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Attention and Disruptive Behavior Disorders

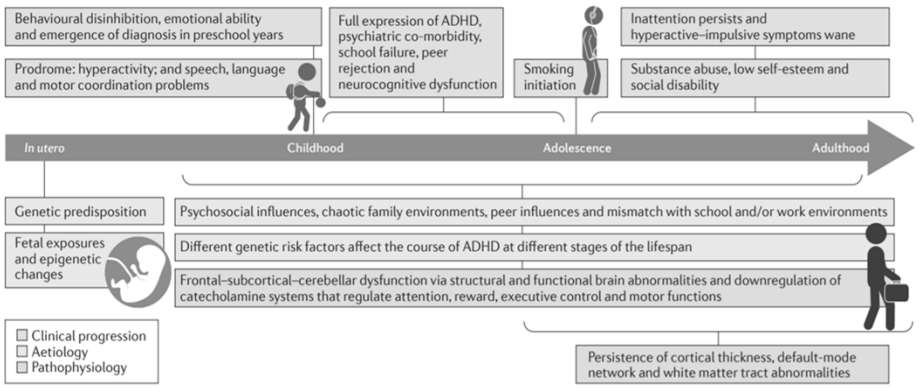


Figure 5 | **Developmental course of attention-deficit/hyperactivity disorder in persistent cases.** Although no single sequence of events describes the pathway from *in utero* to adulthood, this figure describes key developmental events, with boxes spanning their approximate onset along with hypotheses about the timing of the biological underpinnings of aetiological events and pathophysiological expression. ADHD, attention-deficit/hyperactivity disorder.

DSM-5 criteria for ADHD

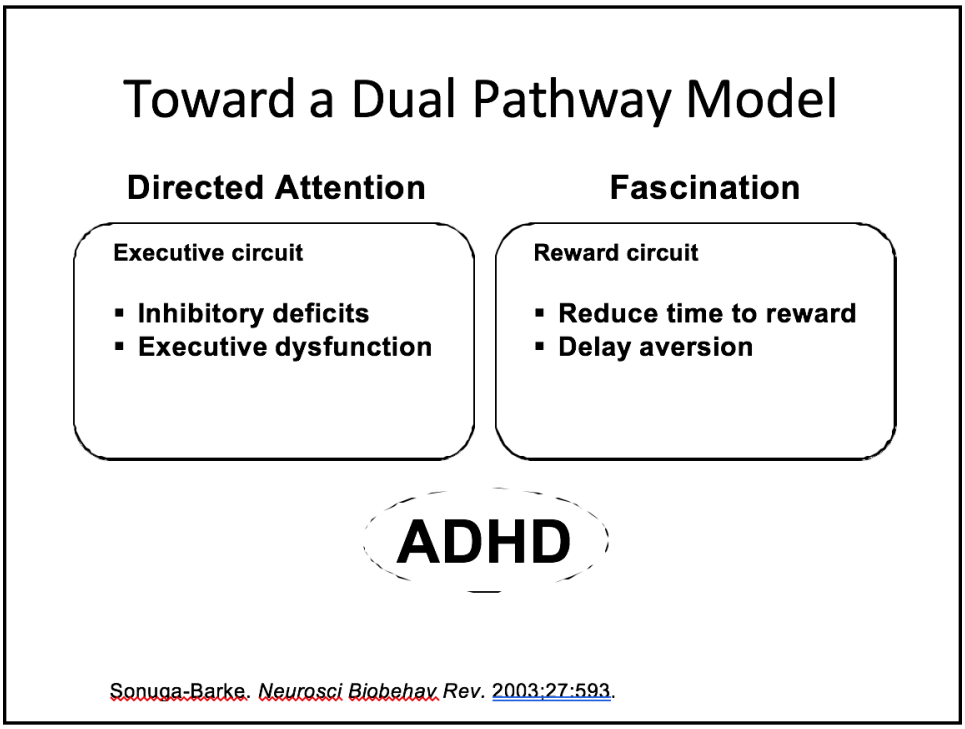
≥5 symptoms per category **in adults**, ≥6 months; age of onset ≤12 years; noticeable in ≥2 settings; impact on social, academic or occupational functioning; not better accounted for by another mental disorder

Inattention

(a) Lack of attention to details / careless mistakes
(b) Difficulty sustaining attention
(c) Does not seem to listen
(d) Does not follow through on instructions (easily side-tracked)
(e) Difficulty organising tasks and activities
(f) Avoids sustained mental effort
(g) Loses and misplaces objects
(h) Easily distracted
(i) Forgetful in daily activities

Hyperactivity / Impulsivity

(a) Fidgetiness (hand or feet) / squirms in seat
(b) Leaves seat frequently
(c) Running about / feeling restless
(d) Excessively loud or noisy
(e) Always "on the go"
(f) Talks excessively
(g) Blurts out answers
(h) Difficulty waiting his or her turn
(i) Tends to act without thinking



- General information on Attention Deficit-Hyperactivity Disorder (ADHD)
  - In a poll in the 1990's, 71% of the American public believed mental illness is due to emotional weakness (it's not), 45% believed it is the client's fault and that they can will it away (it's not and one can't), and 35% believed it is a consequence of sinful behavior (it's not). Only 10% believed it has a biological basis involving the brain (it does).
  - Prevalence of ADHD
    - Worldwide:
      - ***5.29%; it was updated to 5.7% in 2014***
        - Polanczyk et al, 2007: literature review of 9,105 records and 303 full-text articles were reviewed, including 102 studies involving 171,756 subjects from all world regions
        - Polanczyk, et al, 2014
      - Range 2-20% (from 2% in Netherlands and Ireland to 17-20% in India and Ukraine respectively)
    - United States
      - ***11% average*** in US (Ratey, 2018)
      - ***2-13% of school age children in the United States (across many studies)***
        - McKeown et al, 2015:
          - 13% when DSM-IV was replaced by DSM-V
        - Visser et al, 2014:
          - ***11%*** of 4-7 year olds diagnosed by health professionals
            - 6.4 million children
            - 41% increase from 2004 to 2012
            - Racial, ethnic disparities in parents reporting ADHD diagnoses (Collins and Cleary analysis of Visser's data, 2015)
        - Zuvekas et al, 2012:
          - ***6%*** of 4-17 year olds taking medications
            - 3.5 million children
            - 28% increase from 2004 to 2012
        - Pastor and Reuben/CDC, 2008: ***9% (point prevalence)*** of all school-age children 6-17
        - Froehlich et al, 2007
          - ***8.7%*** of children in the US
        - Kessler et al, 2006
          - ***4.4%*** of adults in the US
        - Woodruff et al/US National Health Interview Survey, 2004:
          - ***6.7%*** of all school-age children
        - CDC MMWR, 2003: ***7.8%*** (range 8-10%; 4.4 million children and adolescents, 2.5 million of which receive medication)
          - ***0.77-1.76%*** for children up to age 6
          - ***3-6%*** of school-aged children

            - Presently around 6% of school aged children are being treated with stimulants—this percentage likely reflects the increase in appropriate diagnosis and treatment, although within this percentage are children who have been misdiagnosed and mistreated (with stimulants) and outside this percentage are children who have been undiagnosed and untreated.
        - ***0.6-1.99%*** for youth ages 13-19
    - Barbaresi et al, 2002:
        - ***7.5%*** of school-age youth in Minnesota
    - Velez et al, 1989:
        - ***2.2-12.6%*** prevalence of ADHD, inattentive type
    - In adults:
        - ***4.4%*** (and only 10% of those currently diagnosed receiving treatment); Kessler et al, 2006
            - 3.2% of adult women
            - 5.4% of adult men
        - Worldwide estimates: ***1.2-7.3%***
    - ***Peak age for ADHD prevalence was 9 years***, with a prevalence of 6.1% (8.4% boys, 3.6% girls).
- The male to female ratio in children with the hyperactive-impulsive subtype of ADHD is 4:1
- Prevalence of conduct disorder is 5.6%
    - 6-16% boys
    - 2-9% girls
    - Co-morbid with ADHD 50% of time (depression 30% of time, anxiety disorder 30% of time and LD 30-40% of time)
    - NB: stimulants, Depakote, lithium, Risperdal, Abilify with some evidence of efficacy in conduct disorder
- ***Distorted*** beliefs, myths, ***MISconceptions***, and feelings of shame and doubt ***IN CHILDREN*** (and some adults) re: ADHD:
    - RUINATION:
        - ADHD is a life sentence; my life is over; I will never amount to anything.
        - This means I am really dumb, stupid, crazy, or a bad person. All the bad things my parents and teachers have said about me are really true.
        - I'll never have friends anymore; they will all think I am a total nerd.
        - *RESPONSE:* You are definitely not sick or ruined! You don't have bad germs in you. It doesn't mean you are stupid, lazy, crazy, bad, or ill. It means there are some differences in the way your brain works that can make you have some trouble spots but also can give you special skills and talents. Kids with ADHD have a lot of energy and join in many activities. They're active and often excited to try new things. Many are very creative and smart and have special smarts to boot: music smarts, art and color smarts, muscle smarts, gadget/electronic/building smarts, drama smarts, computer smarts, etc.
    - AUTONOMY
        - I'll never have any fun because I will have to spend all my time with tutors, doctors, and therapists.
        - Medication will change my personality in bad ways. I like being wild, loud, and crazy. This is me, who I am, and no one is going to change me.
        - This whole ADHD thing is bull; it's just one more way my parents are trying to control my life.
    - PERFECTIONISM
        - I'm different from my friends and I'll never be normal.
        - I've really messed up now. It's all my fault.
- ***Distorted*** beliefs/myths, ***MISconceptions***, and feelings of shame and doubt ***IN ADULTS***
    - MYTH: ADHD means the person must be a "spaz" or "stupid".
        - *RESPONSE*: No two people with ADHD are alike, and ADHD has nothing to do with intelligence—instead it is, once sculpted, a gift to be envied. Hallowell argues that people without ADHD could be labeled ASD for attention surplus disorder and should be given membership to the Society of the Congenitally Boring. "Who do you suppose advanced civilization? Who do you suppose comes up with the new ideas today? People with ADD, of course."
    - MYTH: ADHD is overdiagnosed.
        - *RESPONSE: On the whole, it's not overdiagnosed in youth; it is overdiagnosed in some areas of the country and underdiagnosed in other areas of the country. It certainly is undertreated. With adults, it is estimated that 75% remain undiagnosed and only 11% treated. ADD is not a religious or moral or theoretical diagnosis; it is a clinical diagnosis derived from solid evidence such as genetic studies, brain scans, neurochemical studies, electroencephalographic studies, worldwide epidemiological studies…It exists on a continuum, a spectrum. It encompasses traits that have great strengths. The "label" of ADD helps shed the accusatory, judgmental, "moral" diagnoses like lazy, weak, undisciplined or, simply, bad.*
    - MYTH: ADHD is overtreated.
        - *RESPONSE: On the whole, it's not; the number of children being treated for ADHD is far less than the number of children who have ADHD; moreover, 12-month adherence rates for stimulant medication hover around 20%. In adults, only 11% are estimated to be treated.*
    - MYTH: ADHD is ALWAYS about labeling exuberant and creative kids as abnormal.
        - *RESPONSE: It's about empowering kids to adaptively maximize their exuberance and creativity! If someone labels normal exuberance as ADHD, the label is not the problem, the person giving the label is the problem. In other words, labeling normal behaviors as*

abnormal is wrong and inappropriate no matter what label is used. But here's the rub: if someone labels abnormal behavior as normal because of their own shame, guilt, or ignorance, then suffering and invalidation will continue.

