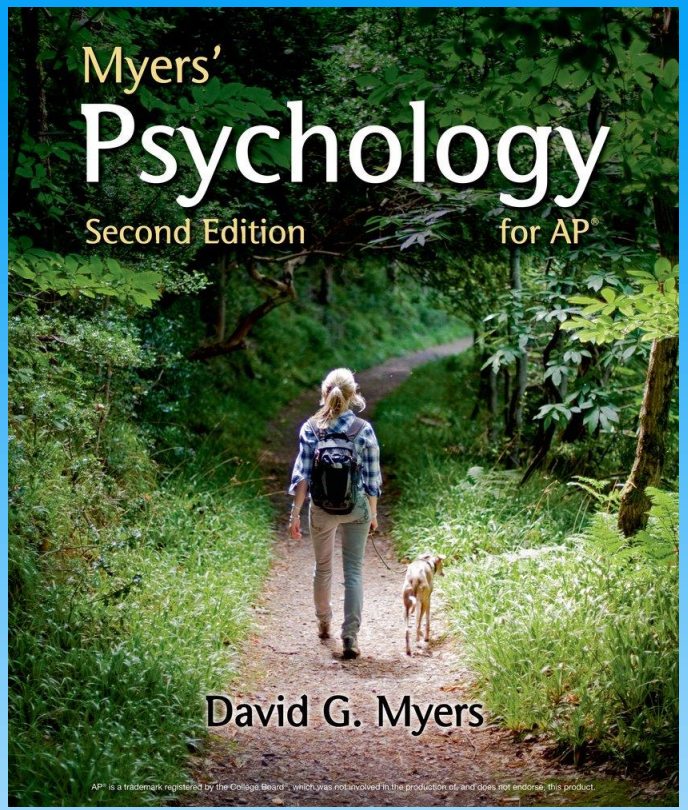


Chapter 3: Consciousness the Two-Track Mind

Chapter 3- Overview

- Understanding Consciousness and Hypnosis
- Sleep Patterns and Sleep Theories
- Sleep Deprivation, Sleep Disorders, and Dreams
- Psychoactive Drugs

Understanding Consciousness and Hypnosis

Defining Consciousness

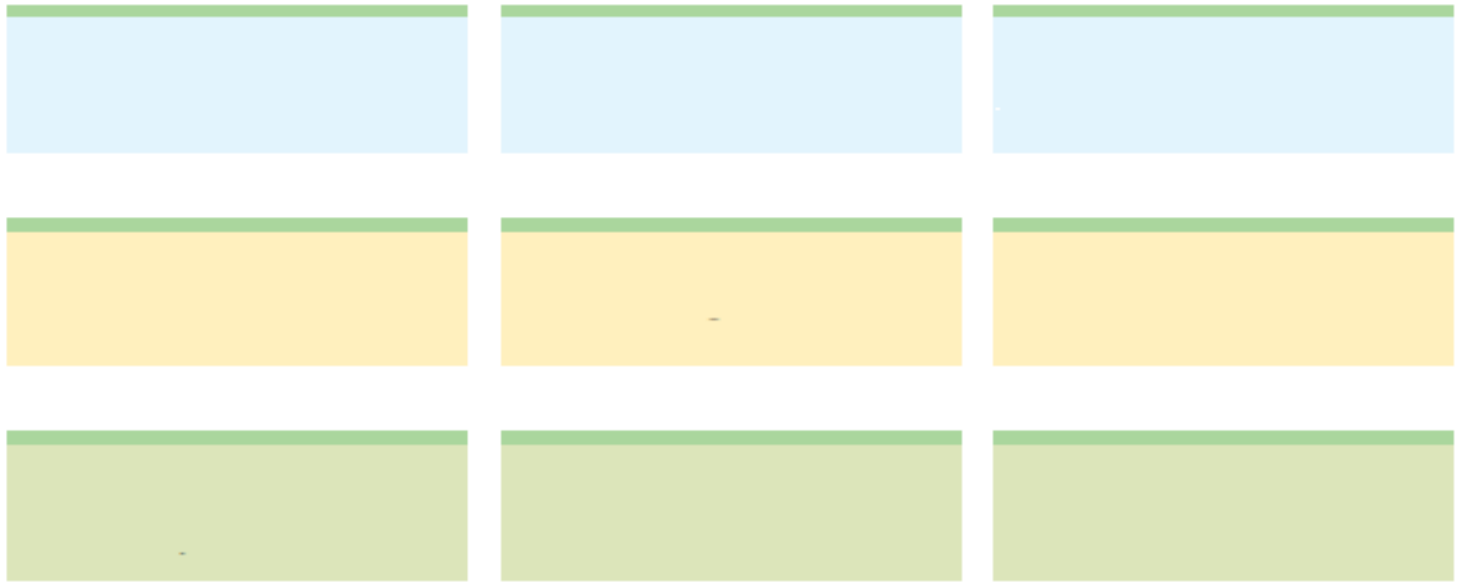
ZUMA Press, Inc./Alamy

Defining Consciousness

- Consciousness
  - States of consciousness
    - Sleep
    - Wake
    - Altered states

Defining Consciousness

States of consciousness



Defining Consciousness

States of consciousness

Some states occur spontaneously

Defining Consciousness

States of consciousness

Some states occur spontaneously	Daydreaming	Drowsiness	Dreaming

Defining Consciousness

States of consciousness

Some states occur spontaneously	Daydreaming	Drowsiness	Dreaming
Some are physio-logically induced			

Defining Consciousness

States of consciousness

Some states occur spontaneously	Daydreaming	Drowsiness	Dreaming
Some are physio-logically induced	Hallucinations	Orgasm	Food or oxygen starvation

Defining Consciousness

States of consciousness

Some states occur spontaneously	Daydreaming	Drowsiness	Dreaming
Some are physio-logically induced	Hallucinations	Orgasm	Food or oxygen starvation
Some are psycho-logically induced			

Defining Consciousness

States of consciousness

Some states occur spontaneously	Daydreaming	Drowsiness	Dreaming
Some are physio-logically induced	Hallucinations	Orgasm	Food or oxygen starvation
Some are psycho-logically induced	Sensory deprivation	Hypnosis	Meditation

Hypnosis

ZUMA Press, Inc./Alamy

Hypnosis

- Hypnosis
  - Hypnotic induction
  - Hypnosis as an altered state?

Hypnosis

Frequently Asked Questions About Hypnosis

- *Can Anyone Experience Hypnosis?*
  - Postural sway
  - Susceptibility
- *Can Hypnosis Enhance Recall of Forgotten Events?*
- *Can Hypnosis Force People to Act Against Their Will?*

Hypnosis

Frequently Asked Questions About Hypnosis

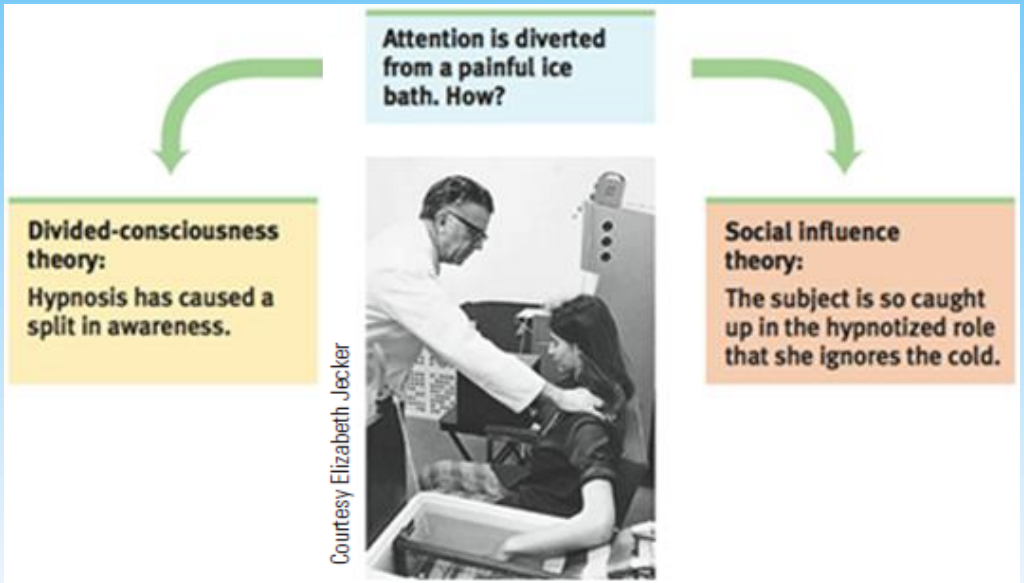
- *Can Hypnosis Be Therapeutic?*
  - Hypnotherapists
  - Posthypnotic suggestion
- *Can Hypnosis Alleviate Pain?*

Hypnosis
Explaining the Hypnotized State:
Hypnosis as a Social Phenomenon

- "Good hypnotic subjects"
- Social influence theory

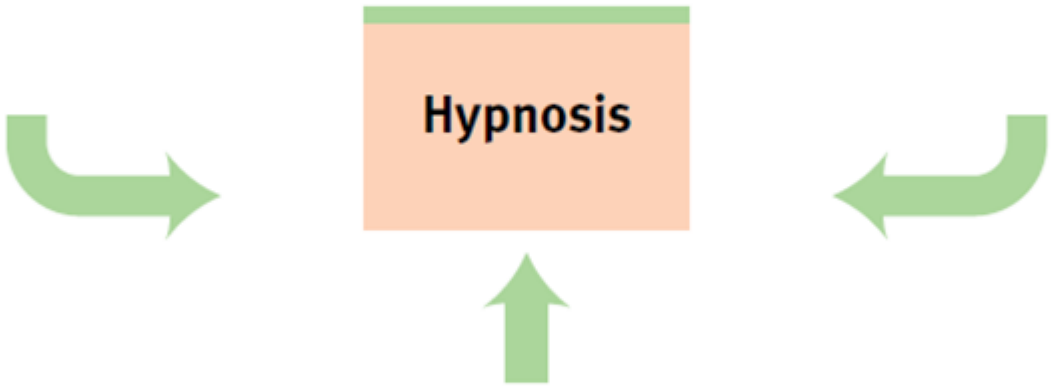
Hypnosis
Explaining the Hypnotized State:
Hypnosis as Divided Consciousness

- Hilgard
  - Dissociation
- Unified account of hypnosis



Hypnosis

Levels of Analysis for Hypnosis

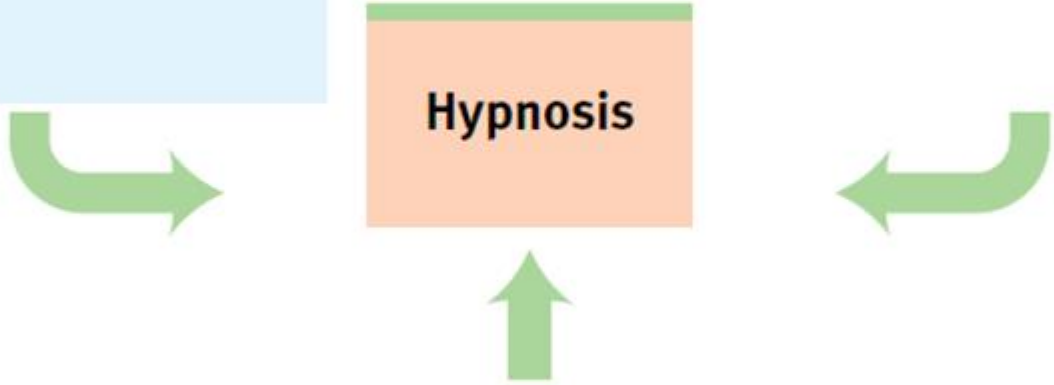


Hypnosis

Levels of Analysis for Hypnosis

Biological influences:

- distinctive brain activity
- unconscious information processing



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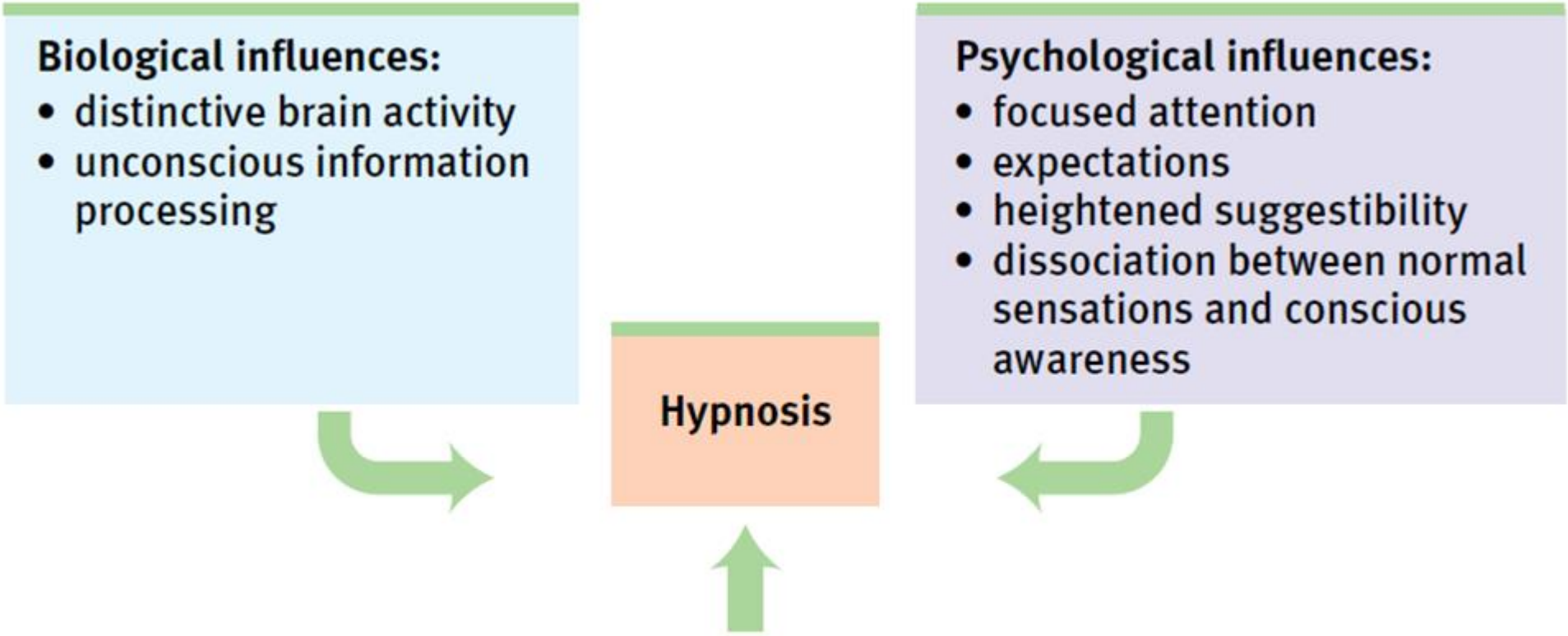
Levels of Analysis for Hypnosis



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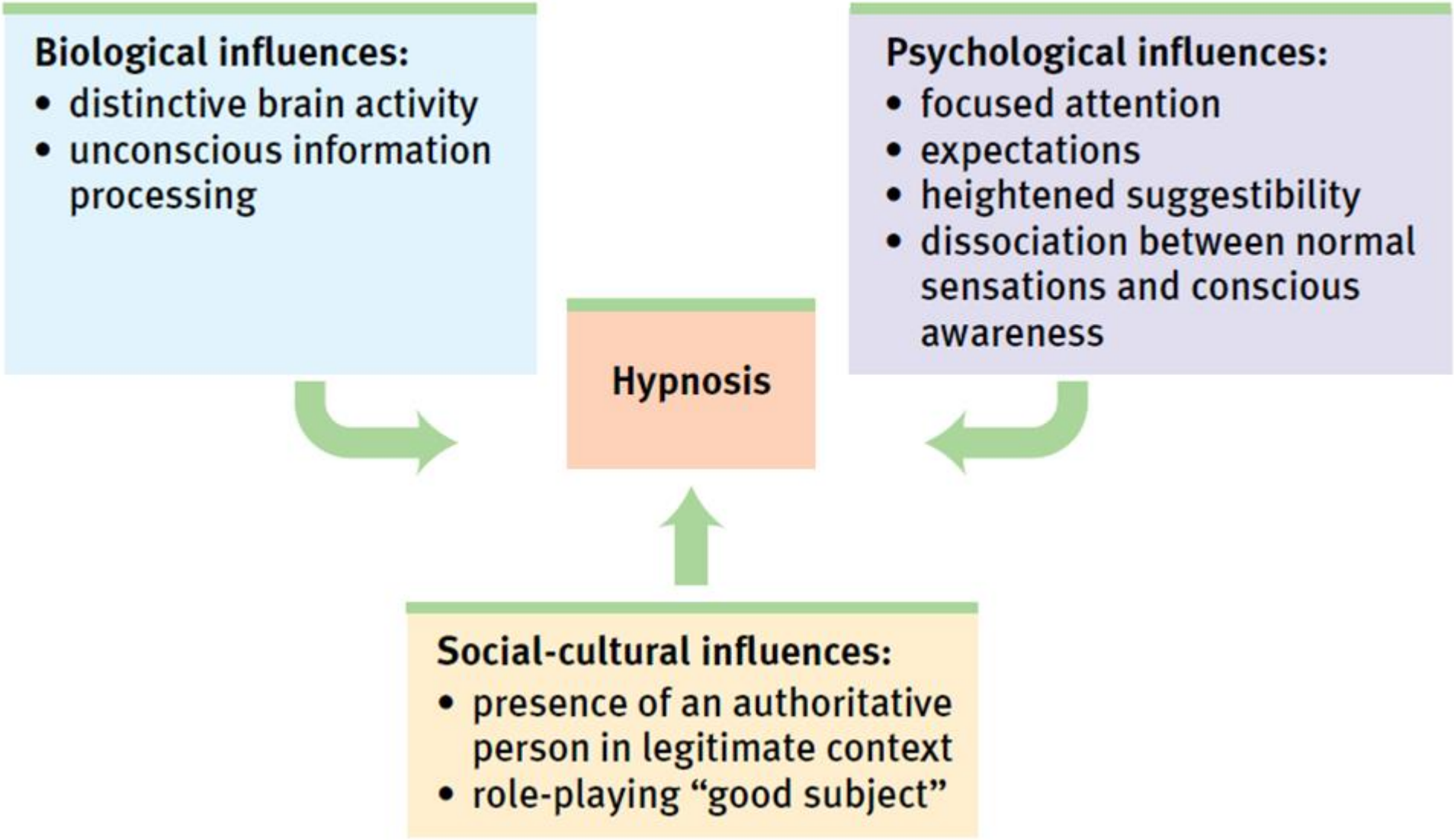


