

STRESS AND HEALTH

A Six-Lesson Unit Plan for High School Psychology Teachers

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Introduction

This lesson plan is designed to support the teaching of a broad range of concepts related to stress and health in a variety of psychology classroom contexts. Each lesson includes a content outline, critical thinking exercises, and class activities to support the unique needs of different teachers, learners, and classrooms. This unit plan allows for a great deal of flexibility. Teachers can choose from the pool of available content and activities to develop lessons that are the best fit for their classes. Class activities are designed to foster more direct engagement and demonstration of the content of each lesson. Critical thinking exercises are discussion-based and they typically focus on application of concepts. The laboratory exercise involves data collection and analysis at the level of the individual and the class to reinforce psychological research.

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Proposed number of days/hours for lesson

Number of total teaching hours: 8-12

- 10-14 days in 50-minute classes = 8-12 hours (one semester class: 5-7 days; 4-6 hours)
- 6-8 days in 90-minute classes = 9-12 hours (one semester class: 3-4 days; 4-6 hours)

NATIONAL STANDARDS ALIGNMENT

This unit is aligned to the following content standards and learning targets of the *National Standards for High School Psychology Curricula* (APA, 2022).

PILLAR	STANDARD AREA	CONTENT STANDARDS AND LEARNING TARGETS	SUPPORTING DOCUMENTS AND ACTIVITIES
Mental and Physical Health	Health	<p>Content Standard 1</p> <p>Stress and Coping</p> <p>Students are able to (learning targets):</p> <p>1.1 Define stress as a psychophysiological response to the environment</p> <p>1.2 Explain sources of stress across the lifespan</p> <p>1.3 Explain physiological and psychological consequences of stress for health and wellness</p> <p>1.4 Explain physiological, cognitive, and behavioral strategies to deal with stress</p>	<p>Lesson One Content Outline</p> <p>Critical Thinking Exercise 1.1: The Evolution of the Definition of Stress</p> <p>Critical Thinking Exercise 1.2: Distress vs Eustress</p> <p>Critical Thinking Exercise 1.3: What’s the Difference between Stress and Anxiety?</p> <p>Activity 1.1: Stress or Anxiety?</p> <p>Lesson Two Content Outline</p> <p>Critical Thinking Exercise 2.1: Teenage Stress</p> <p>Activity 2.1: Types of Stressors</p> <p>Activity 2.2: Internal Stress and Conflict</p> <p>Lesson Three Content Outline</p> <p>Activity 3.1: TED-Ed Videos on the Stress Response</p> <p>Activity 3.2: My Stress Response in Memes</p> <p>Activity 3.3: Brain Dump over the Stress Response</p> <p>Activity 3.4: Heart Rate and Biodot Biofeedback Lab</p> <p>Lesson Four Content Outline</p> <p>Critical Thinking Exercise 4.1: Stress and the Common Cold</p> <p>Critical Thinking Exercise 4.2: Stress and Healing</p> <p>Lesson Five Content Outline</p> <p>Critical Thinking Exercise 5.1: Is Popularity Protective Against Stress?</p> <p>Activity 5.1: Time Flies!</p> <p>Activity 5.2: Meditation Podcast</p> <p>Critical Thinking Exercise 5.2: Being Mindful</p> <p>Activity 5.3: The Mind and Gut Connection</p> <p>Laboratory Exercise 5.1: Sleep and Perceived Stress</p>
Mental and Physical Health	Health	<p>Content Standard 2:</p> <p>Psychological science promotes mental and physical health and wellness</p> <p>Students are able to (learning targets):</p> <p>2.1 Describe factors that promote resilience and flourishing</p> <p>2.2 Identify evidence-based strategies that promote health and wellness</p>	<p>Lesson Six Content Outline</p> <p>Activity 6.1: Mindful Walking</p> <p>Activity 6.2: The 7 Benefits of Gratitude</p> <p>Activity 6.3: Building Resilience</p> <p>Activity 6.4: Synthetic Happiness</p> <p>Activity 6.5: The Happiness Lab Podcast Walk</p>

LESSON 1

What is Stress?

GENERAL OVERVIEW

How often do you feel stressed out? Stress is a term commonly used in conversation. Hans Selye said that, “stress in health and disease is medically, sociologically, and philosophically the most meaningful subject for humanity that I can think of” (as cited in Szabo et al., 2012, p. 472). Being “stressed out” is something that all students and adults can all relate to, and the authors therefore agree with Selye that stress is an important concept for students to understand. High school students may experience stress with homework, upcoming tests, jobs, and college applications. They feel stressed when they move, when their parents divorce, or when they experience the death of a loved one. While all students are familiar with the word stress, the definition of this term has evolved over the course of time. In this lesson, teachers will introduce students to the overarching concept of stress, including key definitions related to this construct.

DEFINITIONS OF KEY TERMS

- **Stress:** the process by which we perceive and respond to circumstances that we appraise as challenging (also referred to as the stress response)
- **Stressor:** experiences that threaten homeostasis
- **Physical stressors:** physical experiences that threaten homeostasis
- **Psychological stressors:** include a wide range of social and interpersonal experiences, from daily hassles to major life events, that threaten homeostasis
- **Distress:** the negative stress response, often involving negative affect and physiological reactivity: a type of stress that results from being overwhelmed by demands, losses, or perceived threats. It has a detrimental effect by generating physical and psychological maladaptation and posing serious health risks for individuals. (APA, n.d.-k)
- **Eustress:** the positive stress response, involving optimal levels of stimulation: a type of stress that results from challenging but attainable and enjoyable or worthwhile tasks (e.g., participating in an athletic event, giving a speech). It has a beneficial effect by generating a sense of fulfillment or achievement and facilitating growth, development, mastery, and high levels of performance. (APA, n.d.-m)
- **Acute stress:** any stress from events that are experienced for a short period of time and have clear endpoints
- **Chronic stress:** any stress that is experienced for a long time

CONTENT OUTLINE

The Evolution of the Definition of Stress

- The definition of stress has evolved over time. Early definitions focused on changes in physiology. More recent definitions highlight the fact that stress occurs when an individual perceives something as threatening. Thus, stress is subjective; two individuals can experience the same event but only one might experience the event as stress.
 - » Walter Cannon (1929) defined stress as physical and psychological “disturbances” that threaten homeostasis (the body’s state of balance) and coined the expression “fight or flight.”
 - » Hans Selye (1956) defined stress as a stimulus that produces a physiological response and created the General Adaptation Syndrome (GAS) model to describe the physiological changes that occur during stress.
 - » Richard Lazarus and Susan Folkman (1984) defined stress as occurring when a person determines they do not have the personal or social resources to respond to a perceived threat.
 - » Modern researchers define stress as the process by which we perceive and respond to circumstances that we appraise as threatening. This leads to a series of emotional (affective), behavioral, cognitive, and physiological changes.

Critical Thinking Exercise 1.1: The Evolution of the Definition of Stress can be completed at this point.

- Physical vs Psychological Stressors
 - » Stressors are the experiences that threaten homeostasis, the balance of the body's internal state.
 - » Physical examples: Exposure to extreme heat and cold, exercise, pain.
 - » Psychological stressors examples: Missing the bus, waiting in line for a roller coaster, arguing with a friend, going on a first date, an approaching college application deadline, getting into college, experiencing an earthquake, losing a loved one
- Distress vs Eustress
 - » The word "stress" is typically used in everyday conversation to refer to something negative; however, Hans Selye, Richard Lazarus, and other researchers determined that both negative and positive events can lead to physiological changes (threats to homeostasis).
 - » Distress examples: From the examples provided above, distress is likely to arise in response to extreme heat and cold, pain, missing the bus, arguing with a friend, an approaching college application deadline, experiencing an earthquake, losing a loved one.
 - » Eustress examples: Eustress is likely to arise from exercise, waiting in line for a roller coaster (for thrill seekers, at least), going on a first date, getting into college.

[Critical Thinking Exercise 1.2: Distress vs Eustress](#) can be completed at this point.

- Acute vs Chronic Stress- Stressful events can come and go quickly, can repeat often, or can last for a long time.
 - » Acute stressor examples: Walking from your house to the car when it is very hot or very cold out, getting into an argument with your friend, being surprised with a pop quiz, getting into a fender bender, getting stuck in a traffic jam which makes you late to work
 - » Chronic stress can include continuous acute stressors that are not resolved or long, ongoing stressors.
 - Examples of acute stressors experienced repeatedly: Missing the bus on a regular basis, many pop quizzes in a school year, experiencing ongoing discrimination
 - Examples of long, or ongoing stressors: Living with a chronic medical condition, caring for a parent or guardian who has terminal cancer, being teased by and excluded from classmates

Stress vs Anxiety

[Critical Thinking Exercise 1.3: What's the Difference between Stress and Anxiety?](#) can be completed at this point.

- » Stress and anxiety are terms that are often used interchangeably but are not the same thing. Although they might feel the same in terms of bodily changes, it is important to differentiate between the terms.
- » Stress is the process by which we perceive and respond to external events we appraise as threatening.
- » Anxiety is characterized by excessive worries about potential future threats that do not go away, even if there is no clear source for the anxiety, the source is eliminated, or the potential threats are unlikely to happen; it is frequently accompanied by physiological changes such as muscle tension and fatigue.

[Activity 1.1 Stress or Anxiety?](#) can be completed at this point.

LESSON 2

Types of Stress

GENERAL OVERVIEW

In addition to the broad, overarching categories of stress introduced in Lesson One, there are many subtypes of internal and external stress that individuals face in daily life, including environmental stress, daily hassles, and stress due to discrimination or adjusting a new culture. This lesson provides definitions and examples of different types of stress and addresses different internal conflicts individuals face when dealing with incompatible motivations and actions.

DEFINITIONS OF KEY TERMS

- **Environmental stress:** stress that is caused by the physical or social environment
- **Acculturation stress:** stress that arises from the processes by which groups or individuals adjust the social and cultural values, ideas, beliefs, and behavioral patterns of their culture of origin to those of a different culture (APA, n.d.-a)
- **Pressure:** stress that is created from the demands or expectations to perform or conform
- **Catastrophes:** unpredictable, large-scale events, such as natural disasters or devastations, that affect a community
- **Major life events:** big events that occur in a person's life that contribute to a person's life story
- **Daily hassles:** the irritating, frustrating, distressing demands of everyday life
- **Anticipatory stress:** stress that arises when one is expecting to encounter a stressor
- **Internal conflicts:** when we have a choice between motivations or actions that are incompatible
- **Approach-approach:** when a person must choose between one of two rewarding (attractive) goals
- **Avoidance-avoidance:** when a person must choose between two punishing (unattractive) options
- **Approach-avoidance:** when a person must choose a goal that has both rewarding/attractive and punishing/unattractive features
- **Double approach-avoidance:** when a person must choose between two alternatives, both of which have rewarding/attractive and punishing/unattractive features

CONTENT OUTLINE

Types of stress

- **Environmental:** any stress that is caused by the physical or social environment
 - » Examples of environmental stressors: Urbanization, overcrowding, poverty, inequality, or discrimination
 - » Discrimination based on identity characteristics including race, ethnicity, religion, gender, mental health status, physical appearance, and ability can be subtle or obvious and can range in severity.
- **Acculturation:** when immigrants are adjusting to life in a new culture
 - » Examples of acculturative stressors: difficulty communicating in a new language, learning the cultural norms, finding work that can sustain a family, finding housing that is safe, integrating into society, and establishing a social network, experiencing discrepancies in values and expectations between the original and new culture
- **Pressure:** stress that is created from the demands or expectations to perform or conform; this may be self-imposed, school or work related, or peer pressure
 - » Examples: When a student puts pressure on themselves to get good grades, or feels pressure from parents/guardians, giving a presentation in front of a large audience, or feeling the need to conform to the behaviors of peers

Critical Thinking Exercise 2.1: Teenage Stress can be completed at this point.

- **Catastrophes:** unpredictable, large-scale events, such as natural disasters or devastations that affect a community
 - » Examples: Hurricane Katrina, Parkland school shooting, the death of George Floyd, quarantine from COVID-19
- **Major life events:** the big events that occur in a person's life that contribute to their life story
 - » Examples: Becoming a parent, moving to a new school, starting a new college or adjusting to college, parents getting divorced, getting a medical diagnosis, graduating high school
- **Daily hassles and frustrations:** the irritating, frustrating, distressing demands of everyday life
 - » Example: Running low on cell phone battery, traffic on the way to school, missing the school bus, getting a flat tire on the way to a job interview, spilling coffee that was just bought, a nagging sibling, when a friend doesn't respond to a text, waiting for a teacher to update your grades
- **Anticipatory stress:** the stress that arises during the expectation of a stressor. Anticipatory stress occurs just by thinking about something that is going to, or that might, happen
 - » Examples of stressors that elicit anticipatory stress: Thinking about being late for school, imagining getting a bad grade on an upcoming exam, thinking about giving a presentation, thinking about the possibility that a significant other might cheat, thinking about not getting into your first-choice college

[Activity 2.1 Types of Stressors](#) can be completed at this point.

- **Internal conflicts:** when a choice is required between motivations or actions that are incompatible
- **Approach-approach:** when a person must choose between one of two rewarding (attractive) goals
 - » Example: On Saturday afternoon, you can either go to the movies with your friend or go to get ice cream with the person you are dating, but you can't do both.
- **Avoidance-avoidance:** when a person must choose between two punishing (unattractive) options, or the "lesser of two evils"
 - » Example: You need to make a choice between cleaning your room and studying for your psychology exam.
- **Approach-avoidance:** when a person must choose a goal that has both rewarding/attractive and punishing/unattractive features
 - » Examples: You want to purchase a car and you are excited about the freedom and flexibility it will bring, but affording a car will require you to work each school night, as well as on the weekends; you want to get a tattoo because you feel like it gives you a way to creatively express something about yourself but you know that the adult you live with will disapprove.
- **Double approach-avoidance:** when a person must choose between two alternatives, both of which have rewarding/attractive and punishing/unattractive features
 - » Example: You are trying to choose between two colleges. You really like the classes available in your major at College X, but you do not like the size or location. You really like the extracurriculars and size of College Y, but it doesn't have as many classes in your major.

[Activity 2.2 Internal Stress and Conflict](#) can be completed at this point.

LESSON 3

The Stress Response

GENERAL OVERVIEW

The stress response is a complex interaction of physiological and psychological activity. Physiological activity includes activation of the “fight or flight” response, realized as activation of the sympathetic-adrenal-medullary (SAM) system and maintained by the hypothalamic-pituitary-adrenal (HPA) axis. Psychological activity includes affective, behavioral, and cognitive responses. Although acute activation of the stress response is helpful to our survival, chronic activation of the stress response can have significant physical and psychological consequences. In this lesson, teachers will delve a bit more deeply into the psychophysiological changes that occur in response to stressors.

DEFINITIONS OF KEY TERMS

- **Stress response:** our reaction to the stressors we experience (also referred to as stress). The stress response includes the physiological and psychological changes that occur in response to stress.
- **Fight or flight response:** activation of the sympathetic nervous system to prepare the body to fight or flee in response to a perceived threat. The response includes increases in heart rate, respiration, and perspiration and decreases in pupil size and digestion.
- **Sympathetic-adrenal-medullary (SAM) system:** a neuroendocrine system responsible for the release of hormones that redirect energy within the body to muscles that help us respond to stressors. The SAM system communicates with the HPA axis.
- **Hypothalamic-pituitary-adrenal (HPA) axis:** a neuroendocrine system comprising the hypothalamus, pituitary and adrenal glands that is responsible for maintaining body homeostasis (balance)
- **Affective response:** a change in emotion or mood due to stress
- **Behavioral response:** any action taken on the environment due to stress
- **Cognitive response:** a change in perception, memory, reasoning, and judgment due to stress
- **Acute activation of the stress response:** an immediate response to the stressor that ends quickly with the end of the stressor
- **Chronic activation of the stress response:** when we experience stressors that last for a long time. Whereas acute activation of the stress response is believed to be protective, chronic activation of the stress response is believed to be responsible for a variety of negative health outcomes.
- **Telomeres:** a protective casing at the end of a strand of DNA. When the telomere is too diminished, the cell often dies or becomes pro-inflammatory. Chronic stress contributes to a decrease in telomeres.

CONTENT OUTLINE

Stress Response Defined

The stress response refers to our reaction to the stressors we experience. The stress response includes the physiological and psychological changes that occur in response to stress.

Fight-or-Flight Response

- Walter Cannon coined the term “fight-or-flight” to describe the physiological changes that occur in order to mobilize energy to the body in order to fight or flee when threatened by a stressor. During fight-or-flight, the sympathetic nervous system is activated; energy is directed to muscles by increasing heart rate, blood pressure, and respiration and by decreasing digestion; perspiration increases to cool the body; and pupils dilate.

[Activity 3.1: TED-Ed Videos on the Stress Response](#) can be completed at this point.

General Adaptation Syndrome

- Hans Selye conducted experiments in the 1930s and 1940s, through which he discovered that a variety of aversive stimuli such as pain, heat, cold, and shock produced a similar physiological response. He called this response “stress.” This stress response can be broken into three distinct phases.
 - » **Phase 1: Alarm:** a threat is recognized, the fight-or-flight response is activated
 - » **Phase 2: Resistance:** with prolonged stress, our body still has an elevated physiological response, but is coping
 - » **Phase 3: Exhaustion:** our body’s resources become depleted and our physiological response will decrease, increasing our chances of illness
- Selye’s GAS model provided the first framework for how stress can lead to illness. The first two phases have been supported by decades of research; however, the third phase has not. Although we often feel exhausted during and after periods of stress, researchers have found that our body’s resources are not depleted by stress.

