Module 2: Stress and Health - Week 2, April 16 - 20

Content:

This Module contains 5 Lessons:

Lesson 1: Science of Psychoneuroimmunology
Lesson 2: Dynamics and Sources of Stress
Lesson 3: General Adaptation Syndrome
Lesson 4: Burnout and Stress Related Illness
Lesson 5: Managing stress

Objectives:

Students will be able to:

- Define stress and review the body's physiological responses to it.
- Summarize the negative health consequences of prolonged stress.
- Explain the differences in how people respond to stress.
- Review the methods that are successful in coping with stress.
- Discuss the role of appraisal in the way we respond to stressful events, and describe the biology of the fight-or-flight response as well as the physical characteristics and phases of the general adaptation syndrome.
- Compare the benefits of relaxation and meditation as stress management techniques

Sources:

http://www.psywww.com/selfquiz/ch14mcq.htm#14q1

Medline Plus http://www.nlm.nih.gov/medlineplus/stress.html

Stress for Adults: How it affects your health and what you can do about it, NIMH, NIH, http://www.nimh.nih.gov/health/publications/stress/fact-sheet-on-stress.shtml

Stress and Your Health,http://womenshealth.gov/publications/our-publications/fact-sheet/stress-your-health.cfm

Introduction to Stress, York School AP Psychology Textbook, CC-BY-SA-NC http://appsychtextbk.wikispaces.com/Stress+and+Health

Relaxation Techniques, National Center for Complementary and Alternative Medicine (NCCAM), National Institutes of Health, http://nccam.nih.gov/health/stress/relaxation.htm

---

Lesson 1: Psychoneuroimmunology and Stress

Science of Psychoneuroimmunology

Source: NCBI, NLM, NIH, http://www.ncbi.nlm.nih.gov/books/NBK24698/#a2000af97ddd00065

Psychoneuroimmunology is defined as the examination of the interactions among psychological, behavioral, and social factors with immunological and neuroendocrine outcomes. It is now well established that psychological factors, especially chronic stress, can lead to impairments in immune system functioning in both the young and older adults. In several studies of older adults, those who are providing care for a relative with dementia report high levels of stress and exhibit significant impairments in immune system functioning when compared with noncaregivers. Stress-induced changes in the immune system may affect a number of outcomes, including slowing the wound healing process and increasing susceptibility to infections.

What is stress?

Source: http://womenshealth.gov/publications/our-publications/fact-sheet/stress-your-health.cfm

Stress is a feeling you get when faced with a challenge. In small doses, stress can be good for you because it makes you more alert and gives you a burst of energy. For instance, if you start to cross the street and see a car about to run you over, that jolt you feel helps you to jump out of the way before you get hit. But feeling stressed for a long time can take a toll on your mental and physical health. Even though it may seem hard to find ways to de-stress with all the things you have to do, it's important to find those ways. Your health depends on it.

Chronic Stress

Source: NLM, NIH, Medline Plus http://www.nlm.nih.gov/medlineplus/stress.html

We all have stress sometimes. For some people, it happens before having to speak in public. For other people, it might be before a first date. What causes stress for you may not be stressful for someone else. Sometimes stress is helpful - it can encourage you to meet a deadline or get things done. But long-term stress can increase the risk of diseases like depression, heart disease and a variety of other problems. A stress-related illness called post-traumatic stress disorder (PTSD) develops after an event like war, physical or sexual assault, or a natural disaster.

If you have chronic stress, the best way to deal with it is to take care of the underlying problem. Counseling can help you find ways to relax and calm down. Medicines may also help.

How Stress Affects your Health and What You Can Do About It

Source: Fact Sheet on Stress, NIMH, NIH, http://www.nimh.nih.gov/health/publications/stress/fact-sheet-on-stress.shtml

Stress — just the word may be enough to set your nerves on edge. Everyone feels stressed from time to time. Some people may cope with stress more effectively or recover from stressful events quicker than others. It's important to know your limits when it comes to stress to avoid more serious health effects.

Stress can be defined as the brain's response to any demand. Many things can trigger this response, including change. Changes can be positive or negative, as well as real or perceived. They may be recurring, short-term, or long-term and may include things like commuting to and from school or work every day, traveling for a yearly

vacation, or moving to another home. Changes can be mild and relatively harmless, such as winning a race, watching a scary movie, or riding a rollercoaster. Some changes are major, such as marriage or divorce, serious illness, or a car accident. Other changes are extreme, such as exposure to violence, and can lead to traumatic stress reactions.

How does stress affect the body?

Not all stress is bad. All animals have a stress response, which can be life-saving in some situations. The nerve chemicals and hormones released during such stressful times, prepares the animal to face a threat or flee to safety. When you face a dangerous situation, your pulse quickens, you breathe faster, your muscles tense, your brain uses more oxygen and increases activity—all functions aimed at survival. In the short term, it can even boost the immune system.

However, with chronic stress, those same nerve chemicals that are life-saving in short bursts can suppress functions that aren't needed for immediate survival. Your immunity is lowered and your digestive, excretory, and reproductive systems stop working normally. Once the threat has passed, other body systems act to restore normal functioning. Problems occur if the stress response goes on too long, such as when the source of stress is constant, or if the response continues after the danger has subsided.

How does stress affect your overall health?

There are at least three different types of stress, all of which carry physical and mental health risks:

- Routine stress related to the pressures of work, family and other daily responsibilities.
- Stress brought about by a sudden negative change, such as losing a job, divorce, or illness.
- Traumatic stress, experienced in an event like a major accident, war, assault, or a natural disaster where one may be seriously hurt or in danger of being killed.

The body responds to each type of stress in similar ways. Different people may feel it in different ways. For example, some people experience mainly digestive symptoms, while others may have headaches, sleeplessness, depressed mood, anger and irritability. People under chronic stress are prone to more frequent and severe viral infections, such as the flu or common cold, and vaccines, such as the flu shot, are less effective for them.