Sleep Patterns and Sleep Theories

Biological Rhythms and Sleep

Biological Rhythms and Sleep

Circadian Rhythm

- Circadian rhythm
  - 24 hour cycle
  - Temperature changes
  - Circadian rhythm and age

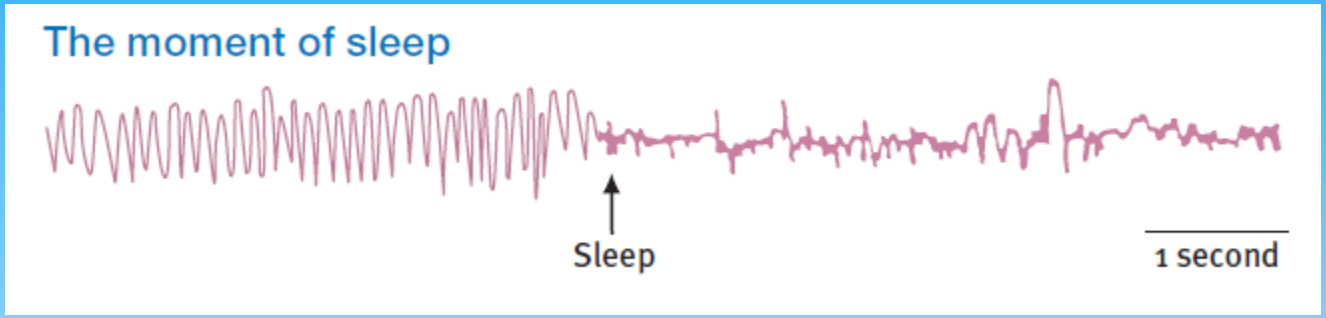
Peter Chadwick/Science Source

Eric Isselée/Shutterstock

Biological Rhythms and Sleep

Sleep Stages

- Sleep

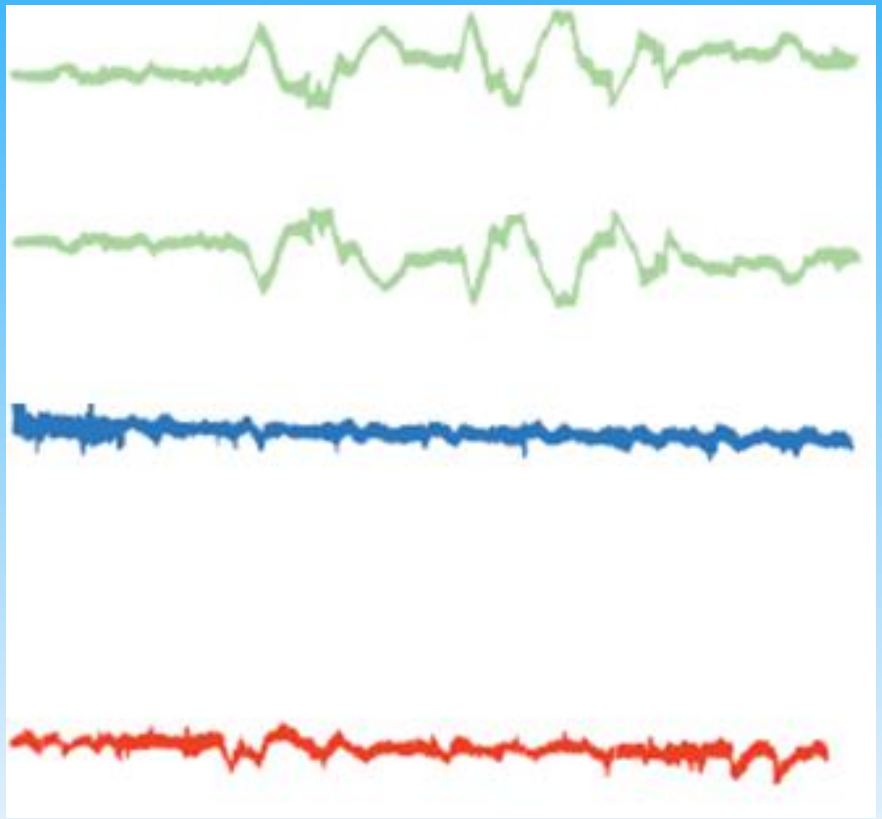


- 90 minute cycles
- REM Sleep versus NonREM Sleep

Biological Rhythms and Sleep

Sleep Stages

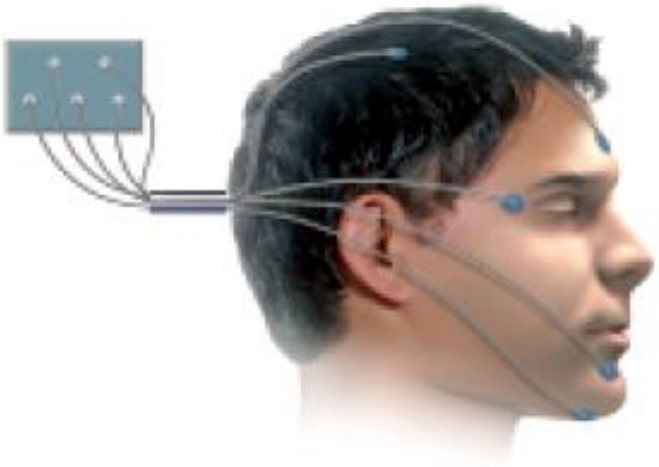
- Measuring Sleeps Activity
  - Eye Movements
  - Muscle Tension
  - EEG Patterns
    - Beta Waves
    - Alpha Waves
    - Delta Waves

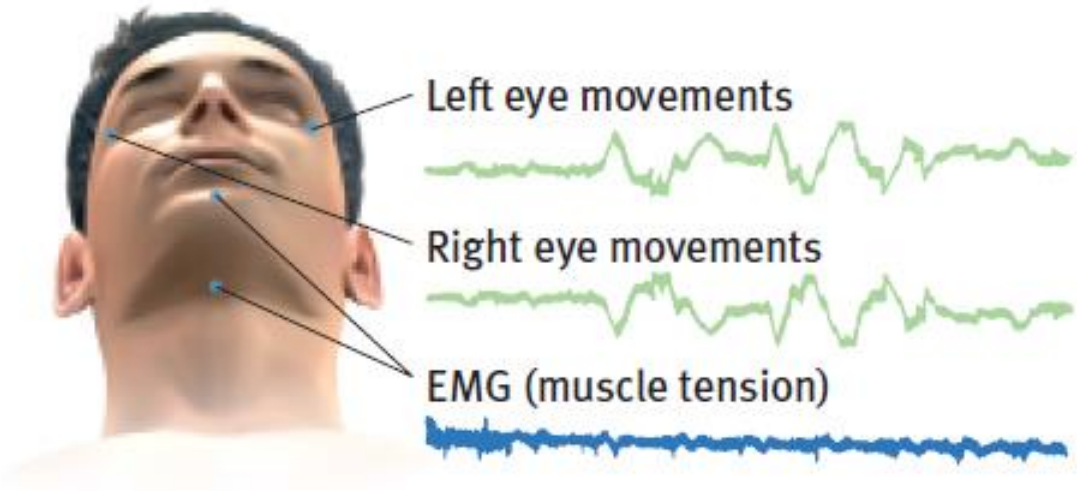


Biological Rhythms and Sleep

Sleep Stages

Measuring sleep activity





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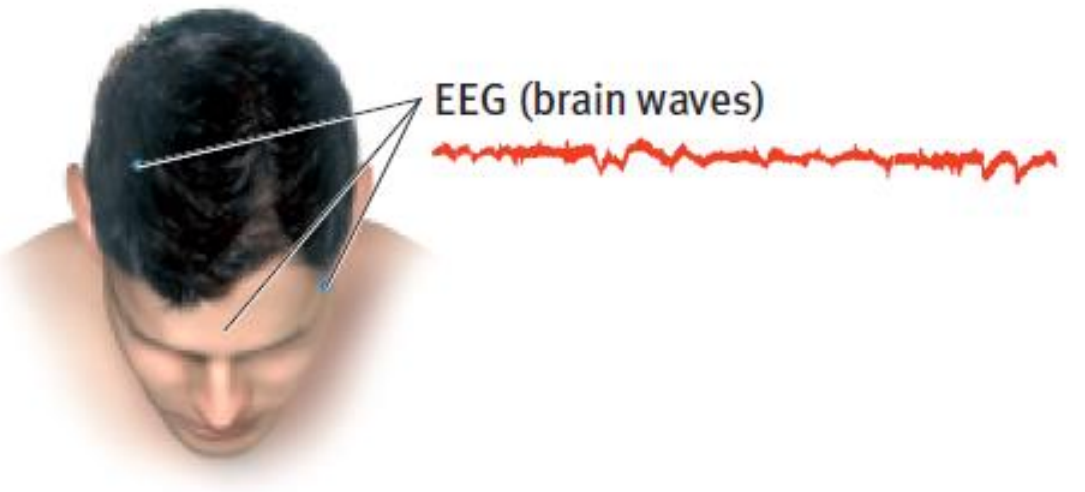

Biological Rhythms and Sleep

Sleep Stages

Biological Rhythms and Sleep

Sleep Stages

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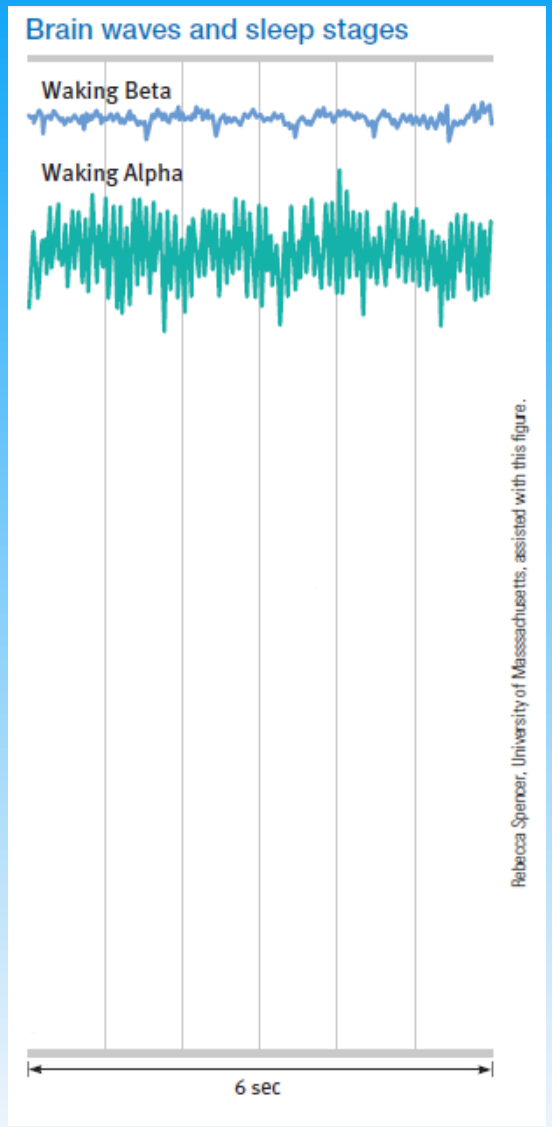
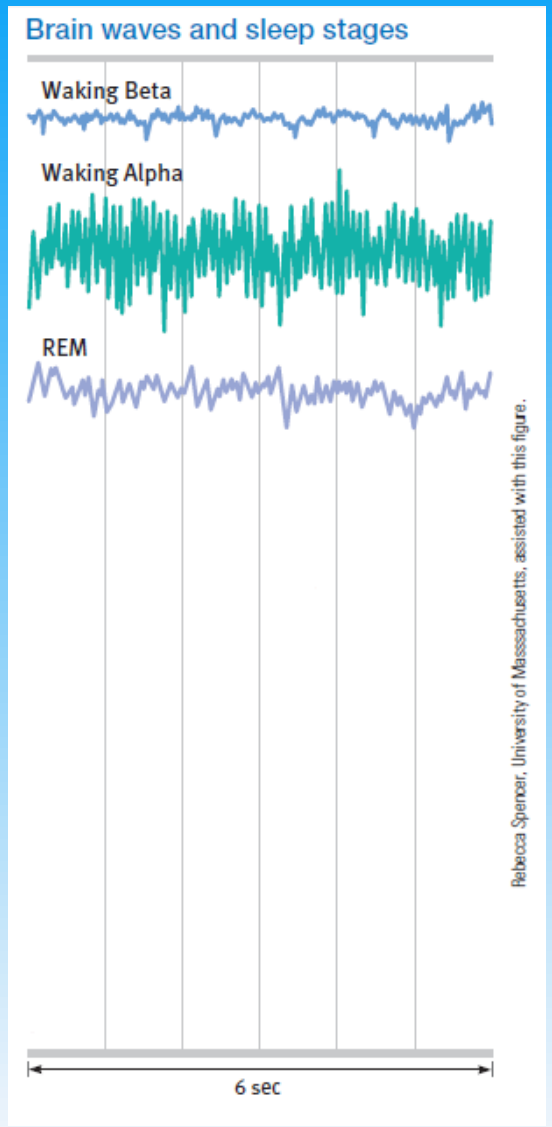
Sleep Stages



