OVERVIEW

BIG IDEA
Stress is a normal & beneficial body response, but it can be problematic when it is chronic. Identifying the stressors & responses to stress can help us determine what role it plays in our overall health.

OBJECTIVE
1.3 Analyze the causes and effects of stress.

AGENDA
1. Stress data collection
2. Defining stress (reading)
3. Stressors & outcomes of stress
4. Stress scenarios

HOMEWORK
Poll your family to see how much stress they experience throughout the day. Record your data and create a line graph depicting the stress data sets.

LESSON 1.3
Stress

SUMMARY:

This lesson will introduce student to the causes and effects of stress. To engage and allow for reflection, students will begin by evaluating their own stress and that of their classmates in a way that will also help them solidify simple concepts like independent/dependent variables, taking an average, and looking for patterns or trends. Then students will read background information on what stress is and when it can be good and bad. After being introduced to a framework for thinking about the causes of stress (stressors) and effects or outcomes, students will have an opportunity to generate ideas for things that fit in each category. Finally, students will read scenarios and classify the details as stressors and outcomes.

UNIT 1: MENTAL HEALTH LESSON 1.3

Stress

PH1.3: Analyze the causes and effects of stress

DO NOW

Use the following scale and table to report how much stress you feel on an average school day during each of the times listed. Be ready to compile your data with the class.

Key for responses:

1 = very relaxed **2** = relaxed **3** = normal **4** = somewhat stressed **5** = very stressed

Time of Day	Your Data	Group Average
When you first wake up. (Ex: 6:00am)		
When you first get to school. (Ex: 7:30am)		
At lunch (Ex: 12:30pm)		
Right after school (Ex: 3:00pm)		
Right after dinner (Ex: 7:00pm)		

1) The independent variable (IV) in a study is one that is manipulated. You can think of it like the "cause" variable. The dependent variable (DV) in a study is the outcome or effect variable that changes in response to the IV. In this sample data collection, what is the...

IV: _____

DV: _____

2) What trend, if any, do you notice about your stress level throughout the day?

3) One of the best ways to determine if your data is accurate is to do several trials and average your results. In this case, we want to increase the sample size in order to get a data set that is more representative of the average person in the population. Therefore, each group member is considered a "trial" and you can average your group members' stress levels during each time of day and enter them in the "Group Average" column.

Average = (a + b + c) / 3 or (a + b + c + d) / 4

4) What trend, if any, do you notice in the group average data?

5) What times of day did the "average" group member have the highest and lowest levels of stress, respectively?

DO NOW:

1. IV: time; DV: stress level
2. Answers will vary; look for students to describe how their stress level increases and/or decreases throughout the day; they also may determine that there is no predictable pattern
3. Answers will vary
4. Answers will vary; ensure students use precise vocabulary: increases, decreases, etc.
5. Answers will vary; to follow up, ask students if those times of day might be associated with particular variables that influence stress levels

DISCUSS

In our data collection exercise above, it is likely that we all used a different definition of stress. Stress, like many mental health factors, can be difficult to measure because it is a subjective variable. Think about how you define what it feels like to be "very stressed." Explain the criteria you use to for determining your stress level.

Share your ideas with a neighbor. Then be ready to share with the class!

READ

Read the following overview of stress from Kids Health:

What Is Stress?

Stress is a feeling that's created when we react to particular events. It's the body's way of rising to a challenge and preparing to meet a tough situation with focus, strength, stamina, and heightened alertness.

The events that provoke stress are called **stressors**, and they cover a whole range of situations — everything from outright physical danger to making a class presentation or taking a semester's worth of your toughest subject.

The human body responds to stressors by activating the nervous system and specific hormones. The **hypothalamus** signals the **adrenal glands** to produce more of the hormones adrenaline and cortisol and release them into the bloodstream. These hormones speed up heart rate, breathing rate, blood pressure, and metabolism. Blood vessels open wider to let more blood flow to large muscle groups, putting our muscles on alert. Pupils dilate to improve vision. The liver releases some of its stored glucose to increase the body's energy. And sweat is produced to cool the body. All of these physical changes prepare a person to react quickly and effectively to handle the pressure of the moment.