Of all the types of stress, changes in health from routine stress may be hardest to notice at first. Because the source of stress tends to be more constant than in cases of acute or traumatic stress, the body gets no clear signal to return to normal functioning. Over time, continued strain on your body from routine stress may lead to serious health problems, such as heart disease, high blood pressure, diabetes, depression, anxiety disorder, and other illnesses.

Stress and Stressors

Source: York School AP Psychology Textbook, CC-BY-NC-SA, http://appsychtextbk.wikispaces.com/

Even though there is little consensus among psychologists about the exact definition of stress, mainstream scientists define stress as the process by which we perceive and cope environmental factors that are appraised as threatening or challenging by our brains. Those factors, known as stressors, could be either physical or psychological in natural. A stressor can be the presence of flood after a storm or nervousness about SATs. According to the theory of Richard Lazarus, a psychologist from UC Berkeley, there are three types of stressors (also known as stimuli): major cataclysmic changes that affect large numbers of persons; major changes affecting one or several persons; and daily hassles. (Lazarus, 1984)

The first type of stressors may refer to phenomena that are outside anyone's control. Like natural disasters, wars or uprooting and relocation, they are universally stressful. The stressors themselves could be ephemeral, but the physical and psychological aftermath is long-term. The second category of stressors happen to relatively few people or to individuals. These are events out of the individual's control, like the death of loved ones, a robbery, or the process of taking exams. The daily hassles are little things that distress or irritate: a quarrel with parents, a losing sports game or too much homework.

The above listed stressors all seem to have negative effects and impacts to our life, however, stressors can be positive as well. According to Hans Selye, the father of stress study, there are two types of stress: eustress and distress. Eustress refers to stress that actually allows the body to function as well or better than it does while unstressed.

Learning Activity 1.1:

- Go to Stress-O-Meter (http://www.bam.gov/sub_yourlife/yourlife_stressometer.html) to determine your own stress level.
- Were the results what you expected? Why or why not?

Lesson 2: Dynamics and Sources of Stress

Stress and the Brain

Source: Psychology/Genetic Interplay, CC-BY-SA, http://en.wikibooks.org/wiki/SL_Psychology/Genetic_interplay

Stress has many definitions, but according to Richard Lazarus, stress is a state of anxiety produced when events and responsibilities exceed one's coping abilities. In this way, stress relies not only on environmental factors, but on cognitive appraisals of these factors (Myers, 2004). The cerebral cortex perceives the stressor, the hypothalamus stimulates the pituitary gland to release epinephrine and norepinephrine. This in turn stimulates the adrenal glands to release the hormone cortisol (Myers, 2004). Stress affects many other areas of the body, such as the amygdala, which produces a fear response. It seems to hardwire the brain differently. Middle-aged rats that had undergone early life stress had abnormal brain-cell activity and memory loss (Brunson et. al., 2005).

The sources of stress are numerous: from catastrophes such as Hurricane Katrina, significant life changes, poverty and inequality, to daily hassles like traffic tie-ups and demanding jobs (Myer, 2004). Especially in urban and overcrowded environments, psychologists see links between everyday stressors and hypertension, and unhealthy behaviors such as lack of sleep and alcoholism (Lazarus & Folkman, 1984). In fact, the leading causes of death today in America are linked to lifestyle and stress. According United Nations Security Council, about half of the world's children grow up in extremely stressful environments (poverty, violence, war, abuse), which means that these children may have impaired cognitive abilities later on in life.

Certain personalities are more susceptible to stress. Friedman and Rosenman found that Type A people, who are characterized as competitive, impatient, and aggressive, are more physically reactive to stress- they produce more hormones and have a higher blood pressure. Type B people, who are more relaxed and easygoing, are less prone to stress. Most significantly, Type A's were 69% more likely to suffer from a heart attack (Myers, 2004). Type A's typically feel like they are less in control of situations.

According to research by Janet Rodin, the less perceived control of a situation, the greater the stress. The elderly that lived in nursing homes, were lonely, and had to be fed, dressed, and changed, felt significantly more stress and had shorter lifespans than their independent, active counterparts.

Females seem to be more susceptible to stress and depression. After experiencing traumatic events, females are twice as likely as men to develop Post Traumatic Stress Disorder, where humans develop maladaptive behaviors such as avoidance, reduced responsiveness and guilt (Myers, 2004).

However, mindful exercise, such as Tai Chi, meditation, and aerobic exercise decrease stress response and promote overall well-being (Sandlund and Norlander, 2000). In a University of Wisconsin study, participants who did meditative exercises showed more electrical activity in the left side of the frontal lobe, indicating that they had a lower anxiety and a more positive emotional state (Davidson, 2003). Meditation, yoga, and other relaxation exercises also assist in autonomic reflexes. This is called conscious control. Through these practices, it is possible to gain control over the sphincter muscles in the anus and bladder. Yoga has been shown to help control heart rate, blood pressure, and other autonomic functions. These are learned behaviors - they involve the formation of new pathways in the brain.

Researchers have also found the correlation between a social support network of close friends and family and less physiological stress effects (Brown and Harris, 1978). Stress Inoculation Training and Hardiness Training are cognitive behavioral techniques that work to improve stress resistance through analyzing stressors, teaching coping techniques, and changing behavior so that the patient feels more assertive and in control (Kobasa, 1986). Drugs, such as beta-blockers, which reduce stress arousal, anxiolytic drugs, such as minor tranquilizers, and anti-depressant drugs, which treat severe anxiety, can also be used to combat stress.

What are the most common causes of stress?

Source: http://womenshealth.gov/publications/our-publications/fact-sheet/stress-your-health.cfm

Stress happens when people feel like they don't have the tools to manage all of the demands in their lives. Stress can be short-term or long-term. Missing the bus or arguing with your spouse or partner can cause short-term stress. Money problems or trouble at work can cause long-term stress. Even happy events, like having a baby or getting married can cause stress. Some of the most common stressful life events include:

- Death of a spouse
- Death of a close family member
- Divorce
- Losing your job
- Major personal illness or injury
- Marital separation
- Marriage
- Pregnancy
- Retirement
- Spending time in jail

What are some common signs of stress?

