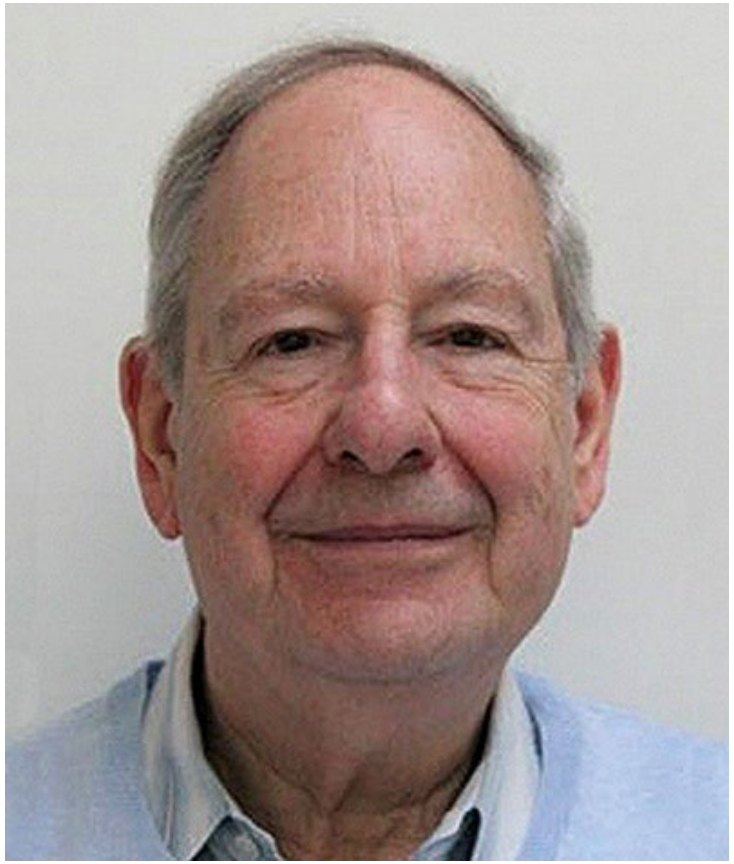
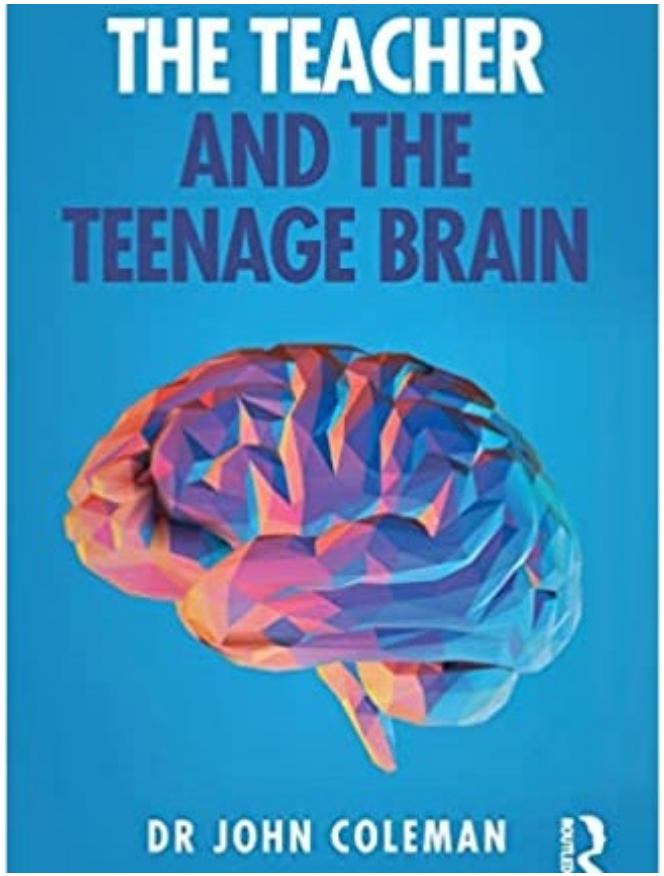
THE TEENAGE BRAIN
Implications for mental health in schools

Dr John Coleman

About Dr John Coleman





This presentation is a summary of the BrainWaves webinar given by Dr John Coleman, based on his book '*The Teacher and the Teenage Brain*'.

