- Substance use—may include drug screening if appropriate

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Why Should we care about performing a proper diagnostic assessment?

- Why not just allow for self-diagnosis?
  - Science does not support the validity of self-diagnoses
- Proper diagnosis informs treatment
- ADHD treatments will not help if your symptoms stem from:
  - Stress
  - Sleep Problems of Unhealthy Lifestyle
  - Anxiety, Depression, or Trauma
  - Drugs or Alcohol use
  - Aging or Hormonal Changes
  - Physical conditions

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How to Improve Diagnostic Precision

- Considerations:
  - Use empirically-validated tools and procedures for diagnosis
  - Framing symptoms in a developmental, environmental, and cultural context
    - Are we taking a broad lens to ADHD's diverse adult manifestations?
    - Are we engaging a mental health care workforce from the same backgrounds as typical patients in the clinic?

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Tools for Differential Diagnosis

- If you have a lot of time:
  - Use a comprehensive diagnostic interview like the MINI or SCID as best practice
- If you have less time:
  - Review the patient's medical records to fully inform about existing conditions
  - Consider using a broadband mental health screener like the DSM-5 Cross-cutting Measure: https://www.psychiatry.org/getmedia/e0b4b299-95b3-407b-b8c2-caa871ca218d/APA-DSM5TR-Level1MeasureAdult.pdf
  - Follow-up on positive screens with in-depth measures
- If conducting a full psychoeducational evaluation for ADHD (college students):
  - Conduct at least an IQ screener (like the WASI) and basic achievement testing (WIAT) to rule out learning problems or borderline intellectual disability

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Differential Diagnostic process: Key Questions

- Create a timeline of symptoms? Which came first—ADHD or the comorbidity?
- Could the symptoms solely be explained by the comorbidity in the absence of ADHD?
- Does this comorbidity sometimes mimic ADHD? Would treating the comorbidity eliminate the ADHD-like symptoms?
- Could the ADHD and comorbidity be feeding each other? (i.e., ADHD symptoms causing performance anxiety, which in turn worsens concentration?)
- Is there a family history of ADHD that is consistent with ADHD diagnosis?
- Might that family history also lead to adverse environmental experiences (like an impulsive, abusive parent with poor emotion regulation)

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Other considerations/best practices

- The *DSM-5* criteria define 4 dimensions of ADHD:
- attention-deficit/hyperactivity disorder primarily of the inattentive presentation (ADHD/I) (314.00 [F90.0]);
- attention-deficit/hyperactivity disorder primarily of the hyperactive-impulsive presentation (ADHD/HI) (314.01 [F90.1]);
- attention-deficit/hyperactivity disorder combined presentation (ADHD/C) (314.01 [F90.2]); and
- ADHD other specified and unspecified ADHD (314.01 [F90.8]).

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Use of Otherwise Specified ADHD

- Meets impairment criteria but may:
  - Have subthreshold symptom (e.g., four symptoms in Inattention only)
  - Insufficient chronicity (e.g., seems to be recent onset of symptoms but without an alternative explanation for symptoms identified)
  - Insufficient pervasiveness (e.g., only in one setting—at work?)
  - Insufficient age of onset (e.g., symptoms first onsetted in college)

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Remission from ADHD

- Partial and full remission are DSM-5 specifiers
  - May occur due to Improvements in symptoms *or* impairment
  - Ensure that improvement was not just due to ongoing supports
    - Medication
    - A personal assistant or loved one who is providing executive function support
    - Ongoing CBT
    - Work accommodations

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What does it mean to be remitted from ADHD?

- Absence of symptoms vs. lower symptoms
- Absence of impairment vs. lower impairment
- Are you remitted if you are still taking medication to manage symptoms?
- Are you remitted if you are receiving CBT or educational interventions to manage symptoms?
- DSM-5: Full vs. partial remission distinguished but not defined

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Full vs. partial remission

Biederman et al (2010 and 2011):

- 65-67% young adults have desistent ADHD (no longer meet criteria; "remitted")
- Only 22-23% demonstrated full remission of ADHD (low symptoms, low impairment, and completion of treatment' "fully remitted")
- Who is remitted depends on definition of remission used

Biederman et al., 2010, 2011; *Psychiatry research, Acta Psychiatrica Scandinavica*

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What about long-term remission? Do people fully recover from ADHD?

- Research on persistence and remission considers only one endpoint (snapshot of functioning).
- Research does not yet demonstrate longitudinal stability in remission status over time.
- Once someone reaches full remission, do they stay remitted long-term?

