1-2 What are the three key elements of the scientific attitude, and how do they support scientific inquiry?

Thinking Critically About:

The Scientific Attitude

Three basic attitudes helped make modern science possible.

1 CURIOSITY:

Does it work?

When put to the test, can its predictions be confirmed?

● *No one has yet been able to demonstrate extrasensory mind-reading.*

○ *Many studies have found that higher stress relates to poorer health.*

2 SKEPTICISM:

What do you mean?

How do you know?

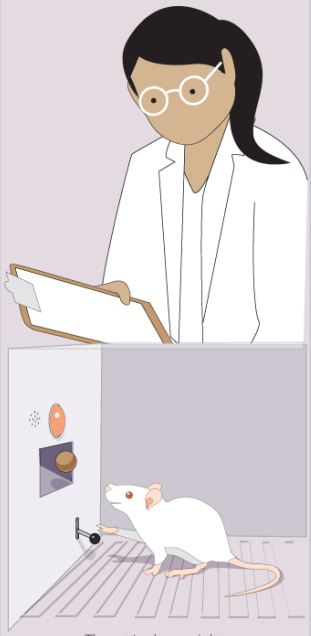
Sifting reality from fantasy requires a healthy skepticism—an attitude that is not cynical (doubting everything), but also not gullible (believing everything).

○ *Our facial expressions and body postures can affect how we feel.*

● *As you will see in Module 53, there is not a relationship between parental behaviors and a child's sexual orientation.*

3 HUMILITY:

Researchers must be willing to be surprised and follow new ideas. People and other animals don't always behave as our ideas and beliefs would predict.



The rat is always right.

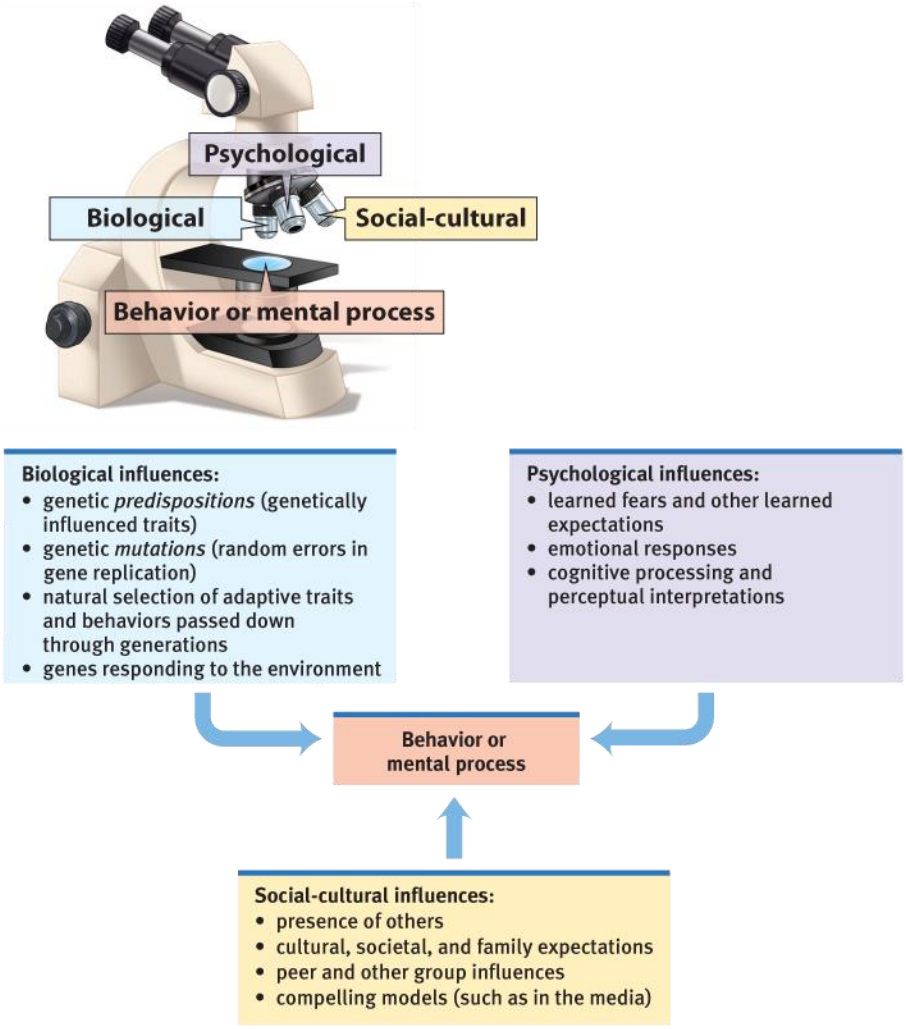


Figure 2.1
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Perspective	Focus	Sample Questions
Behavioral	How we learn observable responses	How do we learn to fear particular objects or situations? What is the most effective way to alter our behavior, for example, to lose weight?
Biological	How the body and brain enable emotions, memories, and sensory experiences; how our genes and our environment influence our individual differences	How do pain messages travel from the hand to the brain? How is blood chemistry linked with moods and motives? To what extent are psychological traits such as intelligence, personality, sexual orientation, and vulnerability to depression products of our genes? Of our environment?
Cognitive	How we encode, process, store, and retrieve information	How do we use information in remembering? Reasoning? Solving problems?
Evolutionary	How the natural selection of traits has promoted the survival of genes	How does evolution influence behavior tendencies?
Humanistic	How we achieve personal growth and self-fulfillment	How can we work toward fulfilling our potential? How can we overcome barriers to our personal growth?
Psychodynamic	How behavior springs from unconscious drives and conflicts	How can someone's personality traits and disorders be explained by unfulfilled wishes and childhood traumas?
Social-cultural	How behavior and thinking vary across situations and cultures	How are we affected by the people around us, and by our surrounding culture?

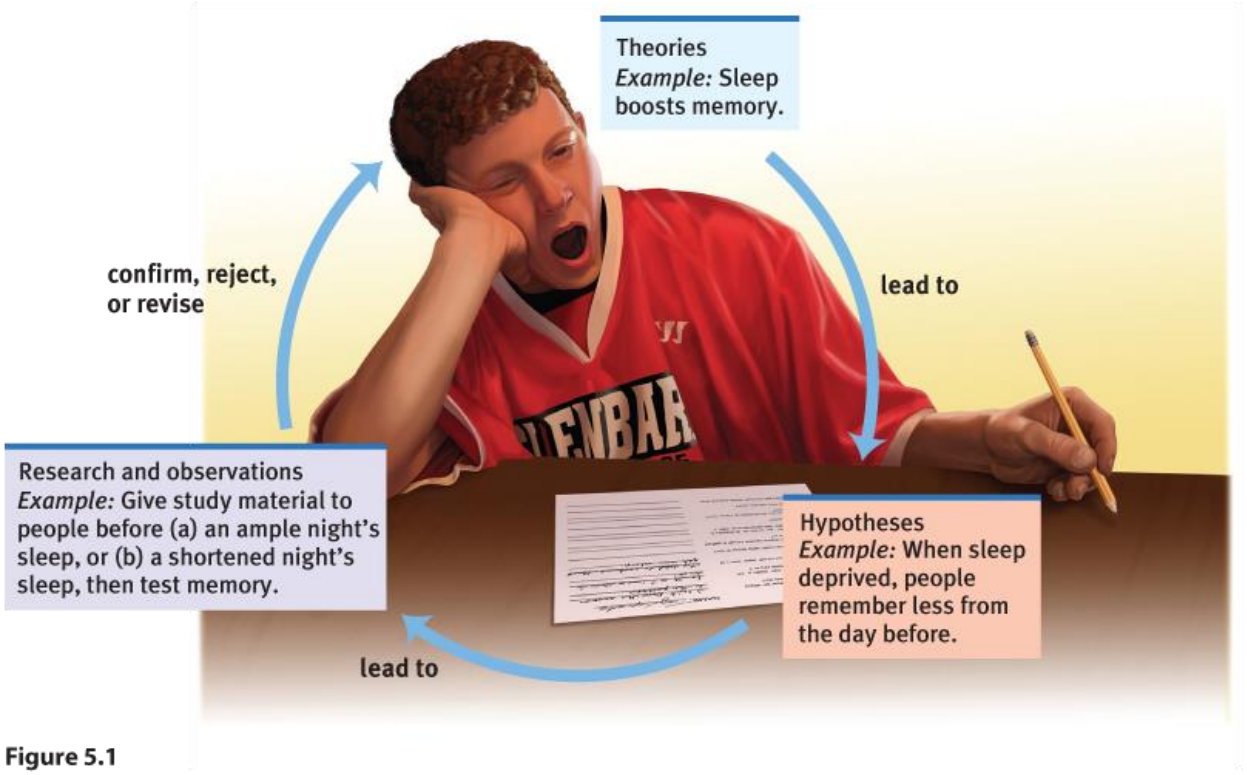

Figure 5.1
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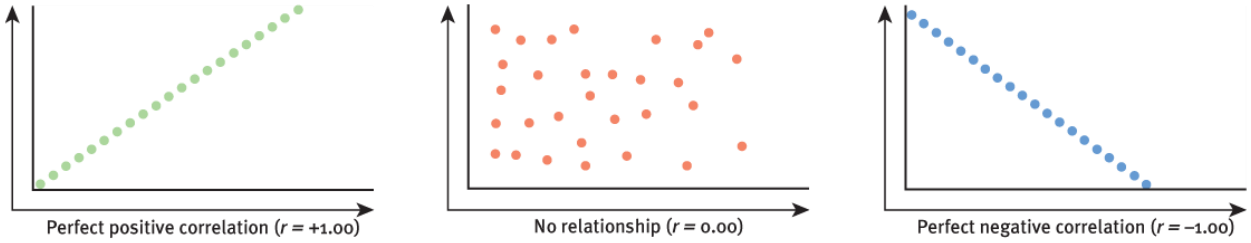

Figure 6.1
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Thinking Critically About:

Correlation and Causation

6-2 Why do correlations enable prediction but not cause-effect explanation?

Mental illness *correlates* with smoking—meaning that those who experience mental illness are also more likely to be smokers.[1] Does this tell us anything about what *causes* mental illness or smoking? **NO.**

There may be something about smoking that leads to mental illness.

Those with mental illness may be more likely to smoke.

OR

There may be some *third variable*, such as a stressful home life, for example, that triggers *both* smoking and mental illness.

So, then, how would you interpret these recent findings:
a) sexual hook-ups correlate with college women's experiencing depression, and
b) *delaying* sexual intimacy correlates with positive outcomes such as greater relationship satisfaction and stability?[2]

Possible explanations:

1. Sexual restraint →	Better mental health and stronger relationships
2. Depression →	People being more likely to hook up
3. Some third factor, such as lower impulsivity →	Sexual restraint, psychological well-being, and better relationships

Correlations do help us predict. Consider: Self-esteem correlates negatively with (and therefore predicts) depression. The lower people's self-esteem, the greater their risk for depression.

Possible interpretations:

1. Low self-esteem →	Depression
2. Depression →	Low self-esteem
3. Some third factor, such as distressing events or biological predisposition →	Both low self-esteem and depression

You try it!
A survey of over 12,000 adolescents found that the more teens feel loved by their parents, the less likely they are to behave in unhealthy ways—having early sex, smoking, abusing alcohol and drugs, exhibiting violence.[3] What are three possible ways we could interpret that finding?[4]

The point to remember: ***Correlation does not prove causation.***

Correlation suggests a possible cause-effect relationship but does not prove it. Remember this principle and you will be wiser as you read and hear news of scientific studies.

1. Belluck, 2013. 2. Fielder et al., 2013; Willoughby et al., 2014. 3. Resnick et al., 1997. 4. *ANSWERS:* A. Parental love may produce healthy teens. B. Well-behaved teens may feel more parental love and approval. C. Some third factor, such as income or neighborhood, may influence both parental love AND teen behaviors.

Random assignment
(controlling for other confounding variables such as parental intelligence and environment)

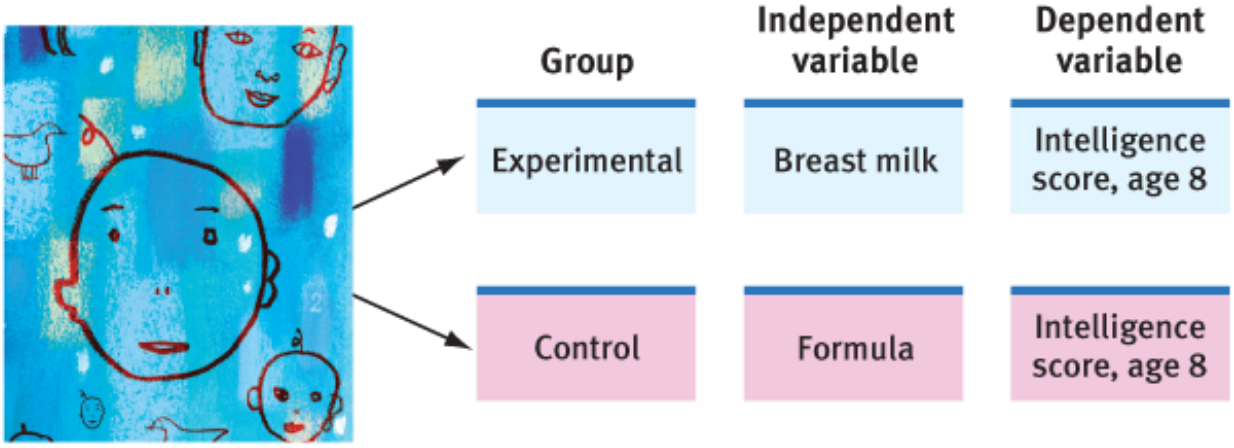

Figure 6.3
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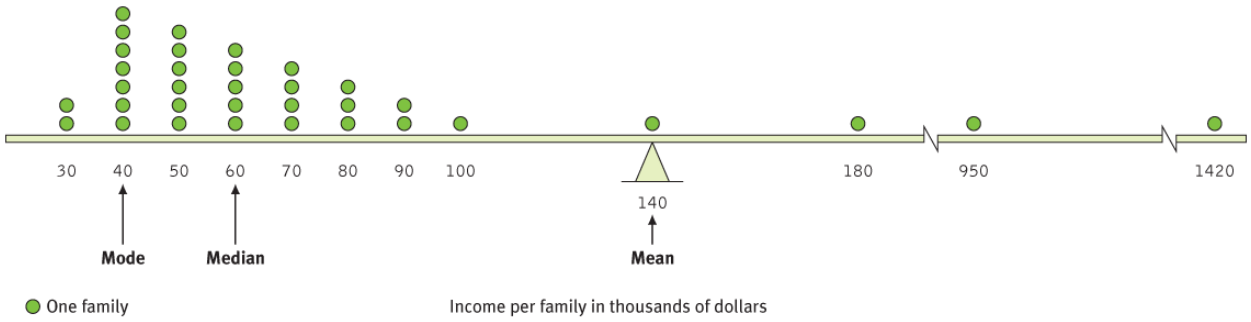
R. Michael Wertz

Research Method	Basic Purpose	How Conducted	What Is Manipulated	Weaknesses
Descriptive	To observe and record behavior	Do case studies, naturalistic observations, or surveys	Nothing	No control of variables; single cases may be misleading
Correlational	To detect naturally occurring relationships; to assess how well one variable predicts another	Collect data on two or more variables; no manipulation	Nothing	Cannot specify cause and effect
Experimental	To explore cause and effect	Manipulate one or more factors; use random assignment	The independent variable(s)	Sometimes not feasible; results may not generalize to other contexts; not ethical to manipulate certain variables



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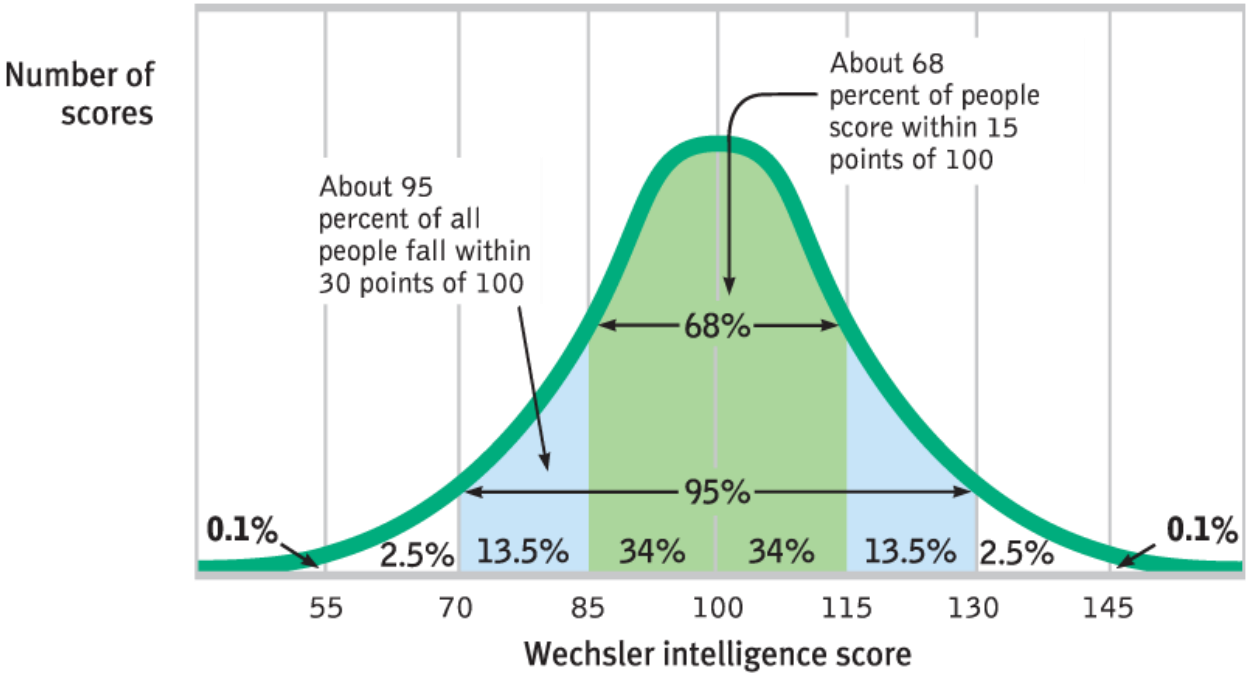

Figure 8.3
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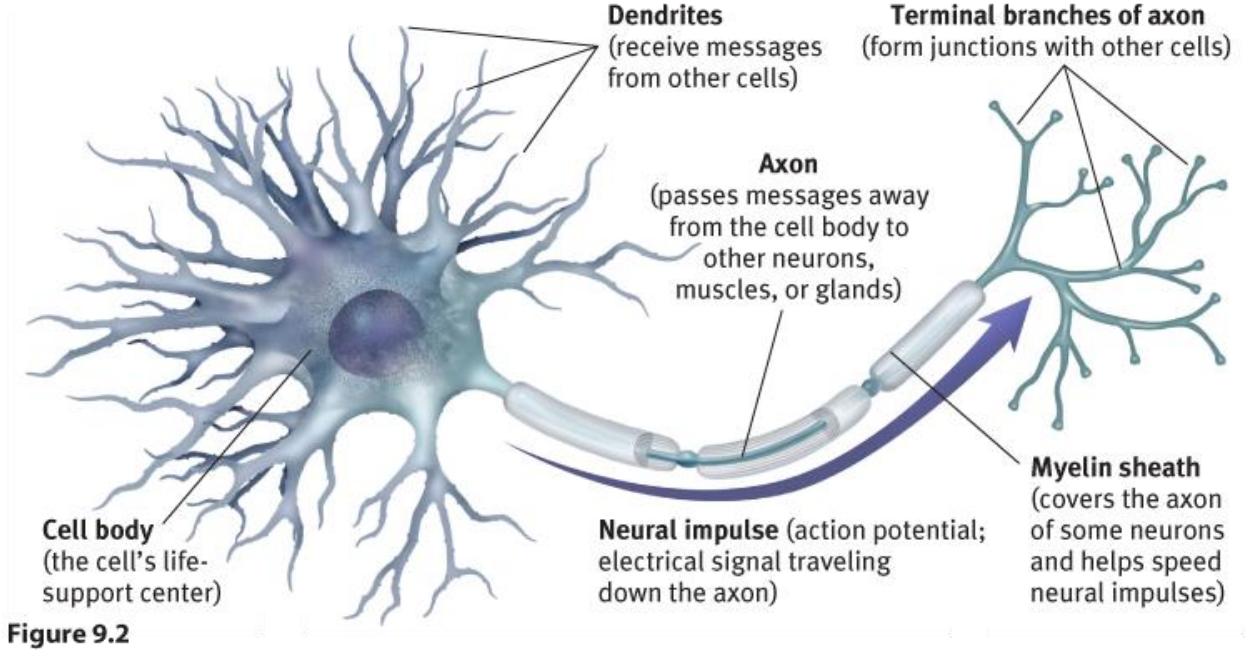

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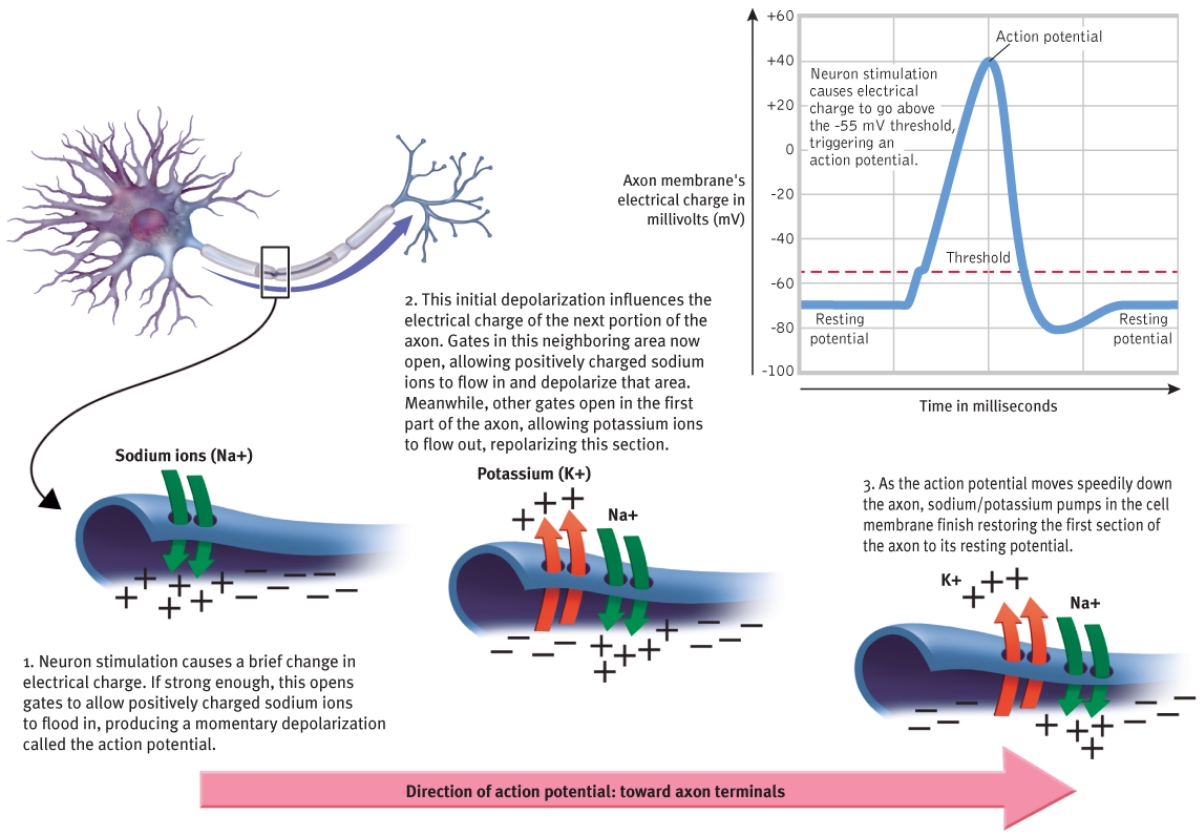

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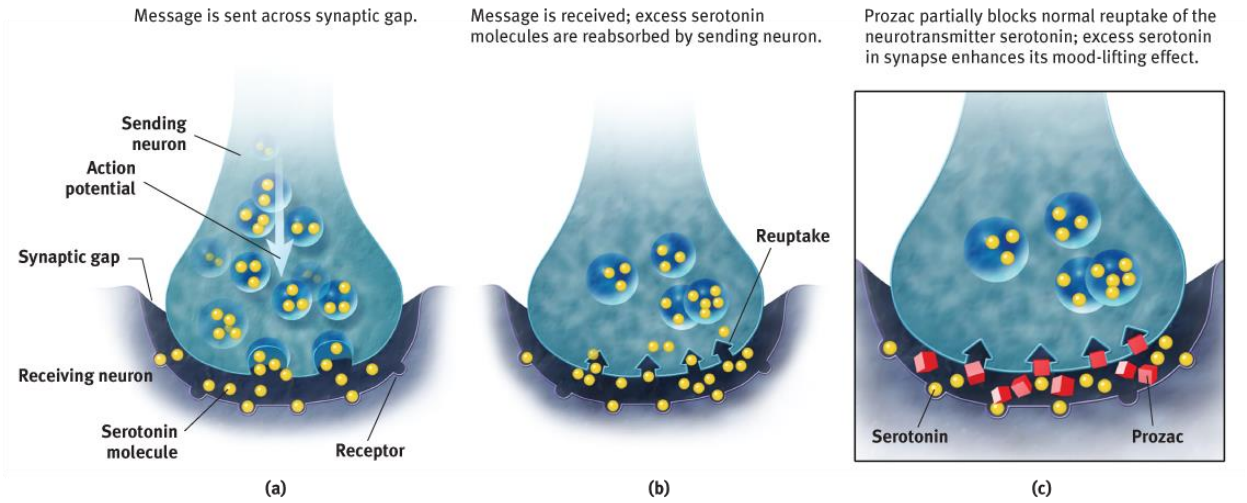

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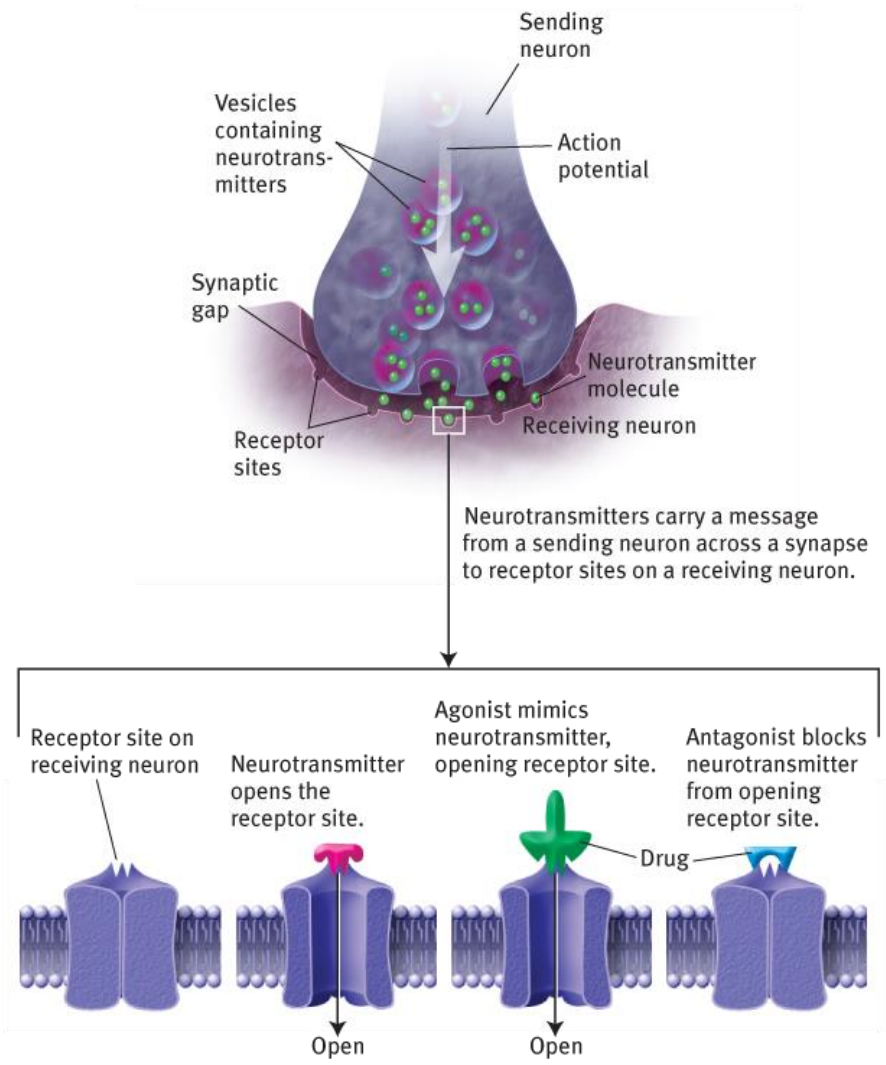

Figure 9.8
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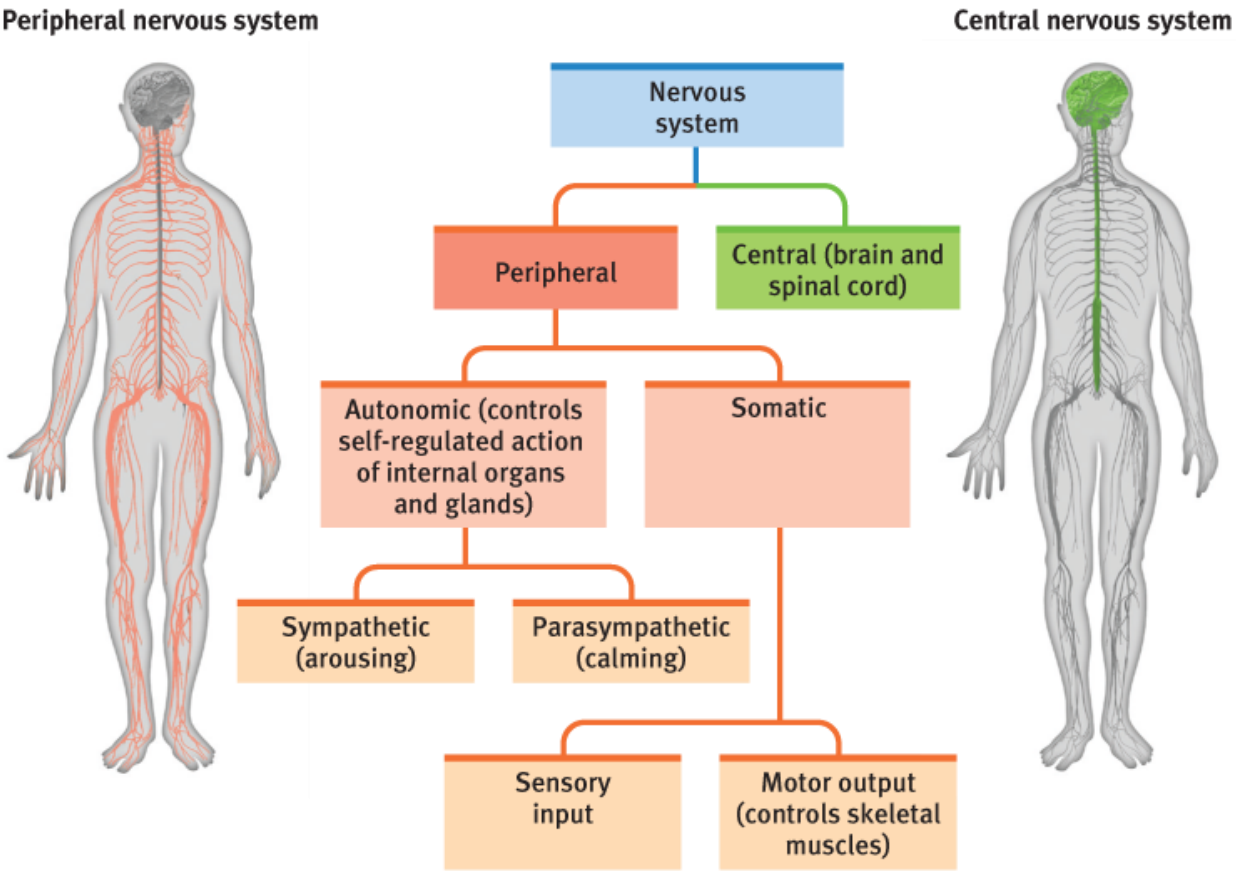
Art adapted from Higgins & George, 2007.

Neurotransmitter	Function	Examples of Malfunctions
Acetylcholine (ACh)	Enables muscle action, learning, and memory	With Alzheimer's disease, ACh-producing neurons deteriorate.
Dopamine	Influences movement, learning, attention, and emotion	Oversupply linked to schizophrenia. Undersupply linked to tremors and decreased mobility in Parkinson's disease.
Serotonin	Affects mood, hunger, sleep, and arousal	Undersupply linked to depression. Some drugs that raise serotonin levels are used to treat depression.
Norepinephrine	Helps control alertness and arousal	Undersupply can depress mood.
GABA (gammaaminobutyric acid)	A major inhibitory neurotransmitter	Undersupply linked to seizures, tremors, and insomnia.
Glutamate	A major excitatory neurotransmitter; involved in memory	Oversupply can overstimulate the brain, producing migraines or seizures (which is why some people avoid MSG, monosodium glutamate, in food).
Endorphins	Neurotransmitters that influence the perception of pain or pleasure	Oversupply with opiate drugs can suppress the body's natural endorphin supply.



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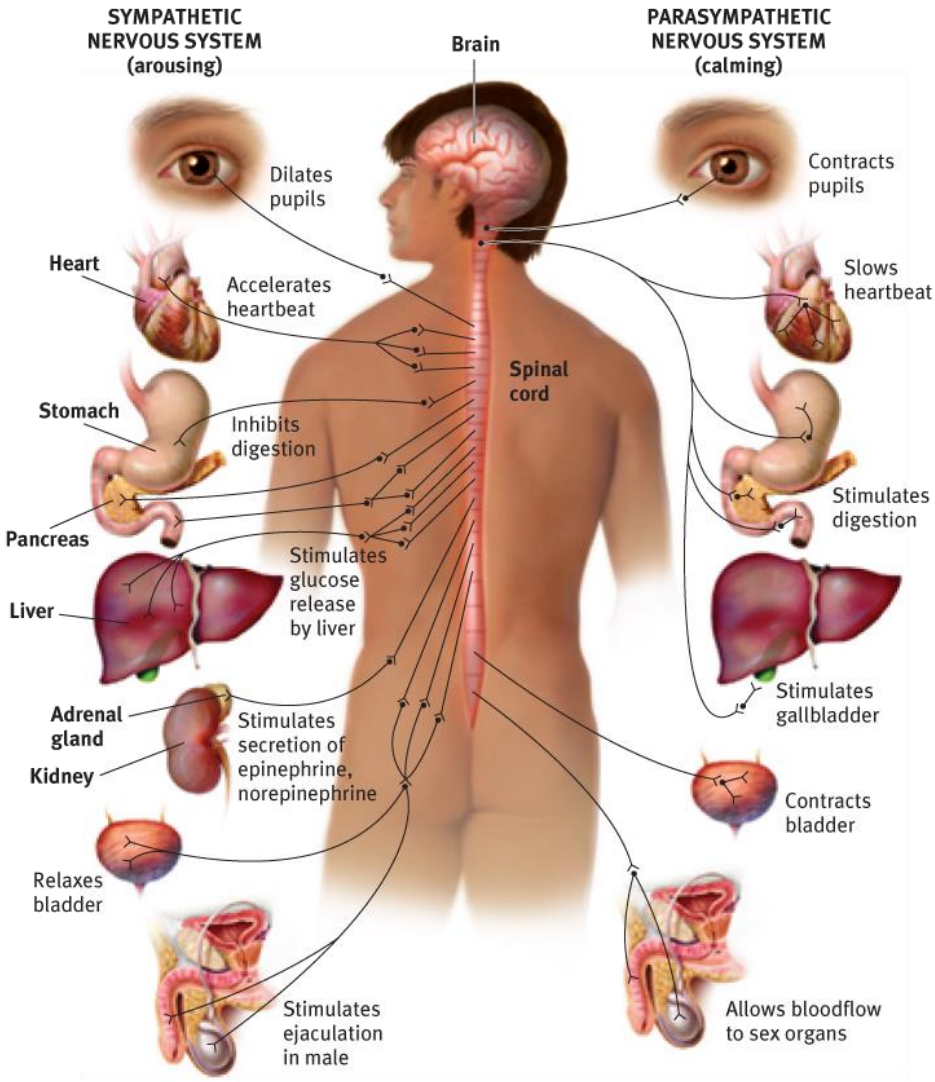

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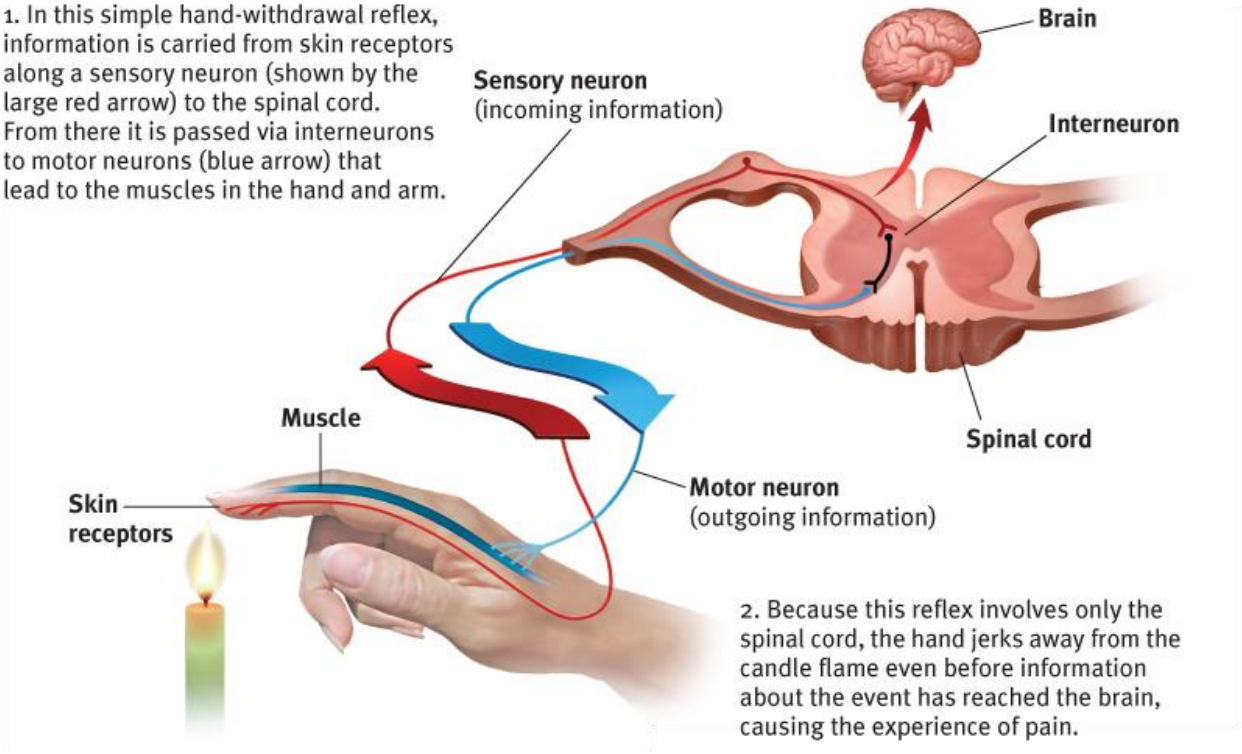

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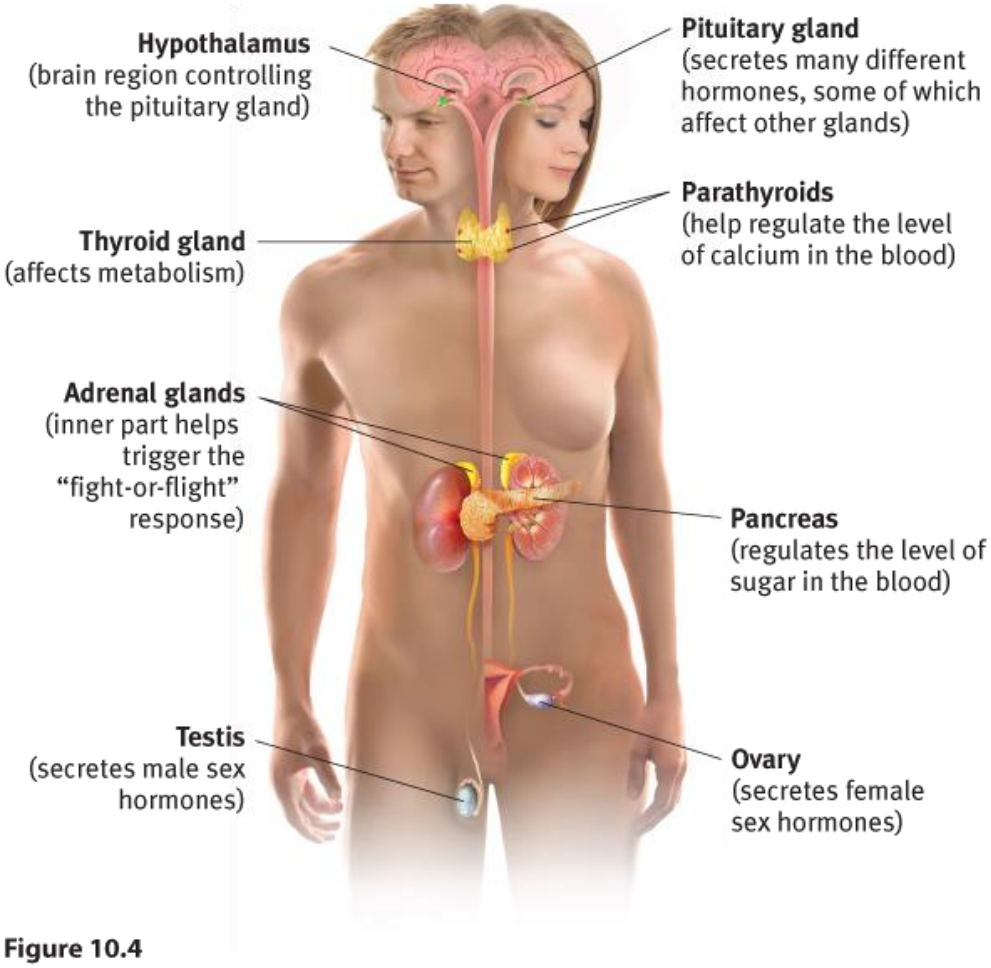

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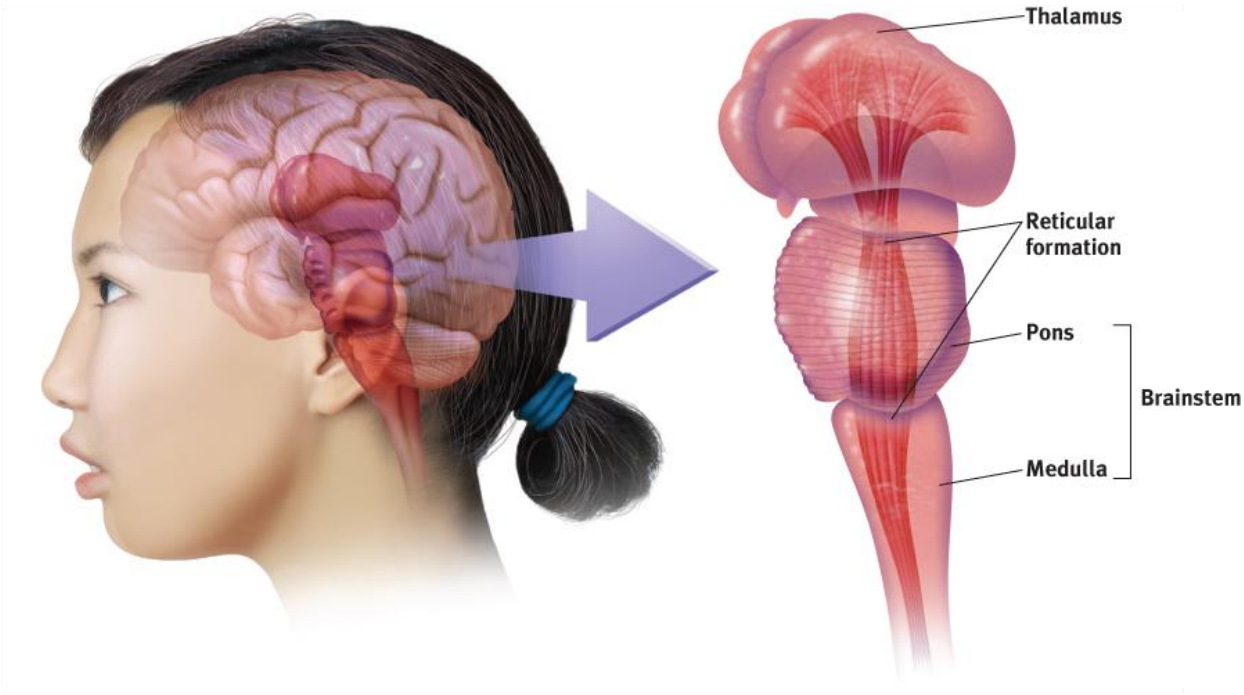

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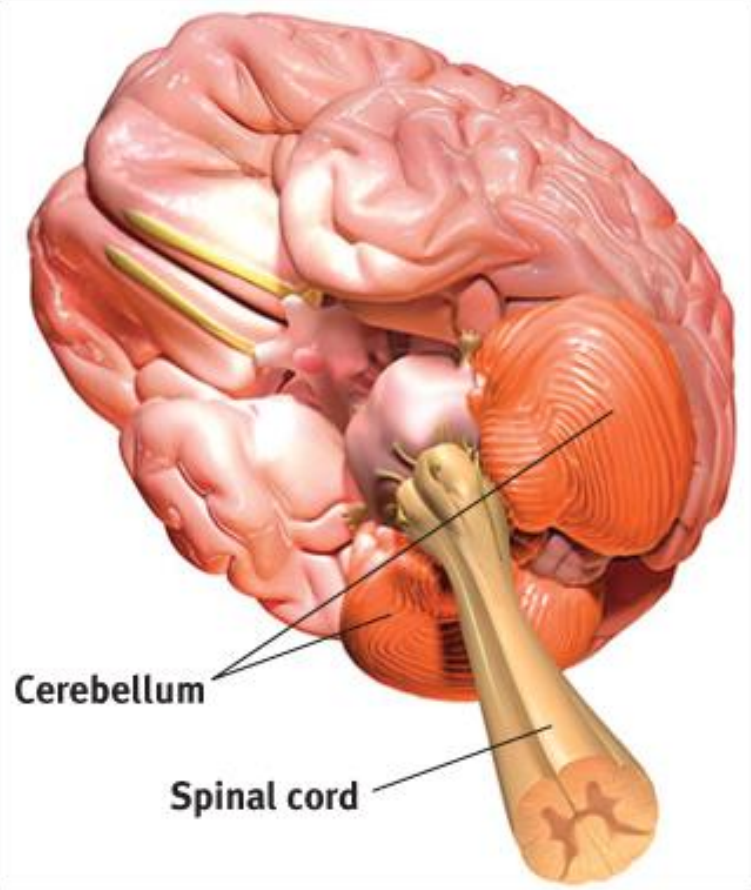

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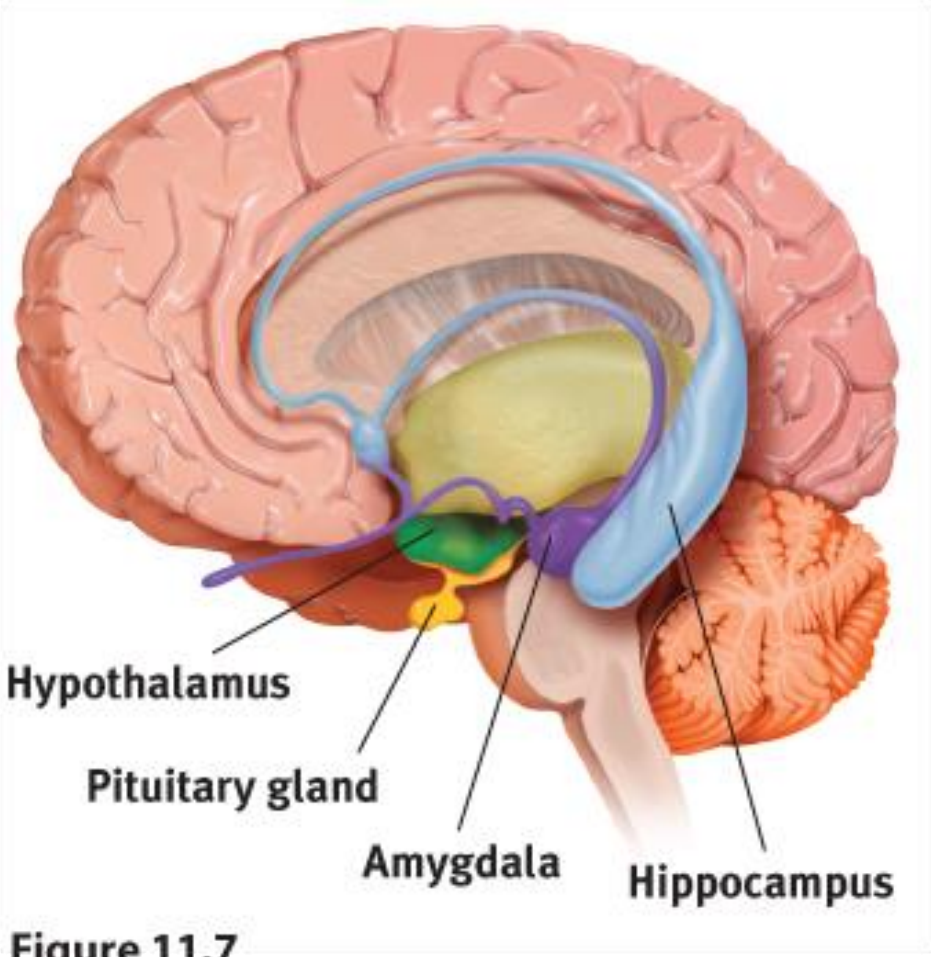

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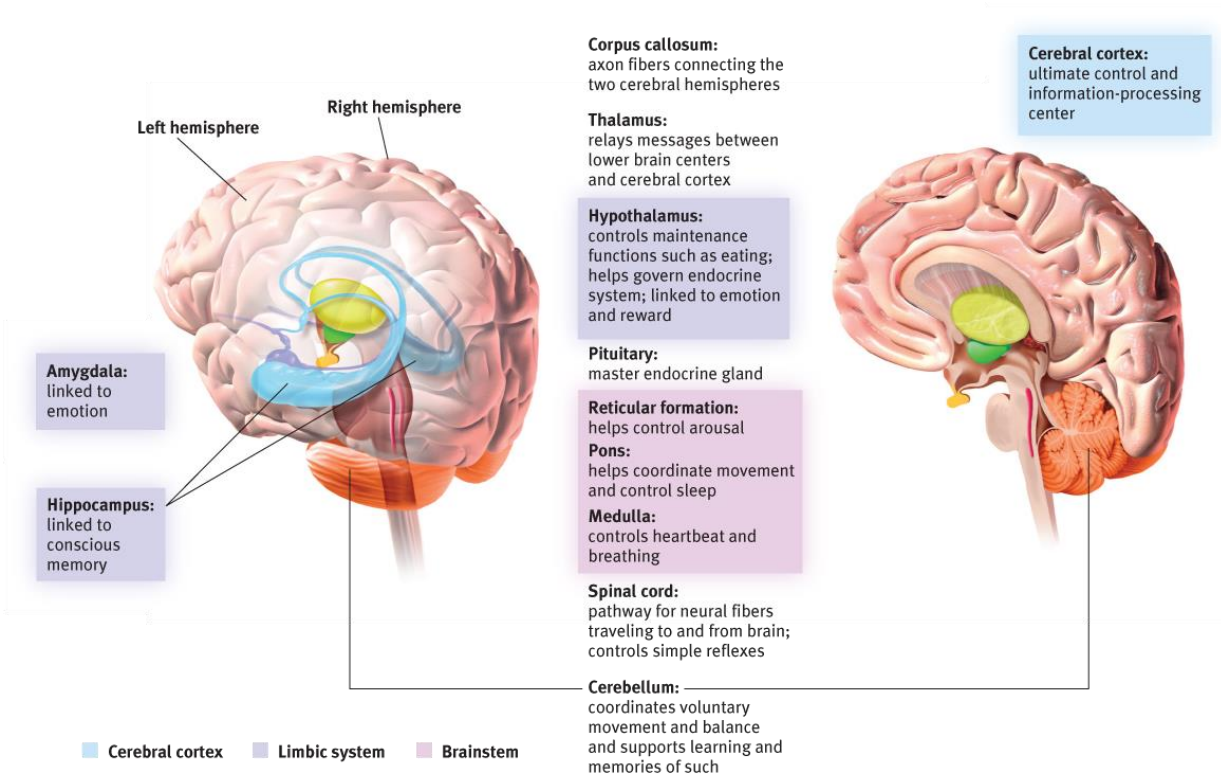

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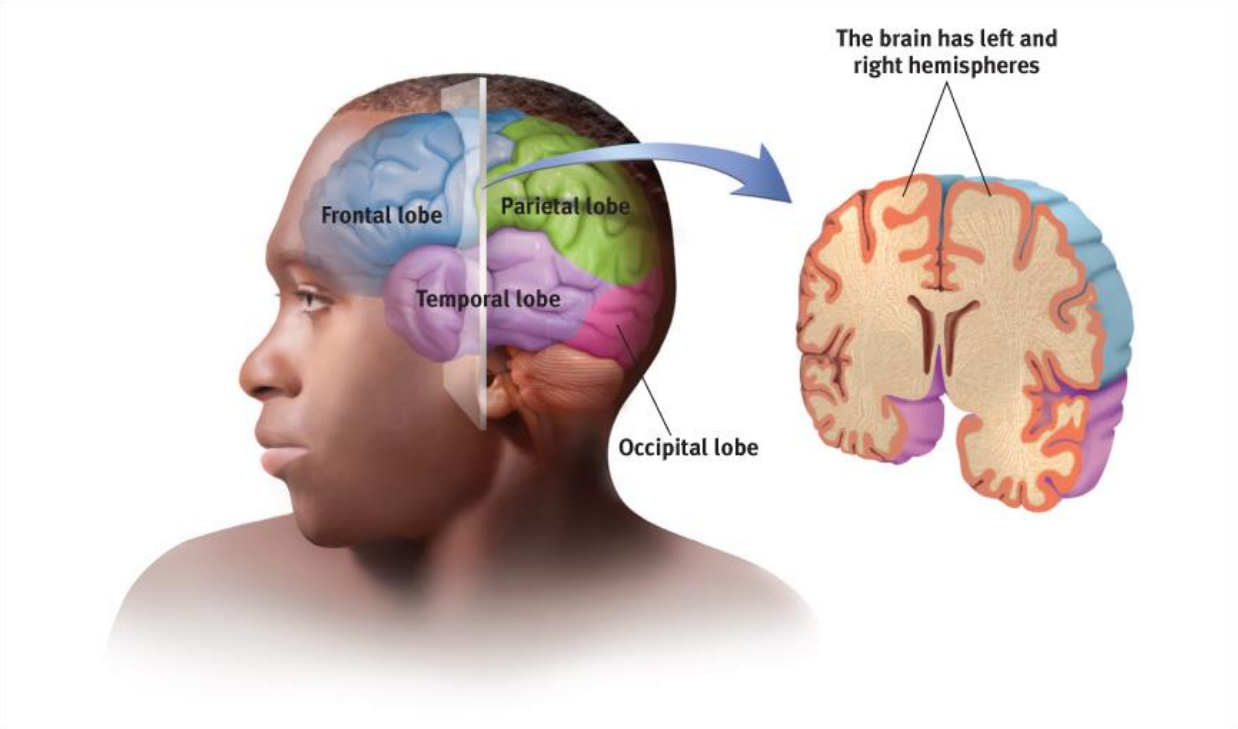
Name	How Does It Work?	Example
Electroencephalogram (EEG)	Electrodes placed on the scalp measure electrical activity in neurons.	Symptoms of depression and anxiety correlate with increased activity in the right frontal lobe, a brain area associated with behavioral withdrawal and negative emotion (Thibodeau et al., 2006).
Magnetoencephalography (MEG)	A head coil records magnetic fields from the brain's natural electrical currents.	Soldiers with posttraumatic stress disorder (PTSD), compared with those who do not have PTSD, show stronger magnetic fields in the visual cortex when they view trauma-related images (Todd et al., 2015).
Computed tomography (CT)	X-rays of the head generate images that may locate brain damage.	Children's brain injuries, shown in CT scans, predict impairments in their intelligence and memory processing (Königs et al., 2017).
Positron emission tomography (PET)	Tracks where a temporarily radioactive form of glucose goes while the brain of the person given it performs a given task.	Monkeys with an anxious temperament have brains that use more glucose in regions related to fear, memory, and expectations of reward and punishment (Fox et al., 2015).
Magnetic resonance imaging (MRI)	People sit or lie down in a chamber that uses magnetic fields and radio waves to provide a map of brain structure.	People with a history of violence tend to have smaller frontal lobes, especially in regions that aid moral judgment and self-control (Glenn & Raine, 2014).

