

*Psychology 110*  
*Dr. Gordon*

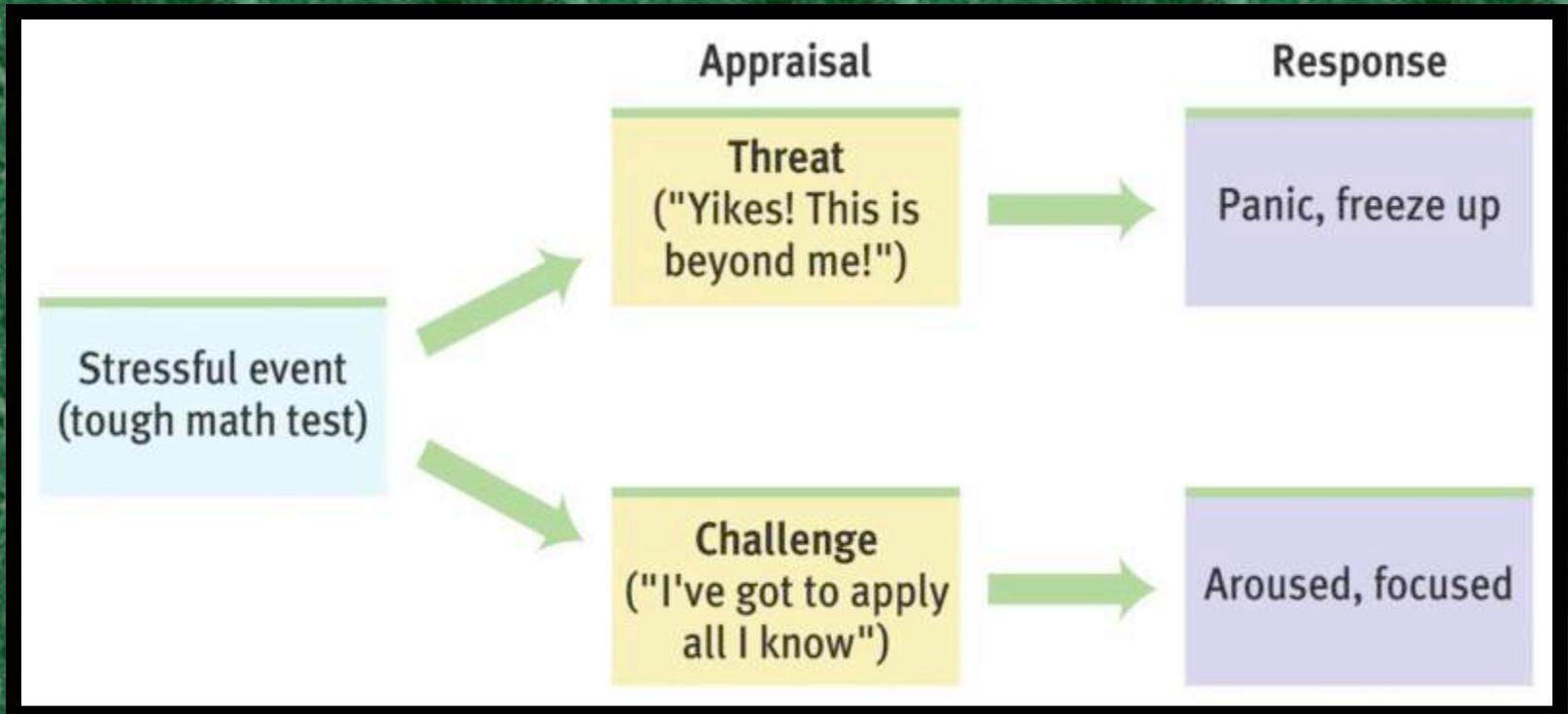
*Module #39*  
*The nature of stress*

## *A. What is stress*

- *1. Stress as an appraisal process*
- *2. Factors associated with appraisal*
- *3. Stressful life events*
- *4. The physiological response to stress*

## 1. Stress as an appraisal process

- *According to Myers, stress is not a specific event or response. Rather, it is an appraisal process. When encountering threats to our person, we appraise and cope with the whatever the environment throws our way. The slide below illustrates Lazarus' (1998) stress appraisal process. What might be perceives as stressful for one person is not for the other.*



## *1. Stress as an appraisal process*



*As a result of chronic stress, a number of Viet Nam veterans developed stress related disease.*

- In your text, Myers talks about “challenge.” Challenge refers to whenever our resources match or exceed the demands of our environment. Challenge can refer to transcending a traumatic event. However, when our resources fall short of the threatening event, we leave ourselves open to stress related disease. When returning to the states, a number of Viet Nam veterans did not have the resources to counter their post traumatic stress.*

## *2. Factors associated with appraisal*

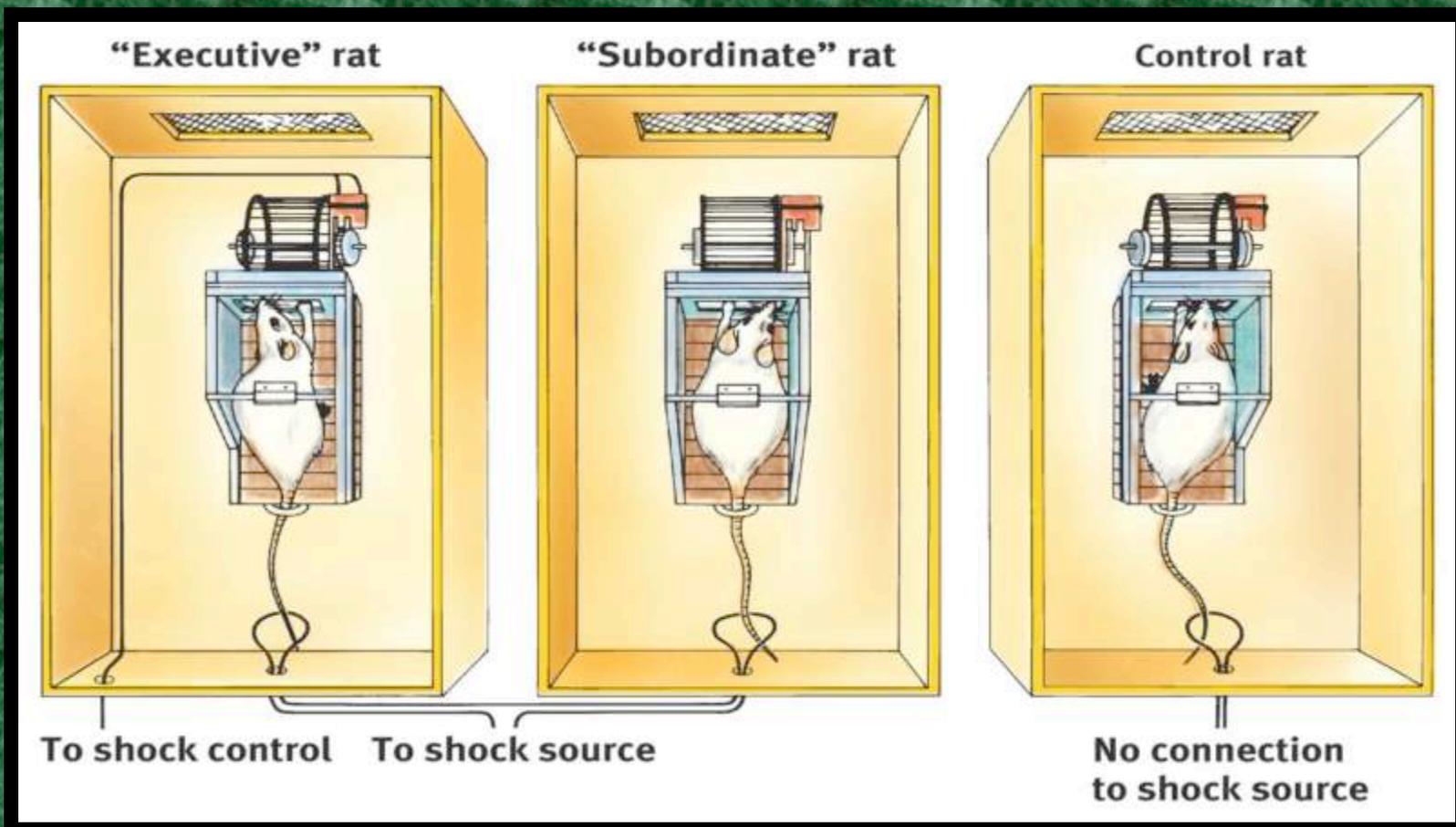


*Elderly residents in nursing homes who are in charge of their activities gain perceived control and better health.*

- Stress researchers have focused on factors that enhance the meaning of a stressor. These include predictability, familiarity, perceived control, and optimism. Myers examines the last two factors. Let's start with perceived control. What is perceived control? Perceived control refers to an ability to determine our own outcomes. Studies have found as we experience less and less perceived control, we become more susceptible to disease. Let's watch a short clip on an appraisal factor.*