Everyone responds to stress a little differently. Your symptoms may be different from someone else's. Here are some of the signs to look for:

- Not eating or eating too much

- Feeling like you have no control
- Needing to have too much control
- Forgetfulness
- Headaches
- Lack of energy
- Lack of focus
- Trouble getting things done
- Poor self-esteem
- Short temper
- Upset stomach
- Back pain
- General aches and pains

These symptoms may also be signs of depression or anxiety, which can be caused by long-term stress.

Do women react to stress differently than men?

One recent survey found that women were more likely to experience physical symptoms of stress than men. But we don't have enough proof to say that this applies to all women. We do know that women often cope with stress in different ways than men. Women "tend and befriend," taking care of those closest to them, but also drawing support from friends and family. Men are more likely to have the "fight or flight" response. They cope by "escaping" into a relaxing activity or other distraction.

Can stress affect my health?

The body responds to stress by releasing stress hormones. These hormones make blood pressure, heart rate, and blood sugar levels go up. Long-term stress can help cause a variety of health problems, including:

- Mental health disorders, like depression and anxiety
- Obesity
- Heart disease
- High blood pressure
- Abnormal heart beats
- Menstrual problems
- Acne and other skin problems

Does stress cause ulcers?

No, stress doesn't cause ulcers, but it can make them worse. Most ulcers are caused by a germ called *H. pylori*. Researchers think people might get it through food or water. Most ulcers can be cured by taking a combination of antibiotics and other drugs.

What is post-traumatic stress disorder (PTSD)?

Post-traumatic stress disorder (PTSD) is a type of anxiety disorder that can occur after living through or seeing a dangerous event. It can also occur after a sudden traumatic event. This can include:

- Being a victim of or seeing violence
- Being a victim of sexual or physical abuse or assault
- The death or serious illness of a loved one

- Fighting in a war
- A severe car crash or a plane crash
- Hurricanes, tornadoes, and fires

You can start having PTSD symptoms right after the event. Or symptoms can develop months or even years later. Symptoms may include:

- Nightmares
- Flashbacks, or feeling like the event is happening again
- Staying away from places and things that remind you of what happened
- Being irritable, angry, or jumpy
- Feeling strong guilt, depression, or worry
- Trouble sleeping
- Feeling numb
- Having trouble remembering the event

Women are 2 to 3 times more likely to develop PTSD than men. Also, people with ongoing stress in their lives are more likely to develop PTSD after a dangerous event.

Fight or Flight Response

Source: York School AP Psychology Textbook, CC-BY-SA-NC, http://appsychtextbk.wikispaces.com/Stress+Response

When we experience excessive stress, either from internal worry or external circumstance, a bodily reaction called the "fight-or-flight" response will be triggered. Harvard physiologist Walter Cannon originally defined it. The response system represents the genetic impulse to protect ourselves from bodily harm, but also can result in negative health effects. According to Cannon's theory, during stress-response processes, the sympathetic nervous system increases the heart rate and releases chemicals to prepare our body to either fight or flee. When the fight-or-flight response system get activated, it tends to perceive everything in the environment as a potential threat to survival.

In modern life, we do not get the option of "flight" very often. We have to deal with those stressors all the time and find a solution. When you need to take an SAT test, there is no way for you to avoid it; sitting in the test room for five hours is the only choice. Lacking the "flight" option in stress-response process leads to higher stress levels in modern society.

Learning Activity 2.1:

Watch this video titled - Fight or Flight Response and take the ungraded quiz.

Stress and Health

Bob Riesenberg, Whatcom Community College and Washington Online, Washington State Colleges, CC-BY

Exercise builds stronger bodies only if we push ourselves beyond our regular level of strength and endurance. Progressing in your intellectual skills occurs only by going beyond your adaptation level for the complexity and amount of knowledge you must acquire. Stress as "challenge" enhances physical and emotional well-being.

Mountain climbers want risk and challenge, but they want the type that they feel they can master and mostly control. They don't want to be perfectly in control because then the challenge would not be so great. They want to be on the edge between in-control and having to use every degree of skill, concentration, and problem solving to succeed. The same is true of race car drivers, downhill skiers, chess players, musicians, and artists.

These activities have been described by Csikszentmihalyi as inducing the experience of "flow" that totally captures the attention, makes it very easy to continue, and very hard to stop. There are many other activities and professions that produce "flow", but the essence of the experience is to be on the edge of challenge and failure with the perception that your own efforts will make the difference between good and bad outcomes. In these conditions stress builds healthier bodies and higher well-being. People who experience "flow" frequently report high degrees of satisfaction in life.

Stress is in the eye of the beholder

The process by which we influence the emotion we experience in a situation by the interpretation or cognitions we select in the experience is described by Lazarus's theory of appraisal as influencing our stress experience. This theory may be beneficial to our understanding of the differences between individual's stress levels. The theory's main points are:

1. When we experience a situation or event we first determine if it is a threat, a challenge, or is neutral.
2. We then assess our inventory of resources to cope with the event. If we do not perceive we are adequate to the task, we must be able to withdraw or we will feel trapped in a situation with aversive consequences coming. That induces distress and all the physiological processes that harm our health. If we perceive that we have the resources to successfully cope with the situation, we feel challenged and optimistic. Note that challenge and optimism are related to enhanced health and sense of well-being.

This second stage of appraisal impacts the first stage in a loop process. If we at first perceive a threat but then realize we can handle it, it reduces the distress and may even create a perception of challenge. If at first we perceive a challenge but then realize that we don't have what it takes to be successful, we may begin to experience distress as we see the aversive outcome of failure looming ahead. Depending on the meaning of the outcome to us, the distress may be mild or severe. If the situation is always hanging over us and we always feeling inadequate to it and anxious about negative outcomes, we are always under distress. Our health and well-being take a beating in that scenario.