- MYTH: ADHD is about drugging kids into control.
  - *RESPONSE: It's about healing suffering and giving children what they deserve to have—a sense of competence, effectiveness, efficacy, and empowerment.*
- MYTH: ADHD is a tool of ineffectual teachers in chaotic school systems.
  - *RESPONSE: It's not, but chaotic school systems or poor fit between child and school and/or teacher clearly exacerbate ADHD.*
- MYTH: ADHD is made-up.
  - *RESPONSE: Saying it's so doesn't make it so. It's not made up; nor are the anatomical, biological, endocrinological, chemical, genetic, psychologic, and emotional aspects of ADHD. Multiple studies, including one that followed over 11,000 twins, have demonstrated that 70-90% of the variance in symptoms of inattention/ADHD is explained by genetic factors. If you take away the word, the label, and the mythology, the suffering and impairment remains. Call it what one wants, suffering and impairment is still suffering and impairment.*
- MYTH: ADHD is due to a conspiracy between psychiatrists, the APA, and the drug industry.
  - *RESPONSE: Conspiracies are due to conspiracies; psychiatrists with conflicts of interests are due to conflicts in the ethics of individuals; ADHD is due to genetics, biology and anatomy.*
- MYTH: Stimulants are JUST LIKE COCAINE; stimulants turn kids into drug addicts.
  - *RESPONSE: Drug or medication abuse is drug or medication abuse. Appropriate stimulant treatment is not anything like cocaine abuse or dependence; abuse of cocaine, crack methamphetamine kill and ruin lives. Contrary to implications by folks such as Tom Cruise, cocaine, crack and methamphetamine abuse are actually not useful remedies to any of life's maladies. Drugs of any sort make fake and false emotions that are dependent on the substances that created them. Stimulants (when they effectively treat ADHD) are the eye glasses of one's focus allowing one's true strengths to shine through. Appropriate treatment reduces future drug abuse and dependence. My vision is not fake because it is corrected by my glasses.*
  - Corollary MYTH: marijuana good, stimulants or Prozac bad.
    - *RESPONSE: Argued quite ardently and frequently by folks in my office (even parents, even parents who continue to use substances). Truth: marijuana bad, stimulants, when they are effective, give people back their true selves and allow them to fulfill their innate potential (which is far better, in my opinion, than a stoned façade of depth and faux intimacy).*
- MYTH: All one needs to do is exercise or take vitamins or eat organic food or pray or tough it out or…
  - *RESPONSE: If exercise or vitamins or organic food or prayer or being tough makes ADHD go away, then one did not have ADHD in the first place or the ADHD improved over time irrespective of life circumstances. Exercise, vitamins, healthy eating, spiritual groundedness, religion, empowerment/efficacy—all critical ingredients of maturity and growth, not powerful enough to cure or cause ADHD.*
- MYTH: ADHD is a fancy label for LAZINESS.
  - *RESPONSE: Laziness is a horrible judgment about ADHD. Using the term "laziness" is a defensive posture that attempts to give the world an external reason for one's attentional and academic vulnerabilities. ADHD is a neurological disorder.*
- MYTH: TV, technology, and 21st century life create ADHD.
  - *RESPONSE: ADHD has existed long before TV, technology, and the 21st century. Indeed, ADHD temperament may have been critical to survival of the fittest. Technology, etc, may exacerbate ADHD, but it doesn't cause it. More likely, inattention increases the likelihood of watching TV, despite the flawed study by Christakis, 2004. As a comparison, the presence of the long allele form of the dopamine 4 receptor gene increases the risk of having childhood problems with inattention by 5 times more the the purported (but likely erroneous) increased risk from TV (50% increase with the gene vs. 9% from TV).*
- MYTH: Sugar, dyes, processed/man-made ingredients create ADHD.
  - *RESPONSE: Not per the evidence. Less processed sugars and more organic food are two healthy ways of eating. Healthy eating promotes health, but, sadly, does not treat ADHD (and, if one has it and it does improve, then one did not have ADHD in the first place or the ADHD one had improved over time irrespective of diet).*
- MYTH: Stimulants cause brain damage and destroy the brains and minds of kids for decades to come.
  - *RESPONSE: Stress causes "brain damage." Stimulants, when they treat ADHD, treat a brain illness, reduce (among other things) stress and therefore treat/prevent "brain damage."*
- MYTH: All medications are ALWAYS dangerous, not treating psychiatric problems has NO risks, medications are ALWAYS MORE dangerous than the psychiatric condition.
  - *RESPONSE: All medications have potential risks, known or otherwise. All psychiatric conditions by definition carry risks (otherwise they are not disorders). Often, undertreated psychiatric illnesses carry more dangers and risks that are carried over a lifetime.*
- MYTH: One suffers ONLY from stimulants and psychiatric medications, NEVER from psychiatric *conditions*, which, by the way, don't exist, and natural remedies have NO risks and cure ALL psychiatric conditions and…
  - *RESPONSE: As above.*
- MYTH: All homeopathic or herbal remedies are FULLY safe and cure 100% of the conditions they claim to treat. All homeopathic or herbal medications have irrefutable evidence to back up their safety and efficacy. All homeopathic and herbal remedies have been fully tested for safety and efficacy in children.
  - *RESPONSE: No, no, not true, and…not true. Before you put a potentially untested, unregulated substance in your mouth or the mouth of your child on the word of a SALESPERSON,* ***DEMAND*** *to see the evidence of safety and efficacy, and evidence from randomized, placebo-controlled double-blind studies that are large enough to be meaningful and that have been replicated. Natural things that can be dangerous: peanuts, garbanzo beans, soy beans, pollen, bee stings, penicillin, marijuana, coca plant/cocaine, kava kava, St. John's Wort, gingko, tobacco, certain mushrooms, snake venom, algae, bacteria, viruses, grizzly bears, earthquakes, hurricanes…*
- MYTH: All pharmaceutical companies are out for greed and profit; NONE of the companies or stores that make homeopathic or herbal remedies operate by greed or seek profit.
  - *RESPONSE: All companies, pharmaceutical, homeopathic, herbal and otherwise are out for profit. The difference is that the pharmaceuticals have at least some degree of regulation; the ONLY regulatory agency for companies that make homeopathic and herbal remedies is the free market (the laws of supply and demand).*
  - COROLLARY MYTH: The FDA is broken and corrupt.
    - *RESPONSE: Imperfect, yes; biased, perhaps; inept, at times; but better than no system at all..*
  - COROLLARY MYTH: All herbal and homeopathic remedies are regulated 100% and certainly better than the FDA.

        - *RESPONSE: They are regulated ~0% which is LESS regulated by far than the pharmaceutical companies.*
    - MYTH: Tom Cruise is right on!
        - *RESPONSE: Tom Cruise's comments, as much as it may have buoyed his flagging sense of self and mounting insecurities, likely will contribute to further shame, demoralization, undertreatment, and suffering in children, adolescents, and adults. I also feel it reveals Mr. Cruise's own self-hatred and low self-esteem.*
    - MYTH: there are no positives to ADHD
        - *RESPONSE:*
            - There are a multitude of strengths related to ADHD or the ADHD temperament that can be maximized over time, including:
                - High energy
                - Creativity (if coupled with enough focus to channel it)
                - Intuitiveness (if coupled with enough focus to stay with the intuition)
                - Resourcefulness
                - Tenacity (unless demoralization sets in)
                - Hardworking (same caveat)
                - Warmheartedness (except when disinhibited emotions or focus gets in the way)
                - Trusting attitude (sometimes too much so)
                - Forgiving attitude (sometimes too much so)
                - Sensitivity (often can hurt as well as serve the person with ADHD)
                - Ability to take risks (a double-edged sword)
                - Flexibility (in some circumstances)
                - Good sense of humor
                - Loyalty
                - Horizontal/out-of-the-box thinking
            - Good fits between a job and an adult with ADHD:
                - Starting your own business
                - Medicine, especially the surgical specialties and emergency room medicine
                - Computer software and programming
                - Airline pilot
                - Trial lawyer
                - Physical education teacher or athlete
                - Politics
                - Journalism
                - Entertainment
                - Chef (preferably at your own restaurant)
                - Teacher, academic, professor
- ADHD affects all areas of life, not just school. It may influence how one gets along with people, how one relates in intimate interpersonal situations, how organized one is at home, how one does in sports and hobbies, how easily one falls asleep and wakes up, how one feels about oneself, how one does in a job.
- Annual estimated excess per capita healthcare, disability, and lost-productivity costs of untreated ADHD in patients aged 7-44 years of age and their family members was $31.6 billion, according to a 2005 study
- ADHD is not one's fault, not one's parents' fault, nor anyone's fault.
    - Parenting does not cause nor cure ADHD; however, certain parenting styles can improve or exacerbate the symptoms of ADHD
    - ADHD is influenced (but not caused nor cured) by one's environment; a good family, a good school, and good friends can make life a lot easier for anyone, and especially someone with ADHD.
    - Environment does not cause nor cure ADHD; however, optimizing the academic and home environment can improve symptoms of ADHD
- Jensen (1997): "The 'response-ready' individual would likely have been advantaged under the brutal or harsh circumstances of the frozen steppe or humid jungle, whereas the excessively contemplative, more phlegmatic individual would have been 'environmentally challenged.'…As society has become increasingly industrialized and organized, 'response-ready' characteristics may have become less adaptive."
- Some amount of more than average activity, impulsivity, and inattentiveness is normal, temperamental, adaptive, and/or related to poor fit between temperament and environment. A diagnosis of ADHD is only given when the degree of overactivity, impulsivity, and inattentiveness is significantly more than clients of the same developmental age and when it causes distress and/or impairment in the client.

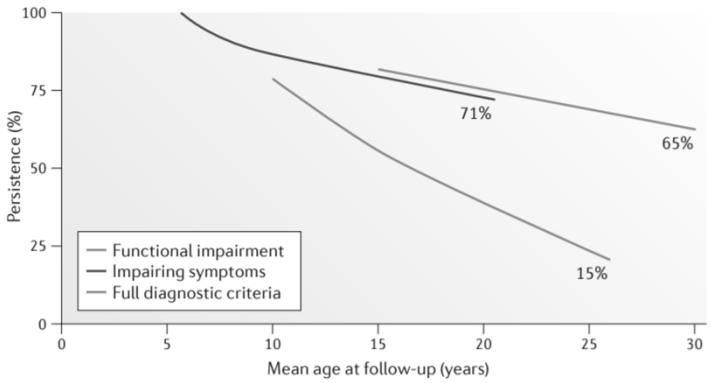


Figure 2 | **The age-dependent decline and persistence of attention-deficit/hyperactivity disorder throughout the lifetime.** Follow-up studies have assessed children with attention-deficit/hyperactivity disorder (ADHD) at multiple time points after their initial diagnosis. Although they document an age-dependent decline in ADHD symptoms, ADHD is also a highly persistent disorder when defined by the persistence of functional impairment[7] or the persistence of subthreshold (three or fewer) impairing symptoms[8]. By contrast, many patients remit full diagnostic criteria[7].

Dunedin Study

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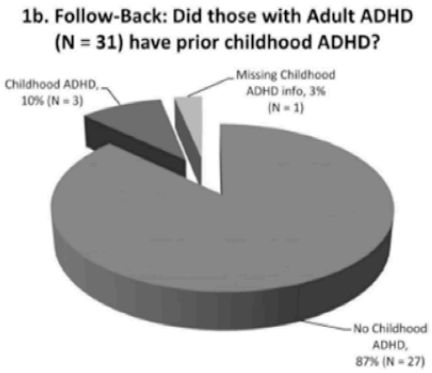
Is Adult ADHD a Childhood-Onset Neurodevelopmental Disorder? Evidence From a Four-Decade Longitudinal Cohort Study. Am J Psychiatry. 2015 Oct;172(10):967-77 Moffitt TE[1],et al



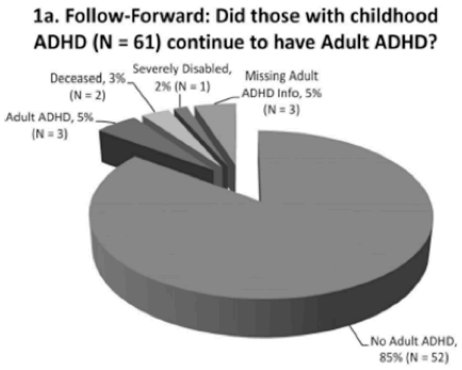


Figure 1.
Childhood-ADHD and adult-ADHD groups comprised virtually non-overlapping sets.

31 Adult Onset Cases at Age of 38 yo
Lack of Childhood onset based on teacher/parent informants
Adult diagnosis –self-report

Dunedin Study's group of children diagnosed with ADHD at ages 11, 13, and 15

- ADHD is a…
  - physical disorder of the brain, with many inherited components.
  - brain-based difference in executive functioning, attention, concentration and impulsivity; likely an extension of a normal continuum such that when sufficiently severe or under certain conditions that demand specific types and degrees of attention (e.g., the academic setting) the neurobiological differences cause impairment and/or distress.
  - challenge, not an excuse; one is still responsible for one's actions, even though one has a physical disorder which makes it harder for one to control one's actions.