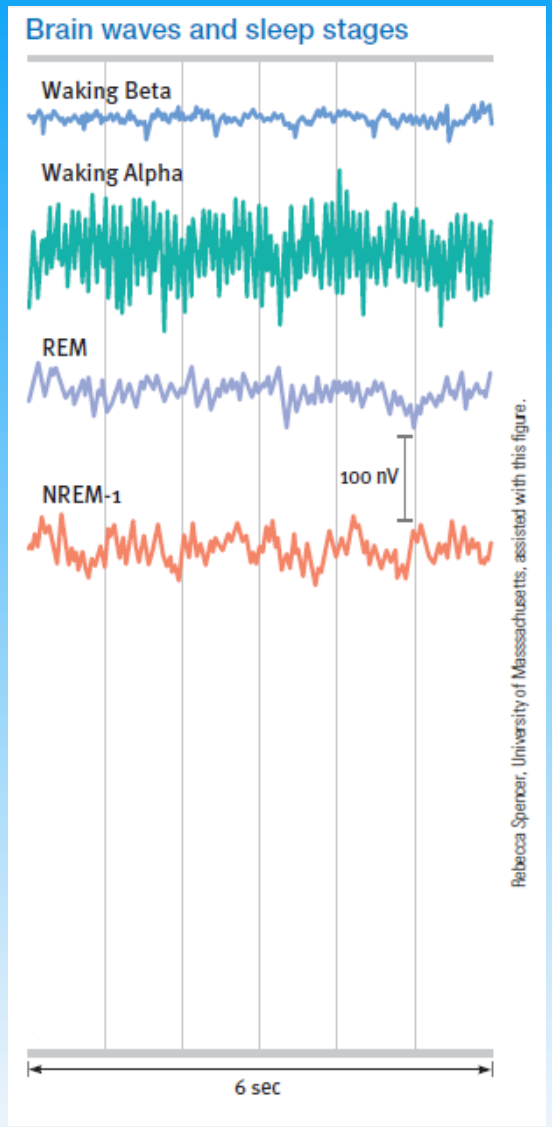
Biological Rhythms and Sleep

Sleep Stages



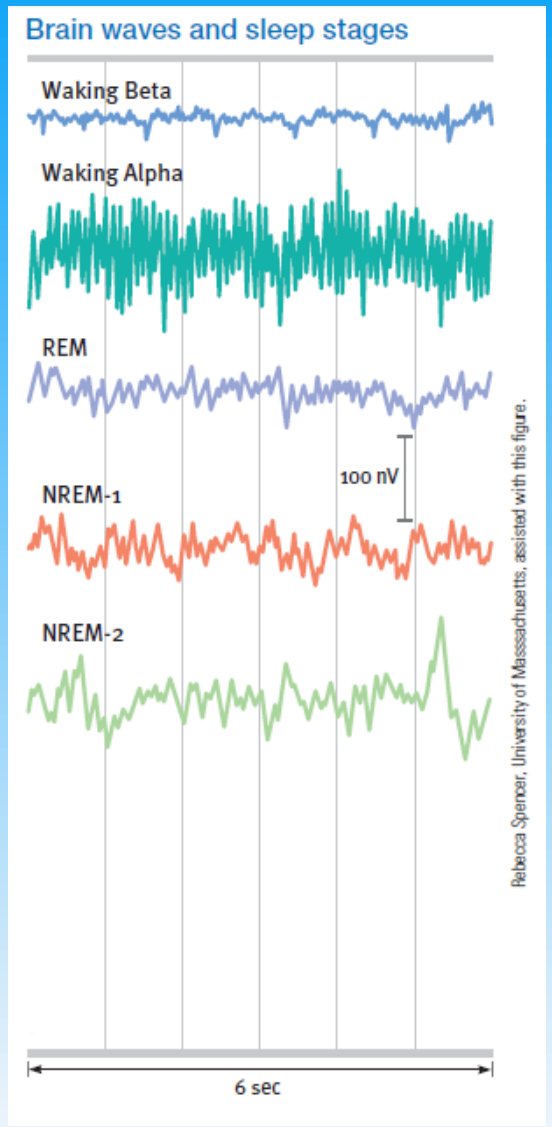
Biological Rhythms and Sleep

Sleep Stages



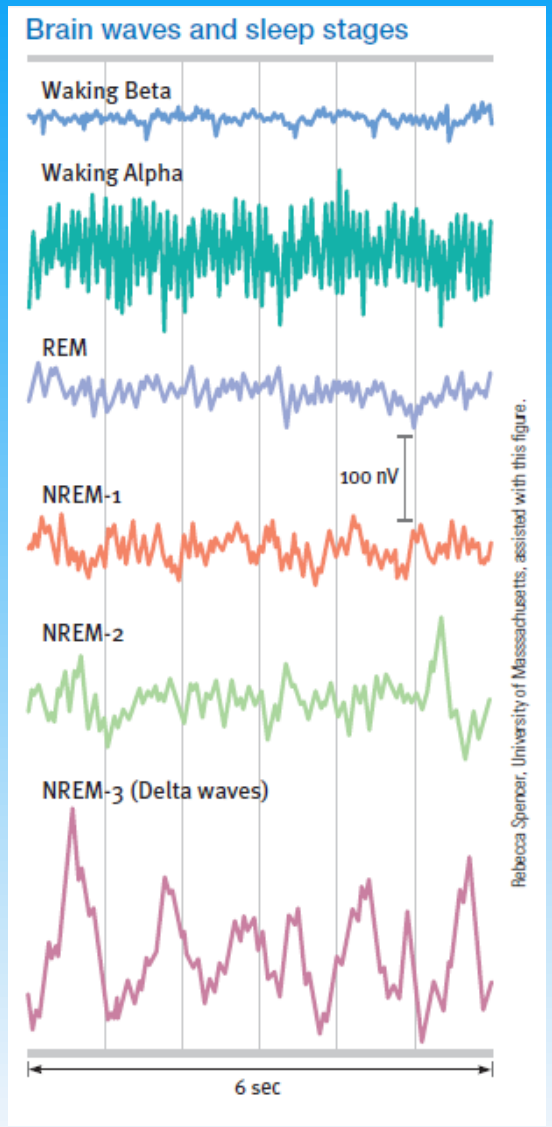
Biological Rhythms and Sleep

Sleep Stages



Biological Rhythms and Sleep

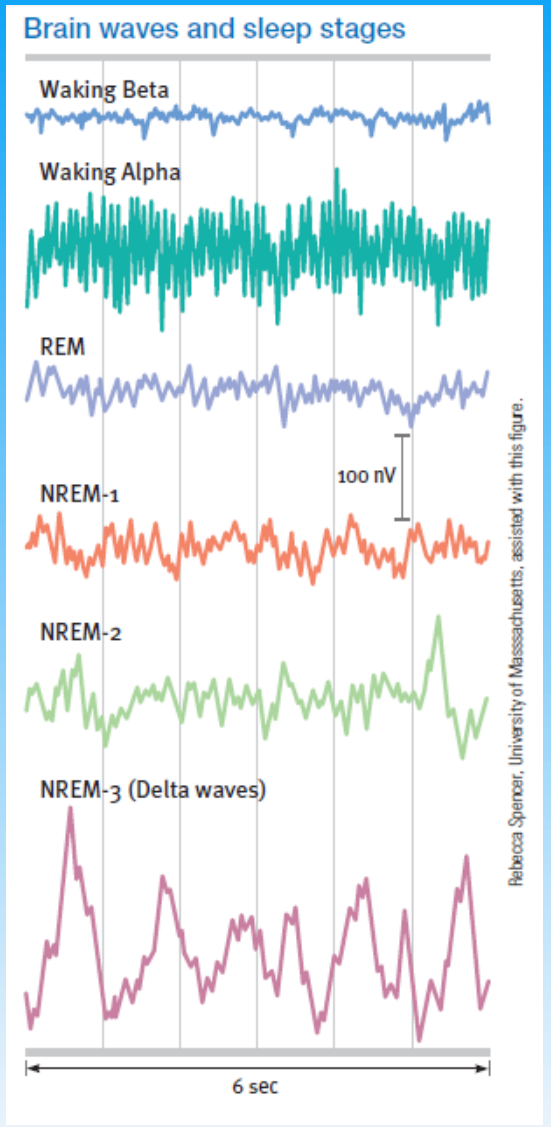
Sleep Stages



Biological Rhythms and Sleep

Sleep Stages

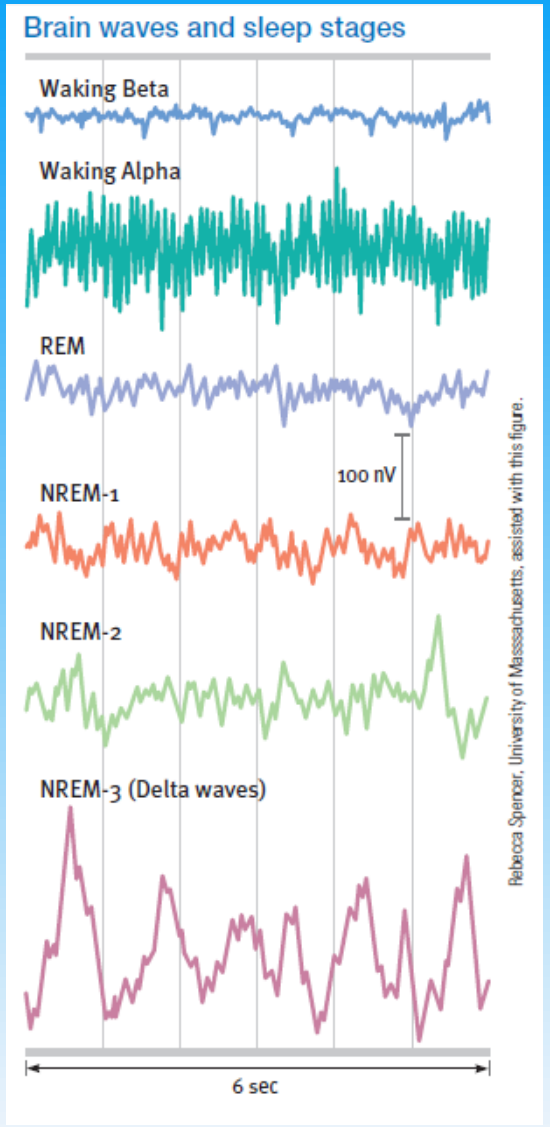
- Parts of sleep
  - Waking Beta Waves
  - Waking Alpha Waves
  - NonREM Sleep
  - REM Sleep



Biological Rhythms and Sleep

Sleep Stages

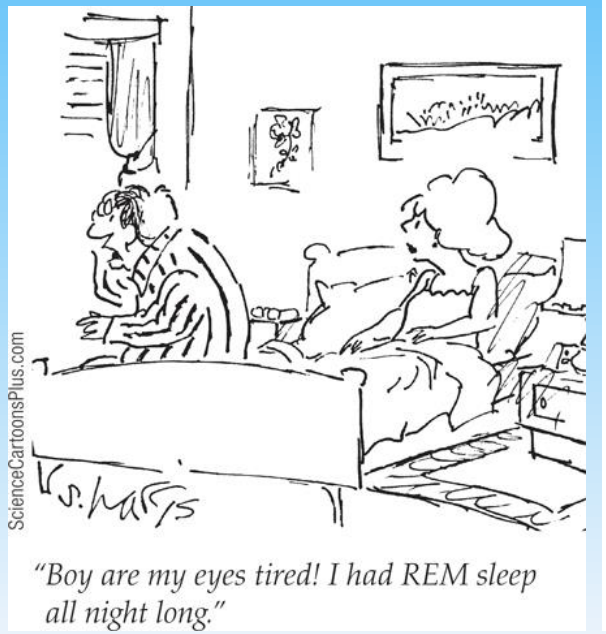
- Parts of sleep
  - –NonREM Sleep
    - NREM-1
      - –Hallucinations
      - –Hypnagogic sensations
    - NREM-2
      - –Sleep Spindles
    - NREM-3
      - –Delta waves

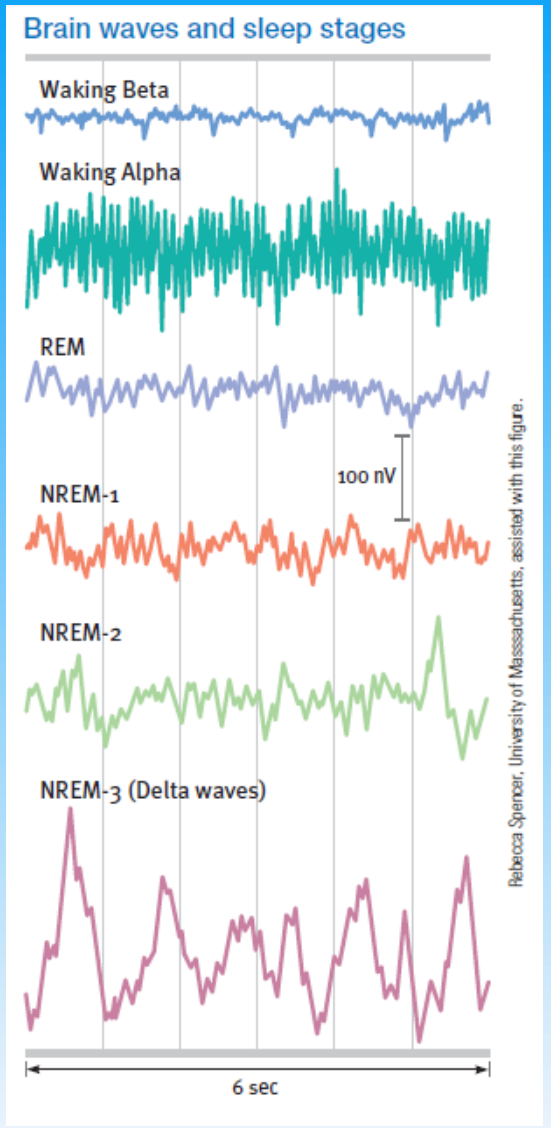


Biological Rhythms and Sleep

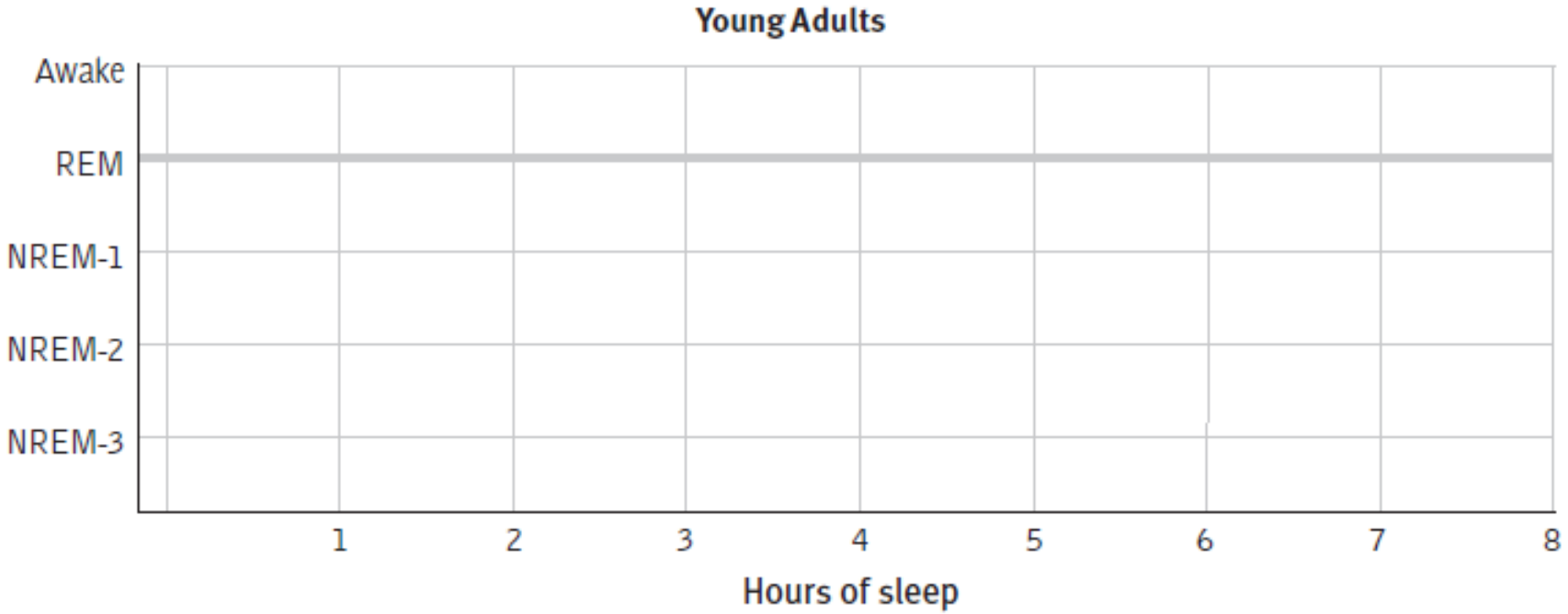
Sleep Stages

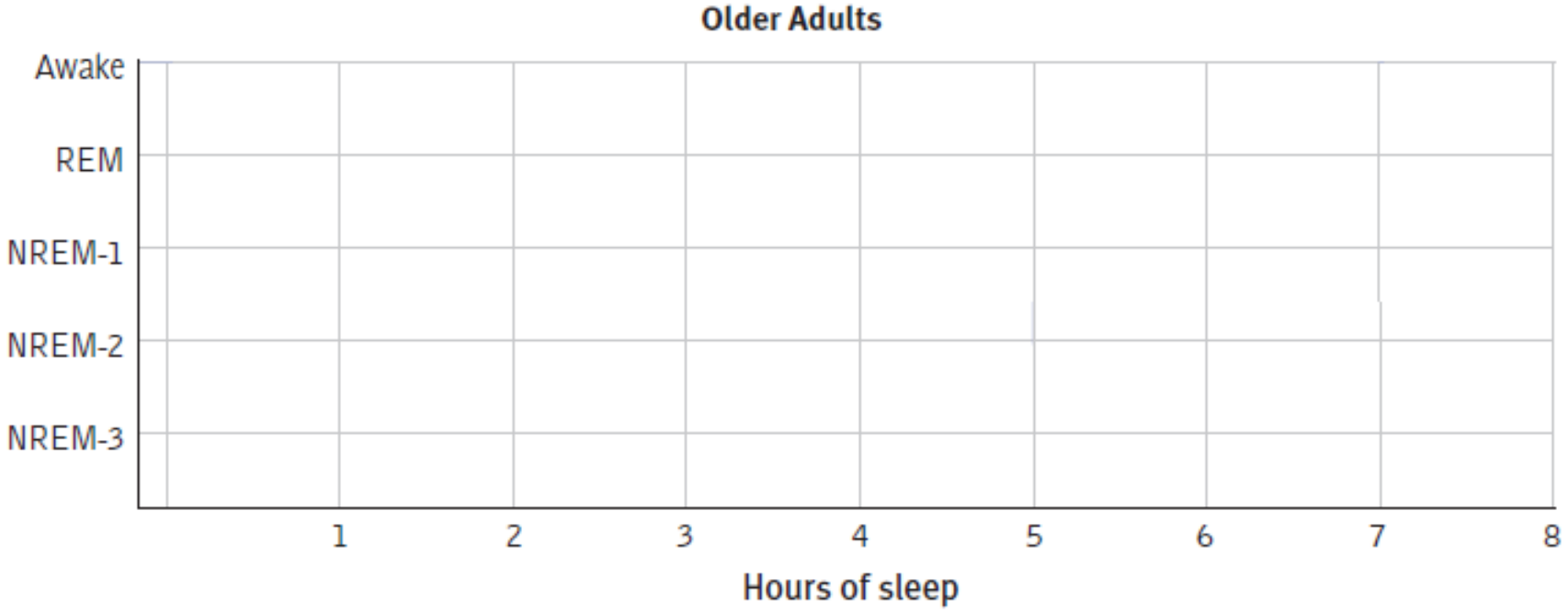
- Parts of sleep
  - REM Sleep
    - EEG Patterns
    - Paradoxical Sleep
    - REM Rebound





The stages in a typical night's sleep





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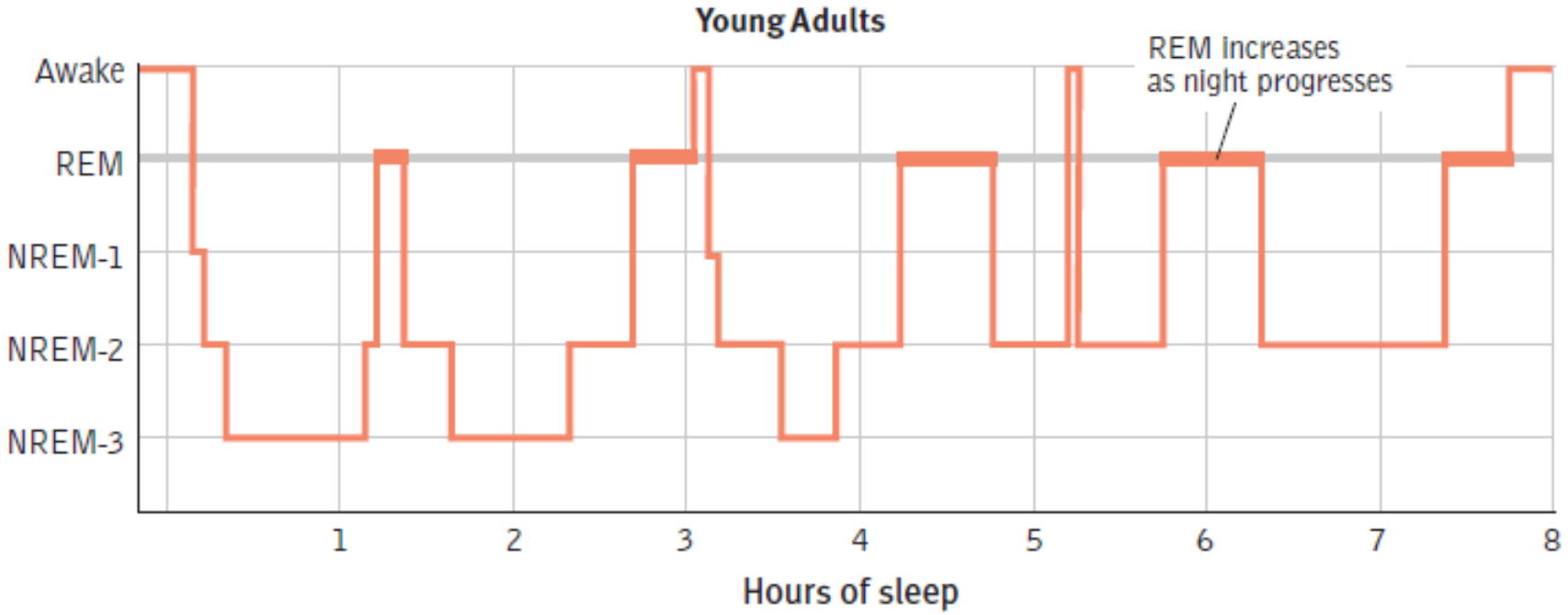

