

Adolescents and ADHD

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What is in the plan

- ▶ What is Adolescence
 - ▶ What happens in the brain
- ▶ What is ADHD
 - ▶ What happens in the brain
- ▶ Adolescents with ADHD
- ▶ Hormones and ADHD
 - ▶ Male / female
- ▶ Sex, Drugs and Fast Cars
- ▶ Useful Resources

What isn't in the plan

- ▶ I won't be able to give individual advice around strategies or management
 - ▶ I won't know your child without asking questions that would break their confidentiality
 - ▶ You will be the expert on your child. I can only speak in generalities

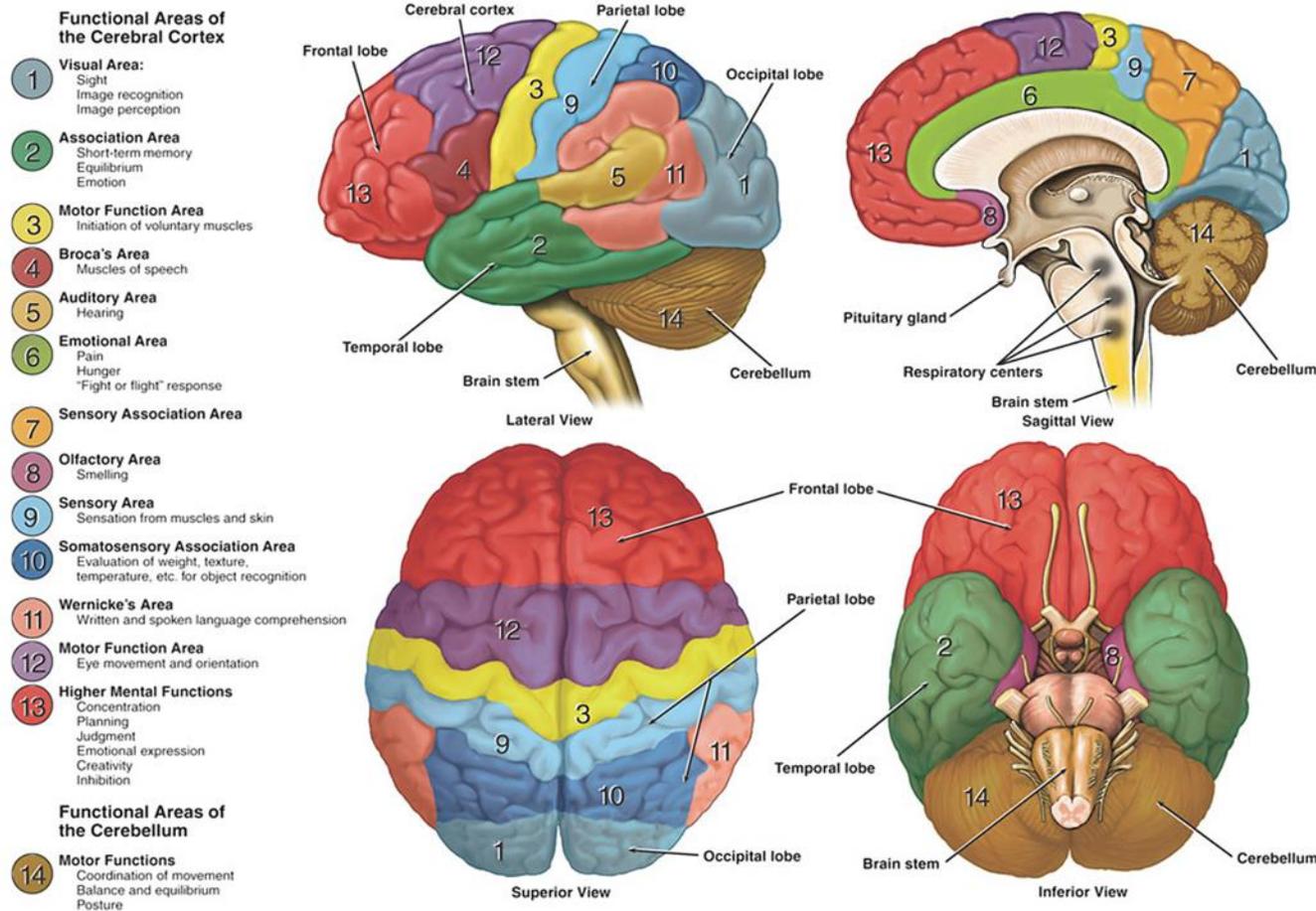
Assumptions

- ▶ Most of you will know the basic ideas around ADHD.
- ▶ For those of you who don't,