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What about those who remitted? Do people fully recover from ADHD?

Variable Patterns of Remission From ADHD in the Multimodal Treatment Study of ADHD

Margaret H. Sibley, Ph.D., L. Eugene Arnold, M.D., James M. Swanson, Ph.D., Lily T. Hechtman, M.D., Traci M. Kennedy, Ph.D., Elizabeth Owens, Ph.D., Brooke S.G. Molina, Ph.D., Peter S. Jensen, M.D., Stephen P. Hinshaw, Ph.D., Arunima Roy, Ph.D., Andrea Chronis-Tuscano, Ph.D., Jeffrey H. Newcorn, M.D., Luis A. Rohde, M.D., Ph.D., for the MTA Cooperative Group

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Aims

1. Validate an empirically-based definition of “full remission”
2. Apply this definition at each of eight longitudinal follow-up points in the Multimodal Treatment Study of ADHD (MTA) to examine cross-sectional rates of remission
3. Identify longitudinal patterns of remission in the MTA Sample

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Addressing Comorbidity

- An Expert Panel (three board-certified child/adolescent psychiatrists and four licensed clinical psychologists) reviewed each case to determine if impairment was due to ADHD or a comorbidity
- Individual symptoms and impairment domains were examined

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Addressing Comorbidity

Comorbid disorders were permitted to be present in remitted patients

We examined cases below the ADHD symptom threshold with continued impairment to see if this impairment was due to residual ADHD symptoms or a comorbid disorder.

If impairment was due to comorbidity, the case could be considered fully remitted.

If impairment was due to residual ADHD symptoms, case was considered partially remitted.

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Results: Cross-sectional Rates of Full Remission

Years after Baseline	Age *M*	Full Remission % (n)		Partial Remission % (n)		Persistent % (n)	
2 (n=531)	10.43	1.4	(8)	51.4	(273)	47.1	(250)
3 (n=485)	11.73	2.1	(10)	47.2	(229)	50.7	(246)
6 (n=449)	14.94	3.3	(15)	40.8	(183)	55.9	(251)
8 (n=429)	16.79	6.1	(26)	47.1	(202)	46.9	(201)
10 (n=422)	18.69	18.5	(78)	37.2	(157)	44.3	(187)
12 (n=420)	21.05	18.3	(77)	37.9	(159)	43.8	(184)
14 (n=438)	23.17	18.3	(80)	42.0	(184)	39.7	(174)
16 (n=418)	25.12	14.6	(61)	45.7	(191)	39.7	(166)

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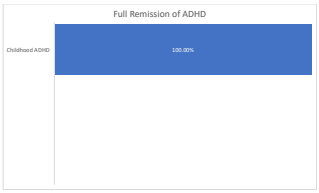
Results: Longitudinal patterns of Remission



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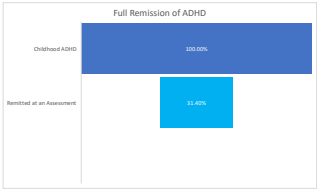
Results: Longitudinal patterns of Remission



- 31.4% of sample (n=175) met criteria for full remission at one time point

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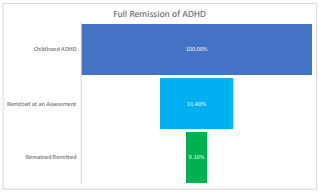
Results: Longitudinal patterns of Remission



- 59.4% of cases with full remission (n=104) experienced recurrence of ADHD

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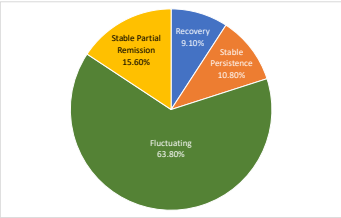
Results: Longitudinal patterns of Remission

- 9.1% of sample (n=51) demonstrated **recovery** (sustained full remission until study endpoint)
- 10.8% of sample (n=60) demonstrated **stable persistence** (persistence at all time points)
- 63.8% of sample (n=356) demonstrated **fluctuations** between remission (full or partial) and recurrence of ADHD
- 15.6% of sample (n=87) demonstrated **stable partial remission** (partial remission that maintained through study endpoint)



