

Physical Reactions to Stress

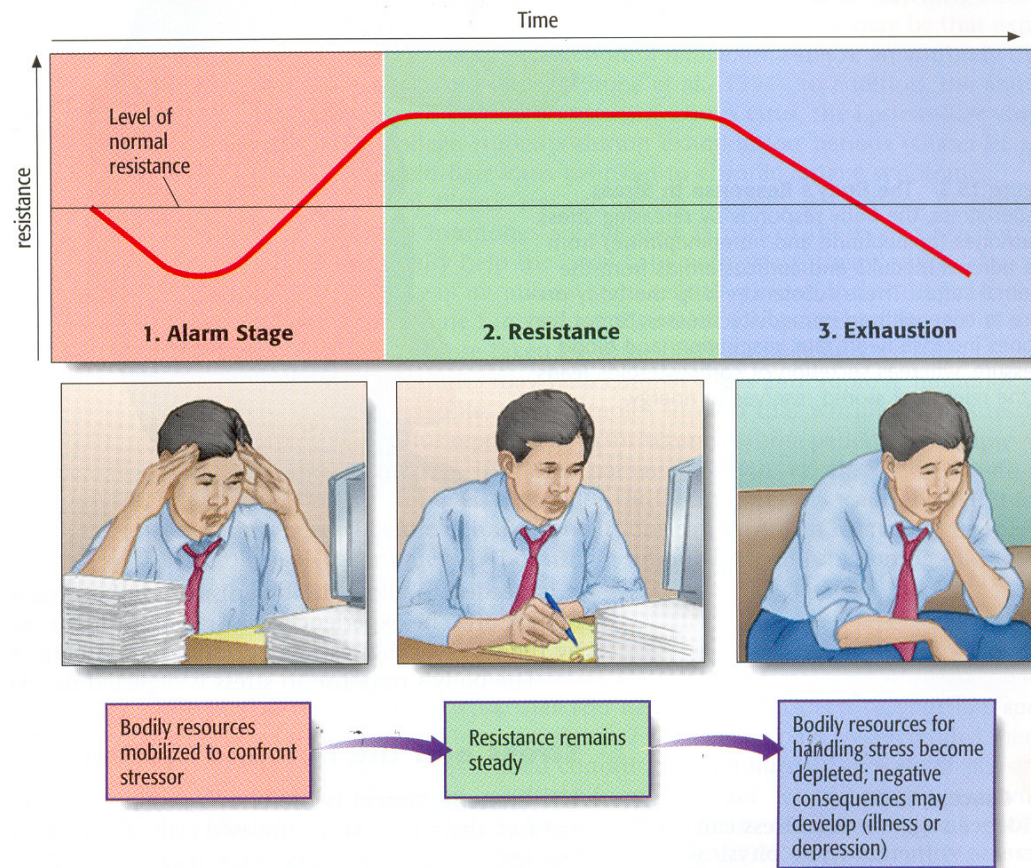
Stress isn't unique to humans. Other species, like this oil-covered survivor of Hurricane Katrina, also experience a physiological reaction in response to stressful situations.