Functional magnetic resonance imaging (fMRI)	Measures blood flow to brain regions by comparing continuous MRI scans.	Years after surviving a near plane crash, passengers who viewed material related to their trauma showed greater activation in the brain's fear, memory, and visual centers than when they watched footage related to the 9/11 terrorist attacks (Palombo et al., 2015).



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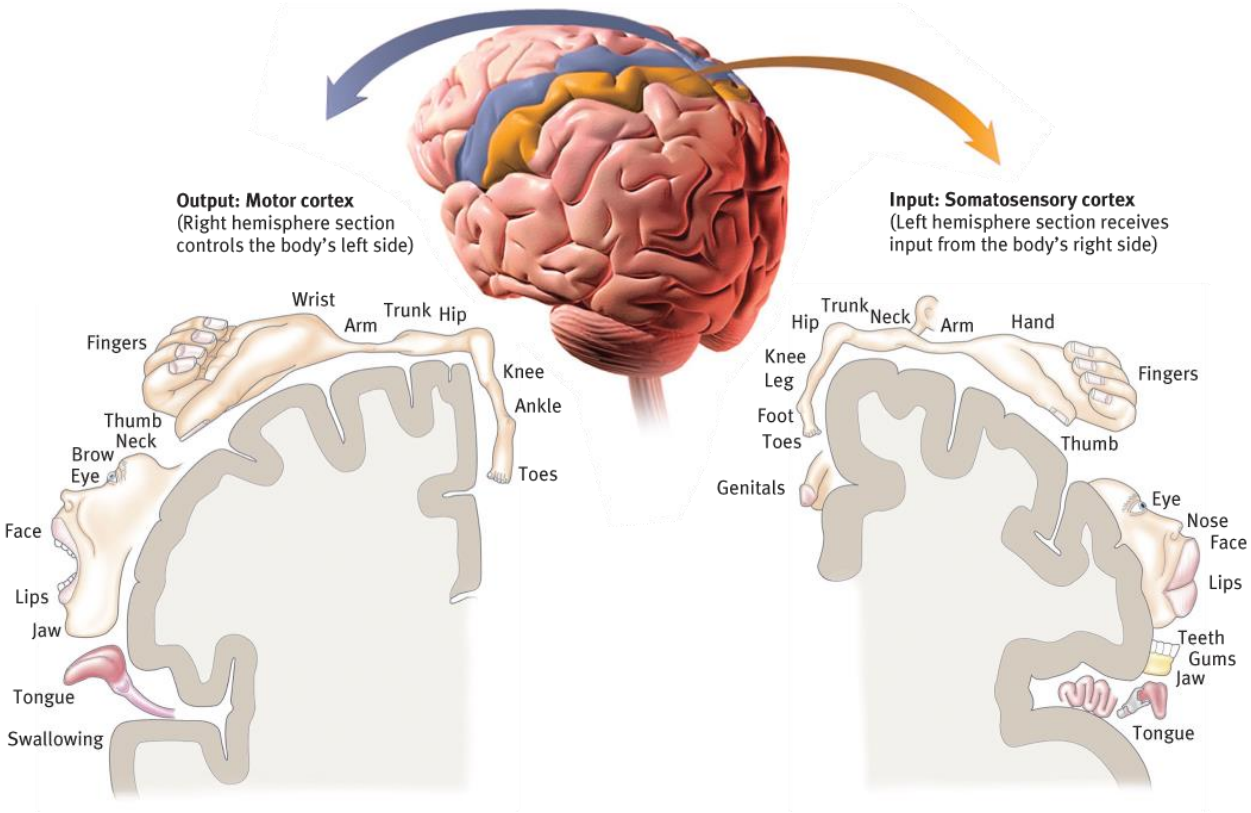

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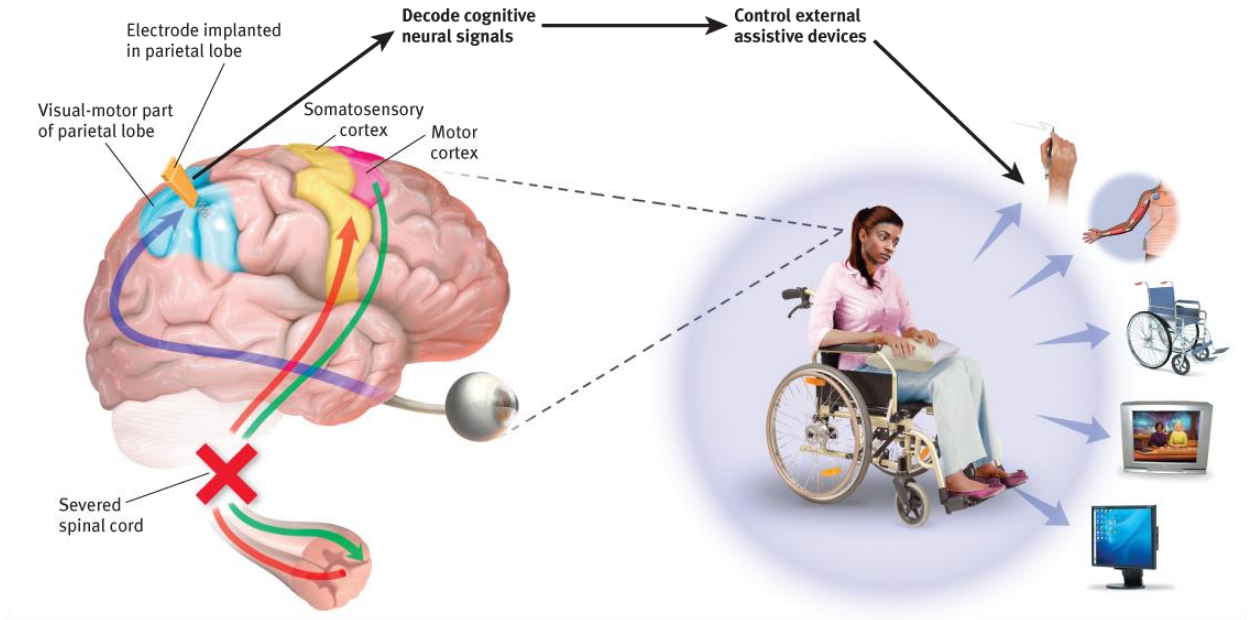

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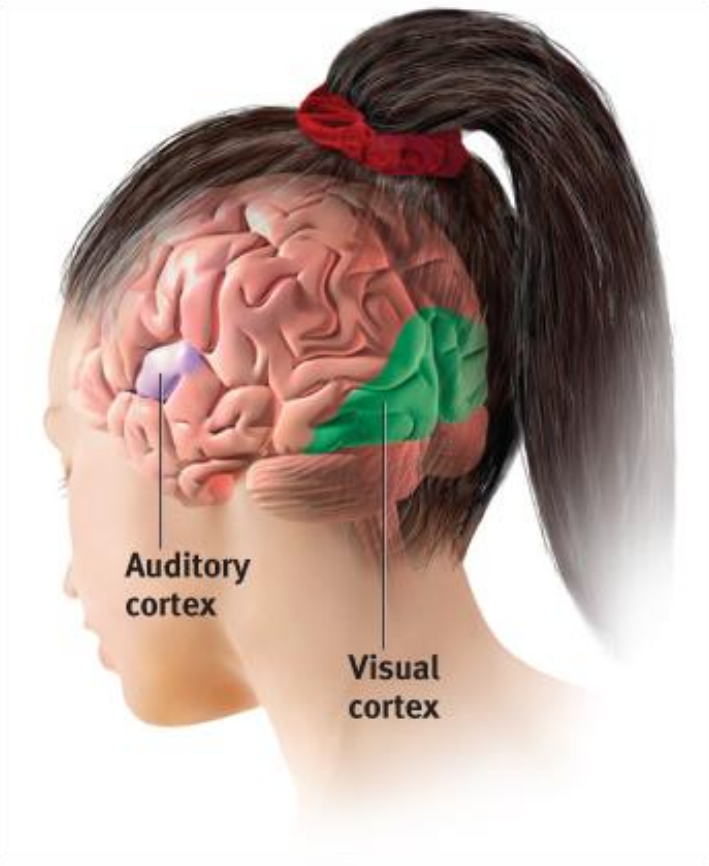

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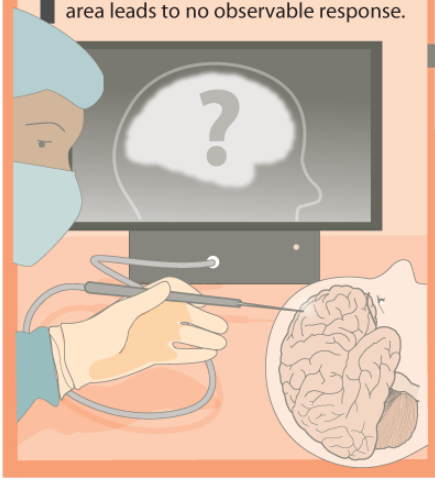
12-2 Do we really use only 10 percent of our brain?

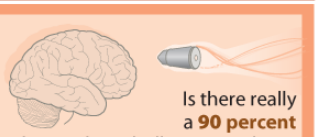
Thinking Critically About:

Using More Than 10 Percent of Our Brain

1 Electrically probing an association area leads to no observable response.



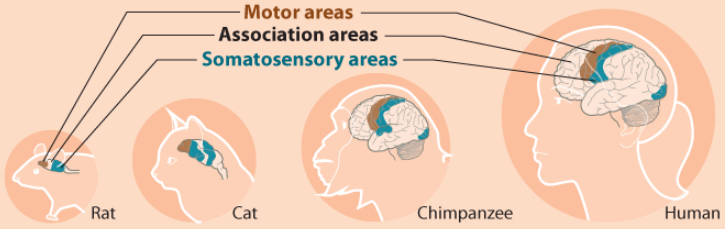
2 This vast association area "silence" has led to the false claim that we really use only **10 percent of our brain**—*"one of the hardiest weeds in the garden of psychology."* [1]

3 

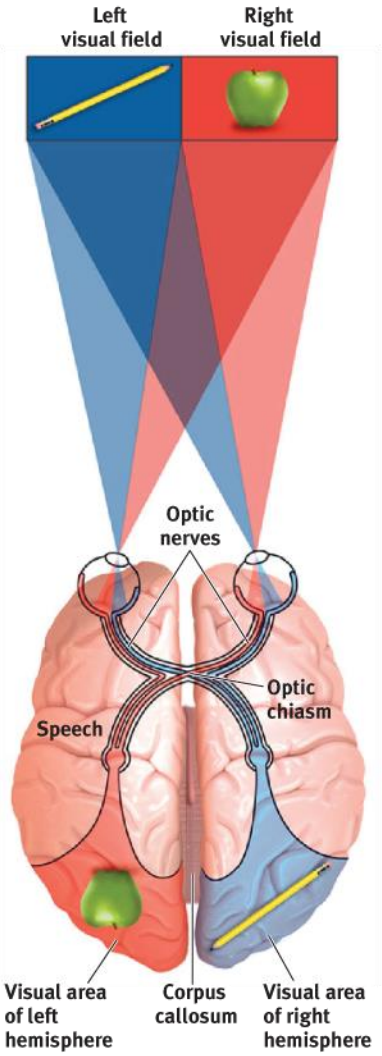
Is there really a **90 percent** chance that a bullet to your brain would land in an unused area?

4 Brain-damaged animals and humans bear witness: Association areas interpret, integrate, and act on sensory information and link it with stored memories. More intelligent animals have larger association areas.

No.



1. McBurney, 1996, p. 44



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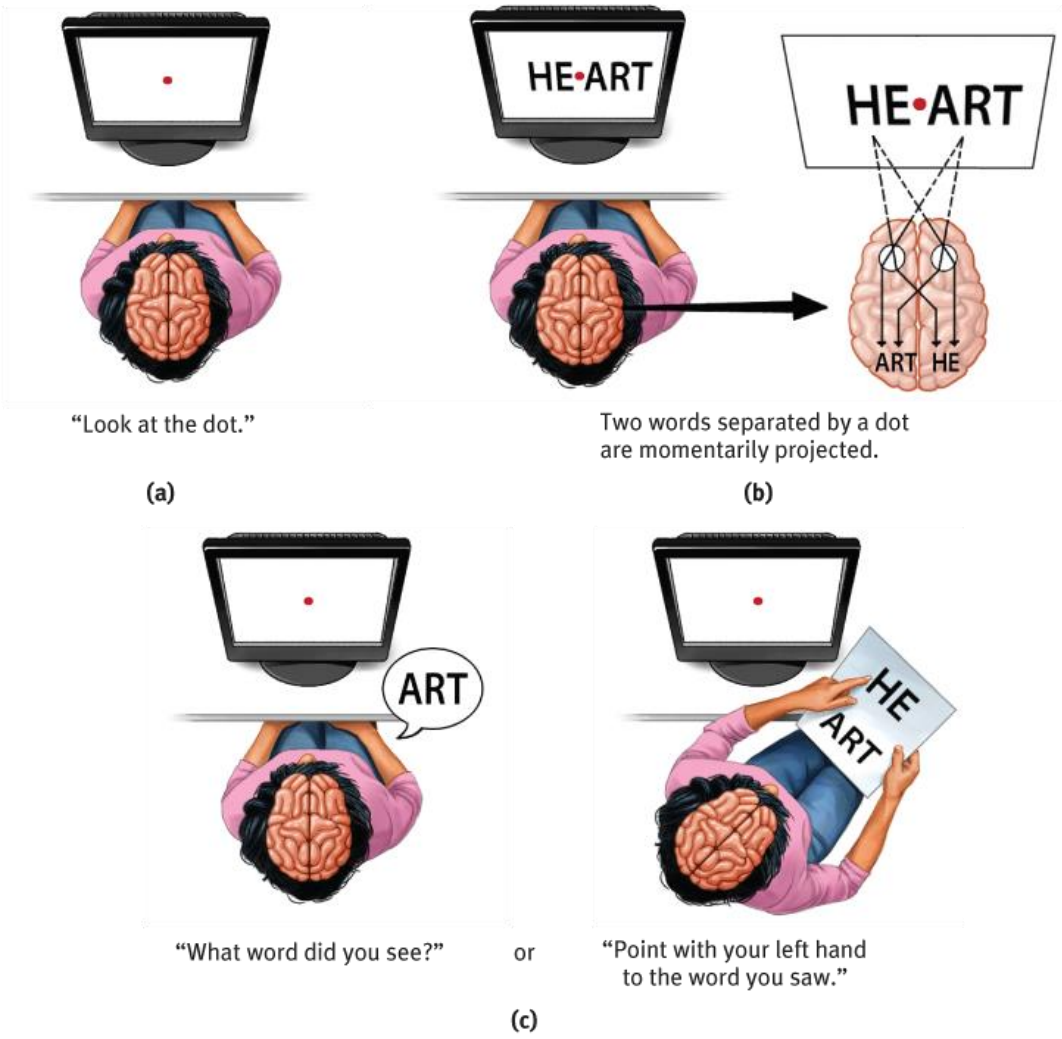

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From Gazzaniga, 1983.

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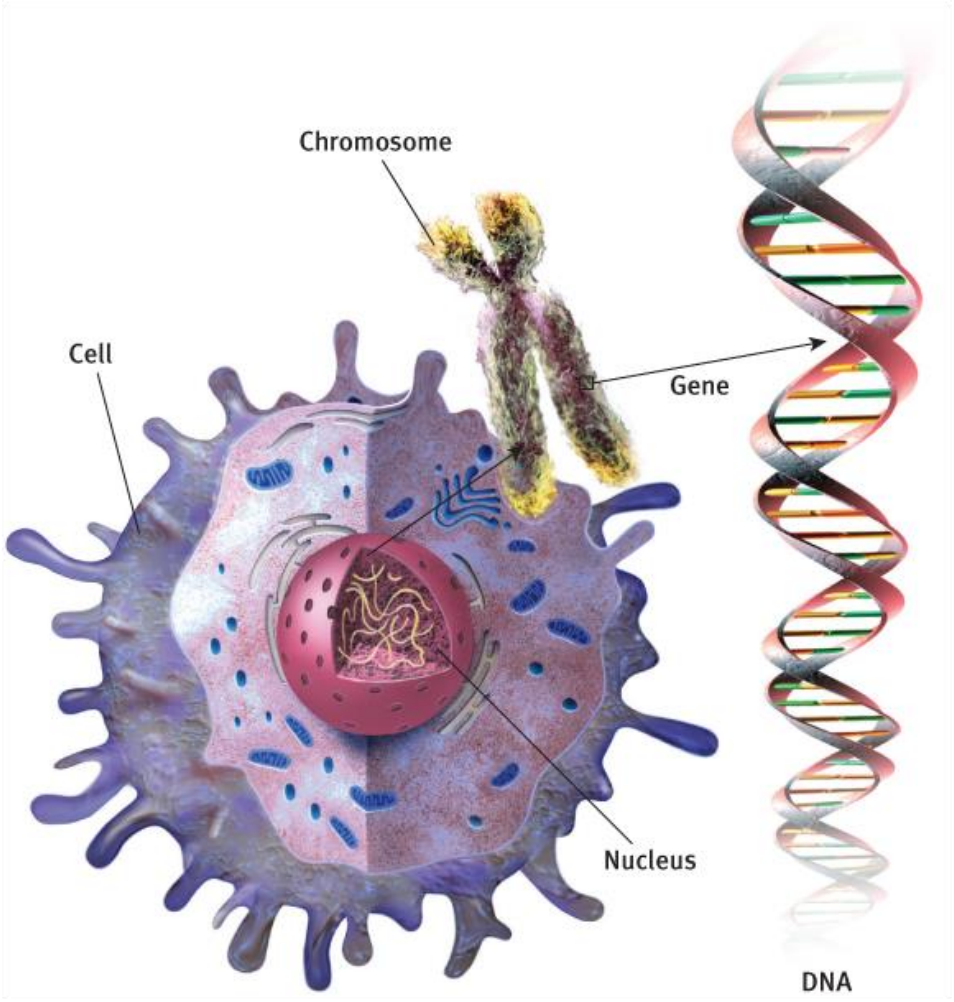

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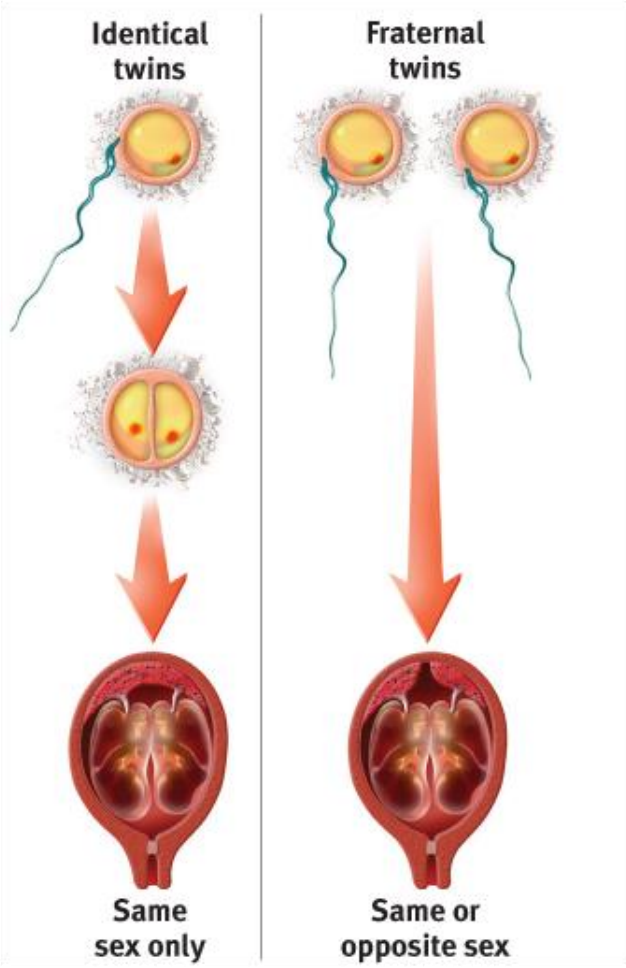

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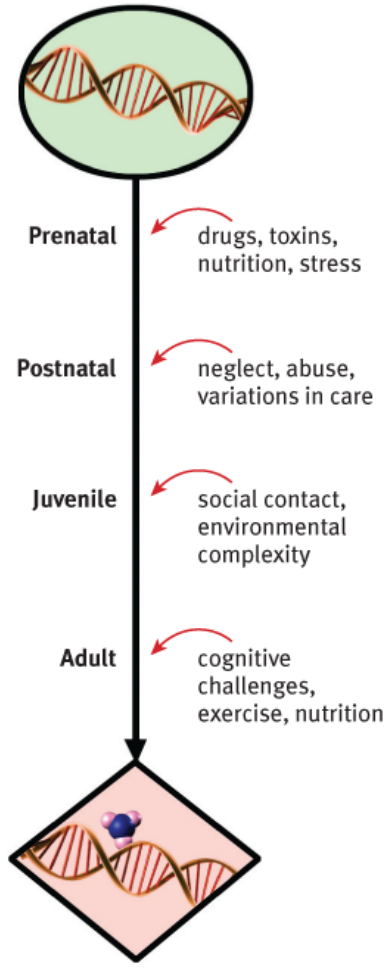

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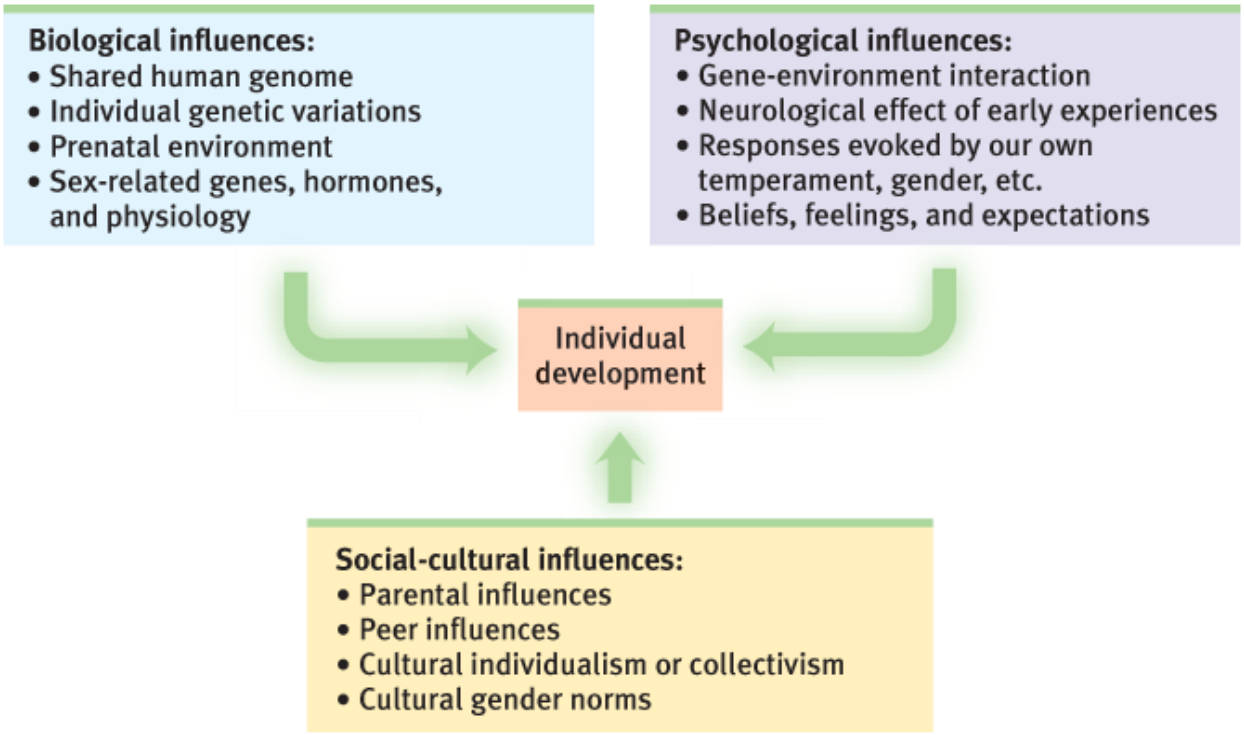
Research from Champagne, 2010.



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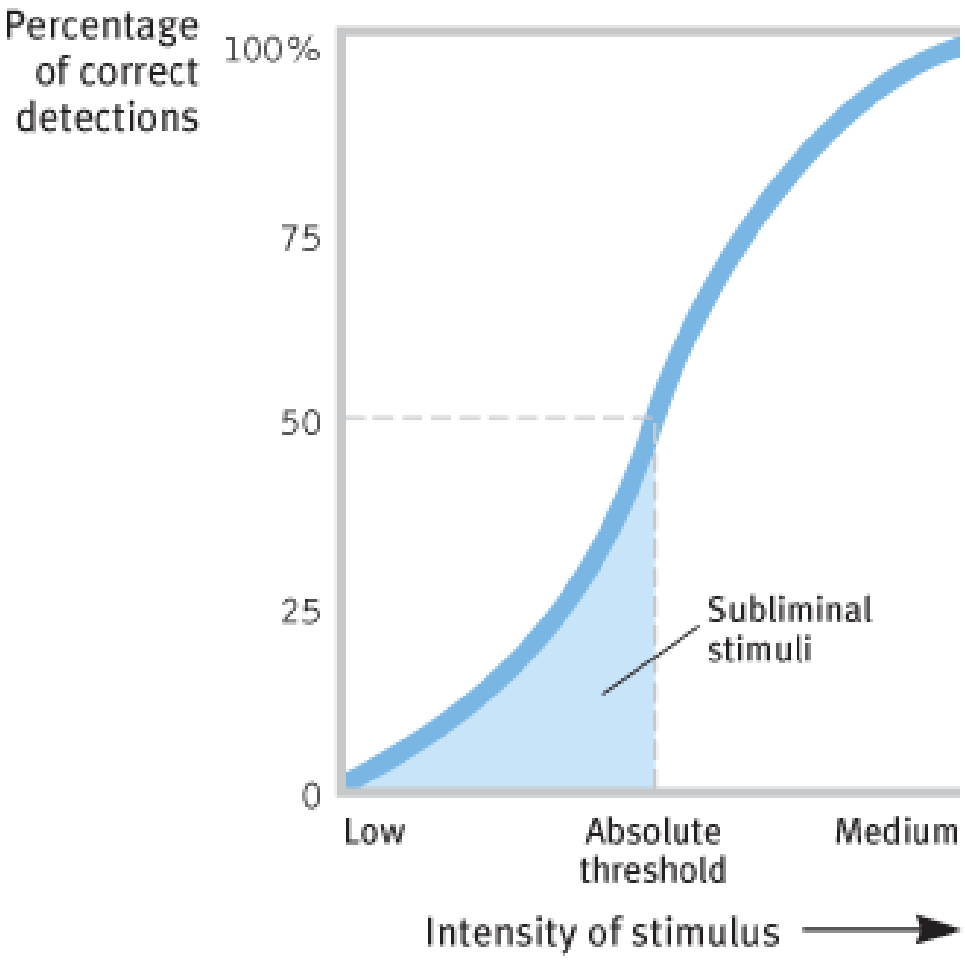

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6–4 How are we affected by subliminal stimuli?

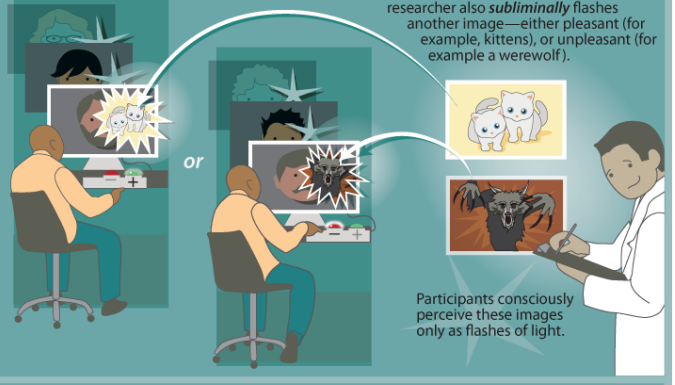
Thinking Critically About:
Subliminal Sensation and Subliminal Persuasion

We can be affected by *subliminal* sensations
—stimuli so weak that we don't consciously notice them.

Researchers use **priming** to activate unconscious associations.

Participant views slides of people and offers either favorable or unfavorable ratings of each person.

BUT
an instant before each slide, the trickster researcher also ***subliminally*** flashes another image—either pleasant (for example, kittens), or unpleasant (for example a werewolf).



Will participants' ratings of the faces be affected?

Yes![1]

More **favorable** ratings of people

More **unfavorable** ratings of people

Our two-track mind: Priming happens even though the viewer's brain does not have time to consciously perceive the flashed images. We may evaluate a stimulus even when we are not consciously aware of it.[2]

So, we can be *primed,* but can we be *persuaded* by subliminal stimuli, for example to lose weight, stop smoking, or improve our memories?

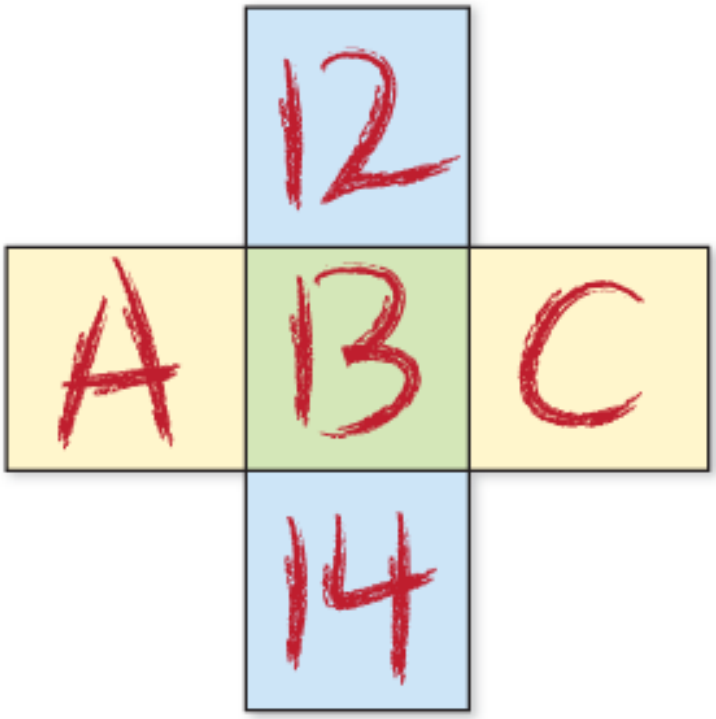
Audio and video messages subliminally (without recipients' conscious awareness) announce:

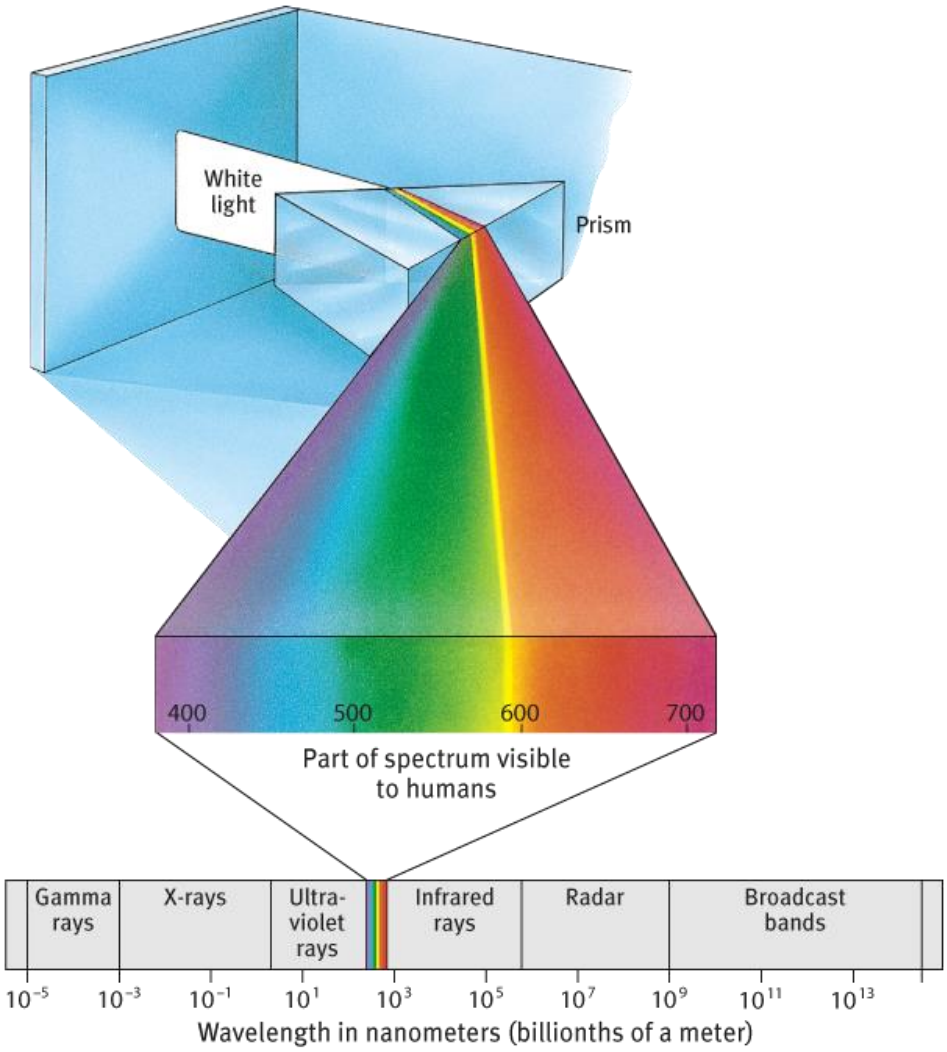
"I am thin,"
"Cigarette smoke tastes bad,"
and
"I do well on tests. I have total recall of information."

Results from 16 experiments[3] showed no powerful, enduring influence on behavior. Not one of the recordings helped more than a placebo, which works only because we believe it will.

1. Krosnick et al., 1992. 2. Ferguson & Zayas, 2009. 3. Greenwald et al., 1991, 1992.

The LORD is my shepherd;
I shall not want.
He maketh me to lie down
in green pastures:
he leadeth me
beside the still waters.
He restoreth my soul:
he leadeth me
in the paths of righteousness
for his name's sake.
Yea, though I walk through the valley
of the shadow of death,
I will fear no evil:
for thou art with me;
thy rod and thy staff
they comfort me.
Thou preparest a table before me
in the presence of mine enemies:
thou anointest my head with oil,
my cup runneth over.
Surely goodness and mercy
shall follow me
all the days of my life:
and I will dwell
in the house of the LORD
for ever.





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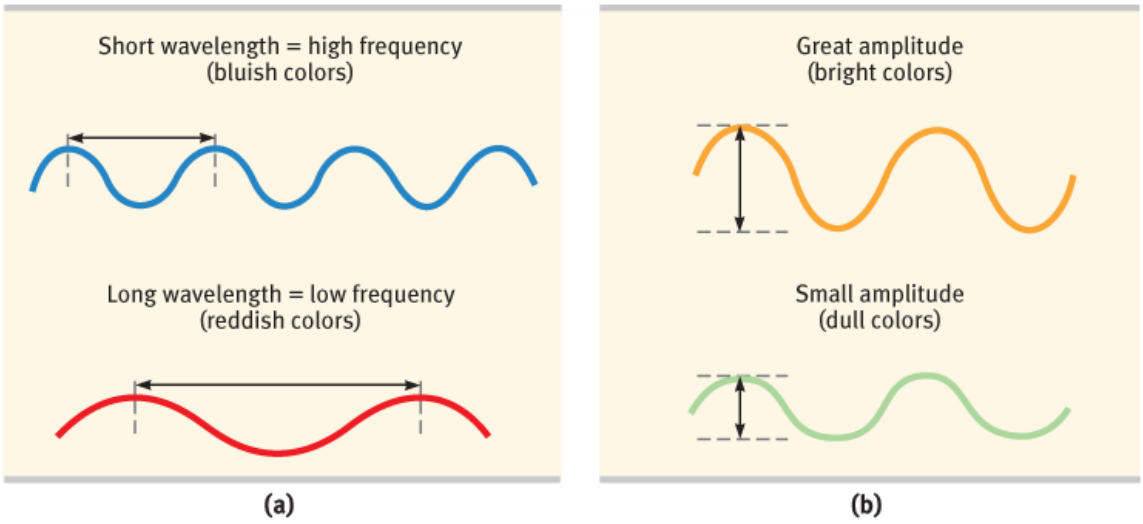

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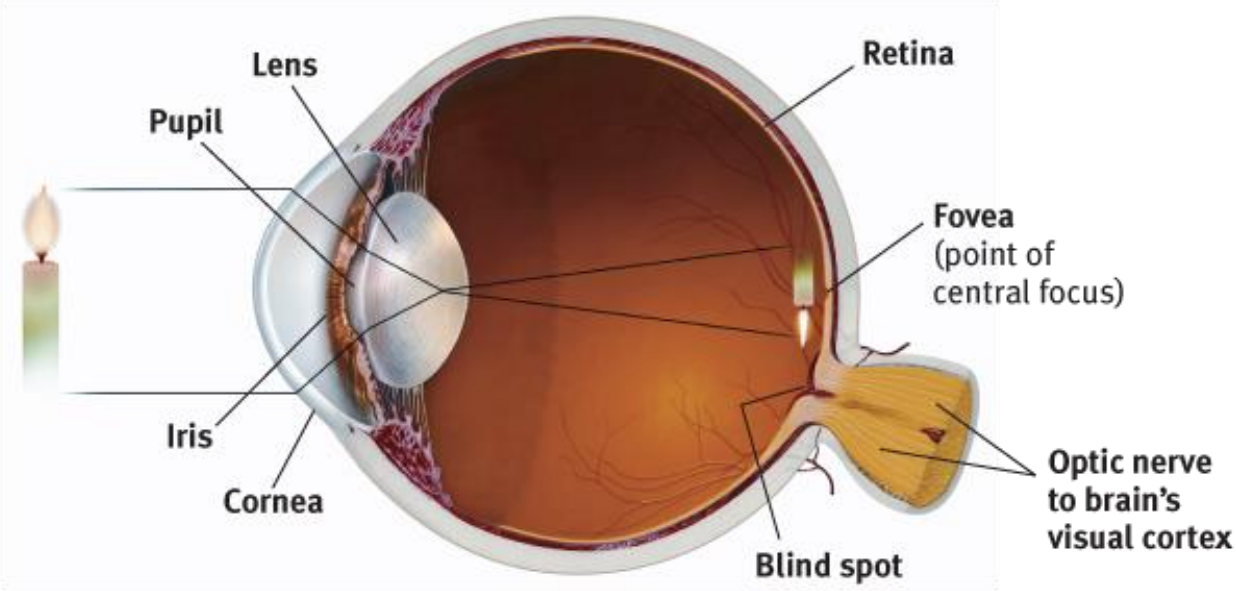

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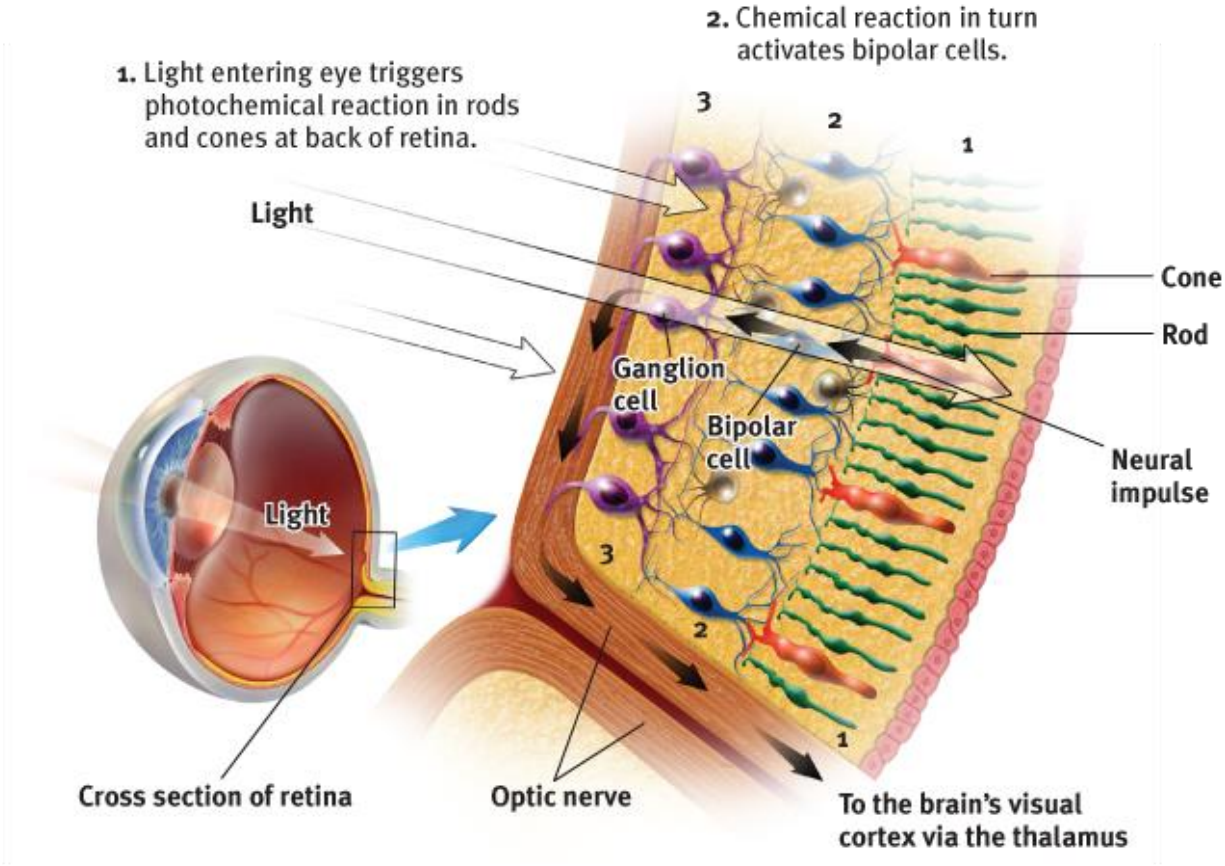

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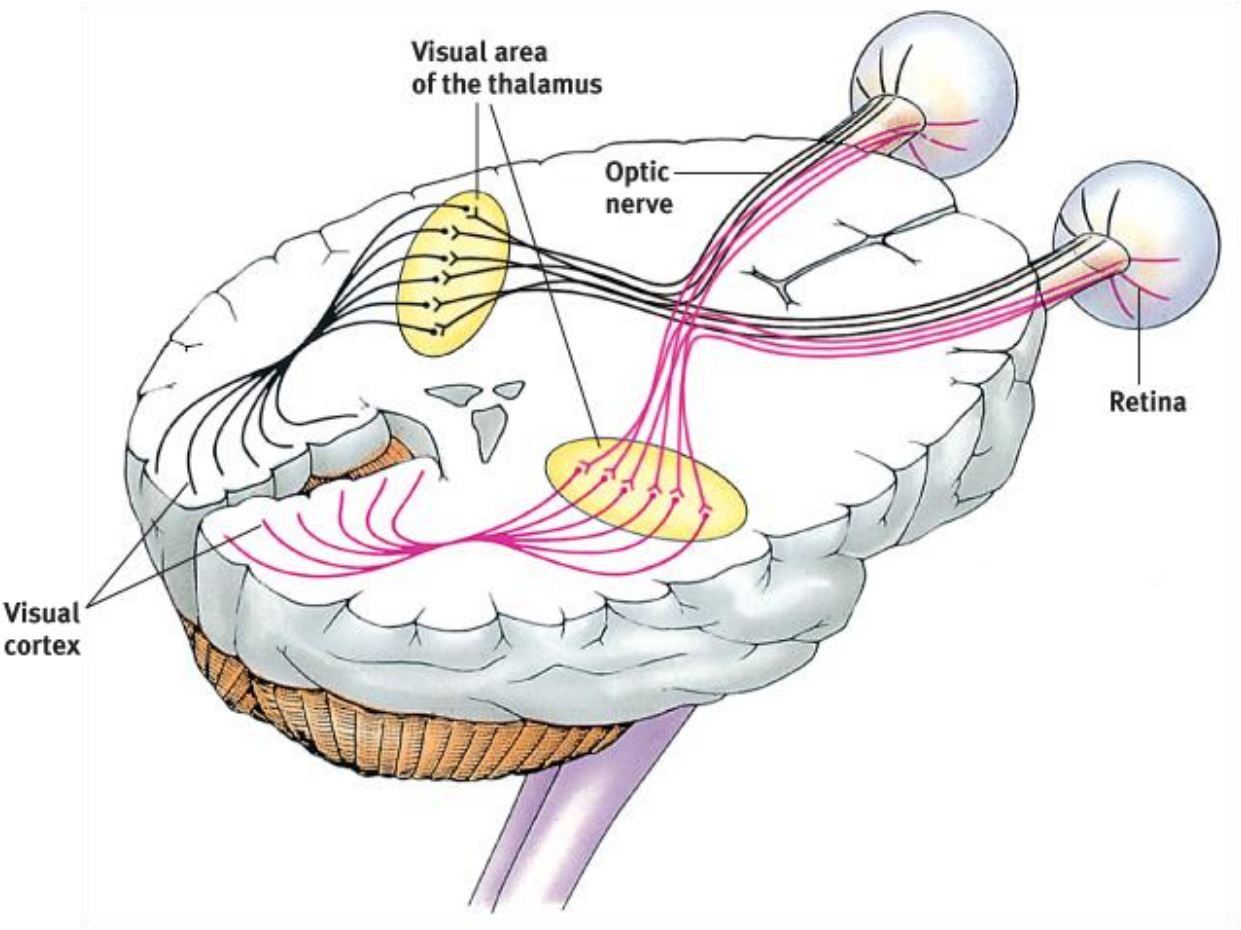

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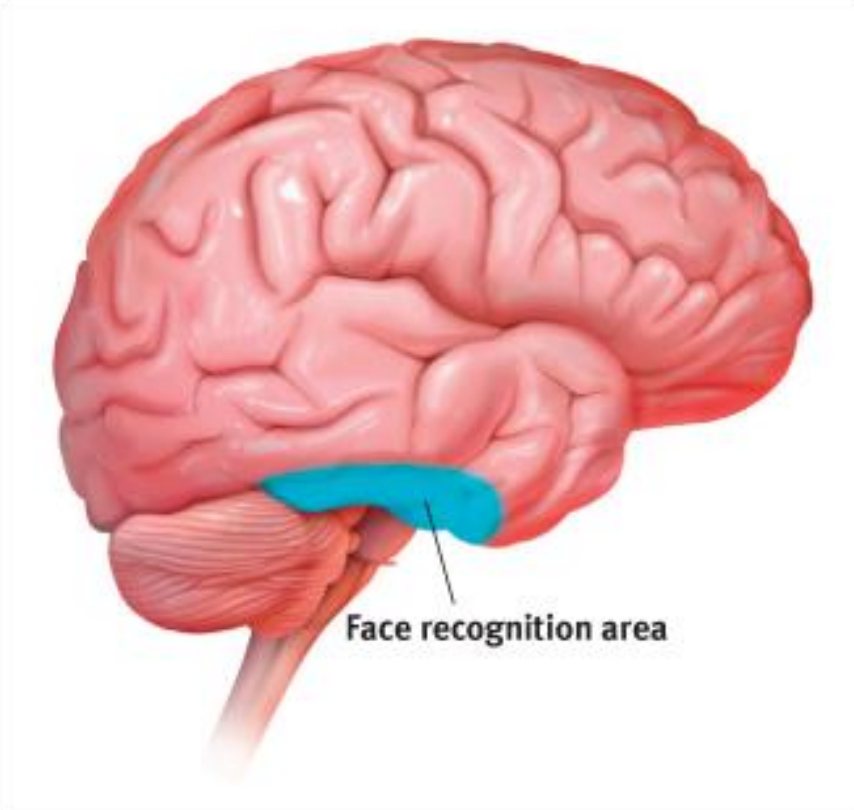

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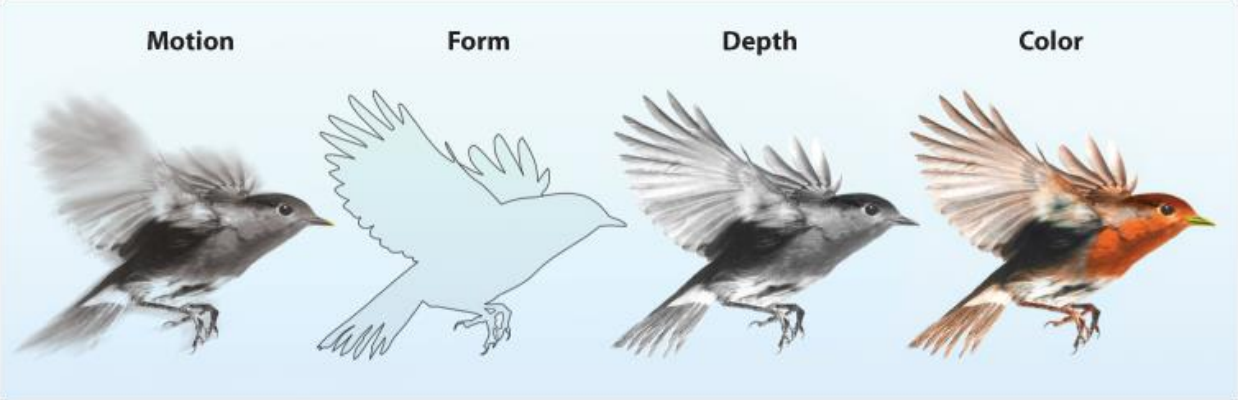

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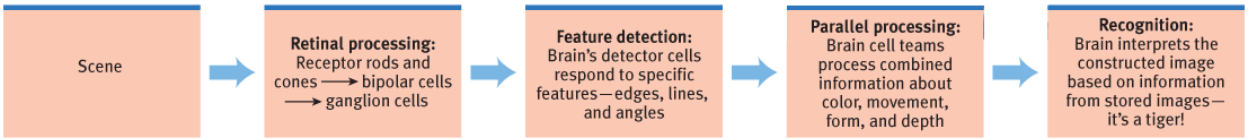

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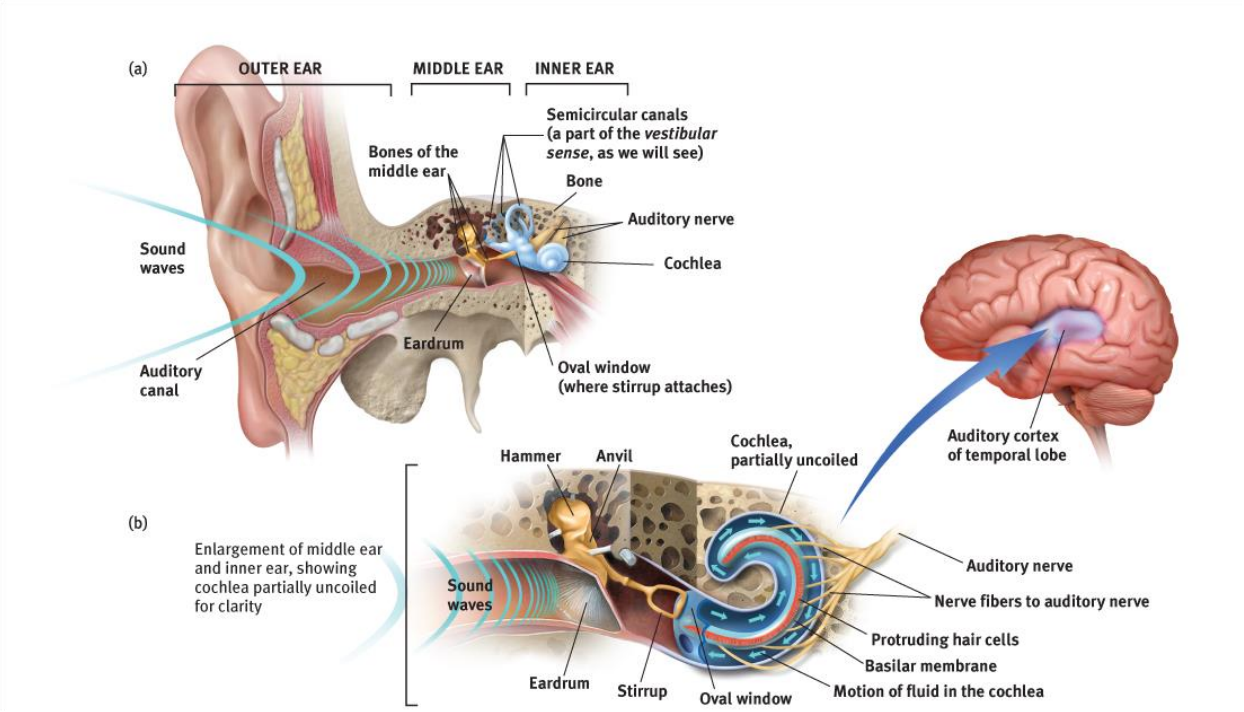
	Cones	Rods
Number	6 million	120 million
Location in retina	Center	Periphery
Sensitivity in dim light	Low	High
Color sensitivity	High	Low
Detail sensitivity	High	Low



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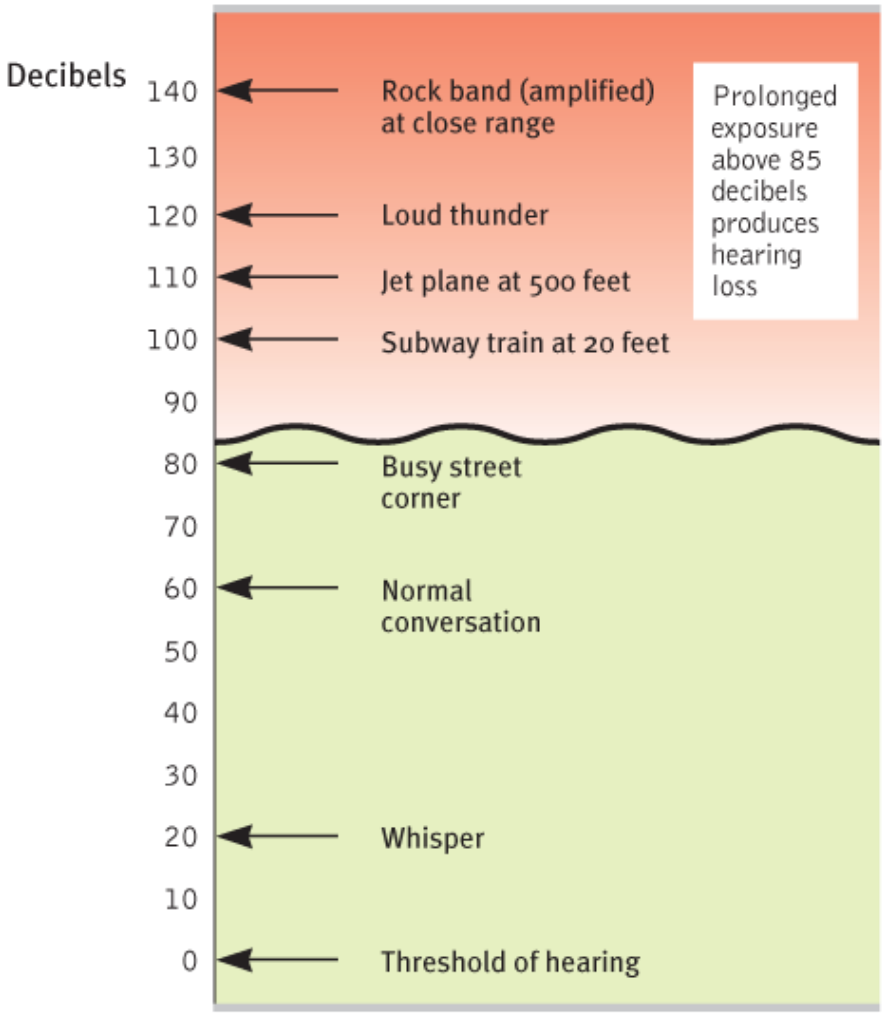