Next we must select from our repertoire of coping resources. There are two types of coping resources:

- instrumental
- palliative (emotion-focused)

Instrumental coping solves the problem and removes the stressor form our experience as in working out a conflict with someone to reduce the distress or by getting a better job to reduce financial pressures.

Palliative coping alters our physiological reactions to stress that will not go away and cannot be escaped. These include relaxation skills, reinterpretation of the meaning or effects of the stressor, acceptance of the situation, or optimism about future improvements in the situation. Palliative skills would include relaxing in the traffic jam even though you have an important appointment that is being missed. You realize you cannot do anything about it, so you may as well relax because anger and tension will not make the cars move any faster, but it will hurt you, so you choose to relax instead.

As we go to our repertoire of coping skills to select one or more, we may become more optimistic of success and

reappraise the situation in the first step. It may become less threatening and hence less distressful. We could find that our coping resources will be less adequate than we initially thought and we would become more threatened now. Even a challenge might be converted into a threat as in traveling to a another country for the first time and finding your credit cards are missing and you have no money for anything and no way to get any.

This interactive appraisal and coping process is at the heart of the impact of stress on us. If we interpret a situation as stressful, it has the stress-related effects on us. If we have few coping sources, more situations will be perceived as distressing. If we have many coping resources, more situations will be perceived as challenging or at least neutral.

As I am driving down the road and have a flat tire, I could be annoyed at the trouble it causes or highly threatened by the memory of Bill Cosby's son's murder a few years ago as he changed his tire. If I don't know how to change a tire and it is night time, I may feel very threatened as I perceive helplessness and vulnerability to someone's attacking me. If I assure myself that this is unlikely and I do know how to change a tire, I may decide that I will get this done in ten minutes and be on the road safely. But then I find that my spare tire is flat. Now I feel threatened for sure. But if I have a good spare, have a good flashlight, have a handgun and the skill to use it, and have changed many tires, I may only feel annoyed at the hassle and not feel threatened (many instrumental skills). I may have none of these things but have a cell phone and a close friend who will quickly be here to solve the problem for me (social support). My distress is much less then.

These factual situations are part of the appraisal and coping process. Perception is also critically important. If I have little confidence in myself to handle a flat tire even though I have been taught how to do it and have the tire, I may feel more threatened. If I have the cell phone but don't believe I should bother anybody to come here, or don't believe they would want to help me, the facts do not determine my reaction as much as my perception of the facts determines it.

A second example of the role of coping skills and perception could involve getting started in this course. If you are a computer whiz and have taken several college courses including online courses before, you got started with little problem. Learning to use Etudes, to take online quizzes probably did not cause much distress. But if you were new to using the Internet, had never taken an online course, and had low self-confidence, you may have been quite distressed. Same situation, different coping resources. Some of our community colleges go to great effort to be sure new online students have the knowledge and coping skills to begin a course with little stress.

Now add pure perception. If you perceive college as a supportive environment that will find a way to assist you to get through as long as you put forth the effort, and perceive instructors as willing to be flexible when circumstances are beyond all of our control, like getting started on the three programs we use and getting books late, you may be hassled but not threatened about failing the course because of these factors. But if you see colleges and instructors as money-hungry and deliberately placing obstacles in your path to cause you to fail and drop out, you have been very distressed when you had these difficulties as you would see no support or flexibility to allow you to adapt to the new situation and have the time to catch up. You might even feel quite angry at this new ploy to get your tuition and frustrate you into quitting. The reality of the college and instructor's intent make no difference in your initial perception and resultant choices. It is your perception of reality that determines what you will do.

The appraisal and coping process underlies the statement that "stress is in the eye of the beholder." Any event of situation may be perceived differently by different individuals due to past experience with it, learned skills, personality traits like Type A and optimism, and the amount of distress being experienced already. Social support may be instrumental in helping cope with problem as in coming to help with the flat tire, or being eager to listen and be supportive with your sharing your experiences. Both reduce the distress levels.

Lesson 3: General Adaptation Syndrome

Selye's Concept of General Adaptation Syndrome

Source: *Psychology: An Introduction* by Russ Dewey, 2007, CC-BY-NC-ND, http://www.intropsych.com/ch14_frontiers/selyes_concept_of_a_general_adaptation_syndrome.html

Hans Selye (1907-1982) started the modern era of research into something called *stress*. In 1950, Selye addressed the American Psychological Association convention. He described a theory of stress-induced responses that become the standard model of stress, the one people usually refer to (or criticize) in academic journal articles about stress.

How did Selye discover the stress response?

Selye's discovery of the stress response was an accident. He was doing research on the effect of hormone injections in rats. Initially he thought he detected a harmful effect from the hormones, because many of the rats became sick after receiving the injections. But when Selye used a control group of rats, injected only with a neutral solution containing no hormones, he observed that they became sick, too.

As it turned out, the rats responded more profoundly to the trauma of being injected than they did to the hormones. The experience of being handled and injected led to high levels of sympathetic nervous system arousal and eventually to health problems such as ulcers. Selye coined the term "stressor" to label a stimulus that had this effect.

What is a stressor for rats? For lab assistants?

The immediate response to stress is the release of adrenaline into the blood plasma (the liquid part of the bloodstream). "Mild stressors such as opening a cage door or handling a rat produces an eightfold increase in plasma epinephrine [adrenaline] concentrations" (Axelrod and Reisine, 1984). The sentence is ambiguous; does the rat or the human experience the eightfold increase in adrenaline? In this case, it is the rat which is having its adrenaline (plasma epinephrine) measured. However, many lab assistants probably experience a burst of adrenaline, too, when handling a rat for the first time.

What were the three stages of Selye's General Adaptation Syndrome?

Selye proposed a three-stage pattern of response to stress that he called the *General Adaptation Syndrome (GAS)* . He proposed that when the organism first encountered stress, in the form of novelty or threat, it responded with an *alarm reaction*. This is followed by a *recovery* or *resistance* stage during which the organism repairs itself and stores energy. If the stress-causing events continue, *exhaustion* sets in. This third stage is what became known popularly as burn-out. Classic symptoms of burn-out include loss of drive, emotional flatness, and (in humans) dulling of responsiveness to the needs of others.