This natural reaction is known as the **stress response**. Working properly, the body's stress response enhances a person's ability to perform well under pressure. But the stress response can also cause problems when it overreacts or fails to turn off and reset itself properly.

Good Stress and Bad Stress

The stress response (also called the **fight or flight response**) is critical during emergency situations, such as when a driver has to slam on the brakes to avoid an accident. It can also be activated in a milder form at a time when the pressure's on but there's no actual danger — like stepping up to take the foul shot that could win the game, getting ready to go to a big dance, or sitting down for a final exam. A little of this stress can help keep you on your toes, ready to rise to a challenge. And the nervous system quickly returns to its normal state, standing by to respond again when needed.

But stress doesn't always happen in response to things that are immediate or that are over quickly. Ongoing or long-term events, like coping with a divorce or moving to a new neighborhood or school, can cause stress, too.

Long-term stressful situations can produce a lasting, low-level stress that's hard on people. The nervous system senses continued pressure and may remain slightly activated and continue to pump out extra stress hormones over an extended period. This can wear out the body's reserves, leave a person feeling depleted or overwhelmed, weaken the body's immune system, and cause other problems.

Source: http://kidshealth.org/teen/your_mind/emotions/stress.html

DISCUSS:

Ask students:

- What is YOUR definition of stress?
- How does the way you experience stress differ from others?

These questions are important for students to think about in order to begin to appreciate the challenges scientists face when measuring variables based on self-reported data and variables that are subjective. If time permits, engaging in a short discussion on how scientists can make a variable like stress as objective as possible will help students grasp this bigger idea. Asking students the pros/cons of measuring stress in two different ways (for example, by asking people how they feel vs. drawing blood and measuring cortisol levels)will help promote thinking about methodology.

READ:

Have students briefly pre-think about these questions before they begin reading.

- What is stress?
- What are the short and long-term effects of stress on the body?
- When is stress a good thing? What is it a bad thing?

UNIT 1: MENTAL HEALTH LESSON 1.3

DISCUSS

1. What are the short and long-term effects of stress on the body?

2. When is stress a good thing? What is it a bad thing?

NEW INFO

CAUSES OF STRESS:

There are four major causes of stress (known as stressors): major life changes, catastrophes, everyday problems, environmental problems

In the table below, make a list of examples that represent each type of stressor:

Major life changes	Catastrophes	Everyday problems	Environmental problems

OUTCOMES OF STRESS:

We can organize some of the outcomes of stress within the categories: behavioral changes, changes in thinking, physical changes, and emotional changes.

In the table below, make a list of examples that represent each type of outcome:

Behavioral changes	Changes in thinking	Physical changes	Emotional changes

DISCUSS: Provide 1-2 examples for each of the four stressors and four outcomes of stress in order to give students a model. Then ask students to volunteer responses. They should be able to explain rationale for why their examples fit in the suggested categories of stressors or outcomes of stress.

Causes of Stress Examples:

Major life changes: new job/school/house/town, divorce, marriage, having a child, breaking up with significant other, starting a new relationship, beginning college, death of a loved one, etc.

Catastrophes: natural disasters, violence, domestic abuse, sexual assault, fire, accidents,,etc.

Everyday problems: being late, traffic, dealing with conflict at school/work, excessive workload (homework or on the job), lack of time/over-scheduling, disagreements and arguments, etc.

Environmental problems: unsafe streets, dangerous driving conditions, lack of access to resources (healthy food, healthcare, etc.), unsanitary or toxic surroundings, etc

Outcomes of Stress Examples:

Behavioral changes: overeat/undereat, violence, rushing/hurrying, isolating oneself, lazy or antisocial behavior

Changes in thinking: self-critical, suspicious, worrying, suicidal thoughts, difficulty concentrating, self-esteem changes

Physical changes: headaches, stomachache, fatigue, heart rate changes, blood pressure changes

Emotional changes: crying, angry, frustrated, irritable, sad, annoyed

THINK

Use the details in the following story to classify **causes (stressors)** and **effects of stress (responses to stress)** in the table below:

Diane, age 17, is eight months pregnant. She did not plan to become pregnant and no longer has a relationship with the baby's father. She is at her prenatal doctor appointment when her OB/GYN asks about her preparations for the baby. Immediately, Diane erupts in tears. She explains that she is trying to finish high school while working two jobs part-time to save money for the baby. She has been feeling exhausted, is getting very little sleep, and seems to have lost her appetite. She struggles to focus in classes because she is so tired and her mind cannot stop racing as she thinks about childbirth and becoming a mom. Before she was pregnant, she had dreams of going far away for college, but now she will have to live at home and attend the community college. She is worried about bringing her baby up in the neighborhood where she was raised because of all the violence and gang activity. On top of that, her parents are divorced and her mother is struggling with alcoholism, so she doesn't even know if the home environment will be safe for her baby. Diane has a lot to think about, so her doctor sets her up with an appointment with a social worker.

Stressors / Responses to Stress	Examples from scenario
Major life changes	
Catastrophes	
Everyday problems	
Environmental problems	
Behavioral changes	
Changes in thinking	
Physical changes	
Emotional changes	

THINK: Have students read the following scenario twice! The first time, have a student read aloud at a normal pace. The second time, encourage students to re-read it silently and slowly, underlining or marking up examples that they see along the way.

Examples from scenario:

Major life changes	pregnancy, dissolved relationship with boyfriend, parents divorced
Catastrophes	unplanned pregnancy
Everyday problems	juggling school/jobs/pregnancy, mother struggles with alcoholism
Environmental problems	lack of resources/money for baby, violence/gang activity in neighborhood
Behavioral changes	gets little sleep, lost appetite (eating less)
Changes in thinking	difficulty focusing in class, mind racing, worry (about childbirth/ becoming a mom)
Physical changes	feels exhausted/tired
Emotional changes	crying, disappointment (not heading to college, staying home)

ASSESS

Use the following scenario to answer the multiple choice questions:

Tim, age 26, cannot seem to get out of bed today. He has a hard time focusing at work, and he hasn't been eating enough lately. When he started getting mild headaches, he went to the doctor, but the doctor said he was healthy and that the headaches were probably due to stress. Tim started to think about the last few weeks-he just moved to a new city and started a new job. He hasn't experienced any huge tragedies recently, but he just can't figure out what's going on.

Based on information from the passage, which of the following best describes the factor that contributes the most to Tim's stress?

a. Environmental problem
b. Major life change
c. Catastrophe
d. Everyday problem

Based on information from the passage, which of the following is an example of a **change in thinking** that Tim is experiencing as a result of his stress?

a. Tim cannot seem to get out of bed today
b. Tim has a hard time focusing at work
c. Tim hasn't been eating enough lately
d. Tim started getting mild headaches

HOME WORK

1. Poll your family members (or neighbors, friends, etc.) to find out their average stress levels throughout the day, according to the table in the beginning of this lesson. You can add an extra column and record the new data in that table, or use an additional piece of paper. When you have polled at least three people, take the average of their responses.

2. Create a line graph showing how YOUR stress level fluctuations throughout the day compare to the class group average and your family's average.

ASSESS: Use the scenario and multiple choice questions as one additional practice opportunity AND/OR as a check for understanding (exit ticket).

ASSESS Answers: B-major life change; B-Tim has a hard time focusing at work

HOMEWORK: The goal of the homework is for students to continue to think about data collection methodology and get some additional very basic practice in data manipulation (organizing data in tables, taking an average, creating a line graph). The assignment should also be engaging for students and possibly even carve out a space for them to bring their learning home and discuss a potentially "silent" topic (stress) as it plays out in the family.

Optional homework idea: Assign each group in the class to poll a different subset of people. For example, one group could poll teachers, another can poll older students (outside the class) or college students, another polls family, and a final student polls younger children/students. Students can make predictions about the patterns/trends in levels of stress they will see with their sub-group. Then take a few minutes at the beginning of the next class to have students re-group to share data and report out any trends or major differences in average stress levels to the class.