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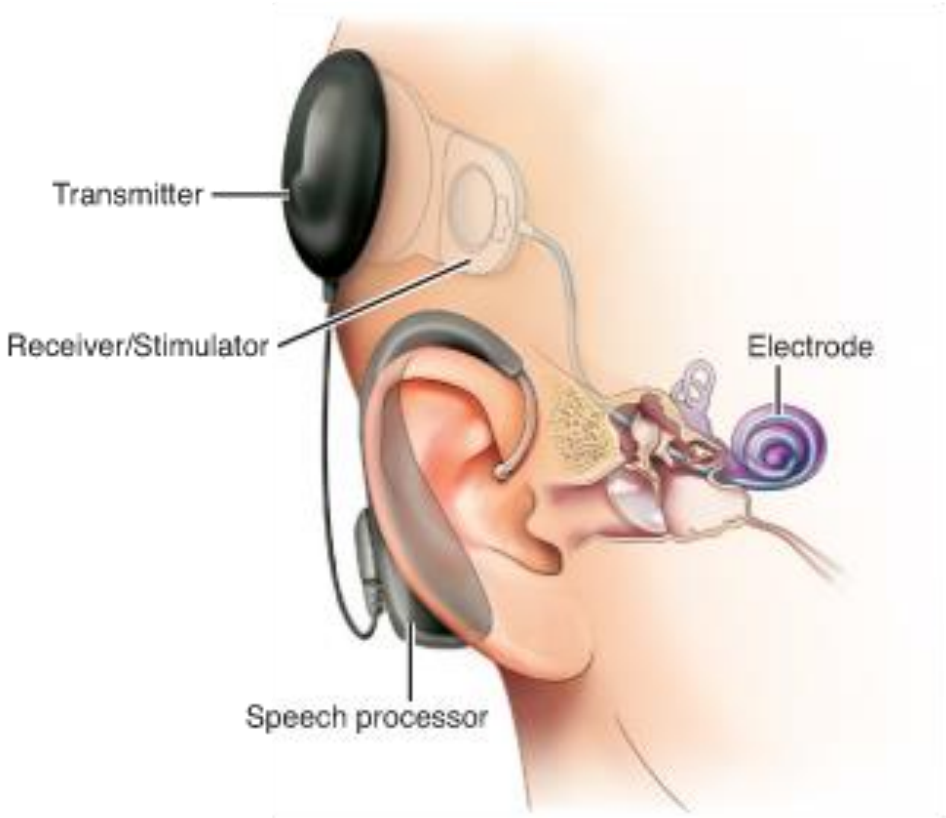

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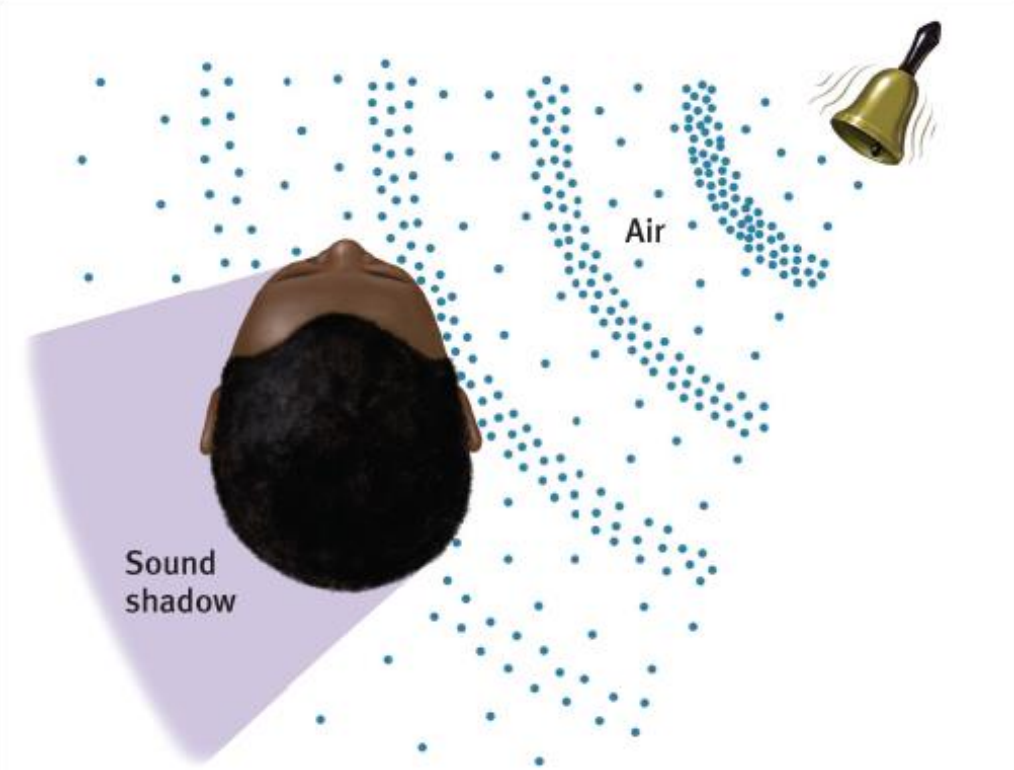

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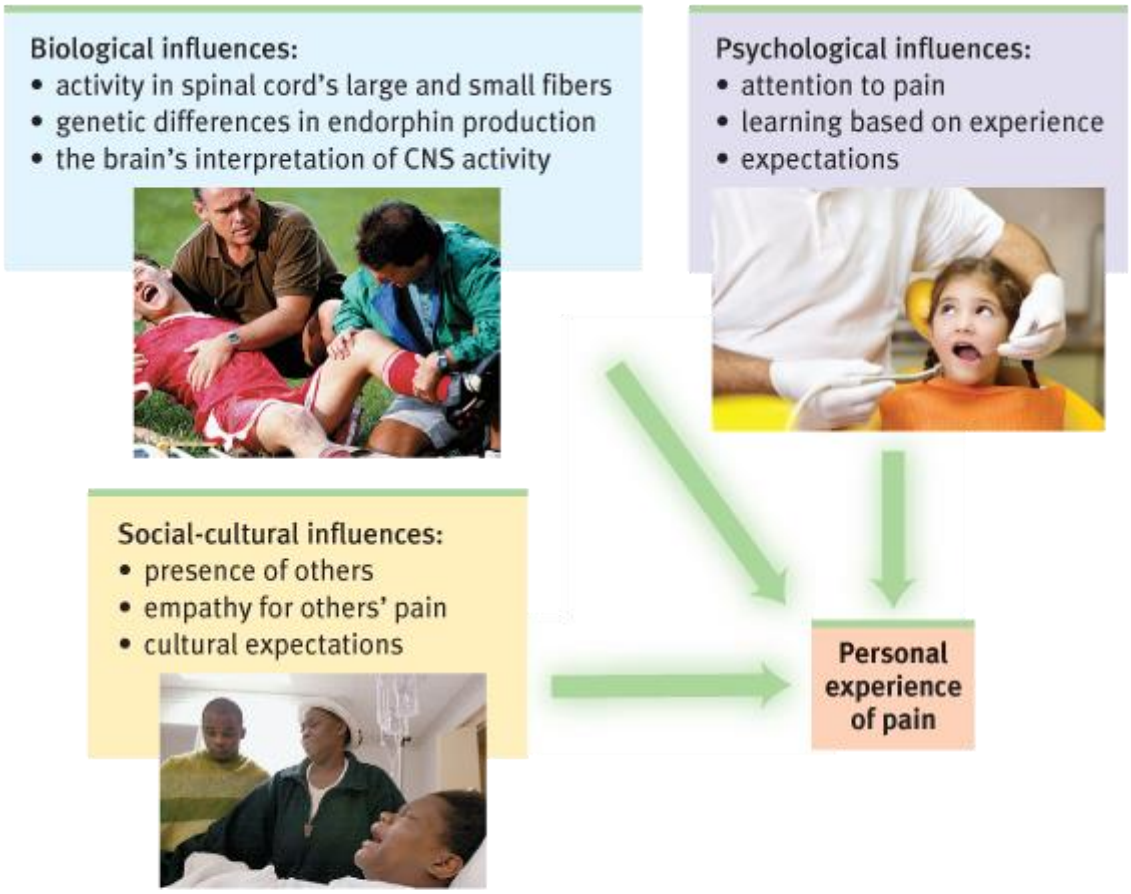

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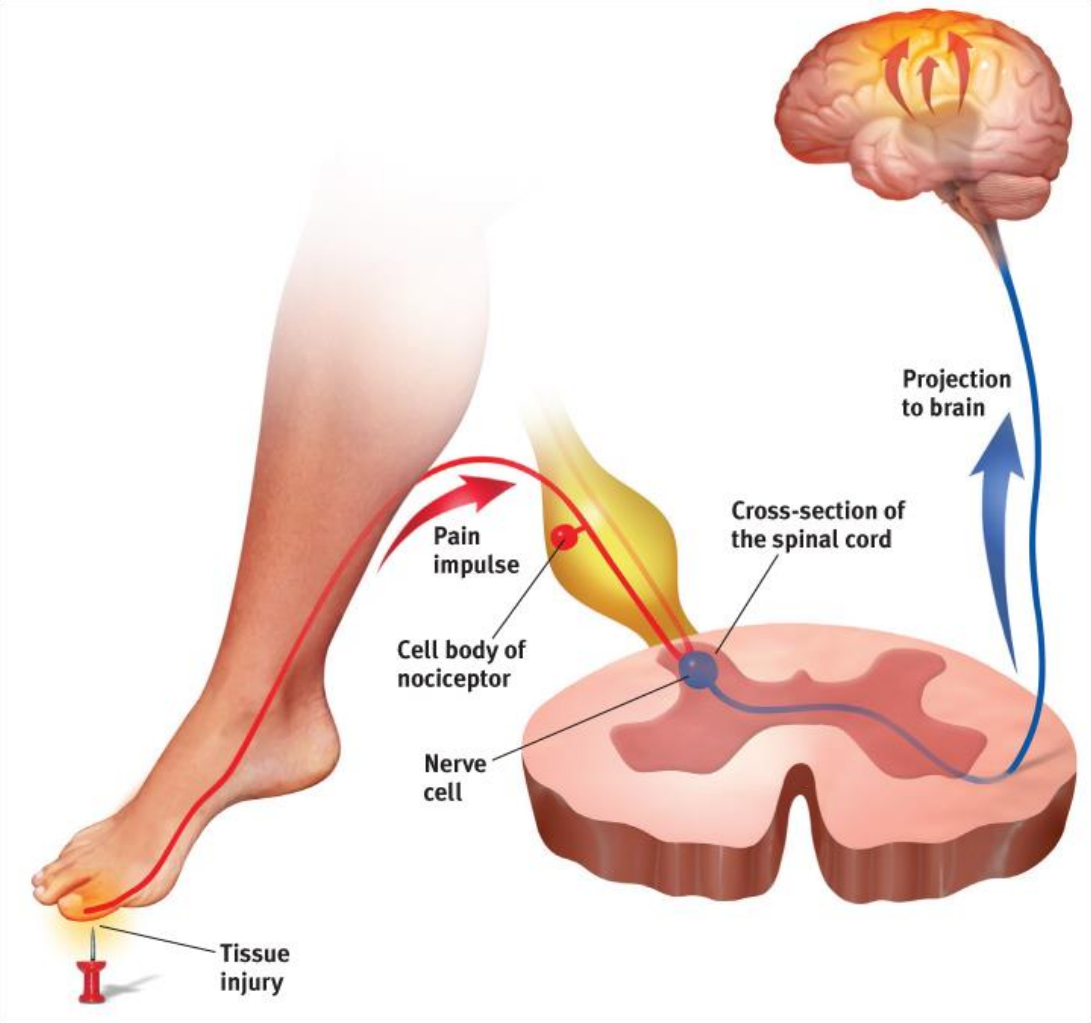

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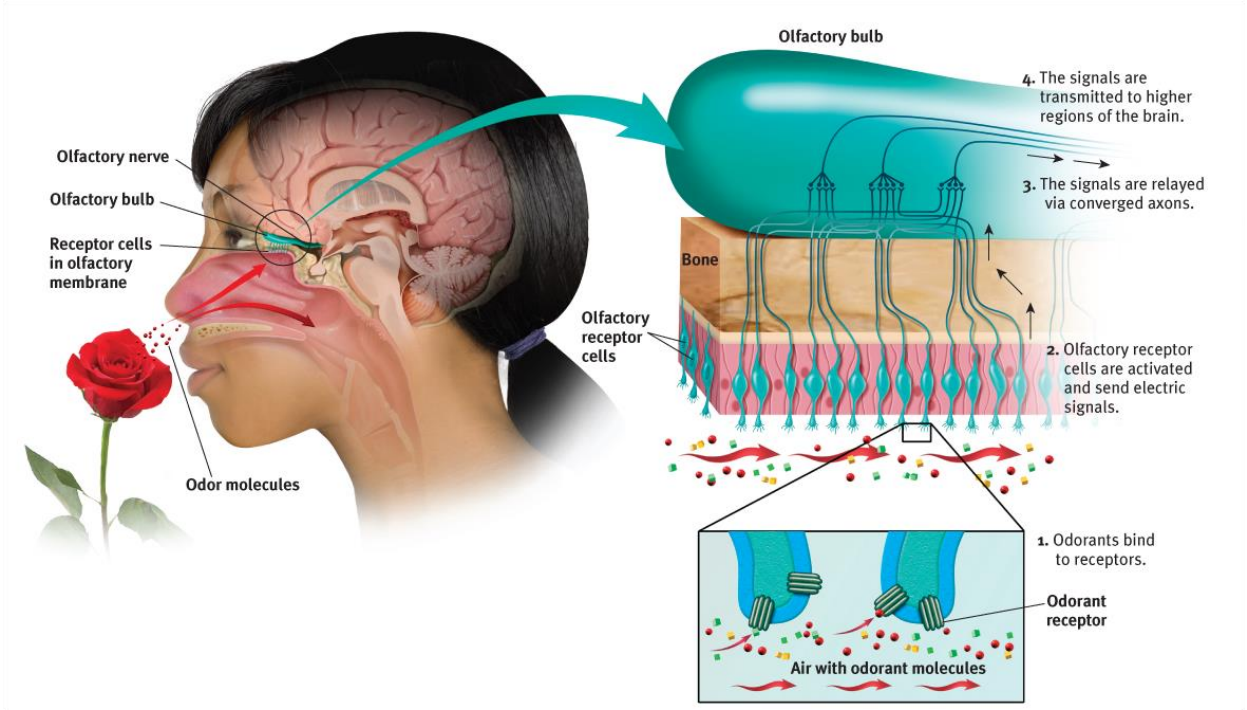

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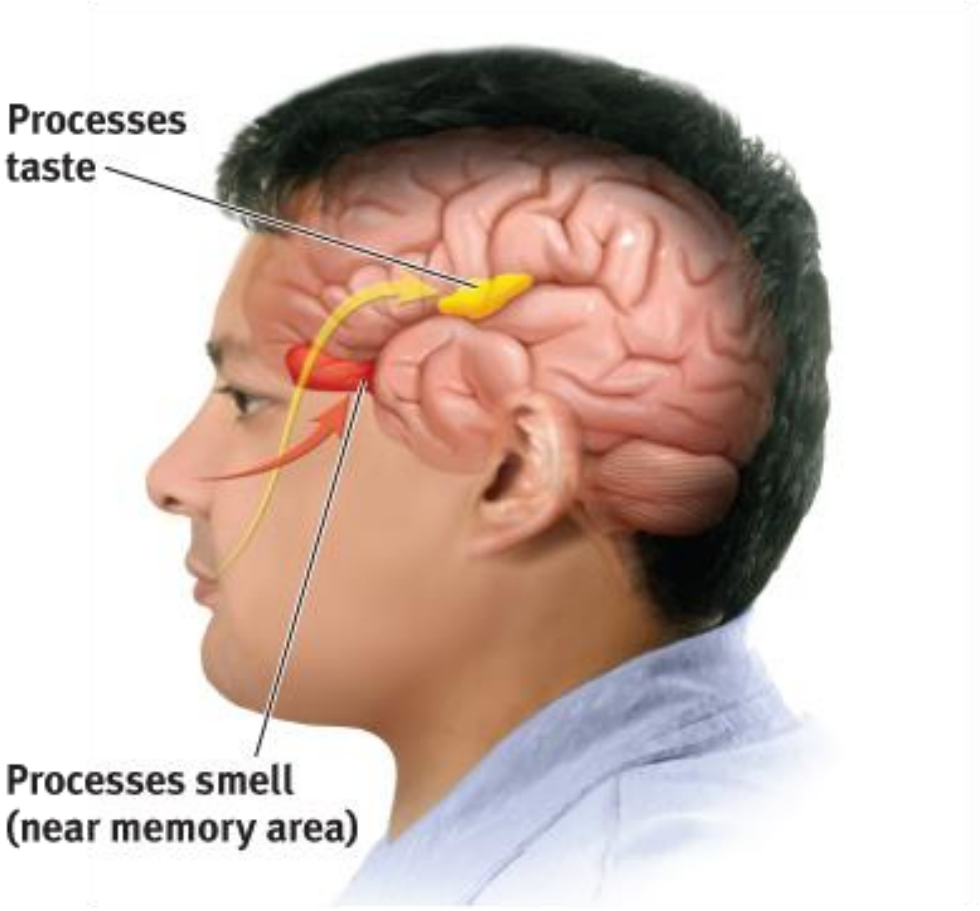

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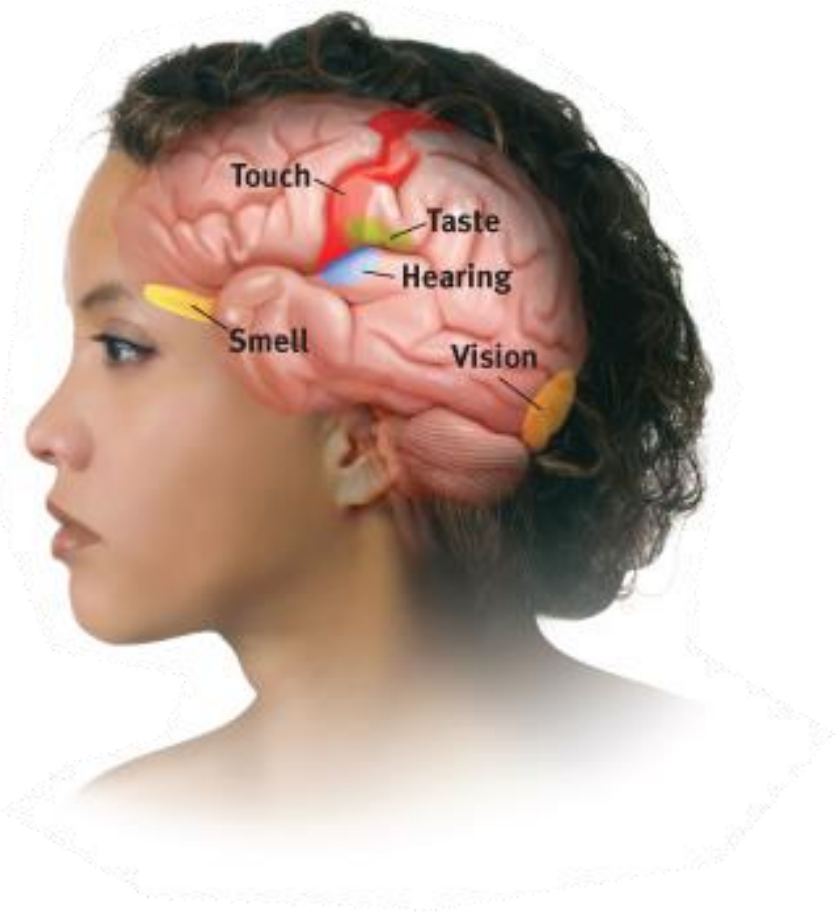

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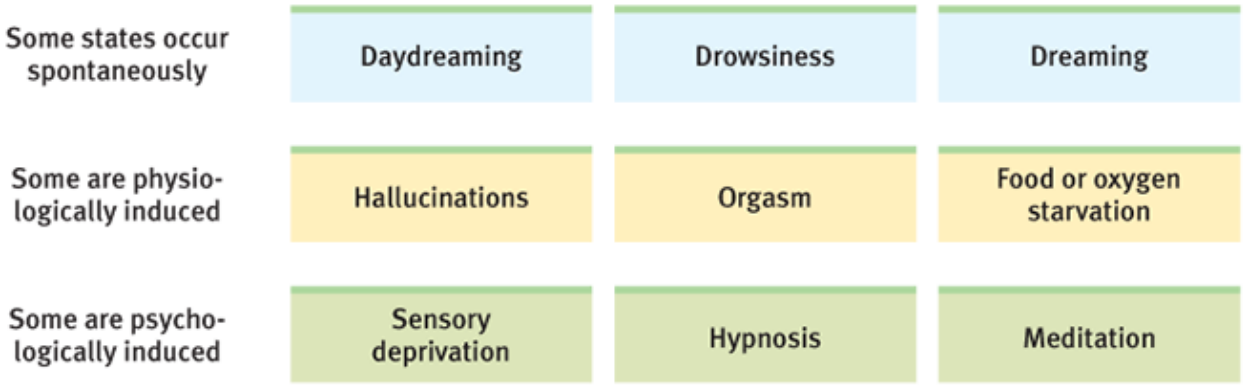
Taste	Indicates
Sweet	Energy source
Salty	Sodium essential to physiological processes
Sour	Potentially toxic acid
Bitter	Potential poisons
Umami	Proteins to grow and repair tissue

Sensory System	Source	Receptors	Key Brain Areas
Vision	Light waves striking the eye	Rods and cones in the retina	Occipital lobes
Hearing	Sound waves striking the outer ear	Cochlear hair cells (cilia) in the inner ear	Temporal lobes
Touch	Pressure, warmth, cold, harmful chemicals	Receptors (including pain-sensitive nociceptors), mostly in the skin, which detect pressure, warmth, cold, and pain	Somatosensory cortex
Taste	Chemical molecules in the mouth	Basic taste receptors for sweet, sour, salty, bitter, and umami	Frontal temporal lobe border
Smell	Chemical molecules breathed in through the nose	Millions of receptors at top of nasal cavities	Olfactory bulb
Body position—kinesthesia	Any change in position of a body part, interacting with vision	Kinesthetic sensors in joints, tendons, and muscles	Cerebellum
Body movement—vestibular sense	Movement of fluids in the inner ear caused by head/body movement	Hair-like receptors in the ears' semicircular canals and vestibular sacs	Cerebellum



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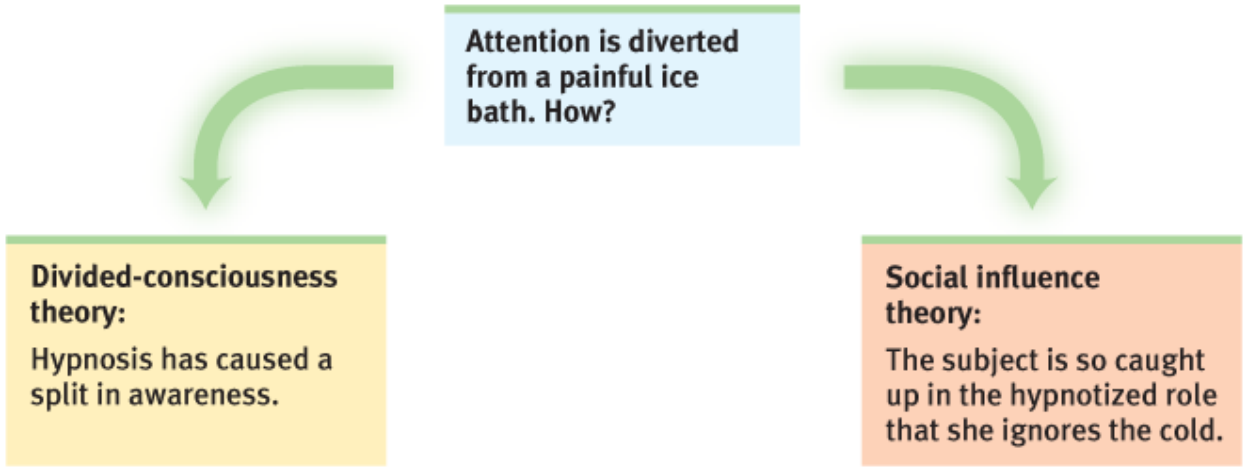

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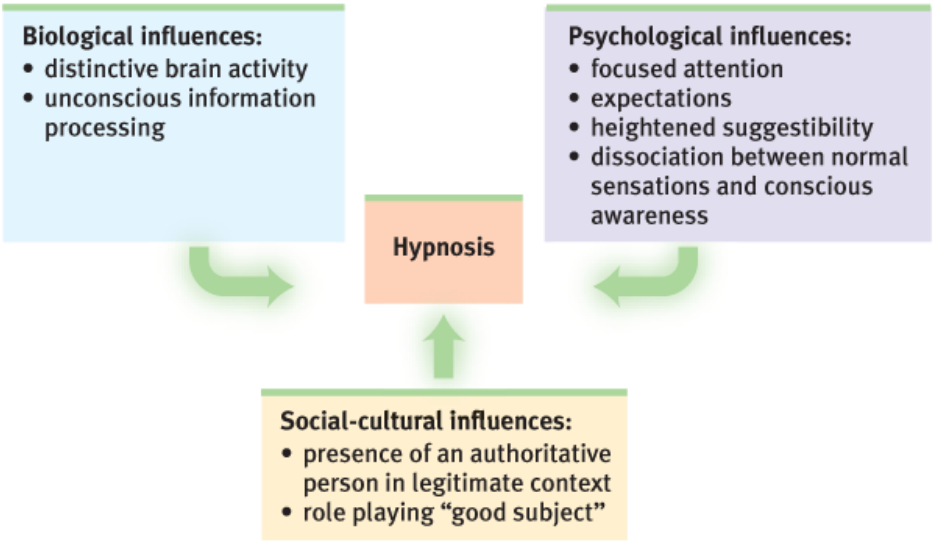

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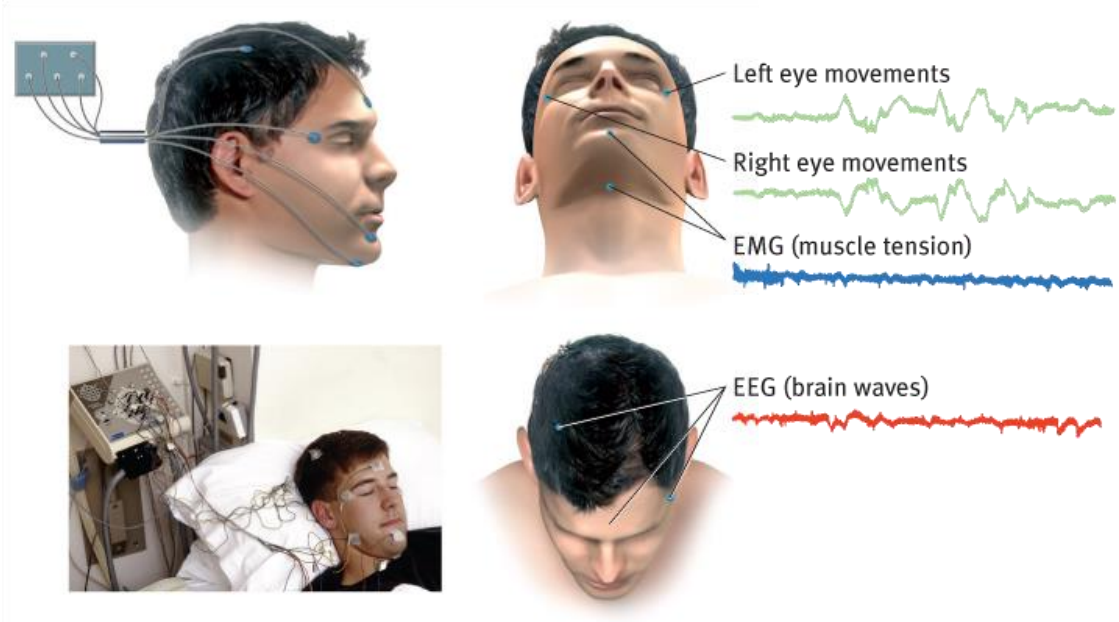

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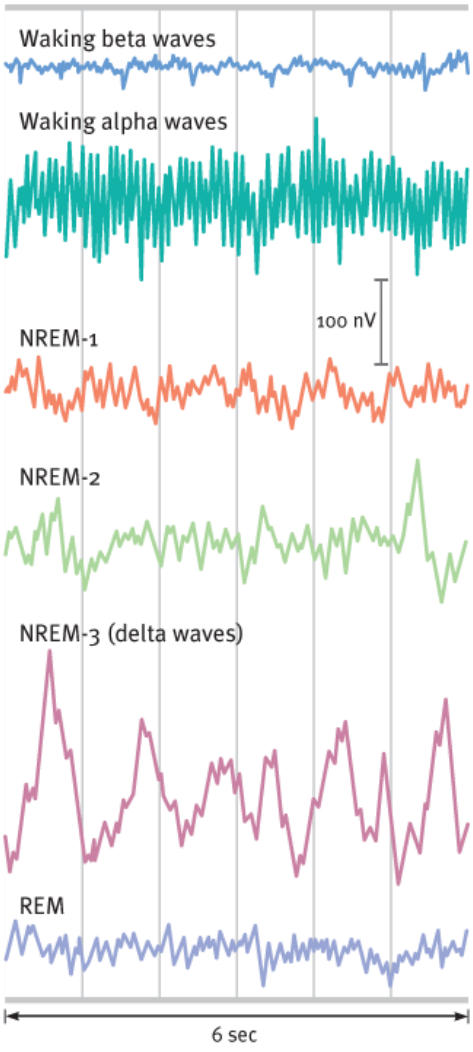

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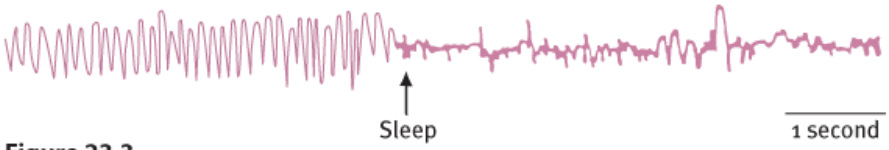

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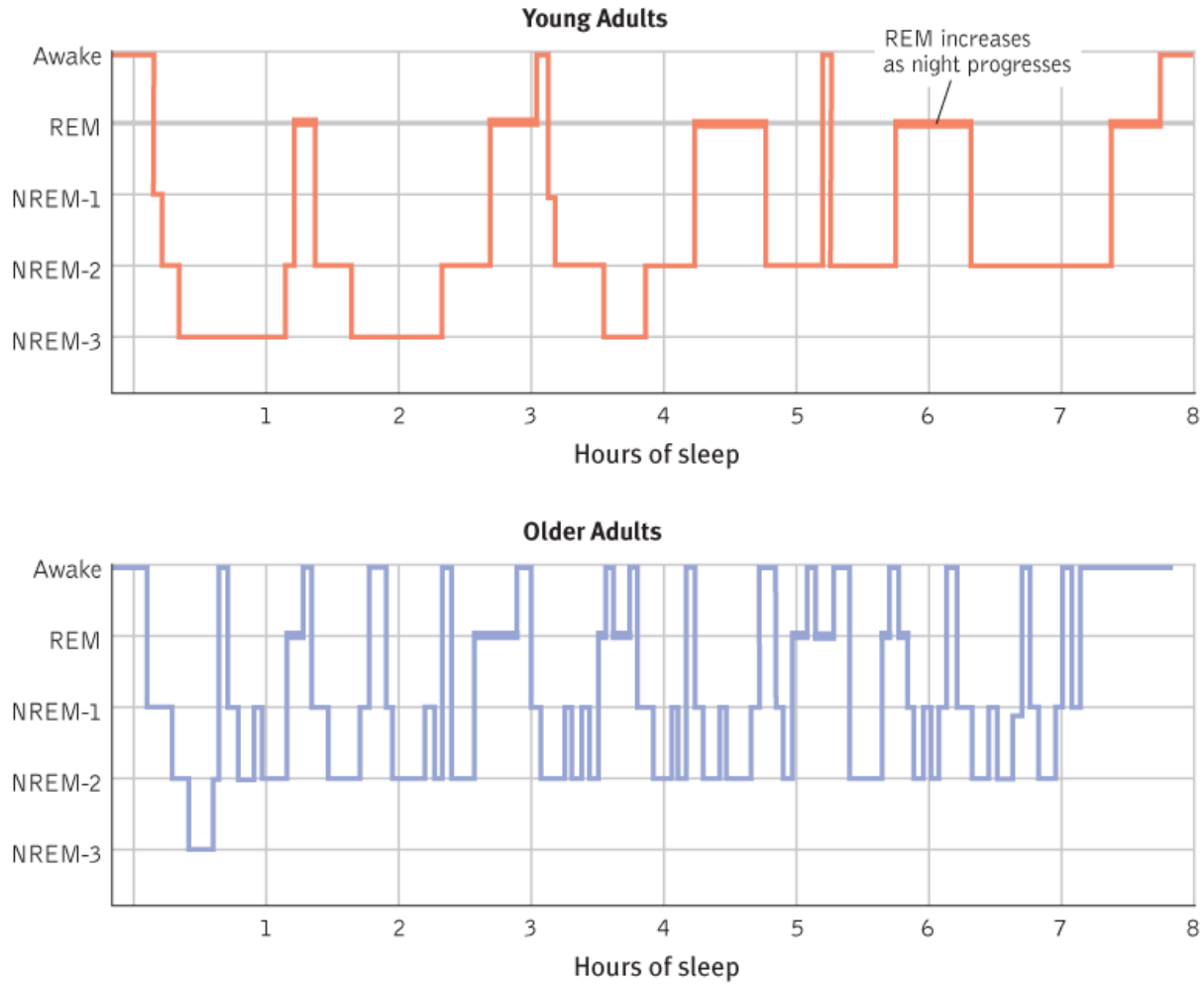

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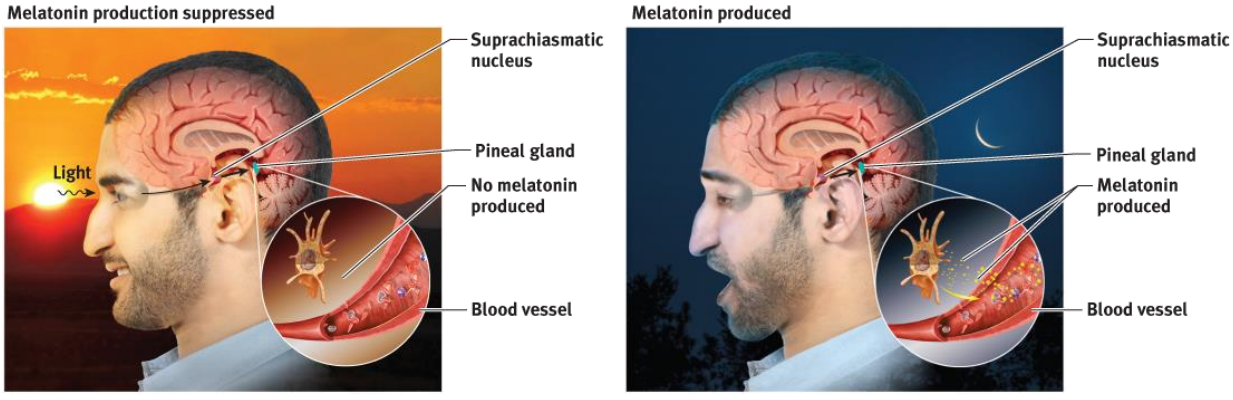

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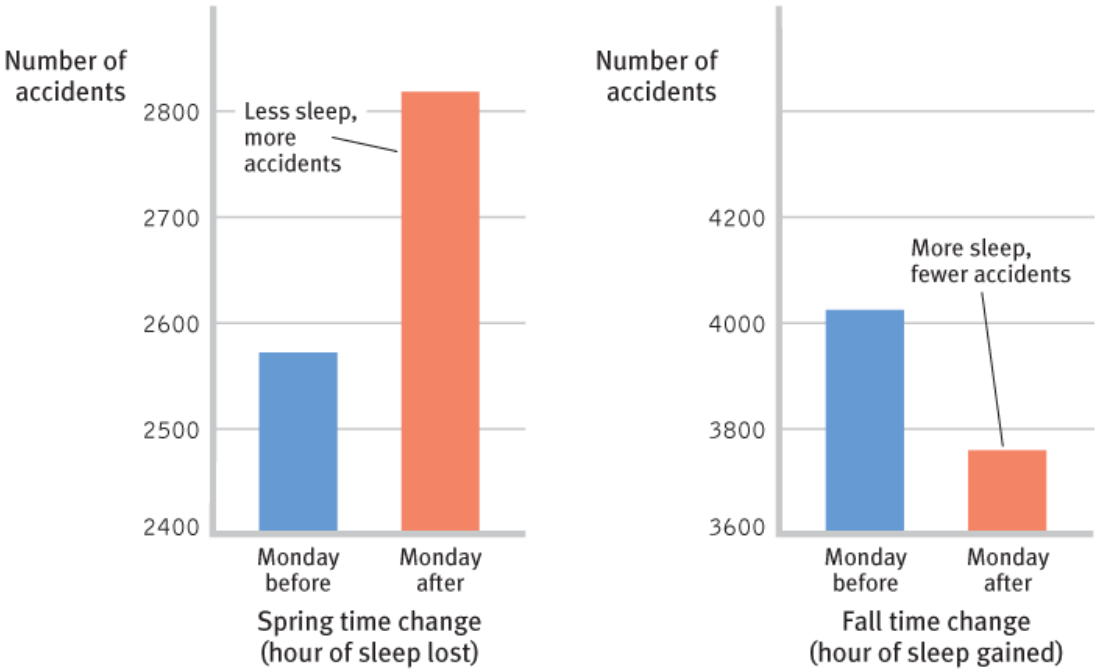

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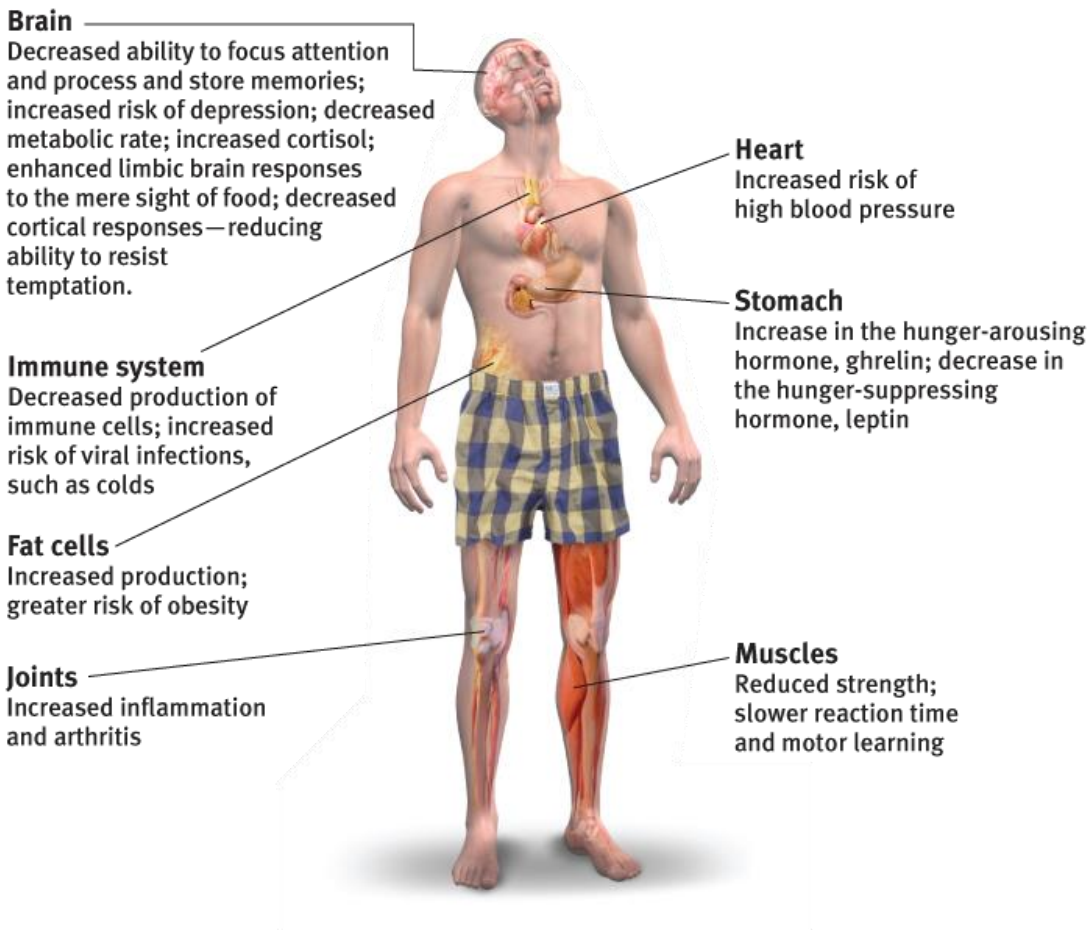

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(a) Learning

(b) Sleep consolidates our learning into long-term memory.

(c) Learning is retained.

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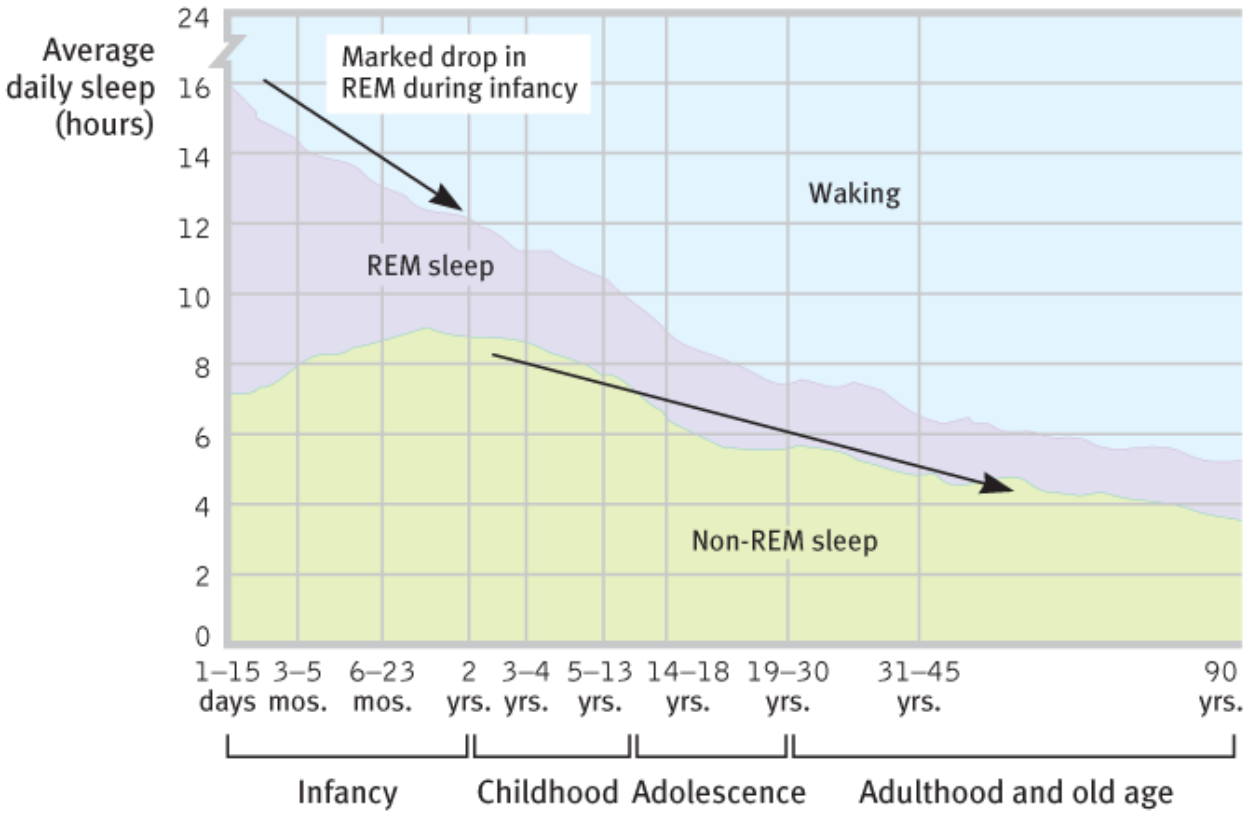

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Disorder	Rate	Description	Effects
Insomnia	1 in 10 adults; 1 in 4 older adults	Ongoing difficulty falling or staying asleep.	Chronic tiredness. Reliance on sleeping pills and alcohol, which reduce REM sleep and lead to tolerance— a state in which increasing doses are needed to produce an effect.
Narcolepsy	1 in 2000 adults	Sudden attacks of overwhelming sleepiness.	Risk of falling asleep at a dangerous moment. Narcolepsy attacks usually last less than 5 minutes, but they can happen at the worst and most emotional times. Everyday activities, such as driving, require extra caution.
Sleep apnea	1 in 20 adults	Stopping breathing repeatedly while sleeping.	Fatigue and depression (as a result of slow-wave sleep deprivation). Associated with obesity (especially among men).
Sleepwalking and sleeptalking[1]	1–15 in 100 in the general population for sleepwalking; about half of young children for sleeptalking	Doing normal waking activities (sitting up, walking, speaking) while asleep. Sleeptalking can occur during any sleep stage. Sleepwalking happens in NREM-3 sleep.	Few serious concerns. Sleepwalkers return to their beds on their own or with the help of a family member, rarely remembering their trip the next morning.

Night terrors	1 in 100 adults; 1 in 30 children	Appearing terrified, talking nonsense, sitting up, or walking around during NREM-3 sleep; different from nightmares.	Doubling of a child's heart and breathing rates during the attack. Luckily, children remember little or nothing of the fearful event the next day. As people age, night terrors become more and more rare.

Theory	Explanation	Critical Considerations
Freud's wish-fulfillment	Dreams preserve sleep and provide a "psychic safety valve"— expressing otherwise unacceptable feelings; contain manifest (remembered) content and a deeper layer of latent content (a hidden meaning).	Lacks any scientific support; dreams may be interpreted in many different ways.
Information-processing	Dreams help us sort out the day's events and consolidate our memories.	But why do we sometimes dream about things we have not experienced and about past events?
Physiological function	Regular brain stimulation from REM sleep may help develop and preserve neural pathways.	This does not explain why we experience meaningful dreams.
Activation-synthesis	REM sleep triggers neural activity that evokes random visual memories, which our sleeping brain weaves into stories.	But it's our brain weaving the stories, so this still tells us something about ourselves.
Cognitive development	Dream content reflects dreamers' level of cognitive development —their	Does not propose an adaptive

	knowledge and understanding. Dreams simulate our lives, including worst-case scenarios.	function of dreams.

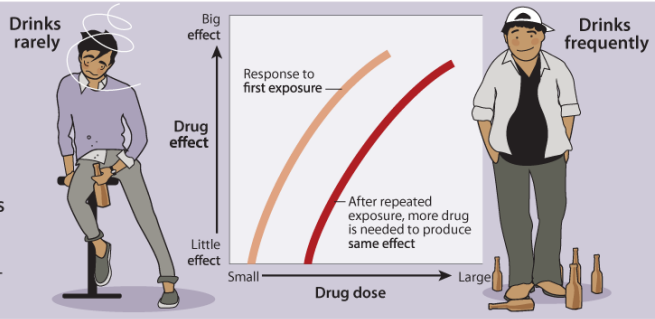
25-2 What roles do tolerance and addiction play in substance use disorders, and how has the concept of addiction changed?

Thinking Critically About:

Tolerance and Addiction

Tolerance

With continued use of alcohol and some other drugs (but not marijuana), users develop **tolerance** as their brain chemistry adapts to offset the drug effect (*neuroadaptation*). To experience the same effect, users require larger and larger doses, which increase the risk of becoming *addicted* and developing a *substance use disorder*.

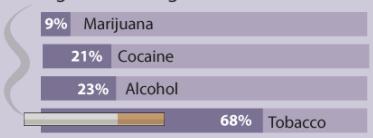


Addiction

Caused by ever-increasing doses of most psychoactive drugs (including prescription painkillers). Prompts user to crave the drug, to continue use despite adverse consequences, and to struggle when attempting to ***withdraw*** from it. These behaviors suggest a *substance use disorder.* Once in the grip of addiction, people *want* the drug more than they *like* the drug.[1]

4% of the world's people have an alcohol use disorder.[2]

The lifetime odds of getting hooked after using various drugs:



Source: National Epidemiologic Survey on Alcohol and Related Conditions[3]

Therapy or group support, such as from Alcoholics Anonymous, may help. It also helps to believe that addictions are controllable and that people can change. Many people do voluntarily stop using addictive drugs, without any treatment. Most ex-smokers have kicked the habit on their own.[4]

Behavior Addictions

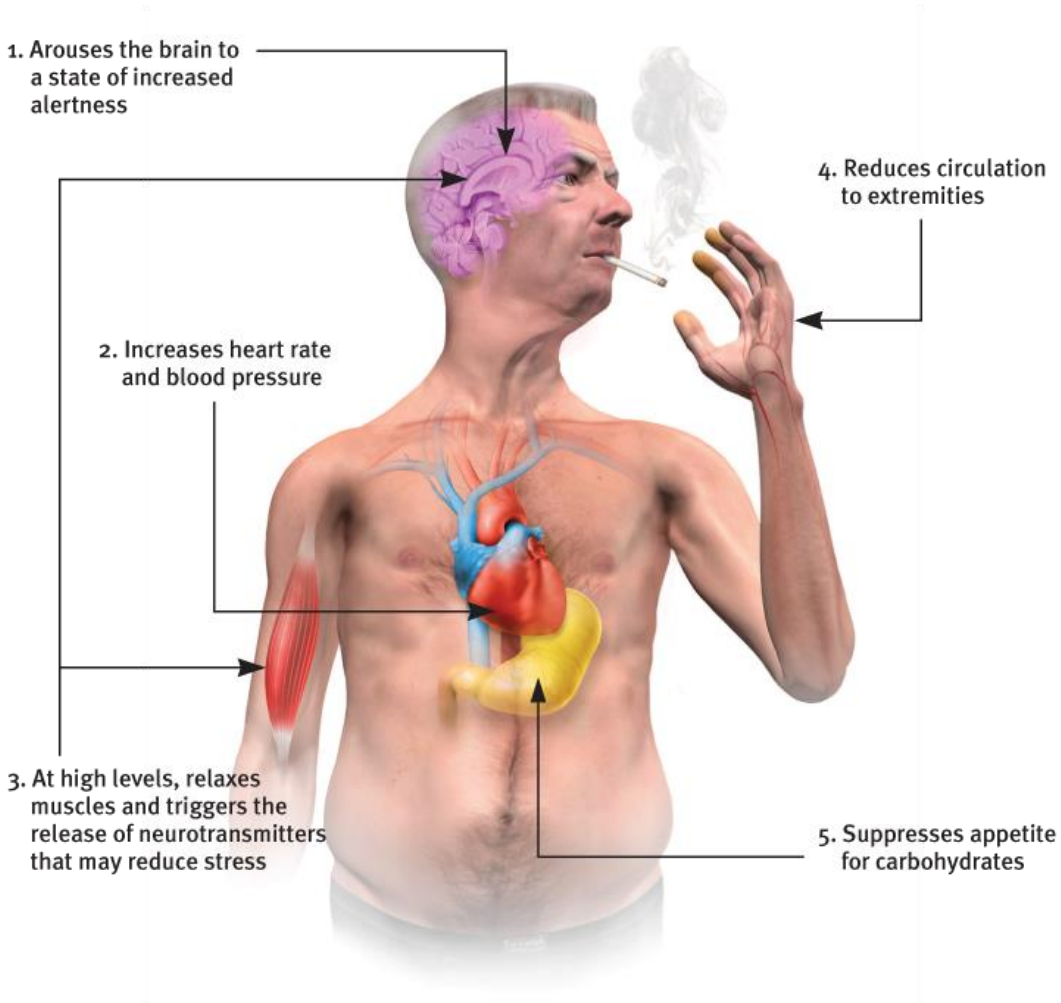
Psychologists try to avoid using "addiction" to label driven, excessive behaviors such as eating, work, sex, and accumulating wealth.

Yet some behaviors can become compulsive and dysfunctional—similar to problematic alcohol and drug use.[5]

- Behavior addictions include *gambling disorder.*
- *Internet gaming disorder* has been proposed "for further study."[6] Some Internet users display an apparent inability to resist logging on and staying on, even when this excessive use impairs their work and relationships.[7]

Psychological and drug therapies may be "highly effective" for problematic Internet use.[8]

1. Berridge et al., 2009; Robinson & Berridge, 2003. 2. WHO, 2014. 3. Lopez-Quintero et al., 2011. 4. Newport, 2013. 5. Gentile, 2009; Griffiths, 2001; Hoeft et al., 2008. 6. American Psychiatric Association, 2013. ; Wittek et al., 2016; Wu et al., 2016. 7. Cheng & Li, 2014; Ko et al., 2005. 8. Winkler et al., 2013.



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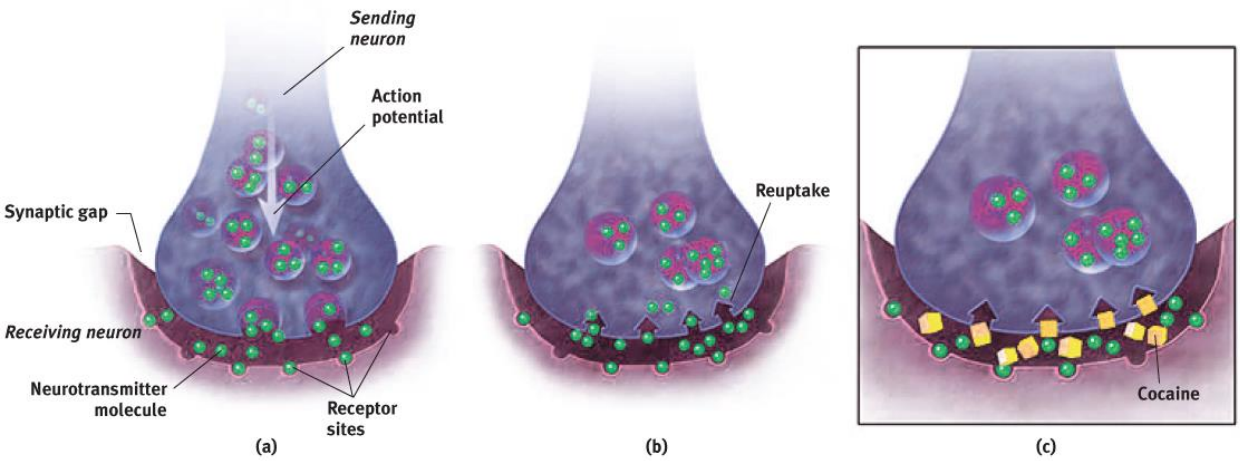

Neurotransmitters carry a message from a sending neuron across a synapse to receptor sites on a receiving neuron.

The sending neuron normally reabsorbs excess neurotransmitter molecules, a process called *reuptake*.

By binding to the sites that normally reabsorb neurotransmitter molecules, cocaine blocks reuptake of dopamine, norepinephrine, and serotonin (Ray & Ksir, 1990). The extra neurotransmitter molecules therefore remain in the synapse, intensifying their normal mood-altering effects and producing a euphoric rush. When the cocaine level drops, the absence of these neurotransmitters produces a crash.

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According to the American Psychiatric Association, a person may be diagnosed with *substance use disorder* when drug use continues despite significant life disruption. Resulting brain changes may persist after quitting use of the substance (thus leading to strong cravings when exposed to people and situations that trigger memories of drug use). The severity of substance use disorder varies from *mild* (two to three of the indicators listed below) to *moderate* (four to five indicators) to *severe* (six or more indicators). (*Source:* American Psychiatric Association, 2013.)

Diminished Control

1. Uses more substance, or for longer, than intended.
2. Tries unsuccessfully to regulate use of substance.
3. Spends much time acquiring, using, or recovering from effects of substance.
4. Craves the substance.

Diminished Social Functioning

5. Use disrupts commitments at work, school, or home.
6. Continues use despite social problems.
7. Causes reduced social, recreational, and work activities.

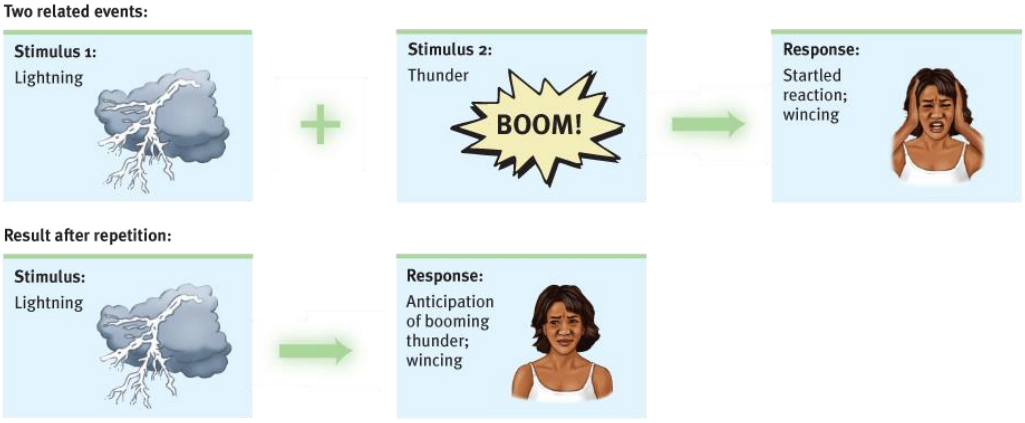
Hazardous Use

8. Continues use despite hazards.
9. Continues use despite worsening physical or psychological problems.

Drug Action

10. Experiences tolerance (needing more substance for the desired effect).
11. Experiences withdrawal when attempting to end use.