Physiological Components of the Stress Response

- A physiological response is an acculturation in physiological functioning. The physiological response includes activation of the sympathetic-adrenal-medullary axis (SAM system) and the hypothalamic-pituitary-adrenal axis (HPA axis). The SAM system and HPA axis work together to provide the activation of energy we need to respond to stressors.
 - » **The Sympathetic-adrenal-medullary (SAM system) response** – The SAM system is responsible for the release of hormones that redirect energy within the body to muscles that help us respond to stressors. When we experience a stressor, the sympathetic nervous system activates the release of epinephrine and norepinephrine by the adrenal gland. The SAM system activates very quickly and produces what is often referred to as the “fight or flight” response (increases in heart rate, blood pressure, and respiration; inhibition of digestion; and dilation of the pupils).
 - » **Hypothalamic-pituitary-adrenal (HPA) axis response** – The HPA axis is responsible for maintaining body homeostasis (balance). When we experience a stressor, the hypothalamus releases corticotropin releasing hormone (CRH) which tells the pituitary gland to release adrenocorticotropic hormone (ACTH) which tells the adrenal glands to release stress hormones (cortisol and other glucocorticoids). The HPA axis maintains the stress response for stressors that do not resolve quickly.

Psychological Components of the Stress Response

- Psychological components of the stress response include affective, behavioral, and cognitive responses. Collectively, these are referred to as the A, B, Cs.
 - **Affective** response – An affective response is a change in emotion or mood.
 - » Examples: A *positive* affective response might be experienced as joy, pride, or enthusiasm. A *negative* affective response might be experienced as fear, distress, anger, or sadness.
 - **Behavioral** response – A behavioral response is any action taken on the environment.
 - » Example: Leaving a dangerous situation, fighting back, or using a coping skill
 - **Cognitive** response – A cognitive response is a change in perception, memory, reasoning, and judgment.
 - » Example: Worrying about the situation, thinking about ways to change the situation, enhanced memory or difficulty remembering, and difficulty making decisions

Interactions Between Physiological and Psychological Components of Stress

- Physiological responses to stress impact psychological responses to stress and psychological responses to stress impact physiological responses. For example, an increase in epinephrine (physiological response) can create a feeling of anxiety (affect). Increases in cortisol levels heighten our memory for certain details of stressful events but also make it difficult to retrieve memories of past events. Negative thoughts about a stressor (cognition) can prolong the stress response and/or reactivate the stress response, resulting in high levels of cortisol (physiological response).

[Activity 3.2: My Stress Response in Memes](#) can be completed at this point.

[Activity 3.3: Brain Dump over the Stress Response](#) can be completed at this point.

Physiological Changes Related to Acute vs Chronic Activation of the Stress Response

- **Acute Activation of the Stress Response** refers to activation of the SAM system and HPA axis in response to a stressor. Scientists believe acute activation of the stress response is a healthy response that activates several systems of the body involved in the fight or flight response. The acute stress response is an immediate response to the stressor that ends quickly with the end of the stressor.
 - » **Metabolic changes:** One way the body gets energy for the fight or flight response is to stop the storage of energy into cells. This is done by making the cells resistant to insulin, the hormone that opens cells for energy (glucose) storage.
 - » **Gastrointestinal changes:** Another way to tap into energy for the fight or flight response is to divert energy used for digestion (a high-energy physiological activity) to the brain and muscles, and one way to make it easier to fight or flee a situation is activate the muscles responsible for emptying the bladder and bowels.
 - » **Cardiovascular changes:** The cardiovascular system is responsible for moving energy to the brain and muscles by increasing heart rate and blood pressure.
 - » **Immunologic changes:** When an acute stressor occurs, immune functioning is enhanced to protect the body from infection.
 - » **Memory changes:** When an acute stressor occurs, especially one with a lot of emotion attached, the memory of that event is enhanced. Thus, it will be easy to remember the information encoded at the time of the event (even if the encoded information is incorrect).
- **Chronic Activation of the Stress Response** refers to repeated or prolonged activation of the SAM system and the HPA axis. Chronic activation occurs when we experience many acute stressors and when we experience stressors that last for a long time. Whereas acute activation of the stress response is believed to be protective, chronic activation of the stress response is believed to be responsible for a variety of negative health outcomes.
 - » **Metabolic changes:** Repeatedly making cells resistant to insulin can lead to diabetes.
 - » **Gastrointestinal changes:** Repeatedly diverting energy from digestive processes can result in damage to the gastrointestinal tract which can contribute to the development of ulcers. Repeatedly activating the muscles responsible for bowel movement can contribute to the development of irritable bowel syndrome.
 - » **Cardiovascular changes:** Repeatedly activating the cardiovascular system can cause damage to the vessels from the force of increased heart rate and blood pressure. The combination of damage to the system with increased levels of glucose and cortisol contribute to the development of atherosclerosis (narrowing of the arteries due to plaque) and increase the likelihood of myocardial ischemia (reduced blood flow and glucose to the heart).
 - » **Immunologic changes:** Although acute activation of the stress response enhances immune function, chronic activation of the stress response compromises immune function. Not only does chronic stress reduce T cells (lymphocytes that kill infected cells and regulate the immune response) which impairs the ability to fight infection, it also reduces the number and activity of natural killer (NK) cells which impairs the ability to prevent tumors from spreading. Immunologic changes due to chronic stress contribute to other stress-related illnesses. For example, immunologic changes reduce the ability to fight *Helicobacter pylori* (*H. pylori*, the bacteria responsible for ulcers) and increase the development of atherosclerosis.
 - » **Memory changes:** Memory formation and retrieval require a healthy network of neurons in the hippocampus. Although acute activation of the stress response can enhance formation of event-specific memories (memory encoding), chronic activation of the stress response is associated with poor memory formation for non-emotional information and with poor memory retrieval. Chronically high levels of cortisol result in the atrophy of neural connections in the hippocampus.
 - » **Role of telomeres:** A number of studies have linked chronic stress with shorter telomeres, a chromosome component that's been associated with cellular aging and risk for heart disease, diabetes and cancer. Telomeres are a protective casing at the end of a strand of DNA. When the telomere is too diminished, the cell often dies or becomes pro-inflammatory. This sets the aging process in motion, along with associated health risks. The relationship between chronic stress and cell aging spans our entire life.

[Activity 3.4: Heart Rate and Biodot Biofeedback Lab](#) can be completed at this point.

LESSON 4

Chronic Stress and Mental and Physical Health

GENERAL OVERVIEW

Chronic stress negatively impacts mental well-being and physical health. In this lesson, teachers will introduce students to the psychological and physical consequences of stress if not properly managed. This content can be a bit worrisome or challenging and so we recommend that teachers who cover this lesson also cover Lesson Four, which addresses what students can do to help mitigate the negative effects of stress. When teachers cover the psychological consequences of chronic stress, we recommend that they have local support resources available for students who identify with the material and request help.

DEFINITION OF KEY TERMS

- **Amygdala:** an almond-shaped structure in the [temporal lobe](#) that is a component of the [limbic system](#) and considered part of the [basal ganglia](#). It plays an important role in memory, emotion, perception of threat, and learning fear. (APA, n.d.-c)
- **Anxiety disorders:** any of a group of disorders that have as their central organizing theme the emotional state of fear, worry, or excessive apprehension (APA, n.d.-d)
- **Basolateral amygdala (BLA):** one of the two main groups of nuclei in the amygdala within the brain and the largest portion of the amygdaloid complex. Its nuclei receive neuromodulatory input from various neurotransmitter systems in the basal forebrain and brainstem, are connected particularly with higher order sensory and limbic association areas, and project to the central amygdala. They are implicated in fear conditioning and emotional learning. (APA, n.d.-f)
- **Gamma-aminobutyric acid (GABA):** a major inhibitory neurotransmitter in the nervous system. It can slow the nervous system down, producing a calming effect, which can help with anxiety, stress and fear.
- **Depression:** a negative affective state, ranging from unhappiness and discontent to an extreme feeling of sadness, pessimism, and despondency, that interferes with daily life (APA, n.d.-j)
- **Neurotransmitters:** any of a large number of chemicals that can be released by neurons to mediate transmission of nerve signals across the junctions ([synapses](#)) between neurons. When triggered by a nerve impulse, the neurotransmitter is released from the terminal button, travels across the [synaptic cleft](#), and binds to and reacts with [receptor](#) molecules in the postsynaptic membrane. Some neurotransmitters can be categorized as generally excitatory (e.g., glutamate, glycine) or generally inhibitory (e.g. [gamma-aminobutyric acid](#)). (APA, n.d.-s)
- **Serotonin:** a common monoamine neurotransmitter in the brain. Serotonin has roles in emotional processing, mood, appetite, sexual desire and performance, sleep, pain processing, hallucinations, and reflex regulation. For example, levels of serotonin correlate negatively with aggression, and release of serotonin may promote sleep. It is implicated in many psychological conditions, including depressive disorders, anxiety disorders, sleep disorders, aggression, and psychosis.
- **Addiction:** a state of psychological or physical dependence (or both) on the use of alcohol or other drugs. The term is often used as an equivalent term for [substance dependence](#) and sometimes applied to behavioral disorders, such as sexual, Internet, and gambling addictions. (APA, n.d.-b)
- **Posttraumatic Stress Disorder (PTSD):** in the DSM-5, a disorder that may result when an individual lives through or witnesses an event in which they believe that there is a threat to life or physical integrity and safety and experiences fear, terror, or helplessness (APA, n.d.-u)
- **Infectious disease:** a disease (such as influenza, malaria, meningitis, rabies, or tetanus) caused by the entrance into the body of pathogenic agents or microorganisms (such as bacteria, viruses, protozoans, or fungi) which grow and multiply there
- **Autoimmune disorder:** a condition in which your immune system mistakenly attacks your body
- **Natural killer cells (NK Cells):** a type of [lymphocyte](#) that destroys infected or cancerous cells. Unlike the B and T lymphocytes, natural killer cells do not require the target cells to display on their surface foreign [antigens](#) combined with host histocompatibility proteins. (APA, n.d.-r)
- **Coronary heart disease:** a cardiovascular disorder characterized by restricted flow of blood through the coronary arteries supplying the heart muscle (APA, n.d.-i)
- **Diabetes:** a disease in which the body's ability to produce or respond to the hormone insulin is impaired, resulting in abnormal metabolism of carbohydrates and elevated levels of glucose in the blood and urine

CONTENT OUTLINE

Stressors, the Stress Response, and Well-Being

- Stressors elicit the stress response.
- Chronic activation of the stress response results in physiological changes that increase the likelihood a person will experience mental and/or physical health issues.

Mental Health

- The relationship between stress and mental health is complex. Psychological disorders such as anxiety disorders, depressive disorders, addiction, and schizophrenia are generally thought to be multiply determined. In other words, they are caused by a variety of genetic and environmental factors (one of which may be exposure to chronic stress). Also, exposure to ongoing stressors can worsen the symptoms of someone who is diagnosed with a psychological disorder and living with a psychological disorder can be stressful. Below we touch on some of the associations between psychological functioning and stress.
- Stress can play a factor in the manifestation of a variety of psychological disorders.
 - » **Anxiety disorders:** stress can contribute to the development of an anxiety disorder.
 - Dealing with the stress of a medical diagnosis and acute and chronic stressors can all contribute to the manifestation of anxiety.
 - Experiencing a high number of stressors during adolescence is correlated with heightened anxiety; evidence suggests that stress is associated with a reduction in GABA in adolescents, which is linked to anxiety (Ferrara, 2021).
 - Adolescents are more vulnerable to stress and stress impacts the amygdala differently in adolescents than adults; repeated restraints in adolescent rats increases the number of active basolateral amygdala neurons, which is responsible for forming conditioned fear to aversive stimuli (Zhang et al., 2012).
 - » **Depression** can be induced by stressful experiences (Anisman, 2014).
 - Chronic stress leads to a reduction in the neurotransmitter serotonin, which is linked with depression (Bruno, 2011).
 - Major depressive disorder is associated with elevated cortisol levels as a result of HPA hyperactivation (Khan et al., 2017).
 - **Hopelessness:** there is evidence that suggests that individuals experiencing depression or are more at risk of depression not only react strongly to negative stressors, but also tend to remember negative experiences, which can lead to feelings of hopelessness.
 - » There is a link between chronic exposure to discrimination (particularly racism and sexism) and depression (Alvarez-Galvez & Rojas-Garcia, 2019; Vargas et al., 2020; Britt-Spells et al. 2018).
 - » **Addiction:** stress related illnesses are linked to substance abuse disorders.
 - Can reflect attempts at mitigating emotional pain, sleep issues, guilt, shame, anxiety or fear (Burke & Miczek, 2014)
 - » **Eating disorders:** In a study of over 1,700 adolescents, stressful life events were positively associated with extreme weight control behaviors and binge eating in both females and males (Loth et al., 2008; Wierenga et al., 2018) .
 - » **Schizophrenia:** Although the relationship between stress and schizophrenia is complex, there is some evidence that stress can be one of many factors that impacts the onset of the disorders and that exacerbates symptoms (Savransky et al., 2018).
 - Individuals with schizophrenia do not necessarily experience more stressful life events, but there is greater perception of stress, specifically with daily hassles (Norman, et al., 1993).
 - » **Posttraumatic Stress Disorder (PTSD):** PTSD involves enduring psychological disturbance attributed to the experience of a major traumatic event.
 - Examples: soldiers combating in war, experiencing a natural disaster, being in a car accident, sexual assault or rape, being bullied, witnessing a traumatic event
 - PTSD symptoms can arise with chronic stressors, such as racial discrimination.
 - A predictor of having PTSD is that of having previous traumas (Suliman et al., 2009).

Physical Illness

- The relationship between stress and physical health is also complex. Living with a chronic illness can be associated with a wide array of stressors, including the challenges associated with functional impairment (i.e., difficulty fulfilling roles), concerns about health care costs, unpredictability about disease progression. As described below, stress can also increase people's susceptibility to illness (like the common cold, Cohen et al., 1991), worsen the course of a disease, and contribute to flare-ups.
- **Infectious Disease:** contracting a virus or other infectious disease depends on a variety of factors (hand washing, environment, contact with others, how contagious the virus is, etc.), but stress may render us more vulnerable to the infection and our ability to fight the infection off.
- **Viruses**
 - » Examples include the common cold, the flu, HIV, AIDS, and the reactivation of herpes
 - » Stressors (increase in corticoids) applied early to a herpes simplex virus type 1 resulted in the worsening of the illness (Elftman, et al., 2010).

Critical Thinking Exercise 4.1: Stress and the Common Cold can be completed at this point.

- **Bacteria:** the elevation of stress (glucocorticoids), can also give rise to bacterial infections.
 - » Examples: a bacteria, *Staphylococcus aureus*, can cause skin infections, impetigo, pimples, TSS, meningitis, pneumonia, sepsis, and post-surgery infections
- **Autoimmune Disorders:** stress is associated with the weakening of immune functioning and can aggravate illnesses that attack our immune system.
 - » **Multiple Sclerosis (MS):** stressful experiences contribute to the exacerbation of MS symptoms and the appearance of new brain lesions (Mohr et al., 2004); additionally, the comorbidity of MS with depression has been associated with previous stressful life events
 - » **Lupus:** there is evidence that suggests that daily hassles, especially those related to social relationships, coincide with flares in patients (Peralta-Ramirez et al, 2004).
 - A follow up study showed that the largest predictor of delayed recall of visual memory, visual fluency and attention speed in lupus patients was the amount of daily stress experienced (Peralta-Ramirez et al, 2006).
 - Among Black women, anticipatory racism stress, defined as a pervasive sense of vigilance in anticipation of future racism events due to the chronicity of racism experiences over one's life, has been linked with lupus flare-ups (Spears et al., 2021).
- **Rheumatoid Arthritis (RA):** People who develop RA are more likely than those who do not develop the disease to report having experienced stressful life events in the year before the onset of the disease (Gross et al., 2017).
 - » Also, among those already diagnosed with RA, the most common factor associated with a disease flare-up was psychological stress/distress (Yilmaz et al., 2017).
- **Healing:** common stressors affect the immune system, which can impact the time it takes a wound to heal.
 - » In one study, it took significantly longer (9 days) for people caring for relatives with dementia (a very stressful responsibility) to heal from a small skin wound compared to non-caregivers (Kiecolt-Glaser et al., 1995).
 - » In another study, dental students received a small dental wound to the top of their mouths during the summer and then again three days before their first major exam. It took significantly longer (3 days longer) to heal from the wound received during the stressful exam time than it did to heal during summer vacation (Marucha et al., 1998).

Critical Thinking Exercise 4.2: Stress and Healing can be completed at this point.

- **Cancer**
 - » Stress can reduce the quality of life for cancer patients, and is associated with poorer clinical outcomes (National Cancer Institute, 2012).
 - » Stress can lead to the development of poor behaviors, such as overeating, drinking alcohol, or smoking, all of which can contribute to the development of cancer (National Cancer Institute, 2012).
 - » The stress of treatment can influence the course of illness.
 - » Surgery can include the removal of body parts/organs.
 - » Radiation and chemotherapy cause brain fog, nausea, sickness, muscle aches, physical pain, a drastic change in physical appearance, sleep disturbances, temperature irregularities, exhaustion, depression, anxiety and PTSD.