Hans Selye's Study of Stress Response

Source: York School AP Psychology Textbook, CC-BY-SA-NC, http://appsychtextbk.wikispaces.com/Stress+Response

In 1934, Hans Selye at McGill University discovered a new type of hormone. He gave rats daily injections of ovarian extract and found that the rats had enlarged adrenals and shrunken spleens, thymus, lymph nodes, and

intestinal ulcers. “Multiple organs in the body generate this hormone, and thus he announced that it is a nonspecific response of body to noxious agents. (Evan-Martin, 2007)

In 1936, Selye defined these series of symptoms in the experiments with the rats as the **General Adaptation Syndrome**, which consists of three stages: the alarm stage, the resistance stage, and the exhaustion stage (Evan-Martin, 2007). The alarm stage is similar to the fight-to-flight response, and the body mobilizes resources to react to the incoming noxious agent. The resistance forces will be built up when the noxious challenge is detected as continuing. The exhaustion stage will cause death if the body is unable to overcome the threat.

For example, your mom told you that you are going to take the SAT next month. The first reaction is shock, starting complaints and feelings of stress, which represent the beginning of the first stage. In the resistance stage, you will try your best to do practice tests, reviewing vocabulary, studying any type of study aids that are available. Finally, you will feel like you are doomed to fail this test and feel desperate, feel constantly anxious, have difficulty falling asleep and waking up in the morning. The exhaustion of this stage will have deleterious effects on your health by depleting your body resources which are crucial for the maintenance of normal functions. Your immune system will be exhausted and function will be impaired. Also, the decomposition which is a functional deterioration of body may happen as the exhaustion stage extends. Selye believed that one becomes sick at that point because stored hormones secrete during the stress response are depleted (Sapolsky, 1998).

Distress may be destructive to health

Source: Bob Riesenberg, Whatcom Community College and Washington Online, Washington State Colleges, CC-BY

Hans Selye’s research that led to the concept of the General Adaptation Syndrome (GAS) demonstrated that stress that is perceived as a threat (distress) may be debilitating if it is continuous. But even “flow” could go on too long and the person would need a break. But "flow" only develops in activities that are freely engaged in. Negative stress, or distress, is often part of activities that we perceive we cannot escape. Our bodies and minds seem to have evolved to cope well with sudden and brief stressors, such as escaping attack by a predator. We do not seem to be designed to handle chronic stress even if it is mild, like driving in heavy traffic. Our society has created many conditions that produce chronic stress and are associated with stress related illnesses. We have time pressures, work pressures, relationship pressures, crowding, noise, crime, to many things to do in too little time, achievement pressures, and even education-related pressures in this course. It is this detrimental effect of ongoing stress that underlies the GAS and the concepts of stress-induced health problems.

Learning Activity 3.1:

Watch the video titled Stressed by Stress and take the ungraded quiz.

Eustress

Source: *Psychology: An Introduction* by Russ Dewey, CC-BY -NC-ND , 2007, http://www.intropsych.com/ch14_frontiers/eustress.html

- What was Selye's concept of eustress?
- What type of stressors produced harmful stress reactions?

Hans Selye originally defined stress as the body's response to *challenges*. He was dismayed by the implication that all challenging events in life were unhealthy and undesirable. Stress was not always bad, he pointed out.

Sometimes a challenge is a good thing. Indeed, one could argue that nothing useful in life can be accomplished without some degree of stress. "Good stress," Selye pointed out, is "the spice of life." To combat the notion that all stress was bad, Selye developed the idea of *eustress*, which is a person's ideal stress level. Selye proposed that different people needed different levels of challenge or stimulation (stress) in their lives. Some people ("turtles") need low levels of stress. Others ("racehorses") thrive on challenges.

In the long run, the popular conception of stress as something bad proved to be more durable and accurate than Selye's notion of stress as a challenge to the system. In other words, the word *stress* continues to mean something bad (not something challenging) to most people. That seems to make the most sense, because psychologists found that only *unpleasant* stressors produced the harmful stress reaction identified by Selye (corticosteroid secretion). Challenges were not harmful in themselves. A person could be a busy executive or engage in strenuous exercise without experiencing negative stress-related symptoms, as long as the person enjoyed the challenge.

Lesson 4: Burn Out

Burnout and Stress Related Illness

Source: A new definition of burnout syndrome based on Farber's proposal by Jesus Montero-Maria Javier García-Campayo, Domingo M Mera and Yolanda L del Hoyo, *Journal of Occupational Medicine and Toxicology* 2009, 4:31 doi:10.1186/1745-6673-4-31, CC-BY, http://www.occup-med.com/content/4/1/31

Burnout syndrome is considered an important work-related illness in welfare societies. It was through observations by Freudenberger inside a detoxification clinic in the mid 1960s that the first scientific descriptions came to light of staff affected by this disorder. It was only in the 1980s that evaluation criteria for the syndrome became available, through the design of a standard measurement instrument, the Maslach Burnout Inventory or MBI.

Burnout is a psychosocial syndrome. It involves feelings of emotional exhaustion, depersonalization and diminished personal accomplishment at work. Emotional exhaustion is a situation where, owing to lack of energy, workers perceive they are no longer able to participate on an emotional level. Depersonalization entails the development of negative attitudes and feelings towards persons for whom work is done, to the point where they are blamed for the subject's own problems. Diminished personal accomplishment is a tendency in professionals to negatively value their own capacity to carry out tasks and to interact with persons for whom they are performed, and feeling unhappy or dissatisfied with the results obtained.

The MBI questionnaire has been adapted for application not only to human services professions but to all types of occupations in general. An updated definition of burnout, constructed using the latest version of the MBI, is that proposed by Maslach et al. In their description it is "a prolonged response to chronic emotional and interpersonal stressors on the job, and is defined by the three dimensions of exhaustion, cynicism, and inefficiency". Exhaustion is the feeling of not being able to offer any more of oneself at an emotional level; cynicism is contemplated as a distant attitude towards work, the people being served by it and among colleagues; ineffectiveness is the feeling of not performing tasks adequately and of being incompetent at work.