Drug	Type	Pleasurable Effects	Negative Aftereffects
Alcohol	Depressant	Initial high followed by relaxation and disinhibition	Depression, memory loss, organ damage, impaired reactions
Heroin	Depressant	Rush of euphoria, relief from pain	Depressed physiology, agonizing withdrawal
Caffeine	Stimulant	Increased alertness and wakefulness	Anxiety, restlessness, and insomnia in high doses; uncomfortable withdrawal
Nicotine	Stimulant	Arousal and relaxation, sense of well-being	Heart disease, cancer
Cocaine	Stimulant	Rush of euphoria, confidence, energy	Cardiovascular stress, suspiciousness, depressive crash
Methamphetamine	Stimulant	Euphoria, alertness, energy	Irritability, insomnia, hypertension, seizures
Ecstasy (MDMA)	Stimulant; mild hallucinogen	Emotional elevation, disinhibition	Dehydration, overheating, depressed mood, impaired cognitive and immune functioning
LSD	Hallucinogen	Visual “trip”	Risk of panic
Marijuana (THC)	Mild hallucinogen	Enhanced sensation, relief of pain, distortion of time, relaxation	Impaired learning and memory, increased risk of psychological disorders



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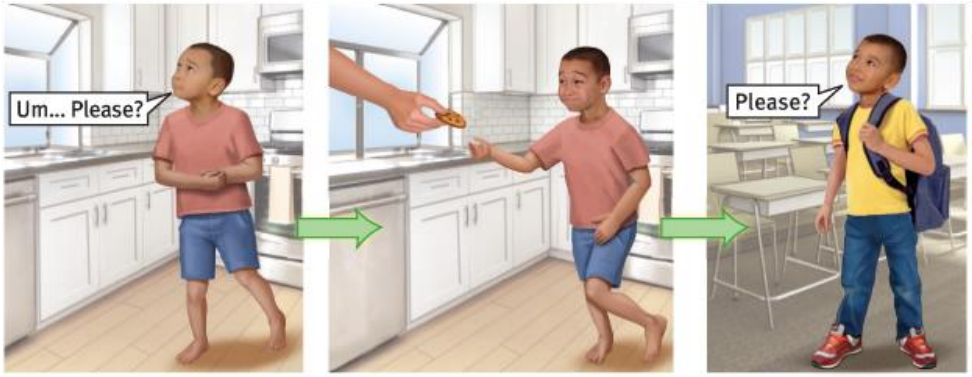

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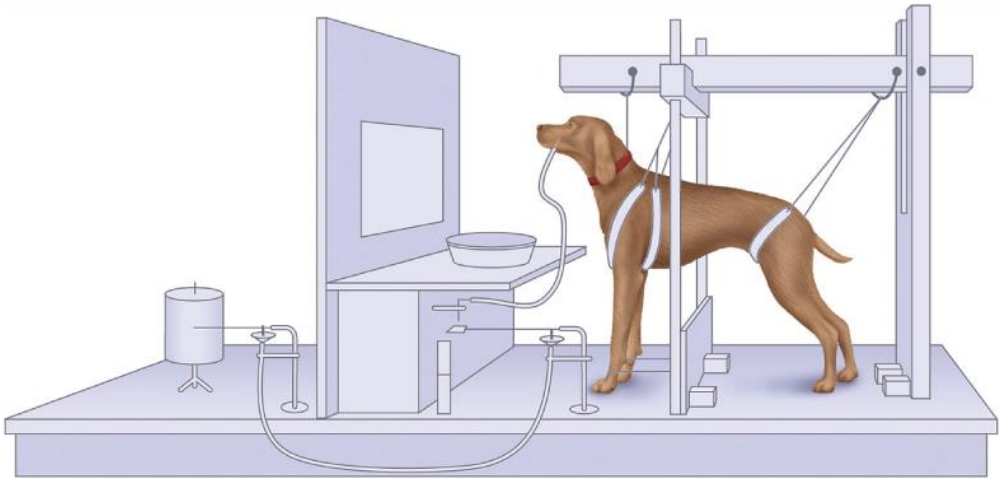

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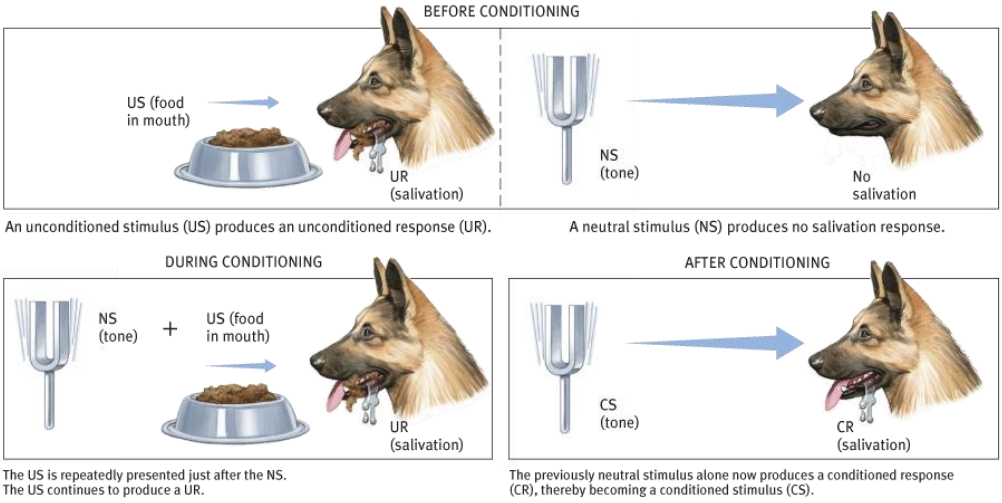

Figure 26.4
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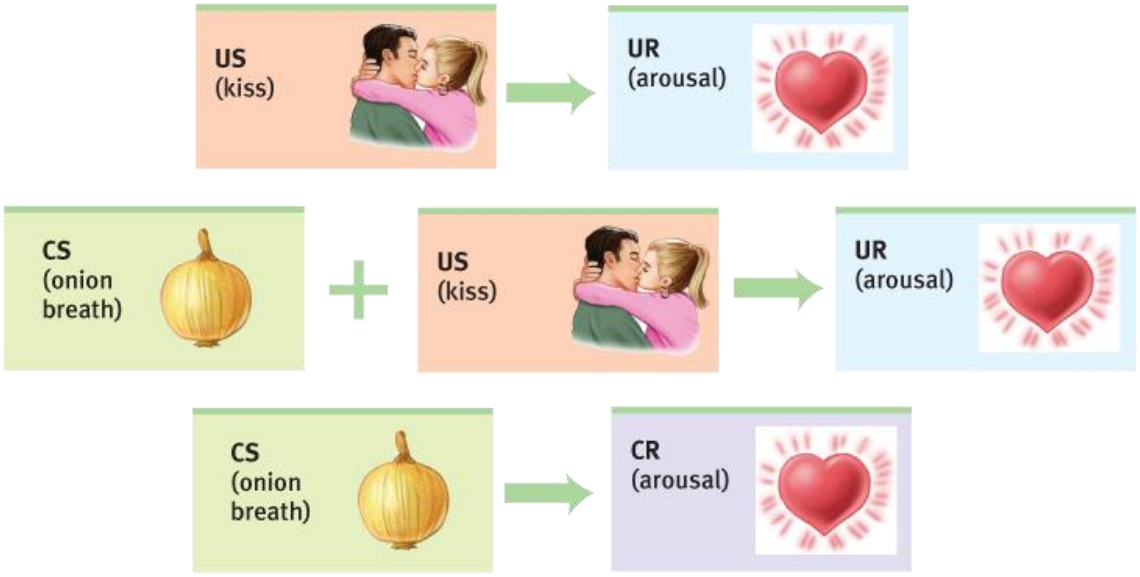

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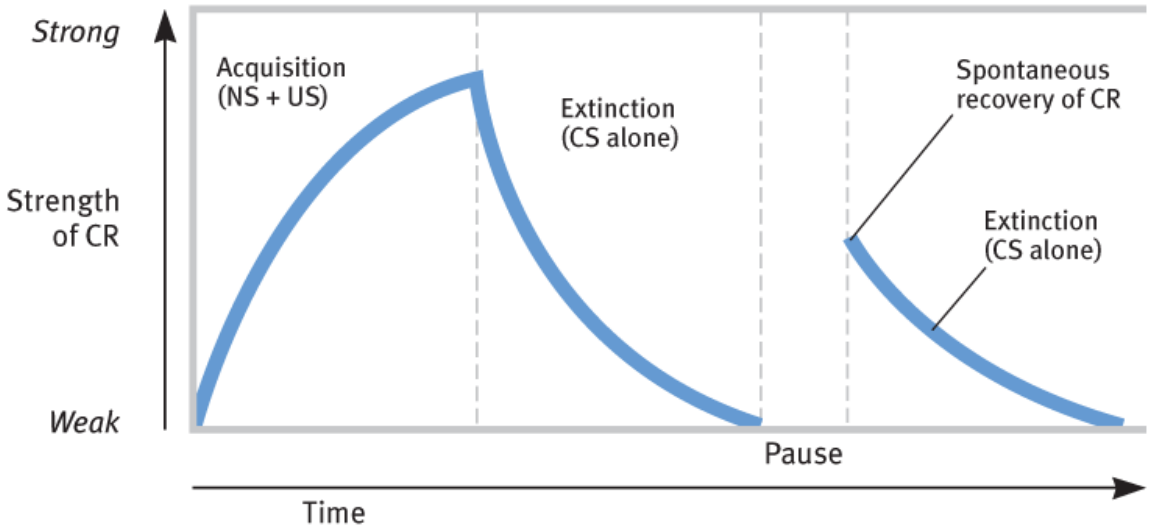

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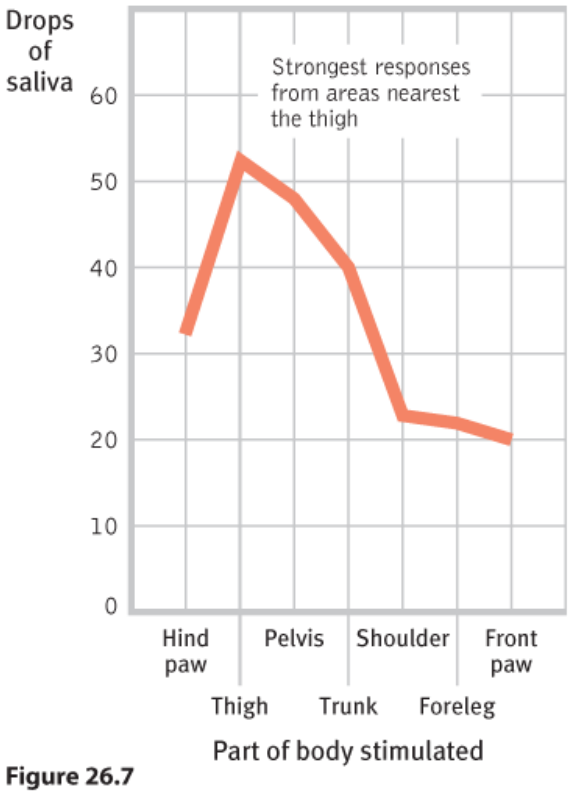

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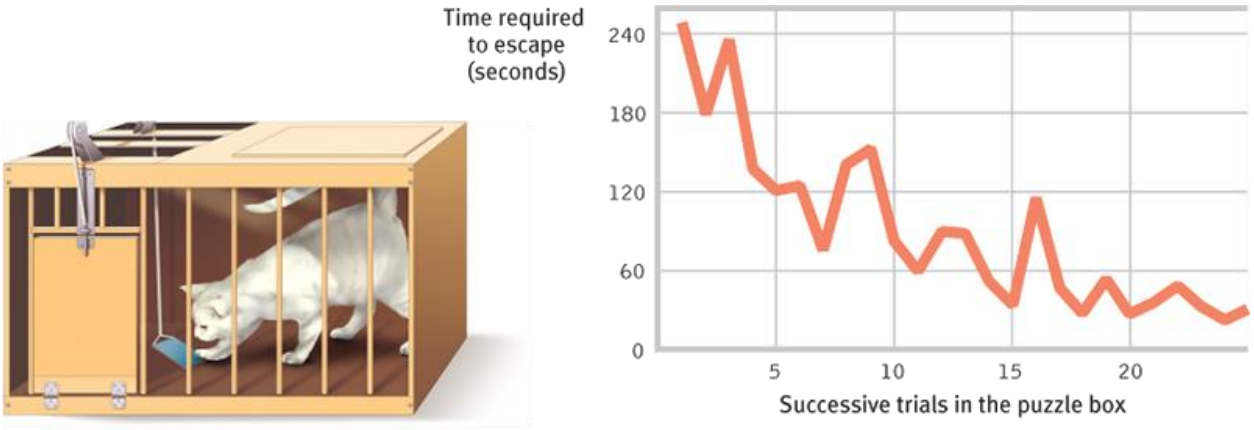

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Data from Thorndike, 1898.

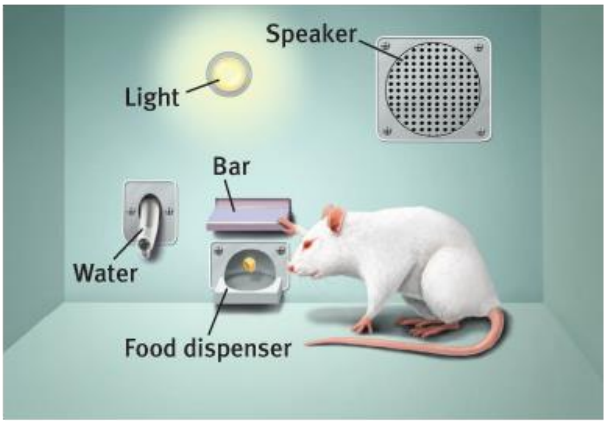

Figure 27.2
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Operant Conditioning Term	Description	Examples
Positive reinforcement	Add a desirable stimulus.	Pet a dog that comes when you call it;

		pay someone for work done.
Negative reinforcement	Remove an aversive stimulus.	Take painkillers to end pain; fasten seat belt to end loud beeping.

	Fixed	**Variable**
Ratio	*Every so many:* reinforcement after every *nth* behavior, such as buy 10 coffees, get 1 free, or pay workers per product unit produced	*After an unpredictable number:* reinforcement after a random number of behaviors, as when playing slot machines or fly fishing
Interval	*Every so often:* reinforcement for behavior after a fixed time, such as Tuesday discount prices	*Unpredictably often:* reinforcement for behavior after a random amount of time, as when studying for an unpredictable pop quiz

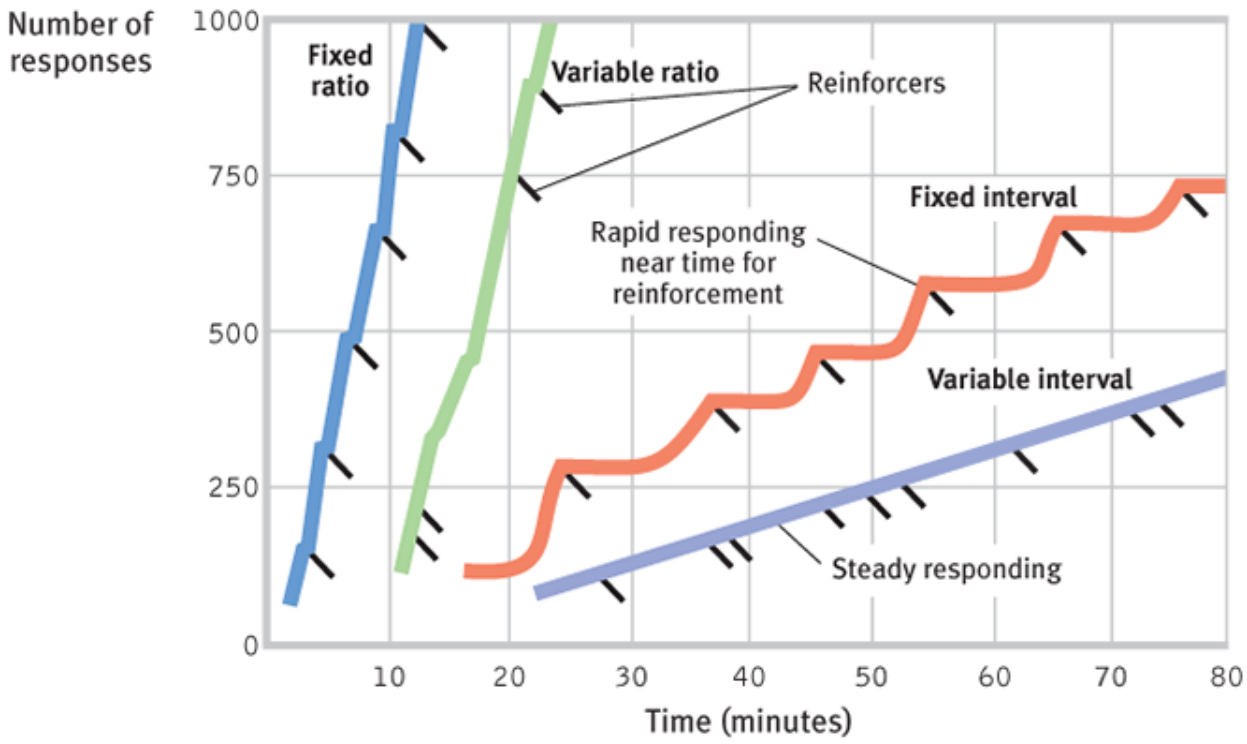

Figure 27.4
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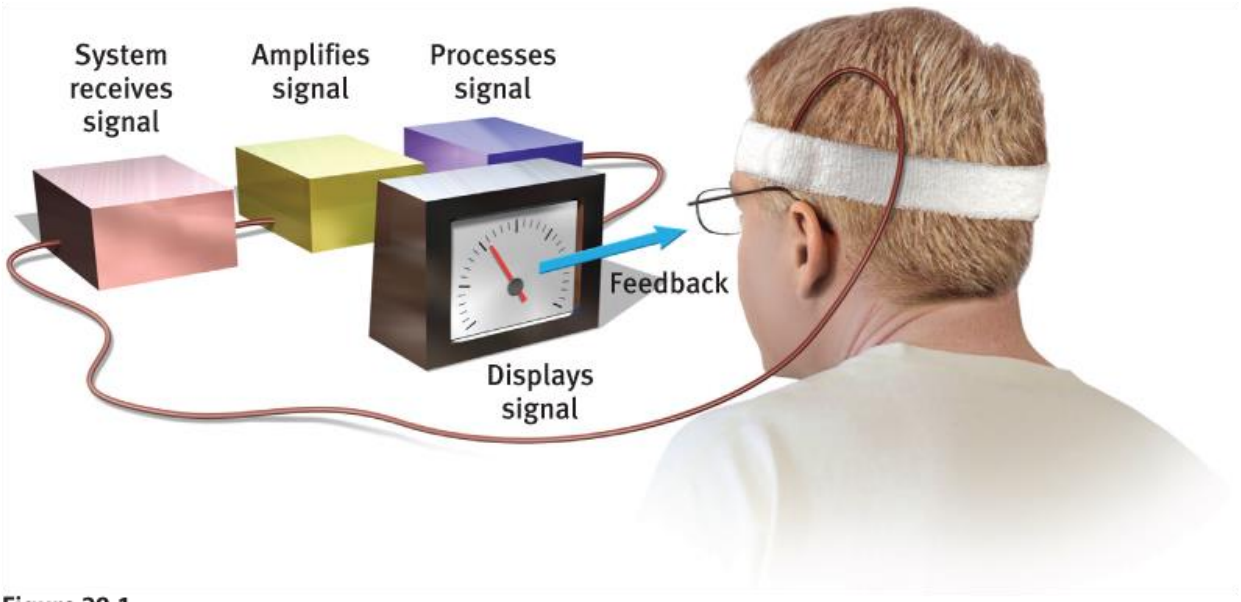
Data from Skinner, 1961.

Type of Punisher	Description	Examples
Positive punishment	Administer an aversive stimulus.	Spray water on a barking dog; give a traffic ticket for speeding.
Negative punishment	Withdraw a rewarding stimulus.	Take away a misbehaving teen's driving privileges; revoke a rude person's chat room access.



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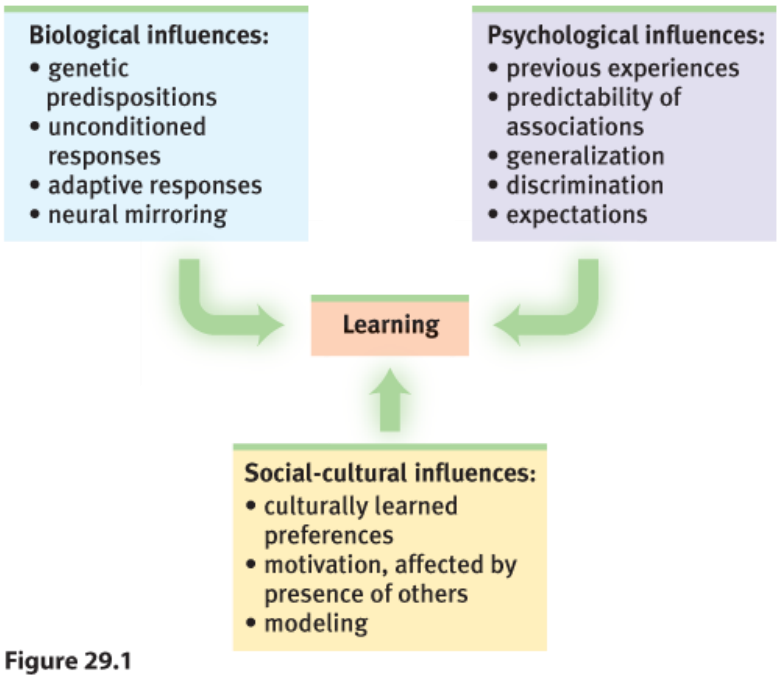
	Classical Conditioning	Operant Conditioning
Basic idea	Learning associations between events we do not control.	Learning associations between our behavior and its consequences.
Response	Involuntary, automatic.	Voluntary, operates on environment.
Acquisition	Associating events; NS is paired with US and becomes CS.	Associating a response with a consequence (reinforcer or punisher).
Extinction	CR decreases when CS is repeatedly presented alone.	Responding decreases when reinforcement stops.
Spontaneous recovery	The reappearance, after a rest period, of an extinguished CR.	The reappearance, after a rest period, of an extinguished response.
Generalization	The tendency to respond to stimuli similar to the CS.	Responses learned in one situation occurring in other, similar situations.
Discrimination	Learning to distinguish between a CS and other stimuli that do not signal a US.	Learning that some responses, but not others, will be reinforced.



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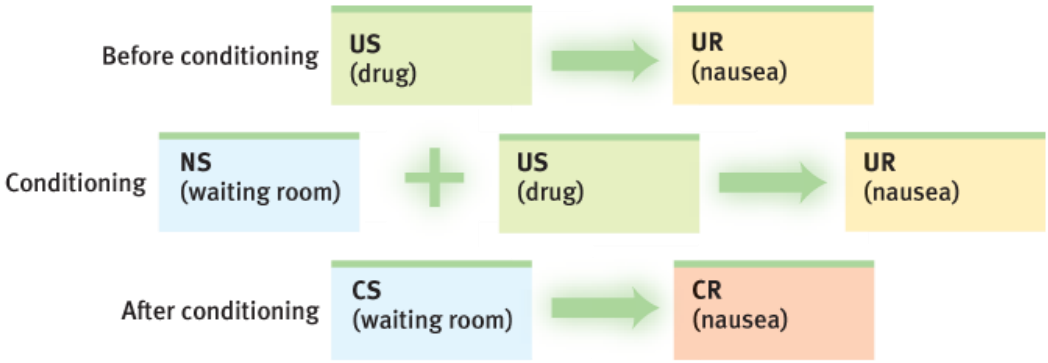

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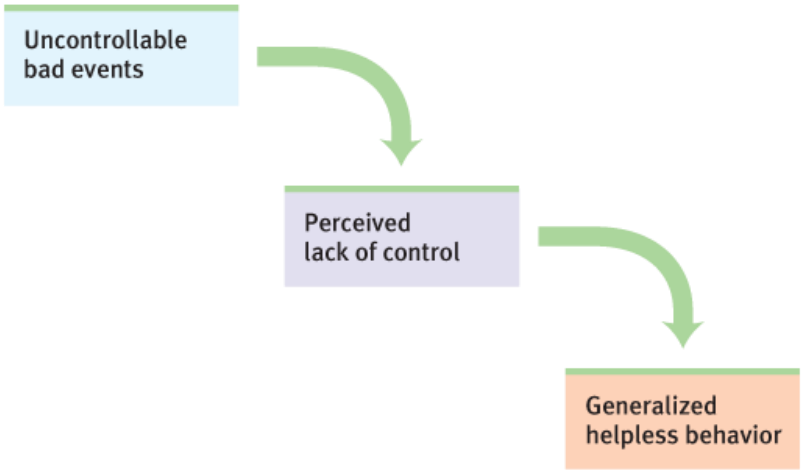

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	Classical Conditioning	**Operant Conditioning**
Biological influences	Natural predispositions constrain what stimuli and responses can easily be associated.	Organisms most easily learn behaviors similar to their natural behaviors; unnatural behaviors instinctively drift back toward natural ones.
Cognitive influences	Organisms develop an expectation that a CS signals the arrival of a US.	Organisms develop an expectation that a response will be reinforced or punished; they also exhibit latent learning, without reinforcement.

30-3 What is the violence-viewing effect?

Thinking Critically About:
The Effects of Viewing Media Violence

Introduction of TV, 1957–1974 ↔ *Doubling of homicide rate in U.S. and Canada*[1]

Introduction of TV for White South Africans in 1975 ↔ *Near-doubling of homicide rate in South Africa*[1]

Heavy exposure to media violence for U.S. 9–11-year-olds ↔ *Increased fighting, and more violent behavior later as teens*[2]

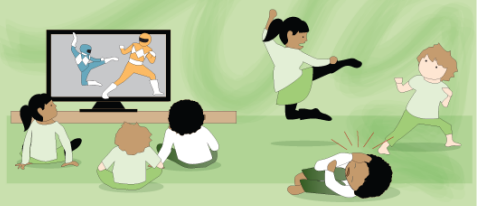
BUT, CORRELATION ≠ CAUSATION!

***Experimental* studies have also found that media violence viewing can cause aggression:**

Viewing violence (compared to entertaining nonviolence) → participants react more cruelly when provoked. (Effect is strongest if the violent person is attractive, the violence seems justified and realistic, the act goes unpunished, and the viewer does not see pain or harm caused.)

What prompts the *violence-viewing effect*?

1 IMITATION:



Watching violent cartoons → Sevenfold increase in violent play[3]

Limited exposure to violent programs → Reduced aggressive behavior[4]

2 DESENSITIZATION:

Prolonged exposure to violence → Viewers are later indifferent (desensitized) to violence on TV or in real life.[5]

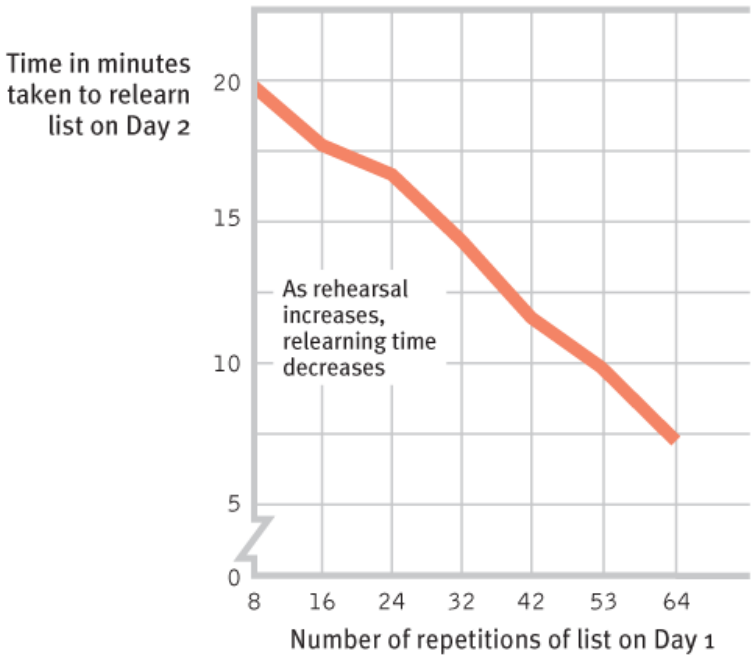
Adult males spent 3 evenings watching sexually violent movies. → Viewers became progressively less bothered by the violence shown. Compared to a control group, they expressed less sympathy for domestic violence victims and rated victims' injuries as less severe.[6]

Violent moviegoers → less likely to help

Nonviolent moviegoers → more likely to help[7]

- APA Task Force on Violent Media (2015) found that the "research demonstrates a consistent relation between violent video game use and increases in aggressive behavior, aggressive cognitions, and aggressive affect, and decreases in prosocial behavior, empathy, and sensitivity to aggression."
- American Academy of Pediatrics (2009) has advised pediatricians that "media violence can contribute to aggressive behavior, desensitization to violence, nightmares, and fear of being harmed."

1. Centerwall, 1989. 2. Boxer at al., 2009; Gentile et al., 2011; Gentile & Bushman, 2012. 3. Boyatzis et al., 1995. 4. Christakis et al., 2013. 5. Fanti et al., 2009; Rule & Ferguson, 1986. 6. Mullin & Linz, 1995. 7. Bushman & Anderson, 2009.



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Data from Baddeley, 1982.

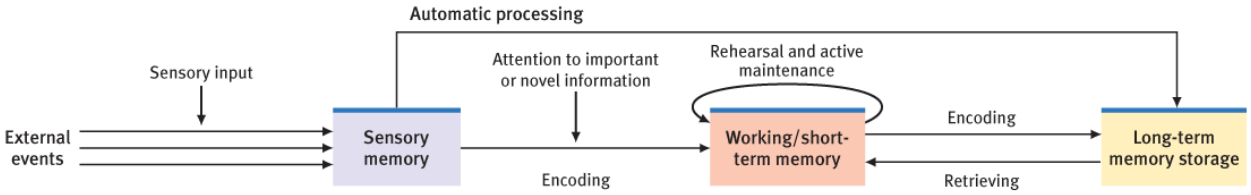

Figure 31.3
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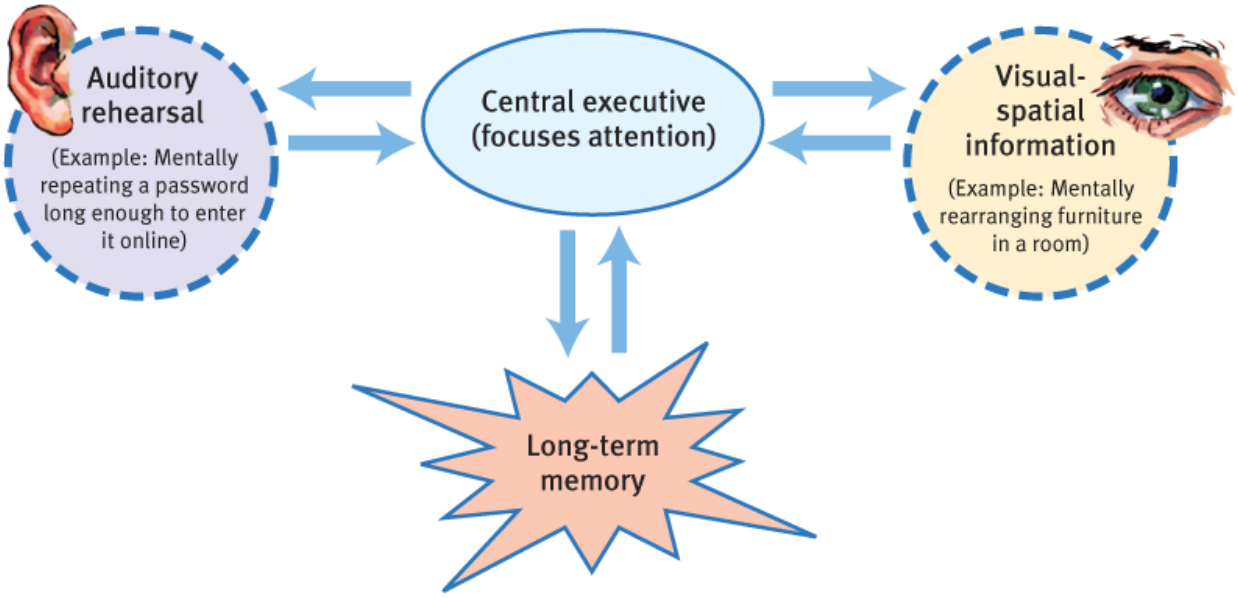

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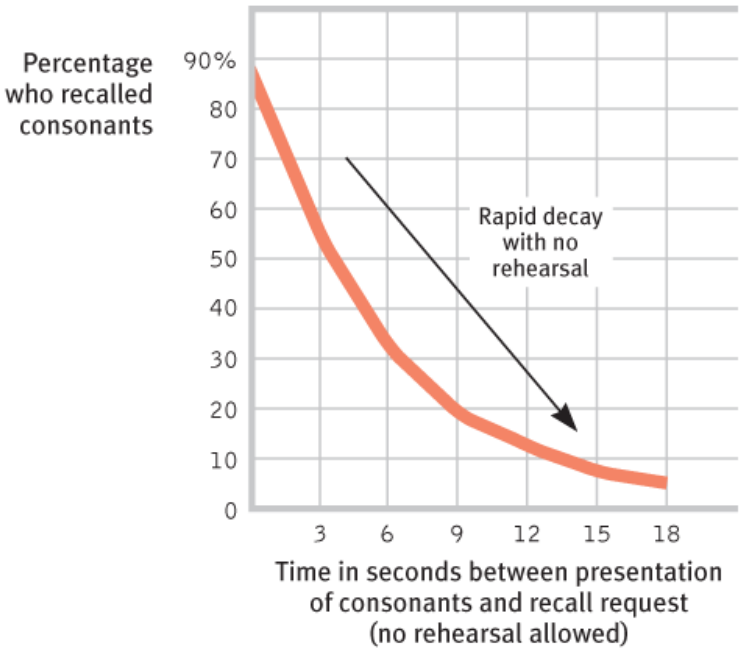

Figure 31.6
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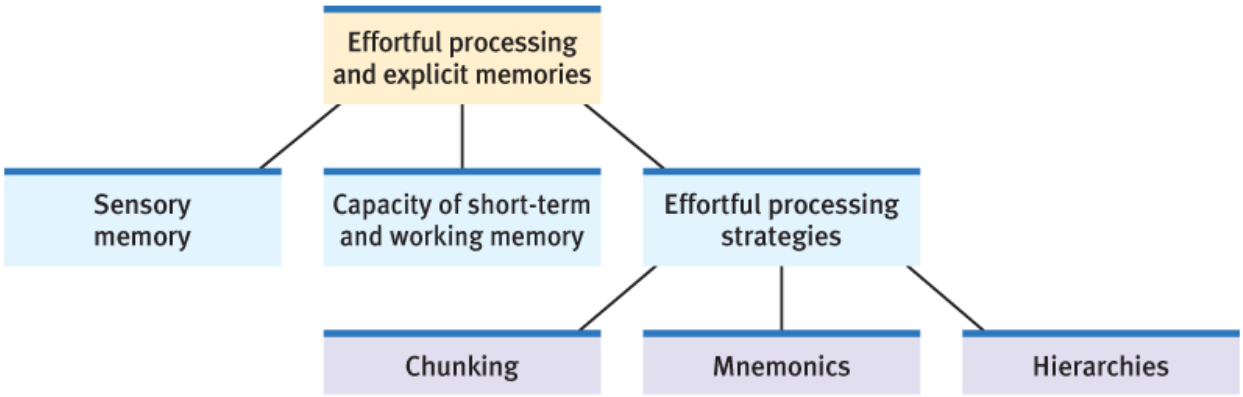
Data from Peterson & Peterson, 1959; see also Brown, 1958.



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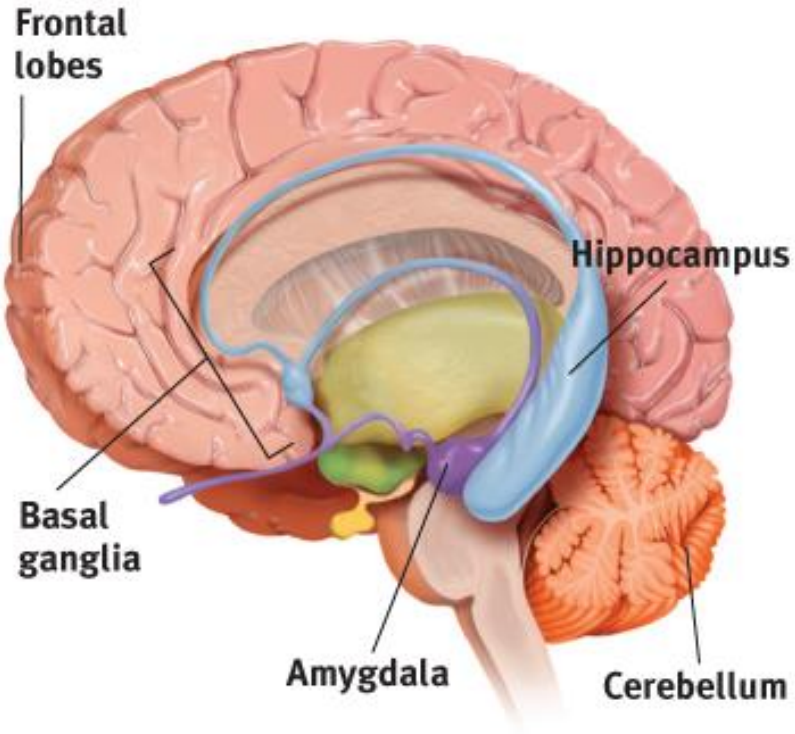

Figure 32.2
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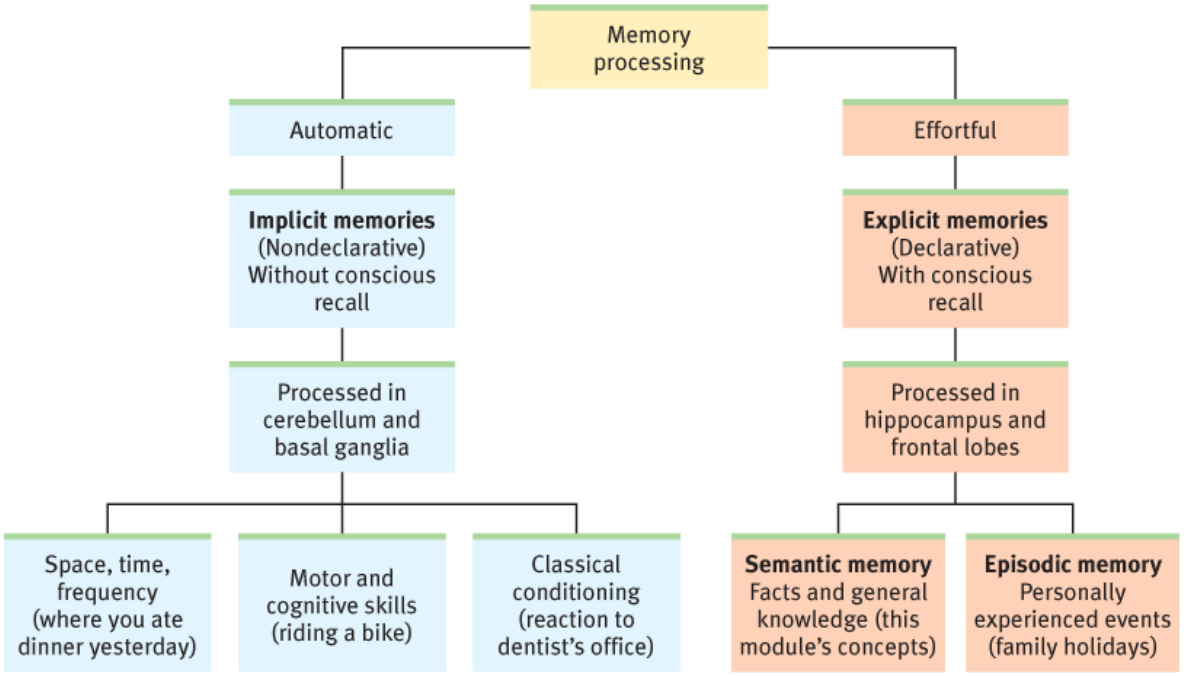

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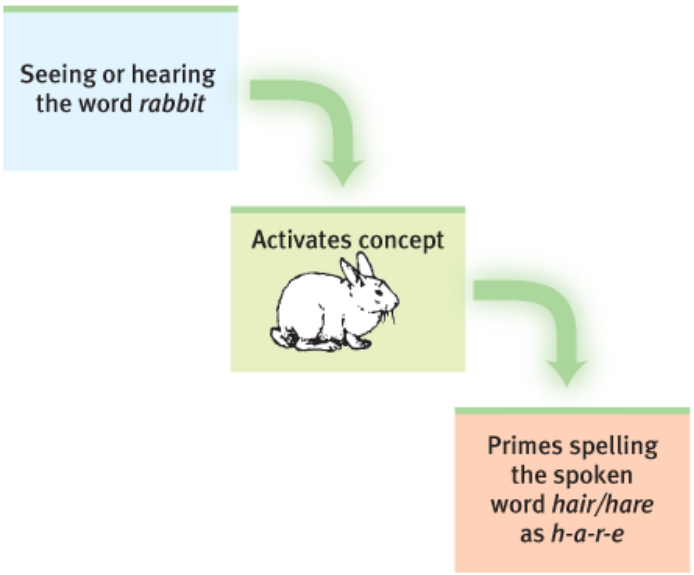

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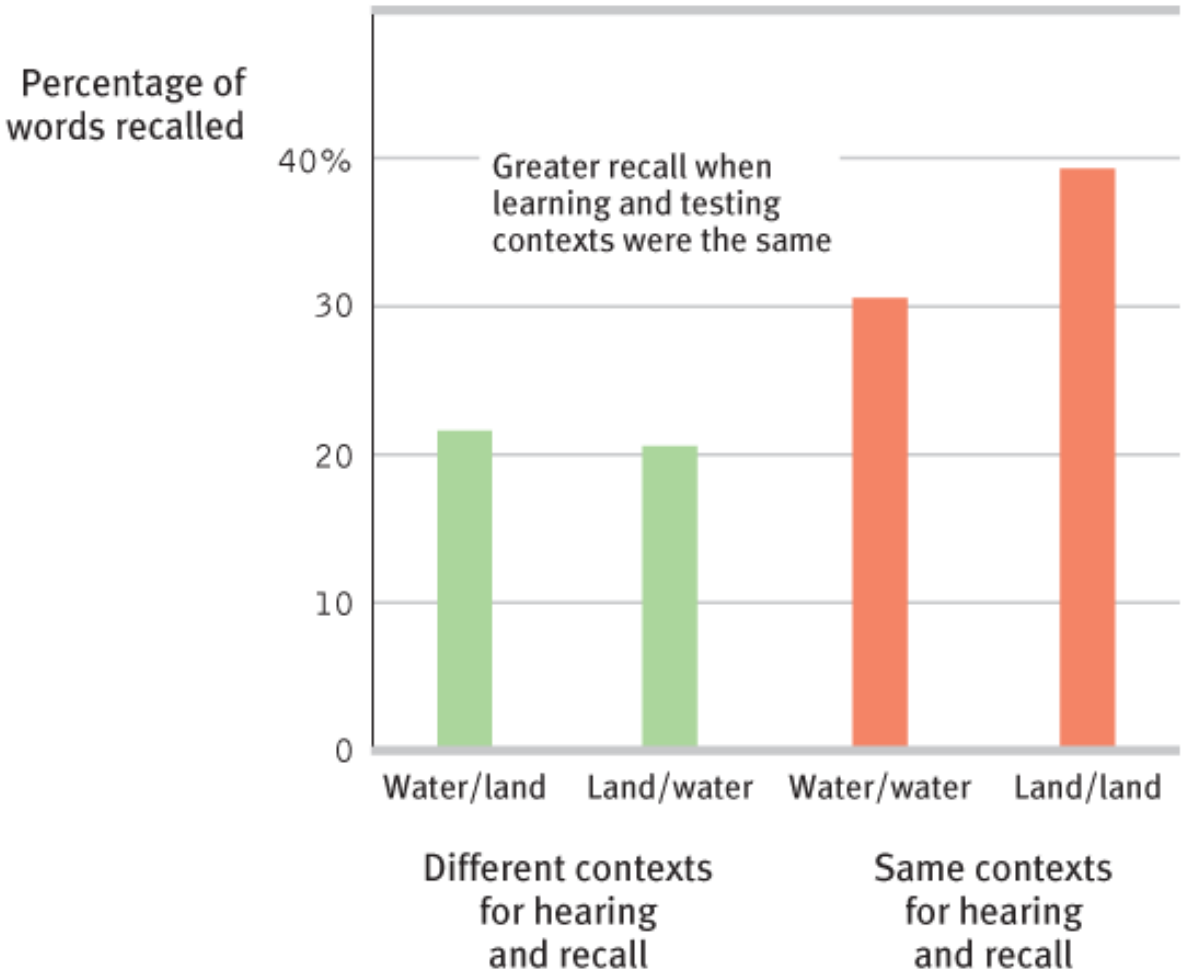

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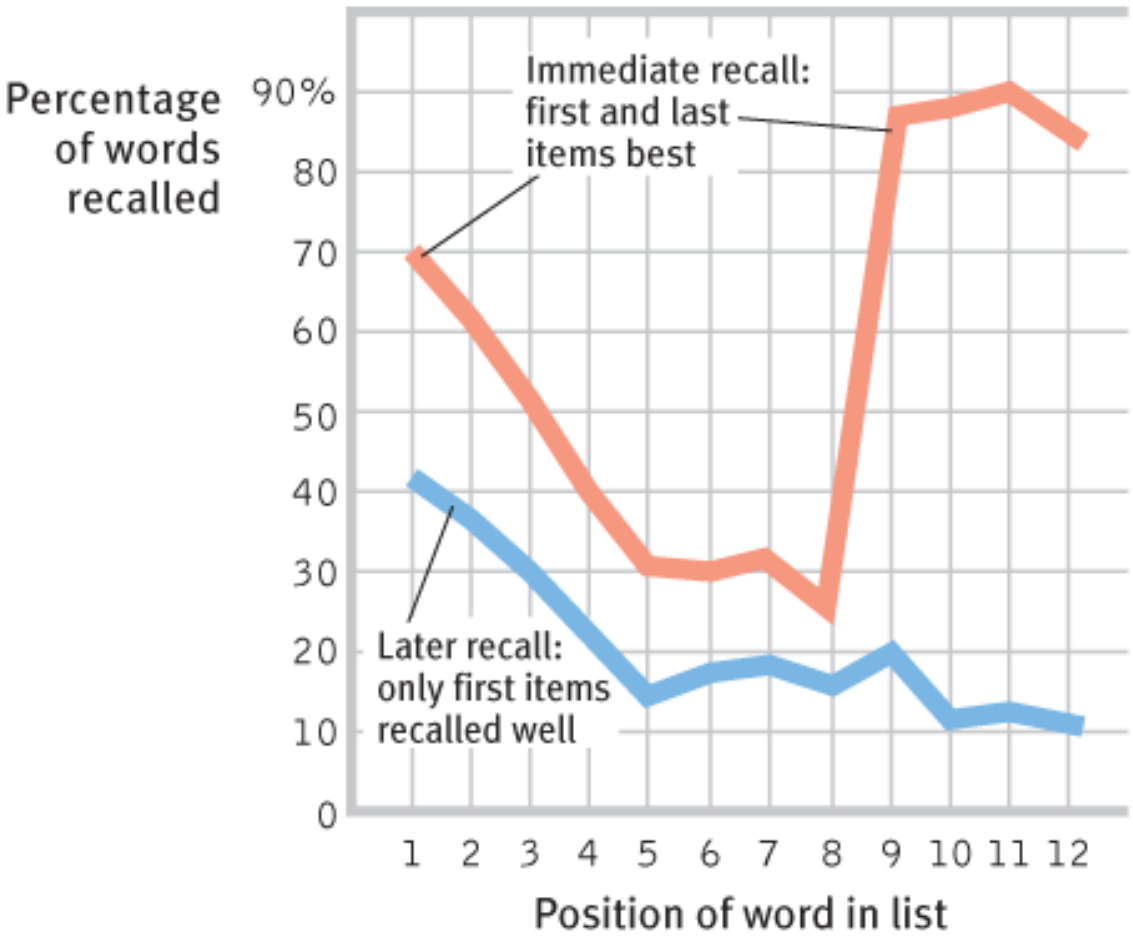

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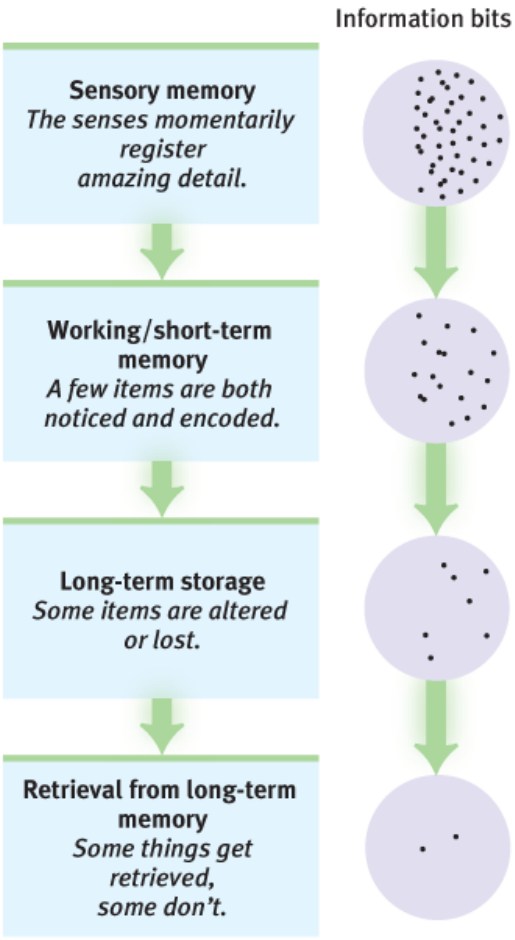

Figure 33.1
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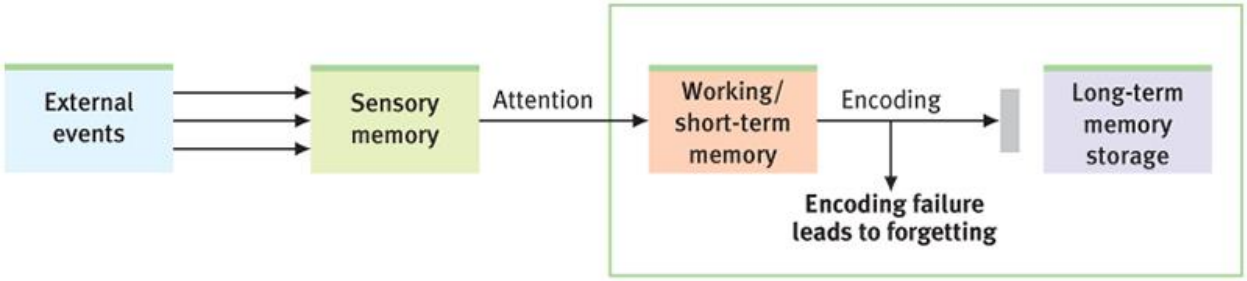

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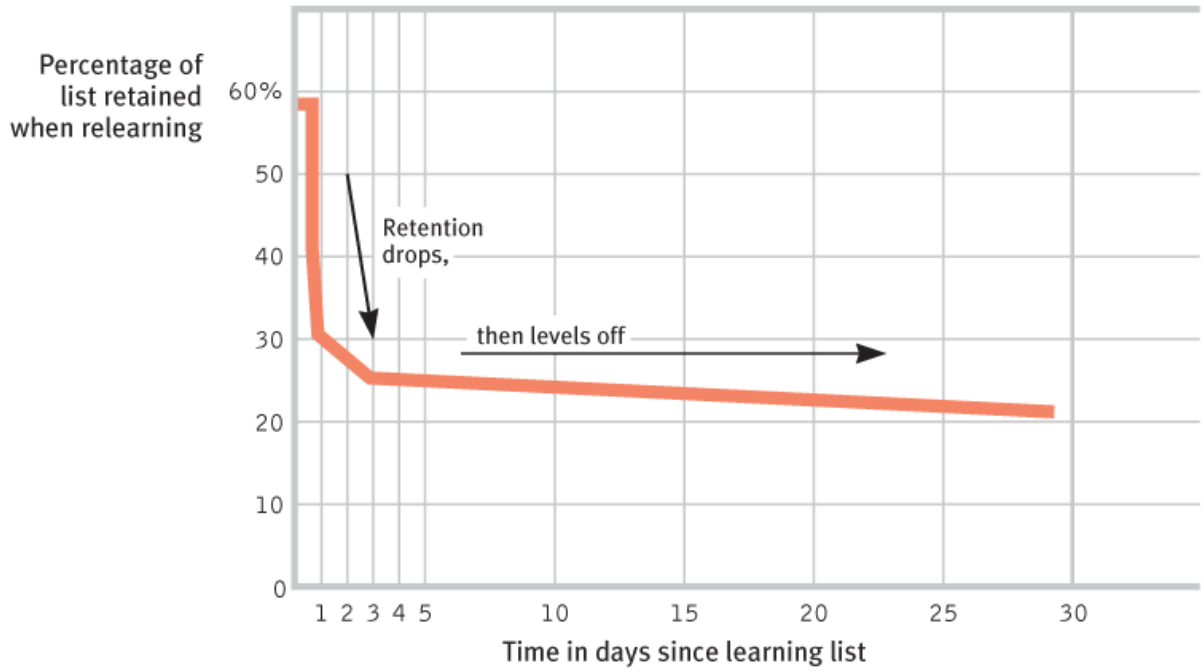

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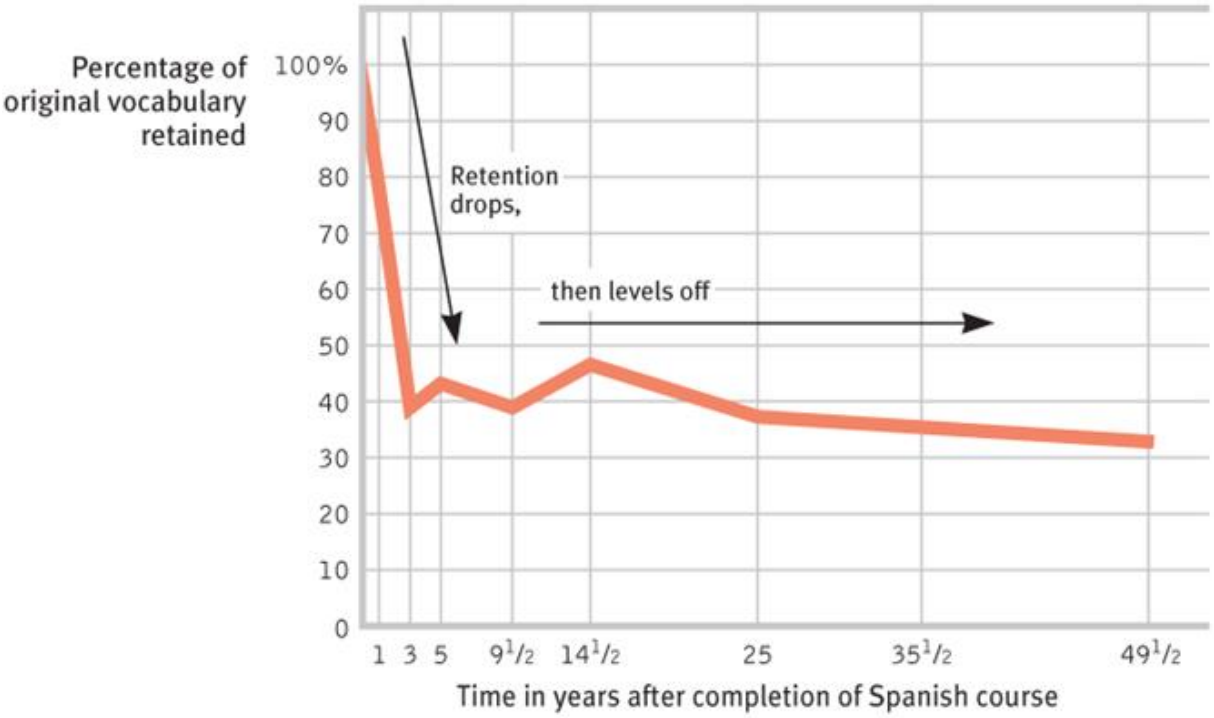
Data from Ebbinghaus, 1885.