- ▶ <https://adhdrichmond.org/adhd-a-guide>

Assumptions - you might not know much about brains

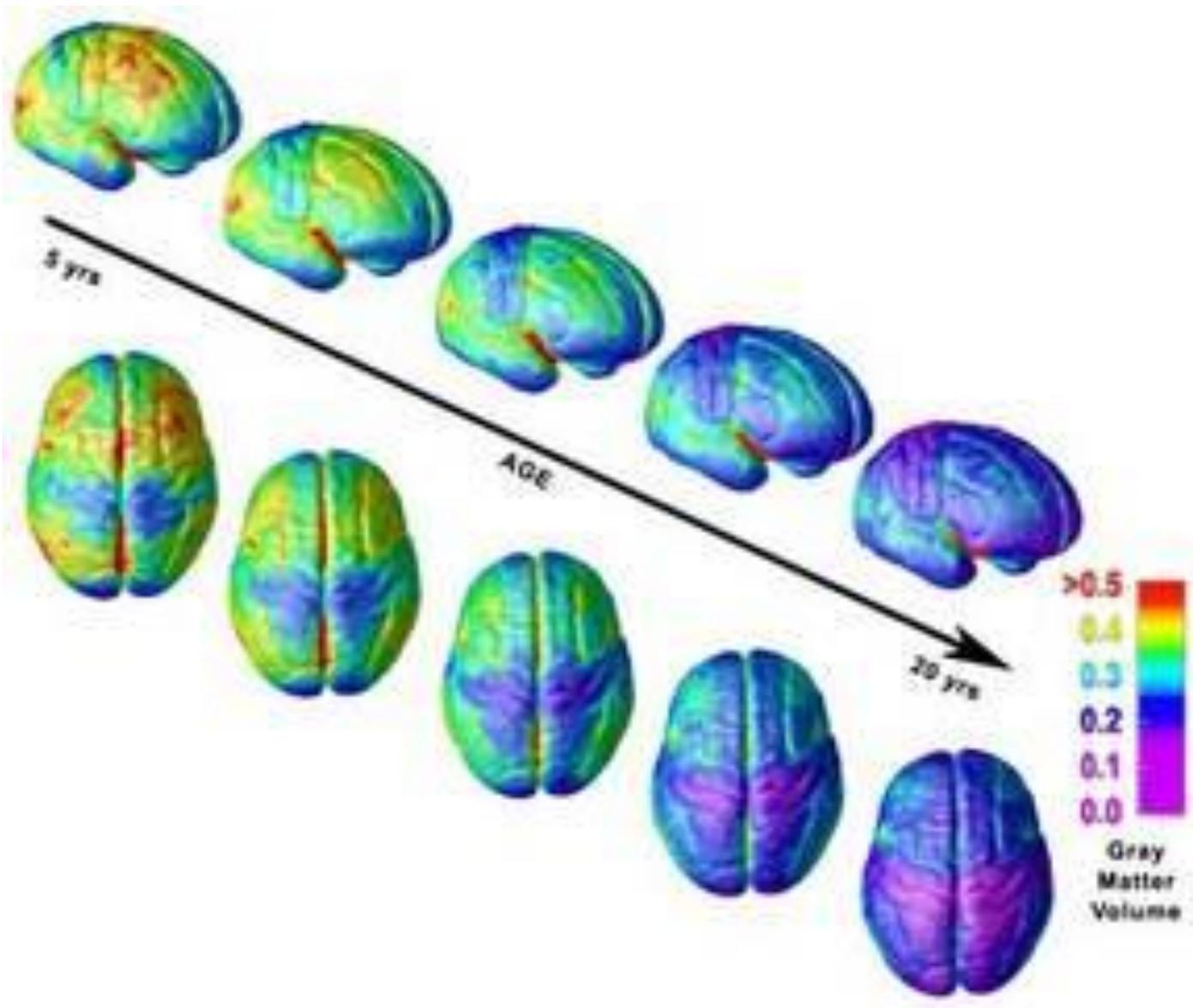


What is Adolescence

- ▶ Usually defined as the period of time between puberty and becoming a legal adult
- ▶ Not always the same as being a teenager (13-19)
- ▶ Physical changes
 - ▶ Brain, body, hormones
- ▶ Psychological changes
 - ▶ Changes in processing speed, abstract thinking
- ▶ Social changes
 - ▶ Depends on culture, but move to peer group, and more responsibility