- » Being a cancer survivor often comes with anticipatory stress of a recurrence or the development of another cancer produced by the initial treatment.
 - » Stressful life events are associated with increased cancer progression and poorer survival, in particular for those with lung cancer (Hamer et al., 2009).
 - » In breast cancer patients, those experiencing high levels of stress had reduced NK cell functioning, which are necessary to attack tumor cells (Varker et al., 2007).
 - » The loss or absence of a parent, physical or sexual abuse, violence and poverty during childhood were associated with increased cancer diagnoses in adulthood (King et al., 2016).
 - » In general, an increase in stressful events is correlated to higher mortality rates.
- **Cardiovascular disease**
 - » High perception of stress is associated with a moderately increased risk of coronary heart disease (Richardson et al., 2012).
 - » Individuals from a lower socioeconomic status (Redmond et al., 2013) and those with low social support are more at risk for later coronary heart disease.
 - » The stress of long-term caregiving of a spouse is correlated with increased risks of cardiovascular disease (Capistrant et al., 2012).
- **Obesity**
 - » During the COVID-19 pandemic, adult and children obesity climbed, and a contributing factor was stress eating and stress induced hunger (Weir, 2021).
- **Diabetes** (Anisman, 2014)
 - » Stress alone does not cause diabetes but there may be a link between stressful lifestyles to Type 2 diabetes, as well as making diabetic management more challenging.
 - » Those with high job demands, but low control, are at greater risk of heart disease, and those with this chronic job strain combined with discrimination, injustice or unfairness in the workplace were more likely to develop Type 2 diabetes along with coronary heart disease.

LESSON 5

Coping and Stress Management Strategies

GENERAL OVERVIEW

As discussed in the previous lessons, stressors elicit a stress response that, if chronic, can contribute to the development or worsening of mental and physical health issues. Although we cannot remove all stress from our lives, the stress-illness connection can be disrupted by coping and stress management strategies. Coping is the process of using cognitive and behavioral strategies to respond to problems in life. Mechanisms used to cope with stress attempt to overcome or diminish the amount of stress experienced. In this lesson, three broad types of coping mechanisms will be introduced: appraisal-focused, which affects thought associated with the stressor; problem-focused, which affects the stressor itself; and emotion-focused, which affects the feelings associated with the stressor. We will also describe stress management strategies that provide both short-term and long-term benefits by decreasing the amount of stress perceived and experienced and directly changing the stress response.

DEFINITION OF KEY TERMS

- **Coping:** the ongoing behavioral, cognitive, and emotional process of managing stress and the negative effects—biological, psychological, and social—it can have on people’s lives
- **Coping strategies:** the thoughts one has and the actions one takes to tolerate, reduce, or minimize the effects of stress
- **Appraisal-focused coping:** a strategy in which people change their way of thinking about the stress by approaching it differently
- **Problem-focused coping:** a stress-management strategy in which a person directly confronts a stressor in an attempt to decrease or eliminate it (APA, n.d.-v)
- **Cognitive restructuring:** a technique used to identify self-defeating beliefs or cognitive distortions and then modify them so that they are adaptive and reasonable (APA, n.d.-h)
- **Emotion-focused coping:** a strategy in which a person regulates his or her negative emotional reactions to a stressor (APA, n.d.-l)
- **Social-support system:** the network of friends, family, neighbors, colleagues, and others surrounding an individual that provides assistance or comfort in helping one cope with biological, psychological, and social stressors
- **Meditation:** profound and extended contemplation or reflection in order to achieve focused attention or an otherwise altered state of consciousness and to gain insight into oneself and the world (APA, n.d.-p)
- **Mindfulness:** the awareness of one’s internal states and surroundings (APA, n.d.-q)
- **Avoidance coping:** strategy for managing a stressful situation in which a person does not address the problem directly but instead disengages from the situation and averts attention from it (APA, n.d.-e)
- **Catastrophizing:** to exaggerate the negative consequences of events or decisions (APA, n.d.-g)
- **Denial:** refusing to acknowledge that something is wrong is a way of coping with emotional conflict and stress
- **Procrastination:** form of self-regulation failure characterized by the irrational delay of tasks despite potentially negative consequences

CONTENT OUTLINE

Coping Mechanisms

- **Appraisal-focused coping**

- » Lazarus and Folkman conceptualized an appraisal process:
 - **Appraisal:** this is evaluating a situation and deciding whether the event is irrelevant to you, relevant but not threatening, or stressful.
 - **Reappraisal:** if you determine the situation is stressful, then it is evaluated for a second time where you now assess your coping resources and the options for managing the stress.
 - **Predictability and anticipation:** unpredictable stressors tend to have more impact than predictable sources of stress. Anticipatory coping that occurs before the onset of stress itself provides a certain degree of control. The perception of control can lessen the effects of stress and impact on health.
 - **Cognitive restructuring:** examining underlying assumptions and automatic thoughts associated with the problem, using techniques such as “reframing” to view the problem as more of a challenge than threat.
 - Example: a student acknowledges the unreasonably high pressure imposed by her parents to get into an Ivy league college and copes by reframing their expectations as validation for how much they think of her ability rather than a demand to be accepted into Harvard.

- **Problem-focused coping**

- » Involves taking steps to generate possible solutions, assessing the pros and cons, and selecting the best way to cope with the stress. This type of coping involves:
 - Identifying the problem
 - Exploring possible strategies
 - Planning and taking action(s)
 - Example: a student who has an upcoming examination might cope by studying more, attending every class, joining a study group, and attending special review sessions to ensure they fully understand the course material.

- **Emotion-focused coping**

- » Involves changing the way an individual feels or emotionally reacts to a certain stressor. The aim is to reduce the emotional impact as a means to improve the individual’s ability to cope. It has been suggested that emotion-focused coping is used primarily when a person appraises a stressor as beyond his or her capacity to change. For example,
 - Focus on/venting emotions related to the stressor*
 - Denial of the stressor*
 - Acceptance of the stressor
 - Turning to religion

*These two forms of emotion-focused coping are effective in the short-term but can interfere with adaptive coping if used long term.

 - Example: a student who is taking a class taught by a teacher who has a reputation for being difficult might cope by talking to the school counselor about their feelings to gain perspective of their emotions before attending that teacher’s office hours.

Adaptive Stress Management Strategies: Effective both short term and long term

- **Social Support Strategies**

- » Social support system: the network of friends, family, neighbors, colleagues, and others surrounding an individual that provides assistance or comfort in helping one cope with biological, psychological, and social stressors.
- Main types of social support:
 - **Emotional:** Expressions of empathy, love, trust and caring from others. Example: close friends, family being there to listen
 - **Instrumental:** Tangible aid and service provided by others. Example: rearranging school schedule while you recover from major surgery, dropping off a meal to someone in need
 - **Informational:** Advice, suggestions, and information received from others. Example: coach reassures player after concussion by sharing their past experience through their own recovery
 - **Appraisal:** Information provided by others that changes the evaluation of the stressor. Example: being reminded that a neighbor who is a cancer survivor is resilient and can overcome a small set back
- Research has documented benefits of social support, including improved immune, cardiovascular, and neuroendocrine function; positive adjustment to chronic disease; decreased depression and anxiety; and effective buffering against the negative effects of stress.
 - » Social support is correlated with decreased morbidity from illness or injury (Kulik, 1989), strengthens the immune system (Cohen et al., 2003).
 - » Good social support may promote better thinking and cognitive health (Haslam et al., 2005).

[Critical Thinking Exercise 5.1: Is Popularity Protective Against Stress?](#) can be completed at this point.

- Having social support may lessen the perceived threat from a stressor by decreasing the risk of isolation.
 - » Having close, loving relationships provides a safe environment to process the stressor (Wang et al., 2018). Negative emotions of loneliness are less likely to occur (Beehr, 2000).
- **Behavioral Strategies**
 - » **Time management:** planning for effective and efficient use of time
 - **Eisenhower Square** and prioritization
 - » Named after Dwight D. Eisenhower, this is a systematic way to prioritize tasks into 4 quadrants:
 - » Important and urgent (do now)
 - » Important but not urgent (schedule when to do it)
 - » Not important but urgent (delegate it)
 - » Not important and not urgent (postpone or do not do it)

[Activity 5.1: Time Flies!](#) can be completed at this point.

- » **Relaxation training:** progressive muscle and/or imagery relaxation coupled with deep breathing to directly modify the stress response
- » **Meditation:** profound and extended contemplation or reflection in order to achieve focused attention or an otherwise altered state of consciousness and to gain insight into oneself and the world
- » **Mindfulness:** the awareness of one's internal states and surroundings
 - Research suggests that mindful meditation may physically change the brain and body and could potentially help to improve many health problems and promote healthy behaviors: increased gyrification, slow changes due to aging, and affect activity in the amygdala.

[Activity 5.2: Meditation Podcast](#) can be completed at this point.

[Critical Thinking Exercise 5.2: Being Mindful](#) can be completed at this point.

- » **Humor:** can dampen stress appraisals, increase positive emotions, and enhance social support. (Weiten, 2017). Researchers found that laughing not only increased levels of hormones that improve health, just the mere act of looking forward to participating in positive/ funny activities decreased levels of potentially harmful hormones (Berk, 2001).
- **Physical Strategies**
 - » **Exercise** in all forms defined as sustained exercise that can increase cardiovascular and lung capacity and can help alleviate depression and anxiety.
 - Substantial body of research suggests that exercise reduces chronic inflammation and therefore serves as a buffer to the damaging physical effects of stress (Edenfield & Blumenthal, 2011).
 - » **Diet and nutrition:** Important to recognize the effects that stress imposes on one's diet and engage in more mindful eating, increase consumption of fruits and healthy snacks.
 - Acute stress may suppress your appetite via hypothalamic influence but chronic stress mediated by cortisol will increase your appetite and activate reward signal pathways in the brain, both of which will increase intake of highly palatable, sugary foods, high-fat foods, and snack foods.
 - Research shows that sugar consumption reduces the stress response leading to a positive reinforcement of comfort food intake.

Activity 5.3: The Mind and Gut Connection can be completed at this point.

- » **Sleep:** Nearly one in five teens (18 percent) say that when they do not get enough sleep, they are more stressed, and 36 percent of teens report feeling tired because of stress in the past month (APA, 2014). The restorative theory of sleep states that sleep is necessary to one's physical health.
 - Physical benefits of gaining quality sleep are widespread: Sleep affects growth and stress hormones, our immune system, appetite, breathing, blood pressure and cardiovascular health (National Institutes of Health, 2013).
 - Sleep is important for cognitive functions such as memory formation, enhancing synaptic connections. There is evidence that bodily growth and repair occur during the deepest stages of sleep (Saper, 2001). Insufficient sleep can contribute to life threatening accidents. According to the Sleep Foundation (nd), drowsy driving is responsible for more than 6,000 fatal car crashes each year and people with severe insomnia are seven times more likely to have work-related accidents than good sleepers.
 - Consequences of insufficient sleep among adolescents range from poor academic performance to increased sports-related injuries, and a higher risk of engaging in health risk behaviors such as alcohol and substance use (Owens & Weiss, 2017).

Laboratory Exercise 5.1: Sleep and Perceived Stress can be completed at this point.

Influence of Culture and Identity

- **Influence of one's culture on coping with stress:** Culture and identity may impact the degree to which stress is perceived and experienced. It may also influence the type of coping strategy a person uses in managing stress (Pfundmair et al., 2015).
- Collectivist cultures privilege family and community over individuals. In contrast, individualistic cultures value personal autonomy and independence over community. These cultural views can impact how stress is perceived and how people respond to stressors.
 - » For example, people living in individualistic societies may be less negatively impacted by the stressors of their friends and family than those living in collectivistic cultures. In contrast, those living in collectivist communities may experience stronger social support and less isolation.
- **Role of religion:** Religious beliefs may foster a person's search for purpose and meaning in stressful situations. Many religious practices have elements of meditation that lead to a relaxation response.

Maladaptive stress management strategies: quick fix strategies that provide short-term relief, but (1) they may not address the negative effects caused by stress, and (2) they may be associated with negative long-term consequences.

- » **Avoidance coping:** strategy for managing a stressful situation in which a person does not address the problem directly but instead disengages from the situation and averts attention from it.
 - Example: Going out of your way to avoid your friend that you need to have a difficult conversation with because it causes you anxiety. You may feel a sense of relief when you ignore their text or call, but the problem does not get resolved and could lead to more serious conflict in the relationship.
 - Example: Putting off (procrastinating) working on a paper because sitting down to write triggers thoughts like “I’m no good at this” and feelings of sadness and self-doubt. Again, putting off the task might lead to a sense of temporary relief, but the deadline is still hanging over you. Also, if you procrastinate too much you may be rushed when writing the paper, which could negatively impact the quality of the paper and reinforce your belief that you’re a poor writer.
 - Use of substances, chronic social media scrolling, and unhealthy eating can also be avoidance coping strategies.
- » **Denial:** refusing to acknowledge that something is wrong is a way of coping with emotional conflict and stress.
 - Example: A student may refuse to recognize their obvious lack of preparedness for an upcoming exam to avoid feeling responsible for failing the class. They miss the opportunity to take an action that could be effective problem-solving (i.e., better preparation next time).

LESSON 6

Promoting Mental and Physical Health

GENERAL OVERVIEW

Whereas the first five lessons focused on stress, the stress response, ways in which stress contributes to mental and physical health issues, and ways in which the negative impacts of stress can be reduced, Lesson 6 focuses on promoting health more broadly. Many of the concepts in this lesson can be used as a direct response to a stressful experience; however, the mindsets and behaviors described here are important to practice even in the absence of an immediate stressor. In this lesson, teachers will introduce students to habits, intentions, and traits that promote mental and physical well-being.

Teachers may also refer to the TOPSS unit lesson plan on Positive Psychology for additional information on well-being and resilience.

DEFINITION OF KEY TERMS

- **Gratitude:** a sense of thankfulness and happiness in response to receiving a gift, either a tangible benefit given by someone (e.g., a favor) or a fortunate happenstance (e.g., a beautiful day) (APA, n.d.-n)
- **Savoring:** “an internal process through which people up-regulate their positive feelings by directing attention to emotionally relevant events” (Dunn, 2018, pg. 47)
- **Resilience:** the process and outcome of successfully adapting to difficult or challenging life experiences, especially through mental, emotional, and behavioral flexibility and adjustment to external and internal demands (APA, n.d.-w)
- **Hardiness:** an ability to adapt easily to unexpected changes combined with a sense of purpose in daily life and of personal control over what occurs in one’s life (APA, n.d.-o)
- **Optimism:** hopefulness; the attitude that good things will happen and that people’s wishes or aims will ultimately be fulfilled (APA, n.d.-t)
- **Subjective well-being (SWB):** is the scientific term for happiness and life satisfaction

CONTENT OUTLINE

Habits that promote Physical and Mental Health

Exercise is beneficial as a coping strategy for managing stress, but also has benefits that go beyond just stress.

- » Physical benefits of exercise- being physically active reduces risk of heart attacks and cardiovascular disease, lowers cholesterol levels, reduces the risk of some cancers, reduces the risk of type 2 diabetes, helps individuals maintain a healthy weight, strengthens bones and muscles, improves quality of daily life, prevents falls, and increases longevity (CDC, 2021-a).
- » Mental benefits of exercise- being physically active has a mood-enhancing effect, reduces symptoms of depression and anxiety, can help ward off panic attacks, improves our quality of sleep, and improves memory and thinking (Weir, 2011).
- » The CDC recommends at least 150 minutes of moderate to intense aerobic exercise a week, as well as muscle-strengthening at least 2 days per week (CDC, 2020).

Sleep contributes to our health, as detailed in Lesson Five.

- » According the CDC (How much sleep do I need?, 2017), teenagers from the ages of 13-18 should receive 8-10 hours of sleep per 24 hours, and adults 18 and above require 7+ hours each night
- » Tips to get a better night’s sleep (APA, 2004):
 - Develop a consistent bedtime routine without technology
 - Go to bed at the same time each night
 - Try going to bed earlier if you are not getting enough sleep at night
 - Avoid caffeine in the afternoon
 - Take a power nap of 20-25 minutes in the mid-afternoon

Nutrition and diet is important for our physical and mental health.

- » Dietary patterns may contribute to depression, increases in ADHD, and other psychological disorders
- » There is evidence to suggest that a diet high in omega-3 can improve the symptoms of depression when combined with therapy, and can also improve the symptoms of ADHD (Clay, 2017)
- » Fad diets that are restrictive sound appealing, but can be harmful and are not sustainable
- » According the Dietary Guidelines for Americans, 2020-2025, only 51% of 14-18 year olds adhere to the recommended dietary guidelines (Dietary Guidelines for Americans, 2020)
- » Some healthy eating tips from the CDC (Healthy Eating Tips, 2021) to improve our physical and mental health are:
 - Add in healthy fats like olive oil, nuts and avocado
 - Cut out sodium by avoiding processed or prepackaged food, get dressings on the side of a salad, and purchase low sodium items from the grocery store
 - Add a variety of different colored fruits and vegetables to your diet
 - Increase your intake of fiber with oatmeal for breakfast, eating steamed or raw vegetables, and adding beans or peas to a salad
 - Be mindful of the portion size of your meals
 - Don't eat out of boredom or emotion; eat when you are hungry

Smoking is the leading cause of preventable deaths, causing more than 7 million deaths per year (CDC, 2021-b).

- » On average, nonsmokers outlive smokers by 10 years.

Intentional Behaviors that Promote Physical and Mental Health

- **Mindfulness** helps mitigate stress, has a positive impact on mood and alertness, and promotes mental and physical health.

Activity 6.1: Mindful Walking can be completed at this point.