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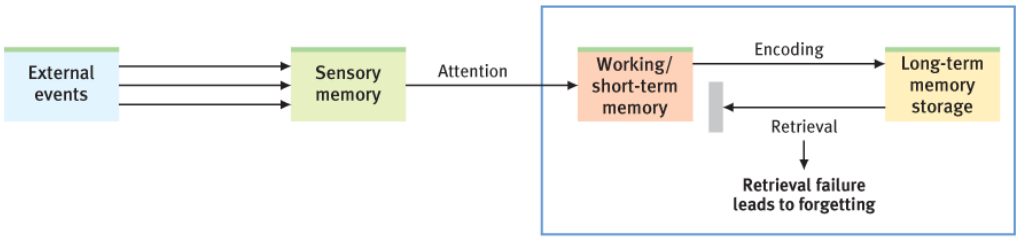

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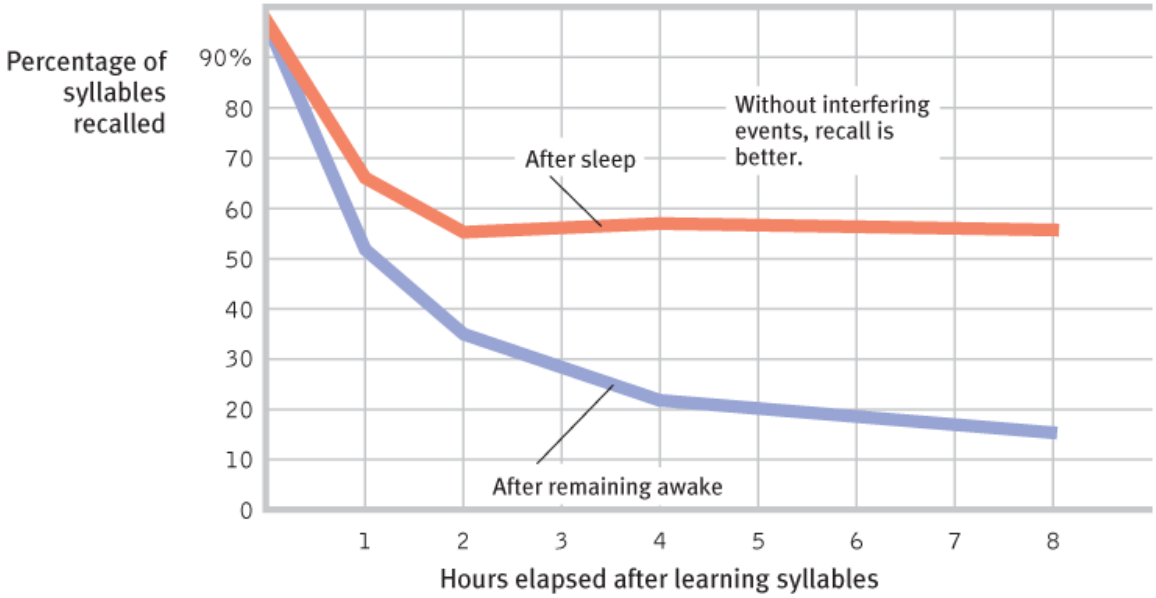

Figure 33.6
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Data from Jenkins & Dallenbach, 1924.

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33-3 Why have reports of repressed and recovered memories been so hotly debated?

Thinking Critically About:

Can Memories of Childhood Sexual Abuse Be Repressed and Then Recovered?

Two Possible Tragedies:

1. People doubt childhood sexual abuse survivors who tell their secret.

2. **Innocent people are falsely accused,** as therapists prompt "recovered" memories of childhood sexual abuse:

Misinformation effect and **source amnesia:** Adult client may form image of threatening person.

With *rehearsal* (repeated therapy sessions), the image grows more vivid.

Client is stunned, angry, and ready to confront or sue the remembered abuser.

Accused person is equally stunned and vigorously denies the long-ago accusation.

Professional organizations (including the American Medical, American Psychological, and American Psychiatric Associations) are working to find sensible common ground to resolve psychology's "memory war": [1]

- **Childhood sexual abuse happens** and can leave its victims at risk for problems ranging from sexual dysfunction to depression.[2] But there is no "survivor syndrome"—no group of symptoms that lets us spot victims of sexual abuse.[3]
- **Injustice happens.** Innocent people have been falsely convicted. And guilty people have avoided punishment by casting doubt on their truth-telling accusers.
- **Forgetting happens.** Children abused when very young may not have understood the meaning of their experience or remember it. Forgetting long-ago good and bad events is an ordinary part of everyday life.
- **Recovered memories are common.** Cued by a remark or an experience, we may recover pleasant or unpleasant memories of long-forgotten events. But does the unconscious mind *forcibly repress* painful experiences, and can these experiences be *recovered* by therapist-aided techniques?[4] Memories that surface naturally are more likely to be true.[5]
- **Memories of events before age 4 are unreliable.** *Infantile amnesia* results from not yet developed brain pathways. Most psychologists therefore doubt "recovered" memories of abuse during infancy.[6] The older a child was when suffering sexual abuse, and the more severe the abuse, the more likely it is to be remembered.[7]
- **Memories "recovered" under hypnosis are especially unreliable.**
- **Memories, whether real or false, can be emotionally upsetting.** What was born of mere suggestion can become, like an actual event, a stinging memory that drives bodily stress.[8]

Psychologists question whether *repression* ever occurs. (See Module 55 for more on this concept—the cornerstone of Freud's theory and of so much popular psychology.)

Traumatic experiences (witnessing a loved one's murder, being terrorized by a hijacker or rapist, losing everything in a natural disaster) → TYPICALLY LEAD TO → **vivid, persistent, haunting memories**[9]

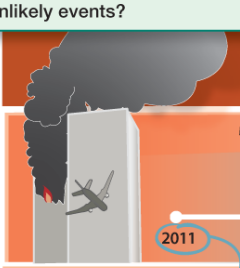
The Royal College of Psychiatrists Working Group on Reported Recovered Memories of Child Sexual Abuse advised that "when memories are 'recovered' after long periods of amnesia, particularly when extraordinary means were used to secure the recovery of memory, there is a high probability that the memories are false."[10]

1. Patihis et al., 2014. 2. Freyd et al., 2007. 3. Kendall-Tackett et al., 1993. 4. McNally & Geraerts, 2009. 5. Geraerts et al., 2007.
6. Gore-Felton et al., 2000; Knapp & VandeCreek, 2000. 7. Goodman et al., 2003. 8. McNally, 2003b, 2007. 9. Porter & Peace, 2007. 10. Brandon et al., 1998.

35-3 What factors exaggerate our fear of unlikely events?

Thinking Critically About:

The Fear Factor



Many people fear flying more than driving.

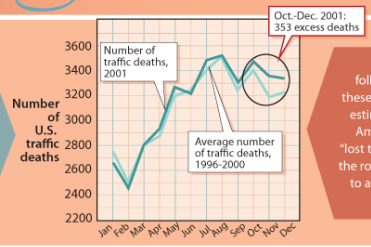
HOWEVER:

2011 → 2013

Americans are vastly more likely to die in a vehicle accident than on a scheduled flight.[1]

64,017 people died in U.S. car or light truck accidents; ***5*** died on scheduled airline flights.

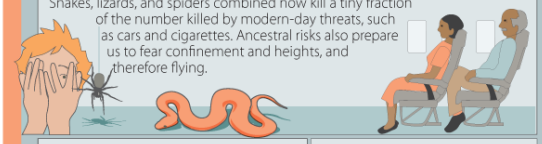
In the three months after 9/11, **FEAR OF FLYING** led more Americans to travel by car, and some to die: [2]



In the year following 9/11, these researchers estimated, 1500 Americans had "lost their lives on the road by trying to avoid the risk of flying."

WHY DO WE FEAR THE WRONG THINGS?

1. We fear what our ancestral history has prepared us to fear: Snakes, lizards, and spiders combined now kill a tiny fraction of the number killed by modern-day threats, such as cars and cigarettes. Ancestral risks also prepare us to fear confinement and heights, and therefore flying.



2. We fear what we cannot control: Driving we control; flying we do not.

3. We fear what is immediate. Dangers of flying are mostly in the moments of takeoff and landing. Dangers of driving are spread across many moments, each trivially dangerous.

4. Thanks to the *availability heuristic*, we fear what is most readily available in memory: Vivid images of horrific airline crashes feed our judgments of risk.

Shark attacks kill ~1 American per year. "Vivid image!"

Heart disease kills 800,000 Americans per year. "Harder to visualize"

People may fear sharks more than cigarettes or the effects of an unhealthy diet.[3]

We remember and fear **disasters** (terrorism, hurricanes, earthquakes) that kill people dramatically, in bunches.

We fear too little the **less dramatic and ongoing threats** that claim lives one by one:

- In an average day, guns kill 92 Americans — in homicides, suicides, and accidents.[4] Yet renewed calls for U.S. gun control tend to follow the well-publicized, mass shootings.

- Worldwide, 500,000 children die each year from diarrhea, with tragically little notice.

"If it's in the news, don't worry about it. The very definition of news is 'something that hardly ever happens.'"[5]

1. National Safety Council, 2016. 2. Gigerenzer, 2004, 2006; Gaissmaier & Gigerenzer, 2012. 3. Daley, 2011. 4. Xu et al., 2016. 5. Schneier, 2007.

Process or Strategy	Description	Powers	Perils
Algorithm	Methodical rule or procedure	Guarantees solution	Requires time and effort
Heuristic	Simple thinking shortcut, such as the availability heuristic (which estimates likelihood based on how easily events come to mind)	Lets us act quickly and efficiently	Puts us at risk for errors
Insight	Sudden Aha! reaction	Provides instant realization of solution	May not happen
Confirmation bias	Tendency to search for support for our own views and ignore contradictory evidence	Lets us quickly recognize supporting evidence	Hinders recognition of contradictory evidence
Fixation	Inability to view problems from a new angle	Focuses thinking on familiar solutions	Hinders creative problem solving
Intuition	Fast, automatic feelings and thoughts	Is based on our experience: huge and adaptive	Can lead us to overfeel and underthink
Overconfidence	Overestimating the accuracy of our beliefs and judgments	Allows us to be happy and to make decisions easily	Puts us at risk for errors
Belief perseverance	Ignoring evidence that proves our beliefs are wrong	Supports our enduring beliefs	Closes our mind to new ideas
Framing	Wording a question or statement so that it evokes a desired response	Can influence others' decisions	Can produce a misleading result
Creativity	Ability to innovate valuable ideas	Produces new insights and products	May distract from structured, routine work

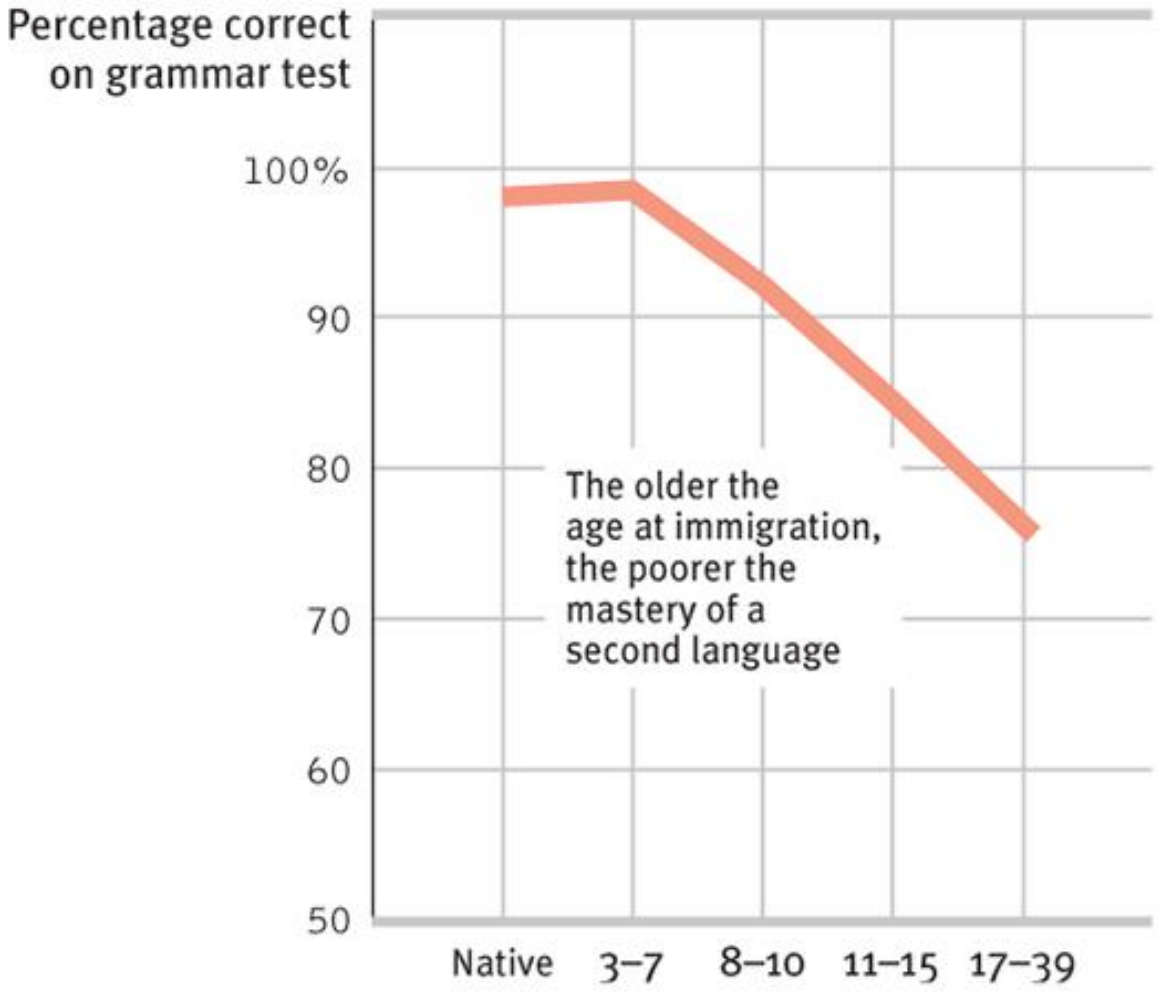


Figure 36.1
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Data from Johnson & Newport, 1991.

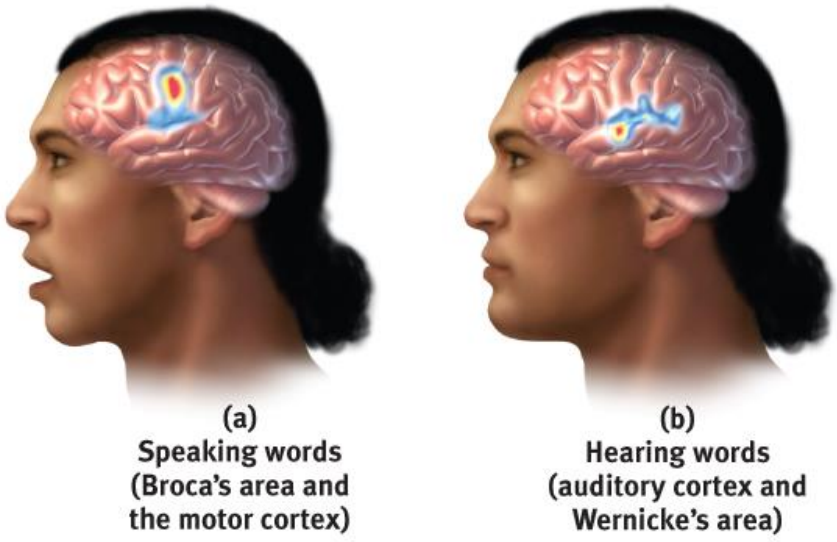

Figure 36.2
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Month (approximate)	Stage
4	Babbles many speech sounds (“ah-goo”)
10	Babbling resembles household language (“ma-ma”)
12	One-word speech (“Kitty!”)
24	Two-word speech (“Get ball.”)
24+	Rapid development into complete sentences

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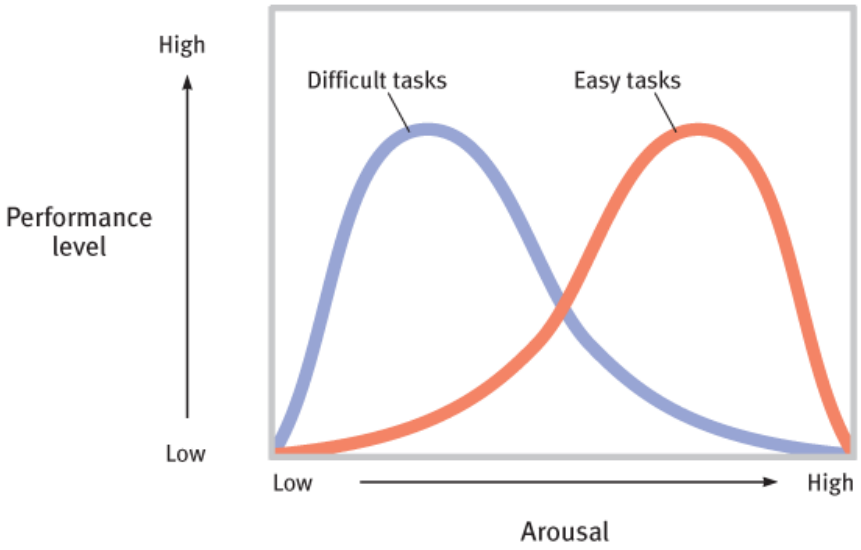

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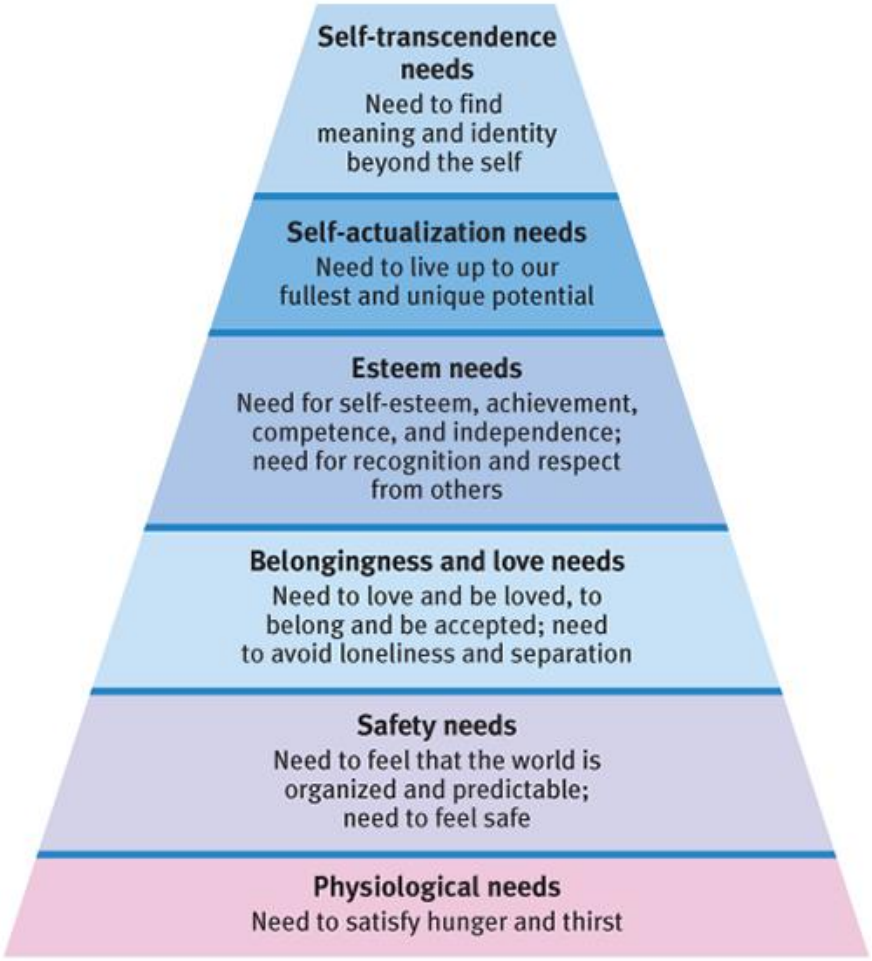

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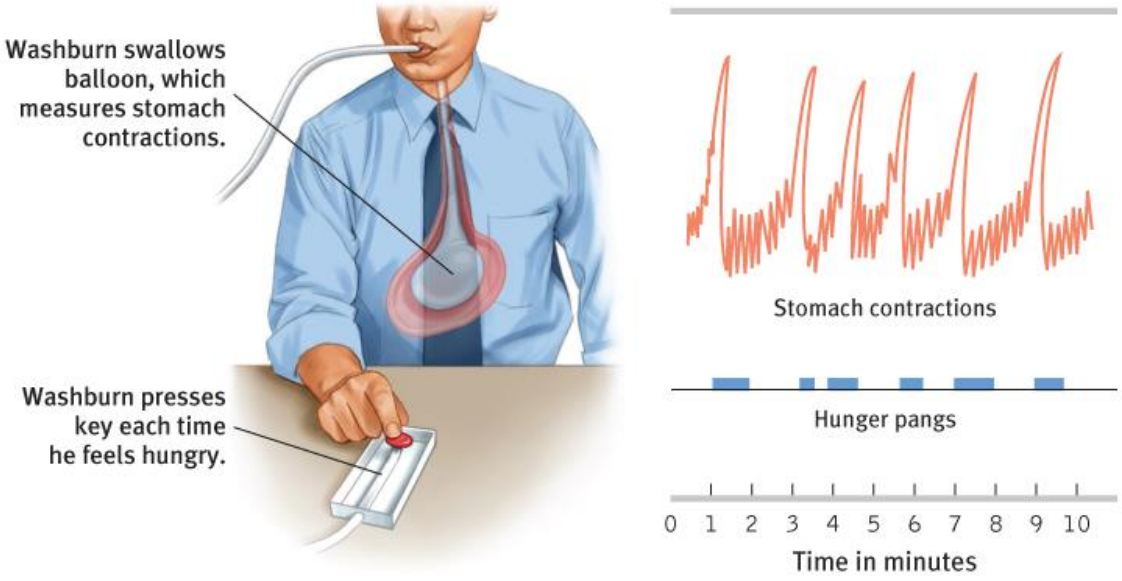
Theory	Its Big Idea
Instinct theory	There is a genetic basis for unlearned, species-typical behavior (such as birds building nests or infants rooting for a nipple).
Drive-reduction theory	A physiological need (such as for food and water) creates an aroused psychological drive (hunger or thirst) that motivates a drive-reducing behavior (eating and drinking).
Arousal theory	Our need to maintain an optimal level of arousal motivates behaviors that meet no physiological need (such as our yearning for stimulation and our hunger for information).
Maslow's hierarchy of needs	We prioritize survival-based needs and then social needs more than the needs for esteem and meaning.



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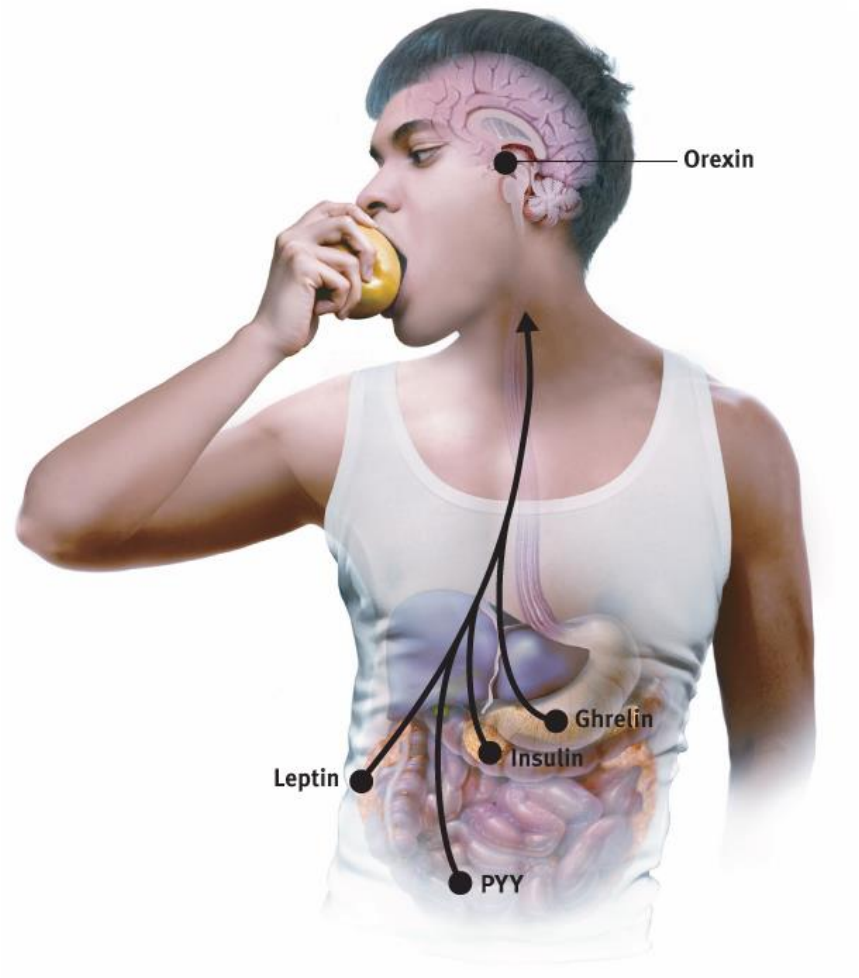
Information from Cannon, 1929.



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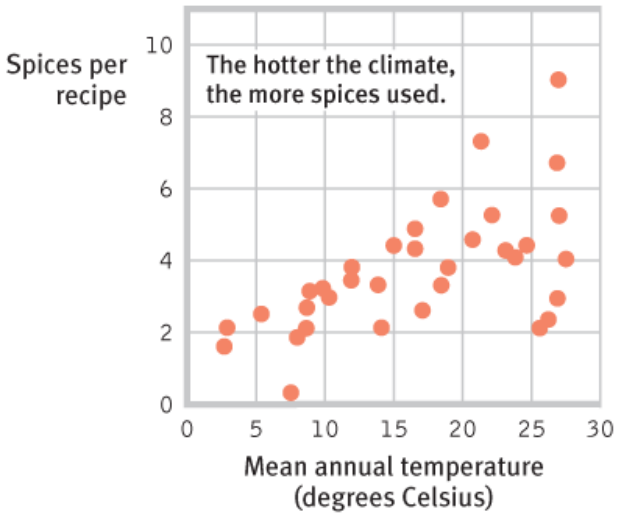

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38-3 How are we affected by obesity, and what factors are involved in weight management?

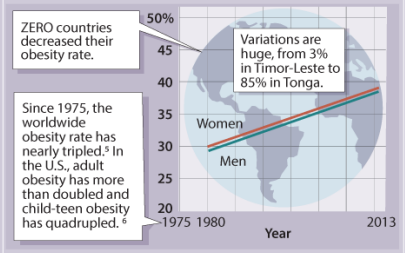
Thinking Critically About:
The Challenges of Obesity and Weight Control

A Growing Problem

Obesity is associated with:

- **physical health risks**, including diabetes, high blood pressure, heart disease, gallstones, arthritis, and certain types of cancer. [1]
- **increased depression**, especially among women.[2]
- **bullying,** outranking race and sexual orientation as the biggest reason for youth bullying in Western cultures. [3]

Percentage Overweight in 188 Countries Studied [4]



Body Mass Index (BMI)

How Did We Get Here?

Does obesity reflect a lack of willpower, as most people presume? [7]
No. Many factors contribute to obesity.

PHYSIOLOGY FACTORS

Storing fat was adaptive.

- This ideal form of stored energy carried our ancestors through periods of famine. People in impoverished places still find heavier bodies attractive, as plumpness signals affluence and status. [8]
- In food-rich countries, the drive for fat has become dysfunctional. [9]

Set point and metabolism matter.

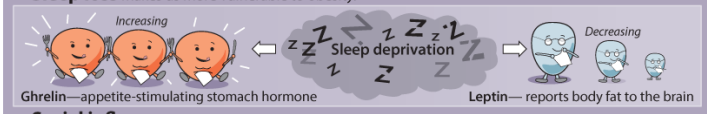
- Fat (lower metabolic rate than muscle) requires less food intake to maintain than it did to gain.
- If weight drops below *set point/settling point*, the brain triggers ⬆ hunger and ⬇ metabolism.
- Body perceives STARVATION; adapts by burning fewer calories. Most dieters in the long run regain what they lose on weight-loss programs.[10]
  - 30 weeks of competition on *The Biggest Loser* ➞ 6 years later ➞ Only 1 of 14 contestants kept the weight off. On average they regained 70% of what they lost and were still struggling with lessened caloric burn from their slowed metabolism. [11]

Genes influence us.

- Lean people seem naturally disposed to move about, burning more calories than energy-conserving overweight people, who tend to sit still longer. [12]
- Adoptive siblings' body weights are uncorrelated with one another or with their adoptive parents, instead resembling biological parents' weight. [13]
- Identical twins have closely similar weights, even if raised apart. [14] Much lower *fraternal* twin weight correlation suggests genes explain 2/3 of our varying body mass. [15]
- ~ 100 genes have been identified as each affecting weight in some small way. [16]

ENVIRONMENTAL FACTORS

- **Sleep loss** makes us more vulnerable to obesity. [17]



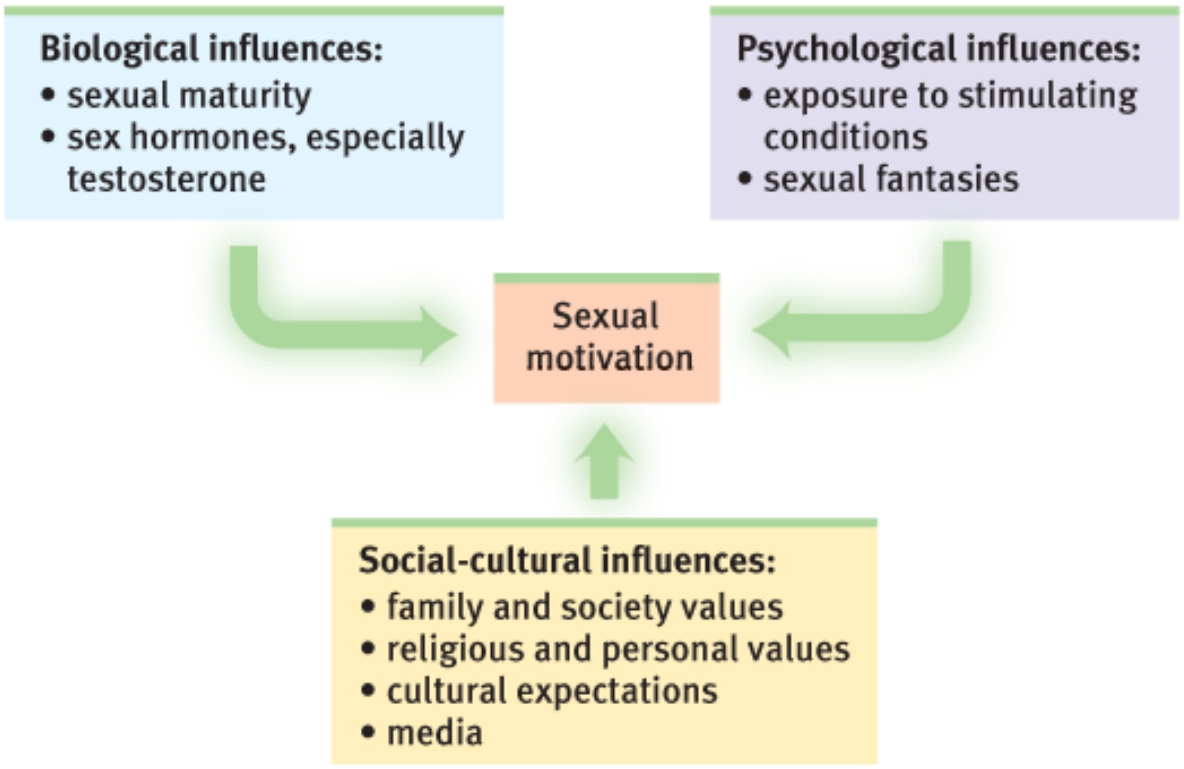
Ghrelin—appetite-stimulating stomach hormone

Leptin— reports body fat to the brain

- **Social influences:** Our own odds of becoming obese triple if a close friend becomes obese. [18]
- **Food and activity levels:** Worldwide, we eat more and move less, with 31% of adults (including 43% of Americans and 25% of Europeans) now sedentary—averaging <20 minutes per day of moderate activity such as walking. [19]

NOTE: With weight, as with intelligence (see Unit XI) and other characteristics, there can be high levels of *heritability* (genetic influence on individual differences) without heredity explaining *group* differences. Genes mostly determine why one person today is heavier than another. Environment mostly determines why people today are heavier than their counterparts 50 years ago.

1. Kitahara et al., 2014. 2. de Wit et al., 2010; Luppino et al., 2010. 3. Puhl et al., 2015. 4. Ng et al., 2014 . 5. NCD, 2016. 6. Flegal et al., 2010, 2012, 2016. 7. NORC, 2016b. 8. Furnham & Baguma, 1994; Nettle et al., 2017; Swami, 2015. 9. Hall, 2016. 10. Mann et al., 2015. 11. Fothergill et al., 2016. 12. Levine et al., 2005. 13. Grilo & Pogue-Geile, 1991. 14. Hjelmborg et al., 2008; Plomin et al., 1997. 15. Maes et al., 1997. 16. Locke et al., 2015. 17. Keith et al., 2006; Nedeltcheva et al., 2010; Taheri, 2004; Taheri et al., 2004. 18. Christakis & Fowler, 2007. 19. Hallal et al., 2012.



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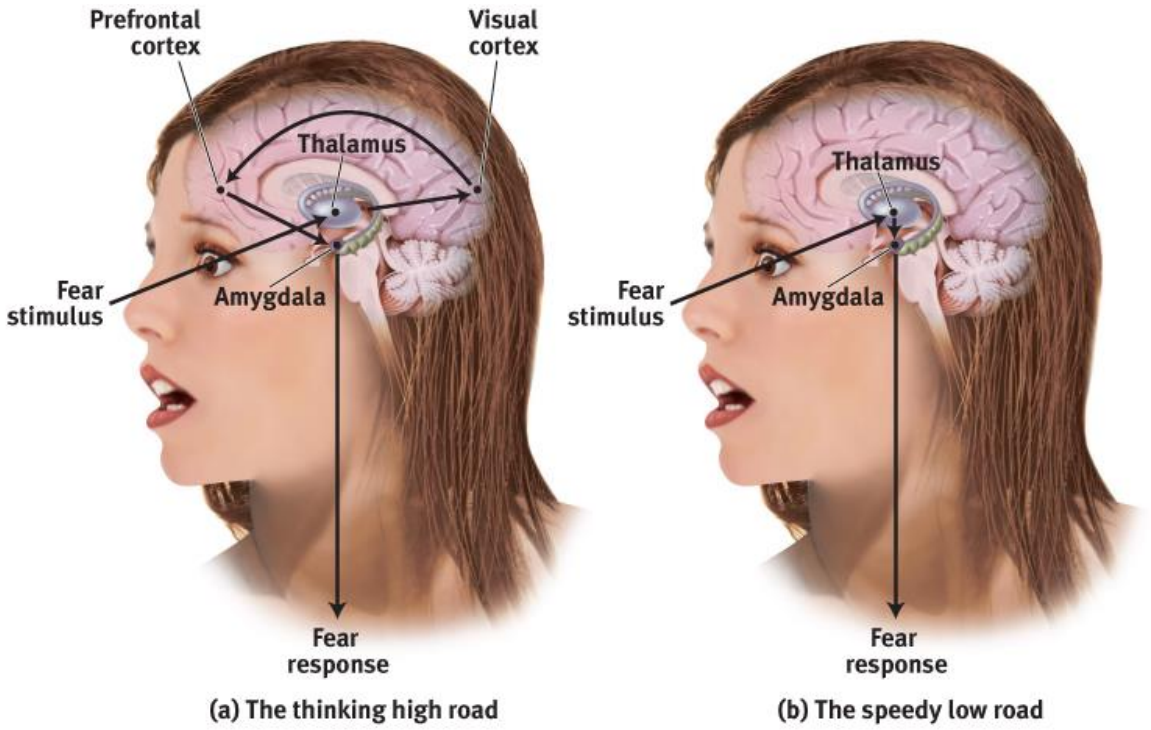

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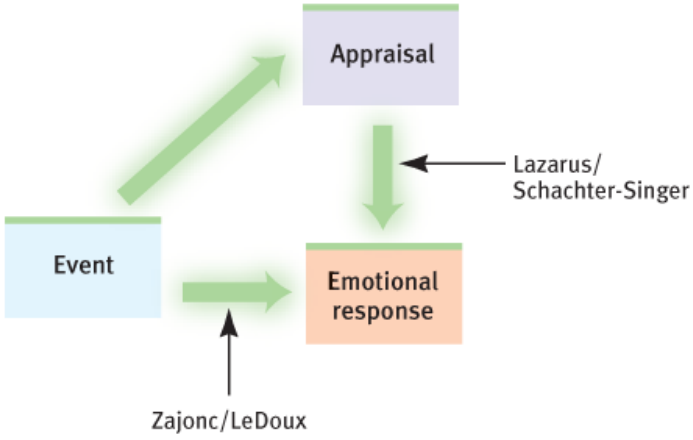

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Autonomic Nervous System Controls Physiological Arousal

Sympathetic division (arousing)		Parasympathetic division (calming)
Pupils dilate	EYES	Pupils contract
Decreases	SALIVATION	Increases
Perspires	SKIN	Dries
Increases	RESPIRATION	Decreases
Accelerates	HEART	Slows
Inhibits	DIGESTION	Activates
Secrete stress hormones	ADRENAL GLANDS	Decrease secretion of stress hormones
Reduced	IMMUNE SYSTEM FUNCTIONING	Enhanced

Figure 41.4
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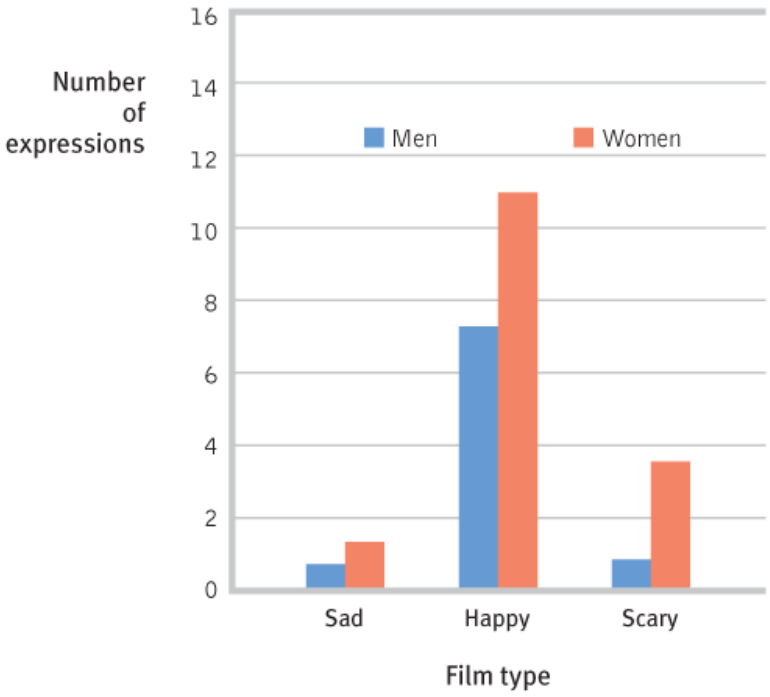
Theory	Explanation of Emotions	Example
James- Lange	Emotions arise from our awareness of our bodily responses to emotion arousing stimuli: stimuli →arousal → emotion.	We observe our heart racing after a threat and then feel afraid.
Cannon-Bard	Emotion-arousing stimuli trigger our bodily responses and simultaneous subjective experience.	Our heart races at the same time that we feel afraid.
Schachter-Singer	Our experience of emotion depends on two factors: general arousal and a conscious cognitive label.	We may interpret our arousal as fear or excitement, depending on the context.
Zajonc; LeDoux	Some embodied responses happen instantly, without conscious appraisal.	We automatically feel startled by

		a sound in the forest before labeling it as a threat.
Lazarus	Cognitive appraisal (“Is it dangerous or not?”)—sometimes without our awareness—defines emotion.	The sound is “just the wind.”



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Data from Kring & Gordon, 1998.

Figure 42.8
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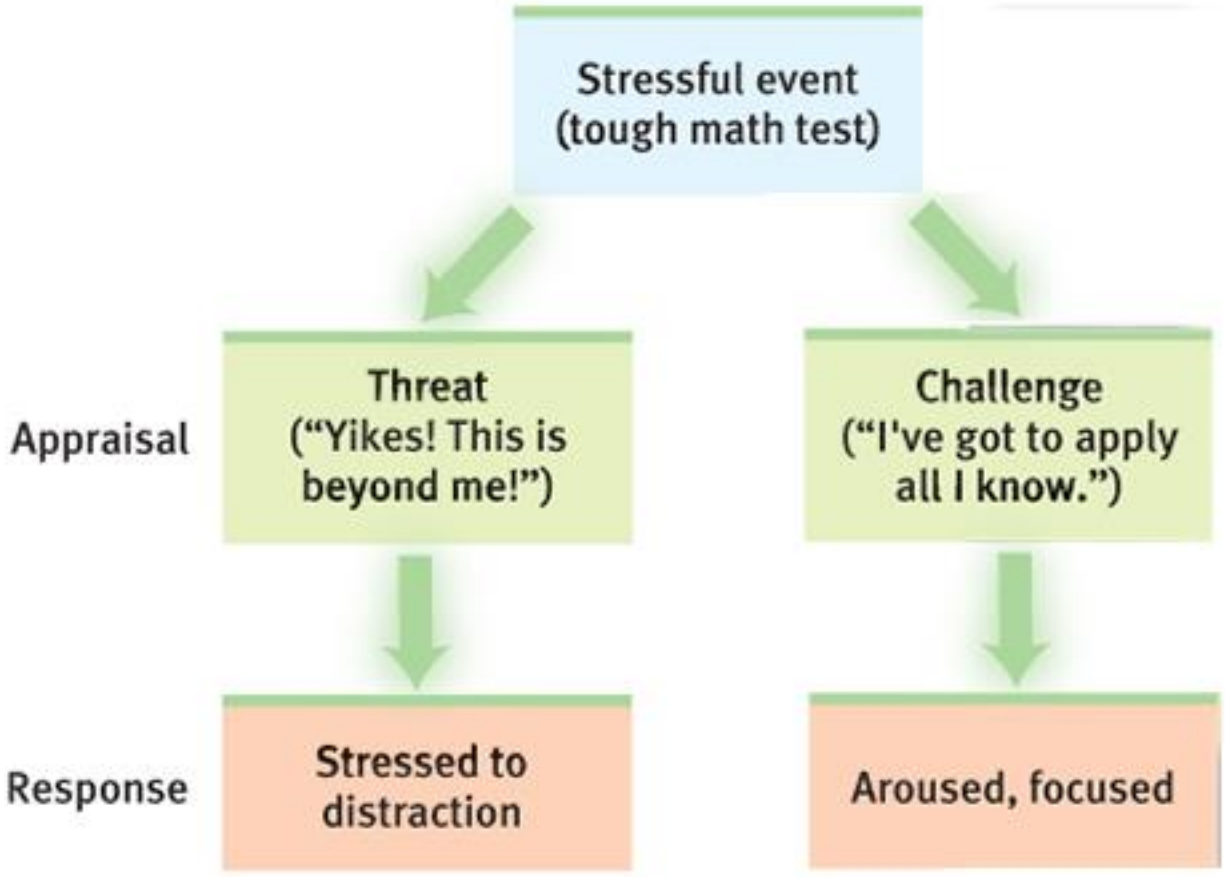

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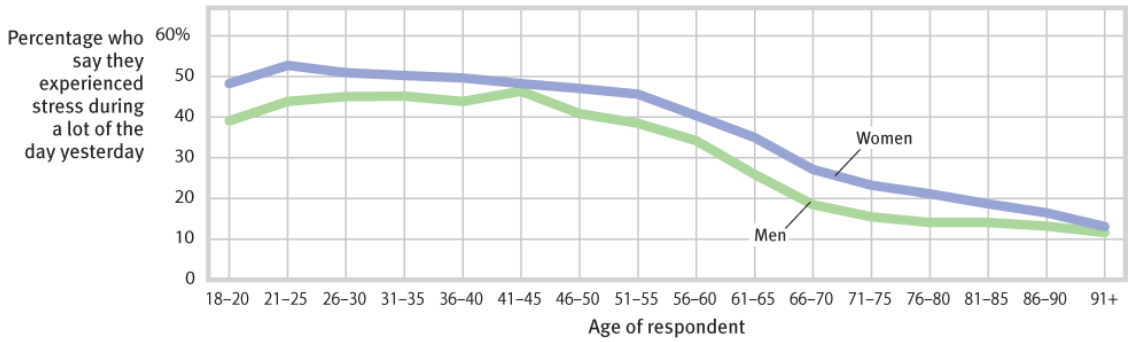

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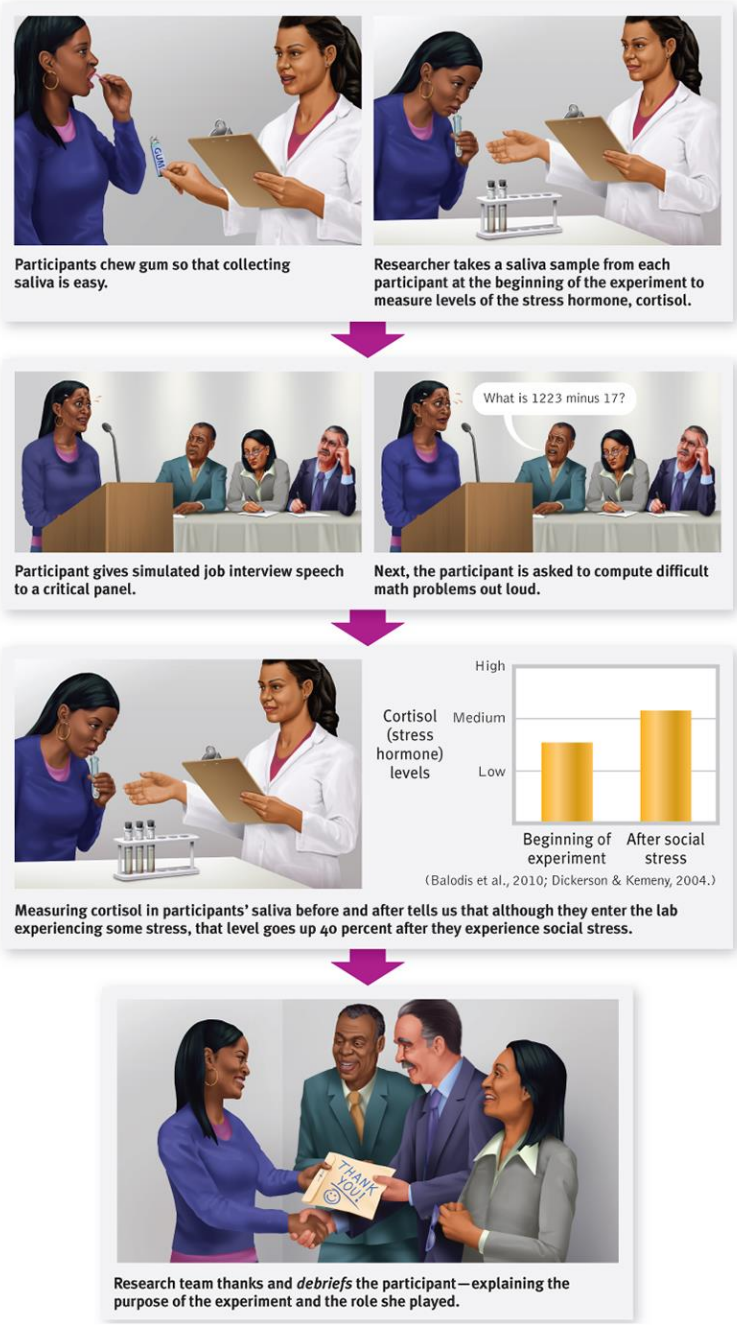

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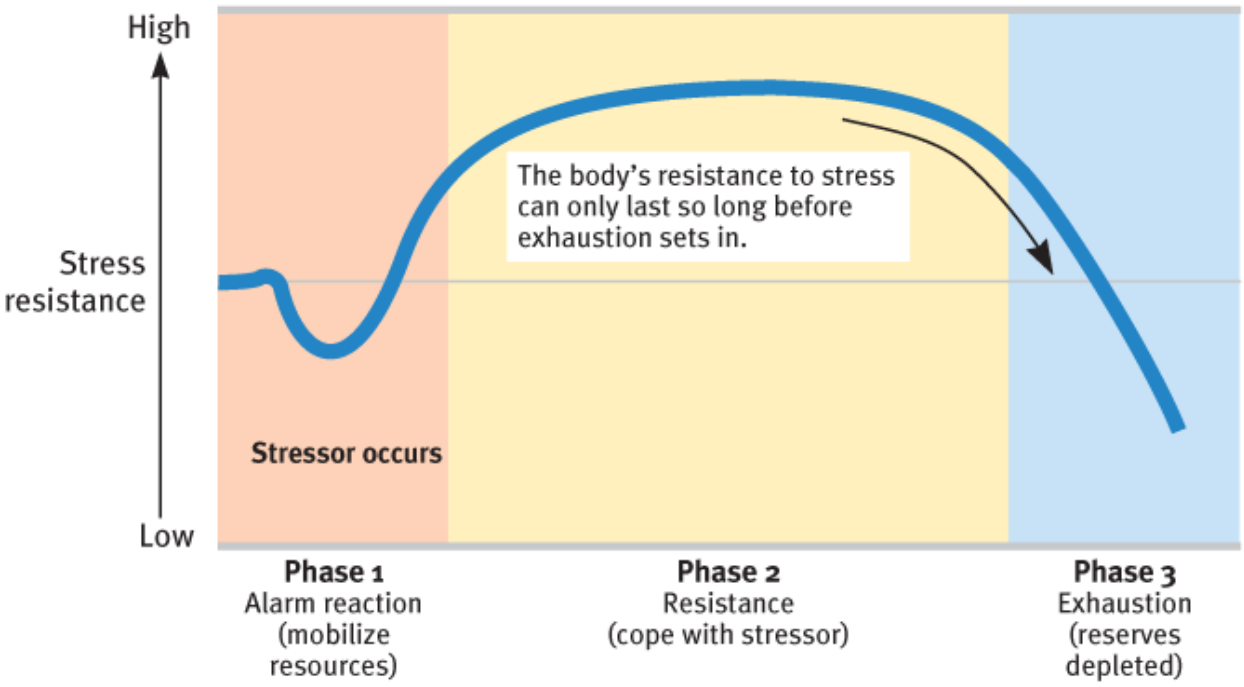

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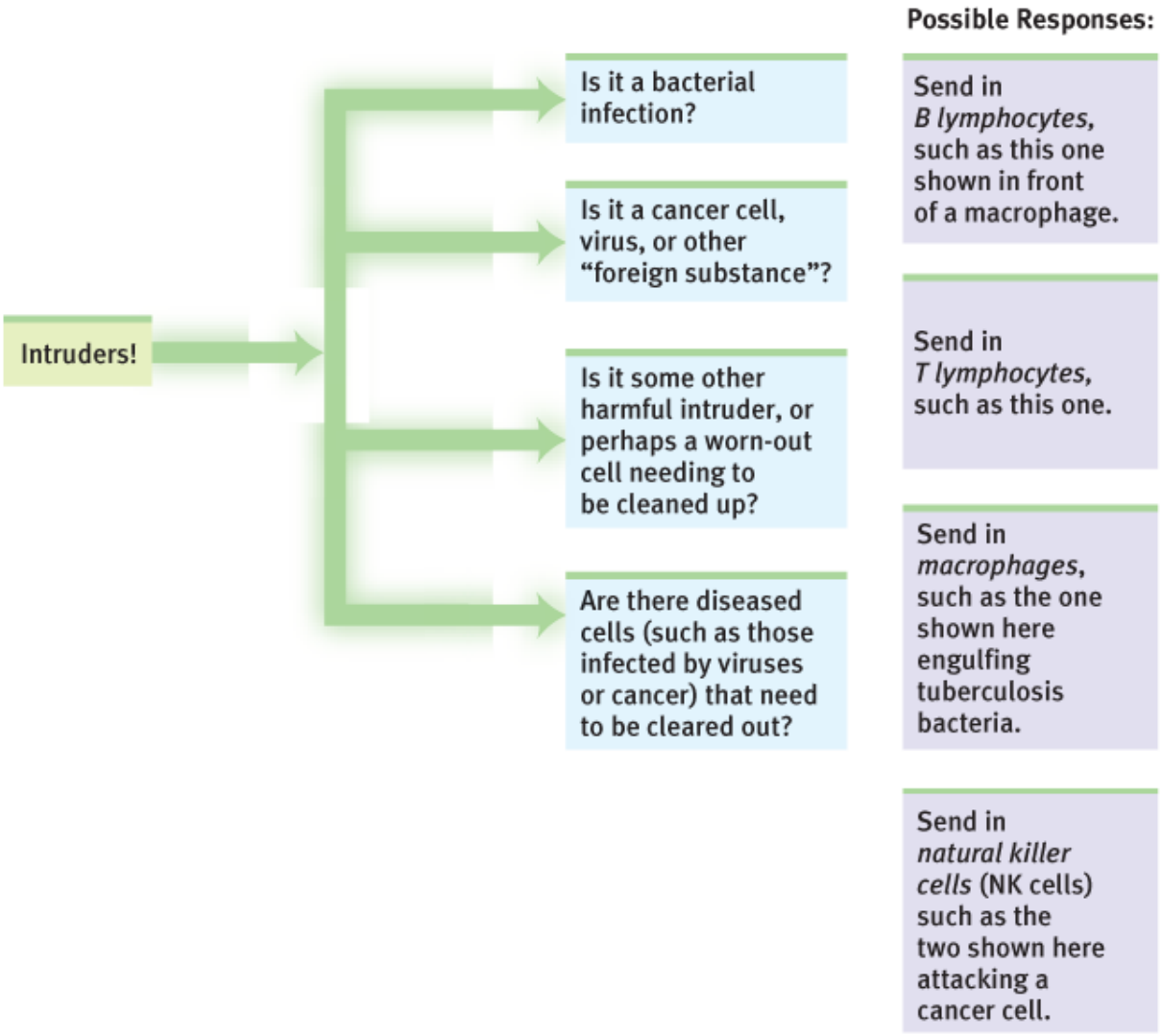

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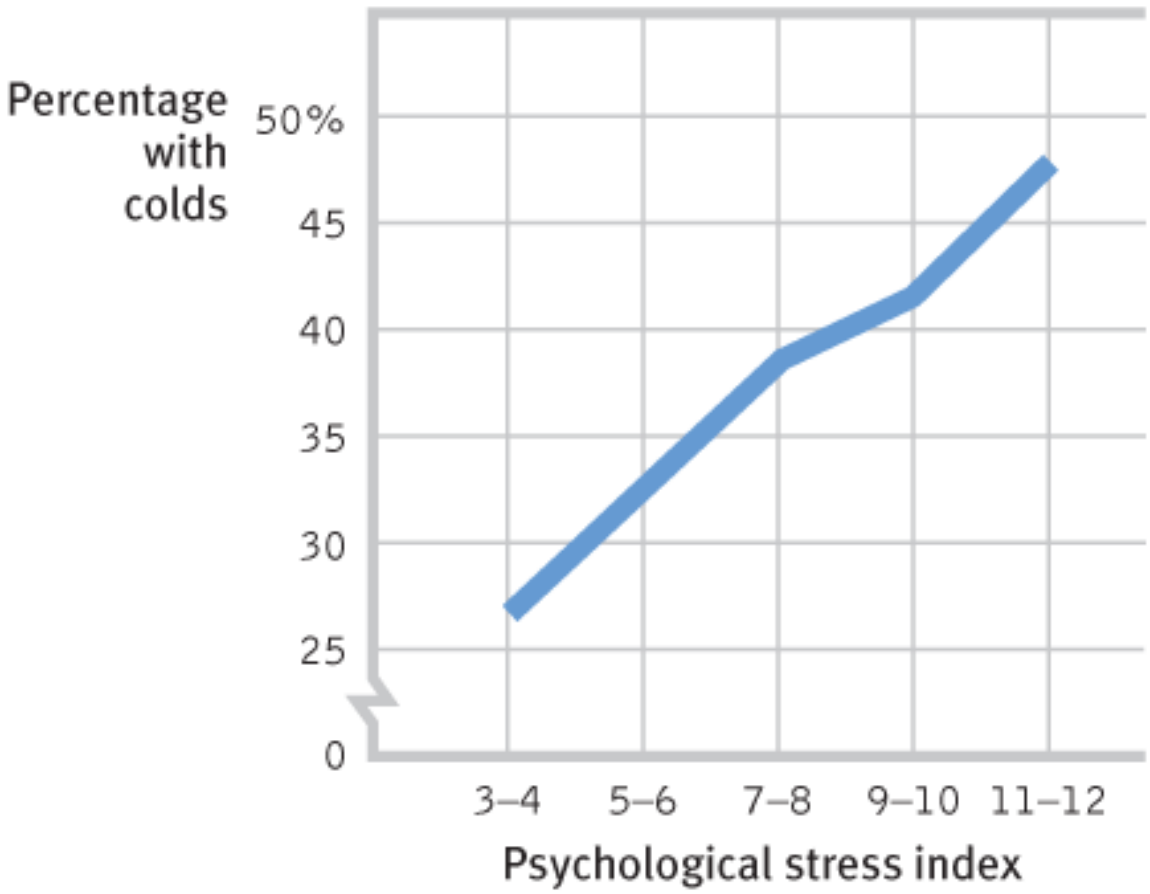

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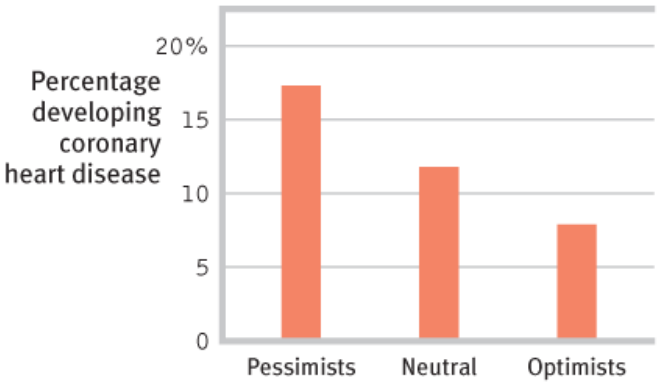

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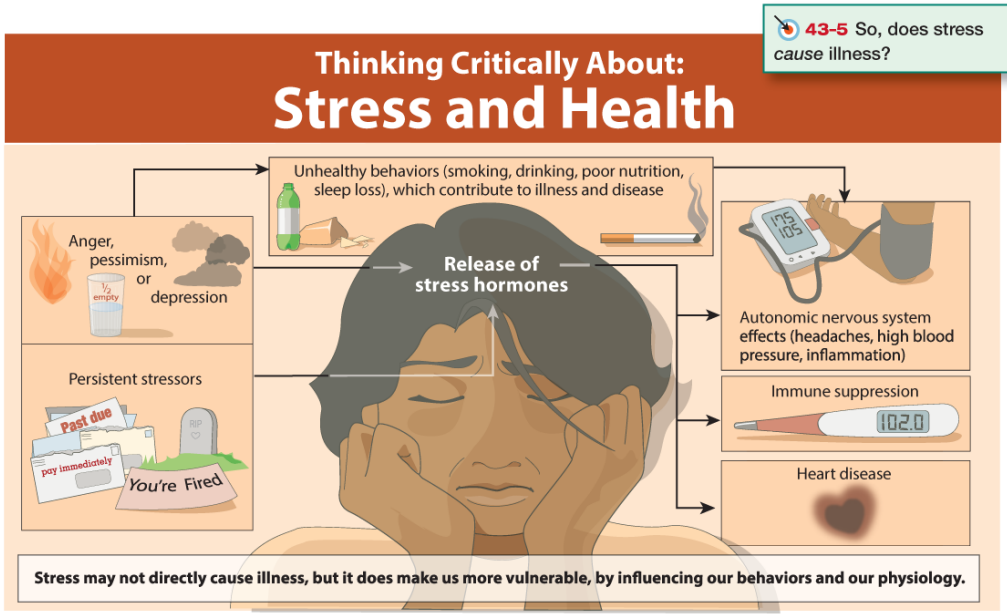
Data from Kubzansky et al., 2001.