Adolescent Brain Changes

- ▶ A lot of growth in the brain just before puberty, then during puberty the brain prunes and shapes the connections
- ▶ The brain matures from back to front
 - ▶ This means the emotional centres develop before the thinking and planning centres
 - ▶ Often use emotional centres to mediate responses
 - ▶ Gut Feelings, use emotional centre to read other people
- ▶ Sensation seeking areas more easily activated, but also need to more stimulation to get the same level of reward



Key tasks of adolescence

1. Adjust to developing bodies, and feelings
 1. Sexual identity, romantic relationships
2. Develop abstract thinking
 1. Is it OK to steal a loaf of bread? What about to save a starving child?
3. Develop perspective taking
 1. The ability to put self in someone else's shoes
4. Develop coping skills
 1. Problem solving, manage risk taking, conflict resolution
5. Develop moral standards and belief systems
 1. Normal to question childhood beliefs and adopting more personal belief system

Key tasks of adolescence

1. Understand and express complex emotions
 1. Understanding of other's emotions, and expressing more complex emotional states
2. Form friendships that are close and mutually supportive
 1. Friendships shift from groups with shared interests to groups with shared values and ideas
3. Develop identity
 1. Sense of self and how you connect to others
4. Taking on Mature Roles and Responsibilities
 1. Family, community, commitment
5. Renegotiating relationships with parents
 1. Separation from, developing independence, autonomy

Adolescence

- ▶ All these tasks important, but not all achieved gracefully.
- ▶ Some degree of trial and error. Skills are new, unpracticed and so often clumsy.
- ▶ “I’m going out and you can’t stop me”
VS
- ▶ “I’m worried about fitting in, and want to make a good impression. I want to be independent and make my own decisions and I’d like to stay out an hour later and I think I can manage that without it disrupting my sleep too much. On balance the benefit from staying out a longer with my friends outweighs the risk of me having to have a lie in the next day”

Adolescence

- ▶ Mood swings are quite normal
- ▶ Spending more time with friends than family
- ▶ Pushing boundaries and challenging rules
- ▶ Experimenting and taking risks

ADHD

- ▶ Difficulties in
 - ▶ Attention
 - ▶ Hyperactivity
 - ▶ Impulse control
 - ▶ Emotional regulation

ADHD Brain

- ▶ The ADHD brain tends to be smaller. This is nothing to do with intelligence
- ▶ The Frontal Lobes mature later than in people without ADHD.
- ▶ There are lower levels of dopamine in the reward centres. Young people with ADHD tend to risk take more, and need more repetition and immediate reward to learn.

