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**What Happens When the Brain
Gets “Sick”
Module 3A**

WHEN THE BRAIN GETS SICK

- When the brain gets sick a specific part of the brain may not be working well or may be working in the wrong way
- Or: when a brain network is disrupted and the communication pathways between different parts of the brain are not working properly



WHAT CAN CAUSE THIS?

- Genetics
- Injury to the brain (such as concussion)
- Infection of the brain
- Tumor of the brain
- Effect of severe and persistent stress
- Toxins from the environment – such as drugs



WHAT DO WE MEAN?

- The “environment” is everything that exists outside of the brain
- A “stressor” is anything from the environment that leads to a brain response
- So, a “stressor” can be: an event, a chemical, a touch, a sound, etc.
- So, a brain response may be: an action, an emotion, a thought, etc.



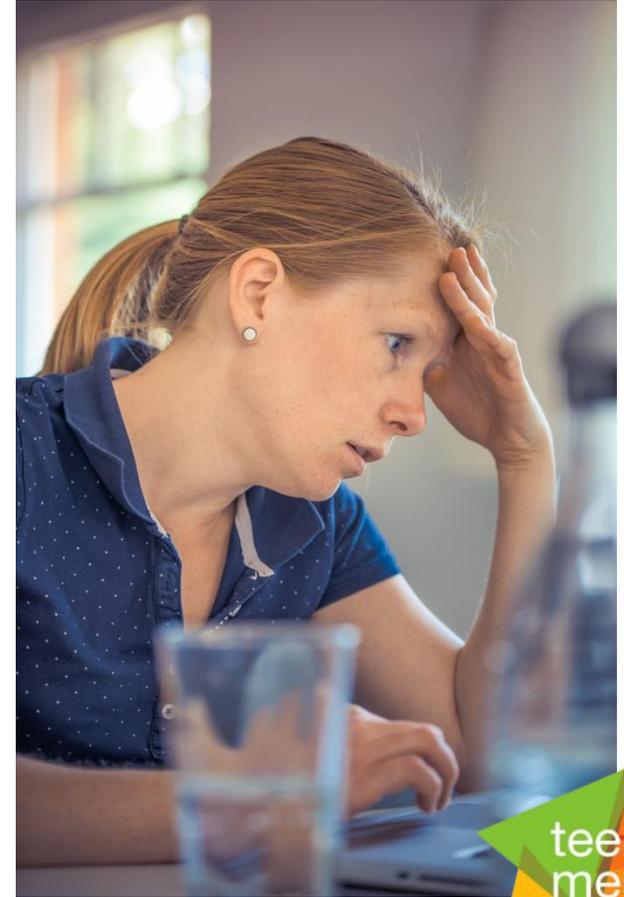
OUR BRAINS

- Our brains are constantly experiencing stressors from the environment
- Our brains are always responding to stressors from the environment
- One of the most important jobs our brains have is to create successful responses to our environments
- And to remember (learn) what responses worked well and which did not work so well for use in the future (adaptation)



WHAT WE KNOW ABOUT STRESS

- All environmental stressors will lead to a **brain response**
 - this is how the brain helps the person adapt
- **The stress response is part of mental health** (e.g. feeling anxious about doing well in school may be a sign to study harder for exams)
- Many stressors may cause short term “**distress**” or mental health problems but this is not the same as mental illness



MENTAL DISTRESS IS A COMMON RESPONSE TO EVERYDAY LIFE



SOME COMMON STRESSORS

- Writing an exam
- Failing to succeed at something important to you
 - Having difficulty with relationships
 - Conflicts with friends or family members
- Moving to a new city or going to a new school
 - Losing something important to you
 - Someone saying mean things to you
- Experiencing multiple competing tasks at the same time



STRESS MYTHS AND REALITIES

- There are many myths about stress
- These myths can make it difficult for us to learn how to use everyday stress in a positive way
- Remember, all of us feel stress, it's normal and it has a purpose – to signal that we need to adapt



STRESS MYTHS

- Everyday stress is bad for you
- We have to do our best not to feel stress and if we are feeling stressed we need to mostly focus on relieving it



STRESS REALITIES

- Everyday stress is normal and useful. It is a signal that we need to do something differently. It leads to learning and adaptation.
- Sometimes we learn by doing the wrong thing. That leads to increase in stress. Doing the right thing leads to decrease in stress.
- If we focus mostly on reducing the stress signal and not developing a new skill we may end up not learning how to adapt to everyday life changes.



