Stress and Disease

by Sophia

WHAT'S COVERED

This tutorial discusses a variety of health effects that stress and other psychological conditions can have on the physical body. You will also consider how strong self and social awareness skill can help you understand your stress levels and manage them to avoid disease. Specifically, this lesson will cover:

1. Stress and Illness

The stress response, as noted earlier, is a coordinated but complex system of physiological reactions that are called upon as needed. These reactions are beneficial at times because they prepare us to deal with potentially dangerous or threatening situations.

However, health is affected when physiological reactions are sustained, as can happen in response to ongoing stress. A number of studies have demonstrated that stress weakens the immune system. Cardiovascular disorders are serious medical conditions that have been consistently shown to be influenced by stress and negative emotions, such as anger and depression. Other **psychophysiological disorders** that are known to be influenced by stress and emotional factors include asthma and tension headaches.

TERM TO KNOW

Psychophysiological Disorder

Physical disorders caused by stress and emotion.

2. Psychophysiological Disorders

If the reactions that compose the stress response are chronic or if they frequently exceed normal ranges, they can lead to cumulative wear and tear on the body, in much the same way that running your air conditioner on full blast all summer will eventually cause wear and tear on it. For example, the high blood pressure that a person under considerable job strain experiences might eventually take a toll on their heart and set the stage for a heart attack or heart failure. Also, someone exposed to high levels of the stress hormone cortisol might become vulnerable to infection or disease because of weakened immune system functioning.

Physical disorders or diseases whose symptoms are brought about or worsened by stress and emotional factors are called psychophysiological disorders. The physical symptoms of psychophysiological disorders are real and they can be produced or made worse by psychological factors (hence the “psycho” and

"physiological" in "psychophysiological"). A list of frequently encountered psychophysiological disorders is provided in the table below.

Type of Psychophysiological Disorder	Examples
Cardiovascular	hypertension, coronary heart disease
Gastrointestinal	irritable bowel syndrome
Respiratory	asthma, allergy
Musculoskeletal	low back pain, tension headaches
Skin	acne, eczema, psoriasis

In addition to stress itself, emotional upset and certain stressful personality traits have been proposed as potential contributors to ill health. In fact, research has shown the existence of disease-prone personality characteristics, including depression, anger/hostility, and anxiety. Indeed, a study of over 61,000 Norwegians identified depression as a risk factor for all major disease-related causes of death. In addition, neuroticism—a personality trait that reflects how anxious, moody, and sad one is—has been identified as a risk factor for chronic health problems and mortality.

Before we discuss two kinds of psychophysiological disorders about which a great deal is known: cardiovascular disorders and asthma, it is necessary to turn our attention to a discussion of the immune system—one of the major pathways through which stress and emotional factors can lead to illness and disease.

3. Stress and the Immune System

In a sense, the **immune system** is the body's surveillance system. It consists of a variety of structures, cells, and mechanisms that serve to protect the body from invading toxins and microorganisms that can harm or damage the body's tissues and organs. When the immune system is working as it should, it keeps us healthy and disease free by eliminating bacteria, viruses, and other foreign substances that have entered the body.

The question of whether stress and negative emotional states can influence immune function has captivated researchers for over three decades, and discoveries made over that time have dramatically changed the face of health psychology (Kiecolt-Glaser, 2009). **Psychoneuroimmunology** is the field that studies how psychological factors such as stress influence the immune system and immune functioning.

Hundreds of studies involving tens of thousands of participants have tested many kinds of brief and chronic stressors and their effect on the immune system (for example, public speaking, medical school examinations, unemployment, marital discord, divorce, death of spouse, burnout and job strain, caring for a relative with Alzheimer's disease, and exposure to the harsh climate of Antarctica). It has been repeatedly demonstrated that many kinds of stressors are associated with poor or weakened immune functioning.

Some of the more dramatic examples demonstrating the link between stress and impaired immune function involve studies in which volunteers were exposed to viruses. The rationale behind this research is that because stress weakens the immune system, people with high stress levels should be more likely to develop an illness compared to those under little stress. In one memorable experiment using this method, researchers interviewed 276 healthy volunteers about recent stressful experiences. Following the interview, these participants were given nasal drops containing the cold virus (in case you are wondering why anybody would ever want to participate in a study in which they are subjected to such treatment, the participants were paid

$800 for their trouble). When examined later, participants who reported experiencing chronic stressors for more than one month—especially enduring difficulties involving work or relationships—were considerably more likely to have developed colds than were participants who reported no chronic stressors.

TERMS TO KNOW

Immune System

A variety of structures, cells, and mechanisms that serve to protect the body from harmful toxins and microorganisms.

Psychoneuroimmunology

The field that studies how psychological factors such as stress influence the immune system.

4. Cardiovascular Disorders

The cardiovascular system is composed of the heart and blood circulation system. For many years, disorders that involve the cardiovascular system—known as **cardiovascular disorders**—have been a major focal point in the study of psychophysiological disorders because of the cardiovascular system's centrality in the stress response. Heart disease is one such condition. Each year, heart disease causes approximately one in three deaths in the United States, and it is the leading cause of death in the developed world.