Reward network

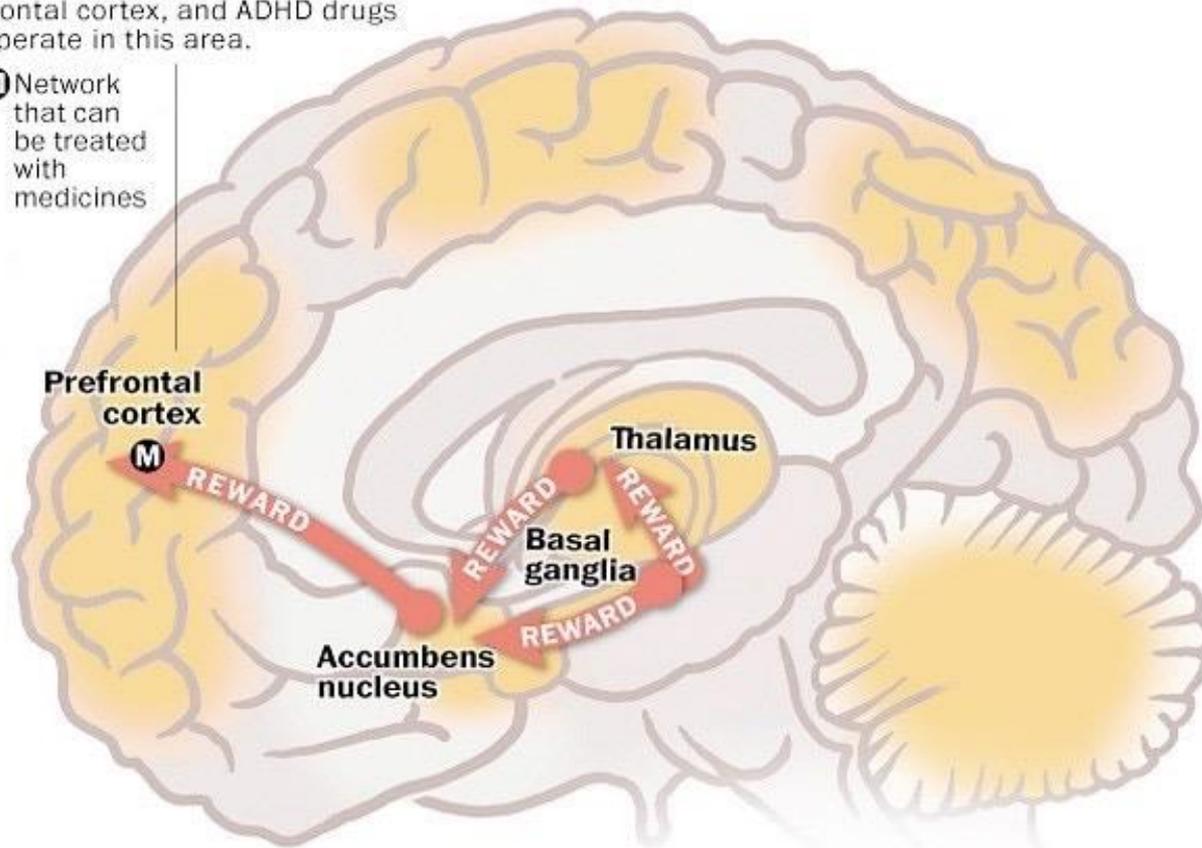
Choosing what's important

Signals in this network tell us, "Wow, this deserves our attention!" The reward center may be understimulated and late to develop in children with ADHD, making it hard for them to choose among competing things. Hyperactivity, impulsivity and inattention are also related to this network.

The decision zone

Networks flow through the prefrontal cortex, and ADHD drugs operate in this area.

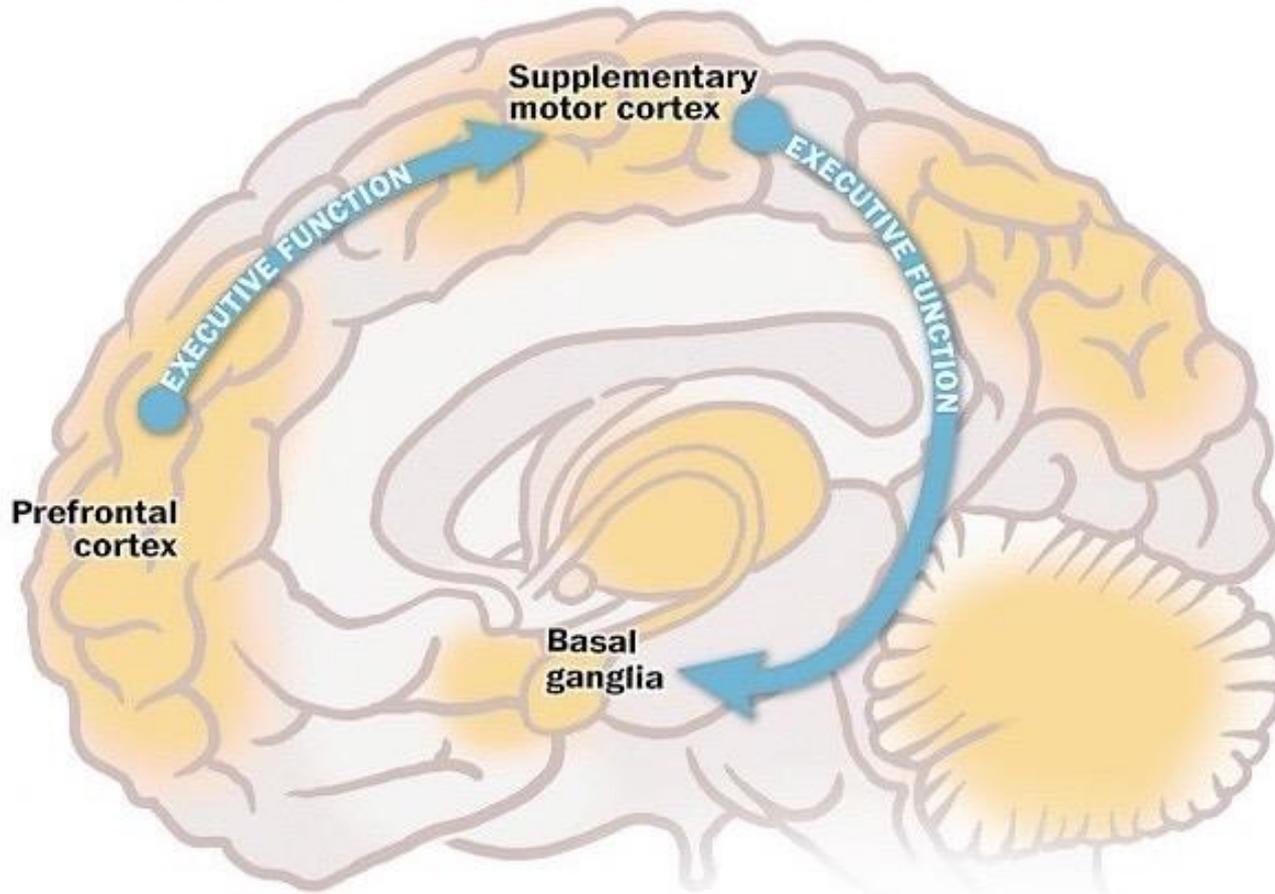
M Network that can be treated with medicines