43-5 So, does stress *cause* illness?



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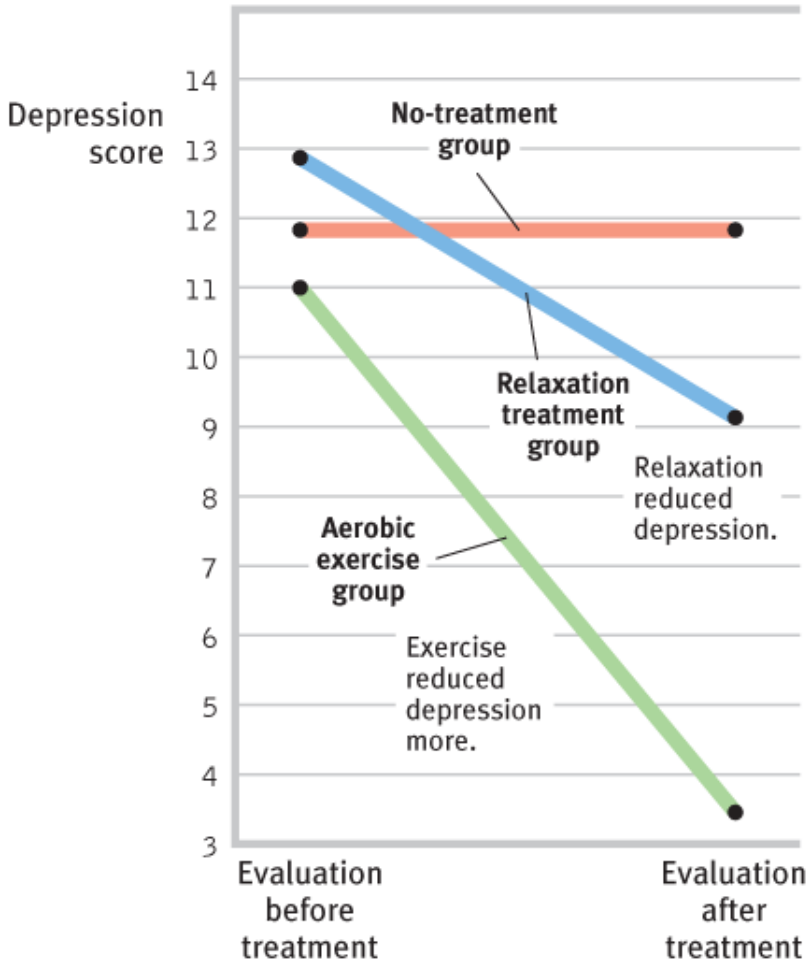

Figure 44.1
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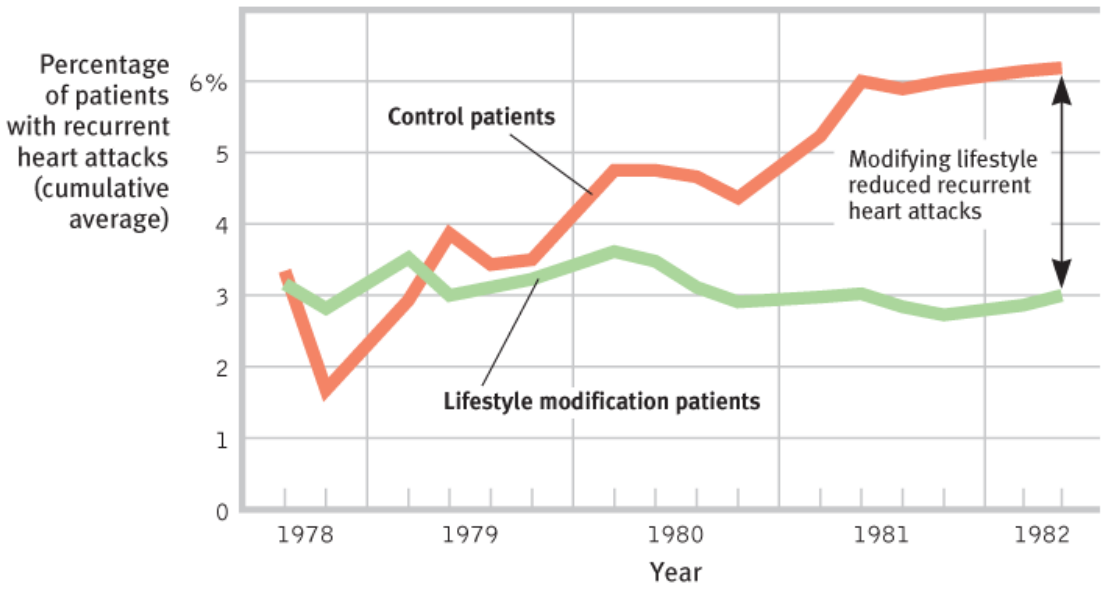
Data from McCann & Holmes, 1984.



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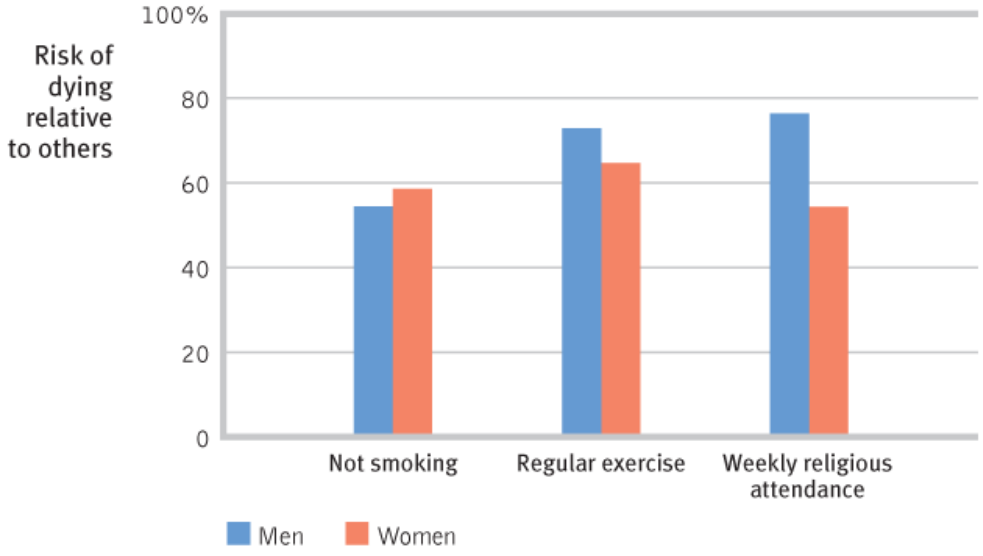
Data from Friedman & Ulmer, 1984.



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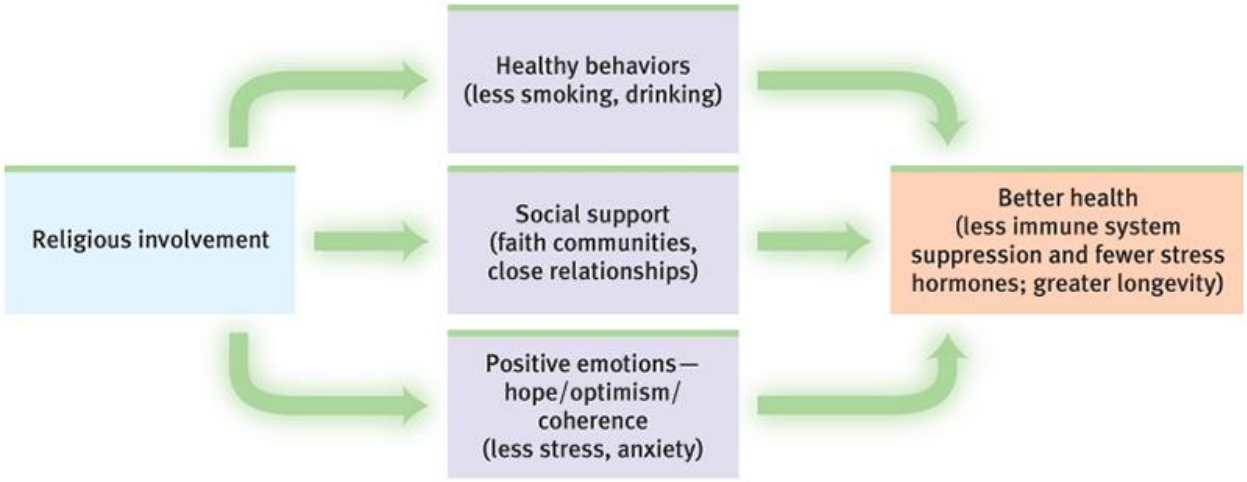

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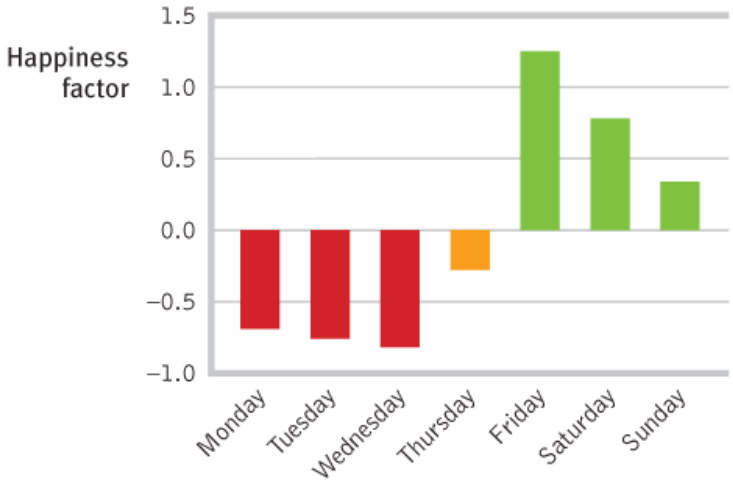

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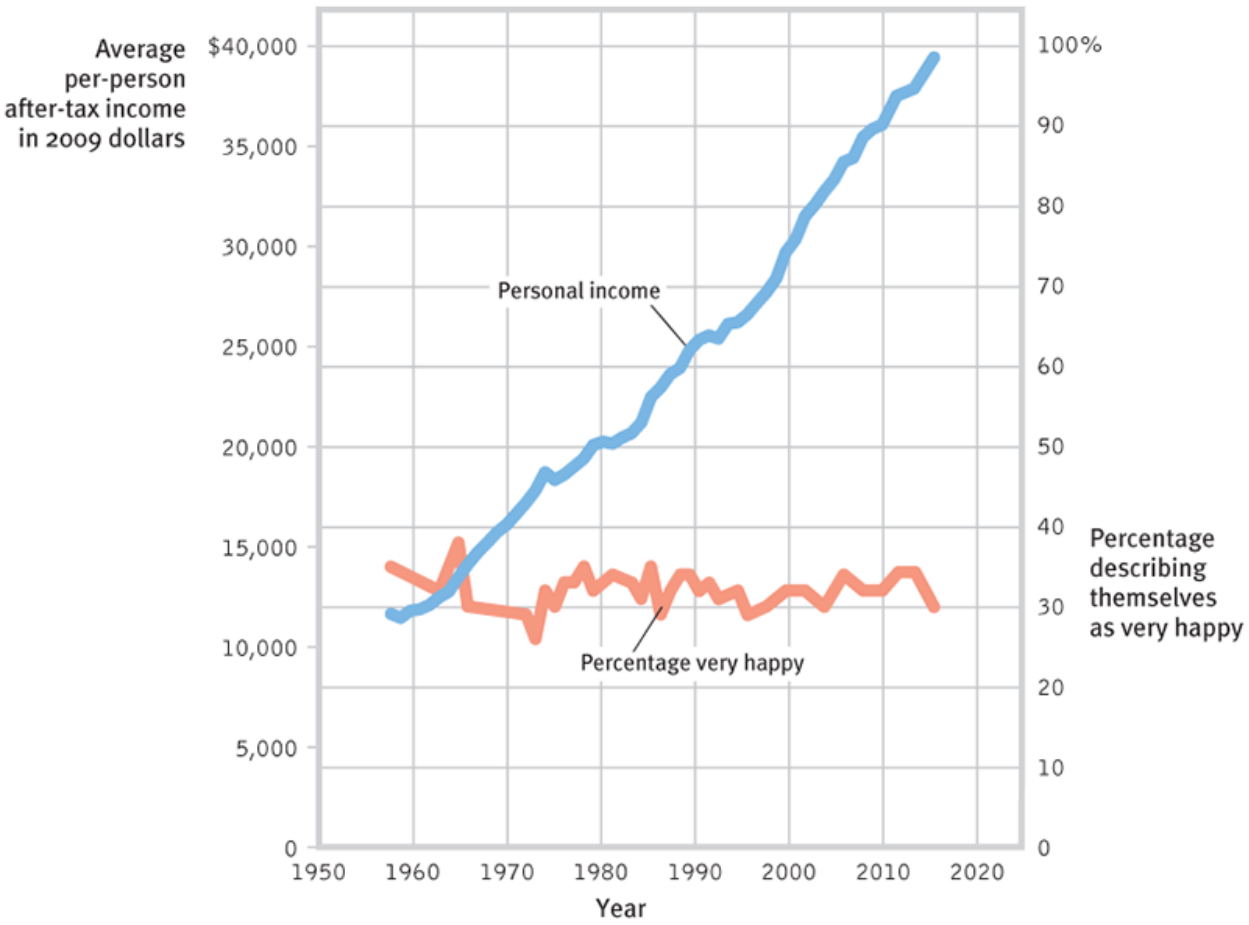

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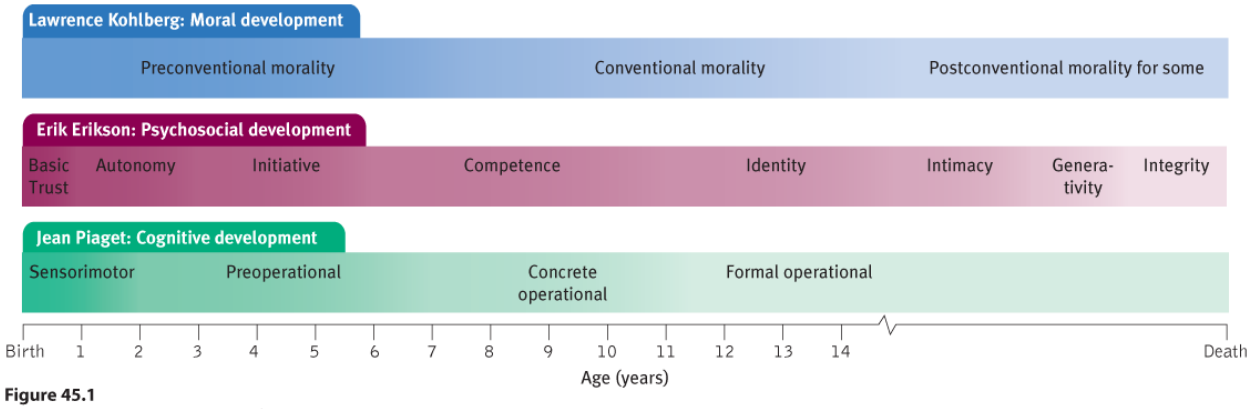
Researchers Have Found That Happy People Tend to	However, Happiness Seems Not Much Related to Other Factors, Such as
Have high self-esteem (in individualist countries).	Age.
Be optimistic, outgoing, and agreeable.	Gender (women are more often depressed, but also more often joyful).
Have close, positive, and lasting relationships.	Physical attractiveness.
Have work and leisure that engage their skills.	
Have an active religious faith (especially in more religious cultures).	
Sleep well and exercise.	



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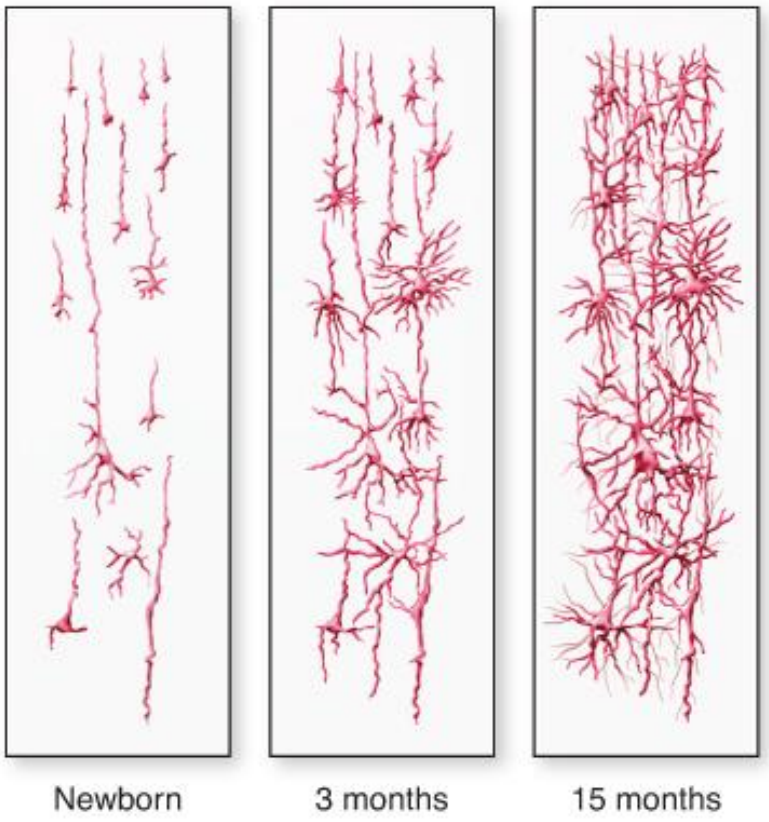

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(a) Two-year-old Alexandra has learned the schema for *doggy* from her picture books.

(b) Alexandra sees a cat and calls it a *doggy*. She is trying to assimilate this new animal into an existing schema. Her mother tells her, "No, it's a *cat*."

(c) Alexandra accommodates her schema for furry four-legged animals, distinguishing dogs from cats. Over time her schemas become more sophisticated as she learns to distinguish the pets of family and friends by name.

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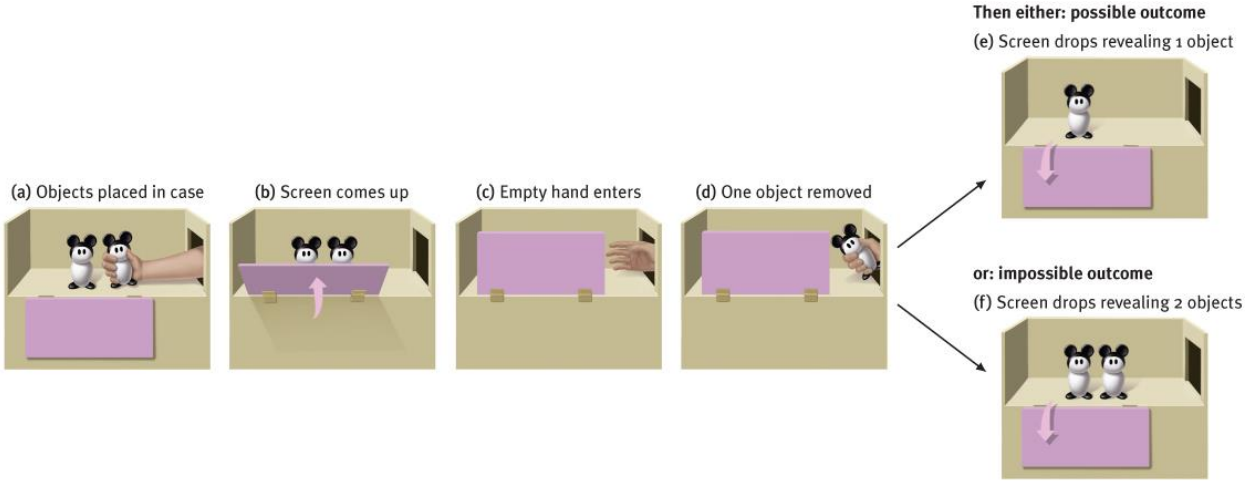

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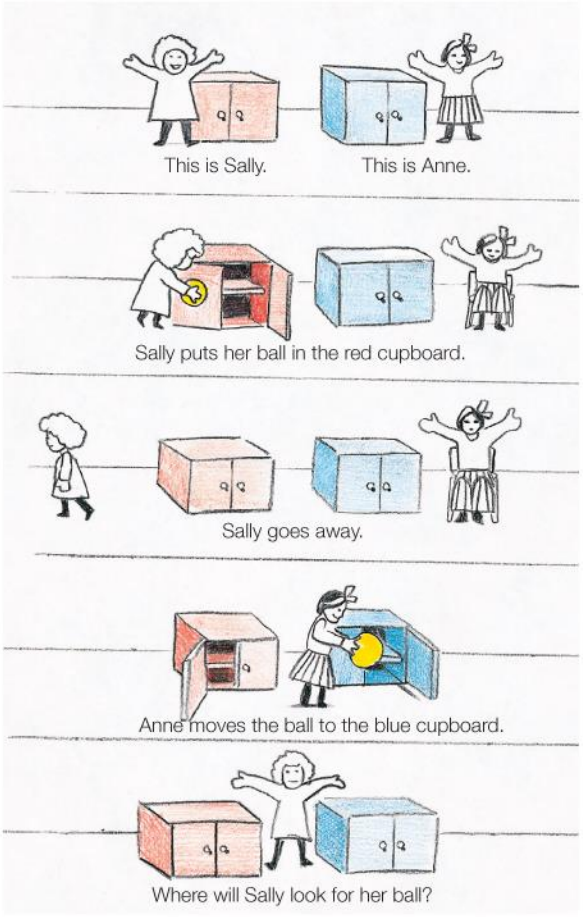

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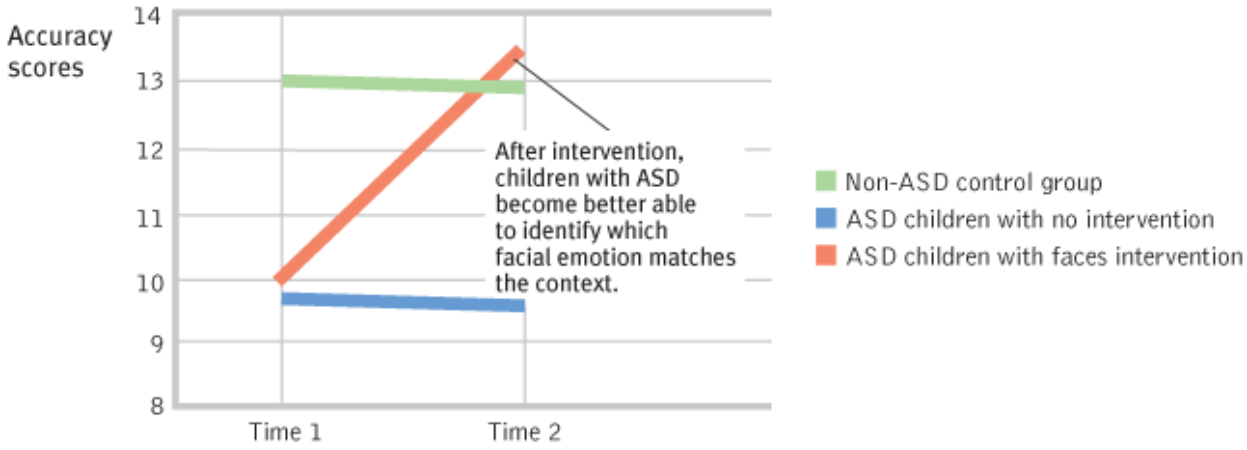

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Typical Age Range	Stage and Description	Key Milestones
Birth to nearly 2 years	*Sensorimotor* Experiencing the world through senses and actions (looking, hearing, touching, mouthing, and grasping)	• Object permanence • Stranger anxiety
About 2 to 6 or 7 years	*Preoperational* Representing things with words and images; using intuitive rather than logical reasoning	• Pretend play • Egocentrism
About 7 to 11 years	*Concrete operational* Thinking logically about concrete events; grasping concrete analogies and performing arithmetical operations	• Conservation • Mathematical transformations
About 12 through adulthood	*Formal operational* Reasoning abstractly	• Abstract logic • Potential for mature moral reasoning

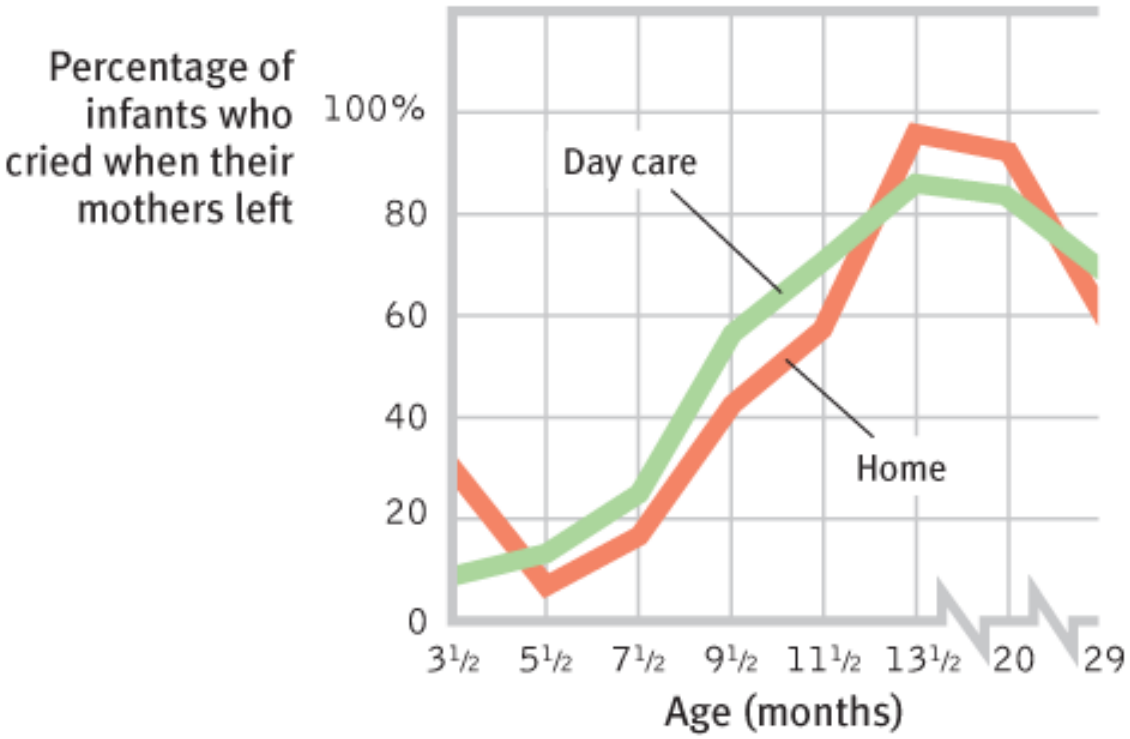

Figure 48.3
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48-6 What outcomes are associated with each parenting style?

Thinking Critically About:

Parenting Styles—

Too Hard, Too Soft, Too Uncaring, and Just Right?

Researchers have identified four parenting styles,[1] which have been associated with varying outcomes.

1 Authoritarian parents

Children with less social skill and self-esteem, and a brain that overreacts when they make mistakes [2]

2 Permissive parents

Children who are more aggressive and immature [3]

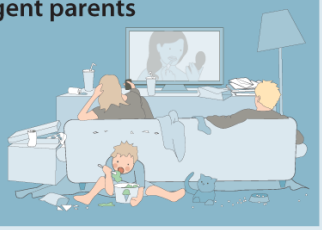
HOWEVER, Correlation ≠ Causation!

What other factors might explain this parenting-competence link?

- Children's traits may influence parenting. Parental warmth and control vary somewhat from child to child, even in the same family.[6] Maybe socially mature, agreeable, easygoing children evoke greater trust and warmth from their parents? Twin studies have supported this possibility.[7]
- Some underlying third factor may be at work. Perhaps, for example, competent parents and their competent children share genes that predispose social competence. Twin studies have also supported this possibility. [8]

3 Negligent parents

Children with poor academic and social outcomes [4]



4 Authoritative parents

Children with the highest self-esteem, self-reliance, self-regulation, and social competence [5]

1. Kakinami et al., 2015. 2. Meyer et al., 2015. 3. Luyckx et al., 2011. 4. Pinquart, 2015; Steinberg et al., 1994. 5. Baumrind, 1996, 2013; Buri et al.,1988; Coopersmith, 1967; Sulik et al., 2015. 6. Holden & Miller, 1999; Klahr & Burt, 2014. 7. Kendler, 1996. 8. South et al., 2008.

Active dads are caregiving more. Today's co-parenting fathers are more engaged, with a doubling in the weekly hours spent with their children, compared with fathers in 1965 (Livingston & Parker, 2011).
Couples that share housework and child care are happier in their relationships and less divorce prone (Wilcox & Marquardt, 2011).
Co-parenting supports children. After controlling for other factors, children average better life outcomes "if raised by both parents" (Taylor, 2014).
Parents' genders do not affect children's well-being. The American Academy of Pediatrics (2013) reports that what matters is competent, secure, nurturing parents, regardless of their gender and sexual orientation. The American Sociological Association (2013) concurs: Decades of research confirm that parental stability and resources matter. "Whether a child is raised by same-sex or opposite-sex parents has no bearing on a child's well-being."

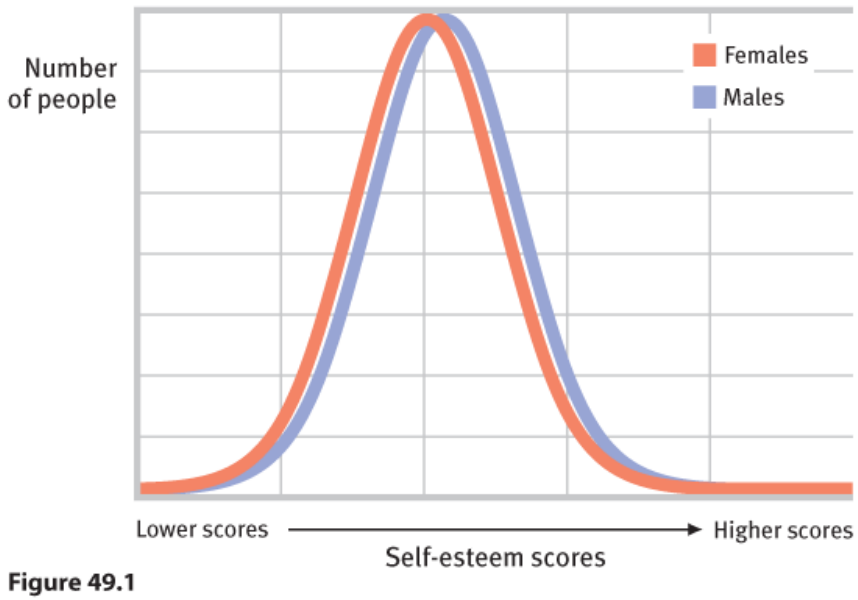


Figure 49.1
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49-3 What factors contribute to gender bias in the workplace?

Thinking Critically About: Gender Bias in the Workplace

Differences in PERCEPTION

Among politicians who seem power-hungry, women are less successful than men.[1]

Most political leaders are men:

Men held 78% of seats in the world's governing parliaments in 2015.[2]

People around the world tend to see men as more powerful.[3]

When groups form, whether as juries or companies, leadership tends to go to males.[4]

Differences in COMPENSATION

Women in traditionally male occupations have received less than their male colleagues.[5]

Medicine U.S. salary disparity between male and female physicians:[6]

Academia **Female** research grant applicants have received lower "quality of researcher" ratings and have been less likely to be funded.[7] (But as we will see, gender attitudes and roles are changing.)

Differences in FAMILY-CARE RESPONSIBILITY

U.S. mothers still do nearly **twice** as much child care as **fathers**.[8] In the workplace, women are less often driven by money and status, compromise more, and more often opt for reduced work hours.[9]

What else contributes to WORKPLACE GENDER BIAS?

Social norms

In most societies, men place more importance on power and achievement, and are socially dominant.[10]

Leadership styles

Men are more *directive*, telling people what to do and how to do it.

Women are more *democratic*, welcoming others' input in decision making.[11]

Interaction styles

Men are more likely to offer opinions.[12]

Women are more likely to express support.[12]

Everyday behavior

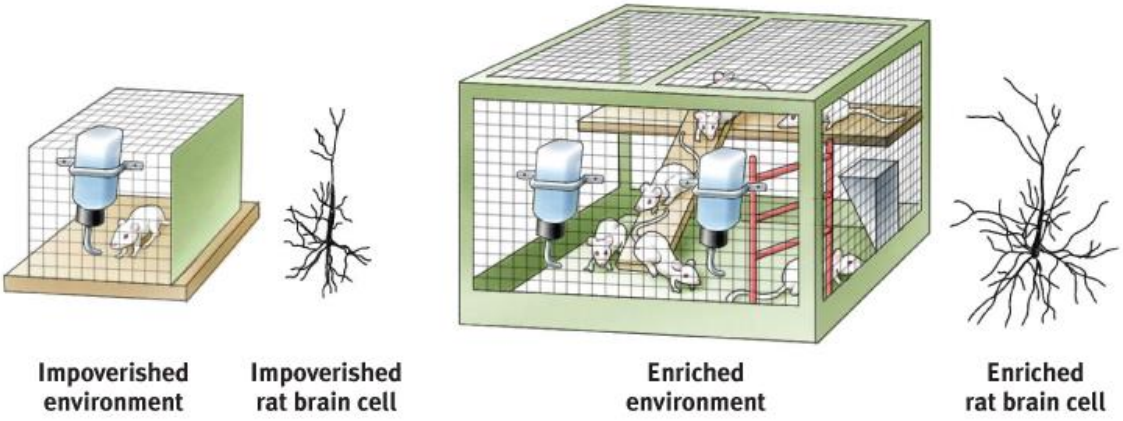
Men are more likely to talk assertively, interrupt, initiate touches, and stare.[13]

Women smile and apologize more than men.[13]

Yet GENDER ROLES VARY WIDELY across place and time.

Women are increasingly represented in leadership (now 50% of Canada's cabinet ministers) and in the workforce. In 1963, the Harvard Business School admitted its first women students. Among its Class of 2016, 41% were women.[14] In 1960, women were 6% of U.S. medical students. Today they are about half.[15]

1. Okimoto & Brescoll, 2010. 2. IPU, 2015. 3. Williams & Best, 1990. 4. Colarelli et al., 2006. 5. Willett et al., 2015. 6. Census Bureau, 2014. 7. van der Lee et al., 2015. 8. CEA, 2014; Parker & Wang, 2013; Pew, 2015. 9. Nikolova & Lamberton, 2016; Pinker, 2008. 10. Gino et al., 2015; Schwartz & Rubel-Lifschitz, 2009. 11. Eagly & Carli, 2007; van Engen & Willemsen, 2004. 12. Aries, 1987; Wood, 1987. 13. Leaper & Ayres, 2007; Major et al., 1990; Schumann & Ross, 2010. 14. Peck, 2015. 15. AAMC, 2014.



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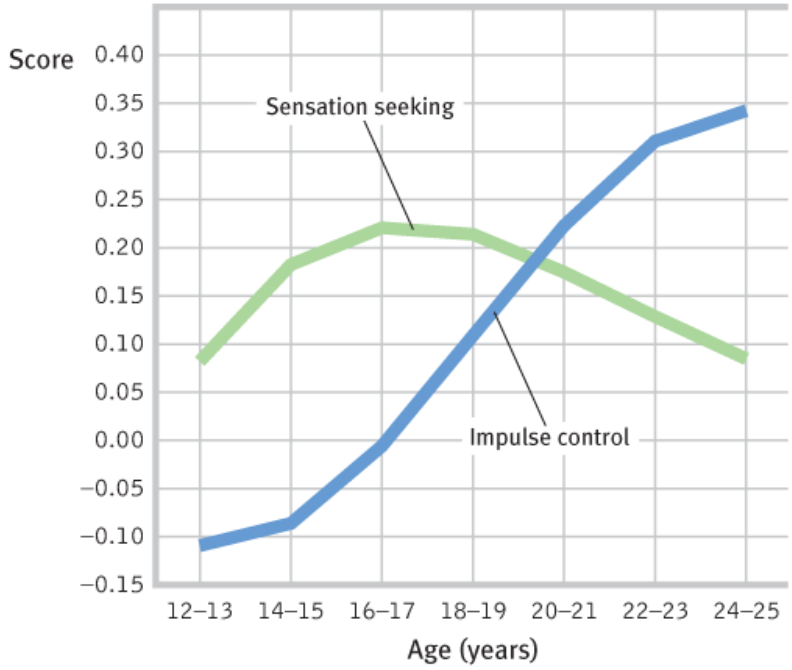

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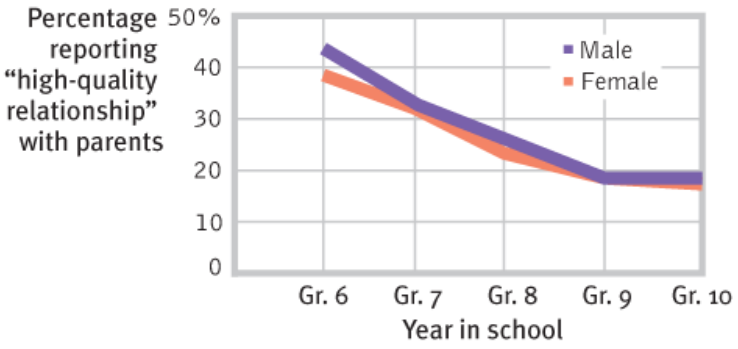
Level (approximate age)	Focus	Example
Preconventional morality (before age 9)	Self-interest; obey rules to avoid punishment or gain concrete rewards.	"If you save your dying wife, you'll be a hero."
Conventional morality (early adolescence)	Uphold laws and rules to gain social approval or maintain social order.	"If you steal the drug for her, everyone will think you're a criminal."
Postconventional morality (adolescence and beyond)	Actions reflect belief in basic rights and self-defined ethical principles.	"People have a right to live."



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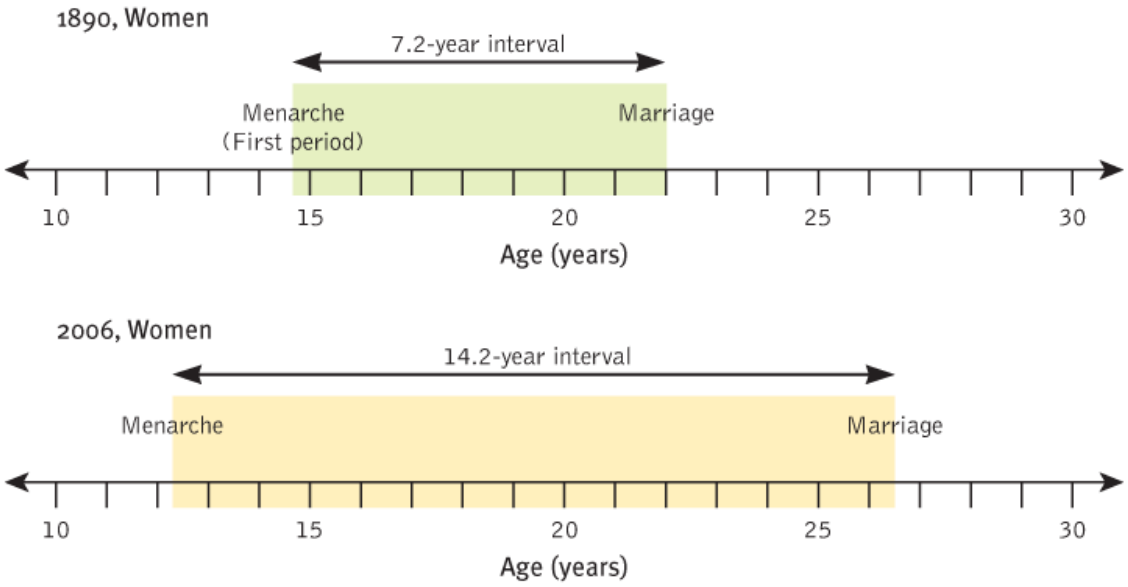

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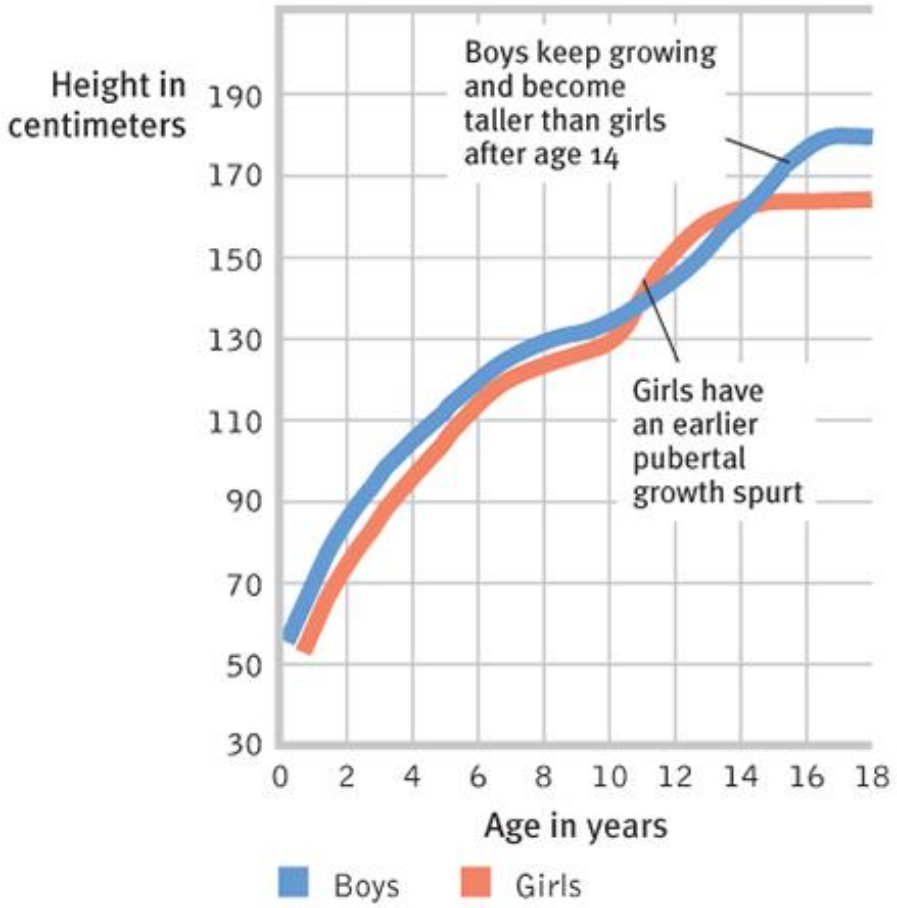
Stage (approximate age)	Issue	Description of Task
Infancy (to 1 year)	Trust vs. mistrust	If needs are dependably met, infants develop a sense of basic trust.
Toddlerhood (1 to 3 years)	Autonomy vs. shame and doubt	Toddlers learn to exercise their will and do things for themselves, or they doubt their abilities.
Preschool (3 to 6 years)	Initiative vs. guilt	Preschoolers learn to initiate tasks and carry out plans, or they feel guilty about their efforts to be independent.
Elementary school (6 years to puberty)	Competence vs. inferiority	Children learn the pleasure of applying themselves to tasks, or they feel inferior.
Adolescence (teen years into 20s)	Identity vs. role confusion	Teenagers work at refining a sense of self by testing roles and then integrating them to form a single identity, or they become confused about who they are.
Young adulthood (20s to early 40s)	Intimacy vs. isolation	Young adults struggle to form close relationships and to gain the capacity for intimate love, or they feel socially isolated.
Middle adulthood (40s to 60s)	Generativity vs. stagnation	Middle-aged people discover a sense of contributing to the world, usually through family and work, or they may feel a lack of purpose.
Late adulthood (late 60s and up)	Integrity vs. despair	Reflecting on their lives, older adults may feel a sense of satisfaction or failure.



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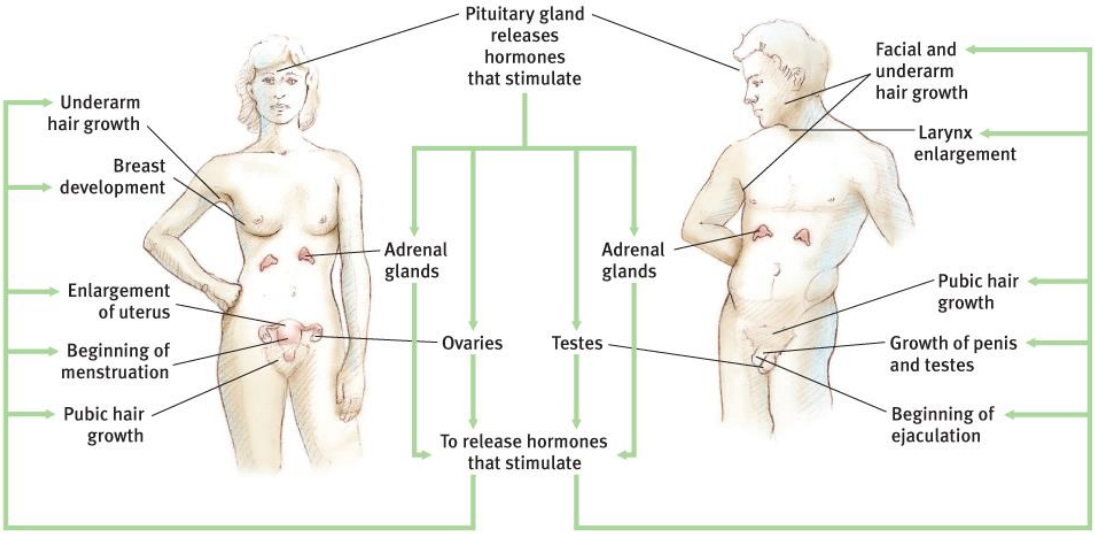

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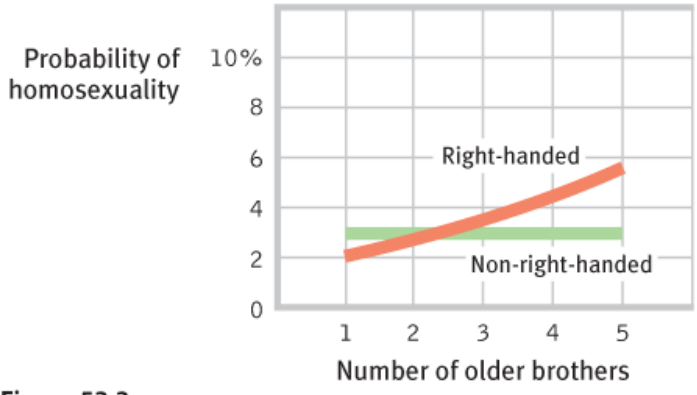

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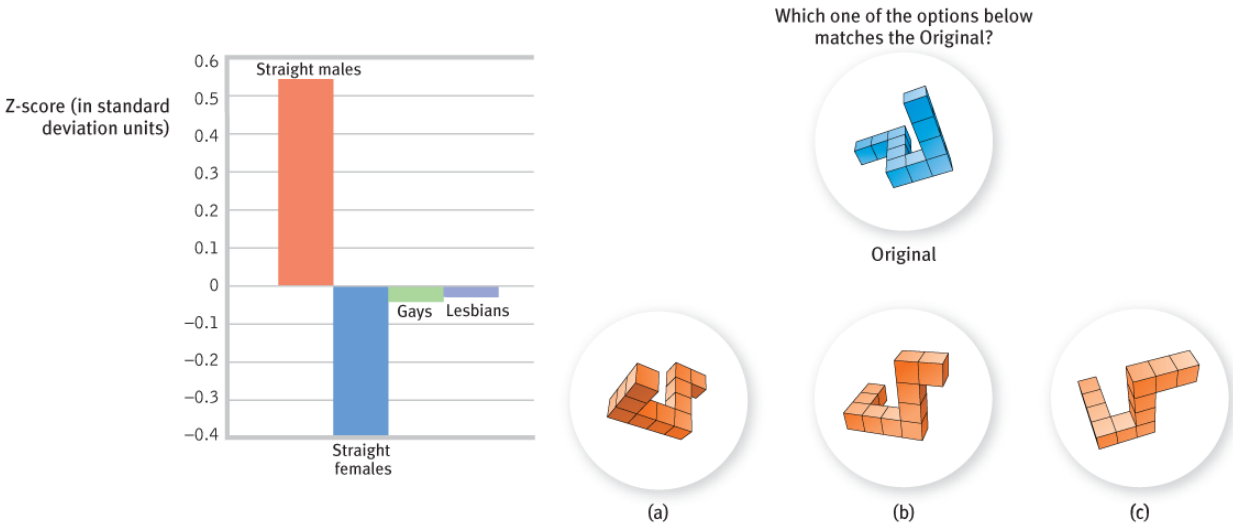

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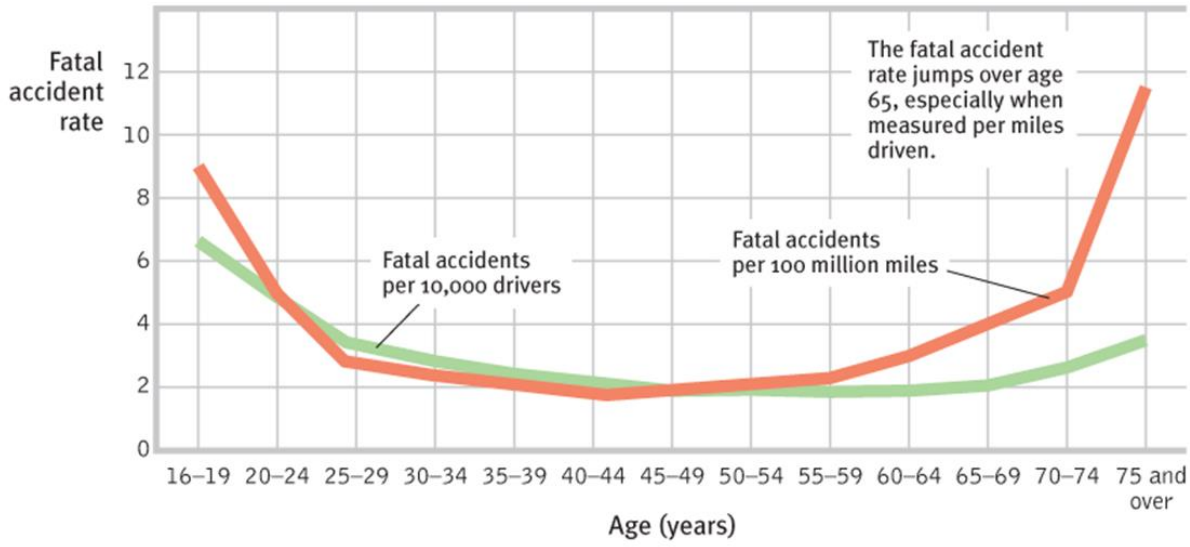

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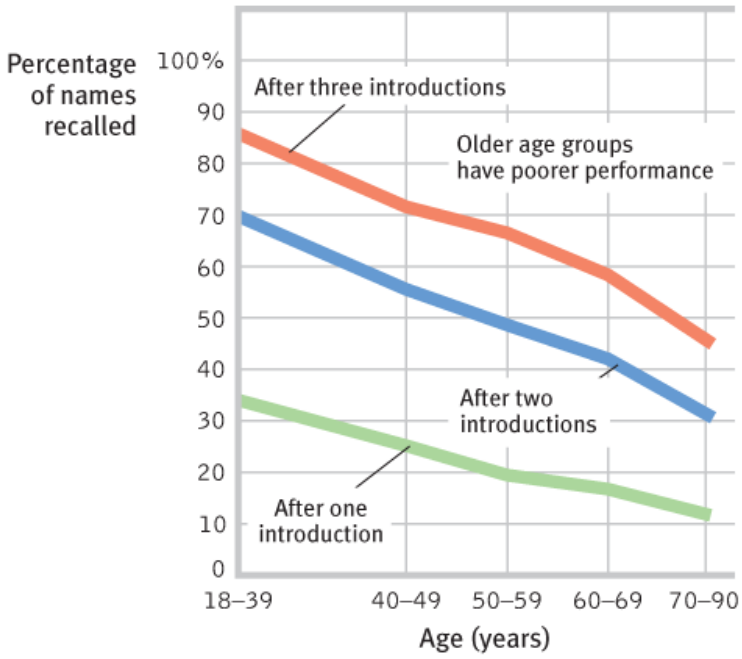

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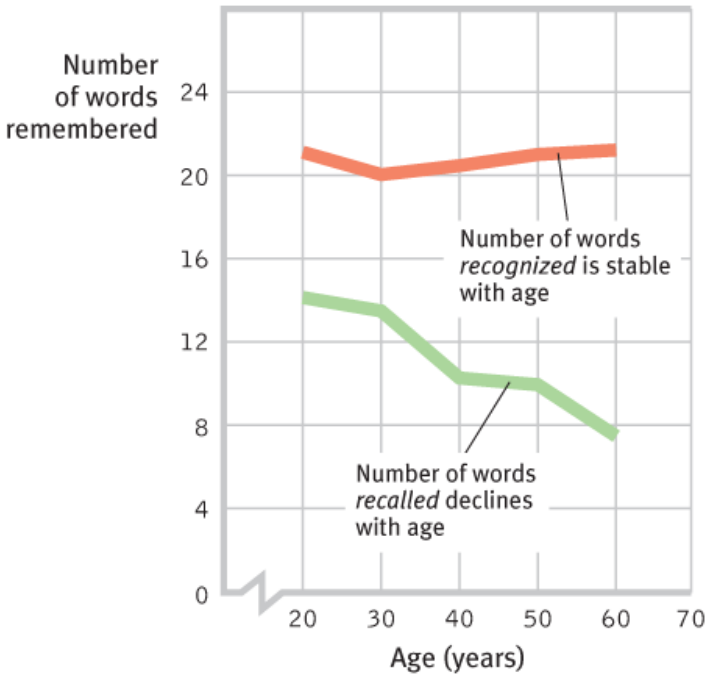

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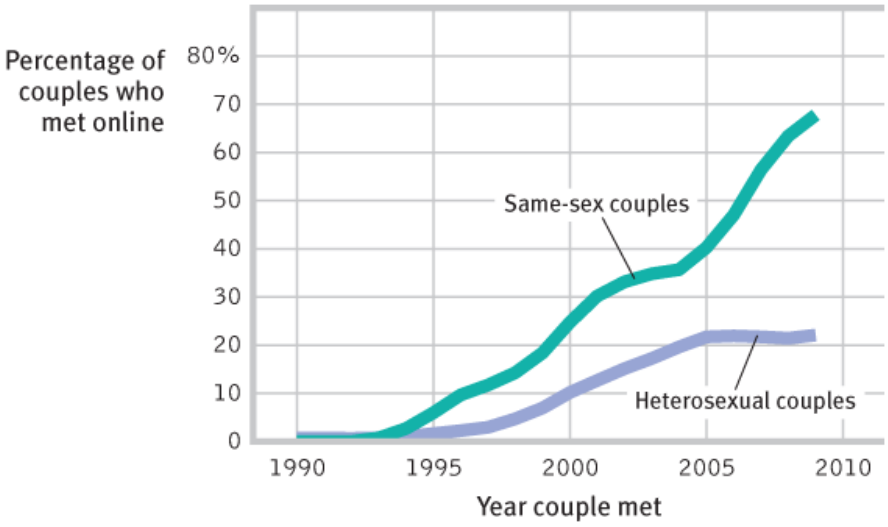
Data from Schonfield & Robertson, 1966.