John trained as a clinical psychologist and was formerly a Senior Research Fellow at the University of Oxford.

He is the founder of a research centre studying adolescents and their families and was awarded an OBE for services to young people in 2001.

Further information about the teenage brain may be found in the book and on John's website: www.jcoleman.co.uk

This is new(ish) knowledge!

- We didn't know what happens in the teenage brain till c20 years ago.
- We used to think the brain stopped developing at end of childhood.
- As a result of brain imaging and scanning, we now know there are very significant changes occurring in teenage brains – second only to development in the first 3 years of life…
- … and the experiences young people have and the stimulation that they receive (or don't) has an significant impact on their brains.

Positive changes to the teenage brain

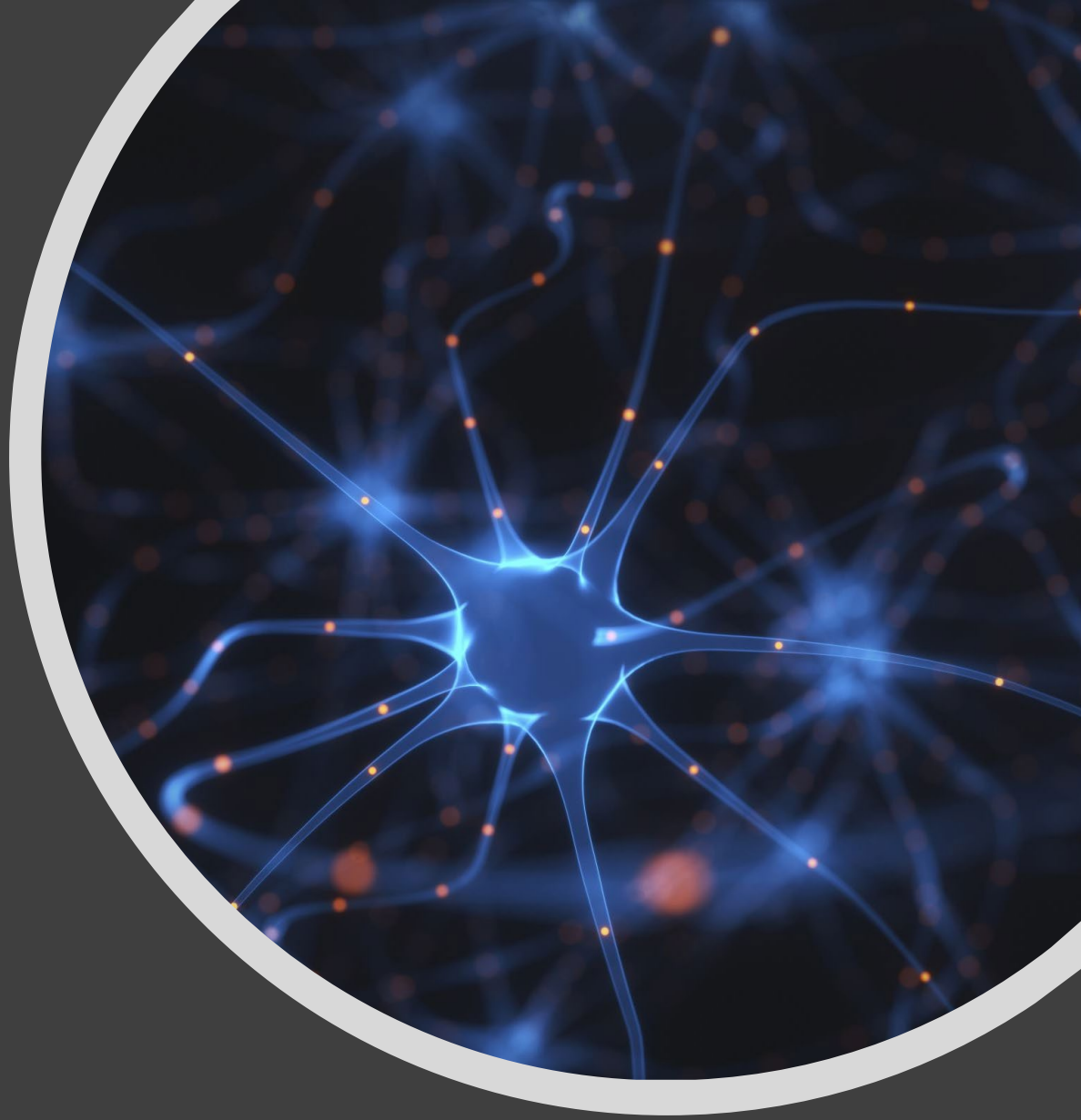
The brain matures during adolescence:

- the way it functions gets more efficient
- the impulses travelling around the brain get faster
- the two different hemispheres within the brain become better connected - allowing young people to use the capacity of their brain more efficiently.

As a result, we see an improvement in teenager's memory, abstract thinking, scientific reasoning and language.

Negative changes to the teenage brain

- In the period before adolescence, there is an upsurge of neurons (nerve cells) in the grey matter of the brain.
- During adolescence, these neurons are ‘pruned’, to allow the neurons that are not being used to die away and the remaining neurons to be strengthened.
- This leads to an average 17% loss of neurons in the grey matter during the teenage period….
- … and produces an underlying period of uncertainty, confusion and difficulty in decision-making for teenagers.
- Ultimately though, pruning allows the brain to become a *‘leaner, meaner machine’.*

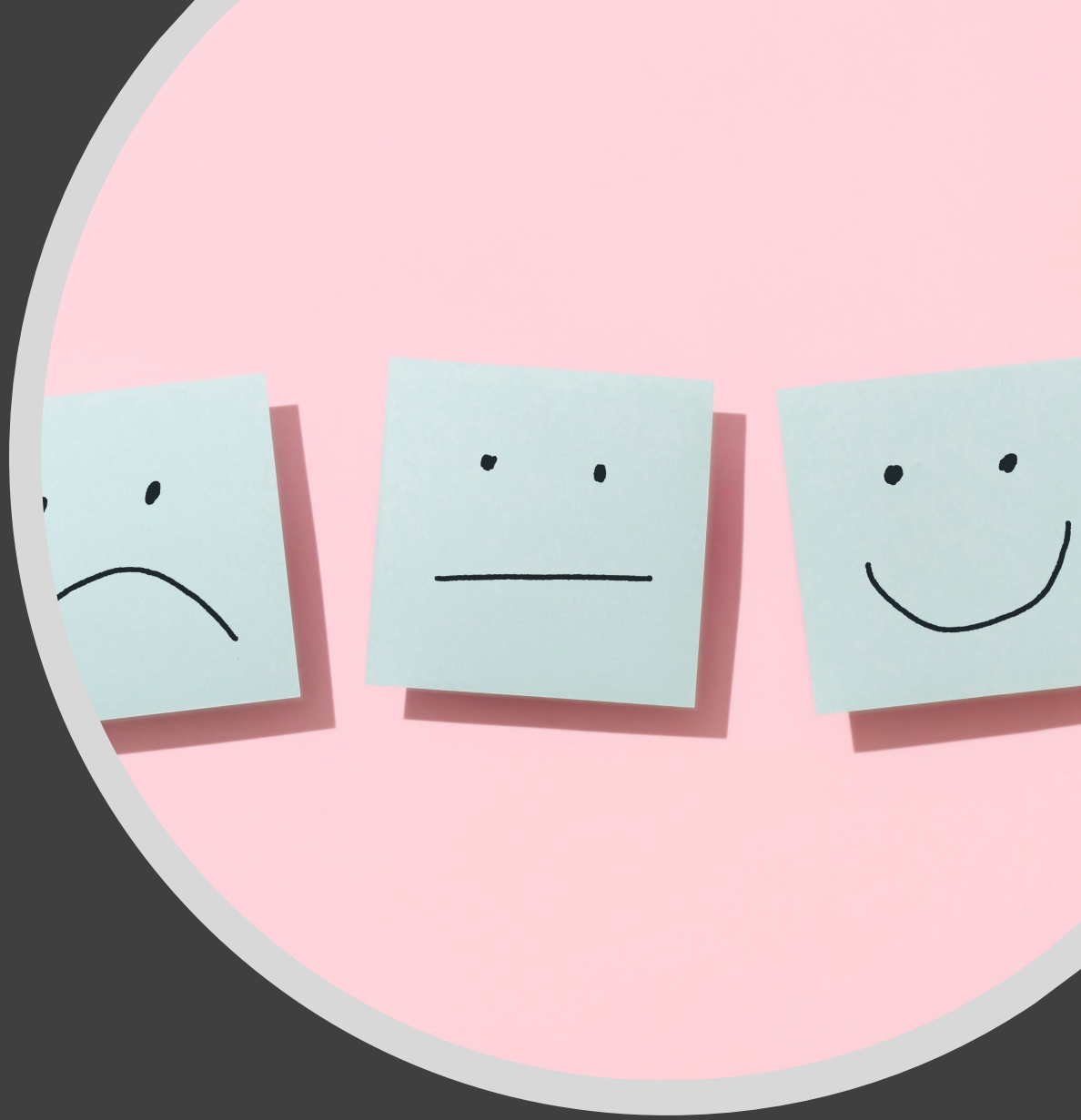


Managing emotions

- Emotional regulation is still immature at this stage – it's normal for teenagers to have times when it is hard to regulate their feelings.
- When adults experience stress and anxiety, we manage those feelings through the prefrontal cortex: the sensible part that allows you to keep perspective.
- For teenagers, the prefrontal cortex is still in development (and can continue developing up until the mid-20s) so their reactions and emotions can be ruled by the more-developed amygdala – the emotional part of their brain.
- It just takes time for the prefrontal cortex to develop and become more dominant than the amygdala.

The impact of hormones

- There are dozens of hormones in the brain which fluctuate daily.
- But in the teenage brain, that fluctuation is much greater – particularly in the hormones that affect mood, wellbeing, stress etc.
- Mood swings, catastrophic reactions, strange feelings etc are completely normal and to be expected during the teenage years.
- So understanding all of this is really helpful for a teenager to know – they know that others are experiencing it too.



The role of dopamine

- Dopamine is the ‘reward’ hormone.
- There are more dopamine receptors in the teenage brain than at any other age.
- This pushes them to look for rewards, making rewards very important to teenagers.
- They are more likely to take risks, seek new experiences, thrills and pleasure-filled activities.

… and melatonin

- The hormone that makes us sleepy.
- It’s released much later in the teenage brain, making it more difficult for teenagers to get to sleep. This results in many young people not getting enough sleep.
- The average recommended sleep time is 8-10 hours for 13-18 year olds.
- Adults are able to get rid of the melatonin in their system by the morning, but teenagers will still have melatonin left. So they are more likely to be drowsy for the first few lessons. Look at your curriculum and realise that some students might not be fully functioning first thing in the morning.