## 2. Factors associated with appraisal

- The slide below is one of many perceived control studies using animals. The animal on the left has the most control because it can turn off the tail shock. In contrast, the animal in the center has the least control because it cannot turn off the tail shock. As a result, it develops ulcers whereas the animal with control does not.*



## *2. Factors associated with appraisal*

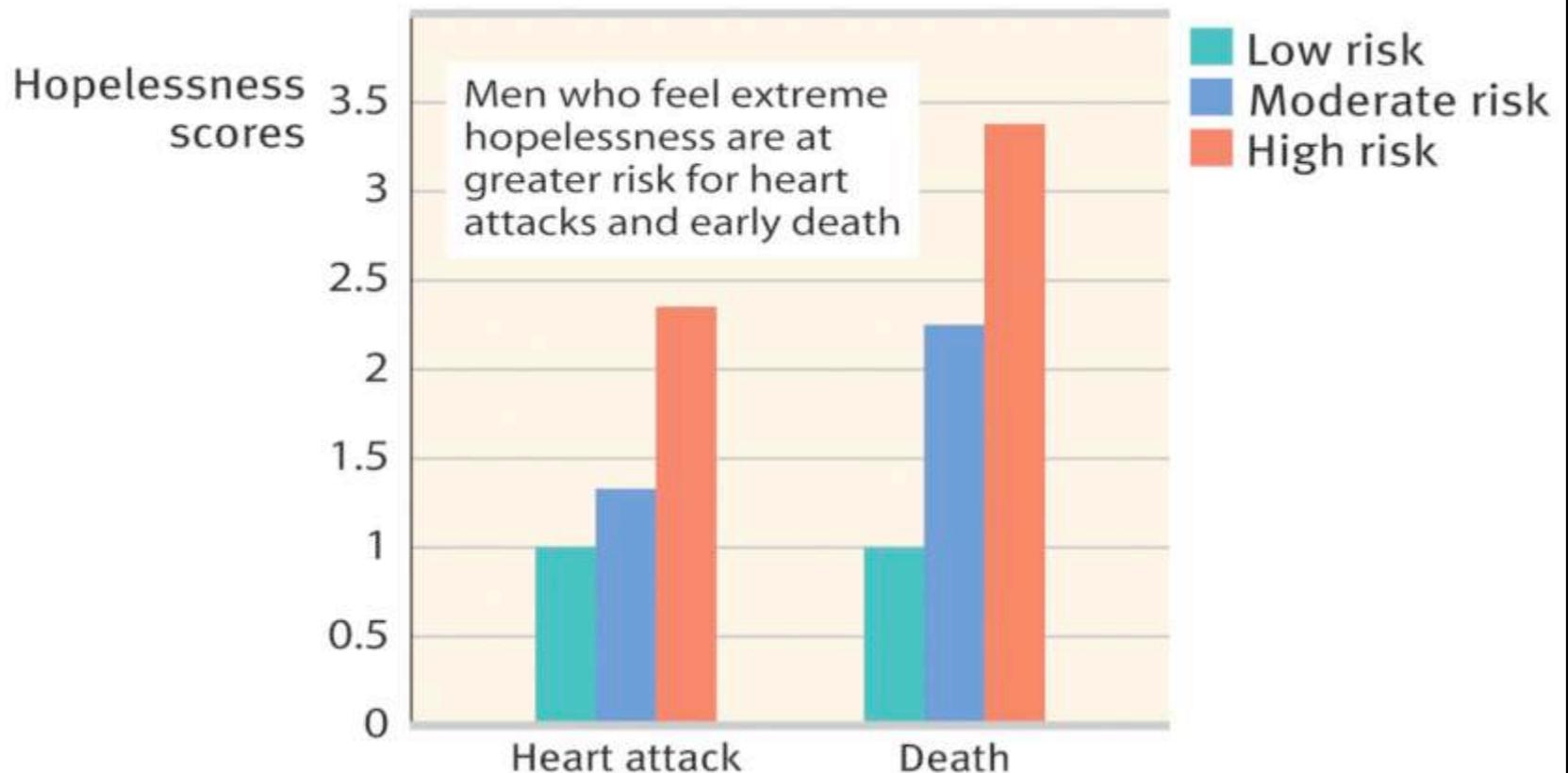
- *Social economic class is an indicator of perceived control. Life expectancy is positively correlated with wealth and negatively correlated with income inequality. In societies with the largest discrepancies between economic classes, poor people tend to die younger. The tallest headstones usually belong to the wealthiest individuals.*



*Have the income discrepancies in the United States and Europe related to early deaths?*

## 2. Factors associated with appraisal

- *Another factor related to appraisal is optimism. Optimism refers to one hoping that good things will happen in the future. One who is optimistic will likely say that the “glass is half full and not half empty. Studies have shown optimistic subjects to have more efficient immune systems and stronger mental health. The slide below indicates the relationship between hopelessness (lack of optimism), heart disease, and death.*



### 3. Stressful life events



*In 1900, Hurricane “Horror” devastated Galveston, Texas killing an estimated 8000 people. To the left, the hurricane leveled the entire town.*

- Stressful life events have been delineated into three types. These include catastrophes, significant life events, and daily hassles. Let’s start with catastrophes. A catastrophe is an unpredictable, large-scale event that most perceive as threatening. Catastrophes range from terrorist attacks (e.g., World Trade Towers in New York) to natural disasters (e.g., hurricanes, earthquakes, etc...). According to some, what is considered the worst natural disaster in American history?*

### 3. Stressful life events



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### 3. Stressful life events

**Table 6-6**

#### **Worst Natural Disasters of the Twentieth Century**

DISASTER	YEAR	LOCATION	NUMBER KILLED
Flood	1931	Huang He River, China	3,700,000
Earthquake	1926	Tangshan, China	242,419
Volcanic eruption	1902	Mont-Pélée, Martinique	40,000
Landslide	1970	Yungay, Peru	17,500
Tidal wave	1960	Agadir, Morocco	12,000
Avalanche	1916	Italian Alps	10,000
Tornado	1989	Shaturia, Bangladesh	1,300

Adapted from Ash, 1999, 1998.

- The slide above lists the worst ever natural disasters. The 1931 flood of the Huang He River in China killed over 3 million people. In history no other natural disaster was this devastating.*

### 3. Stressful life events



- *Studies show that those who have experienced natural disasters can experience psychological effects. Myers cites the work of Rubonis and Bickman who found that depression and anxiety increase an average of 17 percent. Natural disasters uproot and separate families. The slide above illustrates people abandoning their village because of an earthquake.*

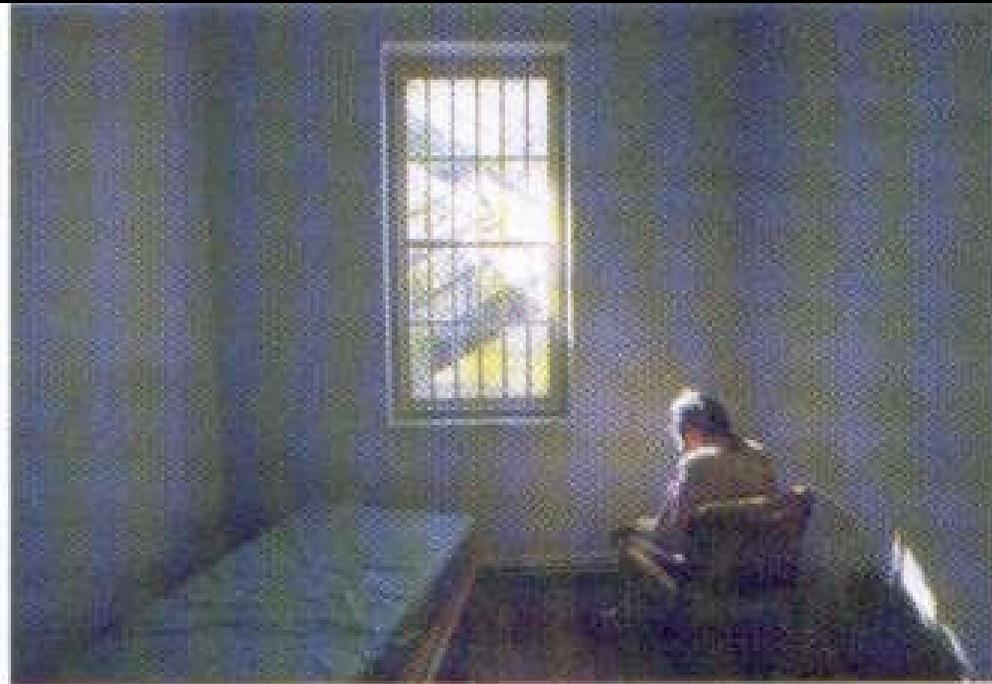
### *3. Stressful life events*



*Individuals  
react to the  
Oklahoma City  
bombing  
catastrophe*

- Not all catastrophes are natural disasters. The psychological effects of acts of terror are well documented. Studies have shown that the psychological effects of 9/11 and the Oklahoma City bombing were devastating. Wahlberg reported that individuals geographically removed from the World Trade Tower disaster*