- syndrome, per the *National Institutes of Health Consensus Development Conference Statement, 1998,* "(the) core symptoms (of which) include
    - developmentally inappropriate level of attention and concentration
    - developmentally inappropriate levels of activity
    - distractibility
    - impulsivity
    - pronounced difficulties and impairment resulting from the disorder across multiple settings -in home, at school, and with peers
    - long-term adverse effects on later academic, vocational, social-emotional, and psychiatric outcomes
- a disorder of executive functioning, the symptoms of which may include:
    - behavioral activity
        - "I can't slow down. It's like having a motor inside me that will not stop."
        - arousal variability
            - high mental and physical energy
            - extreme lassitude at times
        - talks excessively
        - inner restlessness, objectively fidgety
        - trouble staying in a confined space or context, such as dull meetings (not a phobia)
        - inability to enjoy quiet leisure
        - subject sense of being "driven"
        - chooses active jobs
        - Hallowell: "God save me from the reading rooms in libraries. These are peaceful havens for most people, but for me they are torture chambers."
    - attention
        - "It's hard for me to pay attention. I often daydream or zone out."
        - this dominates the presentation in adults (93% of adults with ADHD affected by inattention vs. 58% affected by hyperactive impulsive symptoms)
        - tendency to get lost in one's own thoughts
        - complaints that can read, but "it doesn't register" or poor reading comprehension
        - deficient sustained attention to reading, paperwork, lectures
        - fast moving mind
        - easily distracted, especially when context demands concentration
        - easily bored by tedious materials or tasks
        - does not listen carefully to directions
        - misplaces belongings
        - forgetful of things that must be done
        - extraordinary recall of often irrelevant remote information
        - history of poor educational performance; underachievers; more frequent school disciplinary actions; higher rate of repeating grades; dropped out of school more often
        - less able to initiate and sustain effort to uninteresting tasks
        - poor listening skills
    - Executive functioning organization/memory/planning
        - piles accumulate, metastasize
        - poor prioritizing
        - prefers multitasking
        - trouble remembering, anticipating
        - difficulty turning their great ideas into significant actions
        - cannot work well independently of supervision
        - generally poor self-discipline
        - failure to learn from mistakes; often use the same failed strategy over and over
        - difficulties handling money and making sensible financial decisions
        - inconsistent efficacy—great one hour and lousy the next, regardless of preparation
        - ***<u>Executive functions</u>***
            - Brown, 2018; Brown, 2001
                - Activation
                    1. Organizing
                    2. Prioritizing
                    3. Activating to work
                - Focus
                    1. Focusing
                    2. Sustaining attention
                    3. Shifting/regulating attention to/among tasks
                - Effort
                    1. Regulating alertness
                    2. Sustaining effort

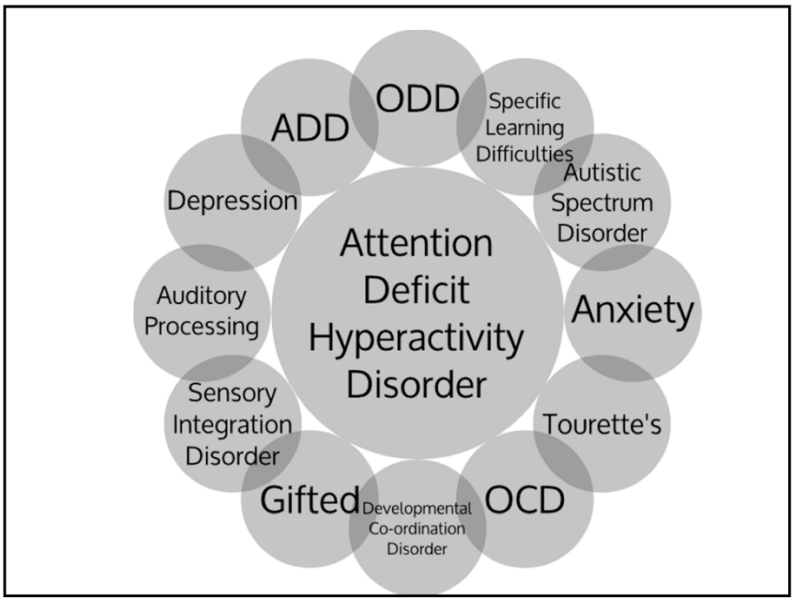
        3. Adjusting processing speed
    - Emotion
        1. Managing frustration
        2. Modulating/regulating emotions
    - Memory
        1. Utilizing working memory
        2. Accessing recall
    - Action
        1. Monitoring action
        2. Self-regulating action
- White et al, 2013: major impairments in reinforcement-based decision making correlate with clear abnormalities in activity in ventromedial prefrontal cortex, anterior insula, and caudate
- Behavioral inhibition (affecting and in feedback with the below)
    - Inhibit prepotent response; delay between stimulus and response
    - Interrupt an ongoing response
    - Interference control
    - Efficiency under timed conditions
    - Response inhibition; control over freedom from interference
- Working memory (non-verbal)
    - Holding events in mind
    - Manipulating or acting on the events
    - Imitation of complex behavior sequences
    - Retrospective function (hindsight)
    - Prospective function (forethought)
    - Anticipatory set
    - Sense of time
    - Non-verbal rule-governed behavior
    - Cross-temporal organization of behavior
- Internalization of speech (verbal working memory)
    - Description and reflection
    - Self-questioning/problem solving
    - Rule-governed behavior (instruction)
    - Generation of rules and meta-rules
    - Reading comprehension
    - Moral reasoning
    - Internal representation of schema; self awareness; manipulation of representational systems; metacognition
- Self-regulation of affect/motivation/arousal
    - Self-regulation of affect
    - Objectivity/social social perspective taking
    - Self-regulation of motivation
    - Self-regulation of arousal in the service in the service of goal-directed action
- Reconstitution
    - Analysis and synthesis of behavior
    - Verbal fluency/behavioral fluency
    - Rule creativity
    - Goal-directed behavioral creativity and diversity
    - Behavioral simulations
    - Syntax of behavior
- Motor control/fluency/syntax (affected by and in feedback with the above)
    - Inhibition of task-irrelevant responses
    - Execution of goal-directed responses
    - Execution novel/complex motor sequences
    - Goal-directed persistence
    - Sensitivity to response feedback
    - Behavioral flexibility
    - Task re-engagement following disruption
    - Control of behavior by internally represented information
- Cognitive flexibility
- Internal representation of action plan
- Active, effortful strategies; planning; decision making
- Temporal organization of behavior
- Initiation and spontaneity
- Balance simultaneous and sequential

        - Freedom from perseveration
        - Concept formation/abstract reasoning
        - Judgment
        - Self-regulation
- time management/sense of time
    - inefficient
    - time broken down into "now" and "not now"
    - procrastinates until deadlines are imminent (when "not now" becomes "now" and quickly dissolves into "too late")
    - poor sense of past and future time
    - motor timing and coordination
    - time perception/intertemporal competence
- sensory/motor processing
    - synchronization of motor responses to sensory stimuli
    - sensory processing
    - language and verbal fluency
- affective instability
    - frustrated over inability to organize
    - irritability and quick to anger; poor regulation of emotions
        - Hallowell: "If there is a separate disorder called Can't Wait in Lines Disorder, I've got it. Can't is the wrong word. I guess, because life does require me to wait in lines, and I manage to do it without going berserk and getting arrested. It's just that I hate to wait.
    - blurts out rude/insulting thoughts
- impulsivity
    - creative
    - I-must-do-it-or-have-it-now attitude at times
    - High intensity attitude alternating with foggy
    - impulsive decision making
    - feelings of being overwhelmed
    - impulsively changes jobs; more likely to have been fired
    - search for high stimulation as a means of focusing
    - reckless driving; more likely to be cited for speeding, to have licenses suspended, be involved in more crashes
        - Chang et al, 2014:
            - Nearly 50% increased risk of transportation accidents
            - 58% reduction of risk with pharmacologic treatment
    - impulsive sexuality
    - quits new projects
    - tendency to self-medicate with alcohol or other drugs, or with addictive substances such as gambling, shopping, sexualizing, eating, or risk-taking; (and have a lower rate of quitting smoking)
    - difficulties staying put with one activity until it's done
    - tendency to change channels, plans, direction for no apparent reason
    - more marital problems, separations, divorces, and marriages
    - more frequent lying, stealing
    - history of physical aggression to others
    - have more physical accidents
    - more broken bones
      more driver's license suspensions and revocations
    - more moving violations and motor vehicle accidents (and they cause more damage in accidents and are more likely to be found at fault).
    - More arrests, convictions, or imprisonments (~50% of adults with full ADHD and ~35% of adults with late-onset ADHD)
- sense of self and others
    - poor ability to appreciate own strengths or perceive own shortcomings
    - difficulty in explaining self to others
    - easily forgetful of one's own failings and those of others
    - difficulty in reading social cues
    - difficulties making friendships and sustaining them
    - perceived by others as self-centered and immature
    - often failing to see others' needs or activities as important
    - low self-esteem, demoralized
    - less well liked
    - history of being labeled "lazy" or "an attitude problem"
    - help rejecting alternating with tendency to want to give help to others

- academics
    - underperform
    - lower class ranking—69% vs. 50% in folks without ADHD
    - require tutoring—56%
    - repeat grade—30-42% vs. 13% in folks without ADHD
    - special education placement--30-40%
    - suspensions—46-60% vs. 19% in folks without ADHD
    - expulsions—10-20% vs. 6% in folks without ADHD
    - failure to graduate from high school 10-35% vs. <1% in folks without ADHD
    - fewer enter college—22% vs. 77% in folks without ADHD
    - lower college graduation rate 5% fewer enter college—5% vs. 35% in folks without ADHD
- test preparation and test taking
    - Difficulty understanding material
    - Insufficient time studying or cramming last minute
    - Not knowing how to study
    - Poor use of memorization techniques
    - Reading and writing deficiencies which interfere with understanding and responding to test questions
    - Difficulty remembering and organizing information and writing it down during test
    - Slow reading rate or lethargic cognitive tempo resulting in inability to complete test in allotted time
    - Difficulty maintaining attention during test
    - Impulsive tendency to rush through test
    - Careless mistakes resulting from failure to read directions or overlooking importantdetails such as responding in the correct box on scantron sheets
    - Test anxiety
- ¾'s of adults with ADHD have at least one other psychiatric diagnosis
- Risk of suicide/suicide is higher
    - Risk of suicide attempts in adolescents and young adults with attention-deficit hyperactivity disorder: a nationwide longitudinal study; Kai-Lin Huang, Han-Ting Wei, Ju-Wei Hsu, Ya-Mei Bai, Tung-Ping Su, Cheng-Ta Li, Wei-Chen Lin, Shih-Jen Tsai, Wen-Han Chang, Tzeng-Ji Chen, Mu-Hong Chen; *British Journal of Psychiatry: the Journal of Mental Science 2018 March 4, : 1-5*
      BACKGROUND: Attention-deficit hyperactivity disorder (ADHD) increases the risk of suicidal behaviours through psychiatric comorbidities; however, a significant direct association has not been observed between ADHD and suicide attempts. Aims To evaluate the risk of suicide attempt in adolescents and young adults with ADHD.
      METHOD: Using a nationwide, population-based insurance claims database, this longitudinal cohort study enrolled 20 574 adolescents and young adults with ADHD and 61 722 age- and gender-matched controls between 2001 and 2009. Any suicide attempt was identified from enrolment to 31 December 2011. The association between ADHD medications and the likelihood of suicide attempt was assessed.
      RESULTS: ADHD was an independent risk factor for any suicide attempt (hazard ratio = 3.84, 95% CI = 3.19-4.62) and repeated suicide attempts (hazard ratio = 6.52, 95% CI = 4.46-9.53). Subgroup analyses of men, women, adolescents and young adults demonstrated the same trend. Methylphenidate or atomoxetine treatment did not increase the risk of suicide attempt or repeated suicide attempts. Long-term methylphenidate treatment was associated with a significantly decreased risk of repeated suicide attempts in men (hazard ratio = 0.46, 95% CI = 0.22-0.97).
      CONCLUSION: ADHD was a risk factor for suicide attempt and a stronger predictor of repeated suicide attempts, independent of comorbidities. Further investigation is warranted to explore the mechanism underlying the association between ADHD and suicidal behaviours. Declaration of interest None.
- Sleep:
    - Increased motor activity during sleep
    - Longer time until sleep onset
    - Reduced REM sleep
    - Increased incidence of sleep disorders such as periodic limb movements with arousal
    - Bernal et al, 2006: study to examine the presence of daily somnolence (excessive daytime somnolence) in children with ADHD vs. without ADHD; not related to medication use; 88 children, aged 6-10 (mean 8)
        - Overall, both groups combined:
            - 36.4% with problems in morning awakening
            - 31.8% with bruxism (teeth grinding)
            - 31.8% with sleep talking
            - 22.7% with restless legs