Executive function network

Making a game plan

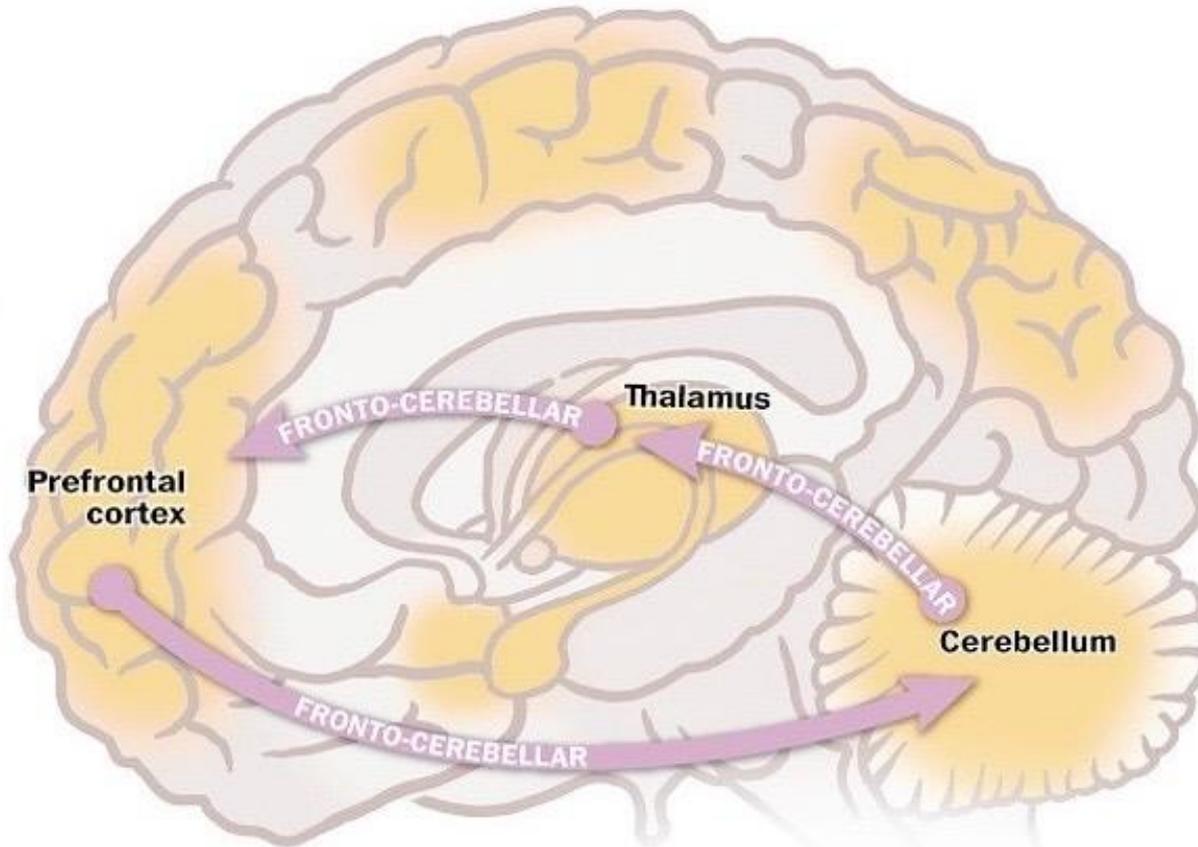
After you choose what to do, this network figures out how to do it. Executive function includes planning, organization and working memory. About half of people with ADHD have executive dysfunction; no medication effectively treats it.



Fronto-cerebellar network

Moving and thinking efficiently

The cerebellum increases coordination, precision and efficiency in movement and thought processes. It may also function as an internal timekeeper, so signal disruption in this network may contribute to time management problems.