### *3. Stressful life events*

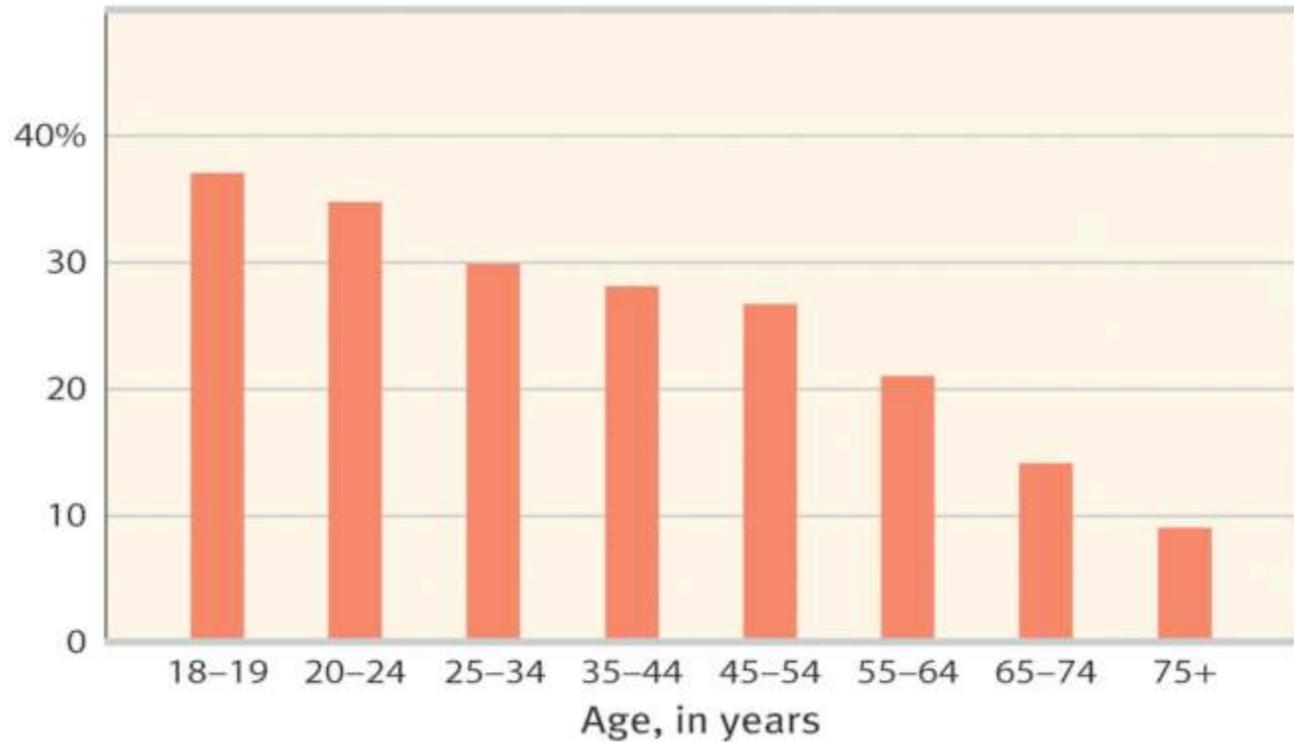


*Loss can have devastating effects on one's psychological health*

- Stressful life events are also considered life changing. These events intensify one's self evaluation and test one's resilience. Myers proposes that the young adult age group is most susceptible to life changes. One of the most devastating life changes is loss. Studies have found that those who are single (divorced or widowed) do not have the longevity of those who are married.*

### 3. Stressful life events

Percentage of people experiencing high stress



- The slide above illustrates a Canadian sample and the percentage of individuals at varying ages experiencing chronic stress. The study shows that young adults between the ages of 18 and 34 reported the most chronic stress. It also shows that with age individuals report less chronic stress. Is this attributed to less transitions or that older persons have more experience dealing with change.*

### 3. Stressful life events

- In early studies by Holmes and Rahe, they found that clusters of life changing events were associated with disease. The slide to the right is a short list of changes from the Social Readjustment Rating Scale (SRRS). The corresponding numbers to the right indicate life change units. (LCU's) Highly stressful events received a greater number of LCU's. As life change units increase, one's susceptibility to physical illness also increases.*

#### SOCIAL READJUSTMENT RATING SCALE

<b>Life event</b>	<b>Mean value</b>
Death of spouse	119
Divorce	98
Death of close family member	92
Fired at work	79
Personal injury or illness	77
Death of a close friend	70
Pregnancy	66
Change in financial state	56
Change in work conditions	51
Marriage	50
Sex difficulties	45
Change in living conditions	42
Change in residence	41
Beginning or ending school	38
Great personal achievement	37
Change in school	35
Trouble with boss	29
Revision of personal habits	27
Change in sleeping habits	26
Vacation	25
Minor violations of the law	22

### 3. Stressful life events

- *More recent research has examined the “daily hassle” as putting one at physical and psychological risk. A hassle is an everyday annoyance. A closer examination of life changing events indicates that they consist of an accumulation of minor stressors or hassles. The slide below indicates the top daily hassles in the early 1980’s.*

**Table 14.1 Life’s Little Hassles—  
The Top Ten**

1. Concerns about weight
2. Health of a family member
3. Rising prices of common goods
4. Home maintenance
5. Too many things to do
6. Misplacing or losing things
7. Yard work or outside home maintenance
8. Property, investments, or taxes
9. Crime
10. Physical appearance

Source: Kanner et al., 1981.



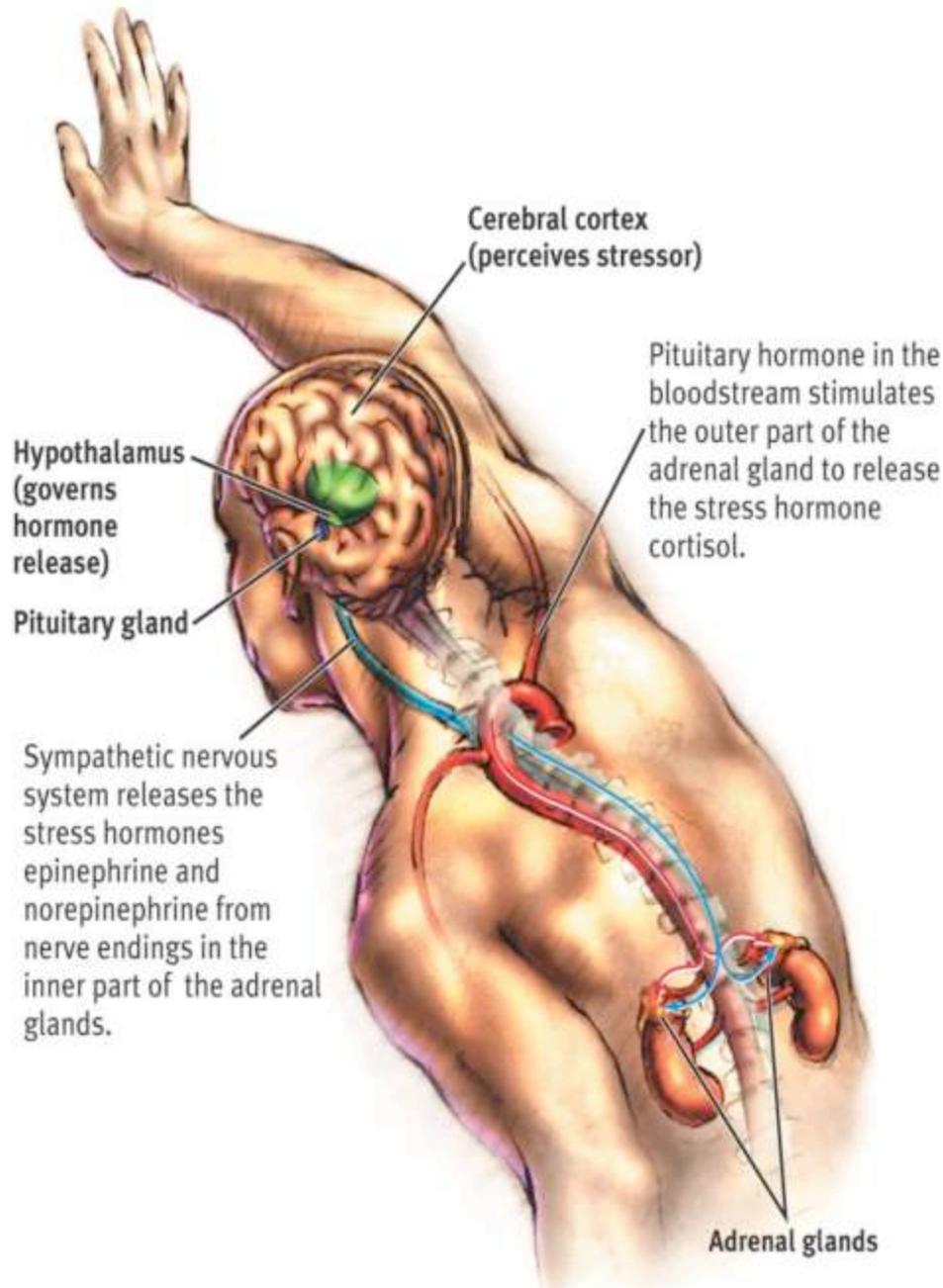
### 3. Stressful life events

- *Myers reviews studies that show that certain types of environments are associated with more expected hassles. For example, impoverished environments (e.g., higher levels of unemployment, poverty, overcrowding, etc...) are associated with physical illness. The slide below illustrates a typical American hassle, the traffic jam!*