        - 15.9% with snoring apnea
    - Morning somnolence more common in youth with ADHD
- Executive Functions
    - "ISIS" (an unfortunate acronym of late)
        - Initiate – getting started
        - Sustain – sticking to it
        - Inhibit – just this
        - Switch – flowing well
- Symptoms more specific to preschool children
    - Busy, running or climbing excessively
    - Failure to learn from experience
    - Unable to share
    - Must be watched constantly
    - Wandering, touching everything
    - Trouble with quiet time and passive activities
    - Difficulty with self-soothing
- Symptoms more specific to adolescents
    - Subjective restlessness (more than motor overactivity)
    - Poor frustration tolerance
    - Bored, intolerant of inactivity
    - Novelty seeking
    - School underachievement
    - Social isolation from peers, fewer friends
    - Overly sensitive to peer approval
    - In some, antisocial behavior, mood swings, and demoralization
    - Higher risk of
        - repeating grades
        - dropping out of high school
        - being suspended or expelled
        - abusing drugs and alcohol
        - being arrested
        - getting pregnant
        - having STD's
        - being fired from a job
- Symptoms more specific to adults
    - Subjective restlessness (more than motor overactivity)
    - Impulsivity (romantic, monetary, decision-making)
    - Inattention
    - Difficulties with multiple tasks/responsibilities
    - Inability to complete tasks
    - Difficulty with planning
    - In some, stress intolerance, affective instability, temper
    - Higher risk of
        - abusing drugs and alcohol
        - financial problems
        - arrests
        - early pregnancy
        - low academic achievement
- Changes in Diagnosis in DSM V
    - No exclusion for autism spectrum disorder (one can have both)
    - Severity specifiers (mild, moderate, severe)
    - No longer broken into subtypes; instead "predominantly inattentive presentation, predominantly hyperactive/impulsive presentation, combined presentation")
    - Broader areas of defined impairment
    - Developmentally appropriate descriptions/descriptive changes
        - Is often restless during activities when others are seated
            - May leave his or her place in the classroom, office, or other workplace, or in other situations that require being seated
        - Often runs about or climbs on furniture and moves excessively in inappropriate situations.
            - In adolescence or adults may be limited to feeling restless or confined
        - Is often excessively loud or noisy during play, leisure or social activities
        - Is often "on the go" acting as if "driven by a motor"
            - Is uncomfortable being still for an extended time, as in restaurants, meetings, etc
            - Seen by others as being restless and difficult to keep up with
- Metaphors (per Hallowell)

        - Driving in the rain with bad windshield wipers
        - Listening to a ball game on a radio that's coming in with a lot of static (though with moments of clear sound)
        - Building a house of cards in a windstorm
        - Being supercharged all the time, like having a race-car brain with trouble putting on the brakes
        - Watching a ballet from the back row without one's glasses
        - Watching an opera with cotton in one's ears
        - Writing notes for an hour long lecture on theoretical physics, using your non-dominant hand
- Some possible risk factors
    - Low birth weight
    - Delayed physical and motor development
    - Maternal smoking
- Psychiatric disorders that can mimic ADHD
    - Depressive disorders
    - Bipolar disorder
    - Oppositional defiant disorder
    - Disruptive mood dysregulation disorder
    - Intermittent explosive disorder
    - Anxiety disorders
    - Substance use disorders
    - Learning disorders
    - Sensory/sensory processing disorders
- Common co-occurring diagnoses:



    - Oppositional defiant disorder (ODD) 54-84%
        - Male children: 66% vs. 11% in boys without ADHD
        - Female children: 35% vs. 4% in girls without ADHD
        - Adults: 20-45% vs. 0% in controls
    - Conduct disorder 20-46%
        - Conduct disorder OR personality disorder: 26.8% vs. 3.9% in those without ADHD
        - Male boys: 21% vs. 3% in boys without ADHD
        - Female girls: ~7% vs. 0 in girls without ADHD (in one study)
        - Almost all youth with conduct disorder also have ODD
        - Adults: 2.8-5% vs. 0% in those without ADHD
        - Antisocial behavior, adults: 18-28%
        - Antisocial personality disorder, adults: 10-15%; in another study: 6.7% vs. 0% in those without ADHD
    - Learning problems
        - Youth: 20-56%
        - Adults: 38.3-41.7%
        - Transmitted independently in families
    - Developmental disorders 37.4% vs. 13.4% in controls
    - Learning AND language disorders 25-35%
    - Mood disorders
        - Youth
            - Up to 60% overall

- Major depression 15-30%; of which there was a
  - 3.3-fold increased chance of positive family history of mood disorder
  - 18.3-fold increased chance of positive family history of bipolar disorder
  - Male boys: 29% vs. 2% in boys without ADHD (in one study)
  - Female girls: 15% vs. 1% in girls without ADHD (in one study)
- Bipolar disorder
  - 16% met criteria for mania in one study, although it was a chronic, irritable mania predominated
  - Subtypes
    1. Bipolar I or II: 4% vs. 0% in those without ADHD
    2. Bipolar disorder not otherwise specified 2.5% vs. 0.9% in those without ADHD
    3. Not clear if cyclothymia was included under bipolar disorder not otherwise specified or not
  - All subtypes grouped together
    1. Male boys: 11% vs. 0% in boys without ADHD (in one study)
    2. Female girls: 11% vs. 0% in girls without ADHD (in one study)

- Adults
  - Major depression 19-38.3%
    - 16-32% of adults with depression have ADHD
  - Bipolar disorder 15%
    - 6-21.2% of adults with bipolar disorder have ADHD

- Anxiety disorder
  - Youth: 25-45% vs. 5-15% in comparison youth
    - In one study the percentage of those with more than two anxiety disorders is as follows:
      - Male boys: 28% vs. 4% in boys without ADHD
      - Female girls: 33% vs. 5% in girls without ADHD
  - Adults: 45-50% vs. 19.5% in those without ADHD; 9.5% of adults with anxiety disorders have ADHD
    - Social anxiety disorder: 29.3% vs. 7.8% in those without ADHD
      - Of those with social anxiety disorder: 14% have ADHD vs. 3-5% in those without anxiety
    - Specific phobia: 22.7% vs. 9.5% in those without ADHD
      - Of those with specific phobia: 9.4% have ADHD
    - Post-traumatic stress disorder (PTSD): 11.9% vs. 3.3% in those without ADHD
      - Of those with PTSD: 13.4% have ADHD
    - Panic disorder: 8.9% vs. 3.1% in those without ADHD
      - Of those with panic disorder: 11.1% have ADHD
    - Generalized anxiety disorder (GAD): 8% vs. 2.6% in those without ADHD
      - Of those with GAD: 11.9% have ADHD
    - Obsessive compulsive disorder (OCD): 2.7% in those without ADHD
      - Of those with OCD: 6.5% have ADHD
  - General rule: treat ADHD first

- Drug and alcohol abuse
  - Alcohol/substance use disorders
    - Youth
      - Abuse in 10-20%
      - Uncomplicated ADHD is associated with a two-fold increased risk of developing a substance use disorder.
      - In youth with ADHD and substance use disorders, the onset of the substance use disorder occurs three years earlier (~19 yo vs. 22 yo when youth has no ADHD)
      - If ADHD co-occurs with conduct disorder, there is a 2-5 fold increased risk of alcohol and cigarette use than if one has ADHD alone
      - Co-occurrence of mood and other psychiatric conditions also increases the risk above that of uncomplicated ADHD.
      - There is an elevated risk of alcoholism in the parents of youth with ADHD
      -
      - With pharmacotherapy, there is an 85% reduction in risk of substance abuse in adolescents.
    - Adults:
      - 6-fold increase risk associated with ADHD.
      - In a German study: 0.4% vs. 0.1% in controls
      - Alcohol abuse or dependence, adults: 27-53% vs. 6.2% controls
  - Nicotine

            - Kollins, 2005: the number of symptoms of ADHD correlate with increased odds of regular smoking (cigarettes).
        - Cannabis dependence, adults 20% vs. 1.5% controls
        - Other
            - abuse, in adults 8-32%
            - dependence in adults 6.7% vs. 0% controls
    - Personality disorder
        - Adults: 10-20%
    - Asthma 8%
    - Headaches 5%
    - Sleep problems 4.5-14% vs. 1.3% in controls
    - Abdominal pain 4%
    - OCD 2%
    - Pervasive developmental disorder 1.6% vs. 0.5% in controls
    - Tics (one study demonstrated that 2.4% of youth with ADHD has tics vs. 0.7% in controls—BUT SEE BELOW)
        - 15-21% of (all) school-aged youth in the community have transient tics in lifetime
        - 2.9% of (all) 13-14 yo's have tics in school setting
        - 27% of students in special education have tics (vs. 19.7% in another study)
        - Motor tics more common than vocal tics
        - More common in boys than girls
        - More common in preschool children than in older children
        - Tics worse in winter than in summer
        - Tourette Syndrome (TS) (1%); see separate handout
            - 56% of folks with TS have ADHD
    - Obesity and physical inactivity in adolescence
        - 1.61 fold increased risk
    - Epilepsy 1%
    - Many medical, learning, sensory/perception, language and psychiatric problems can mimic or exacerbate ADHD
- ADHD is chronic
    - Improves slowly over time
        - Hyperactivity and impulsivity increase the fastest so that by 18 yo and older,
            - ~55% of hyperactive symptoms remit
            - ~45% of impulsive symptoms remit
        - Inattentive symptoms are more intransigent
            - ~25% of inattentive symptoms remit by ages 18-20
    - 6-year follow-up of preschool kids showed that 63% have persistence of ADHD through age 10
    - On average, 25-50% of youths with ADHD continue to meet full criteria into adulthood
        - 20-50% in Costello and Maughan, 2015
            - residual symptoms often persist without meeting full criteria
            - remission in significant minority
            - Severity of symptoms and comorbidity predict outcomes
        - Other data puts the range at 2-27% (Barkley et al, 2002; Mannuzza et al, 1993)
    - 60-90% of children with ADHD continue to experience symptoms in adulthood (even if full criteria for disorder is no longer met)
        - If childhood symptoms high: 57.3%; if low: 31.2%
        - If inattentive only: 28%
        - If inattentive and some hyperactivity: 49.3%
    - Other data:

Age	Symptomatic persistence (%)	Syndromatic persistence (%)
10	--	84
15	84	48
20	69	28
25	62	19
30	53	--

    - Follow-up studies of school age onset of ADHD
        - Meds effective through at least 1.2 years in one analysis of MTA data (MTA, 1999)
        - At year 8 of ADHD, adolescent impairment persists (Molina, 2009)
        - Childhood ADHD causes adult impairment (Hechtman, 2015)
        - Impairment, even in the absence of symptoms, continue into adult life (per MTA data)
            - 16 year follow-up
            - Functional outcomes dependent on having had (formal) ADHD at ages 7-10
            - Areas of impairment
                - Reduced postsecondary education