- **Gratitude** is defined as a sense of thankfulness and happiness in response to receiving a gift, either a tangible benefit given by someone (e.g., a favor) or a fortunate happenstance (e.g., a beautiful day).
 - » Regularly expressing gratitude can promote happiness and our self-esteem, as well as improve our mental and physical health.

Activity 6.2: The 7 Benefits of Gratitude can be completed at this point.

- **Savoring** is defined as “an internal process through which people up-regulate their positive feelings by directing attention to emotionally relevant events” (Dunn, 2018, pg. 47).
 - » We can engage in savoring spontaneously or with effort.
 - » Examples of savoring the moment could be basking in the joy of giggling with our friends, marveling at the sunrise, appreciating the first bite of our favorite meal, reflecting on the pride we feel after accomplishing a task, etc.
 - » Savoring correlates with improved levels of happiness, enhancements in our mood, higher levels of self-esteem, improvements in attention and learning.

Traits that Promote Physical and Mental Health

- » **Resilience** is the capacity to adapt, recover, and possibly even flourish following some adversity, trauma, tragedy, threats, or significant sources of stress—such as family and relationship problems, serious health problems, or workplace and financial stressors.
 - Resilience can be learned.

Activity 6.3: Building Resilience can be completed at this point.

- » **Resilience Competencies:** the University of Pennsylvania Positive Psychology Center recognizes 6 resilience competencies (Resilience Skill Set, 2021)
 - Self-Awareness
 - Self-Regulation
 - Mental Agility
 - Strength of Character
 - Connection
 - Optimism
- » **Hardiness** is a personality trait characterized by resilience and the ability to cope effectively with stress.
 - Hardiness protected Army reserve personnel in the Gulf War. Those with higher levels of hardiness were less likely to have PTSD or depression related to combat-related stress (Bartone et al., 2008). Similar results were also found with Vietnam veterans (King et al, 1998).
 - Research shows that hardiness enhances performance, leadership, conduct, stamina, mood, as well as our physical and mental health by providing individuals with the capacity and courage to turn adversity into an advantage (APA, 2003).
 - While some may be innately hardier, this can also be learned.
- » **Optimism** is a synonym for hopefulness: the attitude that good things will happen and that people’s wishes or aims will ultimately be fulfilled.
 - Optimists are people who anticipate positive outcomes, whether serendipitously or through perseverance and effort, and who are confident of attaining desired goals.
- » **Optimism and Health**
 - Optimists respond to stressful, challenging life events with more positive emotions, while pessimistic people tend to expect poor outcomes and therefore respond with more negative emotions (Carver & Scheier, 2000).
 - Those with greater levels of optimism prior to a coronary artery bypass grafting surgery were correlated with quicker recoveries (Scheier et al., 1989), while those with lower levels of optimism following myocardial infarction were connected to higher levels of depression a year from the surgery (Shnek, Irvine, Stewart, & Abbey, 2001).
 - The benefits of optimism on our physical and mental health are known, but considering that optimism is a personality trait, there is contradictory evidence if we can increase our levels of optimism in the long term.

Subjective Well-Being (SWB)

- » Defined as people’s cognitive and affective evaluations of their lives
- » **Stress and SWB**
 - Our SWB (also known as happiness) has an inverse relationship with high levels of stress.
- » Happiness has benefits to an individual’s physical health, mental health, relationships, productivity, and prosocial behavior (De Neve et al., 2013).
- » 50% of our happiness can be attributed to a genetic set point. 10% of our happiness is contingent on our life circumstances, and 40% of our happiness comes from our intentional thoughts and behaviors (Lyubomirsky et al., 2015).
 - This means that every individual has the ability to improve their happiness, and can engage in intentional activities to improve this.
 - Activities that promote increased levels of happiness are meditating/practicing mindfulness, finding flow, expressing gratitude, eating healthy, exercising, staying connected to others, savoring moments, and volunteerism.

[*Activity 6.4: Synthetic Happiness*](#) can be completed at this point.

[*Activity 6.5: The Happiness Lab Podcast Walk*](#) can be completed at this point.

Positive Effects of Stress

- We often think of stress as something negative, but there is some research that suggests that stress in some cases can be positive, and promote our physical and mental well being.
 - » There is evidence that supports some individuals experience post traumatic growth after a traumatic event where they experience positive changes in their thought patterns or behaviors.
 - » Exposure to stress can increase our stress tolerance (Seery et al., 2013).
 - » There is evidence to suggest that there is a connection between the perception of stress and an individual's health.
 - Those with a higher level of stress and perceive stress as being bad had a 43% increased risk of premature death in a study (Keller et al., 2012)
 - Conversely, those who experience high stress but do not view stress as being bad, had the lowest risk of death
 - Helping individuals restructure the way stress is viewed could be beneficial to their health

CRITICAL THINKING EXERCISE 1.1:

The Evolution of the Definition of Stress

Stephanie Franks, MS, Berkshire Local Schools, Ohio

CONCEPT

This activity will help students see how psychologists have changed how stress is defined over time, and how our appraisal of stress plays a role in how we experience stress. In the stress and health unit, students will need to understand the sources of stress, as well as the stress reaction. In order for students to be able to do this, they need to have an understanding of exactly what stress is, and how we have come to understand stress.

MATERIALS

The Evolution of the Definition of Stress Worksheet

INSTRUCTIONS

- This activity/discussion will take about 5-10 minutes.
- Have students read through the four definitions of stress, and respond to the questions.
- When they are finished, discuss their responses and specifically how stress is no longer viewed as a stimulus or response, but also includes the importance of our appraisal and perceived ability to cope.

THE EVOLUTION OF STRESS STUDENT WORKSHEET

Directions: Look over how various psychologists have defined stress. Then answer the following questions.

- Walter Cannon (1929) defined stress as physical and psychological “disturbances” that threaten homeostasis (the body’s state of balance).
- Hans Selye (1956) defined stress as a stimulus that produces a physiological response.
- Richard Lazarus and Susan Folkman (1984) defined stress as occurring when a person determines they do not have the personal or social resources to respond to a perceived threat.
- Modern researchers define stress as the process by which we perceive and respond to circumstances that we appraise as threatening. This leads to a series of emotional (affective), behavioral, cognitive, and physiological changes.

Questions to consider:

How were Walter Cannon's and Hans Selye's definitions of stress similar?

What do Lazarus and Folkman mean that stress occurs when a person determines they do not have the personal or social resources to respond to a perceived threat?

How is this different from both Cannon and Selye?

According to modern researchers, how is stress currently defined?

How is this different from previous researchers?

Can you think of a time when the exact same situation was appraised differently by you, where in one circumstance you felt stress and in another circumstance you did not?

REFERENCES

Cannon, W. B. (1929). *Bodily changes in pain, hunger, fear, and rage*. Appleton.
Lazarus, R. S., & Folkman, S. (1984) *Stress, appraisal, and coping*. Springer.
Selye, H. (1956). *The stress of life*. McGraw-Hill.

CRITICAL THINKING EXERCISE 1.2**Distress vs Eustress**

Stephanie Franks, MS, Berkshire Local Schools, Ohio

CONCEPT

While we often view stress as being negative, Hans Selye coined the term *eustress*. “Eu” is the Greek prefix for good, so eustress means good stress. Selye, Lazarus, and other researchers have suggested that not all stress is negative or has detrimental effects. Eustress is a type of stress, where the demands of a situation cause physiological and cognitive changes that are positive, and allow for optimal levels of performance. The purpose of this activity is to help students gain a better understanding of stress, and how distress and eustress can impact us.

MATERIAL

The *Distress vs Eustress* Worksheet

INSTRUCTIONS

- » This activity/discussion will take about 10-15 minutes to complete.
- » Ask students the following questions: Is stress always negative? Can stress be positive?
- » Introduce the difference between eustress and distress.
 - **Distress:** the negative stress response, often involving negative affect and physiological reactivity: a type of stress that results from being overwhelmed by demands, losses, or perceived threats. Distress triggers physiological changes that can pose serious health risks, especially if combined with maladaptive ways of coping.
 - **Eustress:** the positive stress response, involving optimal levels of stimulation: a type of stress that results from challenging but attainable and enjoyable or worthwhile tasks (e.g., participating in an athletic event, giving a speech). It has a beneficial effect by generating a sense of fulfillment or achievement and facilitating growth, development, mastery, and high levels of performance.
- Have students complete the *Distress vs Eustress* Worksheet.
- Discuss worksheet.
 - » Distress is associated with decreased performance, unpleasant feelings, and feelings of anxiety.
 - » On the other hand, eustress improves our performance, focuses our attention, motivates us, and is exciting.
 - » The stress in situations that are negative and/or difficult to cope with is experienced as distress and the stress (thrill) in situations that are positive and we have the capacity to handle is experienced as eustress.
- Discussion questions for students:
 - » When you think of stress, are you typically thinking of distress?
 - » Are there some events that will always be negative and others that are positive? Is there some overlap?
 - » How could our perception of whether a stressor is positive or negative impact our stress response?
 - » How can distress have detrimental effects on you physically and psychologically?
 - » How does eustress affect you physically and psychologically?

DISTRESS VS EUSTRESS STUDENT WORKSHEET

Generate a list of examples of when you have experienced distress.

Select one example from the list above.

How did this distress impact you physically and cognitively?

Generate a list of examples of when you have experienced eustress.

Select one example from the list above.

How did this eustress impact you physically and cognitively?

CRITICAL THINKING EXERCISE 1.3**What's the Difference between Stress and Anxiety?**

Stephanie Franks, MS, Berkshire Local Schools, Ohio

CONCEPT

Students often confuse stress and anxiety because the physical and emotional response can be the same. This activity is designed to help students differentiate between the two terms.

MATERIAL

- [What's the Difference Between Stress and Anxiety: Knowing the difference can ensure you get the help you need](#) article from the American Psychological Association (APA, 2020)
- Student Worksheet *What's the Difference between Stress and Anxiety?*

INSTRUCTIONS

- This activity will take between 15-20 minutes, but may need to be adjusted to fit your particular classroom. It should take the students about 10 minutes to complete the assigned reading and worksheet. The discussion takes about 5-10 minutes.
- Before providing students with the worksheet, ask students the following questions:
 - » Is there a difference between stress and anxiety?
 - » What is anxiety?
 - » Do you use the terms anxiety and stress interchangeably?
 - » What are the physical responses of stress?
 - » What are the physical responses to anxiety?
 - » What are the causes of stress?
 - » What are the causes of anxiety?
 - » Can stress cause anxiety?
 - » Can anxiety cause stress?
- Have students read the American Psychological Association's article, [What's the Difference Between Stress and Anxiety: Knowing the difference can ensure you get the help you need](#) (APA, 2020).
- Have students complete the Worksheet, *What's the Difference between Stress and Anxiety?*
- Have students get into groups and review examples of when students experienced stress versus examples of when they experienced anxiety.
- As a class, discuss the worksheet and review any of the previous discussion questions.

REFERENCE

American Psychological Association. (2020). *What's the difference between stress and anxiety?* <https://www.apa.org/topics/stress/anxiety-difference>

WHAT'S THE DIFFERENCE BETWEEN STRESS AND ANXIETY WORKSHEET

Directions: Read the article [What's the Difference between stress and anxiety?](#) (APA, 2020) and complete the following questions.

1. What is your best definition of stress?

2. What is your best definition of anxiety?

3. How are stress and anxiety similar?

4. How are stress and anxiety different?

5. Have you used these terms interchangeably in the past?

6. Provide an example of a time you experienced stress?

Indicate how much you agree with this statement: I understand the difference between anxiety and stress.

1	2	3	4	5
100%, I've got it		Somewhat		Not so much

ACTIVITY 1.1**Stress or Anxiety?**

Stephanie Franks, MS, Berkshire Local Schools, Ohio, and Stacie Spencer, PhD, MCPHS University, Massachusetts

CONCEPT

Students often confuse stress and anxiety because the physical and emotional response can be the same. This activity is designed to help students differentiate between the two terms.

MATERIAL

- Student Worksheet, *Stress or Anxiety?*

INSTRUCTIONS

- This activity will take 5-10 minutes to complete.
- Have students complete the *Stress or Anxiety Worksheet*, go over responses, and lead a small group or whole class discussion.

DISCUSSION QUESTIONS

- How are stress and anxiety alike?
- How are they different?
- Can you experience anxiety without a stressor?
- Can you experience stress without anxiety?

Answer Key

1A. Stress

1B. Anxiety

2A. Anxiety

2B. Stress

3A. Anxiety

3B. Stress

4A. Stress

4B. Anxiety

5A. Stress

5B. Anxiety

6A. Anxiety

6B. Stress

7A. Stress

7B. Anxiety

8A. Anxiety

8B. Stress

STRESS OR ANXIETY STUDENT WORKSHEET

Instructions

The words “stress” and “anxiety” are often used interchangeably in everyday conversation; however, they have different meanings.

- **Stress** is the process by which we perceive and respond to circumstances that we appraise as challenging.
- **Anxiety** is characterized by excessive worries that do not go away, even when there is no clear source for the anxiety or after the source of the anxiety is eliminated.

One reason the words stress and anxiety are used interchangeably is because they often feel the same. When we experience stress and when we are anxious, we might feel our heart racing, we might feel sweaty, we might have difficulty focusing, we might not want to eat or feel like eating a lot, and we might have difficulty falling and/or staying asleep. Each of the following scenarios could result in increased heart rate, perspiration, difficulty concentrating, change in appetite, and/or insomnia. Even though the responses might be the same, some scenarios illustrate stress and some scenarios illustrate anxiety.

Read through the following pairs of scenarios and identify which is an example of stress or an example of anxiety. Write “S” for Stress and “A” for Anxiety.

- | | |
|------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| _____ 1A. Taking care of a loved one with cancer. | _____ 5A. Sitting in traffic that might make you miss a flight. |
| _____ 1B. Worrying that a healthy loved one might get cancer. | _____ 5B. Repeatedly thinking about how much traffic there might be when you leave for the airport the next day. |
| _____ 2A. Avoiding new situations because people in those situations might use racial slurs. | _____ 6A. Worrying for weeks about what classmates thought about a presentation you gave even after receiving positive feedback from the teacher. |
| _____ 2B. Joining a new club and hearing someone in the club use racial slurs. | _____ 6B. Preparing and delivering a class presentation. |
| _____ 3A. Worrying that your friends are saying bad things about you behind your back even though they always say nice things when you are together. | _____ 7A. Being made fun of or being humiliated by others. |
| _____ 3B. Confronting a friend who you heard said something bad about you. | _____ 7B. Avoiding going to any parties because someone who has teased you in the past might be there. |
| _____ 4A. Juggling school work, team practices, and a part-time job. | _____ 8A. Repeatedly thinking about the possibility of being rejected by all the colleges you apply to. |
| _____ 4B. Repeatedly thinking about what might happen if unable to juggle school work, team practices, and a part-time job. | _____ 8B. Writing multiple essays to apply to several colleges. |

CRITICAL THINKING EXERCISE 2.1**Teenage Stress**

Stephanie Franks, MS, Berkshire Local Schools, Ohio

CONCEPT

This activity will have students read three articles about teen stress. Students taking a high school class are teens, and this activity should be relatable to their lives, may validate the levels of stress they may be experiencing, and will have students question whether or not their own stress levels parallel or even exceed an adults'. Using retrieval practice in class is a great way to help students remember what they have learned and better embed the information into their memory. A brain dump is an effective way to have students engage in retrieval practice.

MATERIAL

- Student Worksheet, *Teenage Stress*
- Articles:
 - » [6 Reasons Why Your Teen's Life is More Stressful than your Own](#) (Nicholls, 2017)
 - » [APA Survey Shows that Teen Stress Rivals that of Adults](#) (APA, 2014)
 - » [Common Triggers of Teenage Stress](#) (Smith, 2020)

INSTRUCTIONS

- This activity will take 25-30 minutes to complete.
- Have students complete the *Teenage Stress* Worksheet, go over responses, and lead a small group or whole class discussion.

Discussion Questions for Students

- Do you think teens might have more stress than adults? What evidence from the readings lead you to this conclusion?
- Were the authors objective about the topic? Was there any information that was overemphasized or left out?
- What do you think are your biggest stressors as a teen?
- Do you feel that teachers/parents understand/empathize with the stress you have?
- Do you think there are global, national, local stressors unique to your teenage years that have made you experience stress? What are these and how have they had an impact on you?
- Other thoughts/reflections?

The "Brain dump" idea came from Dr. Pooja K. Agarwal (Agarwal, 2017)

References

- Agarwal, P. K. (2017, November 30). *Brain dumps: A small strategy with a big impact*. Retrieval Practice: Unleash the Science of Learning. <https://www.retrievalpractice.org/strategies/2017/free-recall>
- American Psychological Association. (2014). *American Psychological Association survey shows teen stress rivals that of adults*. <https://www.apa.org/news/press/releases/2014/02/teen-stress>
- Nicholls, J. (2017, May 15). 6 reasons why your teen's life is more stressful than your own. *Washington Post*. <https://www.washingtonpost.com/news/parenting/wp/2017/05/15/6-reasons-your-teens-life-is-more-stressful-than-your-own>
- Smith, K. (2020, November 24). *6 common triggers of teenage stress*. PSYCOM. <https://www.psychom.net/common-triggers-teen-stress>

TEENAGE STRESS WORKSHEET

Read [6 Reason's Why Your Teen's Life is More Stressful than your Own](#) (Nicholls, 2017)

Brain dump (write down everything you remember from the article above) for 90 seconds:

Read [APA Survey Shows that Teen Stress Rivals that of Adults](#) (APA, 2014)

Brain dump (write down everything you remember from the article above) for 90 seconds:

Read [Common Triggers of Teenage Stress](#) (Smith, 2020)

Brain dump (write down everything you remember from the article above) for 90 seconds:

CONCLUSIONS

Do you think teens might have more stress than adults? What evidence from the readings lead you to this conclusion?