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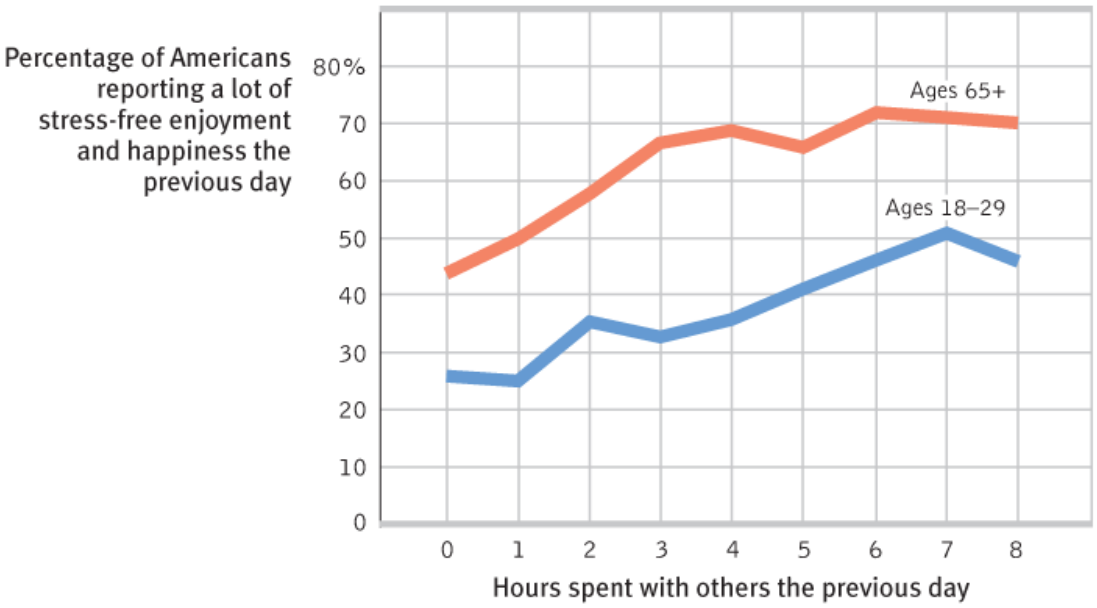
Data from Rosenfeld, 2013; Rosenfeld & Thomas, 2012.



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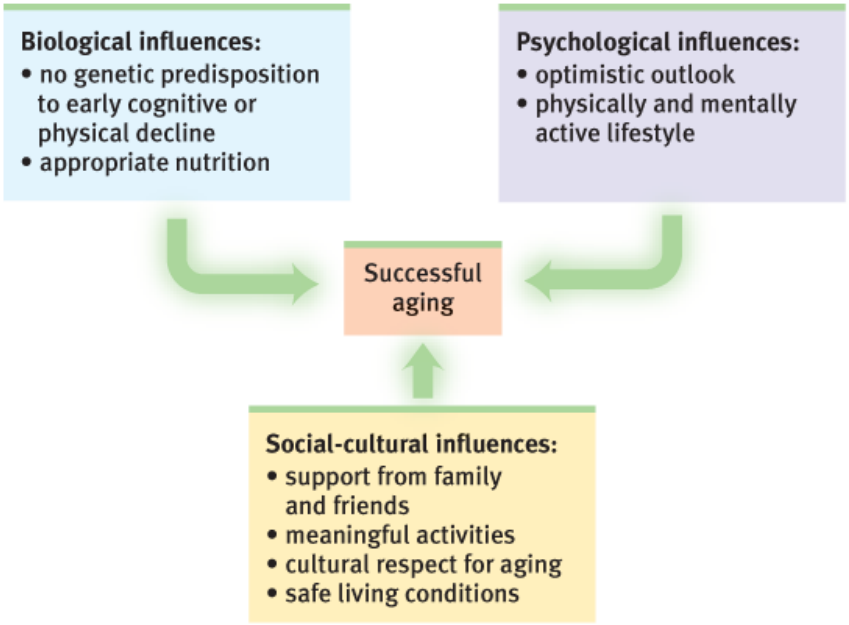

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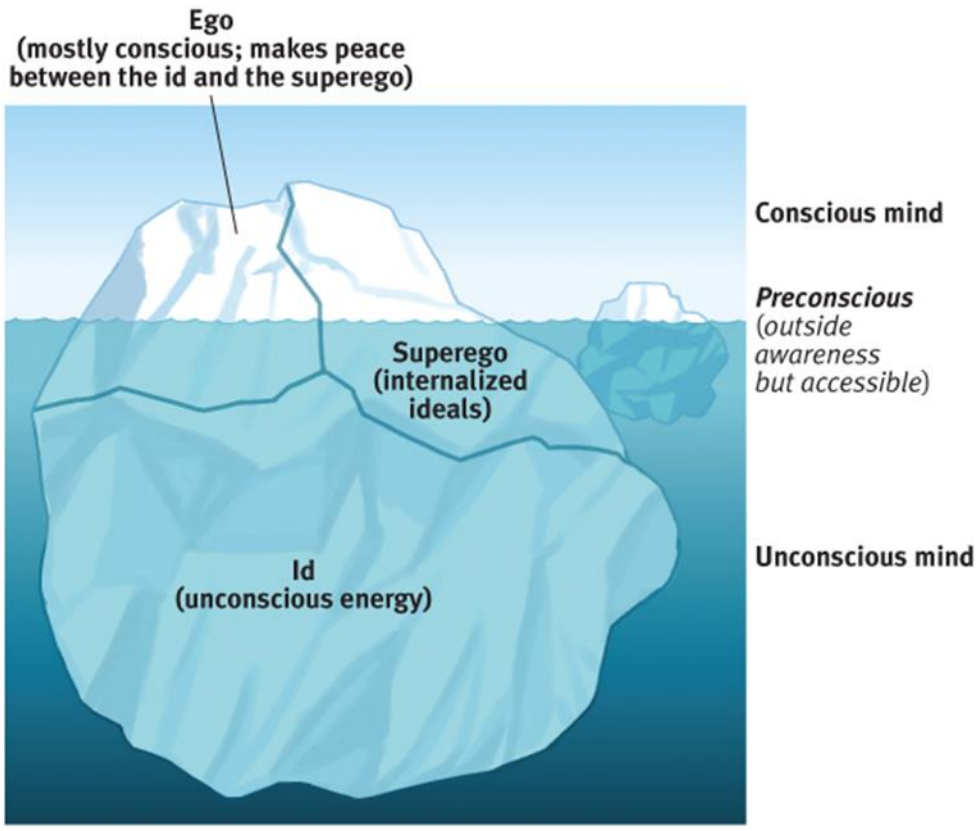

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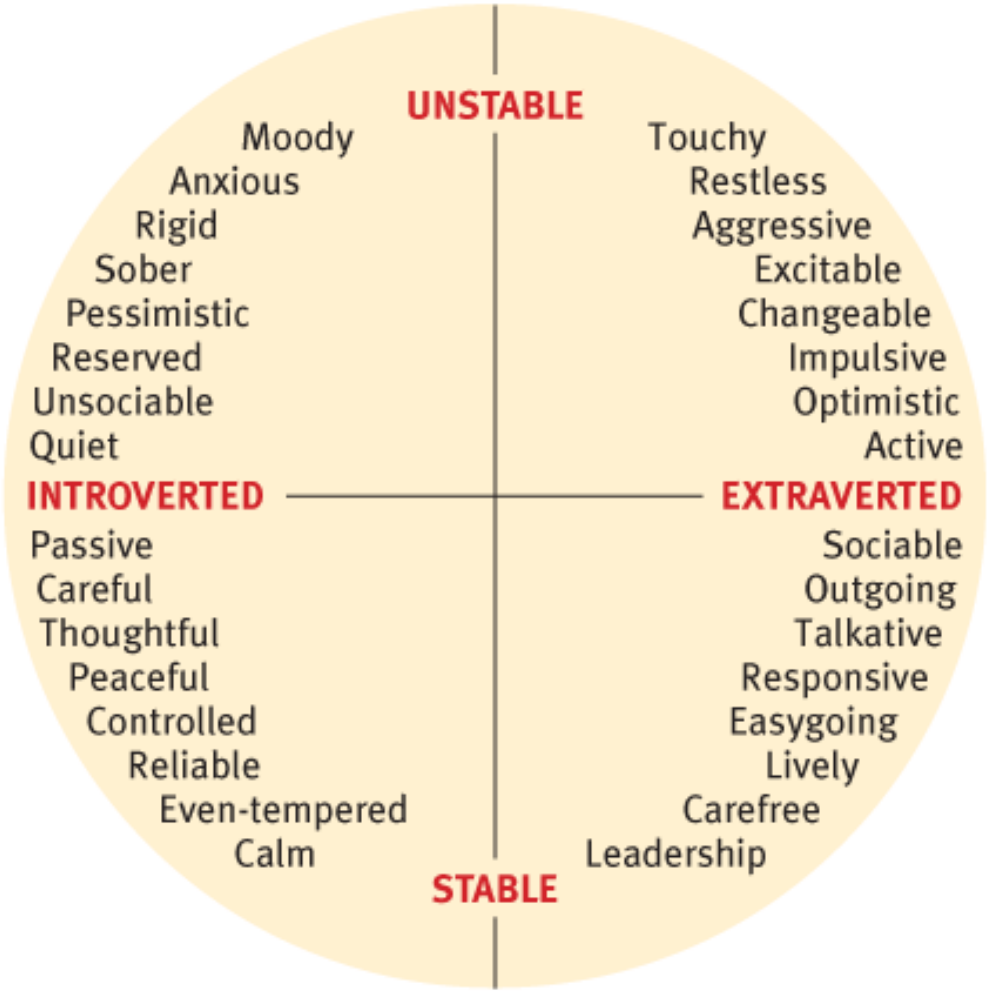
Stage	Focus
Oral (0–18 months)	Pleasure centers on the mouth—sucking, biting, chewing
Anal (18–36 months)	Pleasure focuses on bowel and bladder elimination; coping with demands for control
Phallic (3–6 years)	Pleasure zone is the genitals; coping with incestuous sexual feelings
Latency (6 to puberty)	A phase of dormant sexual feelings
Genital (puberty on)	Maturation of sexual interests

Defense Mechanism	Unconscious Process Employed to Avoid Anxiety-Arousing Thoughts or Feelings	Example of How a 16-Year-Old Defends Against Anxiety After Being Cut from the Soccer Team
Regression	Retreating to an earlier psychosexual stage, where some psychic energy remains fixated	Wants to go to his grandma's house to play cards and eat her chocolate chip cookies
Reaction formation	Switching unacceptable impulses into their opposites	Makes a big show of expressing indifference about being on "the stupid soccer team"
Projection	Disguising one's own threatening impulses by attributing them to others	Talks a lot about how mad his parent is at the coach
Rationalization	Offering self-justifying explanations in place of the real, more threatening unconscious reasons for one's actions	Explains that he wasn't working very hard in the tryouts and could have made the team if he really wanted to
Displacement	Shifting sexual or aggressive impulses toward a more acceptable or less threatening object or person	Yells at his little brother for no real reason
Sublimation	Transferring of unacceptable impulses into socially valued motives	Decides instead to join the cross-country running team, where all are accepted
Denial	Refusing to believe or even perceive painful realities	Insists that there was an error on the team list and he's going to set things right with the coach



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57-2 What are some common misunderstandings about introversion?

Thinking Critically About:
The Stigma of Introversion

Western cultures prize extraversion:

Superheroes tend to be extraverted: Superman is bold and energetic. His introverted alter ego, Clark Kent, is mild-mannered and bumbling.

Take-charge Elastigirl saves the day in *The Incredibles.*

87% of Westerners want to be more extraverted. [1]

Being introverted seems to imply that we don't have the "right stuff." [2]

Attractive, successful people are presumed to be extraverts.

What is introversion?

Introversion is *not* shyness.
(Shy people remain quiet because they fear others will evaluate them negatively.)

Introverted people seek low levels of stimulation from their environment because they're ***sensitive.*** For example, when given lemon juice, introverted people salivated more than extraverted people. [3]

Introversion may have benefits:

- Introverted leaders outperform extraverted leaders in some contexts, such as when their employees voice new ideas and challenge existing norms. [4]
- An analysis of 35 studies showed no correlation between extraversion and sales performance. [5]
- Many introverts flourish, including Abraham Lincoln, Mother Teresa, and Gandhi.

1. Hudson & Roberts, 2014. 2. Cain, 2012. 3. Corcoran, 1964. 4. Grant et al., 2011. 5. Barrick et al., 2001.

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(*Memory tip:* Picturing a **CANOE** will help you recall these.)		
Disorganized, careless, impulsive	**C**onscientiousness	Organized, careful, disciplined
Ruthless, suspicious, uncooperative	**A**greeableness	Soft-hearted, trusting, helpful
Calm, secure, self-satisfied	**N**euroticism (emotional stability vs. instability)	Anxious, insecure, self-pitying
Practical, prefers routine, conforming	**O**penness	Imaginative, prefers variety, independent
Retiring, sober, reserved	**E**xtraversion	Sociable, fun-loving, affectionate

Source: Information from McCrae & Costa (1986, 2008).

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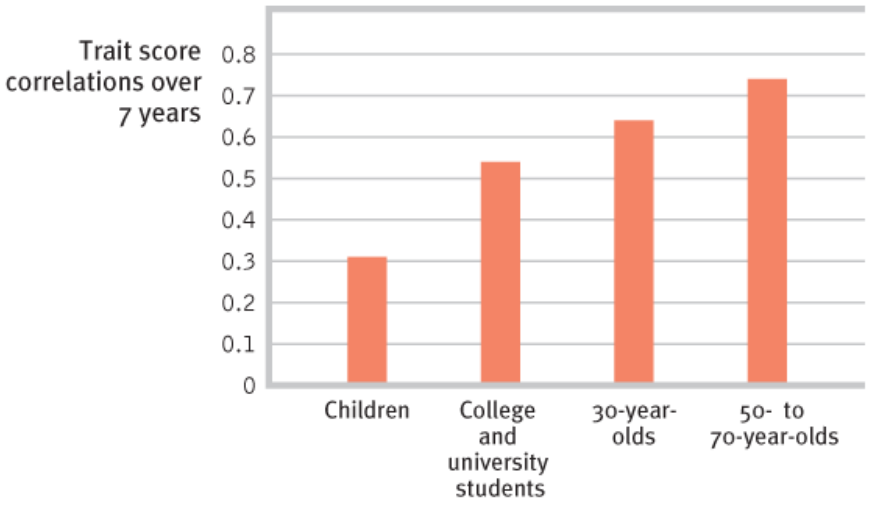

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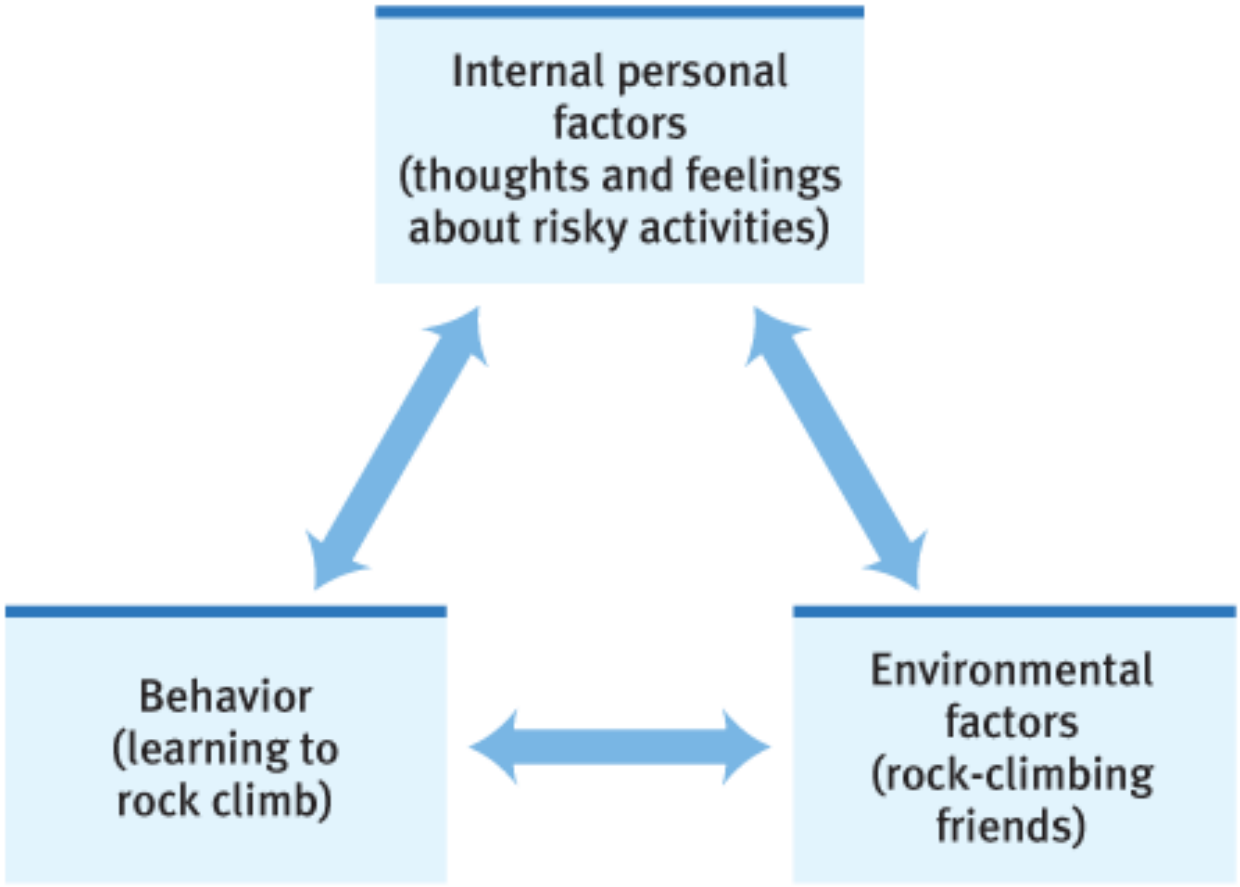
Data from Roberts & DelVecchio, 2000.



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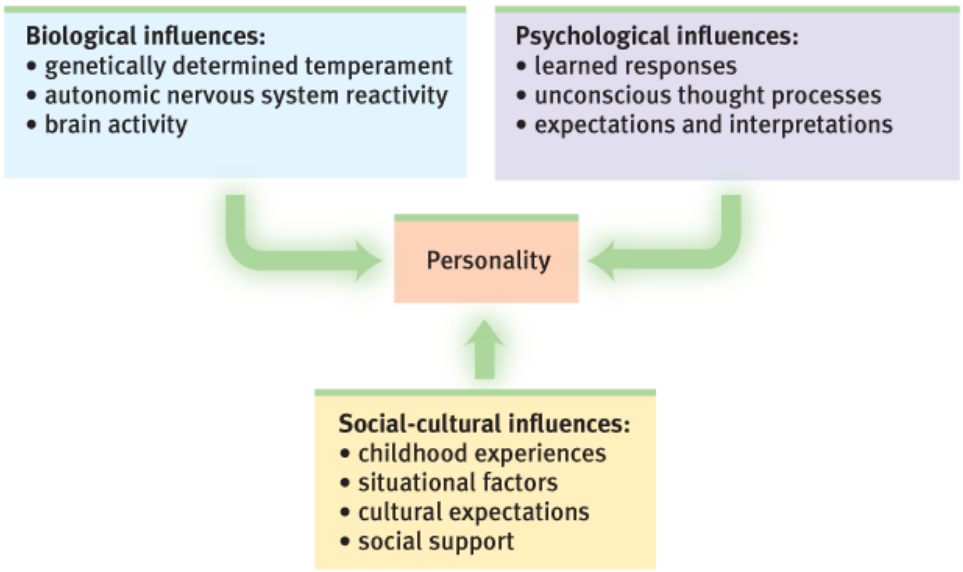

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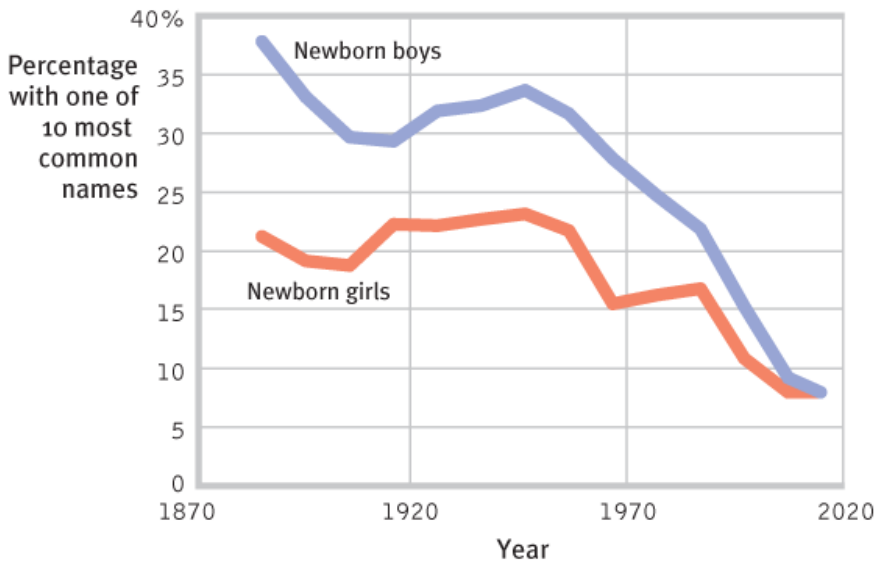
Personality Theory	Key Proponents	Assumptions	View of Personality
Psychoanalytic	Freud	Emotional disorders spring from unconscious dynamics, such as unresolved sexual and other childhood conflicts, and fixation at various developmental stages. Defense mechanisms fend off anxiety.	Personality consists of pleasure-seeking impulses (the id), a reality-oriented executive (the ego), and an internalized set of ideals (the superego).
Psychodynamic	Adler, Horney, Jung	The unconscious and conscious minds interact. Childhood experiences and defense mechanisms are important.	The dynamic interplay of conscious and unconscious motives and conflicts shapes our personality.
Humanistic	Rogers, Maslow	Rather than examining the struggles of sick people, it's better to focus on the ways healthy people may strive for self-realization.	If our basic human needs are met, we will strive toward self-actualization. In a climate of unconditional positive regard, we can develop self-awareness and a more realistic and positive self-concept.
Trait	Allport; Eysenck, H.; Eysenck, S.; McCrae; Costa	We have certain stable and enduring characteristics, influenced by genetic predispositions.	We have certain stable and enduring characteristics, influenced by genetic predispositions.

Social-Cognitive	Bandura	Our traits interact with the social context to produce our behaviors—a phenomenon called *reciprocal determinism.*	Conditioning and observational learning interact with cognition to create behavior patterns. Our behavior in one situation is best predicted by considering our past behavior in similar situations.

Research Method	Description	Perspectives Incorporating This Method	Benefits	Weaknesses
Case study	In-depth study of one individual.	Psychoanalytic, humanistic	Less expensive than other methods.	May not generalize to the larger population.
Survey	Systematic questioning of a random sample of the population.	Trait, socialcognitive	Results tend to be reliable and can be generalized to the larger population.	May be expensive; correlational findings.
Projective tests (e.g., TAT and Rorschach)	Ambiguous stimuli designed to trigger projection of inner dynamics.	Psychodynamic	Designed to get beneath the conscious surface of a person's self-understanding; may be a good ice-breaker.	Results have weak validity and reliability.
Personality inventories, such as the MMPI (to Determine scores on Big Five personality factors)	Objectively scored groups of questions designed to identify personality dispositions.	Trait	Generally reliable and empirically validated.	Explore a limited number of traits.
Observation	Studying how individuals react in different situations.	Social-cognitive	Allows researchers to study the effects of environmental factors on the way an individual's personality is expressed.	Results may not apply to the larger population.
Experimentation	Manipulate variables, with random assignment to conditions.	Social-cognitive	Discerns cause and effect.	Some variables cannot feasibly or ethically be manipulated.



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Data from Twenge et al., 2010, 2016.

Concept	Individualism	Collectivism
Self	Independent (identity from individual traits)	Interdependent (identity from belonging to groups)
Life task	Discover and express one's uniqueness	Maintain connections, fit in, perform role
What matters	Me—personal achievement and fulfillment; rights and liberties; self-esteem	Us—group goals and solidarity; social responsibilities and relationships; family duty
Coping method	Change reality	Accommodate to reality
Morality	Defined by the individual (self-based)	Defined by social networks (duty-based)
Relationships	Many, often temporary or casual; confrontation acceptable	Few, close and enduring; harmony is valued
Attributing behavior	Behavior reflects the individual's personality and attitudes	Behavior reflects social norms and roles

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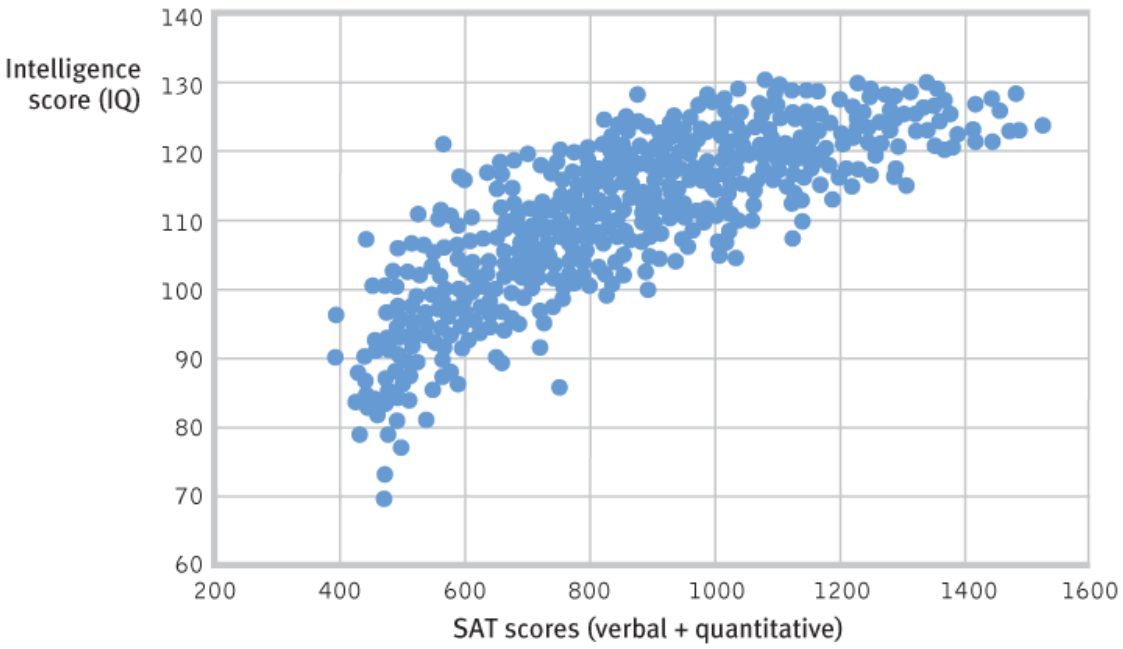
Theory	Summary	Strengths	Other Considerations
Spearman's general intelligence (g)	A basic intelligence predicts our abilities in varied academic areas.	Different abilities, such as verbal and spatial, do have some tendency to correlate.	Human abilities are too diverse to be encapsulated by a single general intelligence factor.
Thurstone's primary mental abilities	Our intelligence may be broken down into seven distinct factors.	A single g score is not as informative as scores for seven primary mental abilities.	Even Thurstone's seven mental abilities show a tendency to cluster, suggesting an underlying g factor.
Gardner's multiple intelligences	Our abilities are best classified into eight or nine independent intelligences, which include a broad range of skills beyond traditional school smarts.	Intelligence is more than just verbal and mathematical skills. Other abilities are equally important to our human adaptability.	Should all our abilities be considered intelligences? Shouldn't some be called less vital talents?
Sternberg's triarchic theory	Our intelligence is best classified into three areas that predict real-world success: analytical, creative, and practical.	These three domains can be reliably measured.	These three domains may be less independent than Sternberg thought and may actually share an underlying g factor.
Emotional intelligence	Social intelligence is an important indicator of life success. Emotional intelligence is a key aspect, consisting of perceiving, understanding, managing, and using emotions.	These four components predict social success and emotional well-being.	Does this stretch the concept of intelligence too far?



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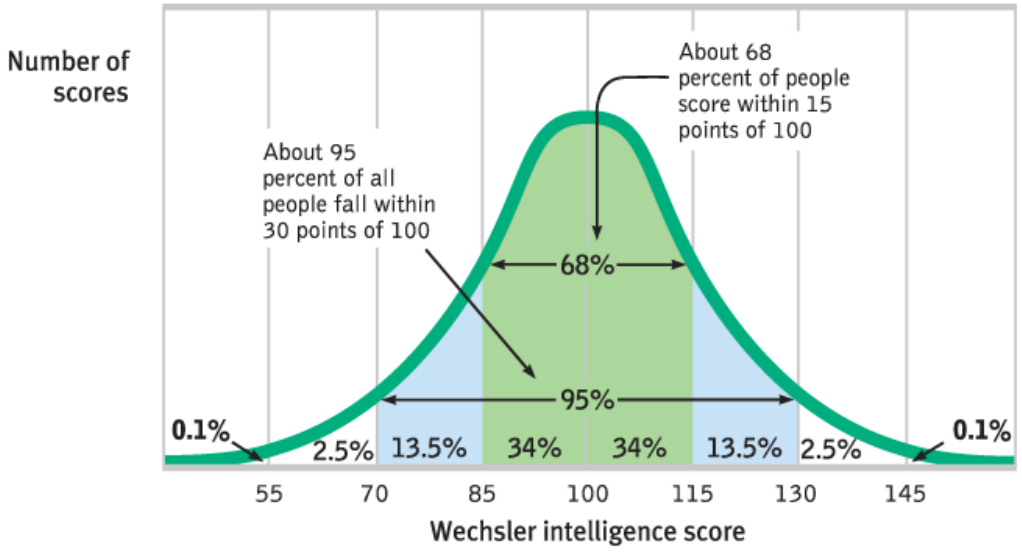
Data from Frey and Detterman, 2004.



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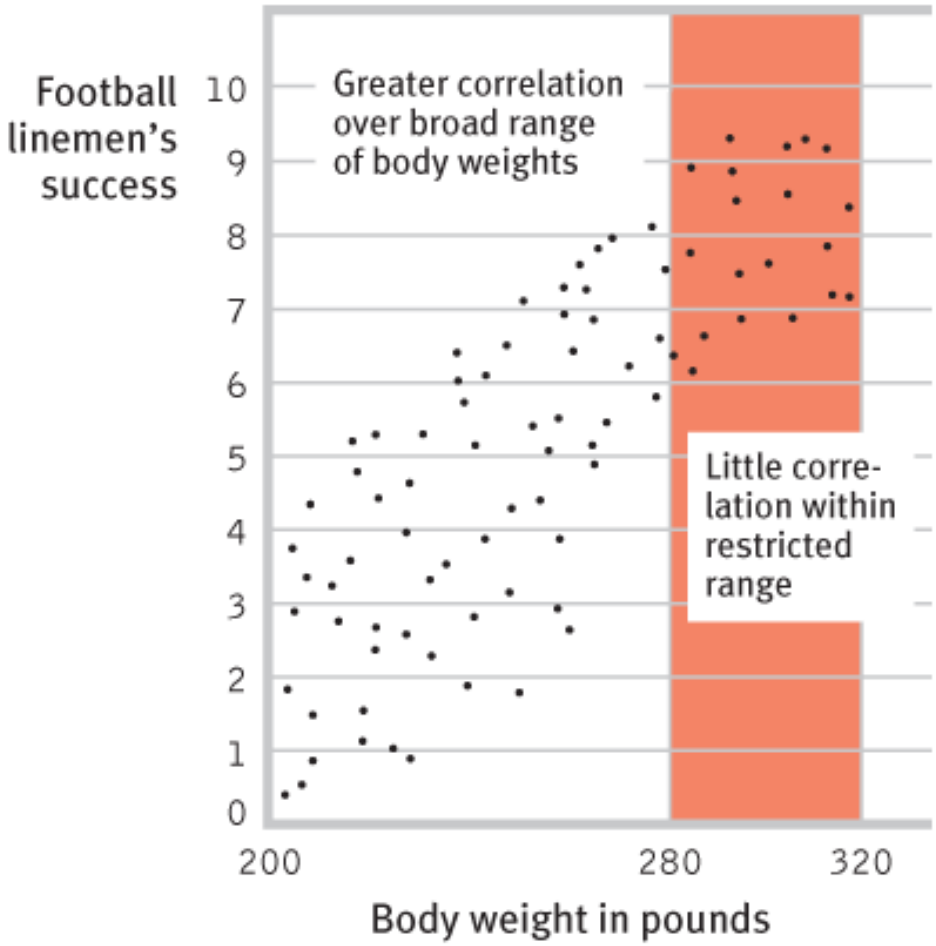

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62-2 What are *cross-sectional studies* and *longitudinal studies*, and why is it important to know which method was used?

Thinking Critically About:

Cross-Sectional and Longitudinal Studies

Researchers using the **cross-sectional** method study different groups at one time. They have found that ***mental ability declines with age.***[1]

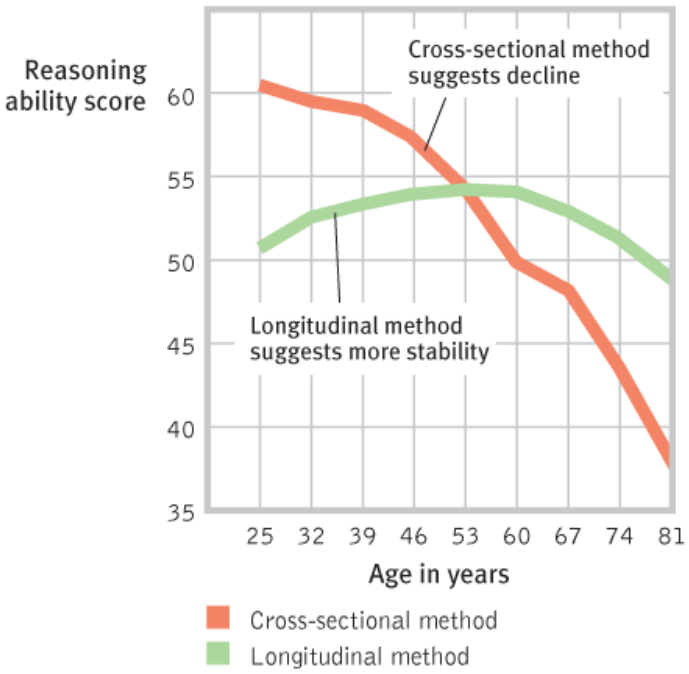
Comparing 70-year-olds and 30-year-olds means comparing different people but also different eras. These researchers were comparing:

- generally less-educated people (born in the early 1900s) with better-educated people (born after 1950).
- people raised in large families with people raised in smaller families.
- people from less-affluent families with people from more-affluent families.

Researchers using the **longitudinal** method study and restudy the same group at different times in their life span. They have found that ***intelligence remains stable, and on some tests it even increases.***[2]

But these studies have their own issue. Participants who survive to the end may be the healthiest and brightest people. When researchers adjust for loss of participants, they find an intelligence decline, especially after age 85.[3]

1. Wechsler, 1972. 2. Salthouse, 2010, 2014; Schaie & Geiwitz, 1982. 3. Brayne et al., 1999.



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Data from Schaie, 1994.

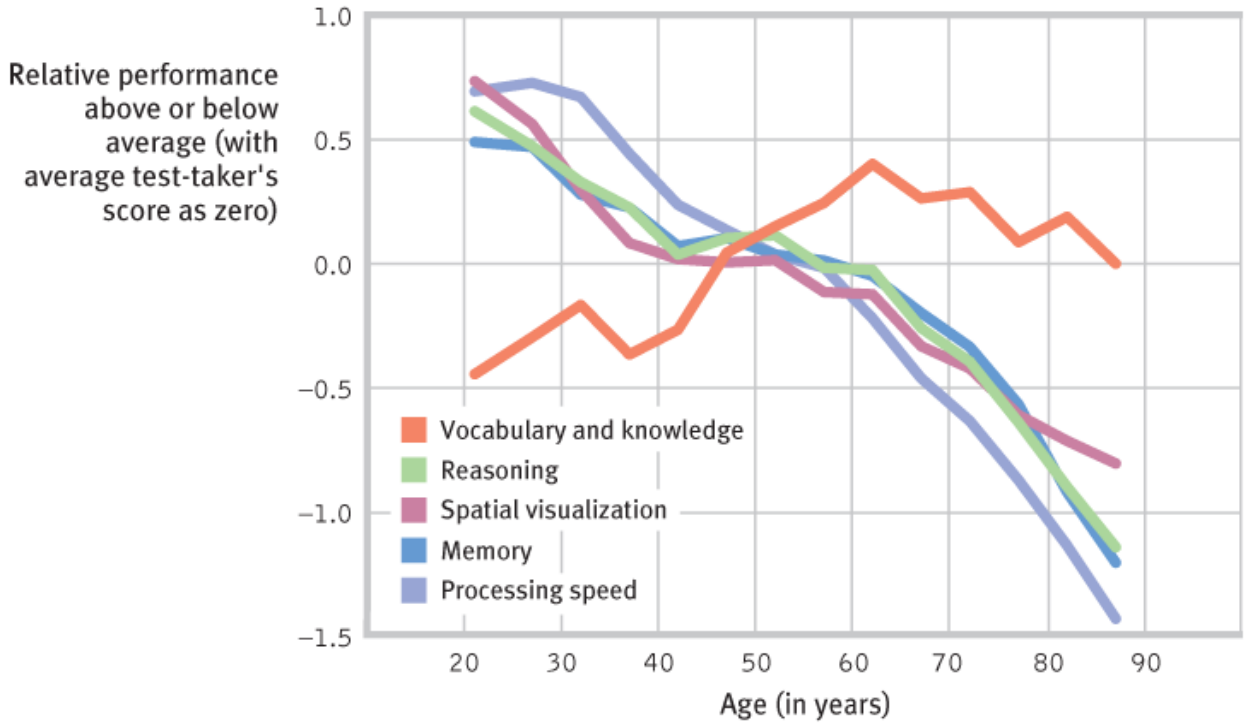

Figure 62.2
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Data from Salthouse, 2010.

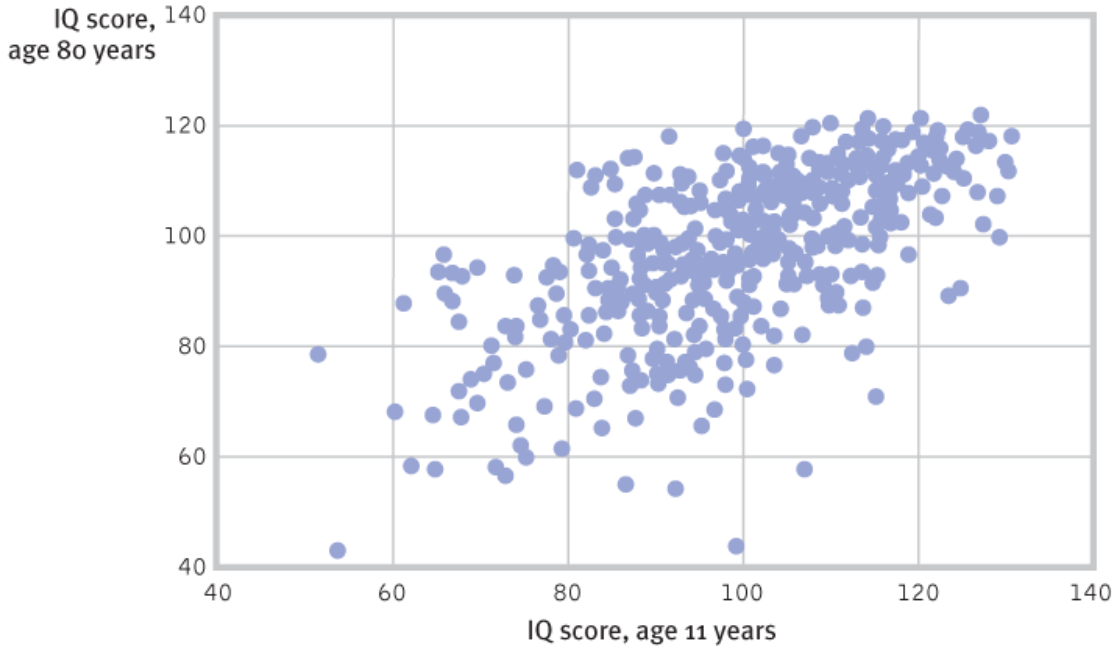

Figure 62.3
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Data from Deary et al., 2004.

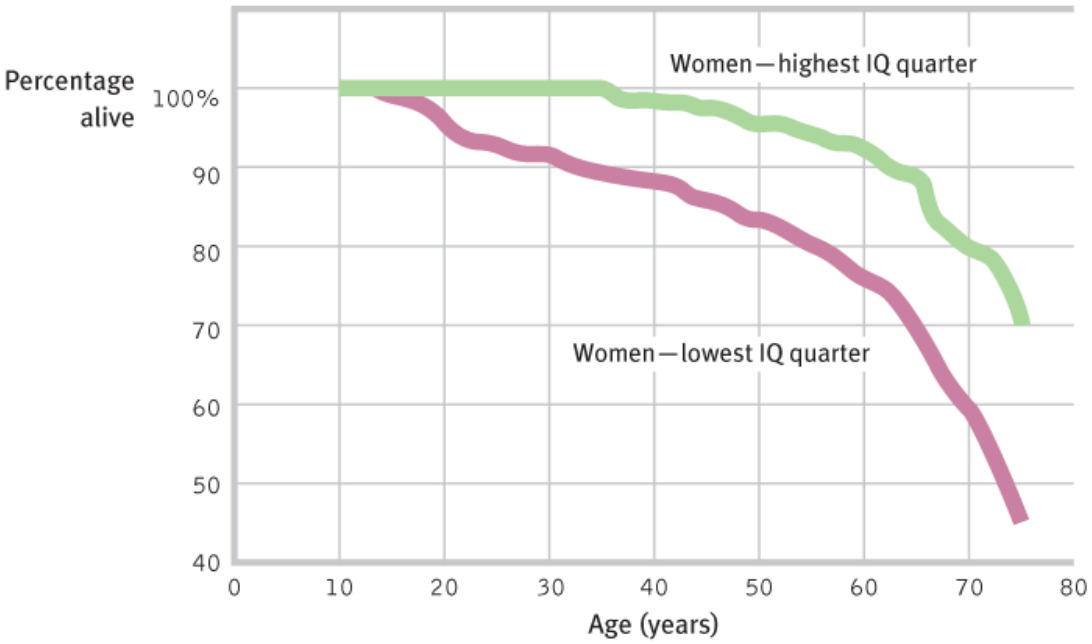

Figure 62.4
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Data from Whalley & Deary, 2001.

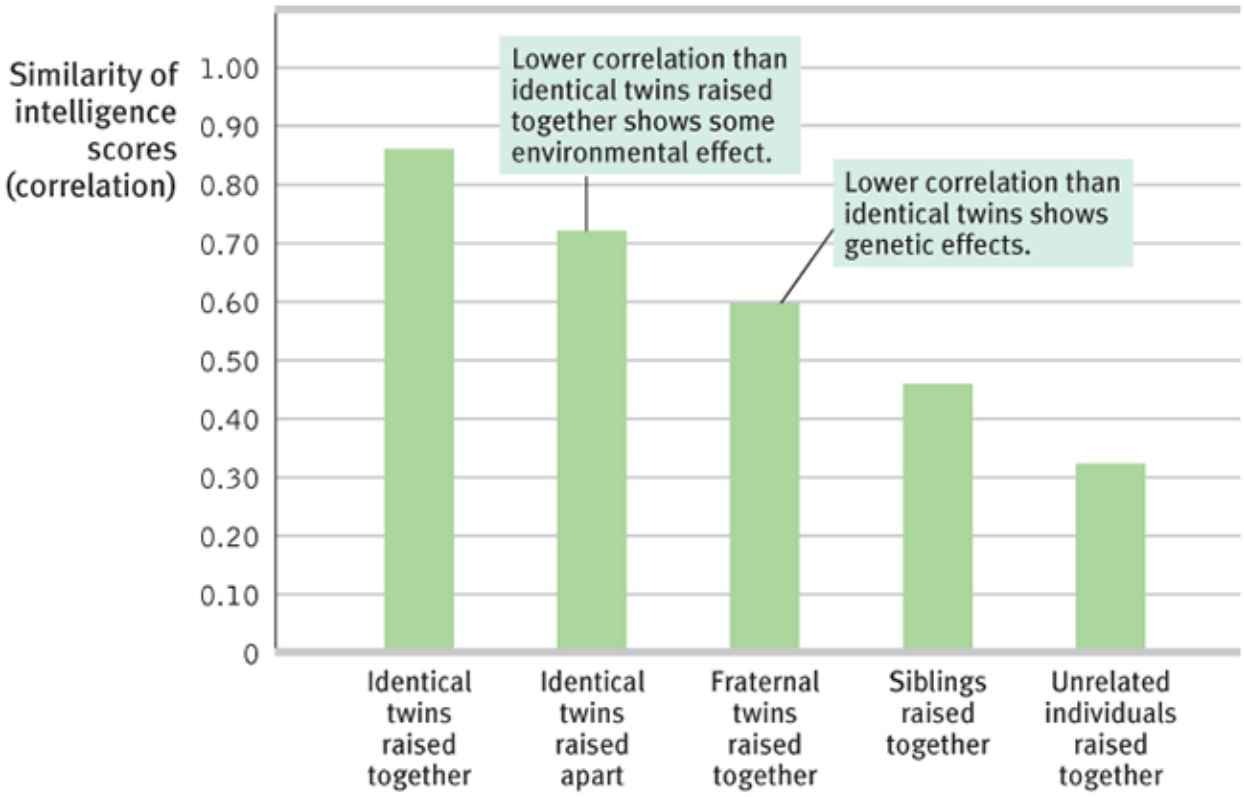

Figure 63.1
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Data from McGue et al., 1993.

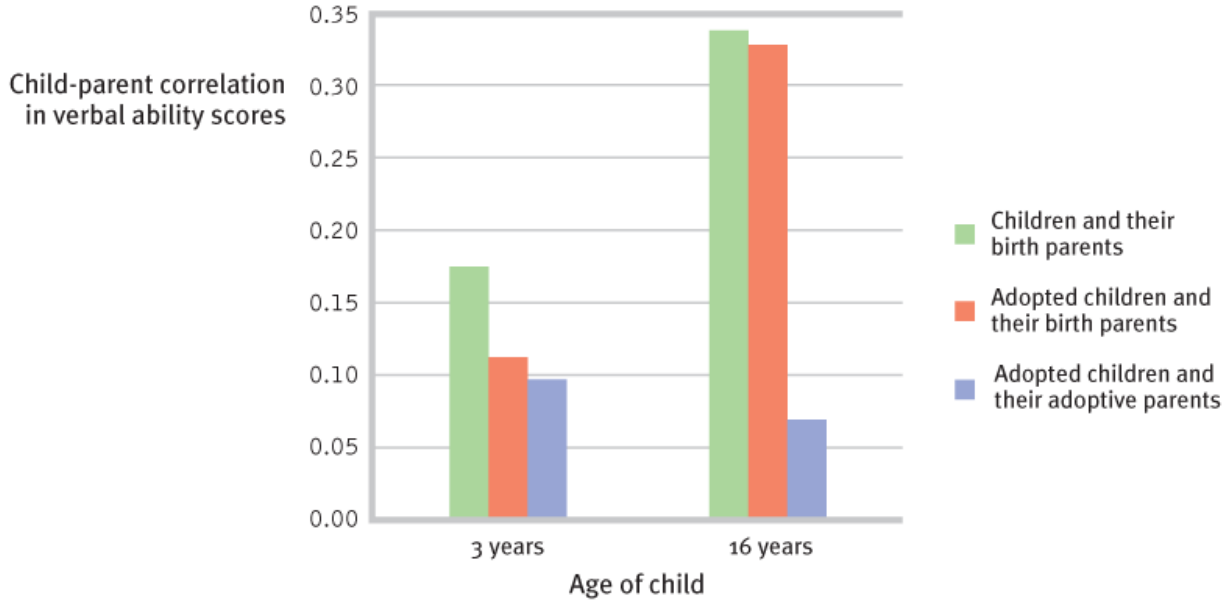

Figure 63.2
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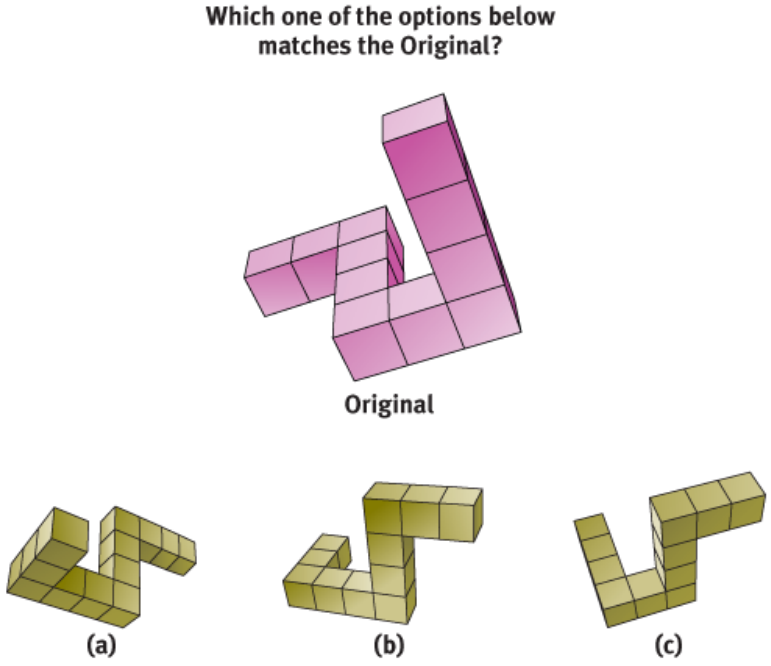
Data from Plomin & DeFries, 1998.



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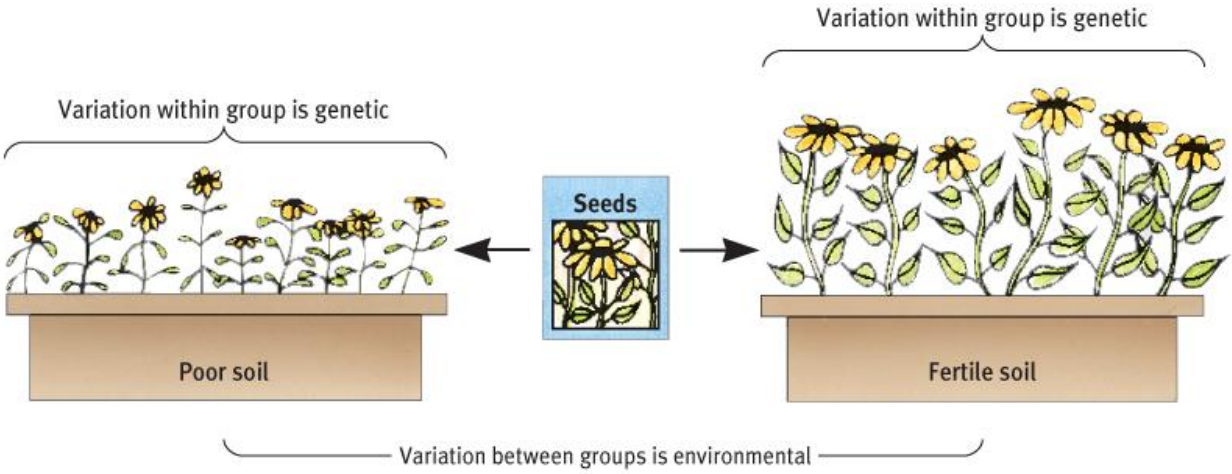

Figure 64.2
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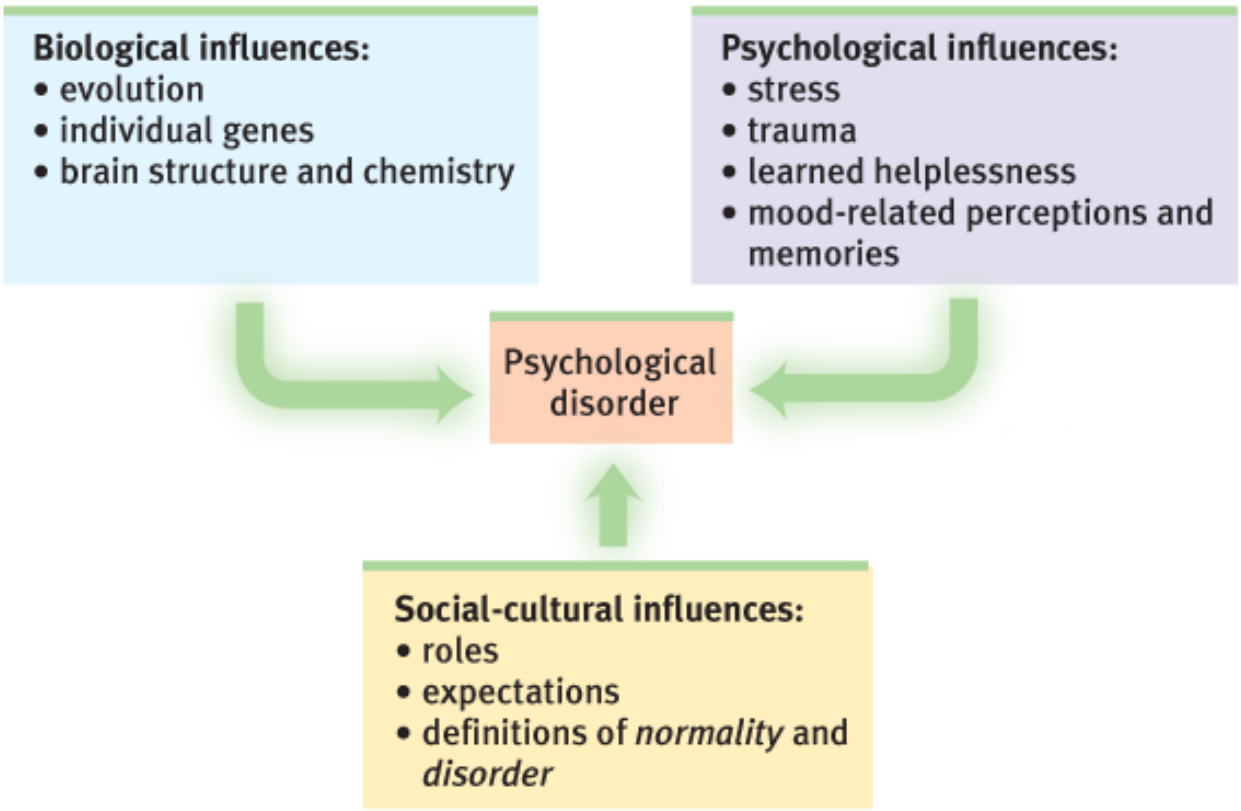
Information from Lewontin, 1976.



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Thinking Critically About: ADHD—
Normal High Energy or Disordered Behavior?

Diagnosis in the U.S.

11%[1] 4- to 17-year-olds

2.5%[2] adults

Twice as often in BOYS as in girls

Symptoms

- inattention and distractibility [3]
- hyperactivity [4]
- impulsivity

SKEPTICS note:

Energetic child + boring school = ADHD overdiagnosis

- Children are not designed to sit for hours in chairs inside.
- The youngest children in a class tend to be more fidgety—and more often diagnosed. [5]
- Older students may seek out stimulant ADHD prescription drugs–"good-grade pills." [6]
- What are the long-term effects of drug treatment?
- Why the increased diagnoses worldwide? [7]

SUPPORTERS note:

- More diagnoses reflect increased awareness.
- "ADHD is a real neurobiological disorder whose existence should no longer be debated." [8]
- ADHD is associated with abnormal brain structure, abnormal brain activity patterns, and future risky or antisocial behavior. [9]

Causes?