The symptoms of heart disease vary somewhat depending on the specific kind of heart disease one has, but they generally involve angina—chest pains or discomfort that occur when the heart does not receive enough blood (Office on Women's Health, 2009). The pain often feels like the chest is being pressed or squeezed; burning sensations in the chest and shortness of breath are also commonly reported. Such pain and discomfort can spread to the arms, neck, jaws, stomach (as nausea), and back.

A major risk factor for heart disease is**hypertension**, which is high blood pressure. Hypertension forces a person's heart to pump harder, thus putting more physical strain on the heart. If left unchecked, hypertension can lead to a heart attack, stroke, or heart failure; it can also lead to kidney failure and blindness. Hypertension is a serious cardiovascular disorder, and it is sometimes called the silent killer because it has no symptoms—one who has high blood pressure may not even be aware of it.

Over the past few decades, there has been much greater recognition and awareness of the importance of stress and other psychological factors in cardiovascular health. Indeed, exposure to stressors of many kinds has also been linked to cardiovascular problems; in the case of hypertension, some of these stressors include job strain, natural disasters, marital conflict, and exposure to high traffic noise levels at one's home.

4a. Type A Personality and Cardiovascular Health

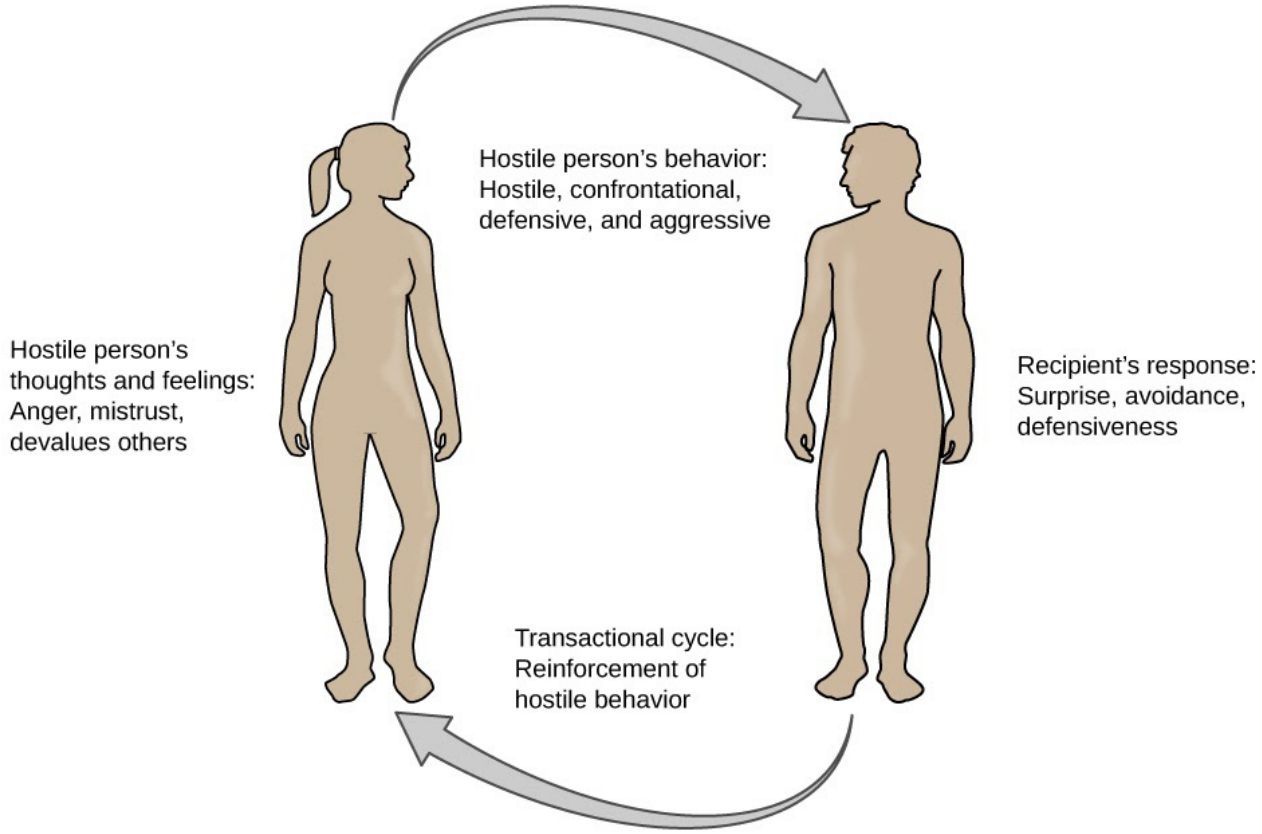
The major components of the Type A pattern include an aggressive and chronic struggle to achieve more and more in less and less time. Specific characteristics of the Type A pattern include an excessive competitive drive, chronic sense of time urgency, impatience, and hostility toward others (particularly those who get in the person's way).