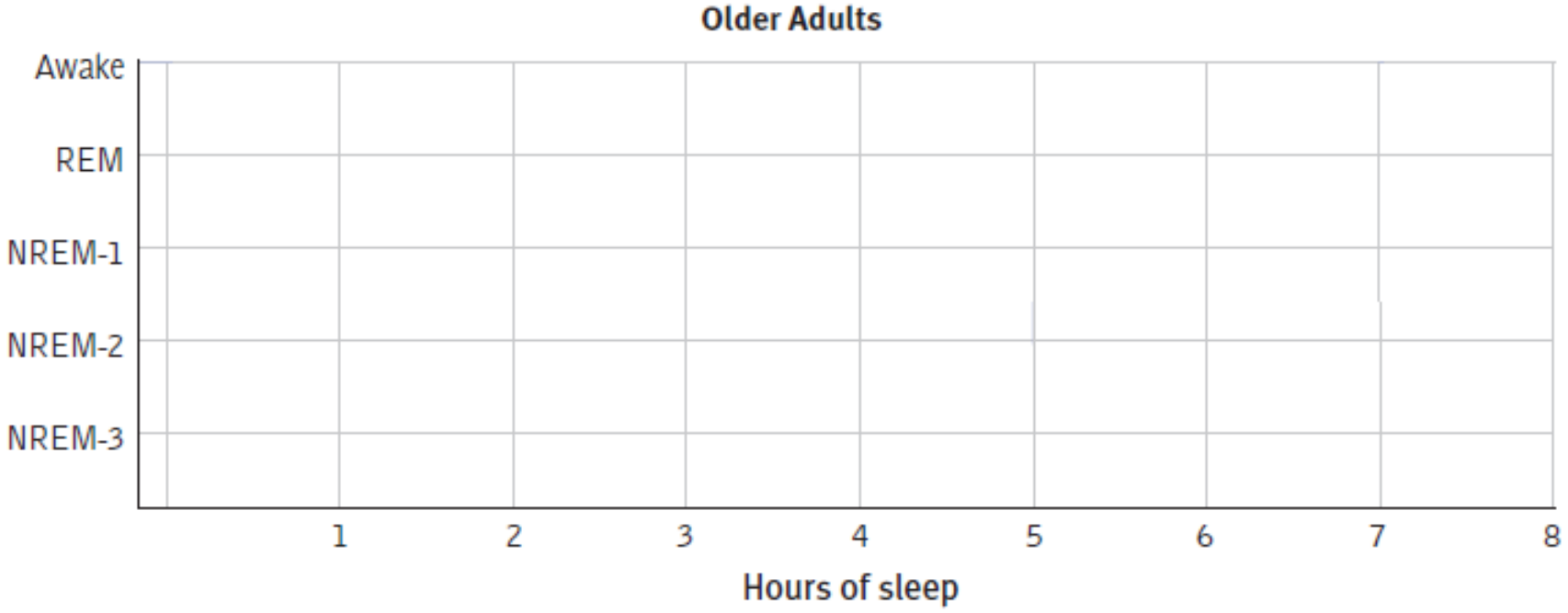

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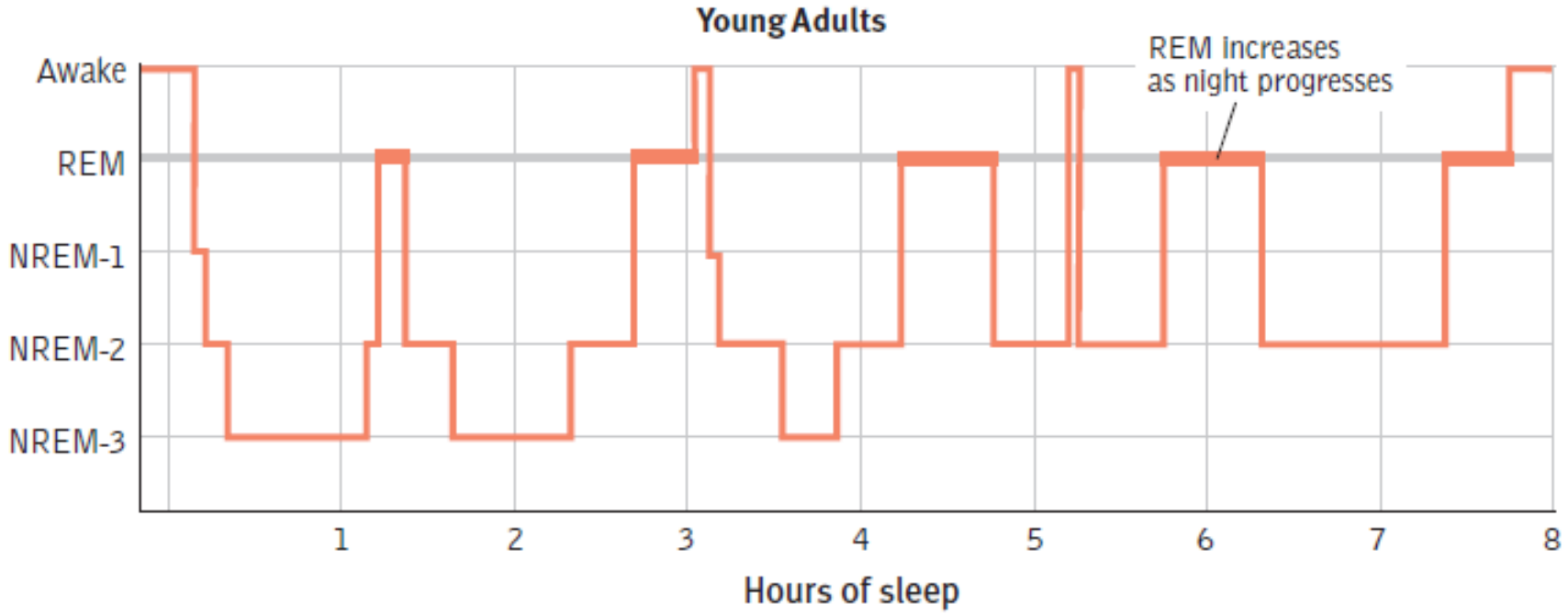
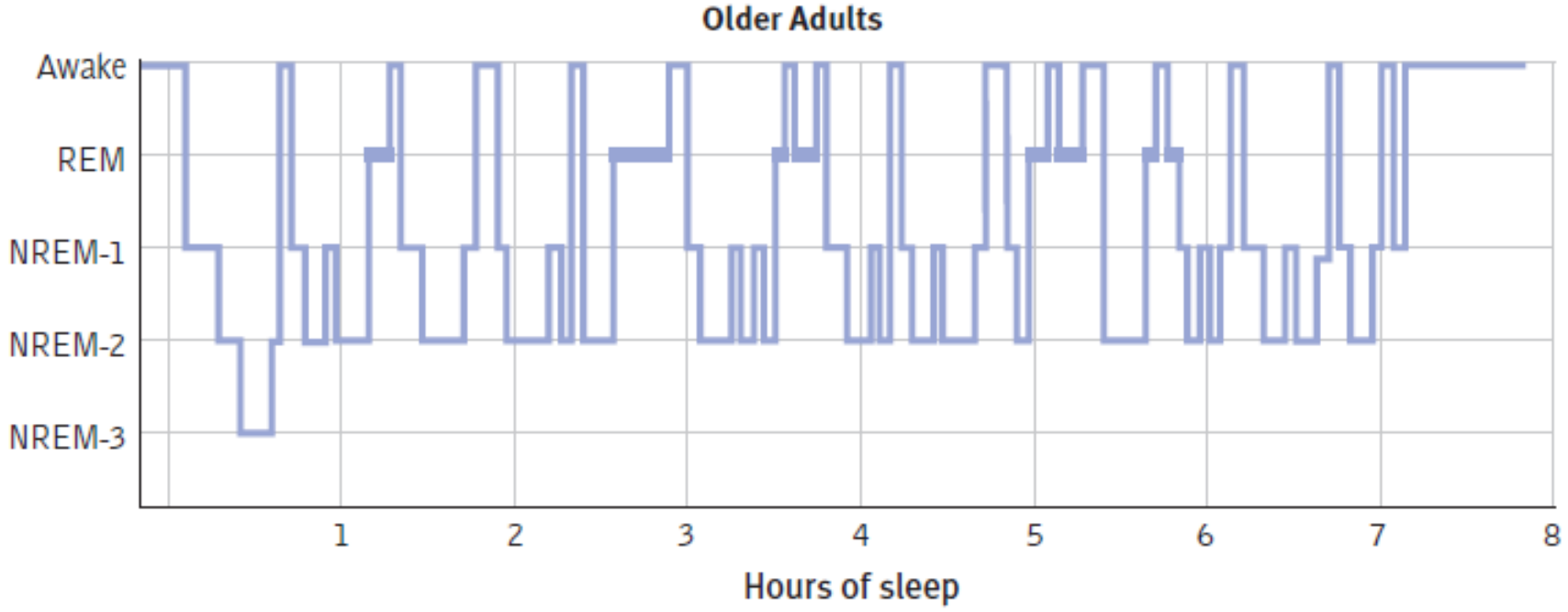
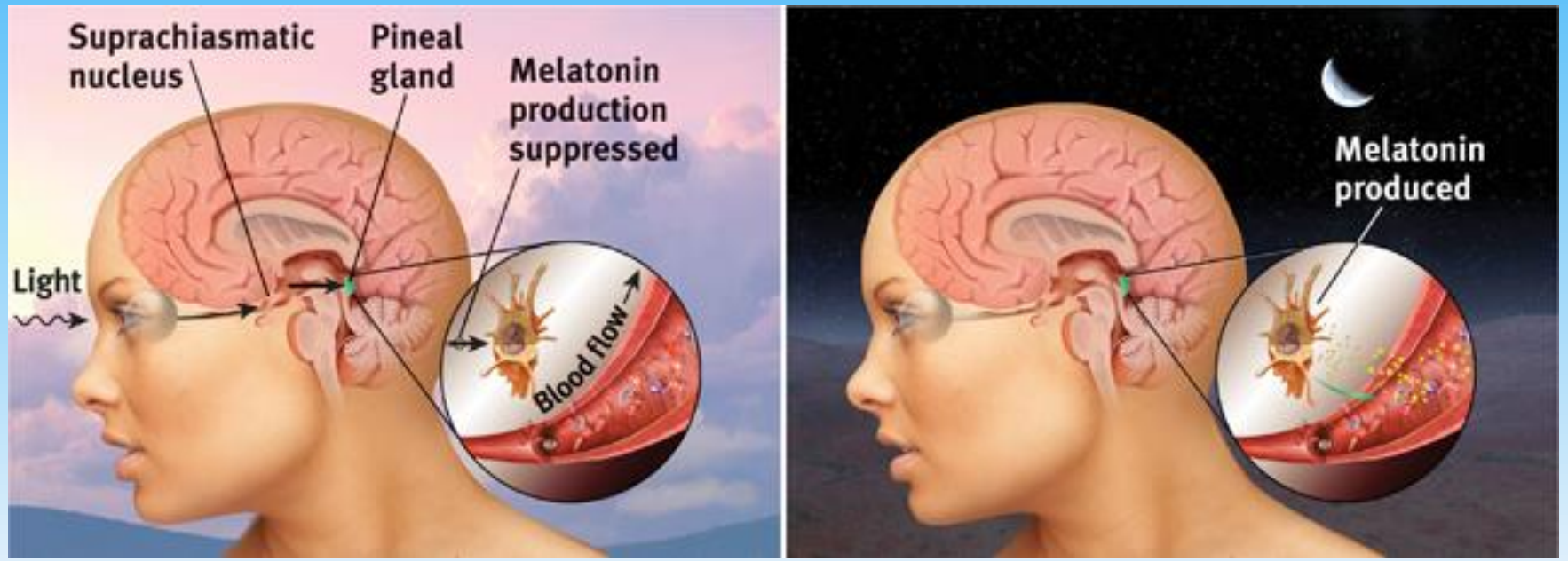




Biological Rhythms and Sleep
Sleep Stages:
What Affects Our Sleep Patterns?

- Suprachiasmatic nucleus (SCN)
  - –melatonin



Sleep Theories

Sleep Theories

- Sleep theories
  - Sleep protects
  - Sleeps helps recuperation
  - Memory storage
  - Sleep and creative thinking
  - Sleep and growth

Sleep Deprivation, Sleep Disorders, and Dreams

Sleep Deprivation and Sleep Disorders

Sleep Deprivation and Sleep Disorders

Effects of Sleep Loss

Cornell University psychologist James Maas has reported that most students suffer the consequences of sleeping less than they should. To see if you are in that group, answer the following true-false questions:

True	False	
.....	.....	1.
.....	.....	2.
.....	.....	3.
.....	.....	4.
.....	.....	5.
.....	.....	6.
.....	.....	7.
.....	.....	8.
.....	.....	9.
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Sleep Deprivation and Sleep Disorders

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.....	.....	9. I often fall asleep after heavy meals.
.....	.....	10.
.....	.....	11.
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.....	.....	8. I often fall asleep in boring meetings or lectures or in warm rooms.
.....	.....	9. I often fall asleep after heavy meals.
.....	.....	10. I often fall asleep while relaxing after dinner.
.....	.....	11.
.....	.....	12.
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.....	.....	5. I have trouble concentrating and remembering.
.....	.....	6. I feel slow with critical thinking, problem solving, and being creative.
.....	.....	7. I often fall asleep watching TV.
.....	.....	8. I often fall asleep in boring meetings or lectures or in warm rooms.
.....	.....	9. I often fall asleep after heavy meals.
.....	.....	10. I often fall asleep while relaxing after dinner.
.....	.....	11. I often fall asleep within five minutes of getting into bed.
.....	.....	12.
.....	.....	13.
.....	.....	14.
.....	.....	15.

Sleep Deprivation and Sleep Disorders

Effects of Sleep Loss

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Sleep Deprivation and Sleep Disorders

Effects of Sleep Loss

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.....	.....	3. Weekday mornings I hit snooze several times to get more sleep.
.....	.....	4. I feel tired, irritable, and stressed out during the week.
.....	.....	5. I have trouble concentrating and remembering.
.....	.....	6. I feel slow with critical thinking, problem solving, and being creative.
.....	.....	7. I often fall asleep watching TV.
.....	.....	8. I often fall asleep in boring meetings or lectures or in warm rooms.
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If you answered "true" to three or more items, you probably are not getting enough sleep. To determine your sleep needs, Maas recommends that you "go to bed 15 minutes earlier than usual every night for the next week—and continue this practice by adding 15 more minutes each week—until you wake without an alarm clock and feel alert all day." (Sleep Quiz reprinted with permission from James B. Maas, "Sleep to Win!" (Bloomington, IN: AuthorHouse, 2013).)

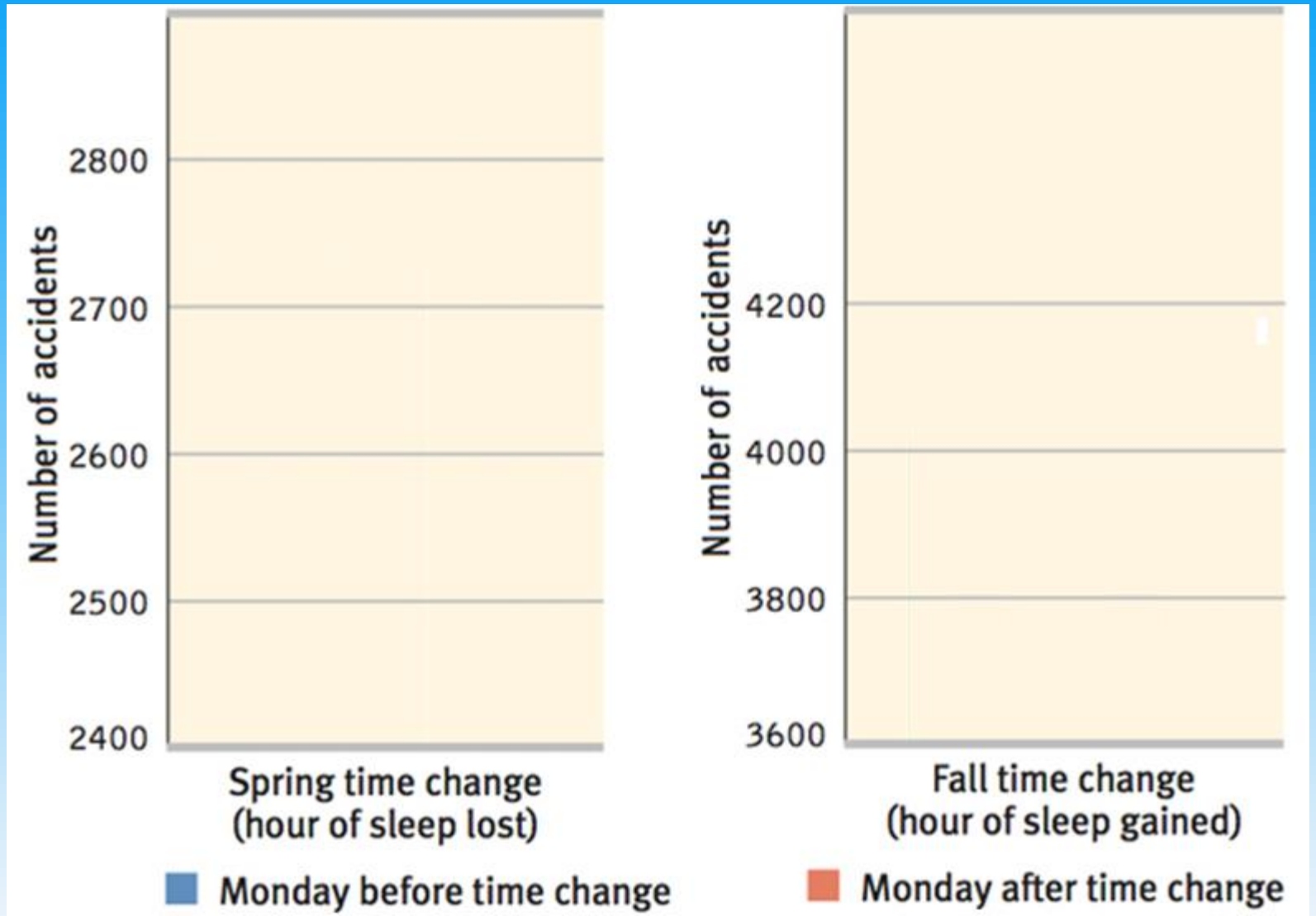
Sleep Deprivation and Sleep Disorders

Effects of Sleep Loss

- US Navy and NIH studies
- Age and sleep loss
- Chronic sleep loss
- Springs and fall time changes