Burnout is generally considered a response by a person to chronic work-related stress in an attempt to adapt or protect oneself from it. From a transactional approach, stress is defined as "the result of a relationship with the environment that the person appraises as significant for his or her well-being and in which the demands tax or exceed available coping resources." This is the case because a life event is not what produces stress; rather, it is caused by the appraisal the affected person makes of it. According to Lazarus and Folkman, coping is "cognitive and behavioral efforts to manage specific internal and/or external demands that are appraised as taxing or

exceeding the resources of the person." A person will be psychologically vulnerable to a determined situation if he or she does not possess sufficient coping resources to handle it adequately, and if at the same time, he or she places considerable importance on the threat implicit in the consequences of this inadequate handling. From this perspective, burnout syndrome may be seen as a progressively-developed process resulting from the use of the relatively ineffective coping strategies with which professionals try to protect themselves from work-related stress.

Burnout has also been described as an experience where the worker is aware of considerable discrepancy between his or her efforts and the results, between the invested efforts and the rewards obtained at work. This phenomenological analysis framework is introduced into the subjective experience of those affected, and the conclusion is reached that the burnout process is triggered when the worker feels that his or her efforts are disproportionate to the gratification achieved, and consequently is no longer able to justify or cope with further investment of effort. Burnout syndrome may be seen as the continuous perception that efforts made to carry out tasks are not effective, because expected gratitude, recognition or success at work are not being achieved.

Learning Activity 4.1: Take the Burn Out Self-Test

This tool can help you check yourself for burnout. It helps you look at the way you feel about your job and your experiences at work, so that you can get a feel for whether you are at risk of burnout.

Source: http://www.mindtools.com/pages/article/newTCS_08.htm

Lesson 5: Managing Stress

How can I help handle my stress?

Source: http://womenshealth.gov/publications/our-publications/fact-sheet/stress-your-health.cfm

Everyone has to deal with stress. There are steps you can take to help you handle stress in a positive way and keep it from making you sick. Try these tips to keep stress in check:

Develop a new attitude

- Become a problem solver. Make a list of the things that cause you stress. From your list, figure out which problems you can solve now and which are beyond your control for the moment. From your list of problems that you can solve now, start with the little ones. Learn how to calmly look at a problem, think of possible solutions, and take action to solve the problem. Being able to solve small problems will give you confidence to tackle the big ones. And feeling confident that you can solve problems will go a long way to helping you feel less stressed.
- Be flexible. Sometimes, it's not worth the stress to argue. Give in once in awhile or meet people halfway.
- Get organized. Think ahead about how you're going to spend your time. Write a to-do list. Figure out what's most important to do and do those things first.
- Set limits. When it comes to things like work and family, figure out what you can really do. There are only so many hours in the day. Set limits for yourself and others. Don't be afraid to say NO to requests for your time and energy.

Relax

- Take deep breaths. If you're feeling stressed, taking a few deep breaths makes you breathe slower and helps your muscles relax.
- Stretch. Stretching can also help relax your muscles and make you feel less tense.
- Massage tense muscles. Having someone massage the muscles in the back of your neck and upper back can help you feel less tense.
- Take time to do something you want to do. We all have lots of things that we have to do. But often we don't take the time to do the things that we really want to do. It could be listening to music, reading a good book, or going to a movie. Think of this as an order from your doctor, so you won't feel guilty!

Take care of your body

- Get enough sleep. Getting enough sleep helps you recover from the stresses of the day. Also, being well-rested helps you think better so that you are prepared to handle problems as they come up. Most adults need 7 to 9 hours of sleep a night to feel rested.
- Eat right. Try to fuel up with fruits, vegetables, beans, and whole grains. Don't be fooled by the jolt you get from caffeine or high-sugar snack foods. Your energy will wear off, and you could wind up feeling more tired than you did before.
- Get moving. Getting physical activity can not only help relax your tense muscles but improve your mood. Research shows that physical activity can help relieve symptoms of depression and anxiety.
- Don't deal with stress in unhealthy ways. This includes drinking too much alcohol, using drugs, smoking, or overeating.

Connect with others

- Share your stress. Talking about your problems with friends or family members can sometimes help you feel better. They might also help you see your problems in a new way and suggest solutions that you hadn't thought of.
- Get help from a professional if you need it. If you feel that you can no longer cope, talk to your doctor. She or he may suggest counseling to help you learn better ways to deal with stress. Your doctor may also prescribe medicines, such as antidepressants or sleep aids.
- Help others. Volunteering in your community can help you make new friends and feel better about yourself.

How can I cope with stress?

Source: NIMH, NIH, http://www.nimh.nih.gov/health/publications/stress/fact-sheet-on-stress.shtml

The effects of stress tend to build up over time. Taking practical steps to maintain your health and outlook can reduce or prevent these effects. The following are some tips that may help you to cope with stress:

- Seek help from a qualified mental health care provider if you are overwhelmed, feel you cannot cope, have suicidal thoughts, or are using drugs or alcohol to cope.
- Get proper health care for existing or new health problems.
- Stay in touch with people who can provide emotional and other support. Ask for help from friends, family, and community or religious organizations to reduce stress due to work burdens or family issues, such as caring for a loved one.

- Recognize signs of your body's response to stress, such as difficulty sleeping, increased alcohol and other substance use, being easily angered, feeling depressed, and having low energy.
- Set priorities-decide what must get done and what can wait, and learn to say no to new tasks if they are putting you into overload.
- Note what you have accomplished at the end of the day, not what you have been unable to do.
- Avoid dwelling on problems. If you can't do this on your own, seek help from a qualified mental health professional who can guide you.
- Exercise regularly-just 30 minutes per day of gentle walking can help boost mood and reduce stress.
- Schedule regular times for healthy and relaxing activities.
- Explore stress coping programs, which may incorporate meditation, yoga, tai chi, or other gentle exercises.