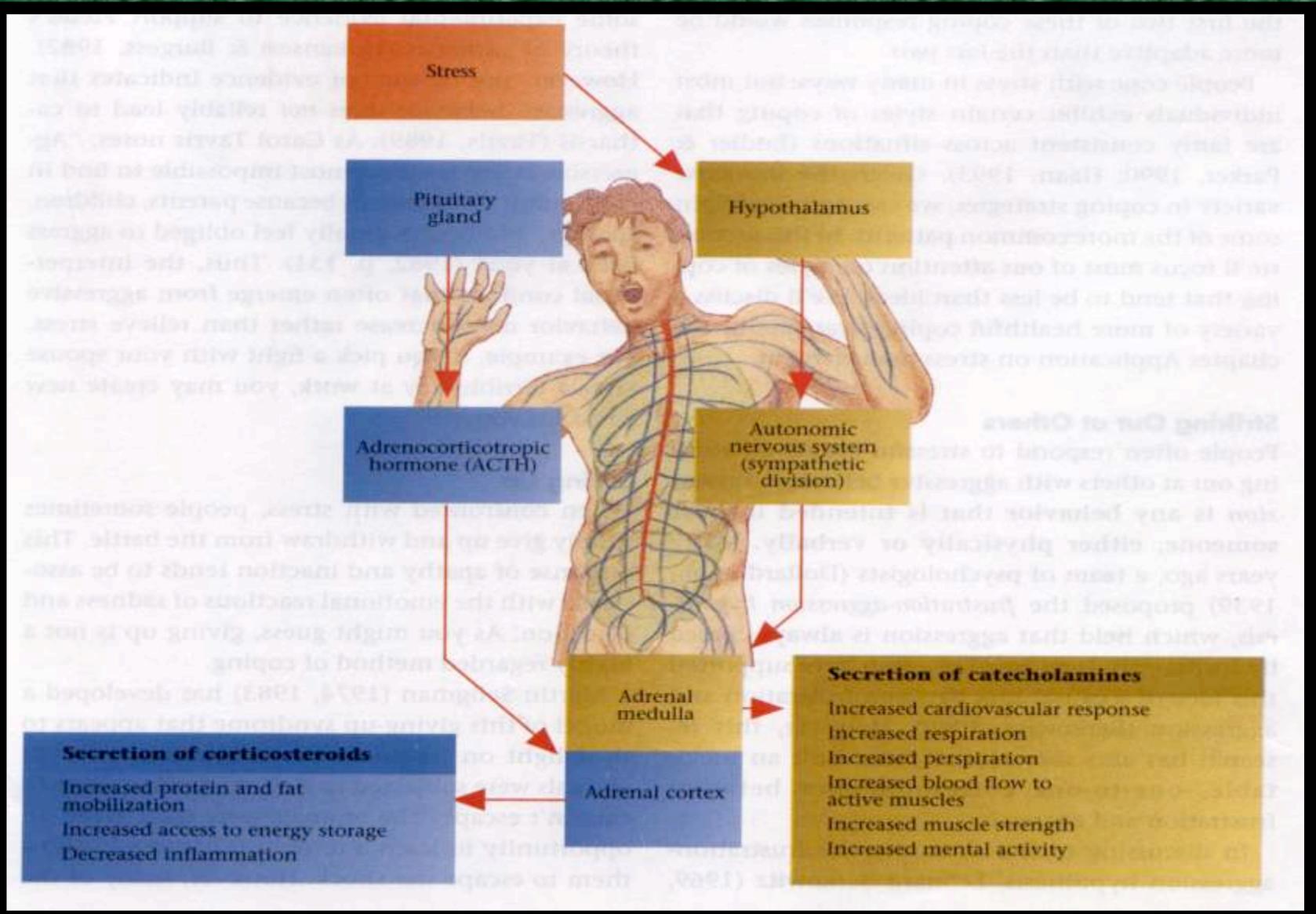
Peter Glass

## 4. The physiological response to stress



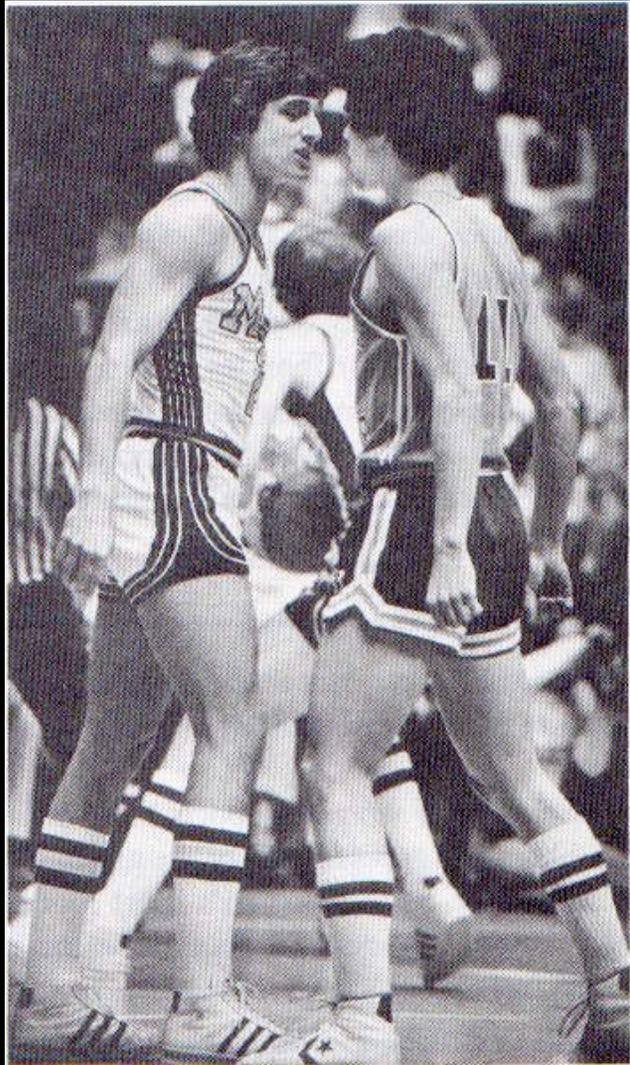
- *The physiological response to stress involves a complex interaction of mind and body processes. The hypothalamus, adrenal gland, and pituitary gland work together to mobilize the organism's response to the immediate threat. This mobilization has been what Walter Cannon referred to as the "fight or flight" phenomenon.*

## 4. The physiological response to stress



- *The slide above illustrates the complexity of the brain and endocrine pathways.*

## 4. *The physiological response to stress*



- *Fight or flight is a common physical response to stress. We either approach or avoid what we perceive to be a threatening situation. The slide to the left illustrates two individuals who have decided to “fight.” Myers identifies other fight or flight alternative that include withdrawing, pulling back, conserving energy, and seeking and giving support. Now, let’s turn our attention to a film clip that illustrates a genuine case of fight or flight.*