General Adaptation Syndrome

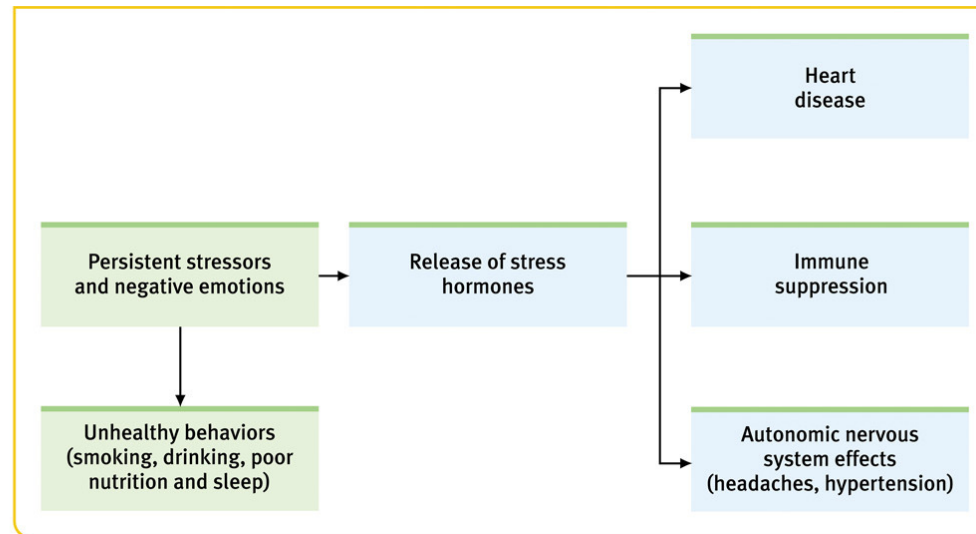
Figure 15.2 Level of Resistance During the Stages of the General Adaptation Syndrome

The body's resistance to stress first dips during the alarm stage, as the impact of the stressor takes a toll, but then increases as the body mobilizes its resources. Resistance remains steady through the resistance stage as the body attempts to cope with the stressor. But if the stressor persists, exhaustion eventually sets in as bodily reserves needed to resist stress become dangerously depleted.



Physical effects of stress

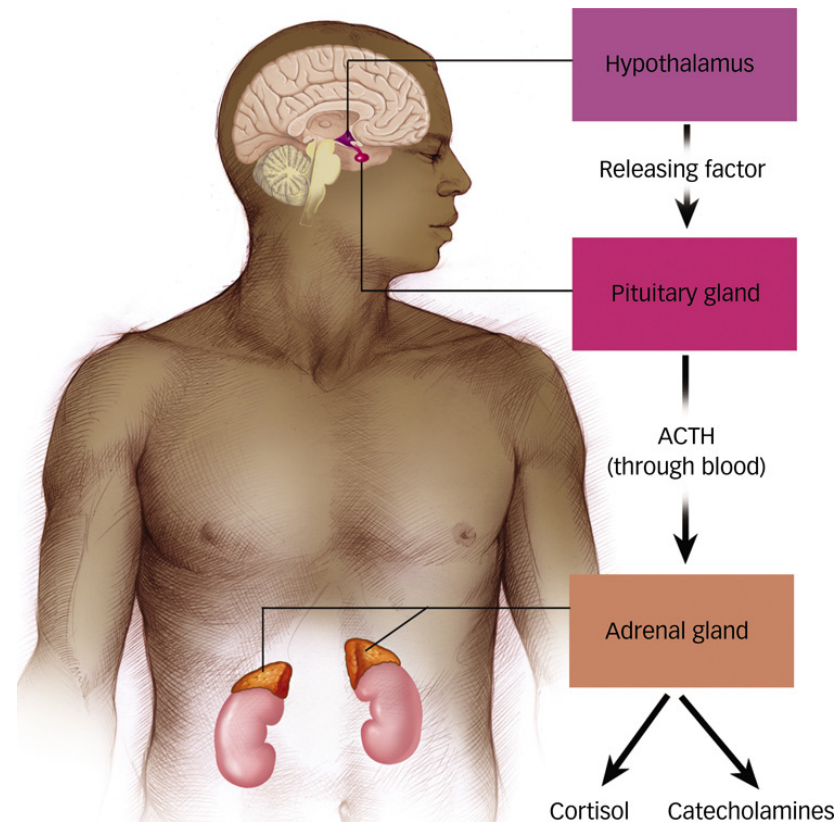
The effects of stress and health are subtle, which may make it difficult for us to perceive the effects.



Physical Reactions to Stress

The fight-or-flight response is an emotional and physiological reaction to an emergency that increases readiness for action in response to a threatening event.

