



## Your Brain on Stress January 6, 2022

### Q & A and chat conversations

**Thank you for joining us! Feel free to ask questions in the chat during the presentation.**

#### **Do you have slides for brain structure? Thanks!**

(Dr Hay) All the slides are available, just email [ces@ahs.ca](mailto:ces@ahs.ca)

#### **Do neurons replenish?**

(Dr Hay) Yes! They can regrow, and your brain can form new neurons. Most of the new neurons grow in childhood and adolescence, but they can grow and reform throughout life

#### **Are neurons the same as brain cells?**

(Dr Hay) Kind of! There are tons of different types of brain cells (there are support cells too!) but the main brain cells are the neurons. That's what forms all the connections that makes our thought!

Great book on my playlist at the moment is Livewired by David Eagleman about the brain reforming and growing. FASCINATING

Livewired is a great term to explain what's happening in the brain

#### **How long would it take for neurons to regrow regularly?**

(Dr Hay) There's no specific period of time that is 100% known, but we think it takes a few weeks! For example, it's thought that antidepressant medication, therapy and aerobic exercise actually help with the underlying cause of depression, by regrowing neurons and new connections; this effect typically takes 4-6 weeks for people to feel the effects!

Nutrition is also a key component of supporting good mental health.

(Dr Hay) Absolutely. A lot of great information out there about how our gut digests nutrition, and how stress affects our ability to extract nutrients; they all go together!

#### **Why would you have a dry mouth if you are stressed?**

(Dr Hay) If you think about it - you want more saliva when you're digesting, at rest! If you're stressed, you may feel less hungry, your body is prepared to run/flee rather than eat! It's more adaptive

That frog looks like me on the couch!

**Good clear info. Will there also be discussion around the other 2 stress responses: freeze and fade?**

(Dr Hay) Not in this specific presentation, because we wanted to continue to discuss the underlying process and how when this happens chronically, it affects our brains - but it's an excellent point, that the stress response can manifest in a lot of different actions other than fight/flight, such as freeze and fade, and how they relate to trauma!

(Dr Hay) As we keep talking about this, always important to know that stress can take a number of different forms, and a lot of stress we are exposed to is out of our control. It's never someone's fault or inability to "calm down" - stress is complex, and hard, and affects everyone differently for a lot of reasons, some of which are systemic factors, and some environmental, etc. There are always ways to cope and break free of that cycle and support each other, but wanted to say that it's never anyone's "fault"!

**How does stress cause depression?**

(Dr Hay) When we're exposed to chronic stress for a long period of time, it rewires our neurons; it makes it harder to turn off the stress response in the future (like in anxiety; feeling under attack all the time), the stress hormones themselves can affect our mood centers and cause lower mood; and sometimes affect how our genes express themselves. Really, it means that it makes it harder to turn off the stress response "brake"; and it continues on and is harder to control with effects on our brains. This is one of the theories for why depression develops

**It makes sense how the anxiety is created but I'm curious like xxx as to how it relates to depression? Is it a shutdown mechanism?**

(Dr Hay) Other theories on depression include things like chronic inflammation - people who have chronic diseases that are associated with high inflammation, like types of chronic arthritis, or cancer treatment, are at higher risk

(Dr Hay) Yes, exactly! When the stress response goes on for too long, it exhausts our resources, depletes our neurons, and makes it harder to recover. People diagnosed with depression have been shown to actually have really high levels of stress hormones, more than people without a diagnosis

The best explanation I've heard is stress regarding the past and anxiety can stem from stress about the future. I'm not a neuroscience major.

I have heard this too

I think it's scarier to know you're depressed than just being depressed and not knowing that you're depressed

(Dr Hay) It's almost like if you think - The first time you run from a bear or run from a threat, you feel energized. The second, third, fourth time, maybe still feel that adrenaline kick. But the 200th time, it's affected your body and brain in a way that actually can cause symptoms of fatigue, exhaustion, etc

Always great to have a breathing break - felt good.

One minute feels really long when it's quiet and when it's loud it feels like less

(Dr Hay) For breathing - your brain listens to your body too! So if you deep breathe, it actually tricks your brain into thinking there's no threat

(Dr Hay) And helps turn off the stress response!

For some reason I just turn everything into a race of "how fast can I do this??" so I get really impatient when I need to do something slowly

(Dr Hay) It's so hard not to!! Especially with the internet, and connection at all times, and work expectations - It's tough! I know what you mean

(Dr Hay) That's the sad part and why we need to break the stigma of mental health/depression and anxiety. It is NO different than needing insulin or treatment for cancer.

