



Mismatched: Your Brain Under Stress

Educational Unit

Lesson Plan Module #3: *Mind/Body Connection II*

Overview

We are all different - what one person finds stressful; another person finds exhilarating. When we do experience stress, a cascade of events can ultimately destroy our health. This process starts in the brain with our perception of stress.

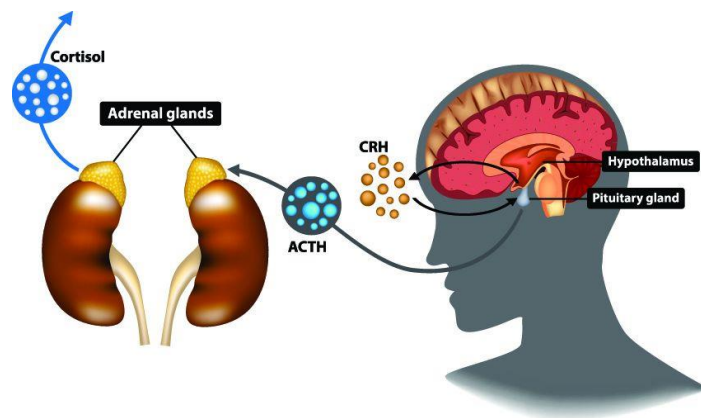
When the brain interprets a situation as a threat or a stressful situation, the hypothalamus is activated. A signal is sent to the pituitary gland, which in turn sends a signal to the adrenal glands to produce hormones such as cortisol. These hormones are designed to help the body deal with the perceived threat. This is referred to as the Hypothalamic-Pituitary-Adrenal, or HPA, axis, and is part of the 'Fight or Flight' system.

The release of cortisol during times of stress is useful if the threat requires a physical response. Cortisol prepares the body by raising blood sugar levels and retain salt to maintain a fluid balance. Once the threat is eliminated or escaped, cortisol returns to normal levels.

However, most of us are under chronic stress not requiring a physical response. This type of stress also raises cortisol levels, but since the stress never goes away, cortisol levels stay high. Prolonged high levels of cortisol can eventually lead to weight gain, specifically fat gain around the belly. This type of weight gain, called central obesity, is more dangerous than other types of weight gain. It is linked to type 2 diabetes, heart disease, and stroke.

The Amygdala, located in the brain, is also involved in the activation of the stress response as it processes emotions and can trigger the HPA axis to release cortisol. Sometimes, these reactions are conscious, but depending on the length of exposure to stimuli, these reactions can be unconsciously triggered.

To understand and manage personal stress, it is important to pay attention to cues, be authentic, and self-aligned to maintain a healthier response to stress.





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Lesson Objectives

After viewing Episode #3: *Mind/Body Connection II*, participants will be able to:

1. List experiences, classify them as stressful or exhilarating, and identify alternative ways to deal with those deemed stressful.
2. Analyze Hypothalamic-Pituitary-Adrenal axis and its relationship to cortisol production.
3. Explain the negative effects of over-production of cortisol.
4. Relate the effect of emotions to the Amygdala and its connection to the 'Fight or Flight' response.

Vocabulary:

Hypothalamus

Pituitary Gland

Adrenal Glands

Cortisol

Chronic Stress

Amygdala

Lesson Discussion Points

- What types of situations make you feel stressed?
- Why is it important to know this?
- How can you help your body handle situations you interpret as stressful?
- Why would there be a strong correlation between a person's pay grade and their health?
- How does the body handle the over-production of cortisol?
- What negative effects are caused from prolonged high levels of cortisol?
- How does the amygdala affect our reactions to stress?
- How can someone overcome the personal reaction to another's negative emotions?



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Activities

Activity #1: Experiences Table

Make a table to list and classify experiences. Discuss results and possible solutions.

| Experiences | Stressful or Exhilarating? | Alternative Reactions |
|--------------------|-----------------------------------|------------------------------|
| | | |
| | | |
| | | |
| | | |

Activity #2: Watch Video

View Episode #3: *Mind/Body Connection II* and discuss content using discussion questions.



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Name _____ Grade or Employee Dept _____

Module #3 Quiz: *Mind/Body Connection II*

Directions: Please circle the correct answer.

- 1. People react to life experiences in the same way.**
 - a. True
 - b. False

- 2. The part of the body that reacts to stress first is:**
 - a. The brain.
 - b. The heart.
 - c. The feet.
 - d. The liver.

- 3. The three components of the HPA axis are:**
 - a. Hippocampus-Pituitary-Adrenals
 - b. Hypothalamus-Pituitary-Adrenals
 - c. Hypothalamus-Peduncle-Adrenals
 - d. Hippocampus-Peduncle-Adrenals

- 4. Cortisol is a hormone released by the body to deal with perceived threats.**
 - a. True
 - b. False

- 5. Continual activation of the HPA axis in modern society is caused by:**
 - a. Acute stress
 - b. Chronic stress
 - c. Consistent Stress
 - d. Obtuse stress

- 6. Which of the following is the stress hormone that releases sugars into the blood to help the body prepare to respond to threats?**
 - a. Epinephrine
 - b. Norepinephrine
 - c. Thyroxine
 - d. Cortisol



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- 7. Prolonged, high levels of cortisol can eventually lead to weight loss.**
 - a. True
 - b. False

- 8. Central obesity is less dangerous than other types of weight gain.**
 - a. True
 - b. False

- 9. Psychological stress can have a profound effect on the shape of our bodies.**
 - a. True
 - b. False

- 10. The Amygdala plays a role in:**
 - a. Releasing hormones directly into the bloodstream.
 - b. Making the heart beat faster when stressed.
 - c. Processing emotions.
 - d. Activating the mind/body connection.