            - Increase number of times fired/quit a job
            - More receive public assistance
            - Greater emotional lability
            - Greater risky sexual behavior
- There is an increased risk of death by suicide in young folks with ADHD (Huang, et al, 2018)
    - 20,574 people aged 12-29 with ADHD (diagnosed b/w 2001-2009), followed through 2011; compared with 61,722 controls
    - After adjusting for psychiatric comorbidities, the hazard ratio for any suicide attempt was 3.84 and for repeated attempts 6.52.
- Adults with ADHD
    - Symptom picture
        - Subjective restlessness (more than motor overactivity)
        - Impulsivity (romantic, monetary, decision-making)
        - Inattention
        - Difficulties with multiple tasks/responsibilities
        - Inability to complete tasks
        - Difficulty with planning
        - In some, stress intolerance, affective instability, temper
    - Prevalence in adults 4.4-4.7% (former number by Secnik et al, 2006, 3199 subjects aged 18-44)
    - It affects about 8 million adults
    - NCS-R estimates that 75% of adults with ADHD are undiagnosed and 11% receive treatment
    - Linked to job loss, lower income, higher divorce rates and more driving accidents.
    - ADHD in adults costs about $77 billion in lost income a year.
    - 90% with inattentive symptoms, 50% with symptoms of hyperactivity
    - 15.2% with substance use disorder (SUD) vs. 5.6% if no ADHD
    - Of those with SUD, 10.8% have ADHD vs. 3.8% if don't have SUD
    - MTA Study (Roy et al, 2016)
        - Childhood predictors of adult ADHD symptoms persistence
            - Initial ADHD symptom severity
            - Co-morbidities
            - Parental mental health problems
        - Functional Adult Outcomes 16 years after childhood diagnosis
            - Outcomes best for lay public and worst for those with ADHD with persistent symptoms, with those with ADHD but no current symptoms in between, in terms of:
                - post-secondary education
                - times fired/quit a job
                - current income
                - receiving public assistance
                - risky sexual behavior
            - Emotional and substance use outcomes best for lay public and those with ADHD but no current symptoms, with those with ADHD with persistent symptoms worst, in terms of:
                - emotional lability
                - neuroticism
                - anxiety disorder
                - mood disorder
                - substance use problems (not including alcohol)
- Subthreshold ADHD vs, late-onset full ADHD vs. classic (full) ADHD
    - Faraone et al, 2006, adults,
        - Analyzed by diagnostic category:
            - Subthreshold ADHD (adults who did not meet full symptom criteria for the disorder
            - Late-onset full ADHD
            - Classic (full) ADHD
        - Results
            - Adults with late onset full ADHD and adults with classic ADHD had similar patterns of psychiatric co-morbidity, functional impairment, and familial transmission
            - Adults with subthreshold ADHD had milder symptoms and showed a different pattern of familial transmission than the other two forms of ADHD
    - Hesslinger et al, 2003: adults with early-onset ADHD vs. late-onset ADHD exhibited virtually the same patterns of psychopathology and psychiatric co-morbidity
    - Rhode et al, 2000: youths aged 12-14 had similar clinical features whether they did or did not meet age-of-onset criteria
    - Willoughby et al, 2000: age-of-onset criteria was justified for ADHD combined type but not for ADHD inattentive type; regardless of age-of-onset, adolescents with elevated levels of ADHD symptoms were at high risk for functional impairments in the absence of intervention

        - Applegate et al, 1997: the prior-to-age-7 criterion for symptom onset reduced the accuracy of identifying impaired cases of ADHD and also reduced agreement with clinicians in a sample of 380 youths
        - Schaughency et al, 1994: adolescents with ADHD with onset before or after age 13 did not differ in severity of symptoms, type of impairment, or persistence of ADHD
- Longitudinal studies of ADHD from childhood to adolescence
    - Girls (5 year follow-up)
        - 38% nicotine abuse (vs. 12% in controls)
        - 36% anxiety disorders
        - 34% oppositional defiant disorder
        - 23% major depression
        - 13% drug abuse (vs. 3% in controls)
        - 11% conduct disorder
        - 8% antisocial personality disorder
        - 5% psychosis
        - 4% alcohol (vs. 0% in controls)
        - 3% with bipolar disorder
    - Boys (10 year follow-up)
        - 49% conduct disorder (vs. 6% in controls)
        - 45% nicotine use (vs. 21% with controls)
        - 35% bipolar disorder (vs. 4% in controls)
        - 21% antisocial personality disorder (vs. 10% in controls)
    - Both genders in Taiwan (6 year follow-up)
        - 70.1% oppositional defiant disorder
        - 49.5% anxiety disorder
        - 39% sleep disorder
        - 33% conduct disorder
        - 11.4% depression
        - 11.3% bipolar disorder
        - 8.3% tics
        - 6.3% school refusal
        - 4.1% substance use
        - 2.1% suicidal behavior
    - Also, in adolescence, twofold less likely
        - to be dating
        - to have good relationship with parents
        - to have bright outlook on future
        - to fit in with peers
        - to be popular in schools
        - to recognize opportunities and seize them
    - As adults
        - 2 to 3-fold more likely to
            - be out of work
            - have youth worse than peers
            - have childhood memories that disturb one as adult
            - Have youth experiences with damaging impact on adult life
        - Increased likelihood of
            - antisocial and criminal behavior
            - injuries and accidents
            - employment difficulties
            - marital difficulties
            - health problems
            - teen pregnancies
            - children out of wedlock
        - Co-morbid diagnoses in adults with ADHD (Kessler et al, 2006)
            - Any anxiety disorder 47%
                - Social phobia 29.3%
                - PTSD 11.9%
                - Panic disorder 8.9%
                - GAD 8%
                - Agoraphobia 4%
                - OCD 2.7%
            - Any mood disorder 38.3%
                - Bipolar disorder 19.4%

- Major depression 18.6%
- Dysthymia 12.8%

Treatment: General Principles

- The goal of treatment is to sculpt ADD into a blessing, by accentuating what's useful and paring back on what's not; usually it's not easy, often it's painful, sometimes it feels futile, but everyone can sculpt a fulfilling, joyful life out of what they are born with ("Delivered from Distraction").
- Five-step plan (per Hallowell)
  - Connect with
    - Friends
    - Romantic partners
    - Mentors
      - Teachers
      - Mentor
      - Supervisor
      - Coach, even an organizational coach
        - Find national coaching associations (e.g., www.aetonline.org)
    - God or whatever your spiritual life leads you towards
  - Play
    - Discover your talents and strengths
    - In activities in that make your brain light up
      - Practice
      - Play over and over again
      - Mastery
      - Recognition (for your mastery)
- "Seven Habits of Highly Effective ADD Adults" (per Hallowell)
  - Do what you're good at; don't spend too much time trying to get good at what you're bad at (you did enough of that in school)
  - Delegate what you're bad at to others, as often as possible
  - Connect your energy to a creative outlet
  - Get well enough organized to achieve your goals; the key here is "well enough." That doesn't mean you have to be very well organized at all—just well enough organized to achieve your goals.
  - Ask for and heed advice from people you trust—and ignore, as best you can, the dream-breakers and finger wagers
  - Keep up regular contact with a few close friends
  - Go with your positive side. We all have a negative side. Make decisions and run your life with your positive side.
- Lifestyle changes
  - Positive human contact
  - Reduce electronics
  - Sleep
  - Good nutrition/eating habits; protein in one's breakfast
  - Multivitamin, zinc (with copper), folic acid, B12
  - Omega-3 fatty acids
  - Grape seed extract
  - Green tea (decaf) or extract
  - Blueberries
  - Don't smoke or put drugs or alcohol in your body
  - Exercise regularly
  - Prayer or meditation
  - Biofeedback
- Cerebellum stimulation
  - Dore method
  - Brain Gym
  - Interactive Metronome
  - Exercises prescribed by occupational therapists
- Classroom accommodations/recommendations to schools, students
  - Allow some restlessness in work area, with frequent breaks
  - Could have tape recorder or timer with soft tone or beep at intervals of 60-120 minutes as reminder to check in with students with ADHD; this could also be used for student's self-monitoring.
  - Visual aids on student's desk re: goals, rules, etc

- Post rules on posters for each work period
- Use participatory teaching: give students something to do to help you while teaching
- Have students practice skills on computers—use learning software programs to rehearse skills
- Varied presentation formats, task materials, modalities, activity level of task
- Intersperse low-appeal with high appeal activities to maintain interest level
- Be more animated, theatrical, and dramatic when you teach—make it interesting!
- Brief academic assignments presented one at a time
- Short time limits specified and enforced
- Smaller quotas of work at a time, with frequent breaks
- Have child pre-state work goals ("how many problems can you do for me?")
- Use after-school help sessions, tutoring, books on tape, and videos to reinforce class work
- Target productivity (number of problems attempted)
- Oral rather than written demonstration of knowledge
- Careful scheduling of classes with heavier load in the AM
- Large calendars
- Study buddy to contact for missed assignments
- Photocopies of class lecture outlines
- Modified homework and testing
  - More done at school
  - Don't send home unfinished class work
  - Homework periods
  - Reduce or eliminate homework (at least in grade school); if given, keep to 10 minutes total X grade level in school
  - Give weekly homework assignments, so parents can plan their week accordingly
  - Assign a homework/study "buddy"
  - Access to notes from another student or the professor
  - Make use of peer tutoring outside of school
  - Oral rather than written demonstration of knowledge
  - Special time/place for homework
- External/technological aids
  - timers
  - tape recorders/tape-recorded lectures
  - Voice-to-Text programs (e.g., Dragon Naturally Speaking)
  - access to textbooks or other literature on tape
  - calculators
  - laptop computer with spell and grammar check
  - word processor with spell and grammar check
  - computerized instructional programs
  - use of dictionary, thesaurus, or Franklin Speller during tests
- Programs for social skills deficits
- Instruction in time and materials management
- Note taking strategies
- Desk checks for neatness
- Filing systems for organizing completed work
- Reducing length of written assignments
- Extra time for work and tests
- Testing in a separate room to eliminate distractions, if the student desires
- Second set of books
- Coach (e.g., guidance counselor) or mentor or case manager roles/point people within the school
- Weekly check-in's with teachers (student-teachers, parent-teachers)
- Morning check-in's with teachers (student-teacher)
- Academic advising to reduce the number of courses in a semester that stress weak areas, such as heavy reading courses, foreign languages, or highly theoretical courses.
- Reduction in required number of courses/semester
- Consider full neuropsychological testing
- Private tutor(s)
- Color coded binders and other commercial organizing systems
- Colored dividers to separate your subjects
- Add a notebook or loose paper to the binder in each subject section
- Try color-coding text, using highlighters for making key points
- Small zipper pouch inside your binder for pens, pencils, erasers, calculator, small ruler, tissues, highlighters, etc
- Store all "to do" homework in the pocket of the inside front cover of your binder

- Include a pocket folder in your binder that is only for *finished* homework; put all your homework in this when you are done
- Draw line down each page while note-taking—on the left, write down key words and concepts and on the right write notes in short sentences
- Take extra care to write down something in your notes when teacher writes it on the board or repeats something or says "this is important" or "remember this" or "this will be on the test."
- Use a timer (I have one that sticks to the frig with a magnet—it's digital and you can set it to any time limit very easily)
- Getting ready in the AM
- Loud alarm clock far away from bed; on Sharper Image, there is a "robot" clock that rolls all over the room if you snooze
- Get water
- Put clothes etc out at night
- Small office or work space; if you have kids and a small apartment (e.g., yours truly):
- Have a second "office"—I moved a second computer and a small table into my bedroom if I need to work during the time my daughter is awake, I can do so in private, slightly reducing the chances that my child will interrupt me
- Earphones
- Try to schedule time (and make it clear to your family) that you will be at your desk doing nothing other than work
- You can set a timer for how long you'll be at the desk; when the buzzer goes off, you have to stop (and be with your family)
- Know when to give up—if being around your children distracts your children so that they then distract you, either try another time or go somewhere out of the home.
- "Do not disturb" sign
- Labeling cupboards, desk drawers, in- and out-baskets, file folders
- Checklists/daily assignment
  - Paper/calendar/journal
  - Palm/PDA
  - Outlook
  - A redundant system with a posted calendar, posted calendar, computerized reminders, datebook/scheduler, wrist watch, and strategically placed self-adhesive notes
  - A notebook, PDA or voice recorder (digital one's can be synchronized to your computer!) as a constant companion to help keep track of ideas and reminders and tasks
- Tape record important meetings/classes
- Use continuous note taking to boost concentration in dull classes or meetings
- Get extra written notes, curriculum materials, etc from meetings/classes
- Daily or weekly "report cards" from supervisors
- Schedule faculty or supervisor review meetings every 3-6 weeks
- Alternate required but boring work or courses with enjoyable work or elective classes
- Schedule harder classes/meetings/work in morning hours, when you are fresher and more attentive
- Exercise before exams and boring classes or meetings
- Scheduled built-in breaks during the work/school day
- Distraction-free and extended time testing
- Wear a tactile-cueing device, the MotivAider (*http://addwarehouse.com* under "Training") to frequently re-prompt your alertness or self-awareness and your focus on the goal
- Learn SQ4R for reading comprehension of any length reading to be done
  - Survey the material
  - Draft Questions
  - Read, Recite, wRite, and Review after each paragraph
- Attend after-class (or after-work) help sessions whenever given
- Peer, fellow student, or coworker who can tutor you in difficult subjects
- Find "fall-back" coworkers or college classmates (with whom you swap phone, e-mail, and fax numbers) for when you may have lost or missed assignments, so you can get them when away from work or class.
- Work as part of a team with more organized people
- Minimize caffeine, nicotine, alcohol, and recreational drugs
- Regular exercise patterns (3+ times/week) for increased attention, better health, better stress management.
- Get counseling and information about ADHD
- Consider cognitive-behavioral therapy to help you develop more constructive self-statements
- Get advice, assistance, and books on time-management and organizing and obtain coaching/mentor/organizational consultant
  - estimating time needed to accomplish tasks
  - targets for completion dates
  - realistic targets for workload
  - self-monitoring for fatigue and attentiveness
  - 15 min+/day
- Get vocational assessment and/or career counseling to obtain a better fit between you and your job setting
- Get financial advisor