### **How do neurons get depleted - from stress?**

(Dr Hay) The hormones released in stress actually affect neuron growth and connections!

### **The damage caused to the neurons due to chronic stress...can this damage be undone if the stress is relieved over a period of time? Does this change the brain permanently?**

(Dr Hay) Great question! Yes we'll chat about it in treatment, but these changes can be reversed - neurons can regrow and recover!

Wonderful, thank you, Rebecca! Sorry I jumped the gun :)

(Dr Hay) No worries at all haha it's an excellent point and I'm glad you mentioned it!

(Dr Hay) A lot of social media platforms are specifically designed to give our brains "rewards" so they feel good in the short term, but often, are not a positive source of social support, and can be more isolating!

The marketing to children and youth (via smartphones) thru all the sites they are accessing on line is huge and often not recognized by parents, let alone youth/teens.

Well said!

### **In addition to the slides being available, will there be a possibility to access the recorded session after this evening? This is full of such good information I feel like I would like to watch it a couple of times :)**

(Wendy/CES) Yes, this is being recorded and will be sent out in the coming days

(Dr Hay) Often, when someone has experienced trauma or rejection, they may "test" new supports or caregivers by lashing out - it's often to see if that person will still stay, or

continue to help them or prove their assumption they are alone. Important to interpret irritability and lashing out in the context of someone may be hurting

(Dr Hay) Resources for support if you are concerned about signs of suicide in yourself, or others, are available at the end!

I see this as 'the porcupine' effect - oftentimes when someone is responding very "prickly" on the outside, we need to resist our initial temptation to back away and realize that perhaps they are needing us even more on the inside.

(Dr Hay) I love that analogy, which is a perfect way to describe it! Thank you!

Please don't forget our brains need water, and the micronutrients we get from whole foods, vegetables and fruit.

### **Is there an amount of time at a specific heart rate for it to be considered an aerobic exercise?**

For anyone interested, how it works, is that in aerobic exercise, the increased blood flow to the brain causes changes (releases a chemical called BDNF) that create neuron growth!

Great question! I am not sure a specific heart rate number, but it is best to be cardio activity (running, swimming, etc) for at least 30min with an elevated heart rate. Ideally, 150min a week is a good target, but again, all steps matter, and whatever is feasible and manageable is helpful!

### **What causes shame or embarrassment?**

(Dr Hay) Hard to say exactly, they are very complex emotions, often rooted in feelings of low self-worth. Shame is thinking, when you do something wrong, "I am bad"; vs guilt, is thinking when you do something wrong, "what I did was bad, but I am not a bad person, I can do better next time". A lot of this can come from learning in previous toxic relationships.

### **How do we get our teen to want to get help? They are seeing a therapist but refuse to share or open up to them. We've tried several different therapists.**

(Dr Hay) It's an excellent question, and one of the biggest challenges in treating adolescents. It's so hard because if the adolescent doesn't see the value in therapy, it's hard to convince someone. A lot of that motivation is out of our control, and may just take the teen time - but being open, and letting them know that support is there, without judgment, is huge, and has such a huge impact that we often don't recognize or feel like matters but it does!

**And a big page of gratitude for Madison and Rebecca!**

Thank you so much for doing this! As a counsellor in Alberta in a school, MH is so critical.

Thank you! Fabulous presentation, well done!

Thank you. That was fantastic

Thanks for the great information

Thank you so much all! Very engaging and interactive presentation.

Thank you for an amazing presentation.

Thank you. Very good presentation!

Thank you!! Love CES presentations.

Thank you kindly.

Thank you so very much for an informative presentation!

Thank you to both of you for sharing your knowledge!

Great presentation! Thanks so much!

Thank you, Madison and Rebecca. That was excellent!

It was very descriptive

Thank you that was awesome

Happy New Year

Thank you!! There is a lot of cool stuff about the brain!!

Great! We did do some in our district using [Mental Health Literacy.org](http://MentalHealthLiteracy.org) I think hearing from doctors is helpful! Thank you

Thanks for all your work

Thank you - so informative - excellent presentation!

Likewise, thank you for taking the time and effort to get this important information and message out.

Me and my teen joined this workshop and we both really got lots of information.

Wonderful presentation – looking forward to my son seeing it in his school (Webber), if you can?

Thank you for the resources.

Very helpful. Watched it with my 2 teens and they learned a lot!