## *4. The physiological response to stress*

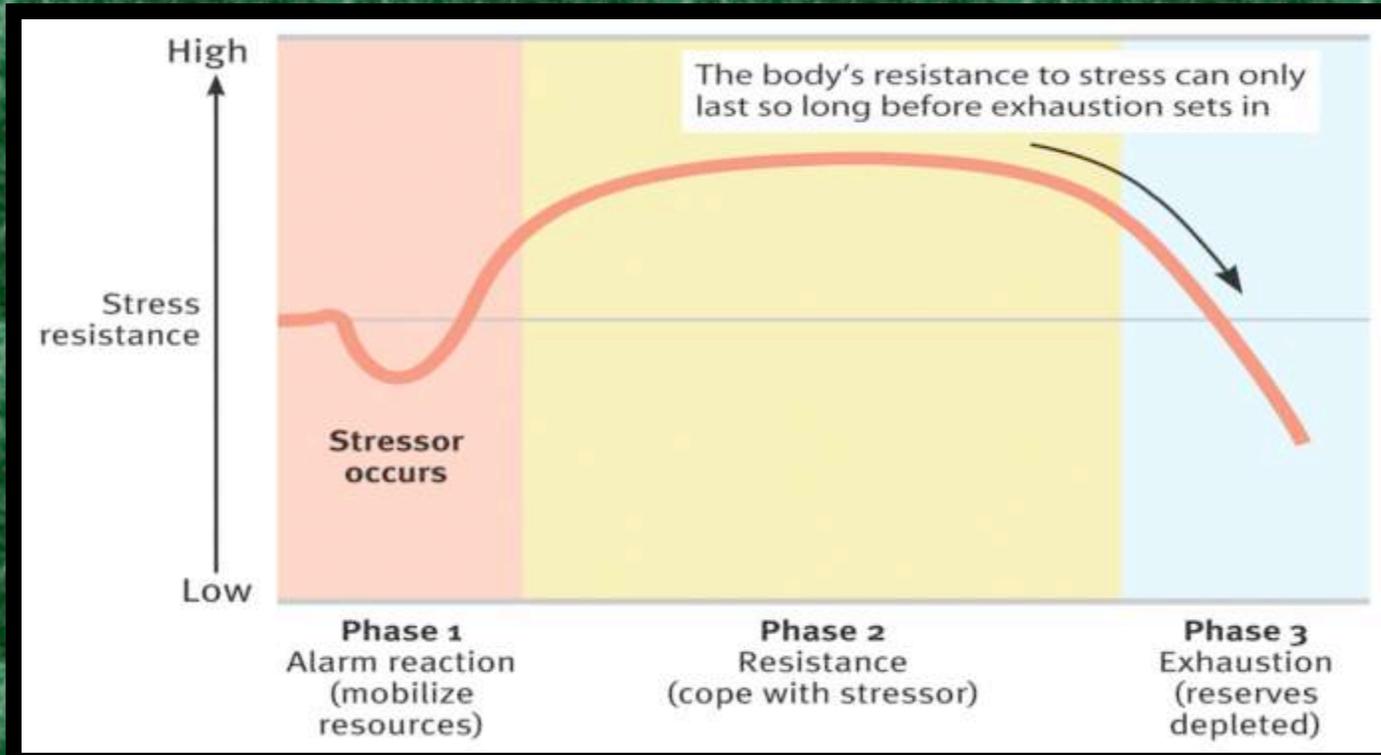


*Hans Selye*

- Hans Selye extended our knowledge of the physical response to stress. Selye (pictured to the left) discovered accidentally a generalized response to prolonged stress. Selye observed three physiological changes when rats were injected with varying substances. These changes included a shrinkage of the thymus gland (contains white blood cells), bleeding ulcers, and an enlargement of the adrenal gland. Regardless of the stressor, Selye found the same generalized response. Selye called it “GAS” or the general adaptation syndrome.*

## 4. The physiological response to stress

- Selye's continued research on the GAS revealed three phases. These included the alarm reaction, resistance, and exhaustion phases. The alarm reaction is the immediate activation of the sympathetic nervous system. The alarm reaction is the same as the "fight or flight." Second, the organism goes into a resistance phase. Resistance refers to the body adjusting to a continued threat. Lastly, the body's energy resources become depleted and the body gives up.*



*Phases  
Of  
GAS*

## *4. The physiological response to stress*



- Studies have found that as the stress hormones (catecholamines) continue to flood the brain over prolonged periods of time, brain damage ensues. MRI scans revealed shrunken hippocampal areas. In short, chronic stress causes memory loss.*

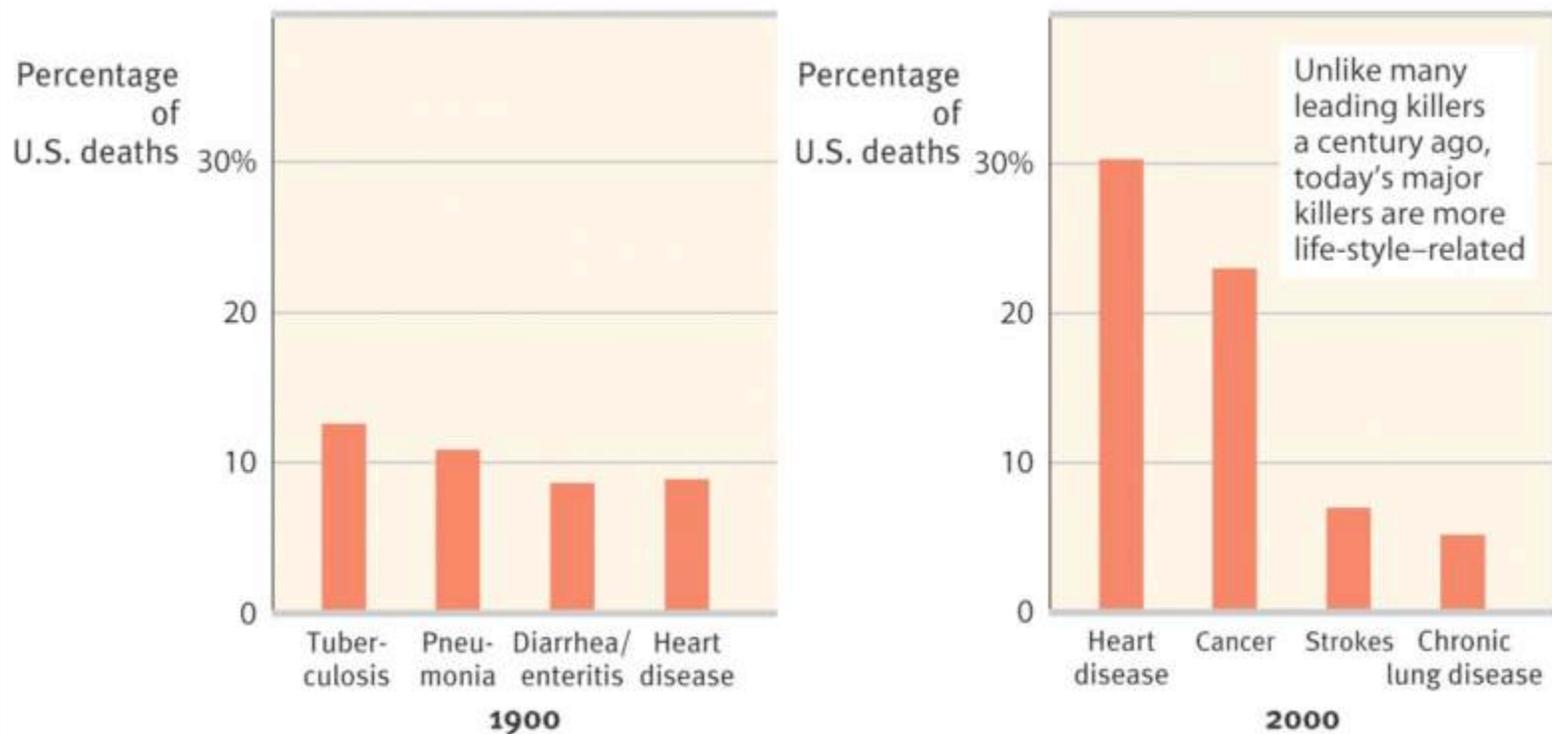
*Prolonged stress cause physical deterioration of brain and other body systems.*

## *B. A closer look at stress and disease susceptibility*

- *1. Stress and coronary heart disease:  
Type A/B personalities*
- 2. Stress and its effect on the immune system*
- 3. Stress and AIDS*
- 4. Stress and cancer*
- 5. Is it more than just stress?*

## 1. Stress and coronary heart disease

- The slide below the percentages of different types of diseases during at the beginning of two centuries. In 1900, the most common “killers” were infectious diseases. In contrast, at the beginning of the 21st century, the most common killers were stress or behavior related illnesses. Heart disease remains the primary “killer” followed by cancer.*



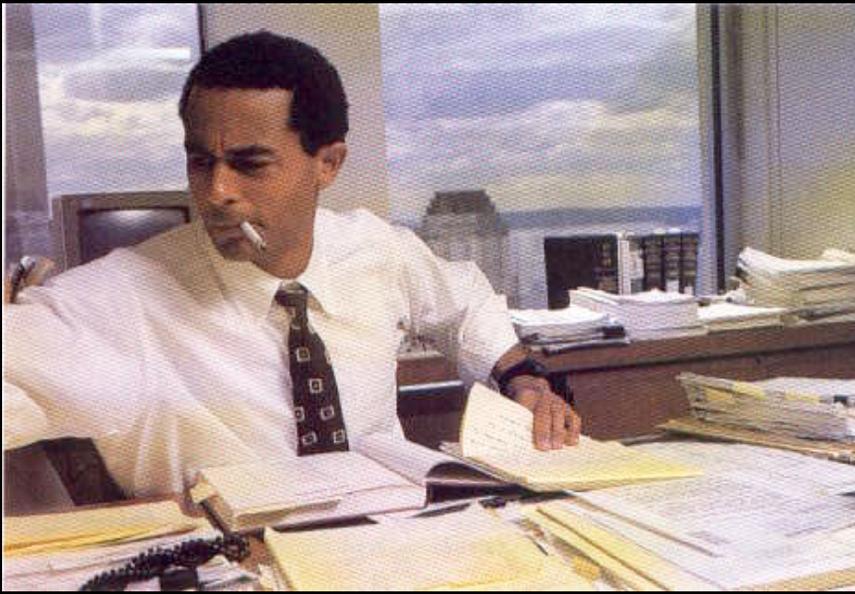
## *1. Stress and coronary heart disease*