Sleep Deprivation and Sleep Disorders

Effects of Sleep Loss



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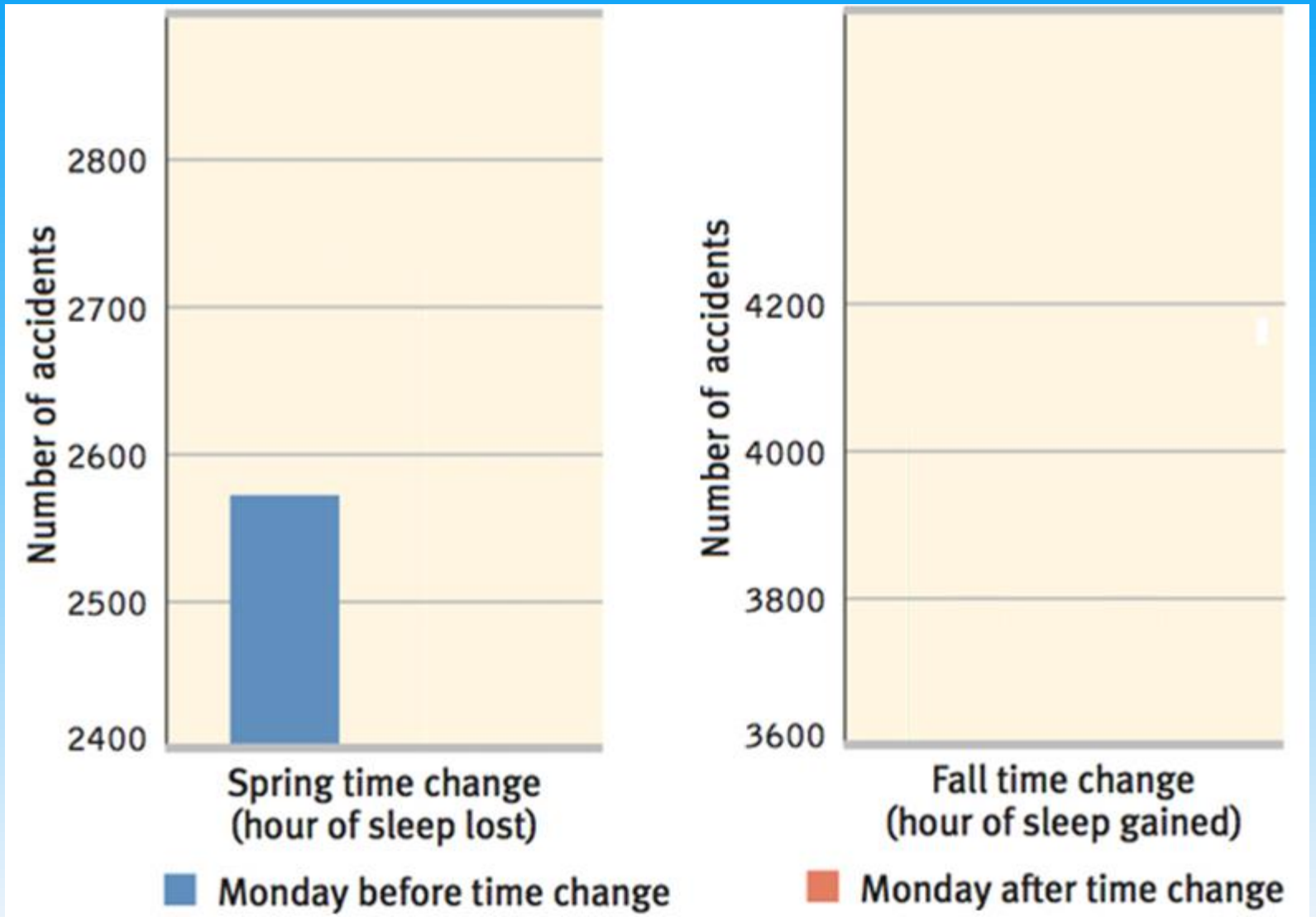

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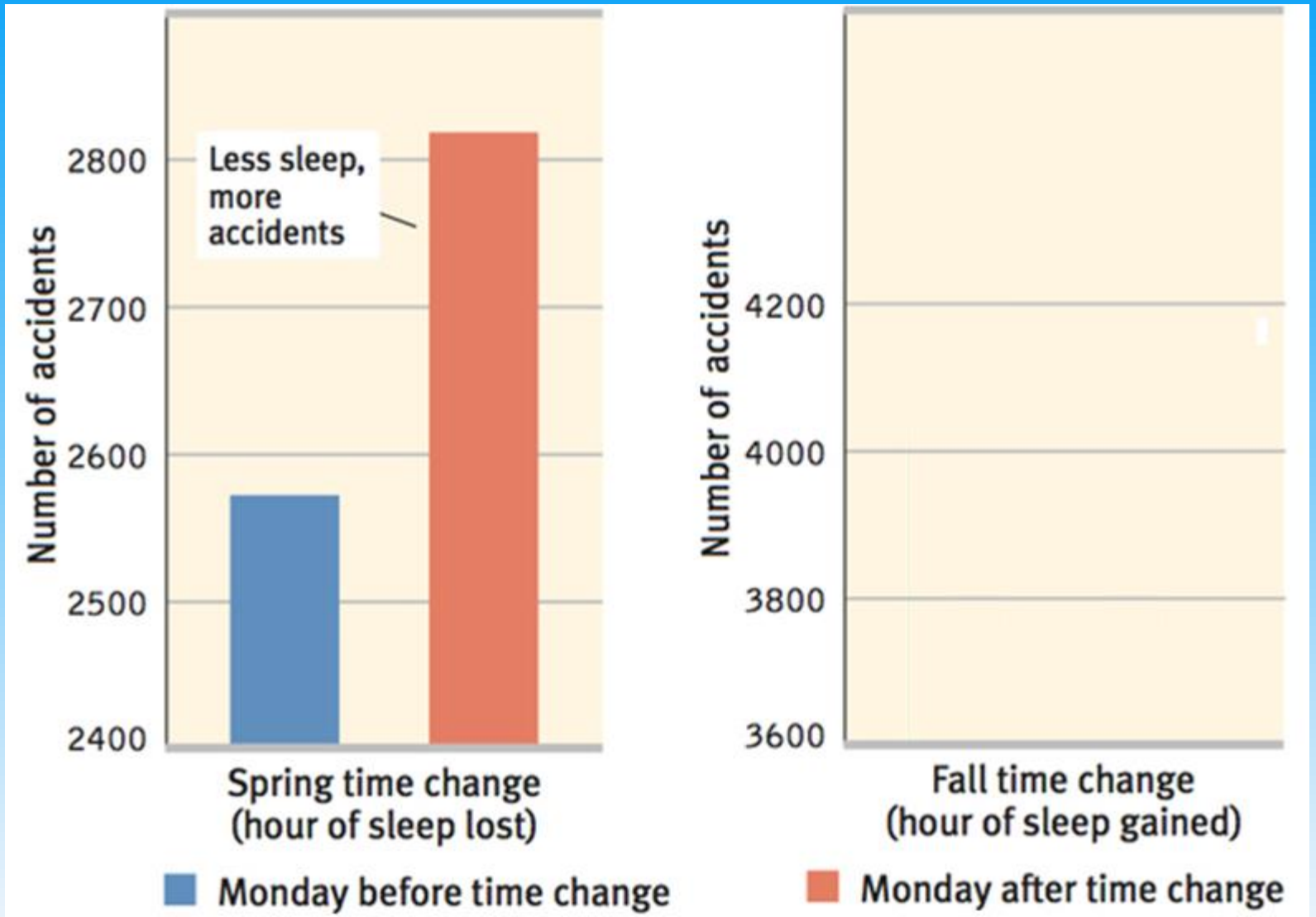

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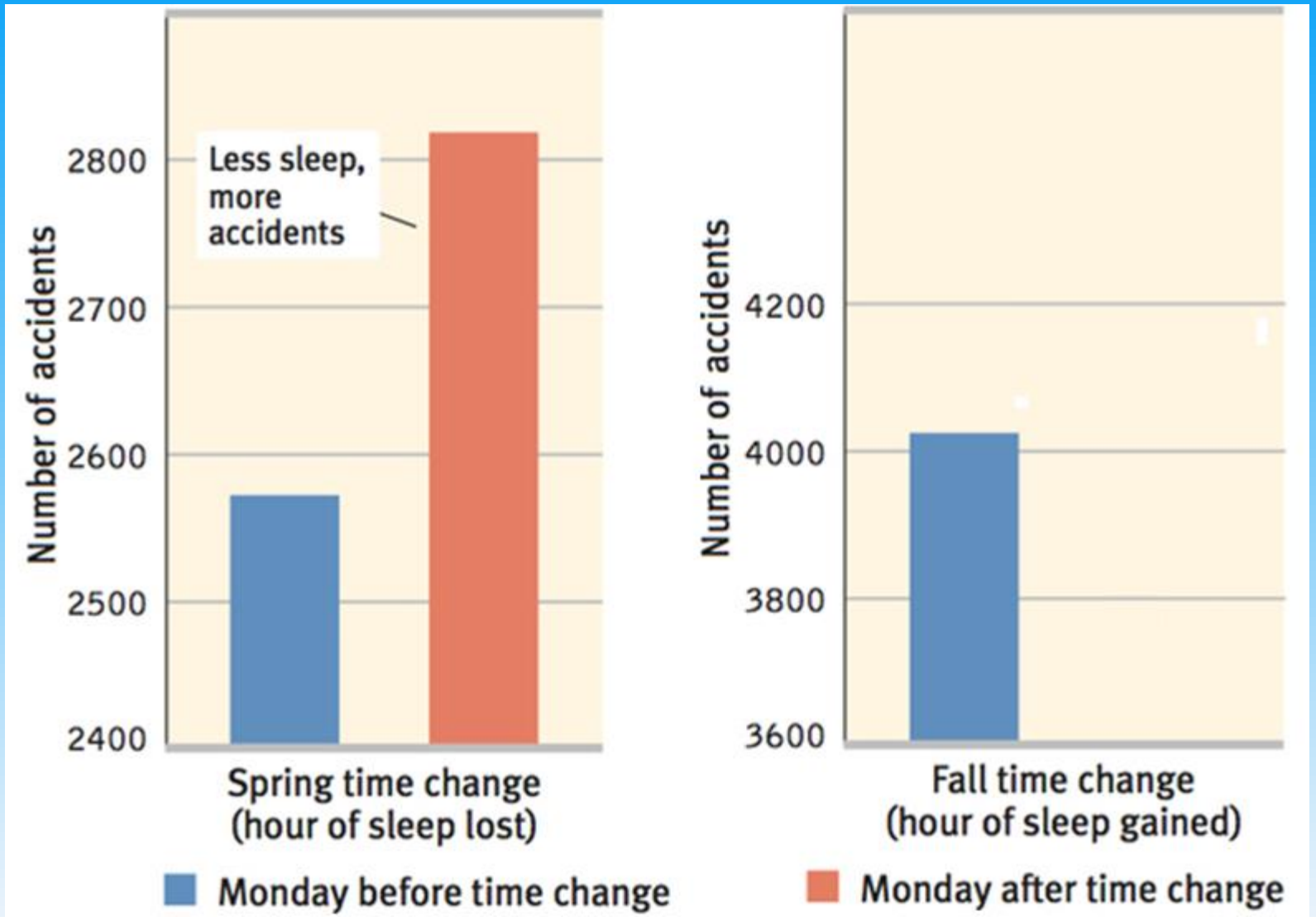

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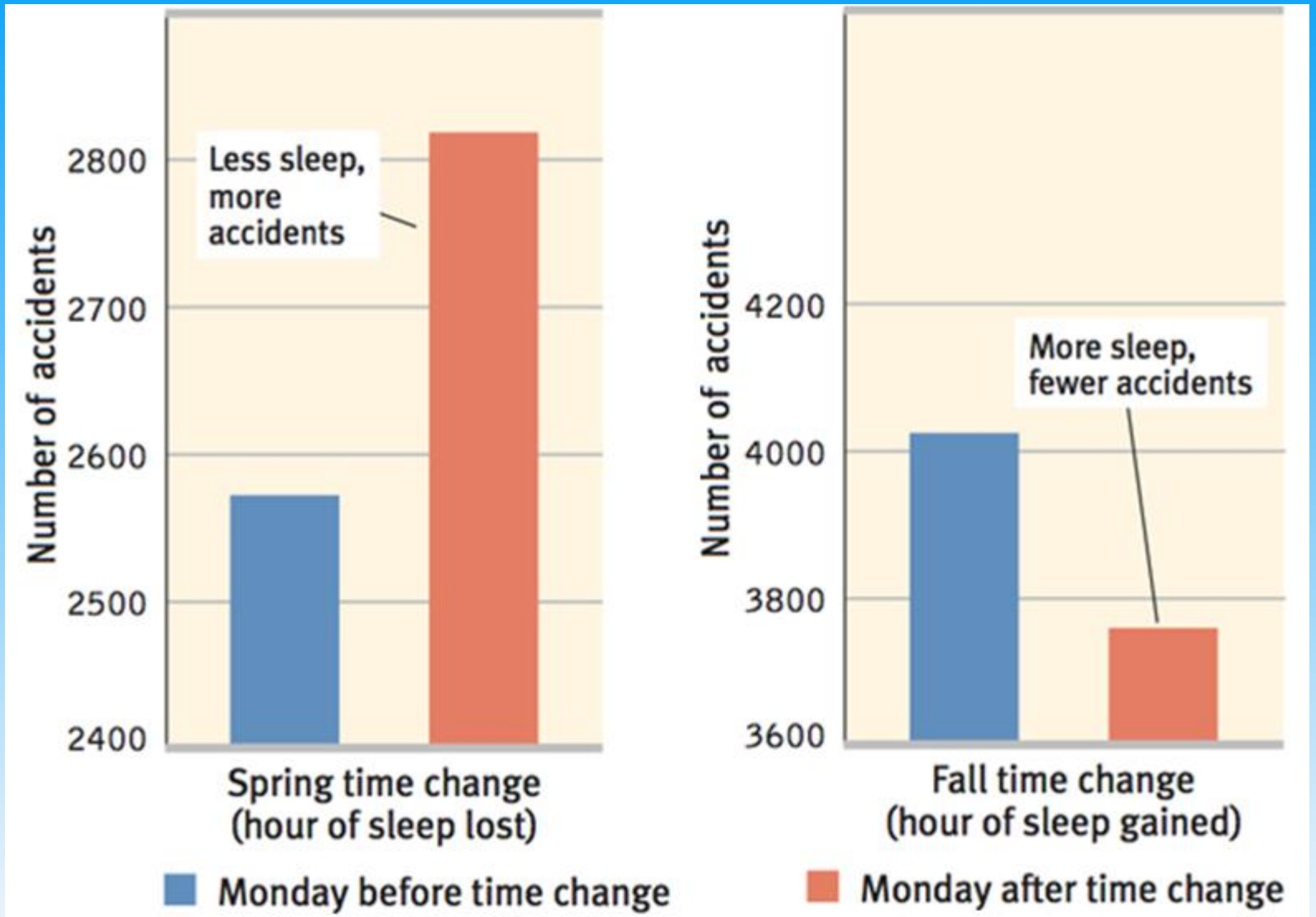

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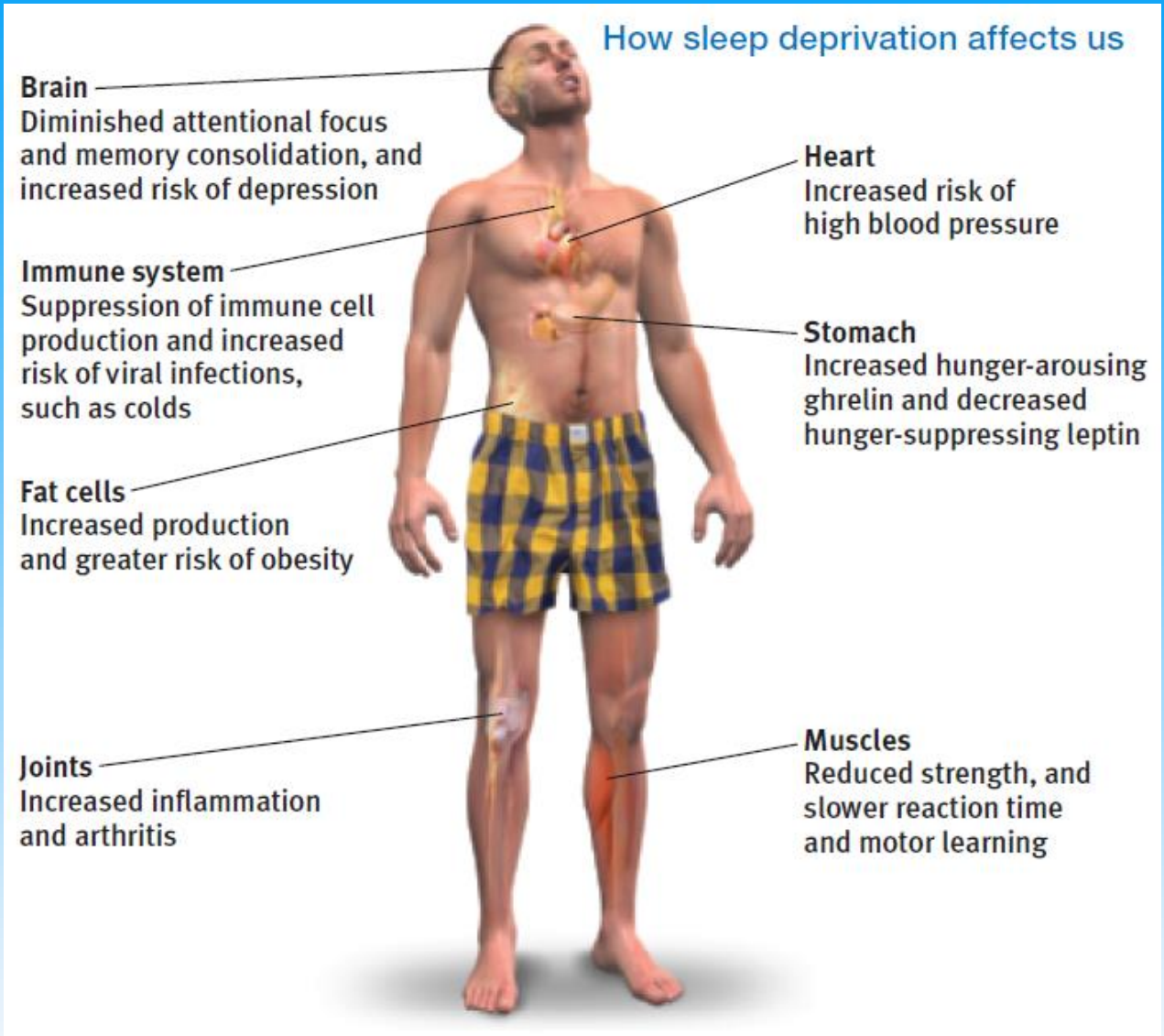


Sleep Deprivation and Sleep Disorders
Effects of Sleep Loss:
Major Sleep Disorders

- Sleep disorders
  - Insomnia
  - Narcolepsy

Sleep Deprivation and Sleep Disorders
Effects of Sleep Loss:
Major Sleep Disorders

- Sleep disorders
  - Sleep apnea
  - Night terrors
  - Sleepwalking/ sleep talking

Dreams

Dreams

What We Dream

- Dreams
  - Manifest content
  - Latent content

"Uh-oh. I think I'm having one of those dreams again."