Were the authors objective about the topic? Was there any information that was overemphasized or left out?

What do you think are your biggest stressors as a teen?

Do you feel that teachers/parents understand/empathize with the stress you have?

**Do you think there are global, national or local stressors unique to your teenage years that have made you experience stress?
What are these and how have they had an impact on you?**

Other thoughts/reflections?

ACTIVITY 2.1

Types of Stressors

Stephanie Franks, MS, Berkshire Local Schools, Ohio, and Stacie Spencer, MCPHS University, Massachusetts

CONCEPT

The following activity should help students consider stressors in people's lives and identify which type of stressor is being addressed, as well as whether the stressor is acute, chronic, or anticipatory.

MATERIALS

- Student Worksheet, *Types of Stressors*
- Sheet of paper for group collaboration

INSTRUCTIONS

- This activity will take 20-25 minutes to complete.
- Form groups of three-to-five students.
- Give small groups five minutes to generate as many stressors as they can come up with and write them down on a piece of paper. These can be stressors that they personally experience or can be made up. Students should use the entire five minutes to add to this list.
- Pass out the student worksheet.
 - » Have the small groups create six-word summaries for each type of stressor.
 - » Have groups swap their list of stressors with another group's list of stressors, and identify which type of stressor each example belongs and write the stressor under the correct category on the worksheet.
 - » After they identify where each stressor belongs, they should also decide if each stressor is acute, chronic, or anticipatory in nature.

TYPES OF STRESSORS STUDENT WORKSHEET

TYPE OF STRESSOR	6-WORD SUMMARY	EXAMPLES
Daily Hassles		
Internal Conflicts		
Pressure		
Catastrophes		
Major Life Events		
Environmental		
Acculturation		

ACTIVITY 2.2**Internal Stress and Conflict**

Stephanie Franks, MS, Berkshire Local Schools, Ohio, and Stacie Spencer, MCPHS University, Massachusetts

CONCEPT

Internal conflicts are inevitable parts of our everyday life. Should we get up early to go for a walk or get some extra sleep? Do we watch our favorite TV show or study for a test next week? Internal conflicts occur when we have to make a choice between competing motivations or actions that are incompatible. This activity should help students generate their own examples of different internal conflicts, as well as differentiate between examples.

MATERIALS

- Student Worksheet *Internal Conflict and Stress*

INSTRUCTIONS

- This activity will take about 15-20 minutes to complete.
- Have students get into groups of two to three.
- Have students review the types of internal conflicts, and generate examples of each type of internal conflict.
- Have students complete the Worksheet, *Internal Conflict and Stress*.

Answer Key

1. Approach-avoidance conflict
2. Approach-approach conflict
3. Approach-avoidance conflict
4. Double approach-avoidance conflict
5. Approach-avoidance conflict
6. Approach-approach conflict
7. Avoidance-avoidance conflict
8. Avoidance-avoidance conflict
9. Double approach-avoidance conflict
10. Avoidance-avoidance conflict

INTERNAL CONFLICT AND STRESS STUDENT WORKSHEET

We all have internal conflicts where we have to make decisions that can have positive and negative consequences. The consequences of these decisions can be appraised differently from person to person. Read through the conflicts and identify which type of internal conflict the scenario describes and the extent to which you think the conflict is a psychological stressor.

Types of internal conflict

- Approach-approach conflict
- Approach-avoidance conflict
- Avoidance-avoidance conflict
- Double approach-avoidance conflict

Internal Conflict 1: Deciding whether or not to do your homework tonight. If you do your homework, you may be rewarded with a good grade tomorrow. If you don't, you could watch Netflix or get more sleep.

What type of internal conflict is the scenario referring to?

Statement: This conflict would be a psychological stressor.

1 Strongly Disagree **2** Somewhat Disagree **3** Neutral **4** Somewhat Agree **5** Strongly Agree

Internal Conflict 2: Deciding whether to go to a concert or buy new shoes with your most recent paycheck.

What type of internal conflict is the scenario referring to?

Statement: This conflict would be a psychological stressor.

1 Strongly Disagree **2** Somewhat Disagree **3** Neutral **4** Somewhat Agree **5** Strongly Agree

Internal Conflict 3: Deciding to get a tattoo. You've been wanting a design for multiple years, but the adult(s) in your life might be disappointed in you.

What type of internal conflict is the scenario referring to?

Statement: This conflict would be a psychological stressor.

1 Strongly Disagree **2** Somewhat Disagree **3** Neutral **4** Somewhat Agree **5** Strongly Agree

Internal Conflict 4: Deciding which college/university to attend after you've narrowed it down to your top two. Both schools have differing pros and cons. For example, one school may be large and in the city, which excites you, but is also extremely expensive. The other school is smaller and further from the city, which you do not like, but is affordable. What type of internal conflict is the scenario referring to?

Statement: This conflict would be a psychological stressor.

1 Strongly Disagree 2 Somewhat Disagree 3 Neutral 4 Somewhat Agree 5 Strongly Agree

Internal Conflict 5: Making the decision to tell your best friend that you are in love with them. On one hand, you may feel better that you are able to share your feelings, but it could also change the friendship, especially if your friend does not love you back. What type of internal conflict is the scenario referring to?

Statement: This conflict would be a psychological stressor.

1 Strongly Disagree 2 Somewhat Disagree 3 Neutral 4 Somewhat Agree 5 Strongly Agree

Internal Conflict 6: Selecting between a KitKat bar or Skittles. (You like both.) What type of internal conflict is the scenario referring to?

Statement: This conflict would be a psychological stressor.

1 Strongly Disagree 2 Somewhat Disagree 3 Neutral 4 Somewhat Agree 5 Strongly Agree

Internal Conflict 7: You just realized that you left your English paper at home, but school starts in five minutes. You have to decide between going home to get your essay or making it to school on time. What type of internal conflict is the scenario referring to?

Statement: This conflict would be a psychological stressor.

1 Strongly Disagree 2 Somewhat Disagree 3 Neutral 4 Somewhat Agree 5 Strongly Agree

Internal Conflict 8: You have been working at a local grocery store, and you just found out that your hours were going to be cut in half. You must decide between quitting and not having immediate work or making half of what you are used to making. What type of internal conflict is the scenario referring to?

Statement: This conflict would be a psychological stressor.

1 Strongly Disagree 2 Somewhat Disagree 3 Neutral 4 Somewhat Agree 5 Strongly Agree

Internal Conflict 9: There is a pandemic, and the recommendation is to not celebrate the holidays with anyone outside of your household. You have to decide whether to visit loved ones or stay home. What type of internal conflict is the scenario referring to?

Statement: This conflict would be a psychological stressor.

1 Strongly Disagree 2 Somewhat Disagree 3 Neutral 4 Somewhat Agree 5 Strongly Agree

Internal Conflict 10: You have been texting your ex-significant other, and your current partner does not know. You can either come clean to your partner and possibly get into a fight or break up, or you can decide to not say anything, which is making you feel guilty and paranoid that your ex will tell your current partner. What type of internal conflict is the scenario referring to?

Statement: This conflict would be a psychological stressor.

1 Strongly Disagree 2 Somewhat Disagree 3 Neutral 4 Somewhat Agree 5 Strongly Agree

ACTIVITY 3.1**TED-Ed Videos on the Stress Response**

Stephanie Franks, MS, Berkshire Local Schools, Ohio

CONCEPT

During this unit of study, students will be learning about the stress response. The stress response refers to our reaction to the stressors we experience. The stress response includes the physiological and psychological changes that occur in response to stress. TED Talks allow opportunities for students to have direct access to information from experts. Using retrieval practice in class is a great way to help students remember what they have learned and better embed the information into their memory. A brain dump (having students write down everything they remember on a given topic) is an effective way to have students engage in retrieval practice (see Agarwal, 2017).

MATERIALS

- Student Worksheet *TED-Ed Videos: The Effects of Stress*
- Timer
- Access to the internet for TED Talks

TIME

- This activity should take students about 25-30 minutes to complete.

INSTRUCTIONS

- Pass out student Worksheet *TED-Ed Videos: The Effects of Stress*.
- For each video, have students complete the pre-watching question. Watch each video, and allow for two minutes to complete a brain dump over what the students retained from the video by having them write down everything they remember. Between each video, discuss the contents of the video.

REFERENCE

Agarwal, P. K. (2017, November 30). *Brain dumps: A small strategy with a big impact*. Retrieval Practice: Unleash the Science of Learning. <https://www.retrievalpractice.org/strategies/2017/free-recall>

TED-ED VIDEOS: THE EFFECTS OF STRESS STUDENT WORKSHEET**Watch the three short TED Talks on Stress****1. Reflect before watching this video... How do you think stress affects your body?**

- a. Watch Sharon Horesh Berquist's TED-Ed video, [How Stress Affects your Body](#) (Berquist, 2015).
- b. After you are finished watching the video, do a brain dump. Set a timer for two minutes and write down what you remember from the video (what is sticking?).

2. Reflect before watching this video... How do you think stress affects your brain?

- a. Watch Madhumita Murgia's TED-Ed Talk, [How Stress Affects your Brain](#) (Murgia, 2015).
- b. After you are finished watching the video, do a brain dump. Set a timer for two minutes and write down what you remember from the video (what is sticking?).

3. Reflect before watching this video... What do you think is the link between your memory and your brain?

- a. Watch Elizabeth Cox's TED-Ed Talk, [The Surprising Link between Stress and Memory](#) (Cox, 2018).
- b. After you are finished watching the video, do a brain dump. Set a timer for two minutes and write down what you remember from the video (what is sticking?).

References

- Berquist, S. H. (2015). *How stress affects your body* [Video]. Ted Conferences. https://www.ted.com/talks/sharon_horesh_bergquist_how_stress_affects_your_body
- Cox, E. (2018). *The surprising link between stress and memory* [Video]. Ted Conferences. https://www.ted.com/talks/elizabeth_cox_the_surprising_link_between_stress_and_memory
- Murgia, M. (2015). *How stress affects your brain* [Video]. Ted Conferences. https://www.ted.com/talks/madhumita_murgia_how_stress_affects_your_brain

ACTIVITY 3.2**My Stress Response in Memes**

Stephanie Franks, MS, Berkshire Local Schools, Ohio

CONCEPT

During this unit of study, students will be learning about the physiological and psychological components of stress. Learning is more meaningful when we use the self-reference effect and think deeply about the material. It's also important that students are able to apply what they are learning in class to their own stress response, so that they become aware of how stress affects them psychologically and physiologically. This knowledge of how our bodies individually respond to stress can be empowering and build self-awareness; it will also be helpful when we move into building coping skills and resilience.

MATERIALS

- Access to the internet
- *Our Stress Response as told in Memes Worksheet*
- Access to a free online Meme generator. Below are examples. Depending on your school's security, one may be blocked, but usually at least one of these websites will work:
 - » memegenerator.net
 - » imgflip.com/memegenerator
 - » www.kapwing.com/studio/editor
- Technology (Chromebook, laptop, computer, etc.)
 - » Template for students, below (if using Google Slides, [here](#) it is)
- Rubric for grading purposes
 - » If you are uploading the rubric into Google Classroom, here is the [Google sheet](#)
 - » Rubric is also attached

INSTRUCTIONS

This activity should take students about 30 minutes to complete.

- Students will need to have access to technology (a laptop, Chromebook, etc.) to complete this assignment. This can be shared with students to complete as a word document/Google doc or as a PowerPoint/Google Slides assignment.
- Explain to the students that now that they understand the physiological and psychological impact that stress can have on us, we want to apply this to our own experience with stress, by having them recall a situation that caused stress, and having them tell their story of their stress response in memes.
- If sharing a template online, share the Google slides template or Google docs template with your students.

OUR STRESS RESPONSE AS TOLD IN MEMES WORKSHEET

Directions

Think of a situation that causes you stress. In the boxes below, you will be creating Memes to describe your physical and psychological responses to stress. Your memes need to be appropriate for a school setting.

Meme generators that are FREE and online. If one is not working, try another.

- memegenerator.net
- imgflip.com/memegenerator
- www.kapwing.com/studio/editor

<p>Create a Meme to explain a situation in which you experienced stress</p>	<p>Insert Meme Here: (you can copy and paste it)</p>
<p>Brief description of the situation and explanation of the Meme:</p>	
<p>Create a Meme to explain your physiological response to the stressful situation</p>	<p>Insert Meme Here: (you can copy and paste it)</p>
<p>Brief description of the response and explanation of the Meme:</p>	

Create a Meme to explain your affective response to the stressful situation	Insert Meme Here: (you can copy and paste it)
Brief description of the response and explanation of the Meme:	
Create a Meme to explain your behavioral response to the stressful situation	Insert Meme Here: (you can copy and paste it)
Brief description of the response and explanation of the Meme:	
Create a Meme to explain your cognitive response to the stressful situation	Insert Meme Here: (you can copy and paste it)
Brief description of the response and explanation of the Meme:	

Reflect on your appraisal of the situation:

How did you appraise the situation? Controllability, predictability, severity, coping ability? Do you think this impacted your response to the situation?

Rubric for My Stress Response in Memes

Meme for situation

3 Student mastered this **2** Somewhat mastered this **1** Did not master this **0** Was not attempted

Description for situation

3 Student mastered this **2** Somewhat mastered this **1** Did not master this **0** Was not attempted

Meme for physiological response

3 Student mastered this **2** Somewhat mastered this **1** Did not master this **0** Was not attempted

Description for physiological response

3 Student mastered this **2** Somewhat mastered this **1** Did not master this **0** Was not attempted

Meme for affective response

3 Student mastered this **2** Somewhat mastered this **1** Did not master this **0** Was not attempted

Description for affective response

3 Student mastered this **2** Somewhat mastered this **1** Did not master this **0** Was not attempted

Meme for behavioral response

3 Student mastered this **2** Somewhat mastered this **1** Did not master this **0** Was not attempted

Description for behavioral response

3 Student mastered this **2** Somewhat mastered this **1** Did not master this **0** Was not attempted

Meme for cognitive response

3 Student mastered this **2** Somewhat mastered this **1** Did not master this **0** Was not attempted

Description for cognitive response

3 Student mastered this **2** Somewhat mastered this **1** Did not master this **0** Was not attempted

Appraisal reflection					
5	4	3	2	1	0
Thorough response; demonstrates understanding of psychological impacts of stress; appropriate response		Demonstrates basic understanding of the psychological impact of stress; somewhat appropriate response		Response does not demonstrate an appropriate response or understand to the psychological impact stress could potentially have	Not attempted

ACTIVITY 3.3**Brain Dump over the Stress Response**

Stephanie Franks, MS, Berkshire Local Schools, Ohio

CONCEPT

During this unit of study, students will be learning about the stress response. The stress response refers to our reaction to the stressors we experience. The stress response includes the physiological and psychological changes that occur in response to stress. Using retrieval practice in class is a great way to help students remember what they have learned and better embed the information into their memory. A brain dump (having students write down everything they know about a given topic) is an effective way to have students engage in retrieval practice.

MATERIALS

- Student Worksheet *Brain Dump Over the Stress Response*
- Timer

TIME

- This activity should take students about six-to-seven minutes to complete.

INSTRUCTIONS

- Pass out the student Worksheet, *Brain Dump over the Stress Response*.
- For the 1st box, set a timer for 90 seconds and have students respond to the prompt. They should not reference their notes, the textbook, or other outside sources. They should spend the entire 90 seconds writing everything that they remember. If they can't remember more information in the 90 seconds, encourage them to continue to actively think about what they have learned.
- Once the 90 seconds has passed, have them reference their notes and talk to a partner or small group for an additional 90 seconds, and then have them add in information that they may have left out.

The "Brain dump" idea came from Dr. Pooja K. Agarwal (Agarwal, 2017).

REFERENCE

Agarwal, P. K. (2017, November 30). *Brain dumps: A small strategy with a big impact*. Retrieval Practice: Unleash the Science of Learning. <https://www.retrievalpractice.org/strategies/2017/free-recall>

BRAIN DUMP OVER THE STRESS RESPONSE WORKSHEET

FIRST: PHYSIOLOGICAL RESPONSE OF STRESS

For 90 seconds, write as much as you remember about our physiological response to stress.

Take another 90 seconds to reference your notes and talk in a group of 2-3. Add in any info that you left out.

SECOND: PSYCHOLOGICAL RESPONSE OF STRESS

For 90 seconds, write as much as you remember about our psychological response to stress. (HINT: remember the ABCs)

Take another 90 seconds to reference your notes and talk in a group of 2-3. Add in any info that you left out.

ACTIVITY 3.4**Heart Rate and BioDot Biofeedback Lab**

Adapted from Jennifer Schlicht, Olathe South High School, Kansas, and Stephanie Franks, MS, Berkshire Local Schools, Ohio

CONCEPT

Relaxation techniques are part of behavioral strategies that may help with stress management. This is often done with progressive muscle and/or imagery relaxation coupled with deep breathing to directly modify the stress response. Relaxation is a process that decreases the effects of stress on your mind and body. When we are stressed, our body goes into “fight-or-flight” mode, and our SAM axis makes our heart rate increase. We will be measuring our heart rates to see how stress impacts our pulse.