STRESS AND ILLNESS – PART 1

- A mental illness is not caused by everyday stress
- A mental illness arises from a complex interaction between genetics and environment that begins from the time of conception and continues over the entire life span
- Often a mental illness will lead to stress because of how the person with the illness interacts with others or their surroundings (e.g. Depression leads to withdrawal from friends which leads to losing friends which leads to stress)



STRESS AND ILLNESS – PART 2

- In a mental disorder, some of the various brain circuits that underlie all brain functions are not working the way they should be
- These disturbances in the brain circuits create the signs and symptoms of mental illness



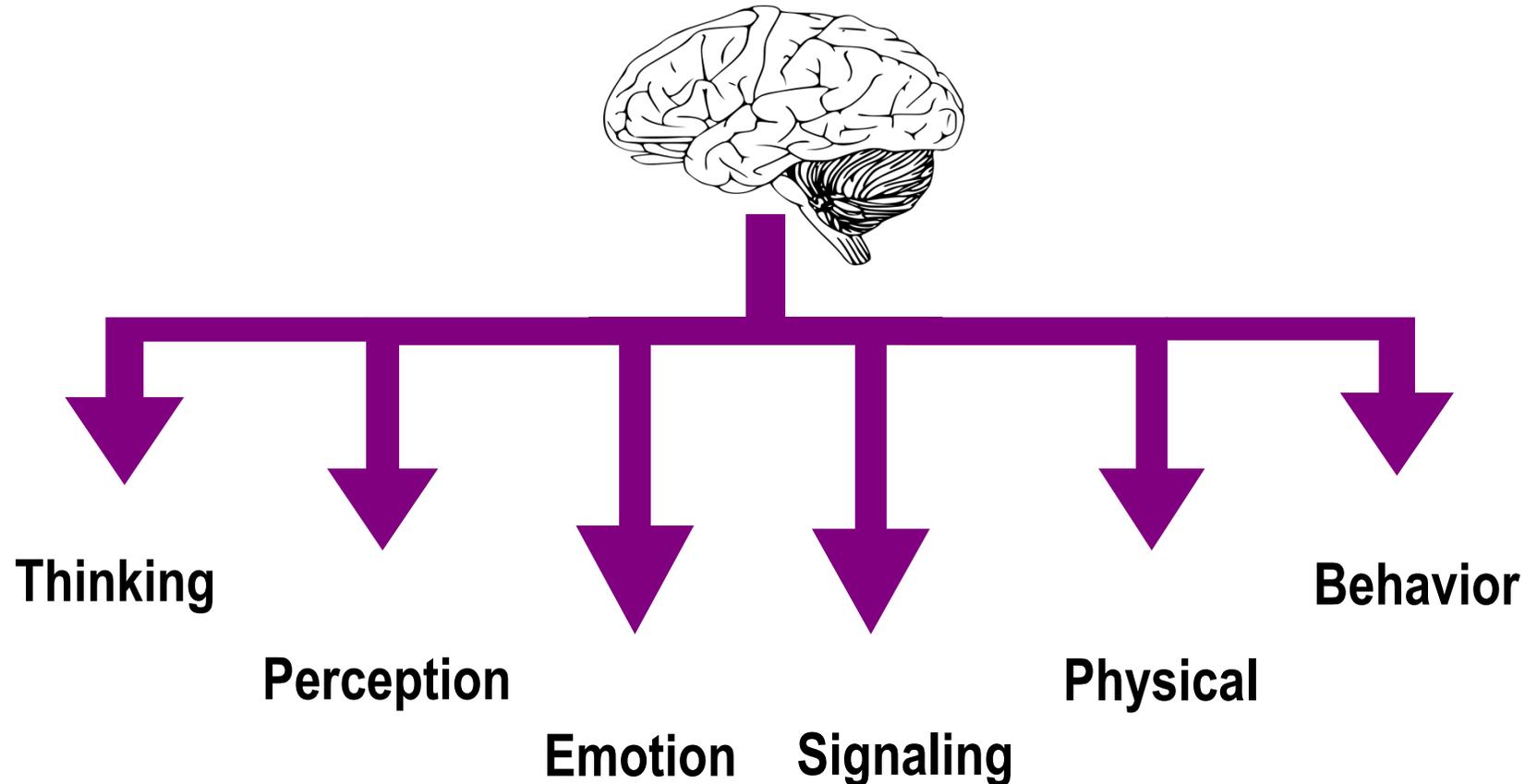
SIGNS AND SYMPTOMS

- A “sign” is something that someone observes about a person (for example: rapid speech, crying, aggressive actions, etc.)
- A “symptom” is what a person experiences internally (for example: feeling hopeless, thinking negative thoughts, restlessness, etc.)
- Sometimes we infer a person’s symptom from their sign (for example: sadness may be inferred from observing crying and a slumped posture.)