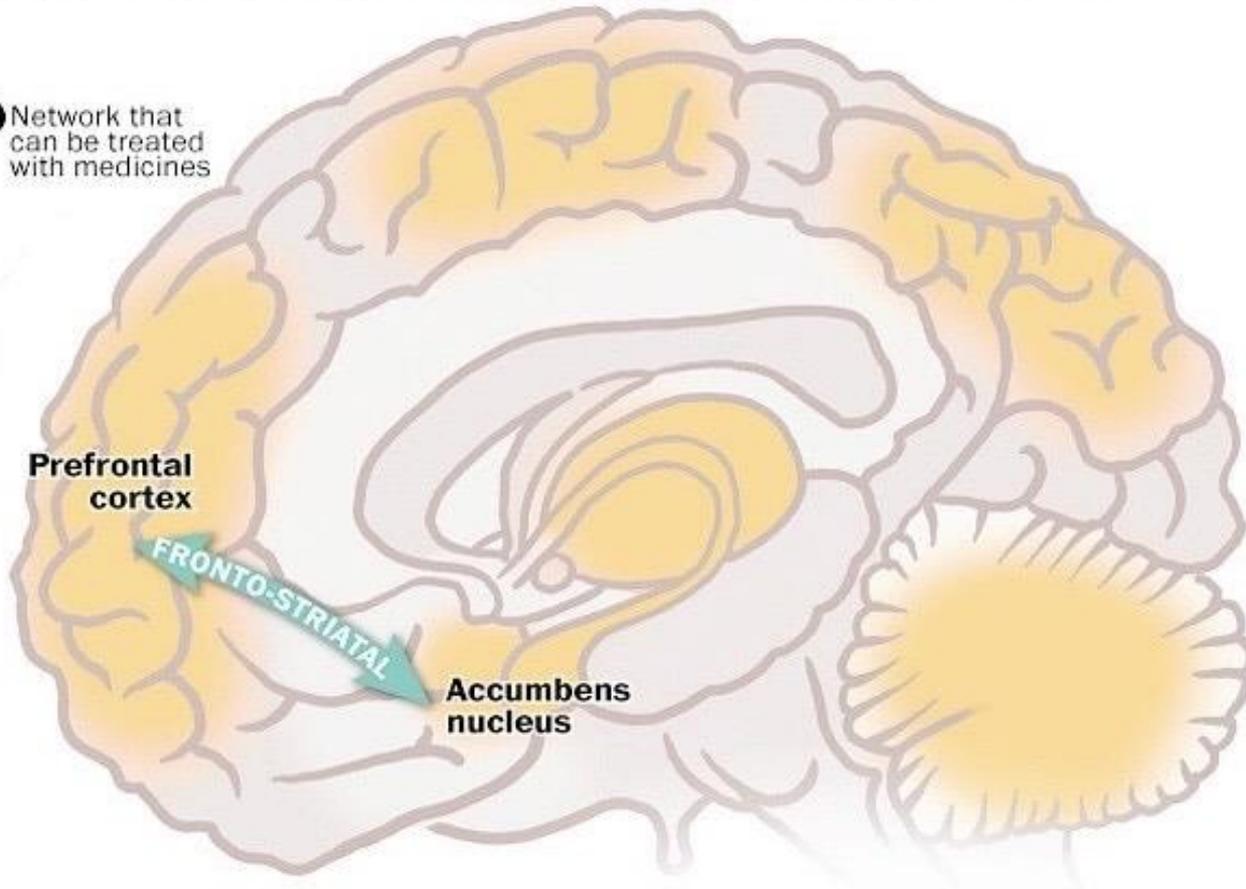


Fronto-striatal network

Deciding to focus

This lets us switch smoothly between tasks, filter out distractions and pick out relevant information from our environment. The network is thought to be underactive in people with ADHD and may contribute to hyperactivity, impulsivity and distractibility.