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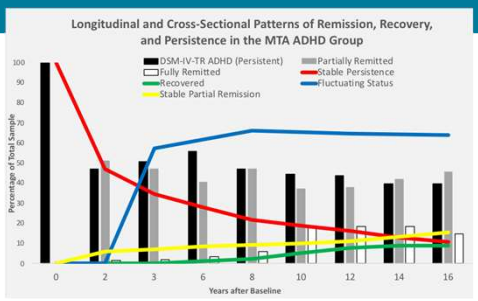

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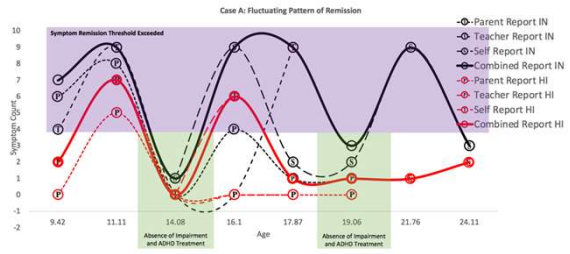
Case Example: Fluctuating Pattern



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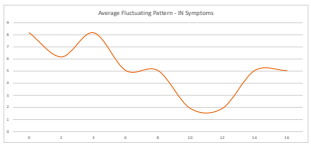
How much fluctuation was typically seen?

- *Mean* IN Trough: 1.91 symptoms, *Mean* IN Crest: 8.17 symptoms
- *Mean* HI Trough: 1.31 symptoms, *Mean* HI Crest: 6.75 symptoms
- *Mean* percentage of assessments with impairment 87.5%
- *Mean* number of fluctuations: 3.42 across 9 assessments
- Average duration of a fluctuation: 4.76 years



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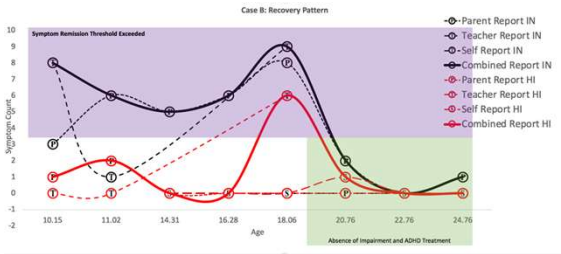
Case Example: Recovery Pattern



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Recommendations Post-Assessment

- Ongoing monitoring of symptoms and impairment (annual check-up?)
- Follow-up when:
  - Initial diagnoses were uncertain or provisional
  - During developmental transitions (i.e., transition to college, marriage)
  - Marked improvements seem present
  - When entering new environments/major life changes
  - Times of stress

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Conclusions

- To protect against Under-diagnosis:
- **FIRST** Screen for ADHD in contexts where it would be expected to occur. Cast a wide net on ADHD symptoms by combining multiple reports from informants. Use a contextual lens.
- To protect against Over-diagnosis:
- **SECOND** Stringently ensure that all cases possess clinically significant impairment that can be linked to reported ADHD symptoms
- **THIRD** Begin a comprehensive review of records to ensure that ADHD symptoms are not due to another source and do not appear to be transient. Refer as needed to rule-out alternative explanations.
- **FOURTH** Carefully determine onset of symptoms- especially when records are retrospective or long-gaps were present between assessments—ensure that symptoms are chronic

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Documentation

- Document:
  - How the adult came to meet each of the A-E criteria for ADHD
  - What evidence you used to make each judgement (what scales, who reporters were)
  - What alternative diagnoses were considered and how they were ruled out
  - When was age of symptom onset?
  - What are the key presenting problems and the key impairment domains?
  - What factors in environment may be mitigating or exacerbating symptoms?
- Key components of assessment recommendations
  - Psychoeducation sources (such as CHADD/National Resource Center on ADHD)
  - Follow-up for medication evaluation (if appropriate)
  - Follow-up for psychosocial treatment
  - Plan for ongoing monitoring of symptoms
  - Suggestions for treatment targets based on key presenting problems

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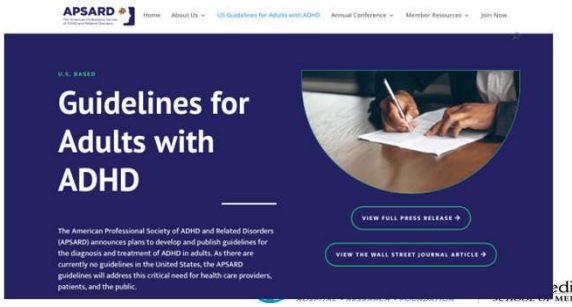
Professional Guidelines Forthcoming



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QUESTIONS?

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