MATERIALS

- Timer (stop watch, phone, clock)
- Biodots ([sample link here for purchase](#))
- Access to internet to play videos
- *Relaxation Training Worksheet*

INSTRUCTIONS

- This activity will take 30-45 mins to complete depending on the number of videos you choose to watch.
- Explain to the students how they will find their pulse and record their heart rate. The easiest way to do this is to find your pulse on your wrist. Using a timer, such as one on your cell phone, count how many beats you have in 15 seconds. You can multiply this number by four to get your beats/minute. A normal resting heart rate is 60-100 beats per minute.
- Biodots react to your body temperature. You will place it on the back of your hand between your thumb and index finger. The ratings on the left are intended to indicate your physical reactions to your emotional state, which is impacted by stress. For this activity, you will wear a biodot and record the color before the relaxation training, during, and after.
- Before selecting a video to watch, have the students record their heart rate and Biodot rating on their worksheet.
- Choose one of the following YouTube videos to watch after you have recorded your heart rate and color of your BioDot.
- Remember to record both of those data points during the video and after the video.
- Give students the following videos and invite them to watch two:
 - » Square Breathing: www.youtube.com/watch?v=cOOd-wIMMRg
 - » 4 x 4 Breathing: www.youtube.com/watch?v=CfUGpJE1D9o
 - » 4-7-8 Breathing: www.youtube.com/watch?v=YRPh_GaiL8s
 - » Progressive Muscle Relaxation (in 3 min): www.youtube.com/watch?v=GZ9PHsbt-m4
 - » Progressive Muscle Relaxation (in 4 minutes): www.youtube.com/watch?v=Q_diV-uqV9w
 - » Progressive Muscle Relaxation (by muscle groups): www.youtube.com/watch?v=utGa6rqzs3g
 - » Guided Imagery: Magic Carpet Ride: www.youtube.com/watch?v=80QVNBVPVXI
 - » Guided Imagery: Beach: www.youtube.com/watch?v=6TywQETck8E
 - Guided Imagery: Beach (yep, another beach trip): www.youtube.com/watch?v=y6qHVvC2rn8
 - Guided Imager: Mountain Walk: www.youtube.com/watch?v=QgstAW5p6cE

RELAXATION TRAINING WORKSHEET

Note: The Biodots will come with an answer key to help with the two far right-hand columns in these charts.

WHAT ACTIVITY YOU ARE DOING	WHAT IS YOUR PERCEIVED LEVEL OF STRESS RIGHT NOW? (LOW, MODERATE, HIGH)	HEART RATE BEATS PER MINUTE (COUNT THE BEATS/ 15 SECONDS THEN MULTIPLY BY 4)	COLOR OF THE DOT	DOES THE COLOR ACCURATELY REPRESENT YOUR STRESS LEVEL DURING THE ACTIVITY?
First time you check				
While watching relaxation video #1				
After relaxation				

WHAT ACTIVITY YOU ARE DOING	WHAT IS YOUR PERCEIVED LEVEL OF STRESS RIGHT NOW? (LOW, MODERATE, HIGH)	HEART RATE BEATS PER MINUTE (COUNT THE BEATS/ 15 SECONDS THEN MULTIPLY BY 4)	COLOR OF THE DOT	DOES THE COLOR ACCURATELY REPRESENT YOUR STRESS LEVEL DURING THE ACTIVITY?
Before the next video				
While watching relaxation video #2				
After relaxation				

Discussion Questions

What relationship did you notice between your pulse, before, during, and after the video relaxation?

What relationship did you notice between the color of the dot, before, during, and after the video relaxation?

What consistency was there between the color and/or heart rate and your activity?

Was there a difference in your perception of stress after doing this activity?

What did you learn about yourself through this activity? How could relaxation training help you, if at all?

What are some other ways to relax?

CRITICAL THINKING EXERCISE 4.1**Stress and the Common Cold**

Stacie Spencer PhD, MCPHS University, Massachusetts

CONCEPT

Stress is associated with illness. In this research study, Cohen et al. (1993) looked at whether experiencing high levels of stress increases the likelihood that a person will get a cold after being exposed to a cold virus. The purpose for this activity is to help students accomplish the following:

- APA National Standards (Health standard area): 1.3 Explain physiological and psychological consequences of stress for health and wellness.
- Evaluate and understand the independent, dependent variables of the study, critique the study, and determine whether the hypothesis was supported.

MATERIALS

- *Stress and the Common Cold Worksheet*

INSTRUCTIONS

This activity takes 20-30 minutes to complete.

- Have students read the summary of the research study titled *Stress and the Common Cold* (Cohen et al., 1993).
- Students will answer and discuss the questions following the summary.

STRESS AND THE COMMON COLD WORKSHEET

Negative Life Events, Perceived Stress, Negative Affect, and Susceptibility to the Common Cold

Authors: Cohen, S., Tyrrell, D. A. J., & Smith, A P. (1993)

Brief Article Summary: Our immune systems are designed to protect us when we come into contact with viruses. Ideally, our immune systems would always protect us so well that we would not know we were exposed to a virus. Unfortunately, there are times when we are exposed to a virus, like a cold or flu virus, and we get sick. The question is - what determines whether we get sick or do not get sick after exposure to a virus? Many have suggested that stress plays a role.

Cohen et al. (1993) wanted to know if people who report high levels of stress are more likely to get sick after exposure to a cold virus than people who report low levels of stress. To answer their question, they designed a *viral-challenge* study, a type of study in which participants report their stress levels, are then exposed to a cold or influenza virus, and are followed to see who gets sick. They predicted people high in psychological stress would be more likely to get sick after exposure to upper respiratory virus than people low in psychological stress.

The researchers recruited 420 healthy volunteers (154 men and 266 women) in Salisbury, England. Participants were 18 to 54 years old with an average age of 33.6 (10.6 standard deviation). Approximately half had completed secondary education, 22% had not, and 27% attended at least one year of University. Participants were given a medical examination including blood tests to determine immune activity and cotinine levels (cotinine indicates exposure to nicotine) and completed measures to determine the number of negative major stressful events, perceptions of the ability to cope with current life demands, and current negative affect (emotions). Then, participants received a nasal spray with one of five respiratory viruses at the level typical of person-to-person transmission or no virus (saline). They were quarantined (alone or with one or two others) in apartments for nine days (two days before the viral challenge and seven days after). Each day, participants were examined for respiratory symptoms by a medical professional, body temperature was recorded, nasal wash samples were collected, and the number of used tissues were counted. A blood sample was taken 28 days after the viral challenge. Participants were determined to have a clinical cold if they were infected (the virus was isolated in samples) *and* diagnosed as having a cold by the medical professional.

None of the saline control participants met the criteria for having a clinical cold and, thus, were not included in the analyses. Looking specifically at participants who were exposed to a virus and then quarantined alone, the researchers found that those with a higher stress levels, perceived stress, and negative affect were more likely to meet the criteria for clinical illness than participants with a lower stress index, perceived stress, and negative affect.

Please answer the following questions after reading the research summary:

What type of research is being conducted and how do you know?

What was the hypothesis?

The summary did not include information about how participants were selected. What suggestions do you have for how participants could/should be selected for this study?

What was the independent variable?

What was the dependent variable?

What was the control group?

What was the experimental group? Were there multiple conditions?

Was the hypothesis confirmed?

Can these results be generalized to a larger population? How do you know?

What are some criticisms of the study?

ANSWER KEY**What type of research is being conducted and how do you know?**

One part of the study is an experiment. I know this because the researchers manipulated which participants received one of the virus nasal sprays and which received the saline nasal spray.

Another part of the study reflects a quasi-experimental design. I know this because groups (high/low stress index; high/low perceived stress; high/low negative affect) are formed by measurement (answers to the stress and affect measures) rather than manipulation (i.e., the researchers did not assign people to high/low stress or to high/low negative affect).

What was the hypothesis?

The researchers predicted people high in psychological stress would be more likely to get sick after exposure to upper respiratory virus than people low in psychological stress.

The summary did not include information about how participants were selected. What suggestions do you have for how participants could/should be selected for this study?

Many answers are acceptable here as long as students discuss random sampling.

What was the independent variable?

Nasal spray ingredients—one of the five viruses or saline (although the results did not compare participants who received the saline to those who received a virus).

Participants were grouped based on whether they were high or low on three different variables. What were those variables?

1. Negative major stressful events
2. Perception of the ability to cope with demands
3. Negative affect (emotions)

What was the dependent variable?

Clinical cold

What was the control group?

The group that received the nasal spray with saline.

What was the experimental group? Were there multiple conditions?

The group that received nasal spray with a virus in it.

Was the hypothesis confirmed?

Yes. A higher percentage of participants with high levels of stress, high perceived stress, and high negative affect developed clinical colds than participants with low levels of each measure.

Can these results be generalized to a larger population? How do you know?

The generalizability of these results to a larger population is questionable because the sample was recruited using convenience sampling rather than random sampling.

What are some criticisms of the study?

Some participants were quarantined alone and others were quarantined with one or two other participants. Participants quarantined together might have infected one another, making it difficult to rule out the impact of exposure to multiple viruses.

Source:

Cohen, S., Tyrrell, D. A. J., & Smith, A. P. (1993). Negative life events, perceived stress, negative affect, and susceptibility to the common cold. *Journal of Personality and Social Psychology*, 64(1), 131-140. <https://doi.org/10.1056/NEJM199108293250903>

CRITICAL THINKING EXERCISE 4.2**Stress and Healing**

Stacie Spencer PhD, MCPHS University, Massachusetts

CONCEPT

Stress is not only associated with an increased risk for getting sick; stress is also associated with the time it takes to heal from injury. In this research study, Marucha et al. (1998) looked at whether experiencing high levels of stress increases the likelihood that a person will heal more slowly from a wound. The purpose for this activity is to help students accomplish the following:

- APA National Standards (Health standard area): 1.3 Explain physiological and psychological consequences of stress for health and wellness
- Evaluate and understand the independent, dependent variables of the study, critique the study, and determine whether the hypothesis was supported.

MATERIALS

- *Stress and Wound Healing Worksheet*

INSTRUCTIONS

- This activity takes 20-30 minutes to complete.
- Have students read the summary of the research study titled *Mucosal Wound Healing is Impaired by Examination Stress* (Marucha et al., 1998).
- Students will answer and discuss the questions following the summary.

STRESS AND WOUND HEALING WORKSHEET**Mucosal Wound Healing is Impaired by Examination Stress**

Authors: Marucha, P. T., Kiecolt-Glaser, J. K., & Favagehi, M. (1998)

Brief Article Summary: Marucha et al. (1998) were interested in the effect of a commonplace stressor on healing from a wound and on immune function. They chose to use exam stress as the commonplace stressor and observed healing from small wounds made to the hard palate (the roof of the mouth). Specifically, they used announcements placed in mailboxes to recruit 11 students (nine men and two women) in dental school and gave each participant a punch biopsy to one side of the hard palate at the end of summer vacation (categorized by the authors as a low stress period) and then again to the other side of the hard palate three days before the first exam of the school year (categorized as a high stress period). To verify the categorization of summer vacation as low stress and the exam period as high stress was consistent with the participants' experiences, the researchers administered the 10-item Perceived Stress Scale at the time of each biopsy and again three days later. They measured healing with daily photographs and wound response to hydrogen peroxide (hydrogen peroxide foams on unhealed wounds), and they measured immune function as production of interleukin 1 β (IL-1 β) messenger RNA (mRNA). Wounds inflicted prior to the exam took an average of three days (40%) longer to heal than wounds inflicted at the end of summer vacation, and IL-1 β mRNA production was 68% lower on the day the wound was inflicted prior to the exam than the day the wound was inflicted at the end of summer vacation. The authors suggest that commonplace stressors, like exams, can impact the healing of even small wounds.

Please answer the following questions after reading the research summary:

What type of research is being conducted and how do you know?

What was the hypothesis?

How were the participants selected?

What was the independent variable?

What was the dependent variable?

What was the control group?

What was the experimental group? Were there multiple conditions?

Was the hypothesis confirmed?

Can these results be generalized to a larger population? How do you know?

What are some criticisms of the study?

ANSWERS**What type of research is being conducted and how do you know?**

A repeated measures experiment. I know because each participant experiences both levels (conditions) of the independent variable.

What was the hypothesis?

The authors did not state a hypothesis. The research question is whether commonplace stressors impact the time it takes a wound to heal.

How were the participants selected?

Participants were recruited through an announcement placed in their mailboxes. This is an example of convenience sampling (not random sampling).

What was the independent variable?

Stress level

What was the dependent variable?

There were two dependent variables. One was the time it took the wounds to heal and the other was production of IL-1 β mRNA.

What was the control group?

The participants served as their own controls.

What was the experimental group? Were there multiple conditions?

There were two conditions. One was low stress (the end of summer vacation) and the other was high stress (the days around an exam).

Was the hypothesis confirmed?

The researchers answered their question - commonplace stressors lengthen the time it takes to heal a small wound.

Can these results be generalized to a larger population? How do you know?

The generalizability of these results to a larger population is questionable because the sample was recruited using convenience sampling rather than random sampling. The students who volunteered to participate in the study might have differed in important ways from the students who did not volunteer to be in the study.

What are some criticisms of the study?

The authors did not discuss any potential limitations of the study.

There are considerably more male than female participants. Also, gender is measured as a binary (male/female) variable. It is important to provide participants with all gender identity options.

It is possible that, after experiencing the first punch biopsy, anticipation of the second biopsy might have been a stressor and the stress of anticipation, rather than exam stress, might have impacted wound healing and immune function. The possibility could be studied by recruiting another group of participants and reversing the order of stressors (high/exam then low/summer vacation).

Source:

Marucha, P. T., Kiecolt-Glaser, J. K., & Favagehi, M. (1998). Mucosal wound healing is impaired by examination stress. *Psychosomatic Medicine*, 60, 362-365. <https://doi.org/10.1097/00006842-199805000-00025>

CRITICAL THINKING EXERCISE 5.1**Is Popularity Protective Against Stress?**

Stacie Spencer PhD, MCPHS University, Massachusetts

CONCEPT

As we learned in effective ways to deal with stress, having a good social support system has been shown to be a positive factor. In this research study, Dr. Hamrick and Dr. Cohen looked at whether being popular made you more stressed and therefore prone to respiratory infections. Please read the summary of the research study and answer the following questions. The purpose for this activity is to help students accomplish the following:

- APA National Standards (Health Standard Area): 1.2 Explain sources of stress across the life span
- APA National Standards (Health Standard Area): 1.3 Explain physiological and psychological consequences of stress for health and wellness
- Evaluate and understand the independent, dependent variables of the study, critique the study, and determine whether the hypothesis was supported.

MATERIALS

- *Is Being Popular Good or Bad for Your Health Worksheet*

INSTRUCTIONS

- This activity takes 20-30 minutes to complete.
- Have students read the summary of the research study titled *Being Popular Can Be Healthy or Unhealthy* (Hamrick et al., 2002).
- Students will answer the questions following the summary.
- When students have finished page 1 or are unable to finish, inform them to move onto page two.

IS BEING POPULAR GOOD OR BAD FOR YOUR HEALTH WORKSHEET**Being popular can be healthy or unhealthy:****Stress, social network diversity, and incidence of upper respiratory infection.**

Authors: Hamrick, N., Cohen, S., & Rodriguez, M. S. (2002)

Brief Article Summary: Hamrick et al. (2002) use the term “popular” to refer to social network diversity. A person with a diverse social network interacts with people who represent different types of relationships (e.g., spouses, family members, friends, classmates, coworkers, fellow club members, and teammates). Research suggests that having a diverse social network is health-protective. Hamrick et al. (2002) wanted to know if having a diverse social network is always protective. Specifically, they suggested that having a diverse social network might increase risk of exposure to infections due to the high number of social contacts and that people with high levels of stress might be vulnerable to infections because stress compromises immune functioning. They predicted when stress is low, people with more diverse networks would be less likely to develop upper respiratory infections than people with less diverse networks. They made the opposite prediction for high stress. They predicted when stress is high, people with more diverse networks would be more likely to develop upper respiratory infections than people with less diverse networks.

The researchers recruited participants through electronic bulletin boards, school newspapers, and word-of-mouth. Of the 151 individuals who met age (18-30), student status, and health criteria, 115 completed the study. Participants completed the Major Stressful Life Events Scale (negative life events), the Social Network Index (social network diversity), the Neuroticism subscale from the Eysenck Personality Questionnaire (neuroticism), and provided information about age, sex (male/female), and race (White, African American/Black, or other). Participants reported the presence/severity of eight upper respiratory infection symptoms each week and were instructed to contact the study coordinator if they believed they had a cold or the flu. A large number of participants (43%) who reported symptoms of upper respiratory infection did not contact the study coordinator to verify the infection and those who did contact the study coordinator to verify upper respiratory infection were more likely to have more diverse social networks. The researchers found that participants with low levels of stress and high network diversity experienced the fewest upper respiratory infections and participants with high levels of stress and high network diversity experienced the most upper respiratory symptoms.

Please answer the following questions after reading the research summary:

What type of research is being conducted and how do you know?**What was the hypothesis?****How were the participants selected?**

What was the independent variable?

What was the dependent variable?

What was the control group?

What was the experimental group? Were there multiple conditions?

Was the hypothesis confirmed?

Can these results be generalized to a larger population? How do you know?

What are some criticisms of the study?

TEACHER ANSWER KEY**What type of research is being conducted and how do you know?**

A quasi-experimental design. I know this because groups (high/low life event stress; high/low network diversity) are formed by measurement (answers to the Major Stressful Life Events Scale and Social Network Index) rather than manipulation (i.e., the researchers did not assign people to high/low stress or to high/low network diversity).