- Co-exists with learning disorder or with defiant and temper-prone behavior.
- Genetic [10]

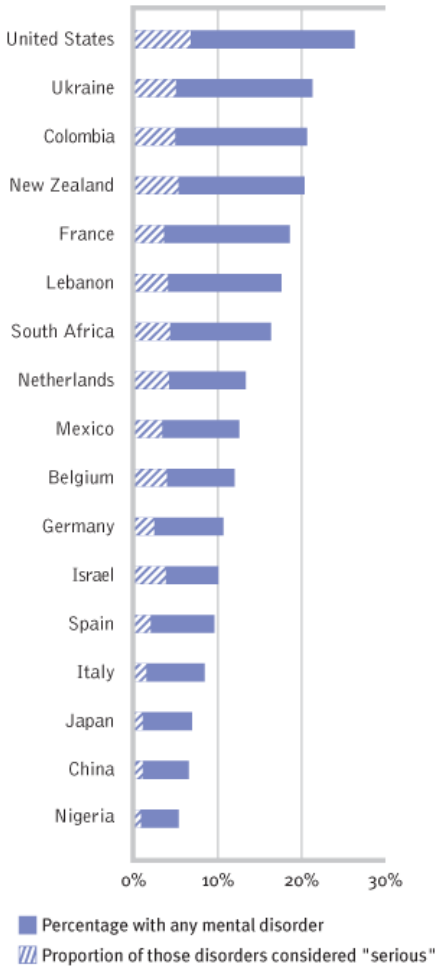
Treatment

- Stimulant drugs (Ritalin and Adderall) calm hyperactivity, and increase ability to sit and focus. [11] So do behavior therapy and aerobic exercise. [12]
- Psychological therapies help with the distress of ADHD. [13]

The bottom line:

Extreme inattention, hyperactivity, and impulsivity can derail social, academic, and work achievements. These symptoms can be treated with medication and other therapies. But the debate continues over whether normal high energy is too often diagnosed as a psychiatric disorder, and whether there is a cost to the long-term use of stimulant drugs in treating ADHD.

1. Schwarz & Cohen, 2013. 2. Simon et al., 2009. 3. Martel et al., 2016. 4. Kofler et al., 2016. 5. Chen et al., 2016. 6. Schwarz, 2012. 7. Ellison, 2015. 8. World Federation for Mental Health, 2005. 9. Barkley et al., 2002.; Hoogman et al., 2017. 10. Nikolas & Burt, 2010; Poelmans et al., 2011; Volkow et al., 2009; Williams et al., 2010. 11. Barbaresi et al., 2007. 12. Pelham et al., 2016; Cerrillo-Urbina et al., 2015. 13. Fabiano et al., 2008.



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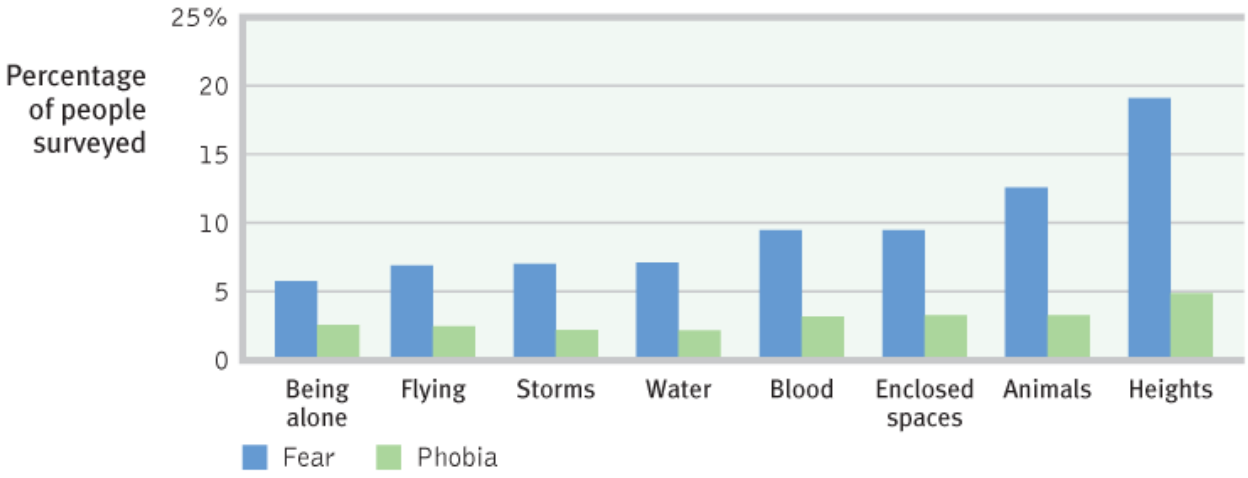
Psychological Disorder	Percentage
Depressive disorders or bipolar disorder	9.3
Phobia of specific object or situation	8.7
Social anxiety disorder	6.8
Attention-deficit/hyperactivity disorder (ADHD)	4.1
Posttraumatic stress disorder (PTSD)	3.5
Generalized anxiety disorder	3.1
Schizophrenia	1.1
Obsessive-compulsive disorder	1



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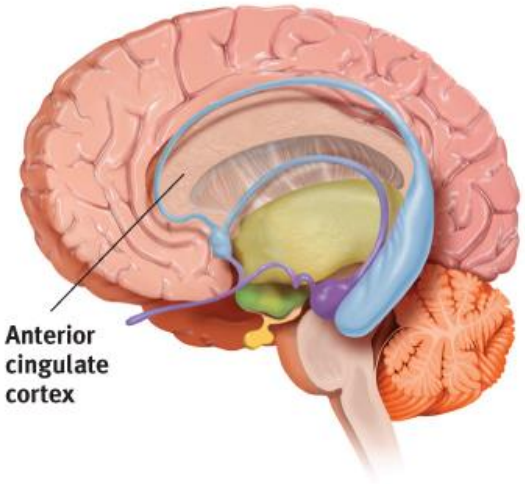
Data from Depla et al., 2008.



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Thought or Behavior	Percentage Reporting Symptom
Obsessions (repetitive thoughts)	
Concern with dirt, germs, or toxins	40
Something terrible happening (fire, death, illness)	24
Symmetry, order, or exactness	17
Compulsions (repetitive behaviors)	
Excessive hand washing, bathing, toothbrushing, or grooming	85
Repeating rituals (in/out of a door, up/down from a chair)	51
Checking doors, locks, appliances, car brakes, homework	46

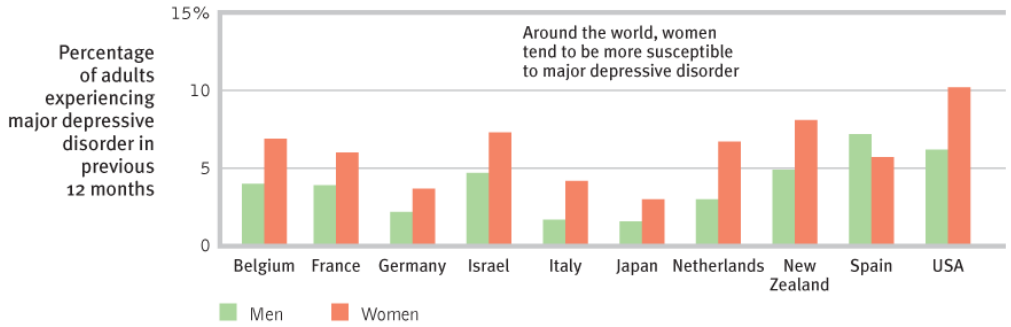

Figure 67.1
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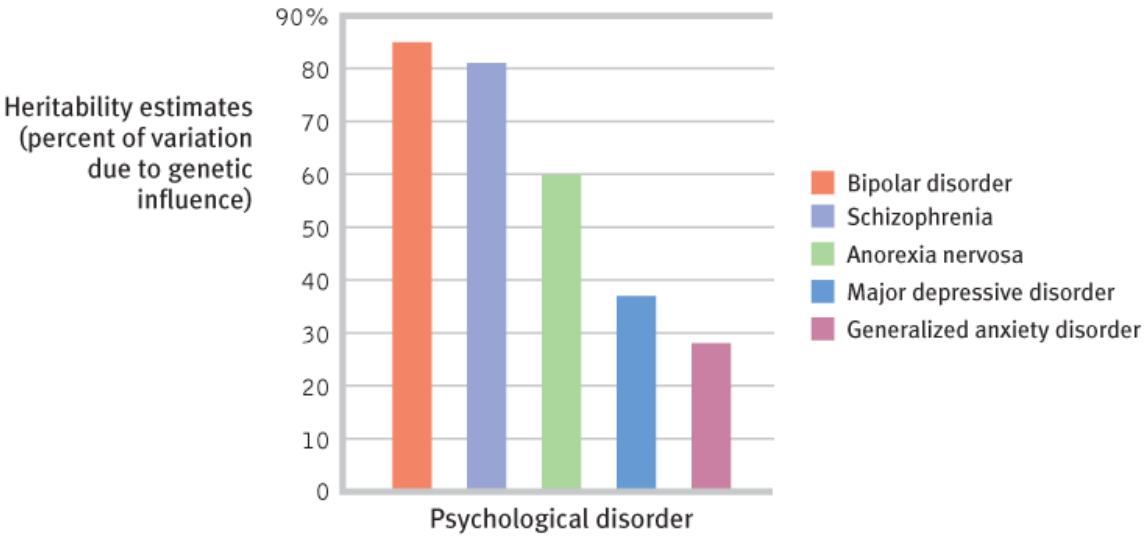
Data from Bromet et al., 2011.



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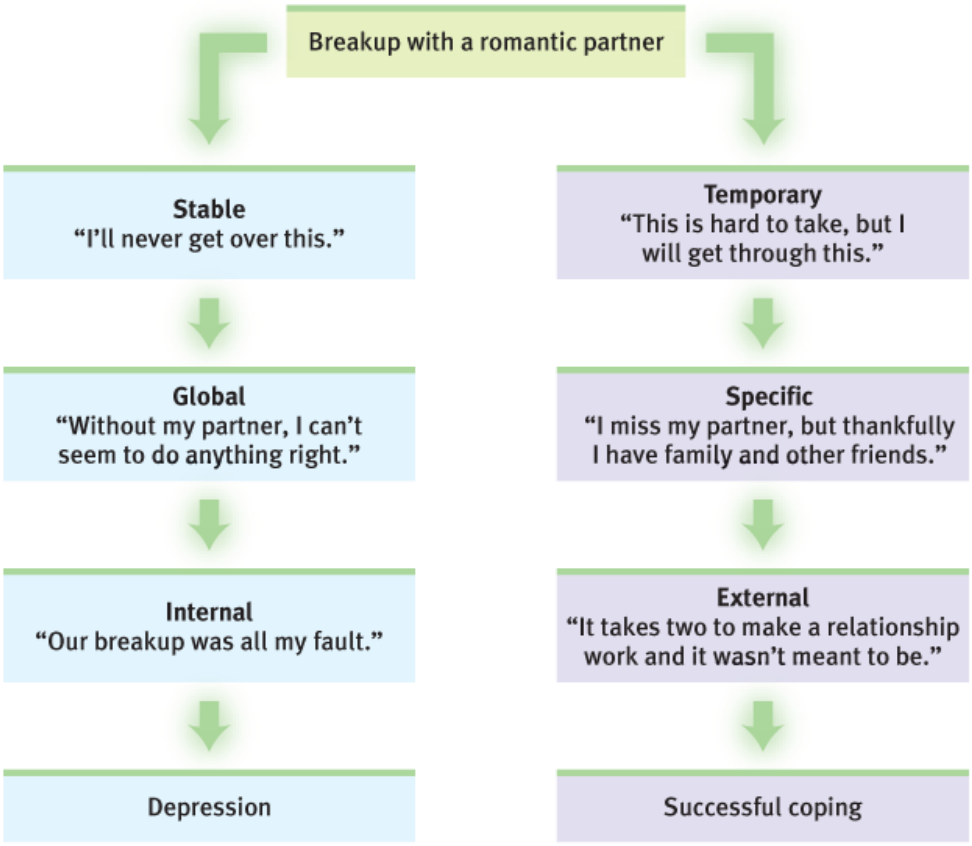

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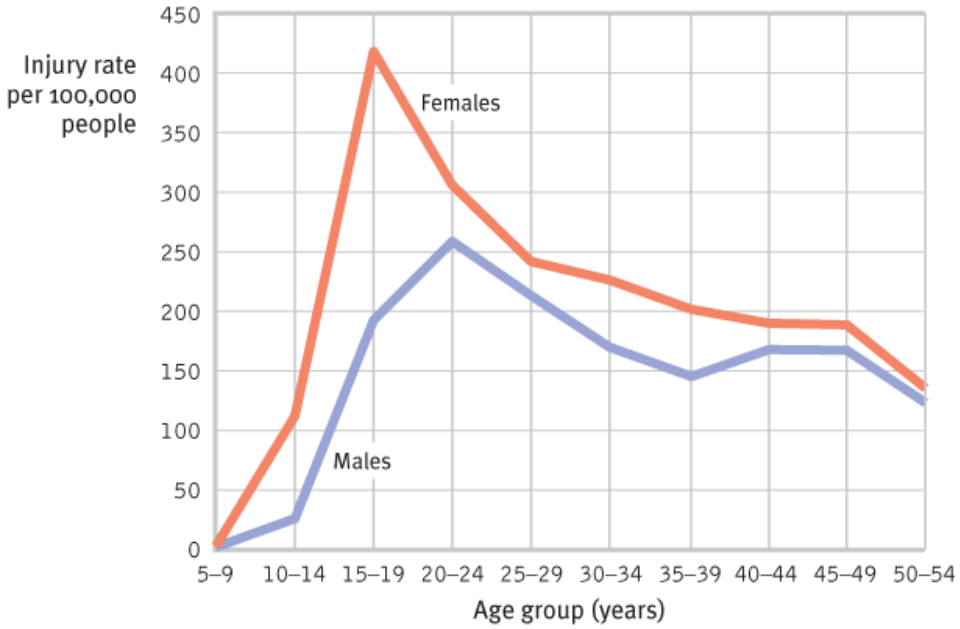

Figure 67.6
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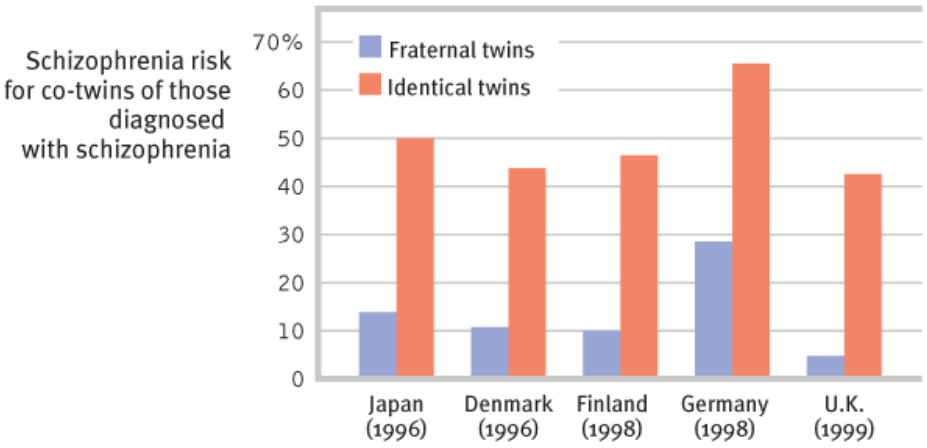
Data from CDC, 2009.

The DSM-5 classifies major depressive disorder as the presence of at least five of the following symptoms over a two-week period of time (minimally including depressed mood or reduced interest) (American Psychiatric Association, 2013).
• Depressed mood most of the time
• Dramatically reduced interest or enjoyment in most activities most of the time
• Significant challenges regulating appetite and weight
• Significant challenges regulating sleep
• Physical agitation or lethargy
• Feeling listless or with much less energy
• Feeling worthless, or feeling unwarranted guilt
• Problems in thinking, concentrating, or making decisions
• Thinking repetitively of death and suicide

	Percentage who cried: Men	Percentage who cried: Women
August	4%	7%
December	8%	21%



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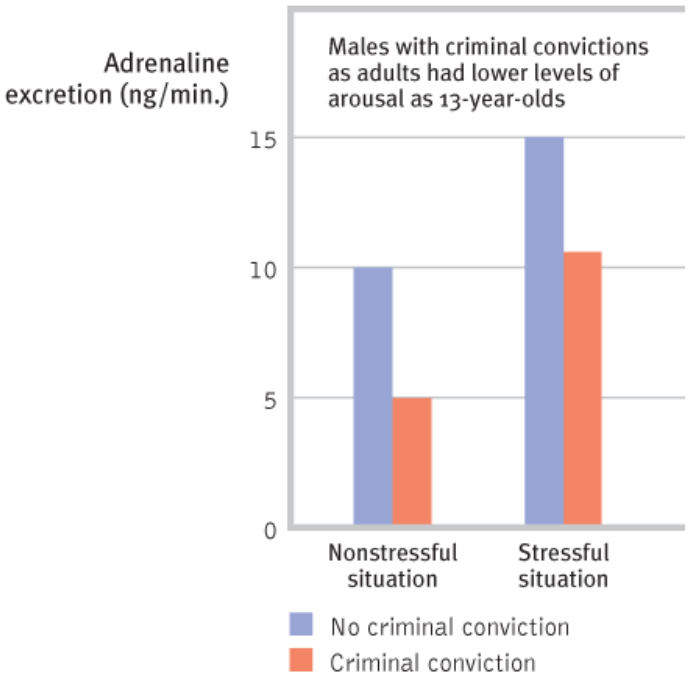
Data from Gottesman, 2001.



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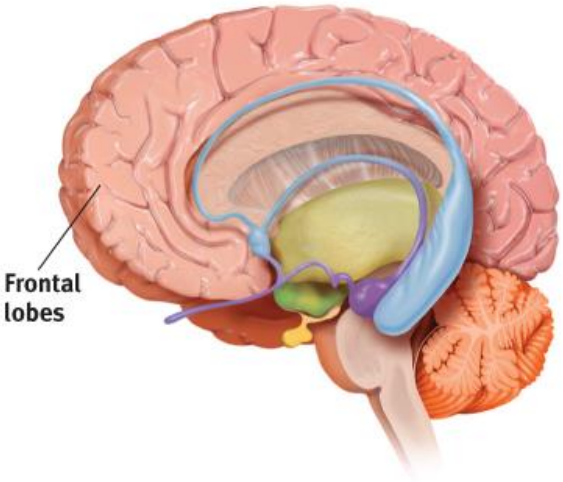
Data from Magnusson, 1990.



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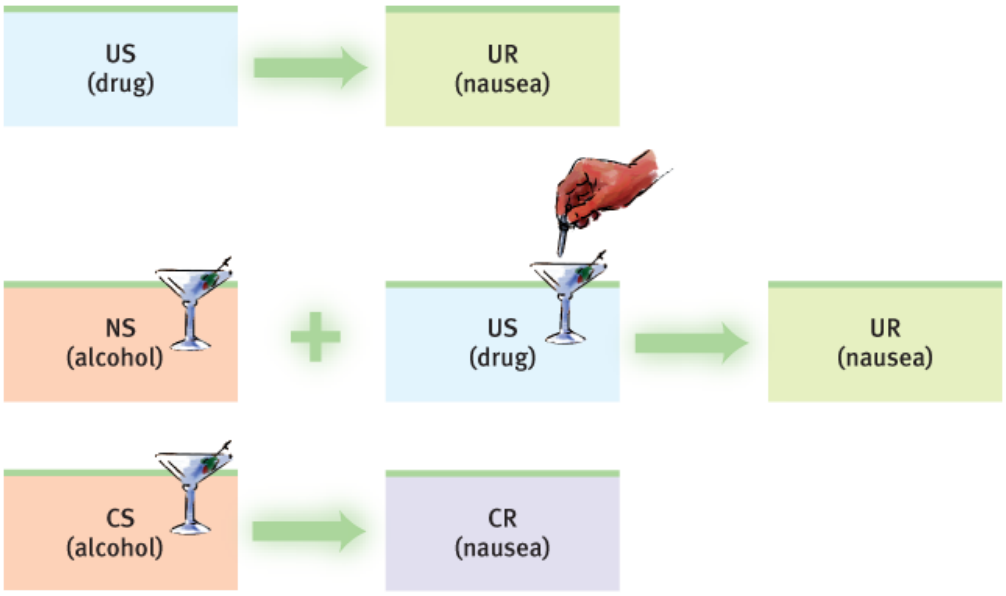

Figure 71.1
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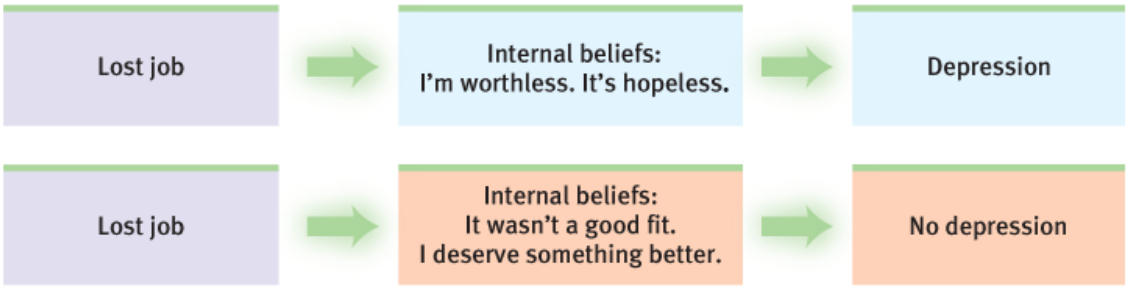

Figure 71.2
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Aim of Technique	Technique	Therapists' Directives
Reveal beliefs	Question your interpretations	Explore your beliefs, revealing faulty assumptions such as "I need to be liked by everyone."
	Rank thoughts and emotions	Gain perspective by ranking your thoughts and emotions from mildly to extremely upsetting.
Test beliefs	Examine consequences	Explore difficult situations, assessing possible consequences and challenging faulty reasoning.
	Decatastrophize thinking	Work through the actual worst-case consequences of the situation you face (it is often not as bad as imagined). Then determine how to cope with the real situation you face.
Change beliefs	Take appropriate responsibility	Challenge total self-blame and negative thinking, noting aspects for which you may be truly responsible, as well as aspects that aren't your responsibility.
	Resist extremes	Develop new ways of thinking and feeling to replace maladaptive habits. For example, change from thinking "I am a total failure" to "I got a failing grade on that paper, and I can make these changes to succeed next time."

Therapy	Presumed Problem	Therapy Aim	Therapy Technique
Psychodynamic	Unconscious conflicts from childhood experiences	Reduce anxiety through self-insight.	Interpret patients' memories and feelings.
Client-centered	Barriers to self-understanding and self-acceptance	Enable growth via unconditional positive regard, acceptance, genuineness, and empathy.	Listen actively and reflect clients' feelings.
Behavior	Dysfunctional behaviors	Learn adaptive behaviors; extinguish problem ones.	Use classical conditioning (via exposure or aversion therapy) or operant conditioning (as in token economies).
Cognitive	Negative, self-defeating thinking	Promote healthier thinking and self-talk.	Train people to dispute negative thoughts and attributions.
Cognitive-behavioral	Self-harmful thoughts and behaviors	Promote healthier thinking and adaptive behaviors.	Train people to counter self-harmful thoughts and to act out their new ways of thinking.
Group and family	Stressful relationships	Heal relationships.	Develop an understanding of family and other social systems, explore roles, and improve communication.

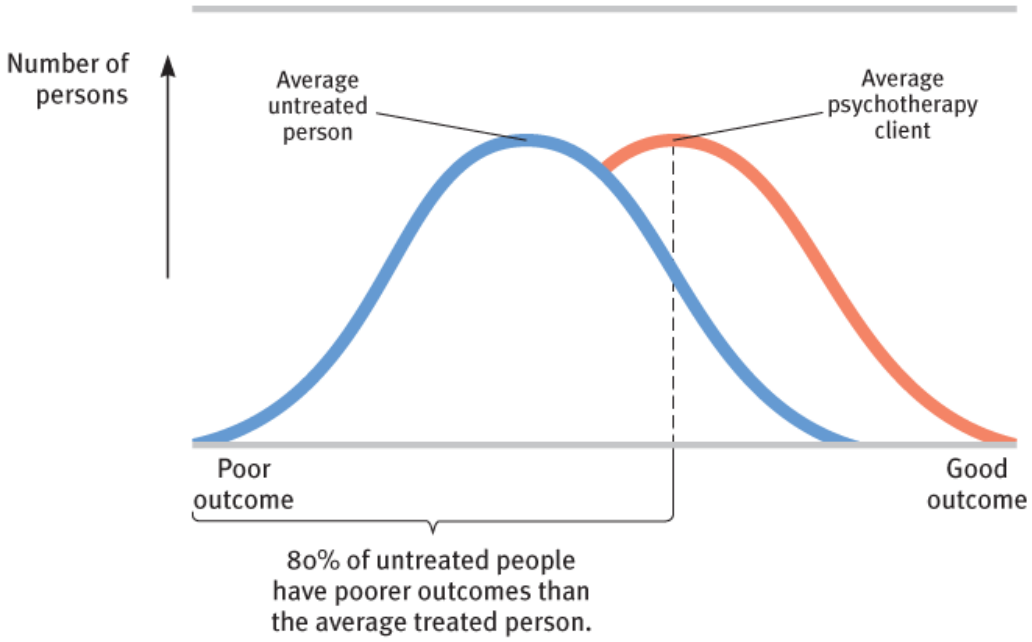

Figure 72.1
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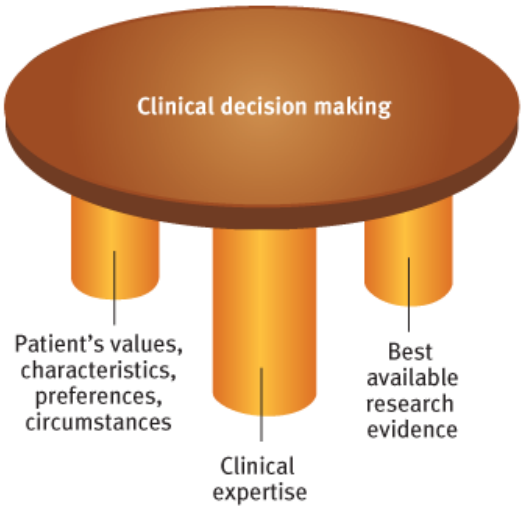
Data from Smith et al., 1980.



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Type	Therapy Description
Clinical psychologists	Most are psychologists with a Ph.D. (includes research training) or Psy.D. (focuses on therapy) supplemented by a supervised internship and, often, post-doctoral training. About half work in agencies and institutions, half in private practice.
Psychiatrists	Psychiatrists are physicians who specialize in the treatment of psychological disorders. Not all psychiatrists have had extensive training in psychotherapy, but as M.D.s or D.O.s they can prescribe medications. Thus, they tend to see those with the most serious problems. Many have their own private practice.
Clinical or psychiatric social workers	A two-year master of social work graduate program plus postgraduate supervision prepares some social workers to offer psychotherapy, mostly to people with everyday personal and family problems. About half have earned the National Association of Social Workers' designation of clinical social worker.
Counselors	Marriage and family counselors specialize in problems arising from family relations. Clergy provide counseling to countless people. Abuse counselors work with substance abusers and with spouse and child abusers and their victims. Mental health and other counselors may be required to have a two-year master's degree.

73-1 Why is therapeutic lifestyle change considered an effective biomedical therapy, and how does it work?

Thinking Critically About:

Therapeutic Lifestyle Change

LIFESTYLE
(exercise, nutrition, relationships, recreation, relaxation, and religious or spiritual engagement)

→ **influences our BRAIN AND BODY** →

affects our MENTAL HEALTH [1]

We were designed for physical activity and social engagement.

Our ancestors hunted, gathered, and built in groups.

Modern researchers have found that outdoor activity in a natural environment reduces stress and promotes health. [2]

APPLICATION TO THERAPY

Training seminars promote therapeutic lifestyle change. [3] Small groups of people with depression undergo a 12-week training program with the following goals:

Aerobic exercise, 30 minutes a day, at least three times weekly (increases fitness and vitality, stimulates endorphins)

Regular aerobic exercise rivals the healing power of antidepressant drugs. [4]

Adequate sleep, with a goal of 7 to 8 hours per night (increases energy and alertness, boosts immunity)

A complete night's sleep improves mood and energy. [5]

Light exposure, 15 to 30 minutes each morning with a light box (amplifies arousal, influences hormones)

Reducing rumination, by identifying and redirecting negative thoughts (enhances positive thinking)

Social connection, with less alone time and at least two meaningful social engagements weekly (helps satisfy the human need to belong)

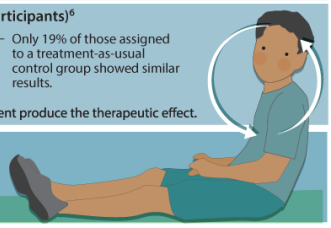
Nutritional supplements, including a daily fish oil supplement with omega-3 fatty acids (aids in healthy brain functioning)

Initial small study (74 participants) [6]

77% of those who completed the program experienced relief from depressive symptoms.

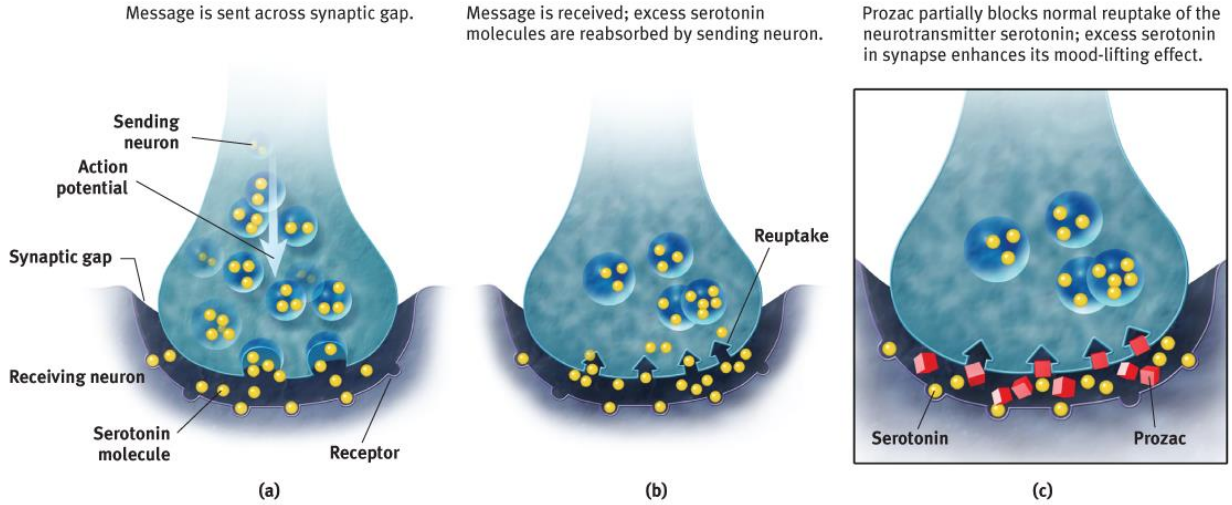
Only 19% of those assigned to a treatment-as-usual control group showed similar results.

Future research will try to identify which parts of the treatment produce the therapeutic effect.



The biomedical therapies assume that mind and body are a unit: Affect one and you will affect the other.

1. Sánchez-Villegas et al., 2015; Walsh, 2011. 2. MacKerron & Mourato, 2013; NEEF, 2015; Phillips, 2011. 3. Ilardi, 2009. 4. Babyak et al., 2000; Salmon, 2001; Schuch et al., 2016b. 5. Gregory et al., 2009; Walker & van der Helm, 2009. 6. Ilardi, 2009, 2016.



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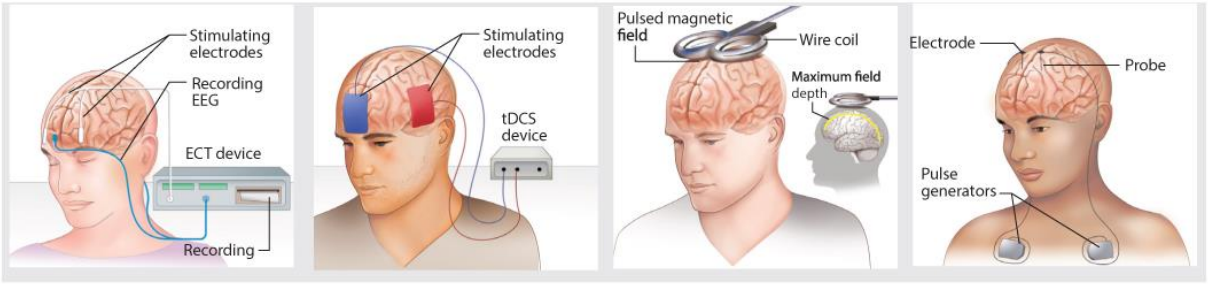

Electroconvulsive therapy (ECT)
Psychiatrist administers a strong current, which triggers a seizure in the anesthetized patient.

Transcranial direct current stimulation (tDCS)
Psychiatrist applies a weak current to the scalp.

Repetitive transcranial magnetic stimulation (rTMS)
Psychiatrist sends a painless magnetic field through the skull to the surface of the cortex to alter brain activity.

Deep-brain stimulation (DBS)
Psychiatrist stimulates electrodes implanted in "sadness centers" to calm those areas.

Figure 73.2
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Therapy	Presumed Problem	Therapy Aim	Therapy Technique
Therapeutic lifestyle change	Stress and unhealthy lifestyle	Restore healthy biological state.	Alter lifestyle through adequate exercise, sleep, nutrition, and other changes.
Drug therapies	Neurotransmitter malfunction	Control symptoms of psychological disorders.	Alter brain chemistry through drugs.
Brain stimulation	Depression (ECT is used only for severe, treatment-resistant depression.)	Alleviate depression, especially when it is unresponsive to drugs or other forms of therapy.	Stimulate brain through Electroconvulsive shock, mild electrical stimulation, magnetic impulses, or deep-brain stimulation.
Psychosurgery	Brain malfunction	Relieve severe disorders.	Remove or destroy brain tissue.

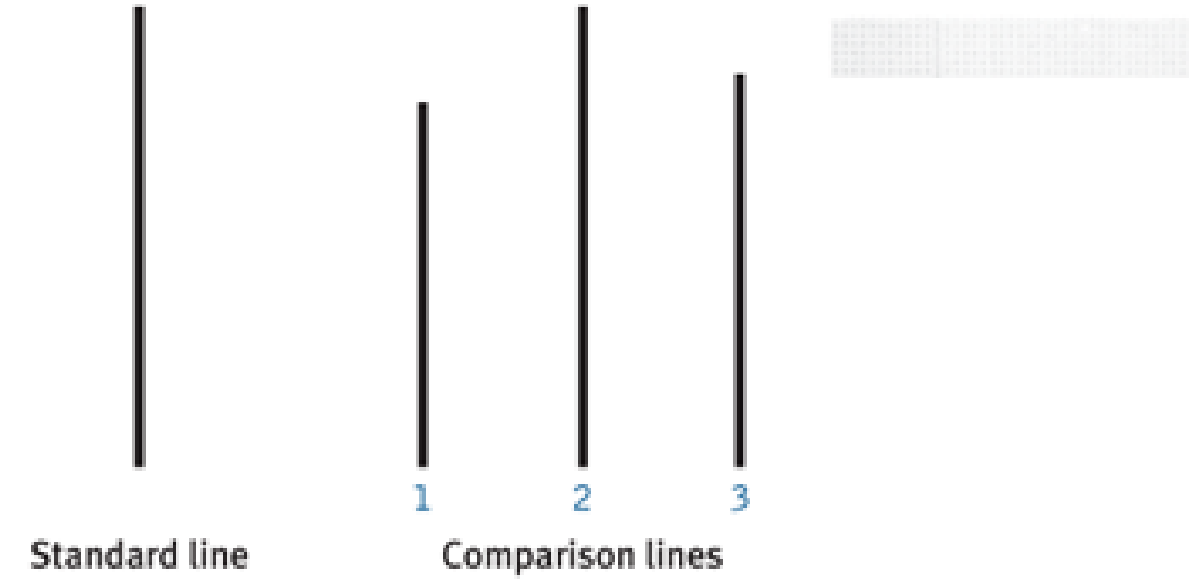

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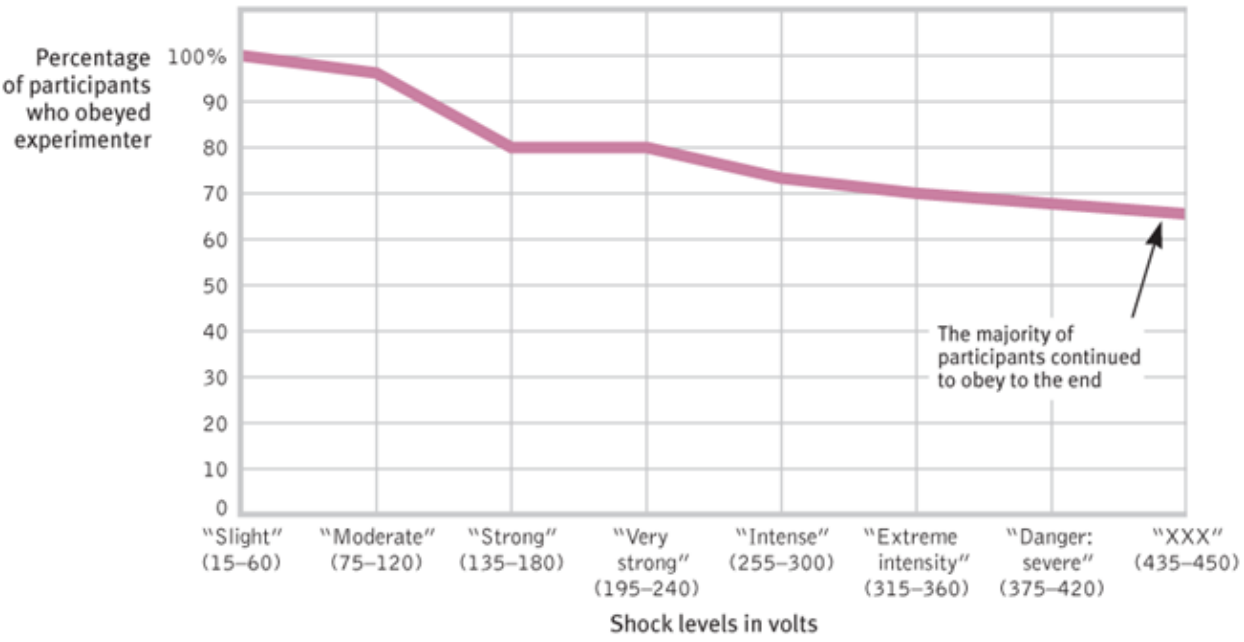
Photo: William Vendivert/Scientific American



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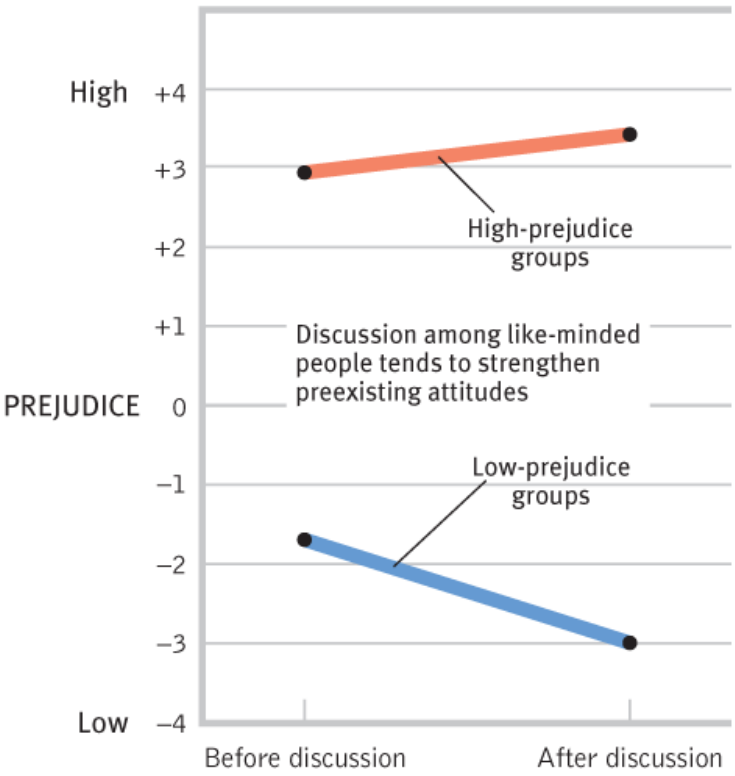
Data from Golder & Macy, 2011.



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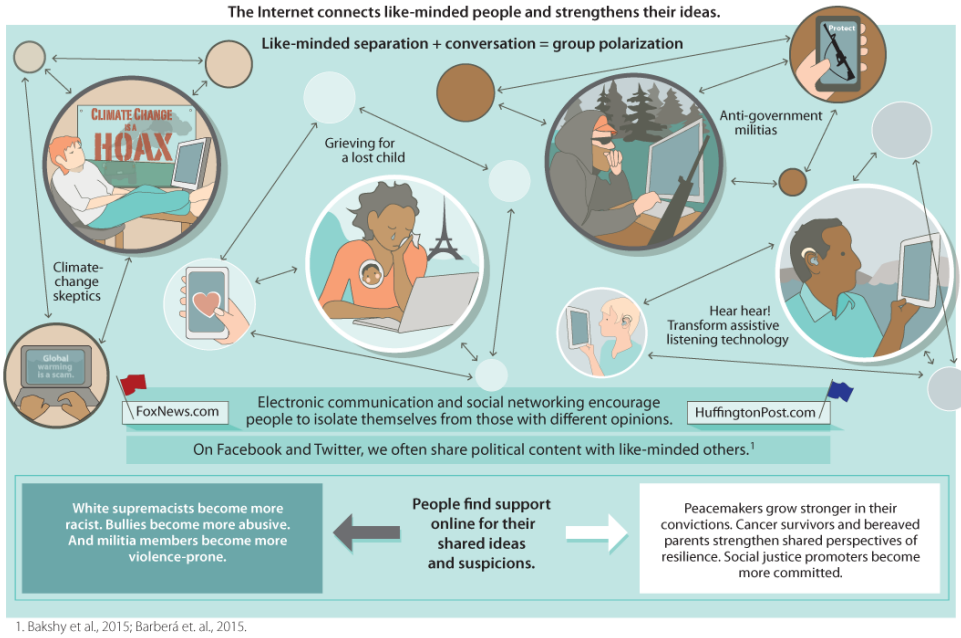
Data from Myers & Bishop, 1970.

76-3 What role does the Internet play in group polarization?

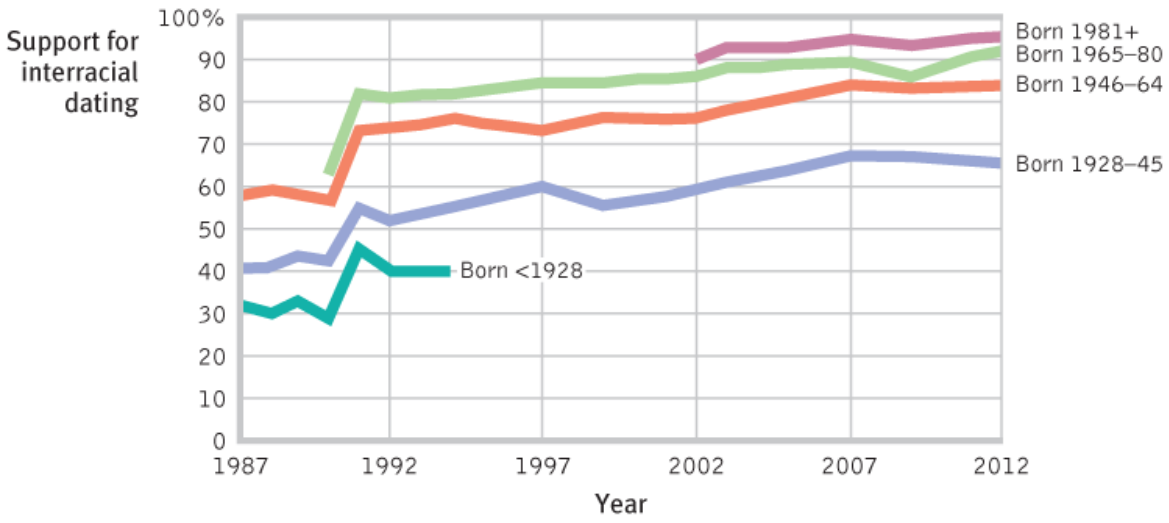
Thinking Critically About:
The Internet as Social Amplifier



1. Bakshy et al., 2015; Barberá et. al., 2015.

Sport	Years	Percentage of home games won
Nippon League Baseball	1998–2009	53.6
Major League Baseball	1903–2009	53.9
National Hockey League	1917–2009	55.7
International Rugby	1871–2009	56.9
National Football League	1966–2009	57.3
International Cricket	1877–2009	57.4
National Basketball Association	1946–2009	60.5
Women's National Basketball Association	2003-2009	61.7
English Premier League Soccer	1993–2009	63.0
NCAA Men's Basketball	1947–2009	68.8
Major League Soccer	2002–2009	69.1

Phenomenon	Social context	Psychological effect of others' presence	Behavioral effect
Social facilitation	Individual being observed	Increased arousal	Amplified dominant behavior, such as doing better what one does well (or doing worse what is difficult)
Social loafing	Group projects	Diminished feelings of responsibility when not individually accountable	Decreased effort
Deindividuation	Group setting that fosters arousal and anonymity	Reduced selfawareness	Lowered self-restraint



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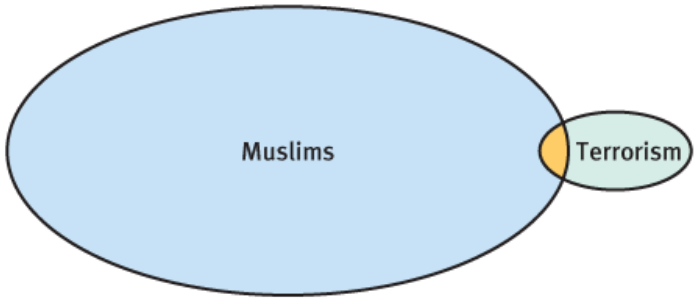
Data from Pew, 2012.



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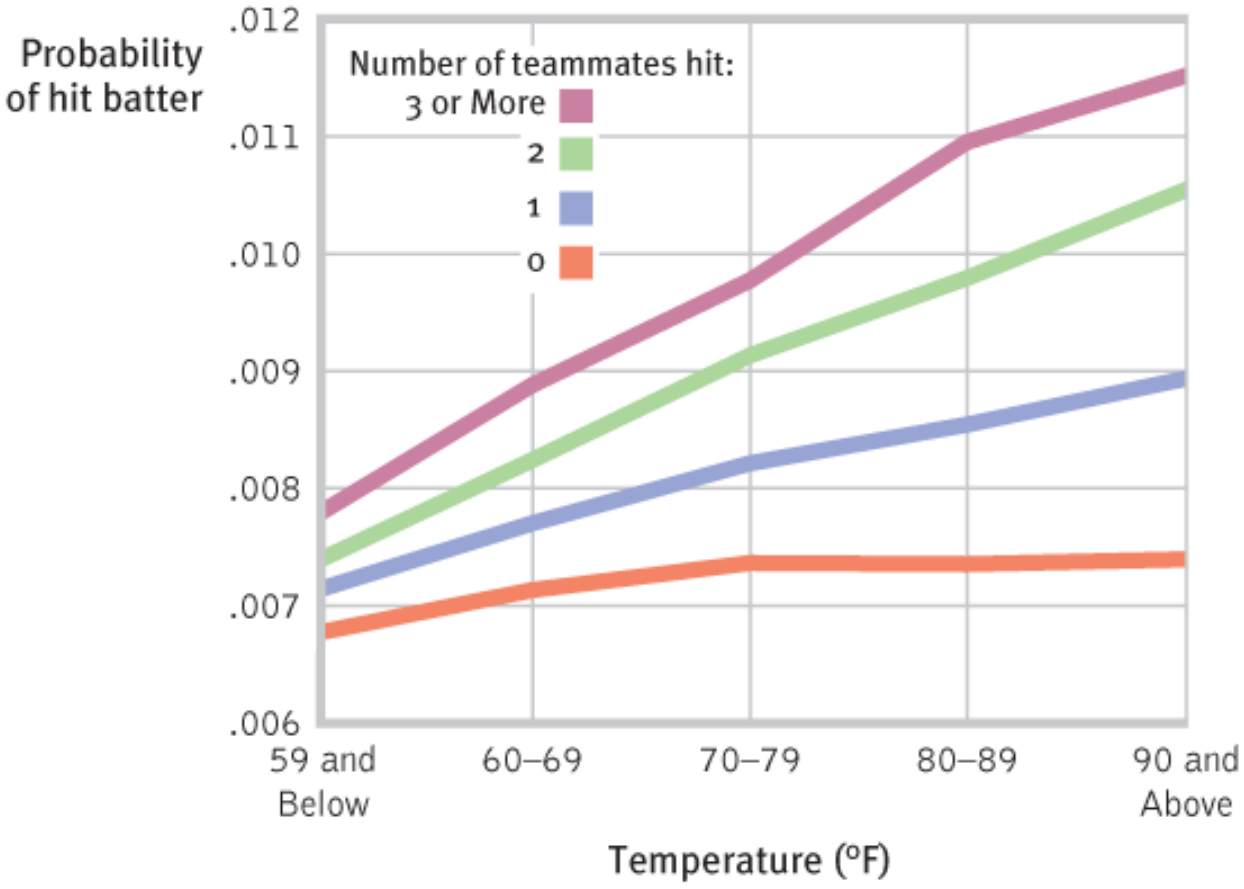

Figure 78.1
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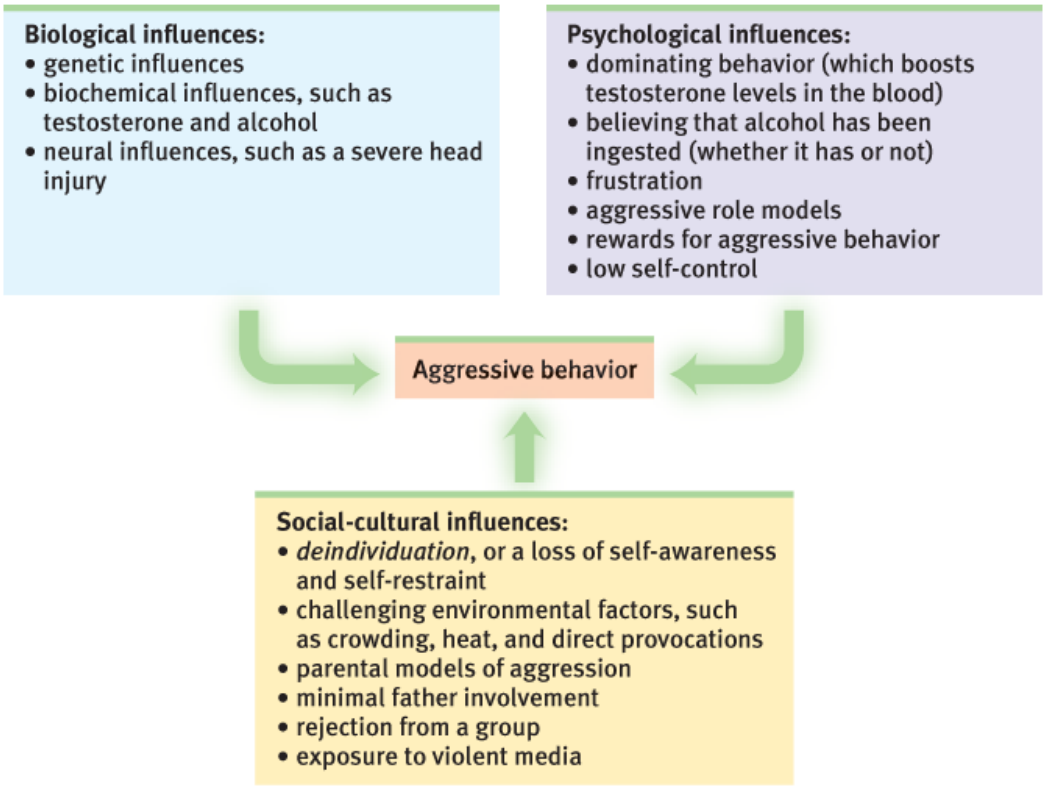

Figure 78.2
Myers/DeWall, *Myers' Psychology for the AP® Course*, 3e, © 2018 Worth Publishers

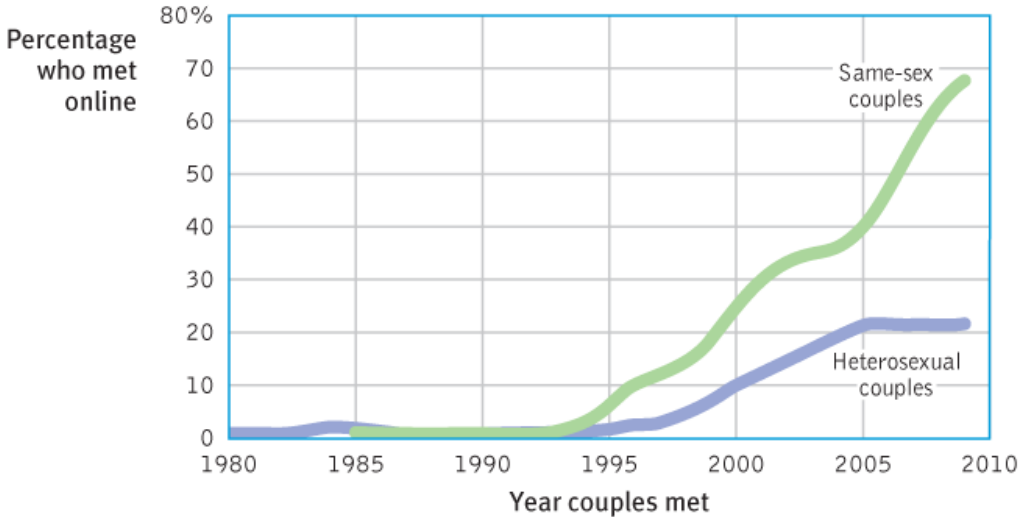

Figure 79.1
Myers/DeWall, *Myers' Psychology for the AP® Course*, 3e, © 2018 Worth Publishers
Data from Rosenfeld & Thomas, 2012.

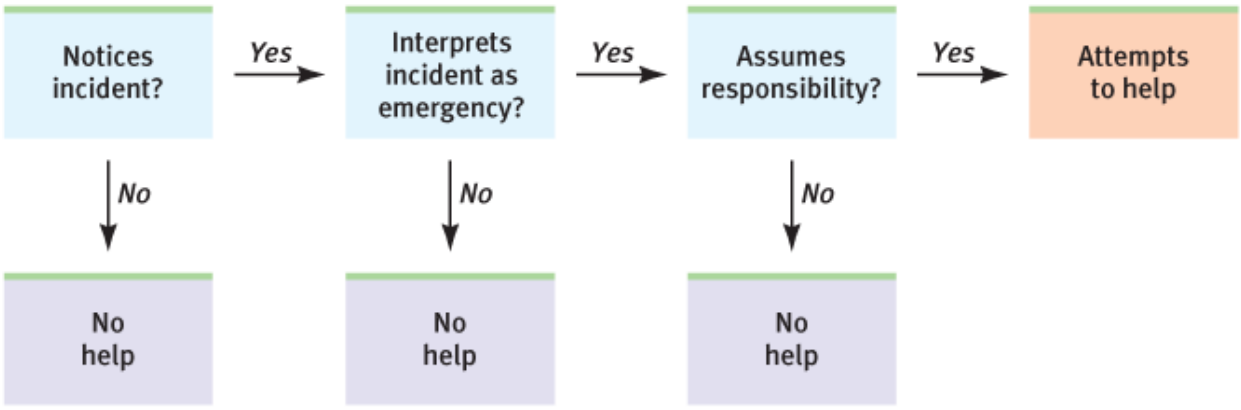

Figure 80.1
Myers/DeWall, *Myers' Psychology for the AP® Course*, 3e, © 2018 Worth Publishers

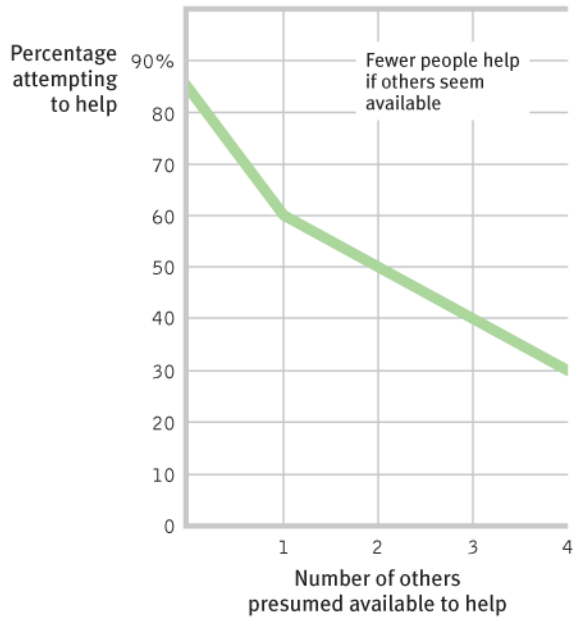

Figure 80.2
Myers/DeWall, *Myers' Psychology for the AP® Course*, 3e, © 2018 Worth Publishers
Data from Darley & Latané, 1968a.