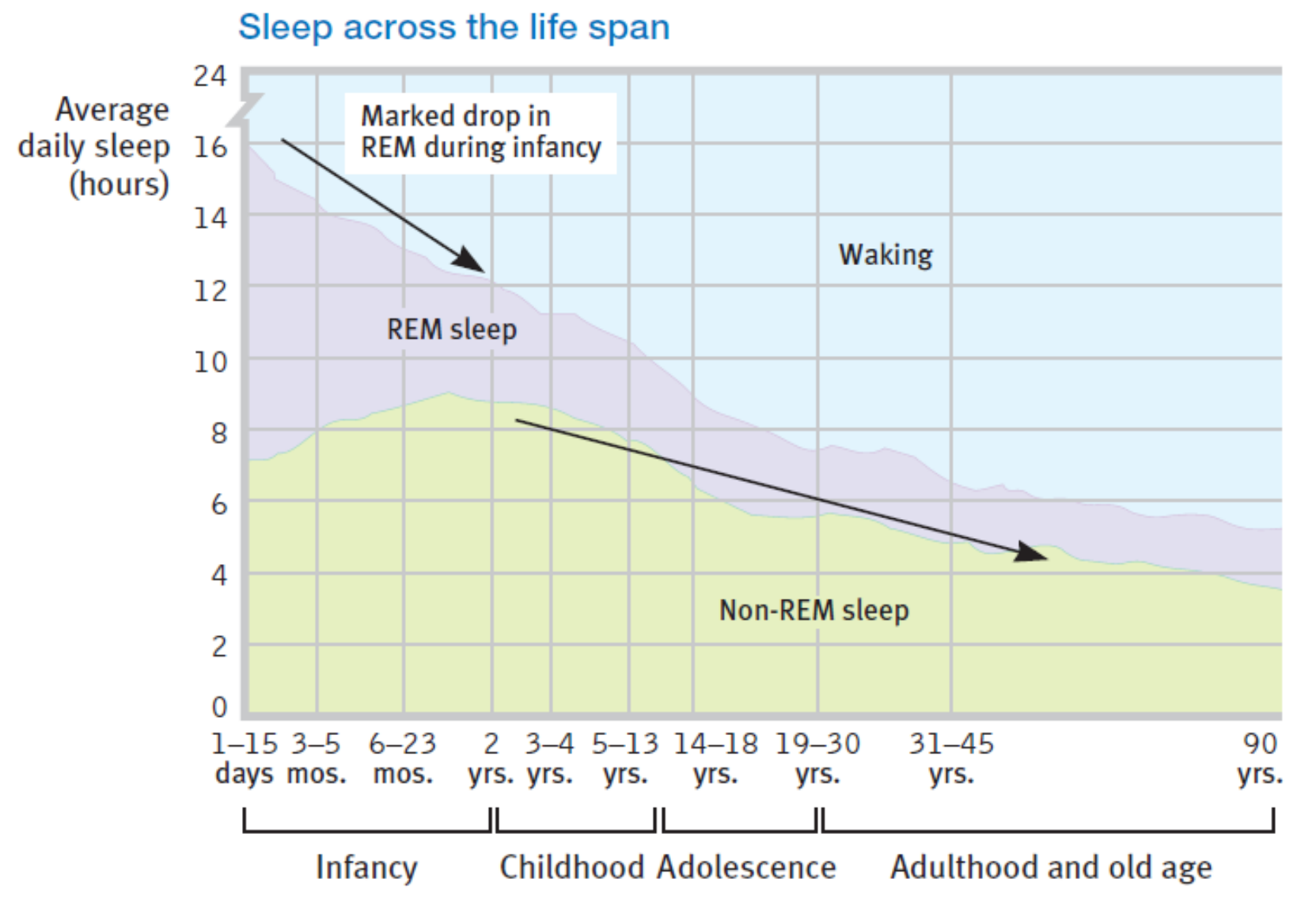
Dreams

Why We Dream

- To satisfy our own wishes
- To file away memories
- To develop/preserve neural pathways
- To make sense of neural static
- To reflect cognitive development
  - REM rebound

Dreams

Why We Dream



Dream Theories

Theory	Explanation	Critical Considerations

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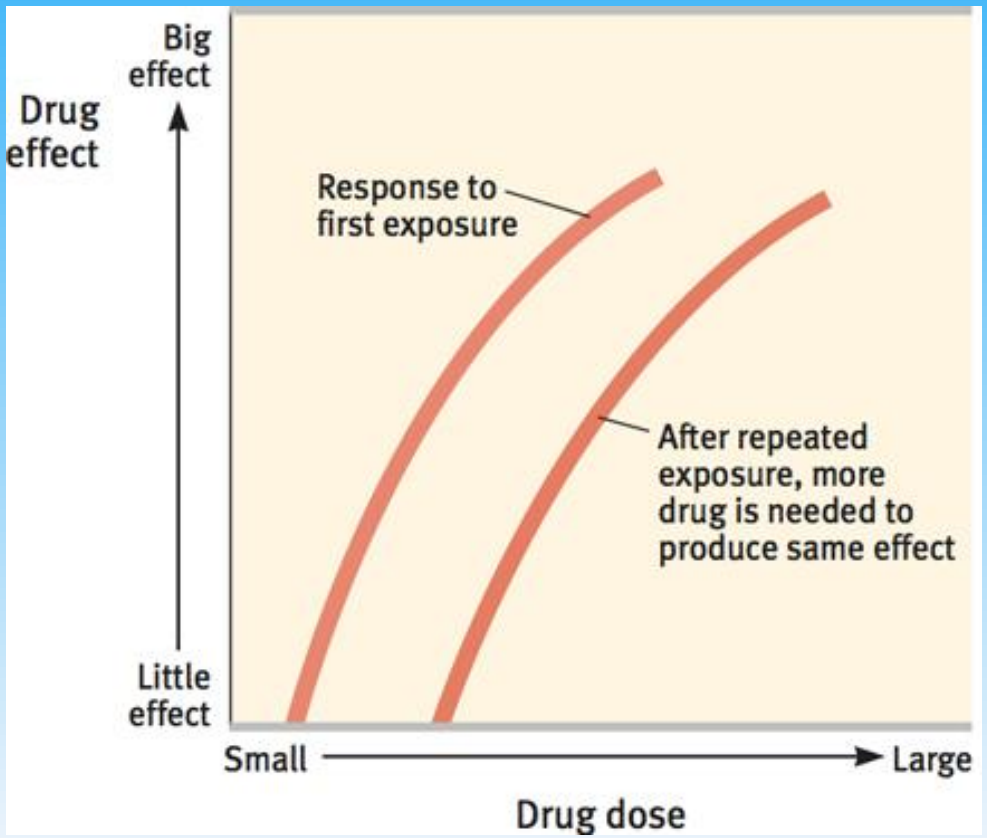
Psychoactive Drugs

Tolerance and Addiction

Tolerance and Addiction

- Substance Use Disorder
- Psychoactive Drugs
- Tolerance
- Addiction
- Withdrawal



When Is Drug Use a Disorder?

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Drug Action

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

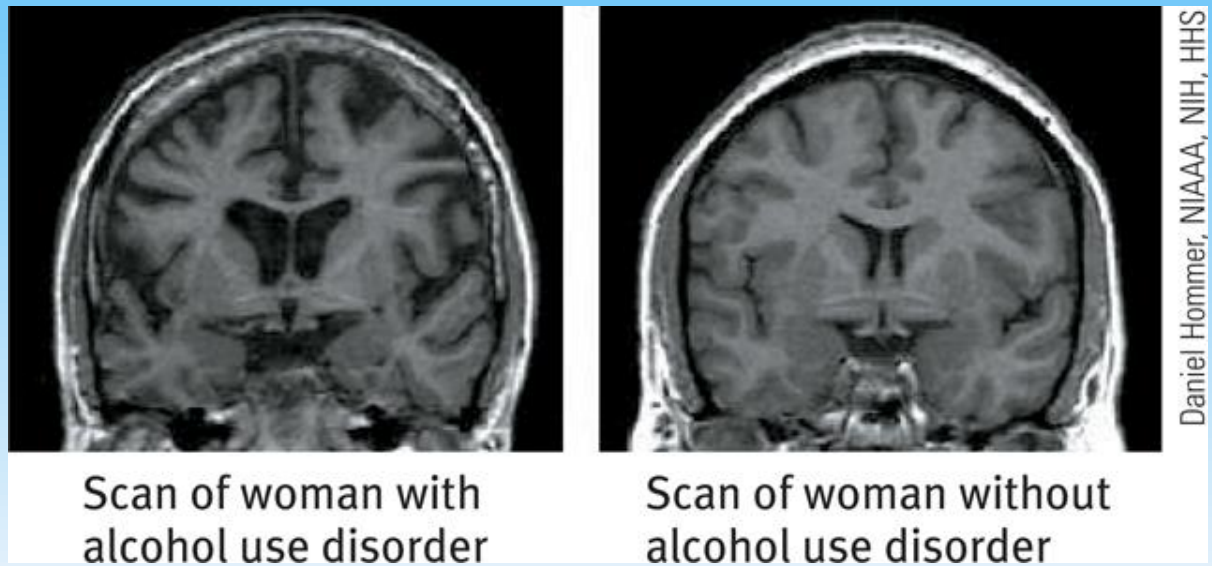
Types of Psychoactive Drugs

Types of Psychoactive Drugs

- Three types of psychoactive drugs
  - Depressants
  - Stimulants
  - Hallucinogens

Types of Psychoactive Drugs
Depressants

- Depressants
  - Alcohol
  - Barbiturates (tranquilizers)
  - Opiates



Scan of woman with alcohol use disorder

Scan of woman without alcohol use disorder

Daniel Hommer, NIAAA, NIH, HHS

Types of Psychoactive Drugs
Depressants:
Alcohol

- Disinhibition
- Slowed neural processing
- Memory disruption
- Reduced self-awareness and self-control
- Expectancy effects

Types of Psychoactive Drugs
Depressants:
Barbiturates and Opiates

- Barbiturate (tranquilizers)
- Opiates
  - Endorphins

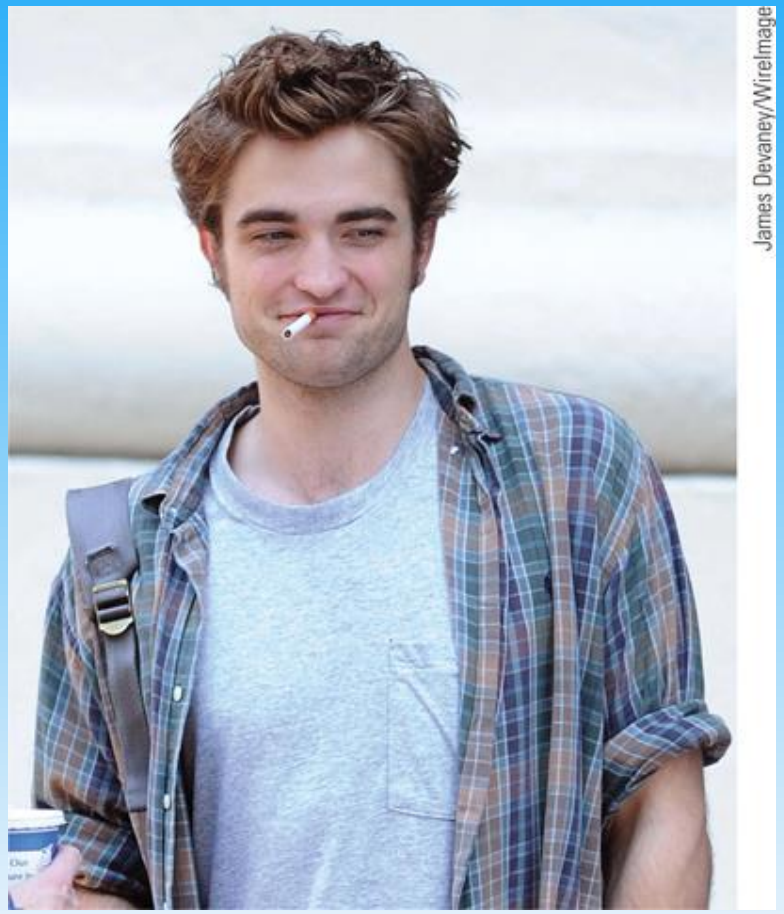
Types of Psychoactive Drugs
Stimulants

- Stimulants
  - Caffeine
  - Nicotine
  - Amphetamines
  - Cocaine - crack
  - Methamphetamine
  - Ecstasy (MDMA)