Meditation and Health

Source: Centers for Disease Control and Prevention, http://www.cdc.gov/Features/Meditation/

Many people practice meditation for a number of health-related purposes. A 2007 national government survey found that 9.4% of respondents had used meditation in the past 12 months.

What is meditation?

The term *meditation* refers to a group of techniques which may be practiced for many reasons, such as to increase calmness and physical relaxation, to improve psychological balance, to cope with illness, or to enhance overall wellness. Most types of meditation have four elements in common:

A quiet location. Meditation is usually practiced in a quiet place with as few distractions as possible. This can be particularly helpful for beginners.

A specific, comfortable posture. Depending on the type being practiced, meditation can be done while sitting, lying down, standing, walking, or in other positions.

A focus of attention. Focusing one's attention is usually a part of meditation. For example, the meditator may focus on a mantra (a specially chosen word or set of words), an object, or the sensations of the breath.

Having an open attitude during meditation means letting distractions come and go naturally without judging them.

How can meditation affect my health?

It is not fully known what changes occur in the body during meditation; whether they influence health; and, if so, how. Research is under way to find out more about meditation's effects, how it works, and diseases and conditions for which it may be most helpful.

The National Center for Complementary and Alternative Medicine (NCCAM) is the federal government's lead agency for scientific research on complementary and alternative medicine (CAM). Some recent NCCAM-supported studies have been investigating meditation for relieving stress in caregivers for elderly patients with dementia and for relieving asthma symptoms.

Is meditation right for me?

Meditation is considered to be safe for healthy people but if you are thinking about using meditation practices to prevent asthma attacks, to control high blood pressure, to reduce arthritis pain, or for any other medical reason, be smart.

Relaxation Techniques

Source: NCCAM, National Institutes of Health, http://nccam.nih.gov/health/stress/relaxation.htm

Relaxation techniques include a number of practices such as progressive relaxation, guided imagery, biofeedback, self-hypnosis, and deep breathing exercises. The goal is similar in all: to consciously produce the body's natural relaxation response, characterized by slower breathing, lower blood pressure, and a feeling of calm and well-being.

Relaxation techniques (also called relaxation response techniques) may be used by some to release tension and to counteract the ill effects of stress. Relaxation techniques are also used to induce sleep, reduce pain, and calm emotions. This fact sheet provides a general overview of relaxation techniques and suggests sources for additional information.

Key Points

- Relaxation techniques are used for a variety of health-related purposes, such as counteracting the effects of stress on the body.
- Most relaxation techniques can be self-taught and self-administered.
- Relaxation techniques are generally safe, but there is limited evidence of usefulness for specific health conditions. Research is under way to find out more about relaxation and health outcomes.
- Do not use relaxation techniques as a replacement for conventional care or to postpone seeing a doctor about a medical problem.
- Tell your health care providers about any complementary and alternative practices you use. Give them a full picture of what you do to manage your health. This will help ensure coordinated and safe care.

About Relaxation Techniques

Relaxation is more than a state of mind; it physically changes the way your body functions. When your body is relaxed breathing slows, blood pressure and oxygen consumption decrease, and some people report an increased sense of well-being. This is called the "relaxation response." Being able to produce the relaxation response using relaxation techniques may counteract the effects of long-term stress, which may contribute to or worsen a range of health problems including depression, digestive disorders, headaches, high blood pressure, and insomnia.

Relaxation techniques often combine breathing and focused attention on pleasing thoughts and images to calm the mind and the body. Most methods require only brief instruction from a book or experienced practitioner before they can be done without assistance. These techniques may be most effective when practiced regularly and combined with good nutrition, regular exercise, and a strong social support system.

Some relaxation response techniques include:

- **Autogenic training.** When using this method, you focus on the physical sensation of your own breathing or heartbeat and picture your body as warm, heavy, and/or relaxed.

- **Biofeedback.** Biofeedback-assisted relaxation uses electronic devices to teach you how to consciously produce the relaxation response. Biofeedback is sometimes used to relieve conditions that are caused or worsened by stress.
- **Deep breathing or breathing exercises.** To relax using this method, you consciously slow your breathing and focus on taking regular and deep breaths.
- **Guided imagery.** For this technique, you focus on pleasant images to replace negative or stressful feelings and relax. Guided imagery may be directed by you or a practitioner through storytelling or descriptions designed to suggest mental images (also called visualization).
- **Progressive relaxation.** (also called Jacobson's progressive relaxation or progressive muscle relaxation). For this relaxation method, you focus on tightening and relaxing each muscle group. Progressive relaxation is often combined with guided imagery and breathing exercises.
- **Self-Hypnosis.** In self-hypnosis you produce the relaxation response with a phrase or nonverbal cue (called a "suggestion"). Self-hypnosis may be used to relieve pain (tension headaches, labor, or minor surgery) as well as to treat anxiety and irritable bowel syndrome.

Mind and body practices, such as meditation and yoga are also sometimes considered relaxation techniques. You can read more about these practices in the National Center for Complementary and Alternative Medicine's (NCCAM) fact sheets Meditation: An Introduction and Yoga for Health: An Introduction.

Use of Relaxation Techniques for Health in the United States

People may use relaxation techniques as part of a comprehensive plan to treat, prevent, or reduce symptoms of a variety of conditions including stress, high blood pressure, chronic pain, insomnia, depression, labor pain, headache, cardiovascular disease, anxiety, chemotherapy side effects, and others.

According to the 2007 National Health Interview Survey, which included a comprehensive survey of complementary and alternative medicine (CAM) use by Americans, 12.7 percent of American adults used deep-breathing exercises, 2.9 percent used progressive relaxation, and 2.2 percent used guided imagery for health purposes. Most of those people reported using a book to learn the techniques rather than seeing a practitioner.

To understand how consciously producing the relaxation response may affect your health, it is helpful to understand how your body responds to the opposite of relaxation—stress.