IN CONTEXT

An example of a person who exhibits Type A behavior pattern is Jeffrey. Even as a child, Jeffrey was intense and driven. He excelled at school, was captain of the swim team, and graduated with honors

from an Ivy League college. Jeffrey never seems able to relax; he is always working on something, even on the weekends. However, Jeffrey always seems to feel as though there are not enough hours in the day to accomplish all he feels he should. He volunteers to take on extra tasks at work and often brings his work home with him; he often goes to bed angry late at night because he feels that he has not done enough. Jeffrey is quick tempered with his coworkers; he often becomes noticeably agitated when dealing with those coworkers he feels work too slowly or whose work does not meet his standards. He typically reacts with hostility when interrupted at work. He has experienced problems in his marriage over his lack of time spent with family. When caught in traffic during his commute to and from work, Jeffrey incessantly pounds on his horn and swears loudly at other drivers. When Jeffrey was 52, he suffered his first heart attack.

Extensive research clearly suggests that the anger/hostility dimension of Type A behavior pattern may be one of the most important factors in the development of heart disease. From a health standpoint, it clearly does not pay to be an angry young person. One reason angry and hostile moods might contribute to cardiovascular diseases is that such moods can create social strain, mainly in the form of antagonistic social encounters with others. This strain could then lay the foundation for disease-promoting cardiovascular responses among hostile individuals. In this transactional model, hostility and social strain form a cycle.



Self and Social Awareness: Skill in Action

Kaitlin has a hostile disposition; she has a cynical, distrustful attitude toward others and often thinks that her coworkers are out to get her. She is very defensive around people at work, even those she has known for years, and she is always looking for signs that others are either disrespecting or belittling her. Each morning before work, she often mentally rehearses what she would say to someone who said or did something that angered her, such as making a political statement that was counter to her own ideology. As Kaitlin goes through these mental rehearsals, she often grins and

thinks about the retaliation on anyone who will irk her that day.

Kaitlin is not especially popular with others, including coworkers, neighbors, and even members of her own family. They either avoid her at all costs or snap back at her, which causes Kaitlin to become even more cynical and distrustful of others, making her disposition even more hostile. Kaitlin's hostility —through her own doing—has created an antagonistic environment that cyclically causes her to become even more hostile and angry, thereby potentially setting the stage for cardiovascular problems.

4b. Depression and the Heart

For centuries, poets and folklore have asserted that there is a connection between moods and the heart. You are no doubt familiar with the idea of a broken heart following a disappointing or depressing event and have encountered that notion in songs, films, and literature.

Perhaps the first to recognize the link between depression and heart disease was Benjamin Malzberg (1937), who found that the death rate among institutionalized patients with melancholia (an archaic term for depression) was six times higher than that of the population. A classic study in the late 1970s looked at over 8,000 manic-depressive persons in Denmark, finding a nearly 50% increase in deaths from heart disease among these patients compared with the general Danish population. By the early 1990s, evidence began to accumulate showing that depressed individuals who were followed for long periods of time were at increased risk for heart disease and cardiac death. In one investigation of over 700 Denmark residents, those with the highest depression scores were 71% more likely to have experienced a heart attack than were those with lower depression scores.

After more than two decades of research, it is now clear that a relationship exists: Patients with heart disease have more depression than the general population, and people with depression are more likely to eventually develop heart disease and experience higher mortality than those who do not have depression; the more severe the depression, the higher the risk.

The American Heart Association, fully aware of the established importance of depression in cardiovascular diseases, several years ago recommended routine depression screening for all heart disease patients. Recently, they have recommended including depression as a risk factor for heart disease patients.

5. Stress and Asthma

Asthma, a chronic disease in which the airways of the respiratory system become obstructed, leading to difficulty breathing, is another illness exacerbated and influenced by psychological factors. Many studies over the years have demonstrated that some people with asthma will experience asthma-like symptoms if they expect to experience such symptoms, such as when breathing an inert substance that they (falsely) believe will lead to airway obstruction. As stress and emotions directly affect immune and respiratory functions, psychological factors likely serve as one of the most common triggers of asthma exacerbation.

SUMMARY

In this tutorial, you learned about a few of the different ways that psychological conditions can affect a

person's physical health. You heard about stress and its impact on **illness**, the **immune system**, and **asthma**. Additionally, an otherwise healthy heart can also be affected by**depression**, a person's **personality**, and other **disorders**. Strong self and social awareness can help you recognize and manage your stress to help avoid negative health consequences.

Good luck with your learning!

Source: THIS TUTORIAL WAS AUTHORED BY SOPHIA LEARNING. PLEASE SEE OUR**TERMS OF USE.**

TERMS TO KNOW

Immune System
A variety of structures, cells, and mechanisms that serve to protect the body from harmful toxins and microorganisms.

Psychoneuroimmunology
The field that studies how psychological factors such as stress influence the immune system.

Psychophysiological Disorder
Physical disorders caused by stress and emotion.