When this occurs, the HPA axis becomes activated



Cortisol	Catecholamines
This hormone increases the concentration of glucose in the blood which makes more energy available to the muscles.	Epinephrine and norepinephrine increase the SNS which increase respiration and blood pressure to energize the muscles for attack or retreat.

Effects of Stress

Indirect Effects of Stress	Direct effects of Stress
<ul style="list-style-type: none">• Stress may prompt behaviors that jeopardize physical well-being such as:<ul style="list-style-type: none">○ not eating properly○ not sleeping properlywhat are the physical effects of these two?• People under chronic stress are more likely to use alcohol, coffee, and cigarettes compared to those under less stress.• High levels of stress can interfere with cognitive abilities, such as<ul style="list-style-type: none">○ attention,○ concentration and○ memory.These can increase the likelihood of accidents, injuries, poor judgments and decisions. You are less likely to “connect the dots”, go with the option in front of you and less likely to think of options and/or evaluate options.	<ul style="list-style-type: none">• Stress can directly affect bodily functions such as contracting and tightening of muscles.• Weaken important body systems, lowering immunity and increase the susceptibility to physical symptoms and illness through the release of corticosteroids

Stress Effects on the Immune Response

Stressors can cause stress hormones (e.g. cortisol) to be released which damage the immune system making you more susceptible to illness.

Those who were under stress were more likely to

- Have flare-ups of herpes simplex
- Worsen periodontal disease
- Reduce the effectiveness of vaccinations
- Have wounds heal more slowly
- Suffer colds

Stress and Cardiovascular Health

The heart and circulatory system are vulnerable to stress. Chronic stress changes the body that will increase the vulnerability to disease in the future ([page 589](#)).

As stress-activated arousal of the sympathetic nervous system, blood pressure goes up and stays up and slowly damages blood vessels. These damaged vessels accumulate plaque and increases the likelihood of coronary heart disease. ([page 589](#)).

Individual Factors that Influence the Response to Stress

Psychological Factors

- Personal Control
- Explanatory Style (optimism vs. pessimism)
- Chronic Negative Emotions
- Positive Emotions
- Type A Behavior and Hostility

Social Factors

- Social Support

Psychological Factors: Personal Control

Stressors challenge you to do something to eliminate or overcome the stressor. Events are more stressful when there is nothing to do—no way to deal with the challenge.

If you perceive control over stressful events, it can reduce the stress of the event.

Deciding what you have control over and what you do not have control over can be difficult.

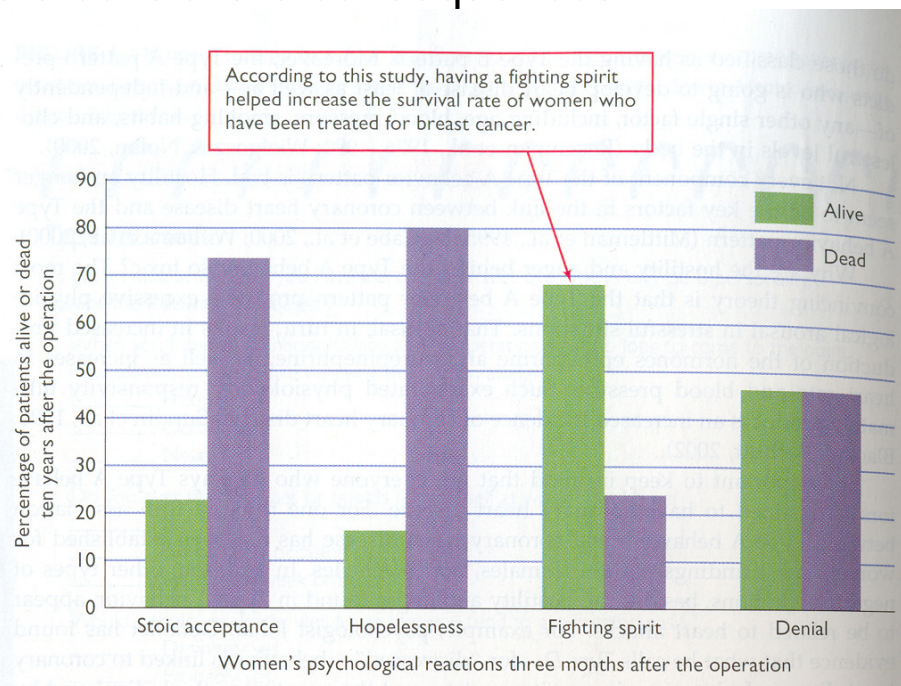
- A former student said that while he was in the Army deployed in Afghanistan, it was less stressful to seek out the insurgents instead of waiting for them to attack the camp/base.
- You can't control the price of gas, but you can control your driving habits.