M Network that can be treated with medicines

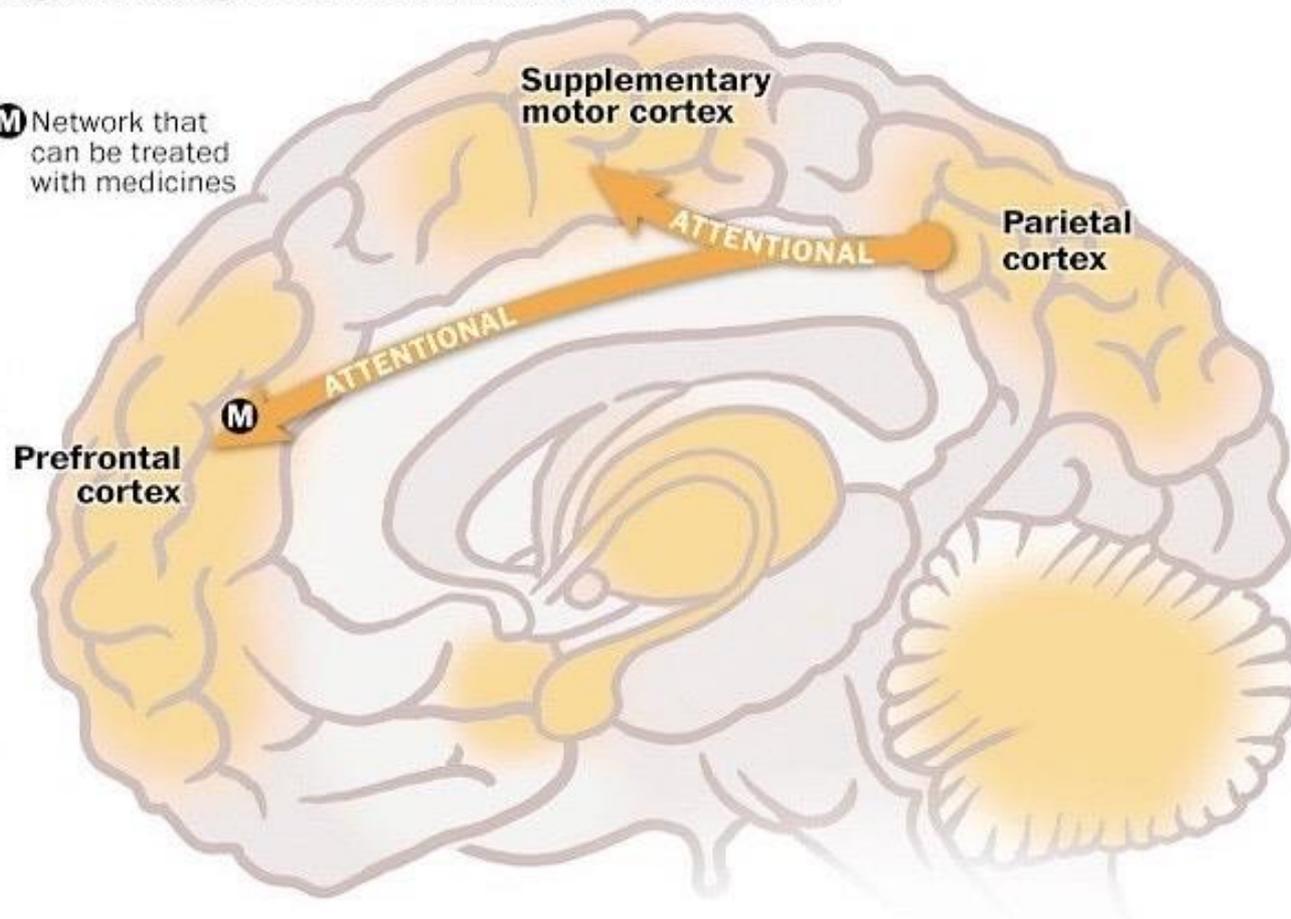


Attentional network

Staying on task

Once you've decided to pay attention to something, this network sustains that attention. Not all ADHD kids are hyperactive. Some are inattentive: more easily distracted, forgetful, disorganized and unfocused than their peers.

M Network that can be treated with medicines



- ▶ Previous images by Dr Sanil Rege
 - ▶ Neurobiology of Attention Deficit Hyperactivity Disorder
 - ▶ <https://psychscenehub.com/psychinsights/neurobiology-of-adhd/>

Adolescents with ADHD

- ▶ Double whammy
 - ▶ Mood swings are quite normal, but ADHD can magnify
 - ▶ Spending more time with friends than family, but more easily swayed, more friendship dramas, less stable friendships
 - ▶ Pushing boundaries and challenging rules - more impulsive, less able to plan ahead, and so sometimes negotiation harder
 - ▶ Experimenting and taking risks - more likely to take risks, less likely to think through consequences, slower to learn from mistakes

Key tasks of adolescence

1. Adjust to developing bodies, and feelings
 1. Sexual identity, romantic relationships
 2. Bodies often develop before psychological maturity
2. Develop abstract thinking
 1. Is it OK to steal a loaf of bread? What about to save a starving child?
 2. Frontal lobes take longer to mature
3. Develop perspective taking
 1. The ability to put self in someone else's shoes
 2. Frontal lobes take longer to mature
4. Develop coping skills
 1. Problem solving, manage risk taking, conflict resolution
 2. More impulsive, frontal lobes take longer to mature
5. Develop moral standards and belief systems
 1. Normal to question childhood beliefs and adopting more personal belief system
 2. Can be more easily swayed