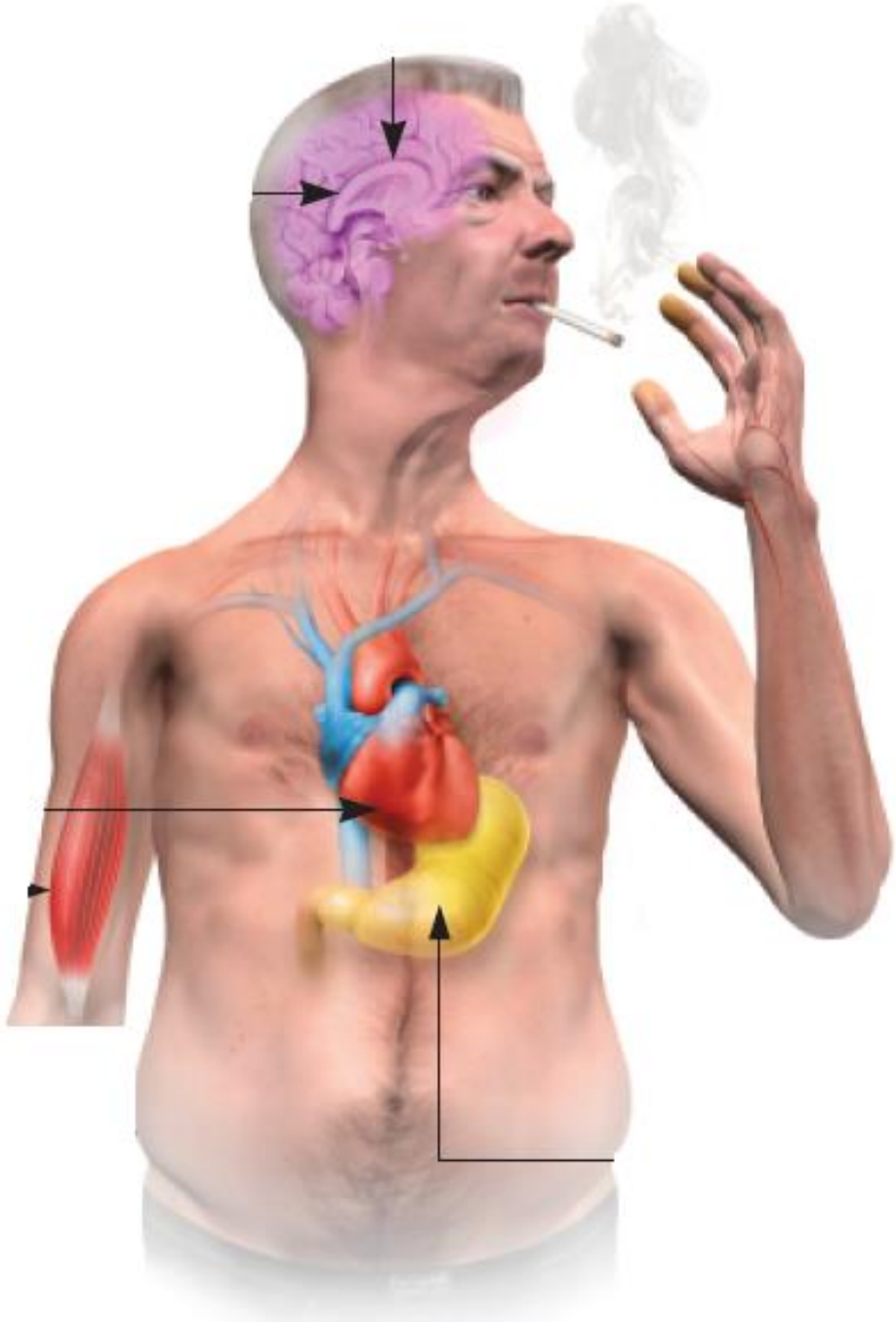
Vasca/Shutterstock

Types of Psychoactive Drugs
Stimulants:
Nicotine

- Nicotine
  - Usage
  - Tolerance

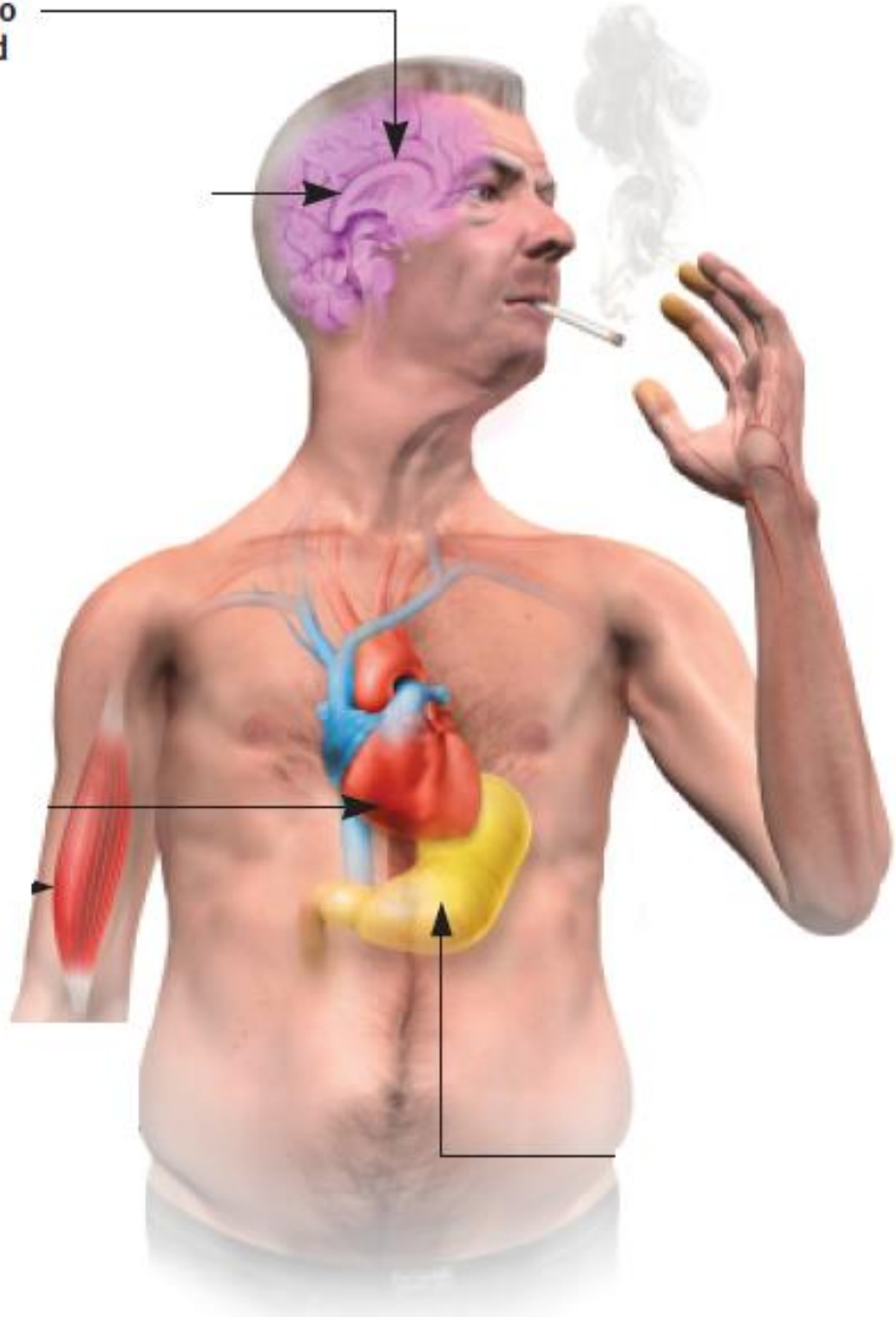


Where there's smoke . . . : The physiological effects of nicotine



Where there's smoke . . . : The physiological effects of nicotine

1. Arouses the brain to a state of increased alertness



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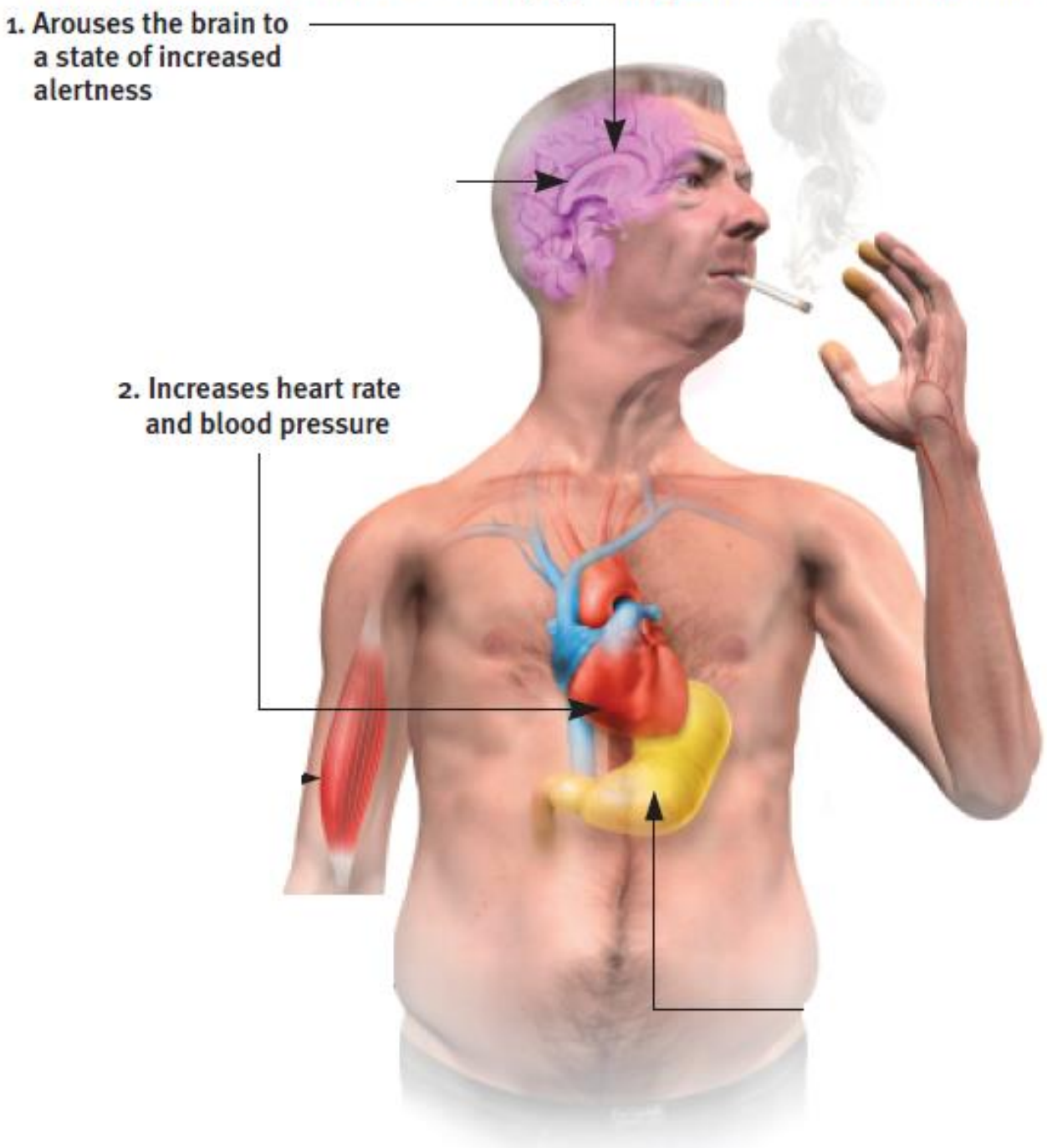

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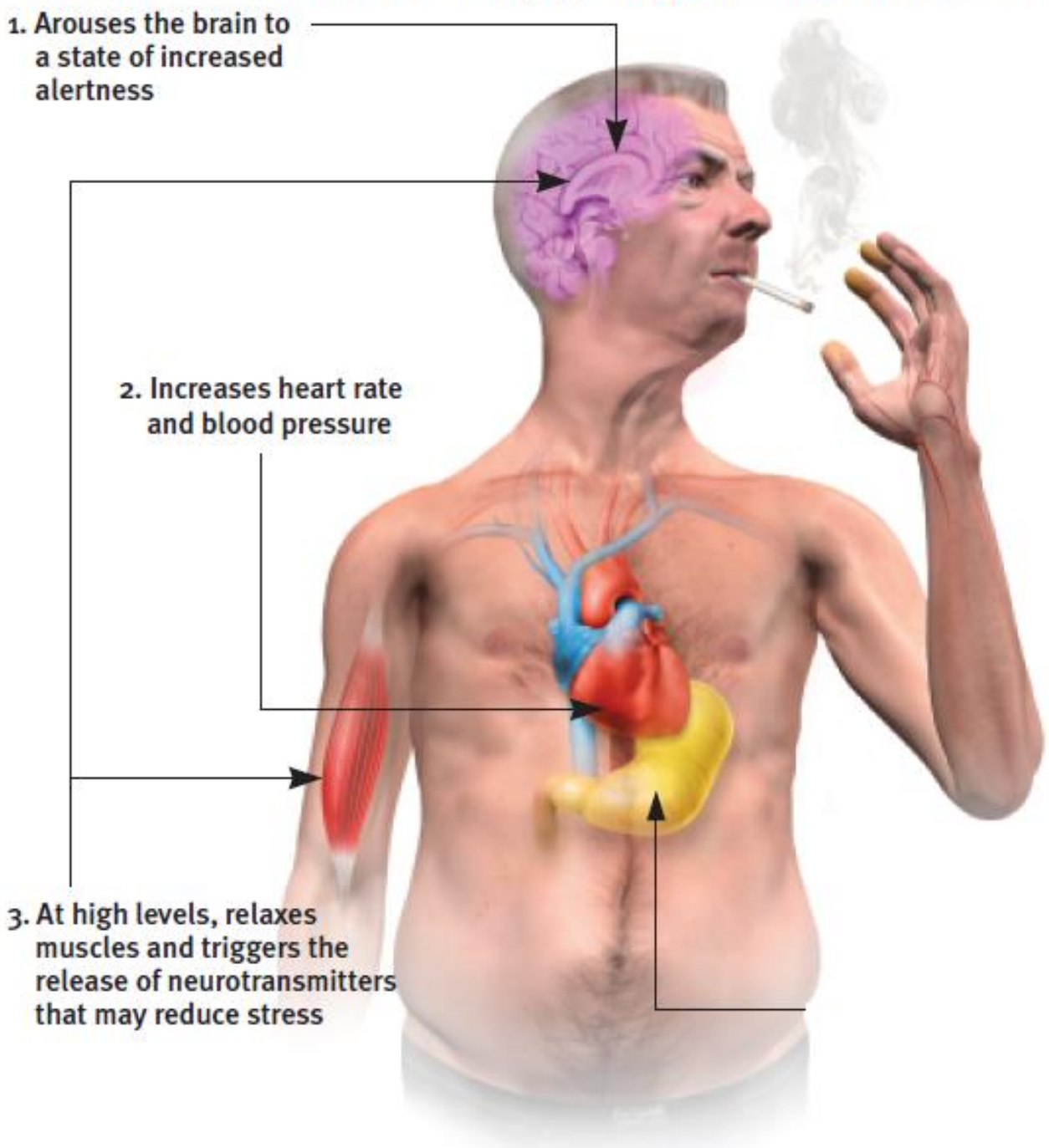

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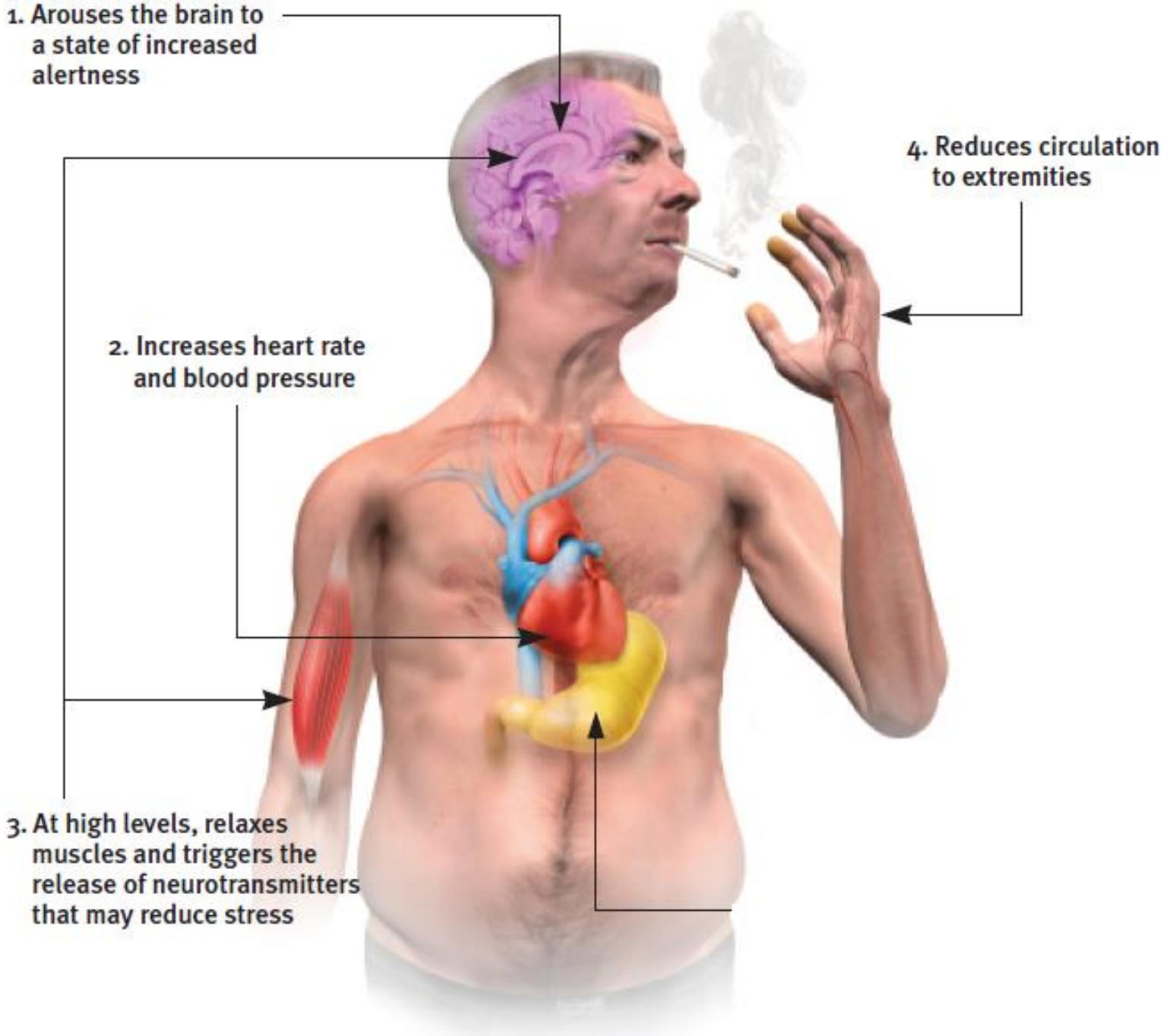

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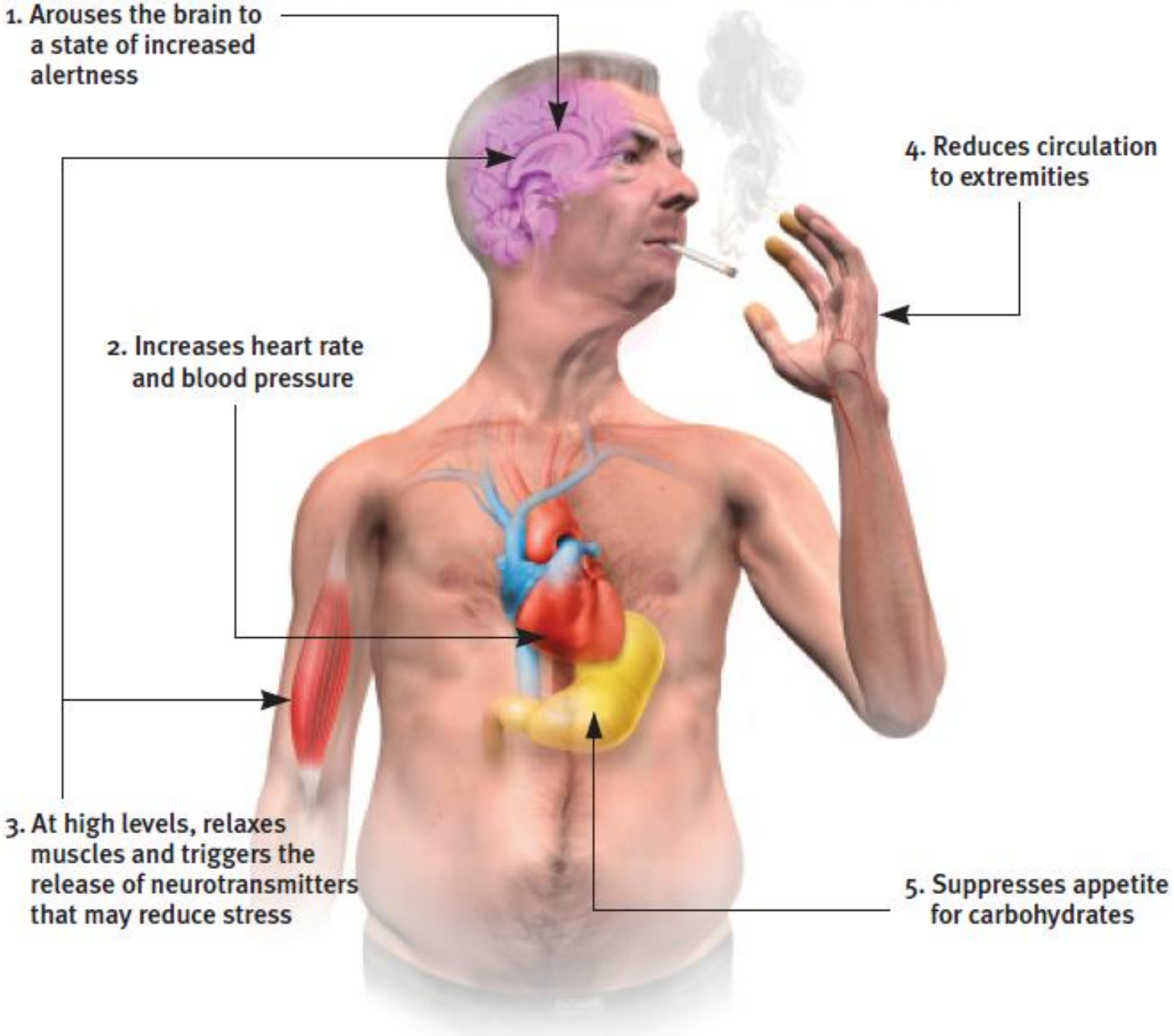
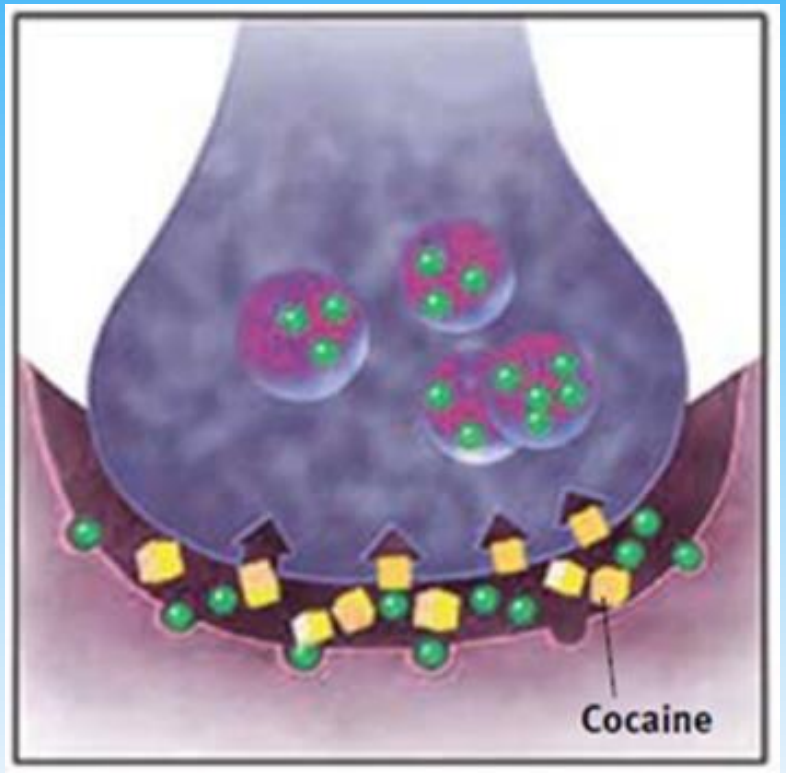


Types of Psychoactive Drugs
Stimulants:
Cocaine

- Cocaine
  - Neurotransmitters
  - Crack



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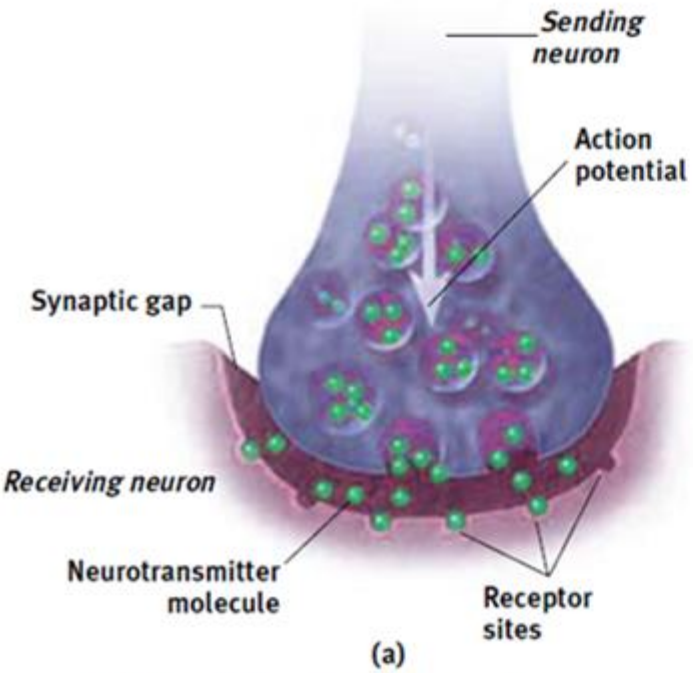

Neurotransmitters carry a message from a sending neuron across a synapse to receptor sites on a receiving neuron.