What was the hypothesis?

They predicted when stress is low, people with more diverse networks would be less likely to develop upper respiratory infections than people with less diverse networks. They made the opposite prediction for high stress. They predicted when stress is high, people with more diverse networks would be more likely to develop upper respiratory infections than people with less diverse networks.

How were the participants selected?

Participants were recruited through electronic bulletin boards, school newspapers, and word-of-mouth.

What was the independent variable?

There were two independent variables (although they were not manipulated variables). One was stress level and the other was social network diversity.

What was the dependent variable?

Symptoms and incidence of upper respiratory infection.

What was the control group?

There was no control group.

What was the experimental group? Were there multiple conditions?

There were two stress groups (low stress/high stress) and there were two social network diversity groups (low social network diversity/high social network diversity).

Was the hypothesis confirmed?

Yes. Participants with low levels of stress and high network diversity experienced the fewest upper respiratory infections and participants with high levels of stress and high network diversity experienced the most upper respiratory symptoms.

Can these results be generalized to a larger population? How do you know?

The generalizability of these results to a larger population is questionable because the sample was recruited using convenience sampling rather than random sampling.

What are some criticisms of the study?

The authors did not measure actual social contact (just the potential for contact via network diversity). Participants with upper respiratory infection symptoms were more likely to contact the study coordinator to verify upper respiratory infection if they had a more diverse social network. Differences in contacting behaviors between the high and low social network diversity groups might indicate an alternative explanation of the results.

Sources

- Hamrick, N., Cohen, S., & Rodriguez, M. S. (2002). Being popular can be healthy or unhealthy: Stress, social network diversity, and incidence of upper respiratory infection. *Health Psychology, 21*(3), 294-298. <https://doi.org/10.1037//0278-6133.21.3.294>
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ACTIVITY 5.1**Time Flies!**

Ann Vanichkachorn, MD, St Christopher's School, Virginia

CONCEPT

From grades to test scores to applying to college, teens experience high levels of school-related stress. Many teens worry about meeting academic demands, pleasing teachers and parents, and keeping up with their classmates. Poor time management skills or feeling overwhelmed by the amount of work can play into academic stress as well. The purpose of this activity is to provide an opportunity for students to actually assess how they spend their time in order to shed some light on how to better manage their time.

MATERIALS

- *Time Flies* Worksheet

INSTRUCTIONS

- This activity takes 15 to 30 minutes to complete.
- Ask students to think about and record how they spend their time in the 24 hours of a weekday or on the weekend.
- When students have finished, assign them to small groups to share their findings.
- Work through the questions either in their small groups or as a class.
- Challenge students to critically think about how time management can positively impact their perception of stress.

TIME FLIES WORKSHEET

How you spend your time can make a difference.

HOW I SPEND MY DAY	DURING THE WEEK (AVERAGE PER DAY)	DURING THE WEEKEND (AVERAGE PER DAY)
Time in school (including commute)		
Study/homework (outside of school)		
Physical activity (athletics, recreational)		
Employment		
Household chores		
Food related activity (shopping, prep, eating out, etc.)		
Social time with friends and family		
Solitary time (include time online, on phone, etc.)		
Sleeping		
Community (volunteer, worship)		
Other		
TOTAL HOURS (24)		

Discussion

1. Did you end up with extra time during the week? Not enough time during the week?
2. How about on the weekend?
3. How would you answer the following?
 - I would like to spend more time on:
 - I would like to spend less time on:
 - I can save time by:
4. My biggest challenges when it comes to time management are:
5. Are my challenges unique or shared by my peers?
6. Discuss effective time management strategies used by fellow students.
7. Discuss the impact of better time management on your personal perception of your stressors.

ACTIVITY 5.2**Meditation Podcast**

Ann Vanichkachorn, MD, St Christopher's School, Virginia

CONCEPT

Meditation practices date back thousands of years and are a part of nearly every major religion. In the last few decades researchers have begun to explore what is happening in the brain when people meditate and how meditation might benefit our mind and body. The purpose of this activity is to help students explore the variety of and the benefits of regular meditative practices.

MATERIALS

- *Meditation Discussion Questions Worksheet*
- Access to internet
- Link to [APA's Speaking of Psychology Episode 131](#)

INSTRUCTIONS

- This activity takes one or two 45-minute class period(s) to complete.
- Ask students to listen to the podcast for homework or listen together as a group during class.
- When students have finished, assign them to small groups to share what they learned about meditation from the podcast.
- Work through the questions either in their small groups or as a class.
- Challenge students to critically think about how regular meditation practice can positively impact their perception of stress and help them manage their busy lives.

MEDITATION DISCUSSION QUESTIONS WORKSHEET

Podcast

Link to [How Meditation Can Help You Live a Flourishing Life](#) APA Speaking of Psychology podcast by Dr. Richard Davidson (Mills, 2021).

Discussion questions in small groups or as a class

What are the different types of meditation?

What are the benefits of meditation? How does it change our brain anatomy?

Student lives are full of distractions, stress, and/or bad habits, so how can meditation help them manage their hectic existence?

What are the four pillars of well-being Dr. Davidson describes? How can they be applied to our lives?

What are hindrances to meditation?

How is meditation different from mindfulness?

Reference

Mills, K. (Host). (2021, March 3). How meditation can help you live a flourishing life, with Richard Davidson, PhD. [Audio podcast episode]. In *Speaking of Psychology*. American Psychological Association. <https://www.apa.org/news/podcasts/speaking-of-psychology/meditation>

CRITICAL THINKING EXERCISE 5.2**Being Mindful**

Ann Vanichkachorn, MD, St Christopher's School, Virginia

CONCEPT

Mindfulness meditation has gained popularity in recent years as an effective stress management strategy but most research is based on an 8-week training program. This research article looks at whether brief mindfulness meditation or possessing the trait of being mindful (dispositional mindfulness) will also confer similar benefits.

PURPOSE

After this activity, students should be able to:

- APA National Standards (Health Standard Area): 1.4 Explain physiological, cognitive, and behavioral strategies to deal with stress.
- Evaluate and understand the independent, dependent variables of the study, critique the study, and determine whether the hypothesis was supported.

MATERIALS

- *Being Mindful* Worksheet

INSTRUCTIONS

- This activity takes 20-30 minutes to complete.
- Have students read the summary of the research study titled *Brief mindfulness meditation training alters psychological and neuroendocrine responses to social evaluative stress* (Creswell et al., 2014).
- Students will answer the questions following the summary.

BEING MINDFUL WORKSHEET

Brief mindfulness meditation training alters psychological and neuroendocrine responses to social evaluative stress.

Authors: Creswell, J. D., Pacilio, L. E., Lindsay, E. K., & Brown, K. W. (2014)

Brief Article Summary: Over the last decade, there has been an increase in research as well as interest in mindfulness meditation training and its potential effect in fostering well-being and improving mental health. A group of psychologists at Duke University performed a comprehensive review of empirical research and concluded that mindfulness brings about various positive psychological effects, including increased subjective well-being, reduced psychological symptoms and emotional reactivity, and improved behavioral regulation (Keng, 2011). Creswell et al (2014) studied whether 1.) short term mindfulness meditation (25 minutes of audio guided meditation for three days) and 2.) possessing the trait of being a mindful person (dispositional mindfulness) would have the capacity to foster resilience to stress by reducing stress reactivity.

Sixty-six participants were randomly assigned to either a brief three-day 25 minute/day mindfulness meditation training or an analytic cognitive training control program. All participants completed a standardized laboratory social-evaluative stress challenge questionnaire (the Trier social stress test which is a laboratory procedure used to reliably induce [stress](#) in human research participants) following the end of their training. Measures of psychological (perception of stress) and biological (salivary cortisol and blood pressure) stress reactivity were collected during the social stress test. The researchers concluded that even brief mindfulness meditation training compared to the control as well as having the trait of being mindful both buffered self-reported psychological stress.

What type of research is being conducted and how do you know?

What was the hypothesis?

What was the independent variable?

What was the dependent variable?

What was the control group?

What was the experimental group? Were there multiple conditions?

Was the hypothesis confirmed?

Can these results be generalized to a larger population? How do you know?

What are some criticisms of the study?

ANSWER KEY**What type of research is being conducted and how do you know?**

Experimental study: participants were randomly assigned to an experimental group who participated in brief mindfulness meditation for three consecutive days or to the control group who underwent analytic cognitive training.

What was the hypothesis?

Brief mindfulness meditation training or dispositional mindfulness would be protective against perceived social evaluative stress.

What was the independent variable?

Mindfulness meditation and dispositional mindfulness.

What was the dependent variable?

Response to the social-evaluative stress challenge questionnaire (TSST) and changes in salivary cortisol.

What was the control group?

Analytic cognitive training and being low in dispositional mindfulness.

What was the experimental group? Were there multiple conditions?

Participants assigned to brief mindfulness meditation and participants who possessed the trait of being mindful.

Was the hypothesis confirmed?

Yes.

Can these results be generalized to a larger population? How do you know?

No. The participants were all between the ages of 18 to 30 so the results cannot be generalized to people outside of that range.

What are some criticisms of the study?

The sample size was relatively small and consisted mostly of individuals of European American and Asian American descent.

Sources

Creswell, J. D., Pacilio, L. E., Lindsay, E. K., & Brown, K. W. (2014). Brief mindfulness meditation training alters psychological and neuroendocrine responses to social evaluative stress. *Psychoneuroendocrinology*, *44*, 1-12. <https://dx.doi.org/10.1016/j.psyneuen.2014.02.007>

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Keng, S. L., Smoski, M. J., & Robins, C. J. (2011). Effects of mindfulness on psychological health: a review of empirical studies. *Clinical psychology review*, *31*(6), 1041-1056. <https://doi.org/10.1016/j.cpr.2011.04.006>

ACTIVITY 5.3

The Mind and Gut Connection

Ann Vanichkachorn, MD, St Christopher's School, Virginia

CONCEPT

We learned about the physiological impact of acute and chronic stress on the gastrointestinal system. Can stress also impact what types of food we crave, consciously or unconsciously? The following activity should help students recognize how dietary habits and food choices may be affected by stress. This activity will help students consider nutritional factors that connect stress to physical health.

MATERIALS

- *Food Cravings Worksheet*

INSTRUCTIONS

- Form groups of three-to-five students.
- This activity should take 30 minutes to complete.
- Depending on the dynamic of your class, this activity can start with individual reflection before the small group work or it can be a full class discussion.
- Give small groups five minutes to think about and record what types of food they eat or crave during a normal week compared to when they are cramming for an exam. *Note: Teachers are encouraged to discuss the sensitivity of this activity as part of the introduction, as some students may have eating disorders.*
- Read [Why Stress Causes People to Overeat](#) (Harvard Medical School, 2021), which discusses why people overeat when stressed.
- As a class, compare every groups' list of food they craved during stress and analyze the list for patterns or trends.
- Answer the discussion questions as a class or in small groups.

FOOD CRAVINGS WORKSHEET

GROUP MEMBERS	FOOD CRAVINGS: NORMAL STRESS	FOOD CRAVINGS: EXCESSIVE STRESS
	1. 2. 3.	1. 2. 3.
	1. 2. 3.	1. 2. 3.
	1. 2. 3.	1. 2. 3.
	1. 2. 3.	1. 2. 3.
	1. 2. 3.	1. 2. 3.
Comment on patterns or trends noted in the lists from each student group		

Discussion Questions

1. Look at what the class ate most often when students were most stressed. Did these food choices confirm or refute the theory that chronic stress leads to increased consumption of salty, fatty, sugary foods?

2. Review the physiological responses to acute and chronic stressors and why we tend to want certain types of food when we are stressed. Discuss what you learned from [Why Stress Causes People to Overeat](#) (Harvard Medical School, 2021).

3. How does this contribute to the weight gain often seen in first year college students?

4. Were there certain foods eaten during normal times that decreased during times of stress?

5. Read [8 Steps to Mindful Eating](#) (Harvard Medical School, 2016). Discuss mindful eating. What is it? How might it help us manage stress?

Sources

Harvard Medical School. (2016, January 16). *8 steps to mindful eating*. <https://www.health.harvard.edu/staying-healthy/8-steps-to-mindful-eating>

Harvard Medical School. (2021, February 15). *Why stress causes people to overeat*. <https://www.health.harvard.edu/staying-healthy/why-stress-causes-people-to-overeat>

LABORATORY EXERCISE 5.1

Sleep and Perceived Stress

Ann Vanichkachorn, MD, St Christopher's School, Virginia

CONCEPT

Why do teens have trouble sleeping? How does sleep affect your perception of stress? This lab exercise asks students to collect data on the number of hours they are sleeping each night for a week and their perceived stress levels for a week and create a line graph or histogram of their findings.

MATERIALS

- *Sleep and Perceived Stress Laboratory Exercise Worksheet*
- Graph paper
- White board and markers

TIME

- Data collection for this laboratory exercise will take place at the beginning of class each day over the course of one school week.
- Once data collection is complete, the lab itself will take approximately 45 minutes to complete.

INSTRUCTIONS

- Introduce the lab by having students read [Why Your Kids Can't Sleep, and How to Help](#) (Chen, 2020) and discuss the importance of quality sleep and the reasons why teens have trouble sleeping and how that may negatively affect their ability to manage stress.
- Keep track of the number of hours of sleep you are getting this week by completing the log in the worksheet below.
- For seven consecutive days, please complete the perceived stress scale (review how to derive the score on day one), score your answers and enter both the sleep and stress data in the Data Collection table below.
- Plot your data as a line graph or a histogram on graph paper.
- Plot the class data as a scatter plot on the white board.
- Answer the questions and discuss your results as a class.

SLEEP AND PERCEIVED STRESS LABORATORY EXERCISE WORKSHEET

Sleep Log: Please answer the following at the beginning of class and on the weekend

	DAY 1		DAY 2		DAY 3		DAY 4		DAY 5		DAY 6		DAY 7	
I consumed caffeine to stay awake	<input type="checkbox"/>	Yes	<input type="checkbox"/>	Yes	<input type="checkbox"/>	Yes	<input type="checkbox"/>	Yes	<input type="checkbox"/>	Yes	<input type="checkbox"/>	Yes	<input type="checkbox"/>	Yes
	<input type="checkbox"/>	No	<input type="checkbox"/>	No	<input type="checkbox"/>	No	<input type="checkbox"/>	No	<input type="checkbox"/>	No	<input type="checkbox"/>	No	<input type="checkbox"/>	No
I naturally felt energized all day	<input type="checkbox"/>	Yes	<input type="checkbox"/>	Yes	<input type="checkbox"/>	Yes	<input type="checkbox"/>	Yes	<input type="checkbox"/>	Yes	<input type="checkbox"/>	Yes	<input type="checkbox"/>	Yes
	<input type="checkbox"/>	No	<input type="checkbox"/>	No	<input type="checkbox"/>	No	<input type="checkbox"/>	No	<input type="checkbox"/>	No	<input type="checkbox"/>	No	<input type="checkbox"/>	No
Last night I went to bed at this time:														
Last night I fell asleep at this time (best guess):														
This morning I woke up at this time:														
I slept for this many hours:														

Perceived Stress Scale (From Cohen et al., 1983)

The questions in this scale ask you about your feelings and thoughts during the last month. In each case, you will be asked to indicate by circling how often you felt or thought a certain way. 0 = Never 1 = Almost Never 2 = Sometimes 3 = Fairly Often 4 = Very Often

1. In the last month, how often have you been upset because of something that happened unexpectedly? 0 1 2 3 4
2. In the last month, how often have you felt that you were unable to control the important things in your life? 0 1 2 3 4
3. In the last month, how often have you felt nervous and "stressed"? 0 1 2 3 4
4. In the last month, how often have you felt confident about your ability to handle your personal problems? 0 1 2 3 4
5. In the last month, how often have you felt that things were going your way?..... 0 1 2 3 4
6. In the last month, how often have you found that you could not cope with all the things that you had to do? 0 1 2 3 4
7. In the last month, how often have you been able to control irritations in your life? 0 1 2 3 4
8. In the last month, how often have you felt that you were on top of things? 0 1 2 3 4
9. In the last month, how often have you been angered because of things that were outside of your control? 0 1 2 3 4
10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them? 0 1 2 3 4

You can determine your PSS score by following these directions:

- First, reverse your scores for questions 4, 5, 7, and 8. On these 4 questions, change the scores like this: 0 = 4, 1 = 3, 2 = 2, 3 = 1, 4 = 0.
- Now add up your scores for each item to get a total. My total score is _____.

Individual scores on the PSS can range from 0 to 40 with higher scores indicating higher perceived stress.

- » Scores ranging from 0-13 would be considered low stress.
- » Scores ranging from 14-26 would be considered moderate stress.
- » Scores ranging from 27-40 would be considered high perceived stress.*

*Teachers should have resources available for any student who finds completion of the scale distressing (e.g., if a student is going through a particularly challenging time).

Data Collection: Enter your data below.

	TOTAL NUMBER OF HOURS OF SLEEP (FROM SLEEP LOG)	PERCEIVED STRESS SCALE SCORE
Day 1		
Day 2		
Day 3		
Day 4		
Day 5		
Day 6		
Day 7		

Plot the following:

1. Create your line graph or histogram with the number of hours of sleep on the X axis and the Perceived Stress Scale score on the Y axis.
2. Create a scatter plot on the white board with the same axis as #1. Each student should plot his/her/their data points so everyone's data points are represented.