Psychological Factors: Personal Control

Having a sense of control over a stressful situation reduces the impact of stressor and decreases the feelings of anxiety and depression.


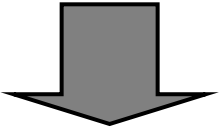
- Your sense of control had to be realistic to be adaptive. Unrealistic perceptions of control over debilitating diseases can add to the stress. Sometimes the control needs to be refocused.
 - Well-adjusted cancer patients accepted that they could not control the disease, but they could control the consequences.

FIGURE 2 The relationship between women's psychological response to breast cancer three months after surgery and their survival ten years after the operation (Pettingale et al., 1985). What implications do these findings have for the treatment of people with cancer?



Psychological Factors: Personal Control

When residents of a nursing home were involved in the decision making process (e.g. deciding daily activities, where they received visitors, when they would attend a movie screening, etc), they were more active, alert, sociable, healthier and lived longer compared to residents where the decisions were made for them.

Nursing Home “Engaged”	Nursing Home “Disengaged”
<p><u>Involvement in deciding</u></p> <ul style="list-style-type: none"> • daily activities • Where they received visitors • When they would attend movie screenings 	<p><u>Not involved in deciding</u></p> <ul style="list-style-type: none"> • daily activities • Where they received visitors • When they would attend movie screenings
<p>The decisions were made with the input of the residents</p> <div style="text-align: center;">  </div> <p>More active, alert, sociable, healthier, and lived longer lives</p>	<p>These decisions were made for them</p> <div style="text-align: center;">  </div> <p>Less active, alert, sociable, healthier, lived shorter lives</p>



In hospitals and nursing homes, patients may learn to feel helpless because they are not given opportunities to make decisions or exert control over their own lives.

Psychological Factors: Hardiness (not in your textbook)

When Suzanne Kobasa looked at stress-resistant business executives who reported high levels of stressful events, and had relatively few illnesses, she identified three traits that made them hardy.

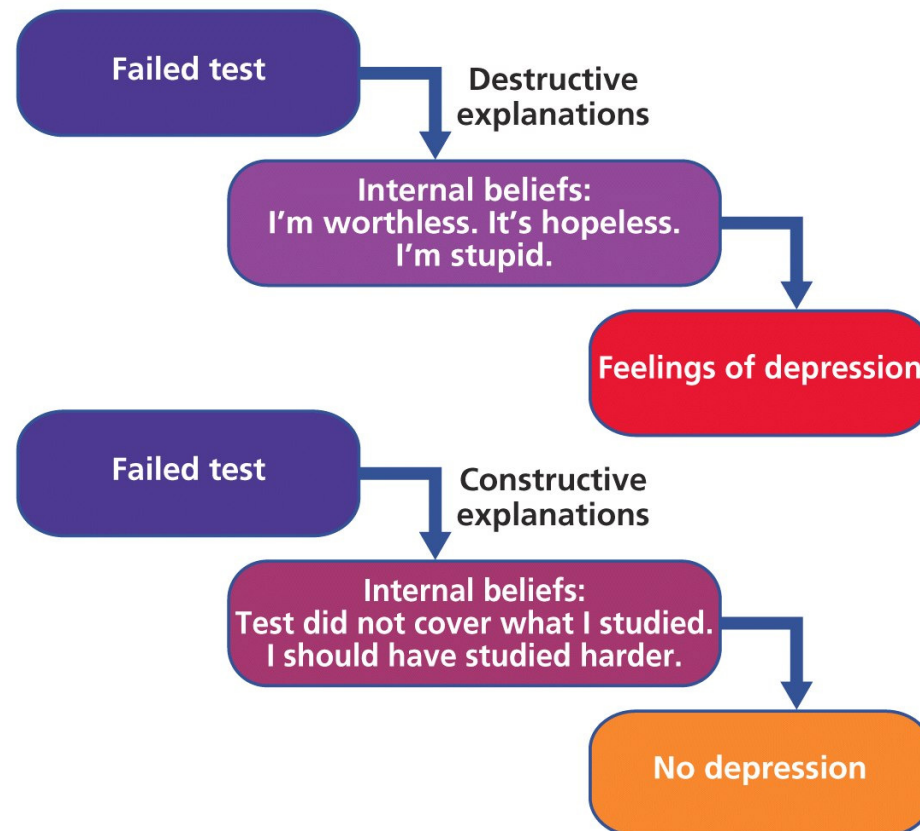
Hardiness (as defined by Suzanne Kobasa), comprises of three beliefs that makes them more resilient to psychological distress and physical illness in the face of stress.