Key tasks of adolescence

1. Understand and express complex emotions
 1. Understanding of other's emotions, and expressing more complex emotional states
 2. Yes, but more reactive
2. Form friendships that are close and mutually supportive
 1. Friendships shift from groups with shared interests to groups with shared values and ideas
 2. Yes - still happens - but can be a risk of getting in with a risk taking group
3. Develop identity
 1. Sense of self and how you connect to others
 2. Can be overshadowed by experience of ADHD, history of not being good enough
 3. Can look for quick wins "I can be good at this..." but this can be exploited
4. Taking on Mature Roles and Responsibilities
 1. Family, community, commitment
 2. Frontal lobes take longer to mature, more impulsive
5. Renegotiating relationships with parents
 1. Separation from, developing independence, autonomy
 2. Frontal lobes take longer to mature

ADHD and adolescence

- ▶ Often need to check medication
 - ▶ This is most often due to increased expectations
 - ▶ Increased academic pressure
 - ▶ Increased social expectations
 - ▶ Can be due to growth spurt
- ▶ Most common time for young people to want to stop taking medication
 - ▶ Want to be independent and prove they can do it
 - ▶ Want to fit in and be like peers
- ▶ Increased risk of co-morbid disorders
 - ▶ Depression / anxiety
 - ▶ Conduct disorder

Hormones and ADHD

Boys

- ▶ Changing testosterone levels
 - ▶ Associated with risk taking - boys with ADHD more prone to taking risks
 - ▶ Body changes, bigger stronger
 - ▶ Cant just pick up and take to their room
 - ▶ Body changes before psychologically mature
- ▶ No evidence of testosterone causing aggression at normal levels

Hormones and ADHD

Girls

- ▶ Oestrogen may enhance stimulant medication,
- ▶ Progesterone may reduce this
 - ▶ First two weeks of cycle (more oestrogen) may go better than the second two weeks (progesterone rises)
- ▶ Girls with ADHD may be more sensitive to PMS
 - ▶ More emotional reactivity?
- ▶ Body changes
 - ▶ Can be more aware and more anxious of body shape
 - ▶ Can lead to dieting or even manipulating ADHD medication

Sex, Drugs and Fast Cars

▶ Sex

- ▶ Frontal lobes not as mature, fewer problem solving skills
 - ▶ Relationships can be harder as a result
 - ▶ Tend to have more partners over time
- ▶ Less likely to use contraception
 - ▶ Need to plan ahead, need to remember to take
 - ▶ Girls can be better on depot / implants
- ▶ Risky Sexual Behaviour associated with ADHD, cannabis use and conduct disorder (all three together seem to influence risk)
 - ▶ More partners, more teenage pregnancy, more STI

Sex, Drugs and Fast Cars

- ▶ Drugs / Alcohol
 - ▶ Young people with ADHD more at risk of drug taking
 - ▶ Risk is much more off medication
 - ▶ Self medicating
 - ▶ No evidence of stimulant medication leading to drug misuse
 - ▶ Slower dopamine rise in ADHD meds vs the instant dopamine rush in cocaine
 - ▶ Risk higher with conduct disorder
 - ▶ Risk of drug dealers targeting kids with ADHD
 - ▶ Low self esteem
 - ▶ Looking for a quick fix “I can be good at...”
 - ▶ See route to easy money and status, when struggling at school
 - ▶ Impulsive
 - ▶ May prevent ADHD treatment due to risks of prescribing for ADHD if also using drugs

Sex, Drugs and Fast Cars

▶ Fast Cars

- ▶ Much Higher risk of road accidents with ADHD
 - ▶ Impulsive, impatient, risk taking
 - ▶ Easily distracted
- ▶ Not a barrier to learning to drive by itself
- ▶ Always drive on ADHD treatment
 - ▶ Significantly reduces risks of accidents
- ▶ Behavioural measures
 - ▶ Always drive on meds
 - ▶ Never drive with phone on / don't have competing conversations
 - ▶ Never drive with distracting peers in back seat

Resources

- ▶ All things ADHD

- ▶ <https://adhdrichmond.org/>

- ▶ Richmond Parenting Groups for teenagers

- ▶ https://www.richmond.gov.uk/media/7125/parenting_courses_spring_2015_descriptions.pdf

- ▶ Young People's Substance misuse team, Richmond

- ▶ https://www.richmond.gov.uk/single_point_of_access