- Delegate!
- A medication dispensing system with automated reminders
- Keyfinders or put keys in a basket that always remains on a table near the front door
- Consult a professional if needed for protections and accommodations under the Americans with Disabilities Act.
- Get treatment for other problems if needed (e.g., depression, anxiety, substance abuse)
- Get couples or family counseling if needed
- Get rid of firearms, weapons—these are dangerous period and worse with folks with ADHD
- Individual therapy for clients
  - Cognitive behavioral therapy to focus on organization, anger management, social skills, etc
  - Psychodynamic psychotherapy to focus on self-esteem and feelings
- Individual therapy for parents, couples therapy for parents, or family therapy (for pediatric clients)
  - Often a critical component
- When acting out behaviors overstress individual parents, the couple, and/or the family
- When issues with individual parents or the couple are making it difficult to follow the treatment plan
- Parent Behavior Management (see separate handout)
- School (for pediatric clients)
  - A behavior plan may need to be coordinated with the school
  - Verbal feedback from the school directly to the physician is ideal, indirect via the parents second best; bimonthly at first, then monthly, then less frequently
  - SNAP/Connors forms are also helpful, especially in the case of medications (see below)
  - Send all school reports to me
  - Send all testing to me
- Group therapy
- Cognitive behavioral groups to focus on anger management, social skills, and self-esteem
- Sonuga-Barke et al, 2013: meta-analyses of randomized controlled studies of dietary and psychological treatments for ADHD
  - When best probably blinded assessment was used, only significant interventions were:
    - Free fatty acid supplementation (e.g., fish oils)
    - Artificial food color exclusion

Medications, General

- 30% of patients do not respond to first medication intervention
- Patient may respond to treatment but have intolerable adverse events/effects
- Tailoring treatment involves a strategy, not one medication or medication dose target only
- Reasons for treatment resistance
  - Incorrect diagnosis
    - Medical or substance related condition
    - Comorbid condition causing impairment
    - Side effects causing impairment or refractoriness
    - Interfering drug-drug interactions
    - Non-adherence with medication schedule
    - Developmental differences
      - Preschoolers respond less well to stimulants, show more side effects, have slower clearance of methylphenidate
    - Systems level issues
      - Family/parent(s)
      - School
      - Neighborhood

TABLE 1 ADHD Medication Effect Size

	Effect Size
Stimulant medications	1.0[a]
α-Agonist medications, ER	0.7
Atomoxetine	0.7

Data from ref 10. 0.2 = small effect size, 0.5 = moderate effect size, 0.8 = large effect size.
[a] 0.4–0.8 in preschoolers.

The Effects of Long-Acting Stimulant and Nonstimulant Medications in Children and Adolescents with Attention-Deficit/Hyperactivity Disorder: A Meta-Analysis of Randomized Controlled Trials

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OBJECTIVE: The aim of this study was to assess the efficacy and safety of stimulant and nonstimulant medications in children and adolescents using as an outcome measure the Attention-Deficit/Hyperactivity Disorder Rating Scale-IV (ADHD-RS-IV), and to examine the effect of medications in different ADHD subtypes (i.e., inattention and hyperactivity/impulsivity).

METHODS: MEDLINE, Scopus, EMBASE, EBSCO (E-journal, CINAHL and SportDiscus), PUBMED, and The Cochrane Central Register of Controlled Trials databases were searched. Randomized controlled trials (RCTs) with parallel group or placebo-controlled studies comparing the effect of medications (stimulants or nonstimulants) in children and adolescents with ADHD were included. The main outcomes were the ADHD-RS-IV total score and subtypes (inattention and hyperactivity/impulsivity). Treatment-emergent adverse events (TEAEs) and secondary outcomes such as systolic and diastolic blood pressure, and pulse rate were considered.

RESULTS: The search strategy identified 15 RCTs, including a total of 4648 children and/or adolescents diagnosed with ADHD aged 6 to 17 years old. Overall, both stimulant and nonstimulant medications reduce the ADHD-RS-IV score with a standardized mean difference (SMD) of -0.70 (confidence interval [95% CI], -0.85 to -0.55); in subgroup analyses, the SMD was -0.83 (95% CI, -1.11 to -0.54) for stimulant medications and -0.58 (95% CI, -0.69 to -0.46) for nonstimulant medications. Similar results were observed in inattention and hyperactivity/impulsivity subtypes. The placebo group also showed a medium effect SMD of -0.68 (95% CI, -0.82 to -0.54). The most frequent TEAEs for stimulant and nonstimulant medications, respectively, were decreased appetite (28.6% and 14.2%) and somnolence (4.4% and 34.1%).

CONCLUSIONS: These results suggest that both stimulant and nonstimulant medications mitigate ADHD symptoms in children and adolescents, although subgroup analyses suggest a greater effectiveness of stimulant medications.

Nonstimulants

Drug Name	*Generic*	*Duration*	*Notes*
Catapres	Clonidine HCL	4-6 hours	Fatigue, dizziness, dry mouth, irritability, behavior problems, low blood pressure. Stopping this medicine suddenly can result in high blood pressure.
Catapres-TTS patch	Clonidine	Up to 7 days	Fatigue, dizziness, dry mouth, irritability, behavior problems, low blood pressure. Stopping this medicine suddenly can result in high blood pressure.
Intuniv	Guanfacine HCL	24 hours	Sleepiness, headache, fatigue, abdominal pain. Although rare, can cause low blood pressure and heart rhythm changes.
Kapvay	Clonidine HCL	12 hours	Fatigue, dizziness, dry mouth, irritability, behavior problems, low blood pressure. Stopping this medicine suddenly can result in high blood pressure.
Strattera	Atomoxetine HCL	24 hours	Sleep problems, anxiety, fatigue, upset stomach, dizziness, dry mouth. Although rare, can cause liver damage. Increased risk of suicide in adults aged 18-24.
Tenex	Guanfacine HCL	6-8 hours	Sleepiness, headache, fatigue, abdominal pain. Although rare, can cause low blood pressure and heart rhythm changes.

Antidepressants

Side effects include sleep problems. The FDA has also issued a warning about a connection between antidepressants and an increased risk of suicide in adults ages 18-24, especially in the first one or two months.

Drug Name	*Generic*	*Duration*	*Notes*
Aventyl	Nortriptyline HCL	8-24 hours	Anxiety, fatigue, upset stomach, dizziness, dry mouth, elevated heart rate, risk of heart arrhythmias.
Norpramin	Desipramine HCL	8-24 hours	Not recommended for children. Associated with rare cases of fatal heart problems.
Pamelor	Nortriptyline HCL	8-24 hours	Anxiety, fatigue, upset stomach, dizziness, dry mouth, elevated heart rate, risk of heart arrhythmias.
Tofranil	Imipramine HCL	8-24 hours	Anxiety, fatigue, upset stomach, dizziness, dry mouth, elevated heart rate, risk of heart arrhythmias.
Wellbutrin	Bupropion HCL	4-5 hours	Headaches. Although rare, may increase risk of seizures.
Wellbutrin SR	Bupropion HCL	12 hours	Headaches. Although rare, may increase risk of seizures.
Wellbutrin XL	Bupropion HCL	24 hours	Headaches. Although rare, may increase risk of seizures.

Medication treatment: 2007 AACAP Practice Parameters

- Screening for ADHD should be part of every patient's mental health assessment
- Evaluation of the youth should consist of clinical interviews with the parent and patient, obtaining information about the patient's school or day care functioning, evaluation for comorbid psychiatric disorders, and review of the patient's medical, social, and family histories
- If the patient's medical history is unremarkable, laboratory or neurological testing is not indicated
- Psychological and neuropsychological tests are not mandatory for the diagnosis of ADHD, but should be performed if the patient's history suggests low general cognitive ability or low achievement in language or mathematics relative to the patient's intellectual ability
  - If the parent and teacher report that the patient performs at or above grade level on subjects when given one-to-one supervision, then a formal learning disorder is less likely
  - In some cases, the patient may engage leisure activities that require the skill (e.g., reading science fiction novels) but avoid reading a history book in preparation for an exam; in such cases it is more appropriate to treat the ADHD and then determine whether the academic problems begin to resolve
  - Testing is important when there are deficits in expressive and receptive language, poor phonological processing, poor motor coordination, or difficulty grasping fundamental mathematical concepts; it is recommended to optimally treat ADHD before neuropsychological testing
- The clinician must evaluate the patient with ADHD for the presence of comorbid psychiatric disorders
  - Older adolescents with ADHD should be screened for substance abuse disorders, as they are at greater risk than teenagers without ADHD for smoking, alcohol, and other substance abuse disorders
- A well-thought-out and comprehensive treatment plan should be developed for the patient with ADHD
  - A review of 78 studies (Jadad et al, 1999)
    - 6 compared pharmacological and nonpharmacological interventions
    - Studies consistently supported the superiority of stimulant over the nondrug treatment
    - 20 studies compared combination therapy with a stimulant or with psychosocial interventions, but no evidence of an additive benefit of combination therapy was found
    - The 1997 AACAP Practice Parameter extensively reviewed a variety of nonpharmacological interventions for ADHD other than behavior therapy, including cognitive behavioral therapy and dietary modification; no evidence was found at that time to support these interventions in patients with ADHD, and no studies have appeared since then that would justify their use
    - Parental ADHD may interfere with the success of parent behavior management, so treatment of parental ADHD is often critical
    - Family system problems must also be addressed
    - The efficacy of EEG feedback, either as a primary treatment for ADHD or as an adjunct to medication treatment, has not been established
    - Formal social skills training for children with ADHD have not been shown to be effective
- The initial psychopharmacological treatment of ADHD should be a trial with an agent approved by the FDA for the treatment of ADHD
  - Stimulants (tier 1)
    - Most studied treatment option
    - Most commonly used treatment option
    - Most effective treatment option
    - First line treatment option
  - Strattera (tier 2a)
- If none of the above agents result in satisfactory treatment of the patient with ADHD, the clinician should undertake a careful review of the diagnosis and then consider behavior therapy and/or the use of medications not approved by the FDA for the treatment of ADHD
  - Wellbutrin (tier 2b)
  - tricyclic antidepressants (tier 3)
  - clonidine/guanfacine (tier 4)
- During a psychopharmacological intervention for ADHD, the patient should be monitored for treatment-emergent side effects
  - Low doses of clonidine, trazodone, or an antihistamine are often helpful for stimulant-induced insomnia
  - Melatonin in doses of 3 mg has been shown to be helpful in improving sleep in children with ADHD treated with stimulants (Tjon Pian Gi et al, 2003)
  - Cyproheptadine can attenuate stimulant-induced anorexia (Daviss and Scott, 2004)
  - If children with co-morbid ADHD and tic disorders respond only to a stimulant medication that induces tics, then combined pharmacotherapy of the stimulant and either clonidine or Tenex is recommended (Tourette's Syndrome Study Group, 2002)
  - The Pediatric Advisory Committee did not support the recommendation that a boxed warning be issued for cardiovascular events (see packet on stimulants)
  - No evidence currently indicates a need for routine cardiac evaluations before starting stimulant treatment in otherwise healthy individuals
- If a patient with ADHD has a robust response to psychopharmacological treatment and subsequently shows normative functioning in academic, family, and social functioning, then psychopharmacological treatment of the ADHD alone is satisfactory