- **Commitment**—hardy individuals are committed to their work and families. They *believe* that what they are doing is important
- **Control**—They *perceive* themselves as having control over their outcomes instead of feeling powerless to influence events (see Learned Helplessness)
- **Challenge**—They view the demands of the situation as a challenge or opportunity instead of a threat. As a result, the situation is seen as less stressful and provided an opportunity to excel.

These hardy people had relatively exceptional coping skills. In hardiness training, participants were encouraged to examine their stressors, develop action plans for dealing with stress, explore their bodily reactions to stress, and find ways to compensate for unchangeable situations without falling into self-pity.

Psychological Factors: Explanatory Style (Optimism versus Pessimism)

We all experience failure (at the job, taking tests, or extracurricular activities). Yet some people persist in spite of this failure. How we explain these failures makes a difference.



HOW COME YOU GOT FIRED?



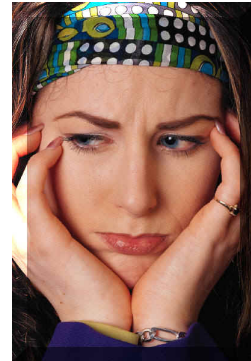
<p><u>Optimistic Explanatory Style for Failures:</u> Accounting for negative events or situations with external, unstable, and specific explanations.</p>	<p><u>Pessimistic Explanatory Style for Failures:</u> Accounting for negative events or situations with internal, stable, and global explanations.</p>
<p><u>External</u></p> <ul style="list-style-type: none"> • The job was difficult. • It wasn't my fault. 	<p><u>Internal</u></p> <ul style="list-style-type: none"> • I didn't work hard enough. • It's my fault. • I wasn't careful.
<p><u>Unstable</u></p> <ul style="list-style-type: none"> • I needed more sleep. • It is a horrible test. • The stars are not aligned. • The drawbridge was up 	<p><u>Stable</u></p> <ul style="list-style-type: none"> • I'm no good at tests. • The questions are difficult. • 6:00 traffic is always bad • Women are no good at math. Men are no good at writing (I do not endorse these, which is a problem with negative stereotypes.
<p><u>Specific</u></p> <ul style="list-style-type: none"> • I am no good at hockey. • I am no good at chess. • I am no good at math. 	<p><u>Global/General</u></p> <ul style="list-style-type: none"> • I am no good at sports. • I am no good at games. • I am no good at school.