STRESS AND ILLNESS – PART 3

- If the brain is not working properly, one or more of its six functions will be disturbed



A MENTAL ILLNESS – PART 1

- Is comprised of signs and symptoms that are substantially different than the usual state of the person (e.g. Depression) or significantly different from the usual states of most people (e.g. Autism), or both (e.g. Schizophrenia or Panic Disorder).
- These signs and symptoms occur within a recognized pattern (called a syndrome) that without treatment predicts a certain outcome



A MENTAL ILLNESS – PART 2

- Because of this syndrome a person has significant and substantial challenges in everyday functioning
- There are likely to be similar factors that give rise to this syndrome (for example: genetics, toxins, etc.)
- This syndrome is called a diagnosis when there is International medical consensus and scientific evidence about it
- The same treatment given to different people with the same syndrome usually leads to similar results



STRESS AND MENTAL ILLNESSES – PART 1

- Severe and prolonged stress (particularly at sensitive times of life such as in utero or early childhood) may damage the brain
- This can increase the risk of a mental illness that begins later in life
- But, many people who have early life stressors do not develop a mental illness



STRESS AND MENTAL ILLNESSES – PART 2

- Most people who develop a mental illness have not had a severe and persistently stressful early environment
- Some severe stressors can lead to a relapse in people who have a mental illness, even though they may not have initially contributed to the development of the mental illness



STRESS AND MENTAL ILLNESSES – PART 3

- The effects of a mental illness on a person may make them more likely to encounter or even create a stressful circumstance which then can be incorrectly assumed to have caused the illness
- (e.g. Depression leads to isolation, that leads to breakup of a close relationship, that leads to more depressive feelings, which then can be incorrectly understood as causing the Depression)



LIFESTYLE AND BRAIN EFFECTS

- Certain life styles may protect or enhance brain functioning (e.g. exercise, memory training, sufficient sleep, good nutrition, positive relationships)
- We do not yet know if there are any specific types of lifestyles that can prevent mental illnesses
- Activities that help improve physical health also help improve mental health



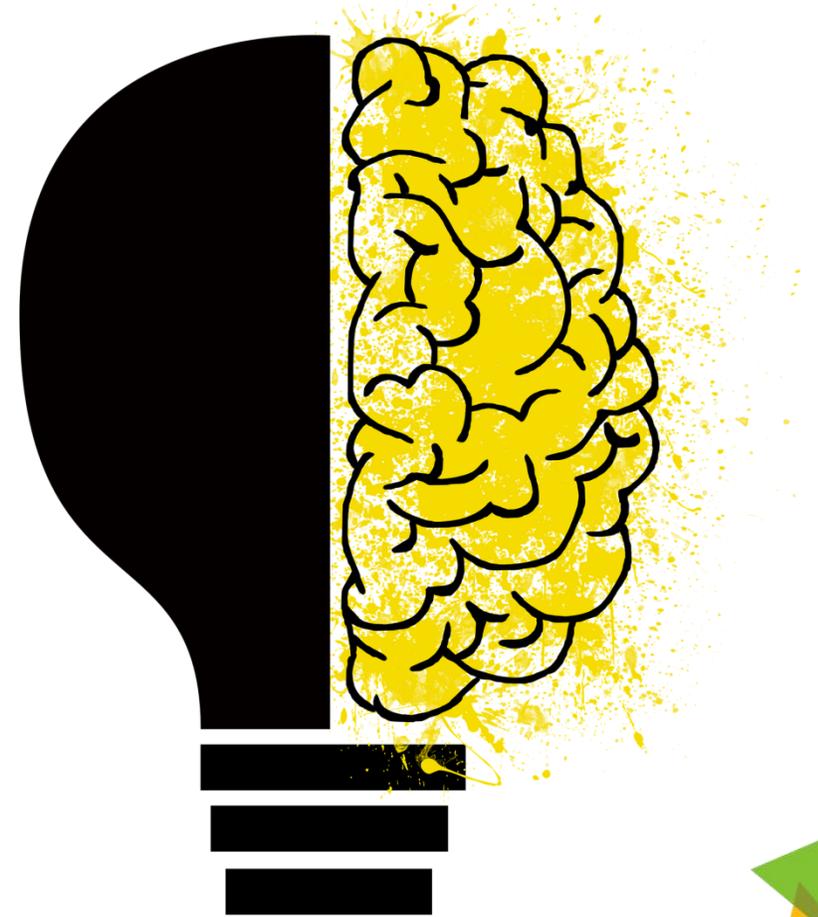
LIFESTYLE AND BRAIN EFFECTS

- Certain lifestyles are **harmful** and can **damage the brain** or its future growth and development
- (e.g. alcohol, drugs, severe and prolonged stress)



LIFESTYLE AND BRAIN EFFECTS

- Can we intervene to improve brain disturbances using lifestyle interventions? Maybe yes and maybe no
- **But:** leading a **healthy lifestyle** is a good thing for brain development and brain function





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@TMentalHealth



info@TeenMentalHealth.org