- If a patient with ADHD has a less than optimal response to medication, has a co-morbid disorder, or experiences stressors in family life, then psychosocial treatment in conjunction with medication is often beneficial
- Patients should be assessed periodically to determine whether there is a continued need for treatment or if symptoms have remitted; treatment of ADHD should continue as long as symptoms remain present and cause impairment
- Patients treated with medication for ADHD should have their height and weight monitored throughout treatment

Specific agents (see other handouts as well)

- Strattera
  - Effective in children, adolescents and adults
  - Monitor height and weight
  - Time to response can be as long as 4 weeks
  - Dosing:
    - Start at 0.5 mg/kg/day for two weeks
    - Then consider increase to 1.2 mg/kg/day for six weeks
    - Then, if partial response, increase to 1.4 mg/kg/day
    - 1.8 mg/kg/day has also been studied
  - Side effects
    - Somnolence
    - Insomnia
    - Nausea/stomach upset
    - Headache
    - Appetite suppression
    - Blood pressure and/or heart rate increase; not clinically significant, but important in adults
    - Sexual dysfunction (in adults)
    - Hepatitis: one confirmed case and one suspected case out of 3.4 million exposures and counting
    - Suicidality (no completed suicides in any of the studies): 0.037% (of which out of 1.357 cases attempted suicide) vs. 0% placebo
  - No drug interactions with stimulants; no drug interactions with alcohol
- Wellbutrin/Wellbutrin XL
  - Children: effective in Connors et al, 1996; Barrickman et al, 1995; Casat et al, 1987; 104 children studied
  - Adolescents: no studies
  - Adults: effective in Wilens et al, 2005; Kuperman et al, 2002; Wilens et al, 2001; Wender et al, 1990 and 1 open study
- Tricyclic antidepressants
  - Nortriptyline: Prince et al, 2000 demonstrated to be increasingly efficacious through the 6th week
  - Desipramine: Wilens et al, 1996 demonstrated to be effective (attention>impulsivity>hyperactivity)
- Clonidine (Kurlan et al, 2002; Prince et al, 1996; Hunt et al, 1985 and 1986; see separate handout as well):
  - Alpha-2a noradrenergic agonist
  - Range 0.05 mg to 0.2 mg up to three times-a-day (so 0.15-0.6 mg/day)
  - Efficacy demonstrated in 3 controlled studies, 1 multi-site study, multiple open studies, and an ADHD-related sleep disorder study
  - Not as helpful with attention
- Guanfacine/Guanfacine XR (study, 2004; Scahill et al, 2001; Hunt et al, 1995)
  - Alpha-2a noradrenergic agonist
  - Guanfacine
    - Half-life 18 hours in adults
    - Range 0.5-2 mg up to three times-a-day (so 1.5-6 mg/day)
    - Efficacy demonstrated in 1 controlled study of ADHD and tics and 2 open studies in ADHD
    - Better than clonidine for attention, worse than clonidine for hyperactivity
    - Less sedating than clonidine, more agitation, insomnia, headache than clonidine
  - Guanfacine XR
    - Efficacious in 8 week, placebo controlled trial
    - Benefit slightly increased from initial 2 mg dose to 3 mg dose and then slightly more on 4 mg dose
- Provigil (see separate handout for more information)
  - Swanson et al, 2003: positive
  - 2000: failed multisite study
  - Fletcher, 2000: positiveTwo multisite studies (Biederman et al, 2005 (with 200 mg/am and 100 mg/pm) and Biederman et al (400 mg/am)):

Time in weeks	1	2	3	4	5	6	7	Final Visit
Provigil % response	20%	25%	38%	--	50%	--	52%	38%
Placebo % response	0%	8%	8%	--	22%	--	24%	18%

- Side effects
  - Insomnia 30% vs. 0% placebo
  - Headache 21% vs. 9% placebo
  - Decreased appetite 18% vs. 1% placebo
  - Abdominal pain 12% vs. 5% placebo

- 30% of patients do not respond to or cannot tolerate stimulants
  - Comorbidity is the rule in this circumstance
  - The diagnosis of ADHD could be the snapshot of a developmental process of another psychiatric condition (whose biology overlaps with that of ADHD)
  - Common co-morbid conditions:
    - ADHD + ODD (oppositional defiant disorder)
      - Adderall XR has evidence of helping both in a formal trial looking at treatment of ADHD + ODD
      - Methylphenidate products
        - Concerta has evidence of helping both
        - Klerman et al, 1997, 1998; Klein et al, 1997; Gadow et al, 1990; Barkley et al, 1989; Hinshaw et al, 1989
      - Strattera has evidence of helping both
    - ADHD + depression
      - Wellbutrin alone or augmentation (e.g., Daviss et al, 2001)
      - SSRI augmentation (Gammon and Brown)
      - Tricyclic antidepressant alone
      - Strattera
      - Mood stabilizer
    - ADHD + bipolar disorder
      - Second generation atypical antipsychotic
      - Mood stabilizer
      - Second generation atypical antipsychotic and a mood stabilizer
      - Wellbutrin
      - Benzodiazepine
      - Lamictal (little to no data)
      - Some of the above with:
        - clonidine
        - stimulant
      - Evidence of safety of stimulants in youth with bipolar disorder (Tilman and Geller, 2006; Galanter et al, 2003; Carlson et al, 2000, 2003)

    - ADHD + tics/Tourette's
      - Strattera: some data indicating lack of tic exacerbation with a trend towards reduction in tics
      - tricyclic antidepressants (namely desipramine) effective in improving tics (Spencer et al, 2003; Singer et al, 1999)
      - Clonidine (Scahill et al, 2003; Kurlan et al, 2002; Leckman et al); guanfacine
      - Benzodiazepine
      - Any of the above with:
        - tricyclic antidepressant
        - clonidine (NB: clonidine plus methylphenidate → reduction in tics (Hazel et al, 2003; Kurlan et al, 2002); no evidence of cardiovascular risk or events in either study)
        - stimulant (stimulants may exacerbate underlying tic disorders; methylphenidate products may be less likely to do so (Castellanos et al, Gadow et al))
      - Second generation (atypical) antipsychotic medications
      - Haldol or Pimozide

    - ADHD + anxiety
      - General
        - Strattera alone (Sumner, 2005)
        - SSRI
        - Tricyclic antidepressant alone
        - Any of the above with:
          - stimulant
          - tricyclic antidepressant
          - clonidine, guanfacine
      - OCD
        - SSRI
        - Tricyclic antidepressant (namely Anafranil)
        - Either with:

            - stimulant
            - Strattera
            - tricyclic antidepressant
            - clonidine, guanfacine
        - ADHD + substance abuse
            - 1st line (a): Strattera
            - 1st line (b): Wellbutrin
            - 2nd line: stimulants
            - 3rd line (a): clonidine/guanfacine
            - 3rd line (b): combined treatment
- Other options
    - Nicotinic/cholinergic agents
        - Nicotinic agents
            - AZD3480 (aka TC-1734)
                - Highly selective for alpha4beta2 nicotinic receptor
                - 50 mg/day helpful; similar effect sizes as stimulants; higher effect size than non-stimulants
        - Nicotine partial agonist?
        - Donepezil
        - Galantamine
    - Memantine
        - Surman, 2012: open study, adults, 10 bid, 12 weeks: +
    - Fish oils
    - Lithium
    - Mood stabilizers
    - Carbamazepine
    - ?Abilify
    - Being investigated
        - Evidoxetine
            - Lin et al, 2014
        - Dasatroline
            - Neuropsychopharm (2 adult RCT's), 2015
        - Metadoxine
            - Manor et al, 2013
        - Centanafadine
            - Wilens et al, 2014
- Options that have been demonstrated to NOT be effective
    - Buspar (a positive open study but a negative multisite trial)
    - Blue green algae
    - Huperzine
    - Gingko
    - Pycnogenal
    - Prohistamine agents
    - Cholinesterase inhibitors
    - Nicotinic partial agonist
    - Mixed catecholamine inhibitor
    - NE/DA reuptake inhibitor
    - Ampakines-mixed
    - Amino acids

- Biology of ADHD: see separate handout

Unreasonable beliefs of parents and of youth:

Parents

- Perfection/obedience
    - Teens with ADHD should behave perfectly and obey their parents all the time without question
        - Instead: strive for high standards and accept imperfections
    - Homework always on time
        - Instead: encourage but accept…
    - Always come to class prepared
        - Instead: keep working on organizational techniques but accept imperfection
    - Always do papers for the love of learning
        - Instead: recognize teens with ADHD need salient, external reinforcers to motivate their behavior
    - Should never get speeding tickets

        - Instead: know that all teens with ADHD get at least one speeding ticket; he should be responsible for paying for it and taking his medication
    - Should never have an motor vehicle accident
        - Instead: know that most teens with ADHD will get in one MVA; she should take her medicine and do her best
    - Should never adjust radio while driving
        - Instead: work on avoiding this and know it may still happen
    - Should always stop completely for stop signs
        - Instead: work on modeling good driving behavior for your teens; your teen will only do as well as you do
    - She be perfect in church or synagogue or mosque
        - Instead: hope for no major disruptions and look for alternative youth group experiences
    - Should impress all with love of family gatherings
        - Instead: allow space and expect attendance at some, not all, functions
    - Should never treat us disrespectfully
        - Instead: allow some rebellion and backtalk—it's part of growth and independence—he shouldn't curse or ridicule severely and might be expected to apologize occasionally
    - Should always get out of bad mood when told to change her attitude
        - Instead: recognize that people with ADHD are moody by nature; she should let you know when she is in a bad mood and wants to keep to herself
    - Should put away dishes the first time I ask
        - Instead: know it won't happen the first time, but after several reminders, "act, don't yak" (apply consequences)
    - Should always get the room spotless
        - Instead: he should get it generally neat; spotless isn't realistic
    - Should never waste electricity by leaving the lights on
        - Instead: know she is just forgetful; work on a reminder system but know it's the least of your worries
    - Shouldn't be on cell phone when I've sent him to room to clean up
        - Instead: know teens with ADHD get off task; work on redirecting him and if it happens too much, assume it's opposition and take it away.
- Malicious Intent
    - My teen misbehaves on purpose to annoy me or get even with me
        - Instead: know that most of the time teens with ADHD just do things without thinking; they aren't planful enough to connive or plan
    - She talks disrespectfully, mouths off on purpose
        - Instead: know impulsive teens just mouth off when frustrated
    - Doesn't follow instructions on purpose to get me angry
        - Instead: teens with ADHD are allergic to effort; they don't take the time to plan to upset their parents
    - She shuffles her feet and plays with her hair to annoy me
        - Instead: teens with ADHD just can't contain themselves; try not to attach meaning to her restlessness; try to ignore it
    - He buys impulsively just to waste our money
        - Instead: poor delay of gratification is part of ADHD, as is impulsivity; don't give any extra money for lunch or gas.
- Love and appreciation
    - My teen should love and appreciate all the great sacrifices I make; if she really loved me, she would confide in me more
        - Instead: teens with ADHD are often self-focused so they don't show appreciation until they grow up and have their own children with ADHD; and it's natural for teens to keep more to themselves as they individuate; as long as I am available when she wants to talk, that's all I can expect; spending time alone has nothing to do with love; it has to do with wanting privacy as one becomes more independent.
- Ruination
    - If I give my teen too much freedom, she will mess up...ruin her life.
        - Instead: know that Kids, like adults, do mess up on occasion; this is how we learn responsibility. You pullback on freedom for a while, and then give another chance.
    - If room messy, will grow up to be slovenly and unemployable
        - Instead: remind yourself that one has little to do with the other.
    - If home late, she'll be pregnant, on drugs
        - Instead: in the absence of evidence, withhold judgment while finding ways to discuss safety
    - If fight with sibs he will never learn to get along with others, won't have friends, will be depressed, might commit suicide
        - Instead: know that all kids fight from time to time; that is how they learn how to be good friends; your concern is proof that you're monitoring your child and providing him or her with the resources and support they need to minimize demoralization.