What happens when we sleep

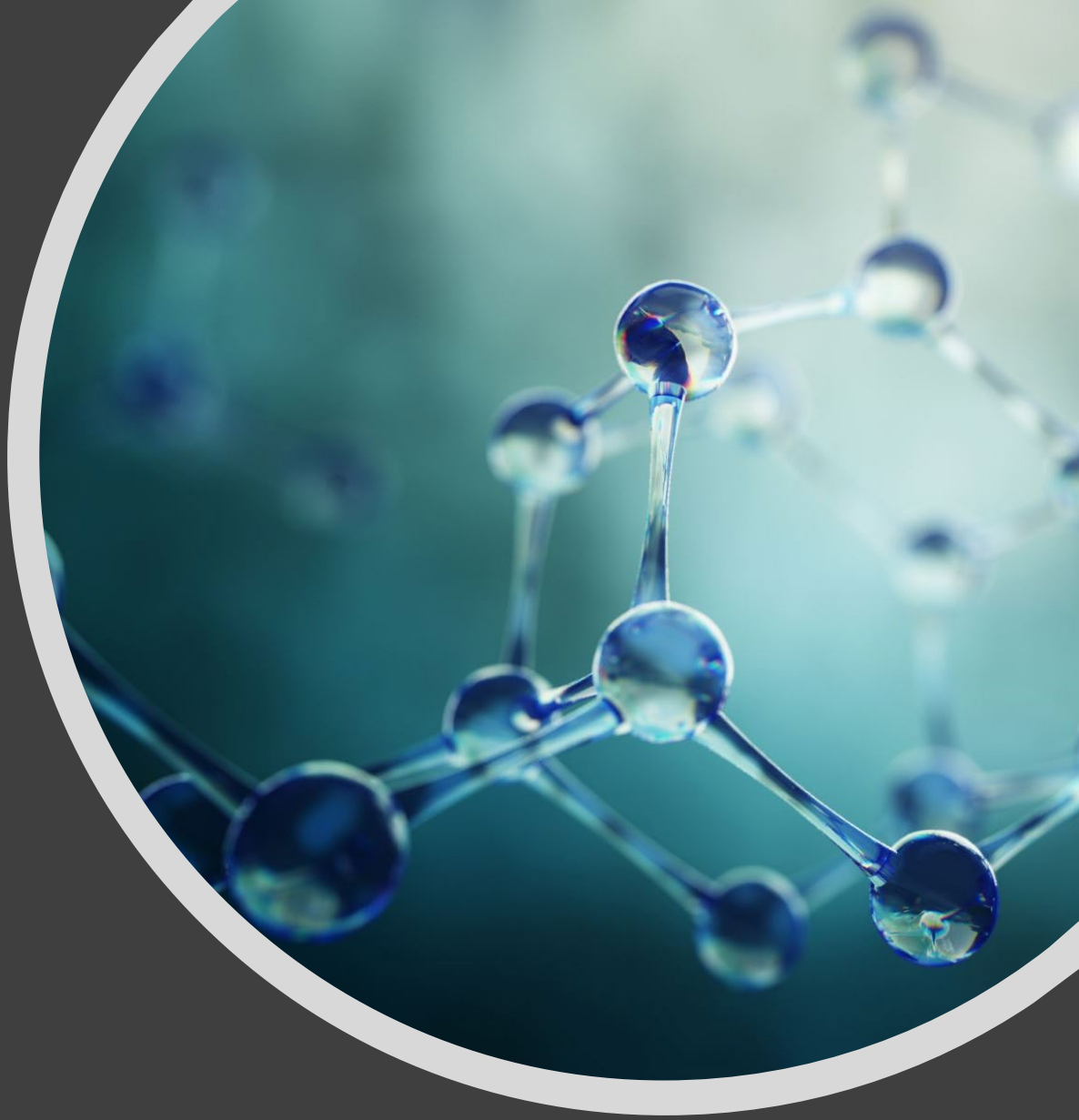
- Memory consolidation – what has been learnt during the day is consolidated and cemented in the brain (i.e. passed from short-term long-term memory).
- The brain recycles waste products that collect around the neurons during the day.
- Growth hormones are released.
- All these are very important for learning and development – and less than 6 hours sleep a night will definitely impact on learning and mood.

How to help teenagers during this phase

- Make sure they know about the changes going on in their brain. Just knowing what's happening and understanding that they're not the only ones experiencing these changes is hugely reassuring and empowering.
- Make sure they understand the positives – that their maturing brain is enabling the advanced learning that is needed at this age.
- Routines can really make a difference – the more young people develop positive routines, the more it helps the develop the prefrontal cortex and emotional regulation.
- The quicker they can get the prefrontal cortex to mature, the better they will become at emotional regulation, planning, problem-solving etc.

Advice for students to “beef up their prefrontal cortex”

1. Be curious – push yourself, try new things, develop new interests – the more you do these things, the more it helps your prefrontal cortex develop.
2. Limit gaming and social media - the more proactive and engaged you can be, the more you’ll engage your prefrontal cortex. So sitting passively and scrolling / gaming, does not stimulate your prefrontal cortex to develop.
3. Get oxygen to your brain – the more active you are (and not sitting in front of screens for too long), the more oxygen gets to the brain helping the brain develop.



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