Chronic negative emotions

People who are habitually

- anxious,
- depressed,
- angry or
- hostile

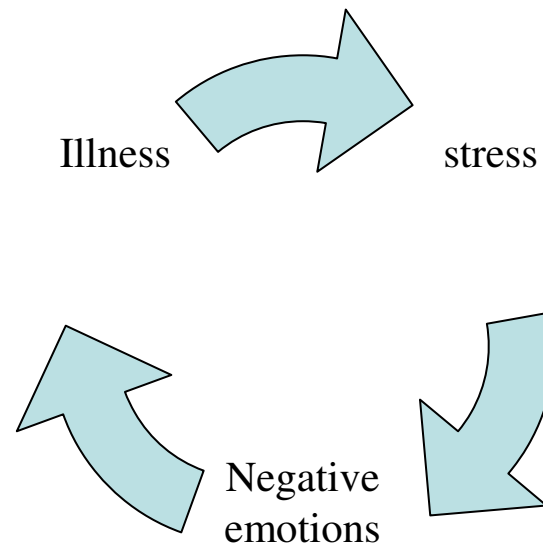
are more likely to develop a chronic disease such as arthritis or heart disease.



- These people tend to report (perceive) more daily hassles than people who are generally in a positive mood, and they react much more intensely and with far greater distress to stressful events.
- Negative emotions such as loneliness and depression can increase the levels of stress hormones that can adversely affect the immune system and are more likely to develop a chronic disease such as arthritis or heart disease.

Chronic negative emotions

In addition, negative emotions such as loneliness and depression can increase the levels of stress hormones that can adversely affect the immune system and are more likely to develop a chronic disease such as arthritis or heart disease.



Personality and Health: Optimism versus Pessimism



People who are optimistic tend to believe that despite setbacks, things will improve. People who are pessimistic tend to believe that if things can go wrong, they will.

A person's level of optimism is associated with health.

- Patients who undergone coronary artery bypass surgery who tended to be optimistic in general, were less likely than other patients after surgery to need rehospitalization for complications such as infection, heart attacks or further surgery.
- Optimists are more likely to maintain positive emotions, avoid negative emotions (such as depression and anxiety), stick to their prescriptions by their doctors, and keep up their relation with others.
- Optimistic women who had surgery for breast cancer were less likely to suffer threats to their self-image.
- Optimists are less likely to experience distress and fatigue after treatment. This is probably due because they maintain social contacts (see social support) and recreational activities during their treatment.