Types of Psychoactive Drugs
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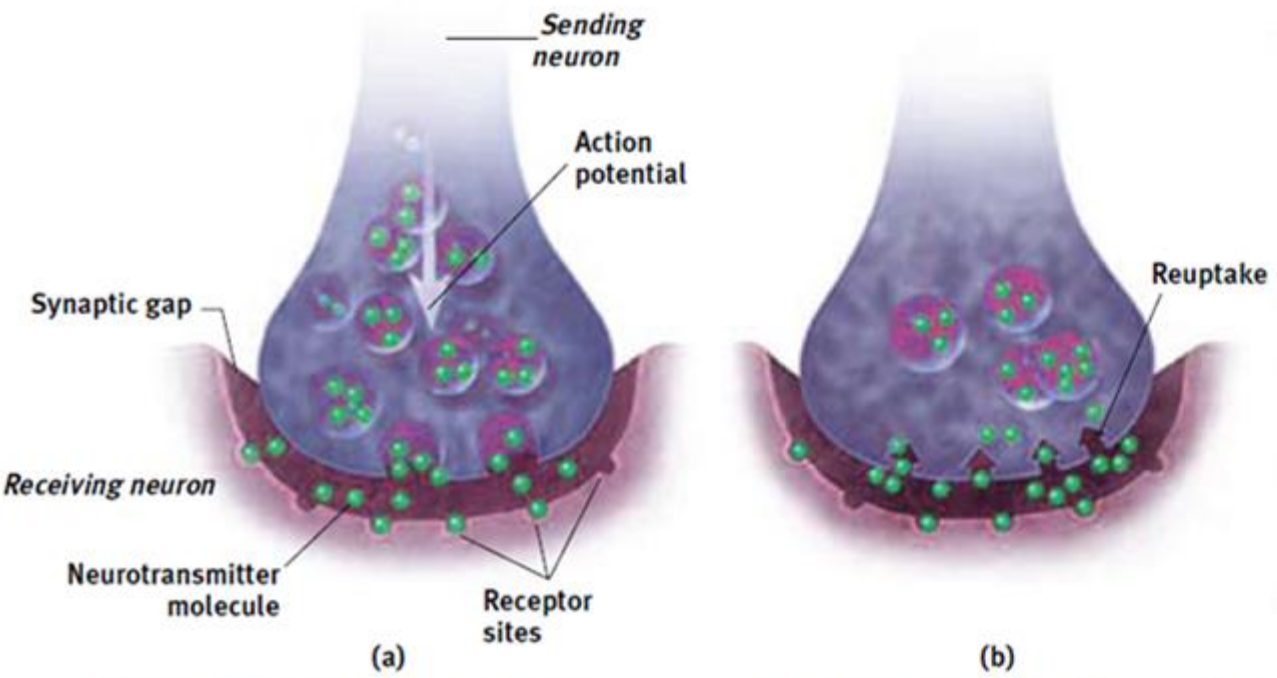

Neurotransmitters carry a message from a sending neuron across a synapse to receptor sites on a receiving neuron.

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

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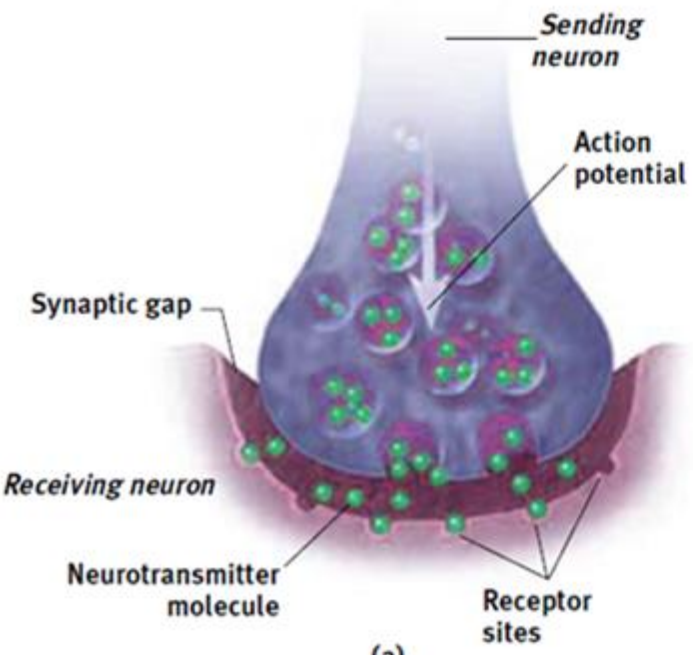
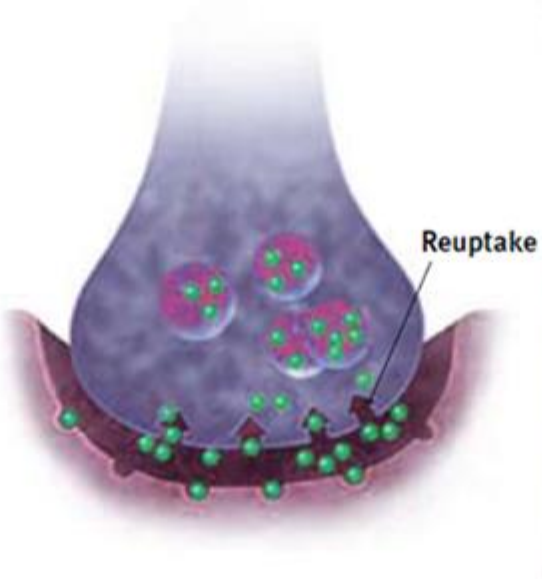


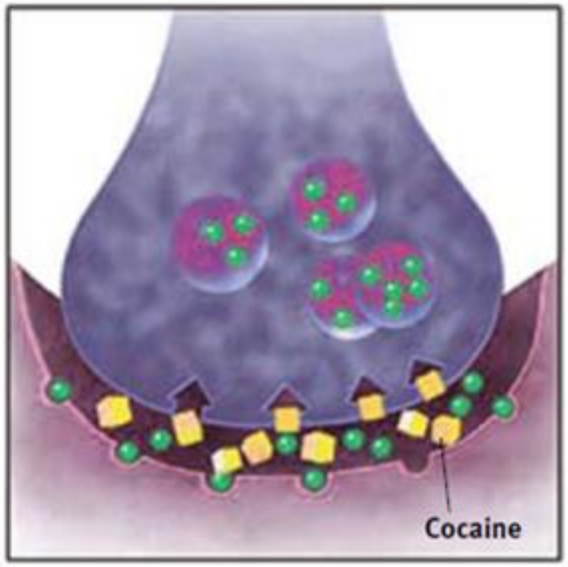
(a)

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



(b)

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



(c)

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.

Types of Psychoactive Drugs
Stimulants:
Cocaine

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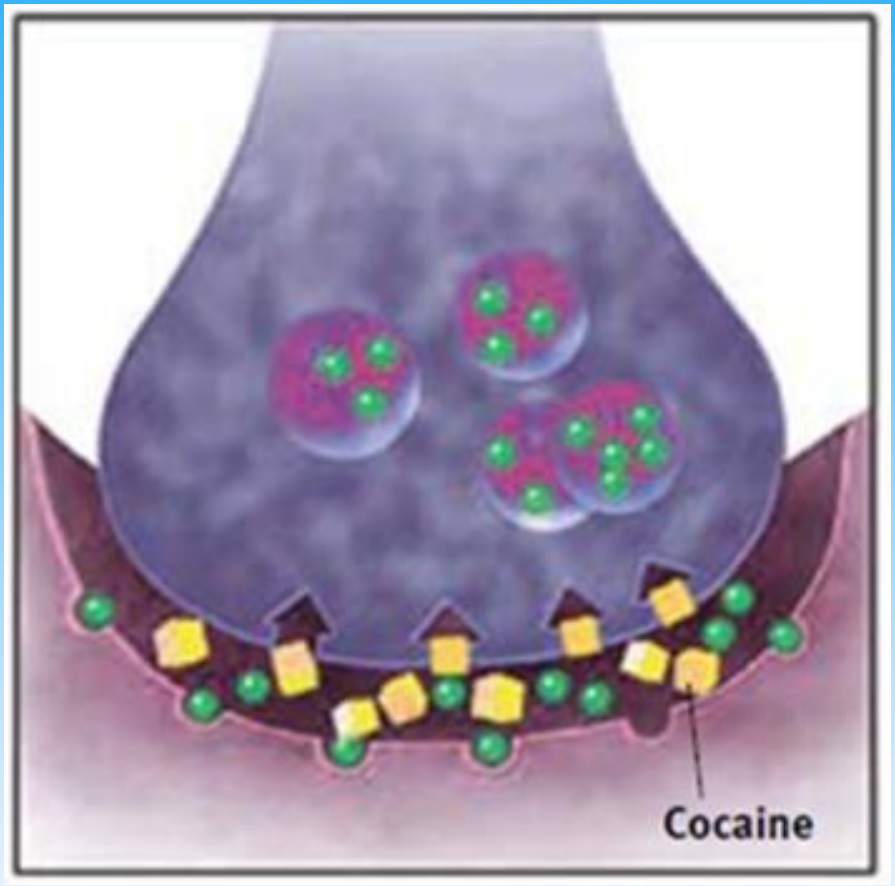


Types of Psychoactive Drugs
Stimulants:
Methamphetamine

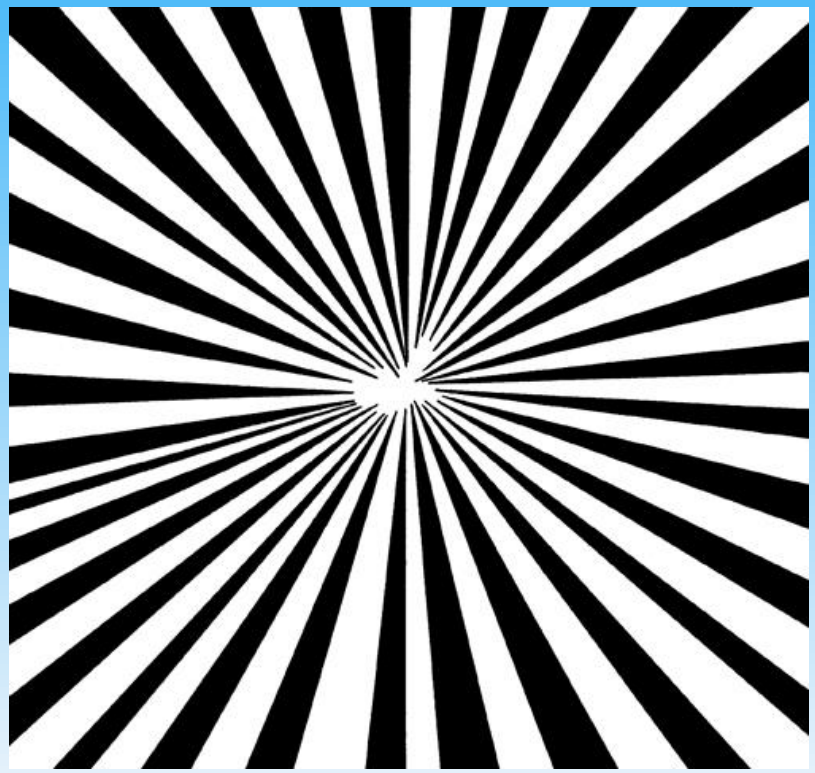
- Methamphetamine
  - Amphetamine
  - Dopamine
  - Effects and Aftereffects

Types of Psychoactive Drugs
Stimulants:
Ecstasy (MDMA)

- Ecstasy
  - MDMA (methylenedioxymethamphetamine)
  - Dopamine and Serotonin
  - “Club Drug”

Types of Psychoactive Drugs
Hallucinogens

- Hallucinogens (psychedelics)
  - LSD (lysergic acid diethylamide)
    - Acid
    - Near death experience
  - Marijuana
    - THC



A Guide to Selected Psychoactive Drugs

Drug	Type	Pleasurable Effects	Adverse Effects

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Marijuana	Mild hallucinogen	Enhanced sensation, relief of pain, distortion of time, relaxation	Impaired learning and memory, increased risk of psychological disorders, lung damage from smoke

The End

Definition Slides

Consciousness

= an awareness of ourselves and our environment.

Hypnosis

= a social interaction in which one person (the subject) responds to another person's (the hypnotist's) suggestions that certain perceptions, feelings, thoughts, or behaviors will spontaneously occur.

Posthypnotic Suggestion

= a suggestion, made during a hypnosis session, to be carried out after the subject is no longer hypnotized; used by some clinicians to help control undesired symptoms and behaviors.

Dissociation

= a split in consciousness, which allows some thoughts and behaviors to occur simultaneously with others.

Circadian Rhythm

= the biological clock; regular bodily rhythms (for example, of temperature and wakefulness) that occur on a 24-hour cycle.

REM Sleep

= rapid eye movement sleep; a recurring sleep state during which vivid dreams commonly occur. Also known as *paradoxical sleep*, because the muscles are relaxed (except for minor twitches) but other body systems are active.

Alpha Waves

= the relatively slow brain waves of a relaxed, awake state.

Sleep

= periodic, natural loss of consciousness – as distinct from unconsciousness resulting from a coma, general anesthesia, or hibernation.

Hallucinations

= false sensory experiences, such as seeing something in the absence of an external visual stimulus.

Delta Waves

= the large, slow brain waves associated with deep sleep.

NREM Sleep

= non-rapid eye movement sleep; encompasses all sleep stages except for REM sleep.

Suprachiasmatic Nucleus (SCN)

= a pair of cell clusters in the hypothalamus that controls circadian rhythm. In response to light, the SCN causes the pineal gland to adjust melatonin production, thus modifying our feelings of sleepiness.

Insomnia

= recurring problems in falling or staying asleep.

Narcolepsy

= a sleep disorder characterized by uncontrollable sleep attacks. The sufferer may lapse directly into REM sleep, often at inopportune times.

Sleep Apnea

= a sleep disorder characterized by temporary cessations of breathing during sleep and repeated momentary awakenings.

Night Terrors

= a sleep disorder characterized by high arousal and an appearance of being terrified; unlike nightmares, night terrors occur during NREM-3 sleep, within two or three hours of falling asleep, and are seldom remembered.

Dream

= a sequence of images, emotions, and thoughts passing through a sleeping person's mind. Dreams are notable for their hallucinatory imagery, discontinuities, and incongruities, and for the dreamer's delusional acceptance of the content and later difficulties remembering it.

Manifest Content

= according to Freud, the remembered story line of a dream (as distinct from its latent, or hidden, content).

Latent Content

= according to Freud, the underlying meaning of a dream (as distinct from its manifest content).

REM Rebound

= the tendency for REM sleep to increase following REM sleep deprivation (created by repeated awakenings during REM sleep).

Substance Use Disorder

= continued substance craving and use despite significant life disruption and/or physical risk.

Psychoactive Drug

= a chemical substance that alters perceptions and moods.

Tolerance

= the diminishing effect with regular use of the same dose of a drug, requiring the user to take larger and larger doses before experiencing the drug's effect.

Addiction

= compulsive craving of drugs or certain behaviors (such as gambling) despite known adverse consequences.

Withdrawal

= the discomfort and distress that follow discontinuing an addictive drug or behavior.

Depressants

= drugs (such as alcohol, barbiturates, and opiates) that reduce neural activity and slow body functions.

Alcohol Use Disorder

= (popularly known as *alcoholism*). Alcohol use marked by tolerance, withdrawal, and a drive to continue problematic use.

Barbiturates

= drugs that depress central nervous system activity, reducing anxiety but impairing memory and judgment.

Opiates

= opium and its derivatives, such as morphine and heroin; they depress neural activity, temporarily lessening pain and anxiety.

Stimulants

= drugs (such as caffeine, nicotine, and the more powerful amphetamines, cocaine, and Ecstasy) that excite neural activity and speed up body functions.

Amphetamines

= drugs that stimulate neural activity, causing speeded-up body functions and associated energy and mood changes.

Nicotine

= a stimulating and highly addictive psychoactive drug in tobacco.

Cocaine

= a powerful and addictive stimulant, derived from the coca plant, producing temporarily increased alertness and euphoria.

Methamphetamine

= a powerfully addictive drug that stimulates the central nervous system, with speeded-up body functions and associated energy and mood changes; over time, appears to reduce baseline dopamine levels.

Ecstasy (MDMA)

= a synthetic stimulant and mild hallucinogen. Produces euphoria and social intimacy, but with short-term health risks and longer-term harm to serotonin-producing neurons and to mood and cognition.

Hallucinogens

= psychedelic (“mind-manifesting”) drugs, such as LSD, that distort perceptions and evoke sensory images in the absence of sensory input.

LSD

= a powerful hallucinogenic drug; also known as acid (*lysergic acid diethylamide*).

Near-Death Experience

= an altered state of consciousness reported after a close brush with death (such as by cardiac arrest); often similar to drug-induced hallucinations.

THC

= the major active ingredient in marijuana; triggers a variety of effects, including mild hallucinations.