Discussion questions:

1. **What type of research is this?**

2. **What did your individual data reveal?**

3. **What did the collected data of the entire class reveal?**

4. **Was there a relationship noted between the total number of hours of sleep and perceived stress levels?**

5. Name some other variables that may have influenced or confounded the findings?

6. What are the main reasons why teens may not be getting enough quality sleep?

7. How will the lab findings from this exercise influence your behavior?

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Cohen S., Kamarck T., & Mermelstein R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, 24, 386-396. <https://doi.org/10.2307/2136404>

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The Nemours Foundation/KidsHealth. <https://kidshealth.org>

Note: PSS Scale is reprinted with permission.

ACTIVITY 6.1**Mindful Walking**

Stephanie Franks, MS, Berkshire Local Schools, Ohio

CONCEPT

Mindfulness has several benefits to both our physical and mental health. It can improve our mood, reduce the physical symptoms of stress, improve our immune system, our heart health, and reduce the symptoms of anxiety and depression. It is important that students are introduced to the idea that mindfulness has benefits, but this exercise will allow students to directly practice engaging in a mindfulness activity that they will be able to replicate outside of the classroom.

MATERIALS

- *Mindful Walking* Student Worksheet
- Timer

INSTRUCTIONS

- This activity should take students about 15 minutes to complete.
- Pass out the student worksheet and discuss the benefits of mindful walking, and have students read through the expectation of the walk.
- Find a safe space outside, and set a timer for 5-10 minutes, allowing students to engage in a mindful walk
- If safety is an issue, this could also become a homework assignment, where students could engage in the mindful walk, and then reflect on their experience.

Resources used for this activity:

Stop, Breathe & Think. *Mindful Walking*. (2017, April 26).

Sutton, J. (2020, July 15). What is mindful walking meditation and how can it impact your life? *Positive Psychology*.

<https://positivepsychology.com/mindful-walking>

MINDFUL WALKING STUDENT WORKSHEET

Mindful walking has the benefits of both exercising and incorporating mindfulness, which can in turn promote both your mental and physical well-being. Rather than trying to hurry to get from one location to another, a mindful walk allows you to pay attention to the sensations of your body, and use these sensations to note and appreciate your surroundings.

The benefits of adding mindful walking into your week will help to enhance your mood, reduce the effects of stress, reduce the symptoms of anxiety and depression, improve focus and attention, and improve your heart health and immune system.

Aim to incorporate mindful walking into each day for 5-10 minutes. If this is too much, one day of mindful walking a week is still better than none.

Goal: Go on a 5-10 minute walk and complete the following:

- Before you begin your walk, take in how your body feels.
 - » How do your feet feel in your shoes?
 - » Are you hot or cold?
 - » Is there any part of your body that is in pain or stiff?
 - » How are you currently emotionally feeling?
- Take a few deep breaths and begin walking at a slower pace than you typically would take.
- As you walk, notice how your body feels, paying attention to how your legs, feet and arms feel with every step you take.
 - » Notice the footstep as it touches the ground and moves from the heel to toe.
- You may become distracted as you are walking and lose focus. That is normal and ok. Once you catch yourself doing this, take the next step as an opportunity to start again.
- Now we will start to pay attention to all of our senses:
 - » Sense of sight: what do you see? Pay attention to details
 - » Sense of sound: what do you hear? Pay attention to details.
 - » Sense of smell: what scents can you pick up as you are walking?
 - » Sense of taste: are you able to notice any tastes as you walk? Can you taste the air?
 - » Sense of touch: note again how the ground feels on your feet. Can you feel anything on your face (e.g., sun, thick air, sweat)?
- Continue to walk.
 - » Make sure you are focusing on your breath as you are walking; slowly and deeply breath in and out.
 - » Again, note how you are emotionally feeling.
 - » Appreciate your surroundings- find beauty, notice something funny, watch someone be kind, appreciate colors/shapes sounds, and identify items as you walk.

Resources used for this activity:

Stop, Breathe & Think. *Mindful Walking*. (2017, April 26).

Sutton, J. (2020, July 15). What is mindful walking meditation and how can it impact your life? *Positive Psychology*.

<https://positivepsychology.com/mindful-walking>

ACTIVITY 6.2

The 7 Benefits of Gratitude

Original idea from Daria Schaffeld, Prospect High School, Illinois

CONCEPT

Lesson Six of the Stress and Health unit specifically focuses on what individuals can do to promote their physical and mental health. Gratitude has a variety of benefits to both our mental and physical health. This activity will explore the benefits of gratitude, and show how easy this can be built into a person's daily or weekly schedule.

MATERIALS

- Access to the internet for the article, [7 Scientifically Proven Benefits of Gratitude](#) (Morin, 2015) or make copies for a class
- *The Benefits of Gratitude* Student Worksheet

INSTRUCTIONS

- This activity should take students about 20 minutes to complete.
- Define gratitude.
- Have students read the online article, [7 Scientifically Proven Benefits of Gratitude](#) (Morin, 2015) and complete the student worksheet that accompanies it, *The Benefits of Gratitude*.
- Once students are finished, discuss the benefits of expressing gratitude with them.
- Now it's time to express gratitude. Tell students to think about the last 24 hours, and write down at least three things, people, events, etc., in the last 24 hours that make them feel grateful. Tell students to not overthink this, and perhaps provide an example. Allow for three-to-five minutes for students to complete this.
- Discuss other ways students can incorporate this into their lives:
 - » Option to have a gratitude journal in this psychology class, and write in this two-to-three times a week as a part of class
 - » Have students think about three items they are grateful for before bed
 - » Write a thank you letter, write an email, or send a personalized text to a person that the student feels grateful for

THE BENEFITS OF GRATITUDE: STUDENT WORKSHEET KEY

The text in the key below was directly pulled from Morin, 2015. Reprinted with permission.

LIST THE BENEFIT DISCUSS IN THE <i>PSYCHOLOGY TODAY</i> ARTICLE BY DR. AMY MORIN	WHAT EVIDENCE DOES THE ARTICLE PROVIDE THAT SUPPORTS THIS BENEFIT (E.G., RESEARCH FINDINGS)
"Gratitude opens the door to more relationships"	"Not only does saying "thank you" constitute good manners, but showing appreciation can help you win new friends, according to a 2014 study published in <i>Emotion</i> . The study found that thanking a new acquaintance makes them more likely to seek an ongoing relationship. So whether you thank a stranger for holding the door or send a thank-you note to that colleague who helped you with a project, acknowledging other people's contributions can lead to new opportunities."
"Gratitude improves physical health."	"Grateful people experience fewer aches and pains and report feeling healthier than other people, according to a 2012 study published in <i>Personality and Individual Differences</i> . Not surprisingly, grateful people are also more likely to take care of their health. They exercise more often and are more likely to attend regular check-ups, which is likely to contribute to further longevity."
"Gratitude improves psychological health."	"Gratitude reduces a multitude of toxic emotions, from envy and resentment to frustration and regret. Robert Emmons, a leading gratitude researcher, has conducted multiple studies on the link between gratitude and well-being. His research confirms that gratitude effectively increases happiness and reduces depression ."
"Gratitude enhances empathy and reduces aggression ."	"Grateful people are more likely to behave in a prosocial manner, even when others behave less kindly, according to a 2012 study by the University of Kentucky. Study participants who ranked higher on gratitude scales were less likely to retaliate against others, even when given negative feedback. They experienced more sensitivity and empathy toward other people and a decreased desire to seek revenge ."
"Grateful people sleep better."	"Writing in a gratitude journal improves sleep, according to a 2011 study published in <i>Applied Psychology: Health and Well-Being</i> . Spend just 15 minutes jotting down a few grateful sentiments before bed, and you may sleep better and longer."
"Gratitude improves self-esteem ."	"A 2014 study published in the <i>Journal of Applied Sport Psychology</i> found that gratitude increased athletes' self-esteem, an essential component to optimal performance. Other studies have shown that gratitude reduces social comparisons. Rather than becoming resentful toward people who have more money or better jobs—a major factor in reduced self-esteem—grateful people are able to appreciate other people's accomplishments."
Gratitude increases mental strength.	For years, research has shown gratitude not only reduces stress , but it may also play a major role in overcoming trauma. A 2006 study published in <i>Behavior Research and Therapy</i> found that Vietnam War veterans with higher levels of gratitude experienced lower rates of post- traumatic stress disorder. A 2003 study published in the <i>Journal of Personality and Social Psychology</i> found that gratitude was a major contributor to resilience following the terrorist attacks on September 11. Recognizing all that you have to be thankful for—even during the worst times—fosters resilience.

Reference

Morin, A. (2015, April 3). 7 scientifically proven benefits of gratitude. *Psychology Today*. <https://www.psychologytoday.com/us/blog/what-mentally-strong-people-dont-do/201504/7-scientifically-proven-benefits-gratitude>

THE BENEFITS OF GRATITUDE: STUDENT WORKSHEET

LIST THE BENEFIT DISCUSS IN THE <i>PSYCHOLOGY TODAY</i> ARTICLE BY DR. AMY MORIN	WHAT EVIDENCE DOES THE ARTICLE PROVIDE THAT SUPPORTS THIS BENEFIT (E.G., RESEARCH FINDINGS)

Questions to respond to:

Do you currently express gratitude?

Of all of the benefits listed above, which benefit is the most appealing to you?

Does expressing gratitude have benefits on your mental and physical health?'

Do you realistically think this is something you could incorporate regularly into your day/week?

ACTIVITY 6.3**Building Resilience**

Stephanie Franks, MS, Berkshire Local Schools, Ohio

CONCEPT

Resilience is the capacity to adapt, recover and possibly even flourish following some adversity, trauma, tragedy, threats, or significant sources of stress—such as family and relationship problems, serious health problems, or workplace and financial stressors. Becoming resilient is beneficial to our students mental and physical well-being, and our students can learn to become more resilient by completing this activity.

MATERIALS

- Article, [Building your Resilience](#) (APA, 2020)
- *Building Resilience* Student Worksheet

INSTRUCTIONS

- This activity should take students about 10-15 minutes to complete.
- Have students read the American Psychological Association article [Building your Resilience](#) (APA, 2020) and have students complete the worksheet.

REFERENCE

American Psychological Association. (2020, February 1). *Building your resilience*. <https://www.apa.org/topics/resilience/building-your-resilience>

BUILDING RESILIENCE WORKSHEET

Directions: Read the article from the American Psychological Association, [Building your Resilience](#) (APA, 2020) and answer the following questions.

Give a good definition of what resilience is.

What is resilience not?

How can resilience promote both your physical and mental health?

What are three ways that you can increase your resilience when faced with difficult and traumatic experiences? Be specific.

ACTIVITY 6.4

Synthetic Happiness

Stephanie Franks, MS, Berkshire Local Schools, Ohio

CONCEPT

This activity has students engage with Dr. Daniel Gilbert's research on synthetic happiness or our psychological immune system. Humans can become anxious about our future in a way that no other animal can. With this ability, we often believe that if things don't go our way, that we will become unhappy. Dr. Gilbert explains that we truly are happy when things don't go as planned.

MATERIALS

- *TED Talk- Daniel Gilbert on Happiness* Student Worksheet
- Access to technology or the ability to show Dan Gilbert's TED talk, [The surprising science of happiness](#) (Gilbert, 2004)

INSTRUCTIONS

- This activity will take 30 minutes to complete. The video is 21 minutes long plus time necessary for discussion.
- Have students complete the TED worksheet while watching the video.
- It might be helpful to pause as you go to discuss the questions rather than waiting until the end.

DISCUSSION QUESTIONS

How are stress and anxiety alike?

How are they different?

Can you experience anxiety without a stressor?

Can you experience stress without anxiety?

TED TALK- DANIEL GILBERT ON HAPPINESS STUDENT WORKSHEET

Name _____

What does the frontal lobe do?

What can our brain do that other animal brains cannot do?

Who is more happy- lottery winners or paraplegics?

What is the impact bias?

What does Daniel Gilbert mean by “synthesized happiness” or a “psychological immune system?”

What is the difference between natural and synthetic happiness?

What argument does Daniel Gilbert make about synthetic happiness?

What conclusions can you draw from the painting study with the patients with anterograde amnesia?

When does the “psychological immune system” work best? Explain this.

What conclusions can be drawn from the Harvard photography study in regards to synthetic happiness?

“The great source of both the misery and disorders of human life, seems to arise from over-rating the difference between one permanent situation and another. Avarice over-rates the difference between poverty and riches: ambition, that between a private and a public station: vain-glory, that between obscurity and extensive reputation. The person under the influence of any of those extravagant passions, is not only miserable in his actual situation, but is often disposed to disturb the peace of society, in order to arrive at that which he so foolishly admires. The slightest observation, however, might satisfy him, that, in all the ordinary situations of human life, a well-disposed mind may be equally calm, equally cheerful, and equally contented. Some of those situations may, no doubt, deserve to be preferred to others: but none of them can deserve to be pursued with that passionate ardour which drives us to violate the rules either of prudence or of justice; or to corrupt the future tranquillity of our minds, either by shame from the remembrance of our own folly, or by remorse from the horror of our own injustice.”
—Adam Smith, *The Theory of Moral Sentiments*, 1759 (p. 210)

What did Adam Smith mean by the passage above?

What is the main point of Daniel Gilbert's Ted Talk?

How could Daniel Gilbert's Ted Talk help with the emergence and maintenance of stress?

ANSWER KEY**What does the frontal lobe do?**

The prefrontal cortex of the frontal lobe acts as an “experience simulator.” We can have experiences in our heads before we try it out in real life.

What can our brain do that other animal brains cannot do?

Think about the future in a capacity that our ancestors and other animals cannot; the example given from the TED talk is that we can think about liver and onion ice cream, and without trying it, make the decision that it would be a bad idea.

Who is more happy- lottery winners or paraplegics?

A year after a lottery winner wins the lottery and a year after a paraplegic loses the ability to use their legs, they are equally happy.

What is the impact bias?

Impact bias is the tendency to overestimate the hedonic impact of future events; the tendency for the simulator to work poorly; the simulator makes us believe that different outcomes from we want will have a larger effect, impact, and intensity than it actually will.

What does Daniel Gilbert mean by “synthesized happiness” or a “psychological immune system?”

Daniel Gilbert means a system of cognitive processes which helps us change our views of the world, so we feel better about the world we live in when things don't go our way.

What is the difference between natural and synthetic happiness?

The difference between natural and synthetic happiness is that natural happiness- we get what we wanted; synthetic happiness- what we make from not getting what we want.

What argument does Daniel Gilbert make about synthetic happiness?

It is real; it is just as real and enduring as getting what you wanted.

What conclusions can you draw from the painting study with the patients with anterograde amnesia?

They synthesized happiness; the patients didn't realize that they owned the painting, which they originally didn't like as much, and yet after owning it (unknowingly), liked it better.

When does the “psychological immune system” work best? Explain this.

When we do not have options; when we feel stuck.

What conclusions can be drawn from the Harvard photography study in regards to synthetic happiness?

When we can't change our minds (when students had to select a picture immediately), we tend to be happier with the picture we were stuck with, yet when we think we can change our photograph, we tend to not be as happy with our decision.

Yet, 68% of students want a course where they would have the ability to change their minds, without realizing that they will ultimately be less happy with the results.

What did Adam Smith mean by the passage above?

It's natural to recognize that we as humans do have preferences and want to have goals for a specific future, but when the desire to acquire the desired outcome does not happen (losing an election, not getting a job, etc.), it can put us morally at risk. It can lead us to lie, cheat, steal, hurt others, and act recklessly and cowardly. Our ambition when we do not recognize that the outcome will be alright or when we do not get what we want can expose a dangerous and dark side of humanity.

What is the main point of Daniel Gilbert's Ted Talk?

Humans have a self-protectant psychological immune system that allows us to make the best of situations that don't go our way, and be truly and genuinely happy with the new outcome.

How could Daniel Gilbert's TedTalk help with the emergence and maintenance of stress?

Answers will vary.

Example: our appraisal of an upcoming test, such as the ACT, might be appraised differently. For instance, if we believe that we need a score of 24 or higher for college or else we will not be successful because we won't get into the college of our choice, our stress response will reflect this appraisal. If a student recognizes that studying for the ACT is important, but they will be able to make the best of whatever score they receive, studying for the ACT might not be considered stressful.

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ACTIVITY 6.5

The Happiness Lab Podcast Walk

Stephanie Franks, MS, Berkshire Local Schools, Ohio

CONCEPT

Students are asked to listen to a podcast episode on the science of happiness and consider the main takeaways from the episode.

MATERIALS

- This activity could take 45-60 minutes and can be done as homework. Each episode is about 40-50 minutes long and the worksheet below may take 5-10 minutes to complete.
- Access to [The Happiness Lab Project](#) with Dr. Laurie Santos
- Headphones
- *The Happiness Lab Project* Worksheet

INSTRUCTIONS

- Students are asked to pick an episode from [The Happiness Lab Project](#) with Dr. Laurie Santos and listen to this podcast while they take a walk outside.
- After finishing the episode, students should complete *The Happiness Lab Project* worksheet.

THE HAPPINESS LAB PROJECT WORKSHEET

Phase 1 to a happier you

Time to Get Outside

Pick an episode from [The Happiness Lab Project](#) with Dr. Laurie Santos. Listen to this podcast while you take a walk OUTSIDE.

- These can also be easily searched for on your phone with the podcast App or wherever you listen to podcasts.

Your task: Answer the following questions

Which episode did you select?

Give an overview of what the podcast episode was about (this must be a minimum of a large paragraph).

What were the significant takeaways from the episode?

Did you enjoy this and how likely are you to listen to another episode outside of class?

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