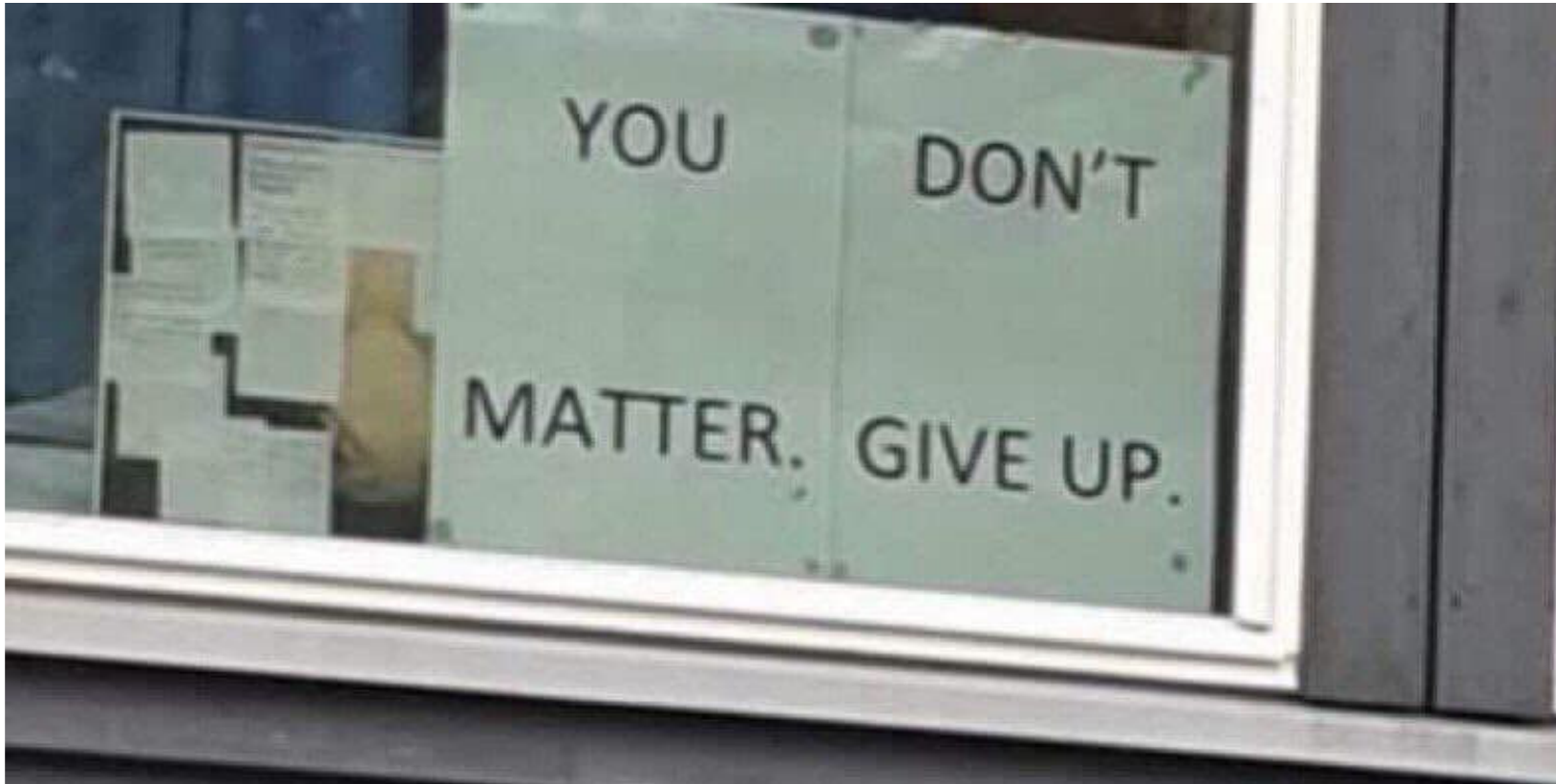
Personality and Health: Optimism versus Pessimism

NOT EVERYTHING
IS CANCELLED

sunshine is not cancelled
love is not cancelled
relationships are not cancelled
reading is not cancelled
naps are not cancelled
devotion is not cancelled
music is not cancelled
dancing is not cancelled
imagination is not cancelled
kindness is not cancelled
conversations are not cancelled
hope is not cancelled



Personality and Health: Optimism versus Pessimism



Type A Behavior Pattern and Hostility

Type A consists of a cluster of three characteristics

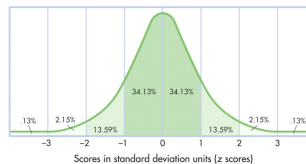
- An exaggerated sense of time urgency, often trying to do more in less time,
- intense ambition and competitiveness and
- a general sense of hostility, frequently displaying anger and irritation.

Type B

- More relaxed and laid back

Self-Evaluation: Which type do you tend to be?

Type A	Type B
<ul style="list-style-type: none">• Very competitive• Always on the go• Hard driving• Demands perfection• Ambitious, wants quick promotions• Is a “workaholic”—even at play	<ul style="list-style-type: none">• Noncompetitive• Relaxed, in control• Easygoing• Understanding, forgiving• Confident and happy in job• Enjoys leisure and weekends





This basketball coach displays some Type A behaviors.

Stress and Cardiovascular Health Type A Behavior Pattern

Type A personalities virtually guarantees that they will encounter many stressful situations such as time pressures of their own making and barriers that anger them.

What does the research in health psychology show with respect to differences in personality type (Type A versus Type B)?

- When 3,000 middle aged men were tracked for 8 years, those with a Type A personality were twice as likely to develop heart disease than Type B, even taking into account such risk factors as smoking, high blood pressure, and elevated levels of cholesterol.