*A heart attack waiting  
to happen?*

- Coronary heart disease consists of a weakening of the heart muscle due to restricted blood flow. Studies have been conducted to identify some of the high risk behaviors for heart disease. They include smoking, consuming a diet high in fat and cholesterol, assuming a sedentary lifestyle, etc... In addition, personality and other psychological factors have been linked to coronary heart disease.*

## *1. Stress and coronary heart disease*



*A Friedman and Rosenman subject was typically male.*

- Interestingly, it was not a group of psychologist researchers, but the work of cardiologists that linked personality to heart disease. Initially, in 1956, two cardiologists, Meyer Friedman and Ray Rosenman observed the eating behaviors of middle aged couples. They concluded that it was the intensity of one's stress level that predicted heart attack risk.*

## *1. Stress and coronary heart disease*



*What is the “toxic” component of the Type A personality?*

- Based on the finding that stress leads to heart disease risk, Friedman and Rosenman conducted a nine year longitudinal study of 3000 men between the ages of 35 to 59. During the initial fifteen minute interview, investigators observed the behaviors and mannerisms of their subjects. From these observations, Friedman and Rosenman divided their sample into Type A and Type B personalities.*

## *1. Stress and coronary heart disease*



*Hey baby,  
we are both  
a cool  
Type B!*

*Subject identified as having a Type A personality displayed the following characteristics: aggressive, competitive, hard-driving, impatient (always interrupting), ambitious, a sense of time urgency, verbally aggressive, and shows anger with minimal provocation. In contrast, the Type B personality showed opposite traits.*

*“Easygoing” was the typical qualifier for a subject identified as Type B.*

*Type A or Type B?*

# *1. Stress and coronary heart disease*

## **Measuring the Type A Personality**

- 1. Do you find it difficult to restrain yourself from hurrying others' speech (finishing their sentences for them)?
- 2. Do you often try to do more than one thing at a time (such as eat and read simultaneously)?
- 3. Do you often feel guilty if you use extra time to relax?
- 4. Do you tend to get involved in a great number of projects at once?
- 5. Do you find yourself racing through yellow lights when you drive?
- 6. Do you need to win in order to derive enjoyment from games and sports?
- 7. Do you generally move, walk, and eat rapidly?
- 8. Do you agree to take on too many responsibilities?
- 9. Do you detest waiting in lines?
- 10. Do you have an intense desire to better your position in life and impress others?

- *The slide to the left is a short quiz to determine if you have Type A or Type B personality? Eight “yes” responses strongly suggest that one has Type A tendencies and a risk for heart disease.*

# *1. Stress and coronary heart disease*

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## *1. Stress and coronary heart disease*



*Type A's like to lean forward.*

- According to Myers, Type A's are more susceptible to heart disease because they smoke, consume caffeinated drinks, and sleep less. A closer examination of Type A's is that they have an exaggerated sympathetic response or "combat ready." When faced with a competitive situation, Type A's display heightened blood pressure, pulse rate, and release of stress hormones. The latter physiological outcome causes a "hardening of the arteries."*

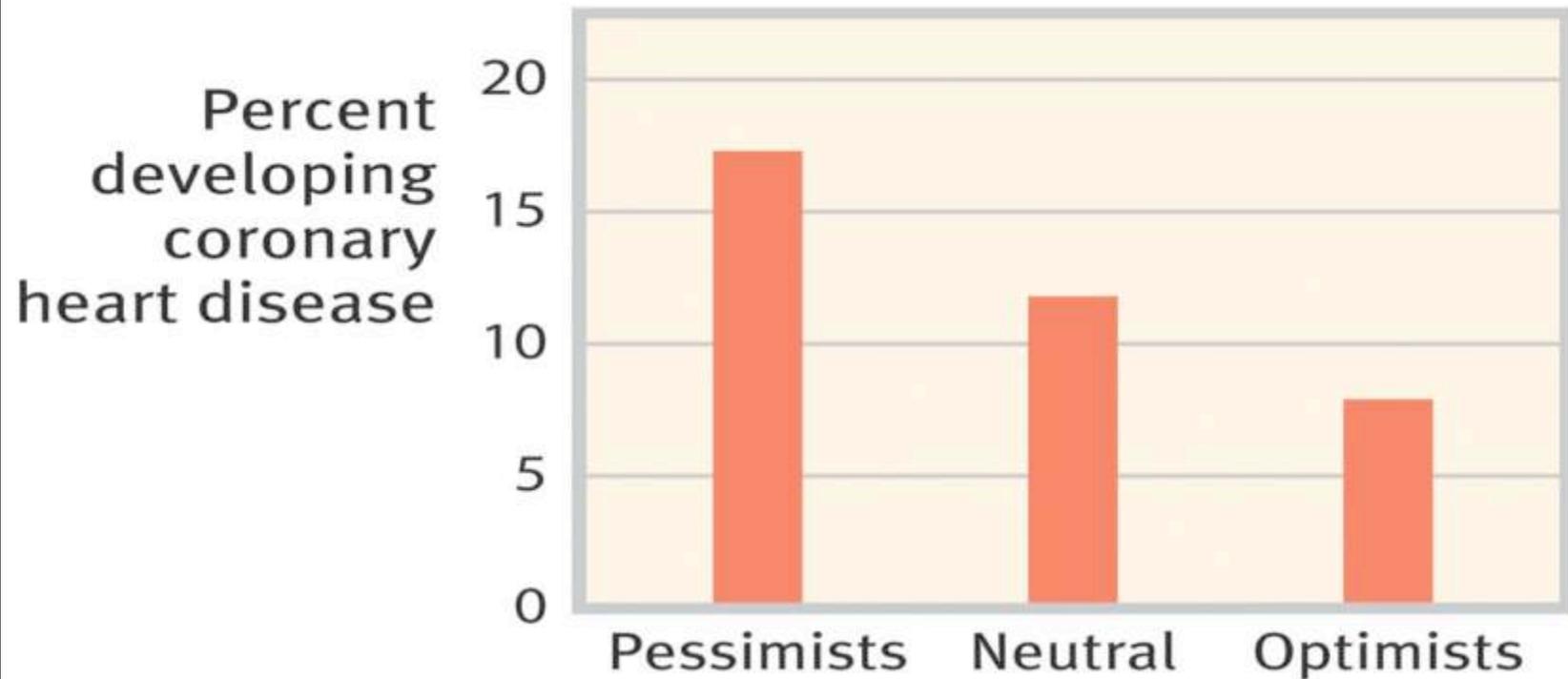
## *1. Stress and coronary heart disease*



*Type A's like to lean forward.*

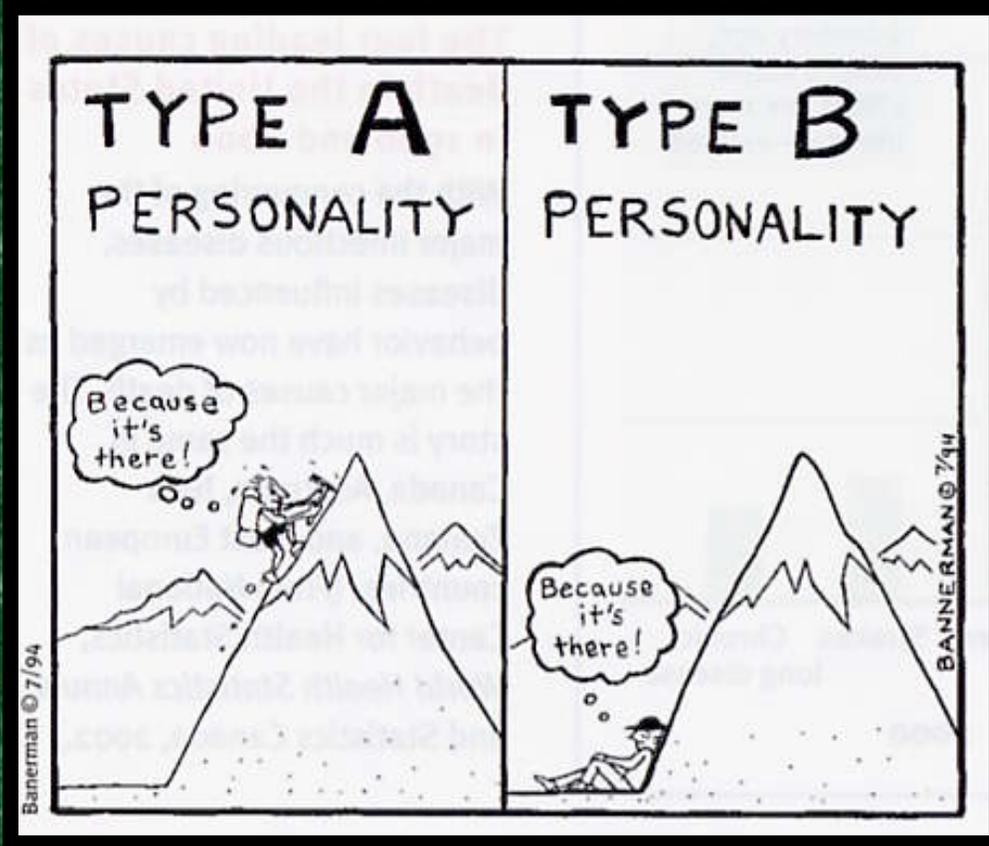
- Recently, investigators continue to search for the toxic components of the Type A personality. Myers reviews a number of studies. Anger prone individuals are high risks for coronary heart disease. Anger is characterized as hostile or even cynical. Studies have shown that individuals with even normal blood pressure are three times more likely to develop heart disease if they have anger problem.*