Unreasonable beliefs of parents and of youth:

Youth

- My parents rules are totally unfair; my parents are ruining my life; they just don't understand me
    - how many other teens have gone though the same thing? They turned out OK. So will I.
- Why should I come home earlier than my friends; they'll think I'm a loser; I'll lose all my friends

        - Instead: my friends are loyal; they'll understood my parents are rigid with curfew. I won't lose any friends.
    - Why do I get stuck doing all the work? And I don't need any reminders. I do it totally on my own.
        - Instead: parents and siblings do chores too. I actually don't do them enough on my own. I need to allow myself to accept a little help
    - My teacher is unfair; she picks on me all the time. I always get stuck doing extra homework. I'll never have time for fun.
        - Instead: maybe she does pick on me. There could be a reason. I'm rarely with the class or know the answer when she calls on me. Maybe if I kept up with the work, she wouldn't call on me all the time.
    - I don't need medicine any more. I'm grown up now and I can handle everything on my own
        - Instead: maybe I need to see whether I do better or worse on or off the medicine. I'll keep an open mind about it.
    - Getting material things is a sign that your parents love you; getting your way is a sign that your parents really love you.
        - Instead: material things don't tell you whether someone really cares about you. Neither does getting your way all the time.
    - If my parents really loved me, they would let me go to the rock concert with my friends.
        - Instead: if they really love me and think it is dangerous to go to the concert, they would try to stop me. I won't use this to judge how they feel.

- History of ADHD
    - Descriptions of the syndrome go back over 240 years
        - Melchior Adam Weikard, 1775
        - Alexander Crichton, 1798
        - John Haslam, 1809
        - Benjamin Rush, 1812
        - Jean-Etienne Dominique Esquirol, 1845
        - Heinrich Hoffman, 1865
        - Henry Maudsley, 1867
        - Charles Baker, 1892
        - Thomas Clouston, 1899
        - William James, 1890
            - "Everyone knows what attention is. It is taking possession by the mind, in clear and vivid form, of one out of what seems several simultaneously possible objects or trains of thought. Focalization, concentration of consciousness are its essence. It implies withdrawal from some things in order to deal effectively with others."
        - George Still, 1902
    - Exists in every country in which it has ever been studied
    - In 1937, first report of the efficacy of amphetamine in the treatment of disruptive behavior symptoms (by Bradley); serendipitous discovery when benzedrine (d,l-amphetamine) was used to treat post-spinal tap headaches in children with various neurologic disorders:
        - Benzedrine did not help the headaches
        - Staff observed remarkable improvements in learning and behavior
        - The children also noted the improvements and dubbed Benzedrine "the math pill."
        - Then studied 30 children 5-14 years old, all of "normal intelligence"
        - 10 mg was helpful, 20 mg caused headaches.
        - "To see a single daily dose of Benzedrine produce a greater improvement in school performance than the combined efforts of a capable staff working in the most favorable setting, would have been all but demoralizing to the teachers, had not the improvement been so gratifying from a practical viewpoint…half of the group show(ed) favorable mood changes."
    - In 1960, named "minimal brain dysfunction"
    - In 1968, re-named "hyperkinetic reaction of childhood (DSM II)
    - In 1980, re-named "attention deficit either with or without hyperactivity (DSM III)
    - In 1987, re-named "attention deficit-hyperactivity disorder (DSM III-R)
    - In 1994, 3 sub-types (inattentive type, hyperactive-impulsive type, combined type) were added (DSM IV)
    - In my opinion, a better (but clunkier) name for ADHD would be Parallel Processing Dysregulation-Executive Dysfunction Disorder, with the following subtypes:
        - Impulse Dysregulation Spectrum (ADHD, hyperactive and combined type)
        - Mood-Impulse Dysregulation Spectrum (ADHD-mood/bipolar continuum or co-morbidity)
        - Executive Dysfunction Spectrum (ADHD, inattentive type)

For more information on ADHD

- Ruth Nass, MD and Fern Levinthal, PhD, 100 Questions and Answers About Your Child's Attention Deficit Hyperactivity Disorder, 2005
- Peter Jensen, MD, Making the System Work for Your Child with ADHD: How to Cut through Red Tape and Get What You Need from Doctors, Teachers, Schools, and Healthcare Plans.
- Russell Barkley—great books (e.g., Taking Charge of ADHD, Your Defiant Child) and videotapes on ADHD and oppositional behaviors
- Edward Hallowell, Driven to Distraction; Delivered from Distraction: Getting the Most Our of Life with Attention Deficit Disorder.
- Colleen Alexander-Roberts and Paul Elliott, ADHD and Teens
- J. Marlene Snyder, ADHD and Driving: A Guide for Parents and Teens with ADHD
- Janet Heininger, From Chaos to Calm
- Ross Greene, The Explosive Child
- The Gift of ADHD, Honos-Webb
- A Mind at a Time: America's Top Learning Expert Shows How Every Child Can Succeed
- The Incredible Years: A Trouble Shooting Guide for Parents of Children Aged 3-8; Webster-Stratton
- Off-Road Parenting: Parenting Solutions for Difficult Behavior, Pacifici and Chamberlain, www.northwestmedia.com

- Henry Cloud and John Townsend, ***"Boundaries"***
- The 10 Basic Principles of Good Parenting, Steinberg
- Your One Year Old, Your Two Year Old, etc, Louis Bates Ames
- Larry Silver—videotapes on ADHD
- Children and Adults with Attention-Deficit/Hyperactivity Disorder (***CHADD***)—***www.chadd.org***—national support group/lobby group
- The Attention Deficit Disorder Association (***ADDA)***—www.add.org
- ADDitude: The Happy, Healthy Lifestyle Magazine for People with ADD by Ellen Kingsley, MA
- "Straight Talk about Your Child's Mental Health," Stephen Faraone, PhD
- "Your Child," AACAP
- "Your Adolescent," AACAP
- www.markwilsonmd.medem.com
- www.lifeskillsplus.org
- www.e-ParentCoach.com
- www.ADDplanner.com/home.html
- Watchminder2; www.watchminder.com
- Schools/camps for ADHD/LD
  - Beacon College www.beaconcollege.edu
  - Brehm Prep School/options Program at Brehm; www.brehm.org
  - Camp Kirk; www.campkirk.com
  - Camp Kodiak; www.campkodiak.com
  - CHADD/UCB Summer Camp Scholarships; www.chadd.org/summercamp
  - Eagle Hill School www.ehs1.org
  - Eagle View Ranch; www.soarnc.org
  - Landmark College Summer Programs for High School and College Students with Learning Differences; www.landmark.edu
  - NYU Summer Program for Kids with ADHD; www.aboutourkids.org
  - SOAR www.soarnc.org
  - Summit Camp and Travel www.summitcamp.com
  - Talisman Programs (adventure programs for kids with ADHD and Asperger's syndrome) www.talismancamps.com
  - The LearningCamp; Vail, Colorado; www.LearningCamp.com

Further Evidence of Morbidity and Dysfunction Associated With Subsyndromal ADHD in Clinically Referred Children
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BACKGROUND: While the diagnostic criteria for attention-deficit/hyperactivity disorder (ADHD) have evolved over the years, some children with impairing ADHD symptoms fail to meet the full diagnostic threshold for the disorder. The main aim of this study was to evaluate the morbidity and dysfunction of subsyndromal ADHD in the clinical setting.
METHODS: Subthreshold and full ADHD subjects were derived from consecutive referrals (n = 2,947) to a pediatric psychopharmacology program at a major academic center. Subjects were diagnosed with subthreshold ADHD if they met at least 1 of the following criteria: (1) their age at onset for ADHD was ≥ 7 years; (2) they had ≥ 5 but < 8 ADHD symptoms using the DSM-III-R or ≥ 4 but < 6 ADHD inattentive or hyperactive/impulsive symptoms using the DSM-IV. Healthy controls were derived from 2 identically designed longitudinal case-control studies of youth with and without ADHD. Psychiatric assessments relied on clinical structured interviews and measures of psychopathology, social functioning, cognitive ability, and academic achievement.
RESULTS: Of the 1,931 children diagnosed with ADHD, 140 (7%) were diagnosed with subthreshold ADHD. 48% of subthreshold ADHD subjects had an age at onset ≥ 7 years, and 73% had insufficient symptoms. Reanalysis of findings using DSM-5 criteria showed that only 21% of our subthreshold ADHD subjects would have met DSM-5 criteria based on age at onset of < 12 years, while 79% would have maintained their subthreshold diagnoses. Subjects with subthreshold ADHD differed from controls in the mean number of comorbid disorders; rates of mood, anxiety, and elimination disorders (all P < .001) and substance use disorders (P < .05); scores on all Child Behavior Checklist clinical and social functioning scales; scores on 7 of the 10 Social Adjustment Inventory for Children and Adolescents scales; rates of requiring extra help in school and being placed in a special class; and scores on 4 of the 5 Wechsler Intelligence Scale for Children-Revised Version subscales (excluding Digit Span) as well as in Freedom from Distractibility Index score (P < .001). Subthreshold and full ADHD subjects had similarly elevated Global Assessment of Functioning scores versus controls (P < .001), but subjects with subthreshold ADHD had fewer perinatal complications and better family functioning scores and were more likely to be female and older and to come from families of higher socioeconomic status than subjects with full ADHD.
CONCLUSIONS: Clinically referred children failing to meet full-threshold diagnosis for ADHD due to either insufficient symptoms or later age at onset have patterns of clinical features highly similar to those with the full syndrome. These results extend to previously reported findings in nonreferred samples documenting the high morbidity and disability associated with subthreshold ADHD.

Dasotraline in Children with Attention-Deficit/Hyperactivity Disorder: A Six-Week, Placebo-Controlled, Fixed-Dose Trial
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OBJECTIVE: Dasotraline is a potent inhibitor of presynaptic dopamine and norepinephrine reuptake with a pharmacokinetic profile characterized by slow absorption and a long elimination half-life. The aim of this study was to evaluate the efficacy and safety of dasotraline in children with attention-deficit/hyperactivity disorder (ADHD).
METHODS: Children aged 6-12 years with a Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) diagnosis of ADHD were randomized to 6 weeks of double-blind once-daily treatment with dasotraline (2 or 4 mg) or placebo. The primary efficacy endpoint was change from baseline in the ADHD Rating Scale Version IV-Home Version (ADHD RS-IV HV) total score at week 6.

RESULTS: A total of 342 patients were randomized to dasotraline or placebo (mean age 9.1 years, 66.7% male). Treatment with dasotraline was associated with significant improvement at study endpoint in the ADHD RS-IV HV total score for the 4 mg/day dose versus placebo (-17.5 vs. -11.4; $p < 0.001$; effect size [ES], 0.48), but not for the 2 mg/day dose (-11.8 vs. -11.4; ns; ES, 0.03). A regression analysis confirmed a significant linear dose-response relationship for dasotraline. Significant improvement for dasotraline 4 mg/day dose versus placebo was also observed across the majority of secondary efficacy endpoints, including the Clinical Global Impression (CGI)-Severity score, the Conners Parent Rating Scale-Revised scale (CPRS-R) ADHD index score, and subscale measures of hyperactivity and inattentiveness. Discontinuation rates due to adverse events (AEs) were higher in the dasotraline 4 mg/day group (12.2%) compared with the 2 mg/day group (6.3%) and placebo (1.7%). The most frequent AEs associated with dasotraline were insomnia, decreased appetite, decreased weight, and irritability. Psychosis-related symptoms were reported as AEs by 7/219 patients treated with dasotraline in this study. There were no serious AEs or clinically meaningful changes in blood pressure or heart rate on dasotraline.

CONCLUSION: In this placebo-controlled study, treatment with dasotraline 4 mg/day significantly improved ADHD symptoms and behaviors, including attention and hyperactivity, in children aged 6-12 years. The most frequently reported AEs observed on dasotraline included insomnia, decreased appetite, decreased weight, and irritability.