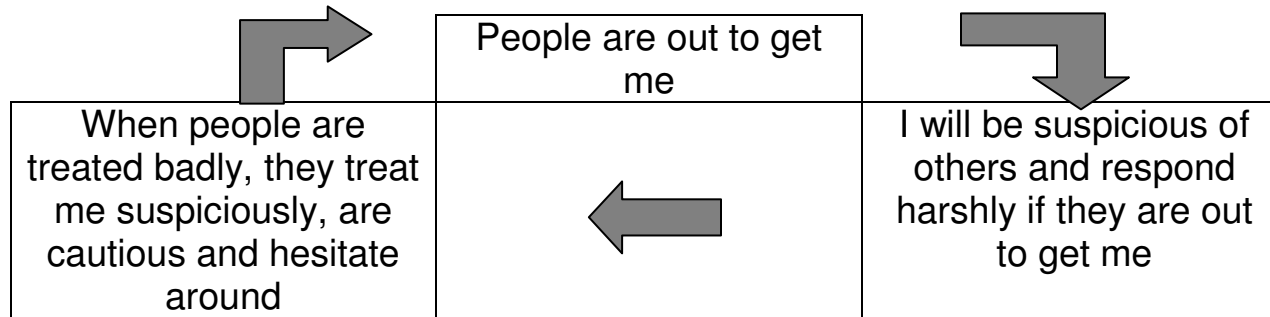
Type A people with high levels of competitiveness and ambition can foster aggressive behavior and hostility when things get in their way. However...

Researchers found that even within the Type A, there were differences. It was not the time urgency and being competitive that was a factor—it was the hostility.

Type A and Hostility

Hostility dimension: Hostility refers to the tendency to feel anger, annoyance, resentment and contempt and to hold negative beliefs about human nature in general.

- Because of their hostility, hostile people also create more stress in their life (a self-fulfilling prophecy, and perhaps a learned behavior). They experience more frequent and more severe, negative life events and daily hassles.
- Hostile people are also prone to believing that the disagreeable behavior of others is intentionally directed at them. Thus hostile people tend to be suspicious, mistrustful, cynical and pessimistic.
- Type A and Hostile personalities tend to alienate others and produce interpersonal stress and conflict which reduces the amount of social support the person has.
- A cynical hostility marked by suspiciousness, resentment, frequent anger, distrust and antagonism seem important in the relation between personality and stress.



Hostility and Health

Hostile men were five times as likely to develop heart disease and seven times as likely to die by age 50 compared to non-hostile men.

Why does hostility predispose people to heart disease?

- Type A personalities tend to react more intensely to a stressor than other people do and take more time to recover.
 - They experience greater increases in blood pressure, heart rate and the production of stress related hormones.

Stress hormones elevated

Sympathetic	
Pupils dilated, dry, far vision	Eyes
Dry	Mouth
Goose bumps	Skin
Sweaty	Palms
Passages dilated	Lungs
Increased rate	Heart
Supply maximum to muscles	Blood
Increased activity	Adrenal glands
Inhibited	Digestion

Less Hostile

Sympathetic	
Pupils dilated, dry, far vision	Eyes
Dry	Mouth
Goose bumps	Skin
Sweaty	Palms
Passages dilated	Lungs
Increased rate	Heart
Supply maximum to muscles	Blood
Increased activity	Adrenal glands
Inhibited	Digestion

More Hostile

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Estimating the likelihood of a Type A

You can use the checklist below to estimate the likelihood of your being a Type A personality. However, the checklist should be regarded as a rough estimate, because Friedman and Rosenman (1974) emphasize that how you answer certain questions in their interview is often more significant than the answers themselves. Nonetheless, if you answer “yes” to a majority of the items below, you may want to consider reading their book, Type A Behavior and Your Heart.

- _____ 1. Do you find it difficult to restrain yourself from hurrying other’s 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 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 or 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?

Source: Weiten, Themes and Variations in Psychology 5th edition