When you're under stress, your body releases hormones that produce the "fight-or-flight response." Heart rate and breathing rate go up and blood vessels narrow (restricting the flow of blood). This response allows energy to flow to parts of your body that need to take action, for example the muscles and the heart. However useful this response may be in the short term, there is evidence that when your body remains in a stress state for a long time, emotional or physical damage can occur. Long-term or chronic stress (lasting months or years) may reduce your body's ability to fight off illness and lead to or worsen certain health conditions. Chronic stress may lead to high blood pressure, headaches, stomach ache, and other symptoms. Stress may worsen certain conditions, such as asthma. Stress also has been linked to depression, anxiety, and other mental illnesses.

In contrast to the stress response, the relaxation response slows the heart rate, lowers blood pressure, and decreases oxygen consumption and levels of stress hormones. Because relaxation is the opposite of stress, the theory is that voluntarily creating the relaxation response through regular use of relaxation techniques could counteract the negative effects of stress.

Status of Research on Relaxation Techniques

In the past 30 years, there has been considerable interest in the relaxation response and how inducing this state may benefit health. Research has focused primarily on illness and conditions in which stress may play a role either as the cause of the condition or as a factor that can make the condition worse.

Currently, there is some evidence that relaxation techniques may be an effective part of an overall treatment plan for some disorders, including:

- **Anxiety.** Studies have suggested that relaxation may assist in the treatment of phobias or panic disorder. Relaxation techniques have also been used to relieve anxiety for people in stressful situations, such as when undergoing a medical procedure.
- **Depression.** In 2008, a major review of the evidence for relaxation in the treatment of depression found that relaxation techniques were more effective than no treatment for depression, but not as effective as cognitive-behavioral therapy.
- **Headache.** There is some evidence that biofeedback and other relaxation techniques may be helpful for relieving tension or migraine headaches. In some cases, these mind and body techniques were more effective than medications for reducing the frequency, intensity, and severity of headaches.
- **Pain.** Some studies have shown that relaxation techniques may help reduce abdominal and surgery pain.

The results of research on relaxation to promote overall health or well-being or to treat other health conditions have been mixed or unclear. These conditions include:

- **High blood pressure.** A 2008 review of evidence for relaxation in the treatment of high blood pressure found some evidence that progressive muscle relaxation lowered blood pressure a small amount. However, the review found no evidence that this effect was enough to reduce the risk of heart disease, stroke, or other health issues due to high blood pressure. In a recent randomized controlled trial, 8 weeks of relaxation response/stress management was shown to reduce systolic blood pressure in hypertensive older adults, and some patients were able to reduce hypertension medication without an increase in blood pressure.
- **Asthma.** Several reviews of the literature have suggested that relaxation techniques, including guided imagery, may temporarily help improve lung function and quality of life and relieve anxiety in people with asthma. A more recent randomized clinical trial of asthma found that relaxation techniques may help improve immune function. More studies are needed to confirm this finding.
- **Nausea.** Relaxation techniques may help relieve nausea caused by chemotherapy.
- **Fibromyalgia.** Although some preliminary studies report that using relaxation or guided imagery techniques may sometimes improve pain and reduce fatigue from fibromyalgia, more research is needed.
- **Irritable bowel syndrome.** Some studies have indicated that relaxation techniques may prevent or relieve symptoms of irritable bowel syndrome (IBS) in some participants. One review of the research found some evidence that self-hypnosis may be useful in the treatment of IBS.
- **Heart disease and heart symptoms.** Researchers have looked at relaxation techniques for the treatment of angina and the prevention of heart disease. When a cardiac rehabilitation program was combined with relaxation response training in a clinic, participants experienced significant reductions in blood pressure, decreases in lipid levels, and increases in psychological functioning when compared to participants' status before the program. Although studies have shown that relaxation techniques combined with other lifestyle changes and standard medical care may reduce the risk of recurrent heart attack, more study is needed.
- **Insomnia.** There is some evidence that relaxation techniques can help in treating chronic insomnia.

Researchers have found some evidence on the effectiveness of relaxation techniques for:

- **Temporomandibular disorder.** (pain and loss of motion in the jaw joints). A review of the literature found that relaxation techniques and biofeedback were more effective than placebo in decreasing pain and increasing jaw function.
- **Ringing in the ears.** Use of relaxation exercises may help patients cope with the condition.
- **Smoking cessation.** Relaxation exercises may help reduce the desire to smoke.
- **Overactive bladder.** Bladder re-training combined with relaxation and other exercises may help control urinary urgency.
- **Nightmares.** Relaxation exercises may be effective in treating nightmares of unknown cause and those associated with posttraumatic stress disorder.
- **Hot flashes.** Relaxation exercises involving slow, controlled deep breathing may help relieve hot flashes associated with menopause.

Researchers have found no significant change in outcomes from relaxation techniques used during cardiac catheterization. However, patients experienced less distress prior to the procedure. Future research may investigate whether this has any long-term effect on outlook and recovery.

Many of the studies of relaxation therapy and health have followed a small number of patients for weeks or months. Longer studies involving more participants may reveal more about the cumulative effects of using relaxation techniques regularly.

Side Effects and Risks

- Relaxation techniques are generally considered safe for healthy people. There have been rare reports that certain relaxation techniques might cause or worsen symptoms in people with epilepsy or certain psychiatric conditions, or with a history of abuse or trauma. People with heart disease should talk to their doctor before doing progressive muscle relaxation.
- Relaxation techniques are often used as part of a treatment plan and not as the sole treatment for potentially serious health conditions.

If You Are Thinking About Using Relaxation Techniques for Health

- Do not use relaxation techniques as a replacement for conventional care or to postpone seeing a doctor about a medical problem.
- Ask about the training and experience of the practitioner or instructor you are considering for any complementary alternative medicine practice.
- Look for published research studies on relaxation for the health condition in which you are interested. Remember that some claims for using relaxation therapies may exceed the available scientific evidence.
- Tell all your health care providers about any complementary and alternative practices you use. Give them a full picture of what you do to manage your health. This will help ensure coordinated and safe care.