## 1. Stress and coronary heart disease



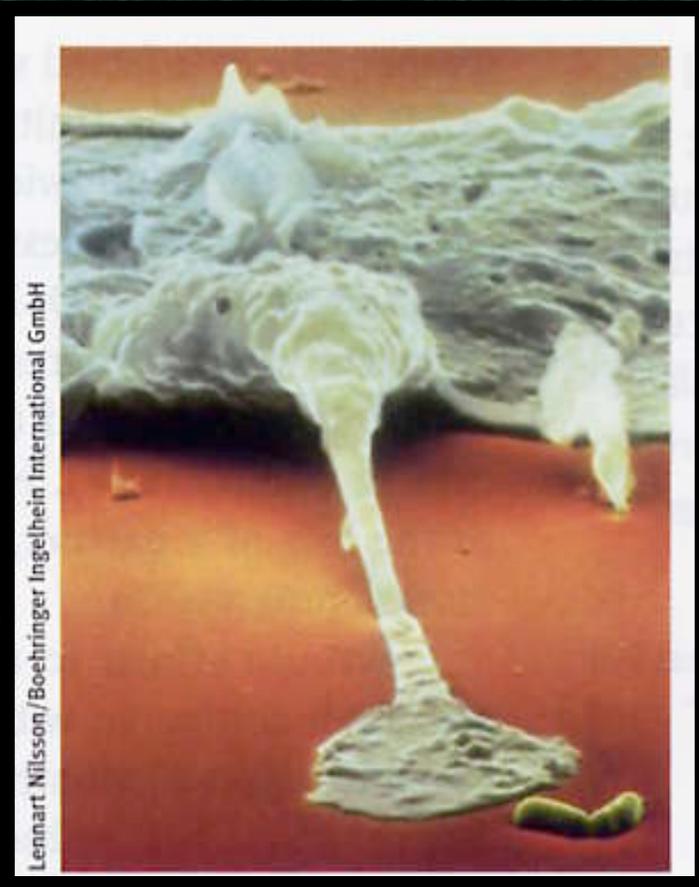
- The slide above illustrates the effects of pessimism on cardiac health. Persons showing pessimism are “twice as likely as optimists to develop heart disease...” Furthermore, Johan Denollet (2000) has identified a Type “D” or distressed personality. These individuals display negative emotions and social inhibition. Research has shown that these individuals are highly prone to heart disease.*

## 1. Stress and coronary heart disease



- *Studies have found that happier people live longer. Those persons experiencing negative emotions or psychiatric conditions have shorter lives. One also needs to consider that having a physical illness can exacerbate one's psychological disorder. In spite of these alarming trends, psychological factors contributing to heart disease have also caught the eye of humorists.*

## *2. Stress and its effect on the immune system*



*The slide above illustrates  
A large macrophage*

- Why does stress make us vulnerable to disease? Why would stress cause our physical to deteriorate? The answer to these question is simply a suppressed immune system. The immune system contains three important mechanisms that help to fight disease. These include B lymphocytes (produced in bone marrow and release antibodies), T lymphocytes (produced in the thymus gland (attack foreign substances), and macrophages (ingest harmful agents).*

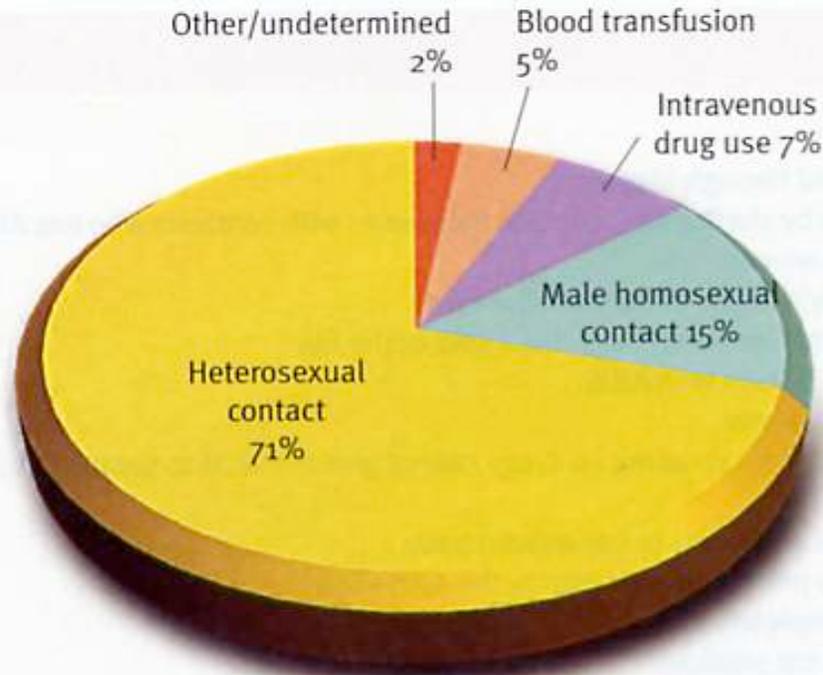
## *2. Stress and its effect on the immune system*



*Centenarians (people over 100 years) know how to manage their stress.*

- Stress diverts much need energy to the muscles and the brain during fight or flight. When we are ill, our bodies divert energies to our immune system to fight the disease. If we experience chronic stress, our bodies become vulnerable because our immune system does not get the energy to fight the disease. As a result, our immune system becomes shortchanged. This might explain why those who live to 100 years are very good managing their stress.*

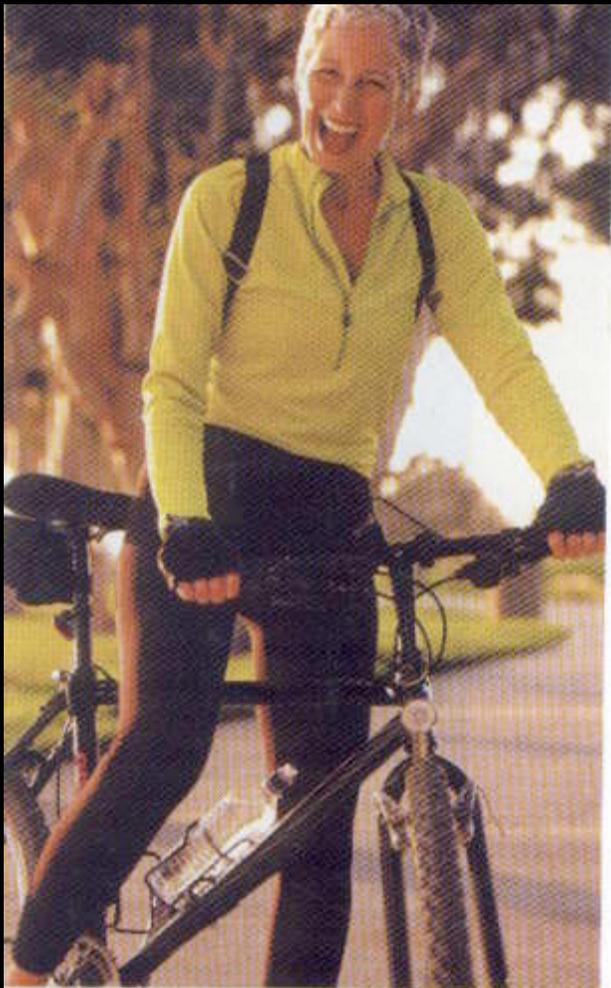
### 3. Stress and AIDS



*AIDS and its means of transmission*

- As most know, AIDS refers to an “Acquired Immune Deficiency Syndrome.” According to Myers nearly 22 million individuals died of it during the 20th century. AIDS is more difficult to control because it kills slowly. Persons do not know that they are infected thus having opportunities to spread the disease. Researchers have also found that stress can accelerate the progression of the AIDS virus.*

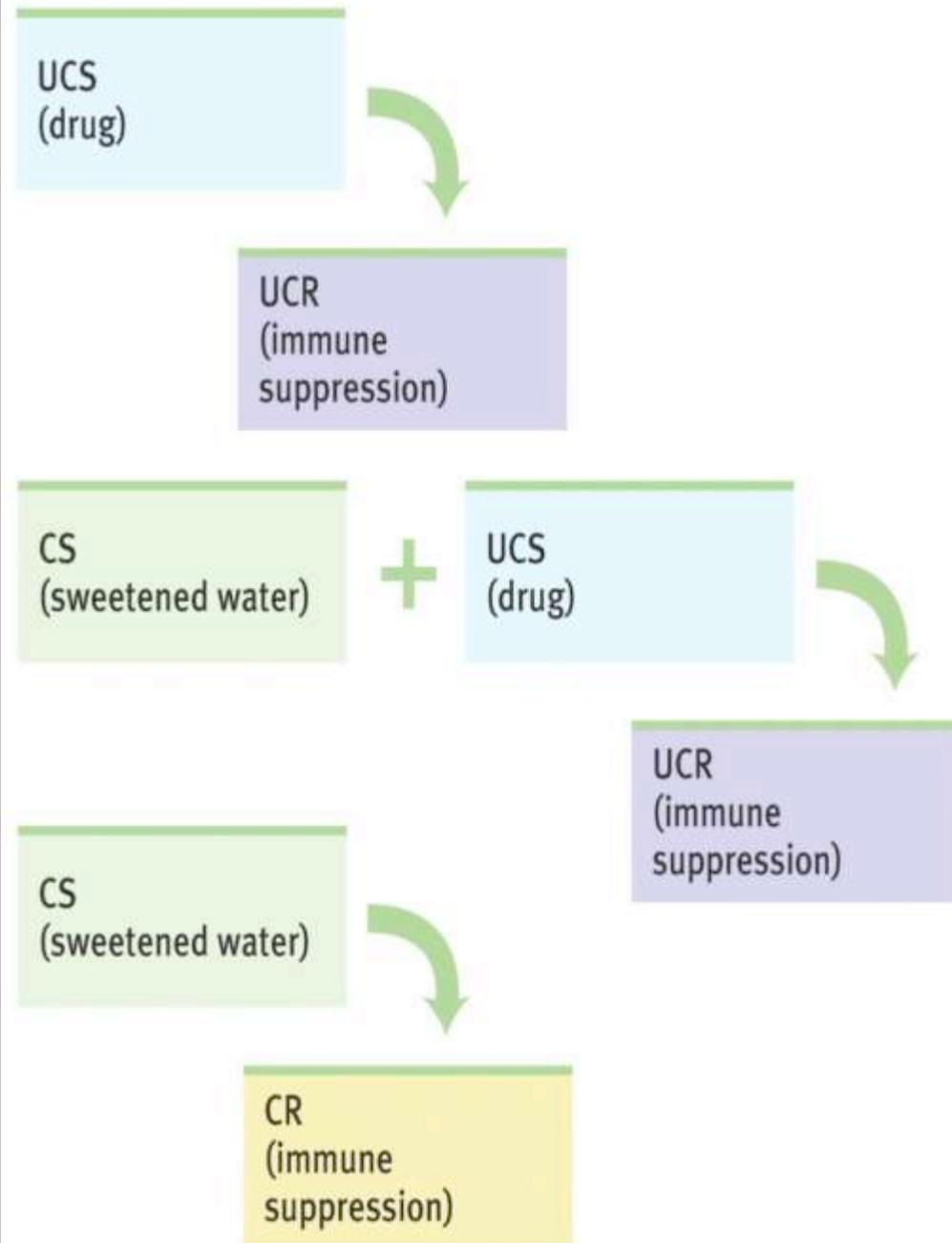
## *4. Stress and Cancer*



*Managing stress  
allows for a  
healthy immune  
system*

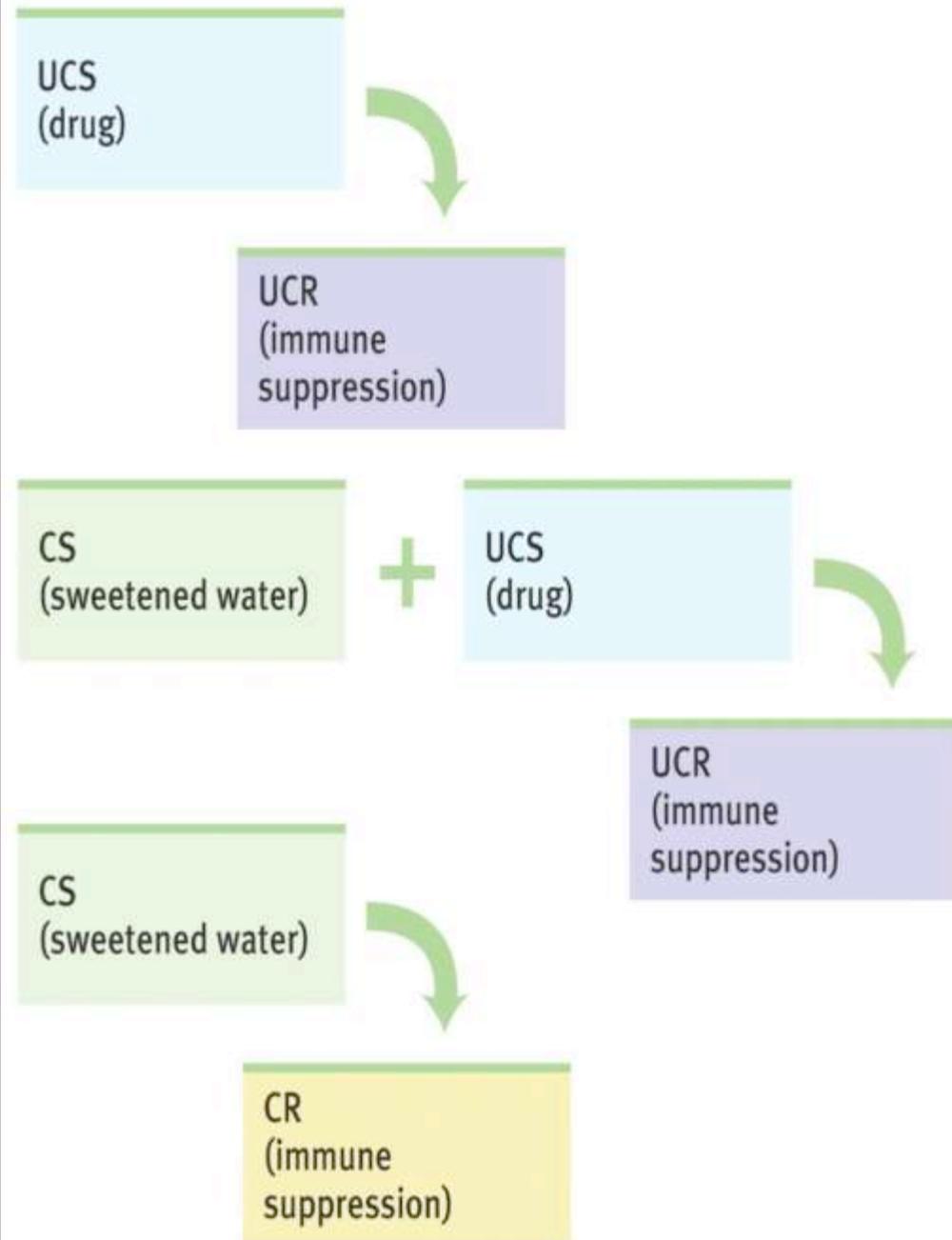
- *Research has also found that stress can accelerate the progression of cancer. There appears to be a connection between “loss” and cancer. Those who are widowed have a greater chance of developing cancer. As in AIDS, the speed of cancer progression depends on the efficiency of one’s immune system. Therefore, it appears that managing one’s stress has become imperative as a means of fighting disease. In the next module, we will discuss management of stress.*

## 5. Is it more than just stress?



- *Is our susceptibility to disease attributed to other psychological factors beside our perception of stress. Interestingly, Robert Ader and Nicholas Cohen discovered that they could classically condition the immune response. The slide to the left illustrates the conditioning sequence.*

## 5. Is it more than just stress?



- *What does this all mean? Stimuli that have been associated with immune suppression can be paired with neutral stimuli. Thus, neutral stimuli become triggers for immune suppression. On the other hand, neutral stimuli can be conditioned to become immune system promoters?*