

A woman's face is shown in a dreamlike, ethereal state. Her eyes are closed, and her expression is peaceful. The background is a dark, swirling space filled with vibrant, colorful light trails in shades of orange, yellow, and purple, suggesting a state of deep sleep or a dream. The overall mood is serene and mysterious.

PSY 152 CONSCIOUSNESS AND SLEEP

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Learning Objectives

- Define consciousness
- Explain the circadian rhythm
- Sleep and stages of sleep
- Dreams

The Concept of Consciousness

- ❖ What is “consciousness”?
- ❖ Awareness of oneself and the environment.
- ❖ Several meanings of conscious
 - ❖ **As sensory awareness**- knowledge of the environment through perception of sensory stimulation.
 - ❖ **As selective attention**- focus one’s consciousness on a particular stimulus.
 - ❖ **As direct inner awareness**- knowledge of one’s own thoughts, feelings, and memories without use of sensory organs.

Freud Perspective of Consciousness

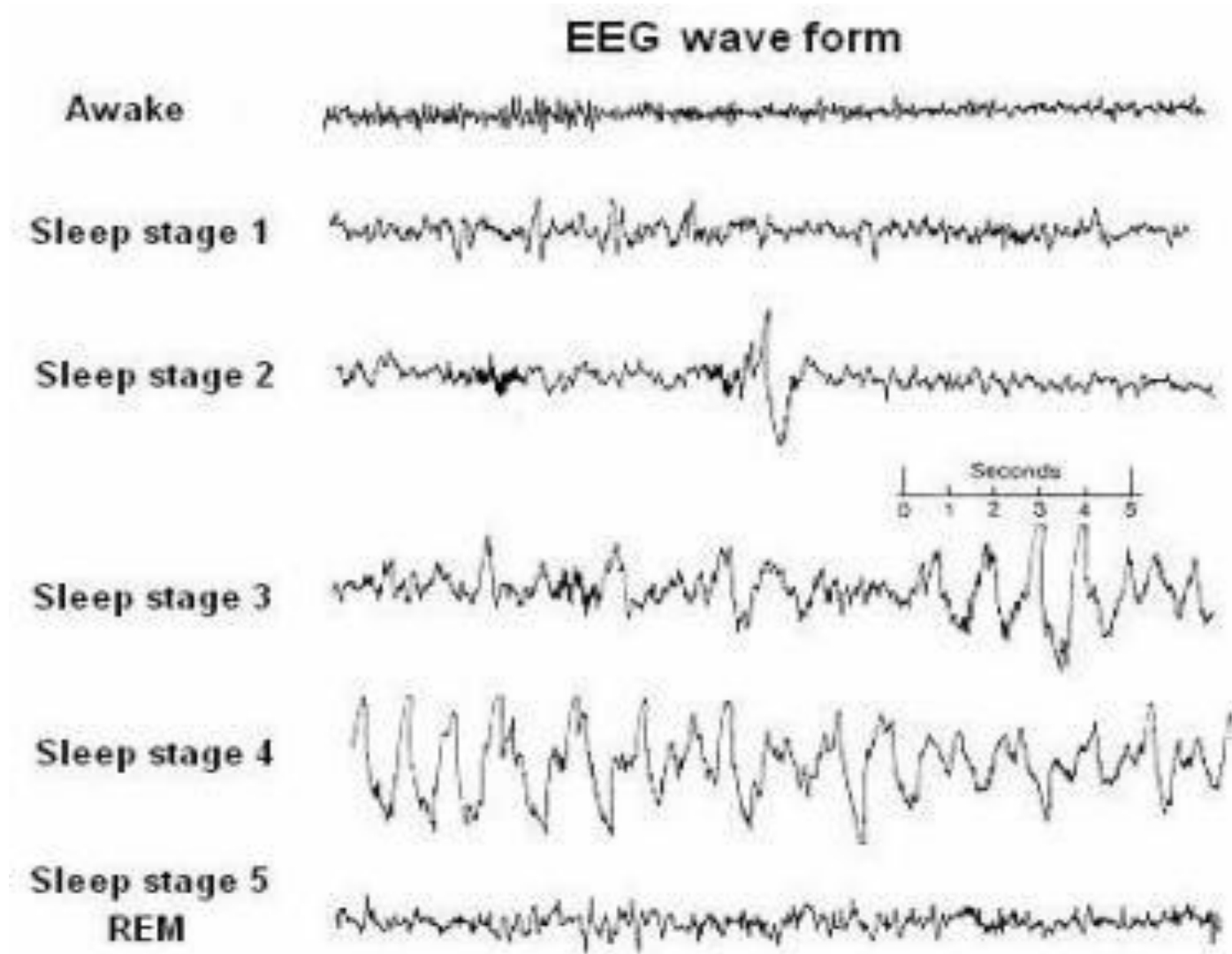
- ❖ **The conscious**-the part of the mind that is being aware of
- ❖ **The unconscious**- the part of the mind that is kept away from awareness e.g., being in coma
- ❖ **The preconscious**-memories that are not currently activated but are ready to be recalled e.g., what you ate for breakfast today
- ❖ **The subconscious**- a store of information that is currently present but not attended to e.g., intuition

Measurement of consciousness

- ❖ The **electroencephalograph** (EEG) is one of the major tools to measure consciousness
- ❖ EEG measures electrical activity of the brain
 - ❖ Normally called brain waves

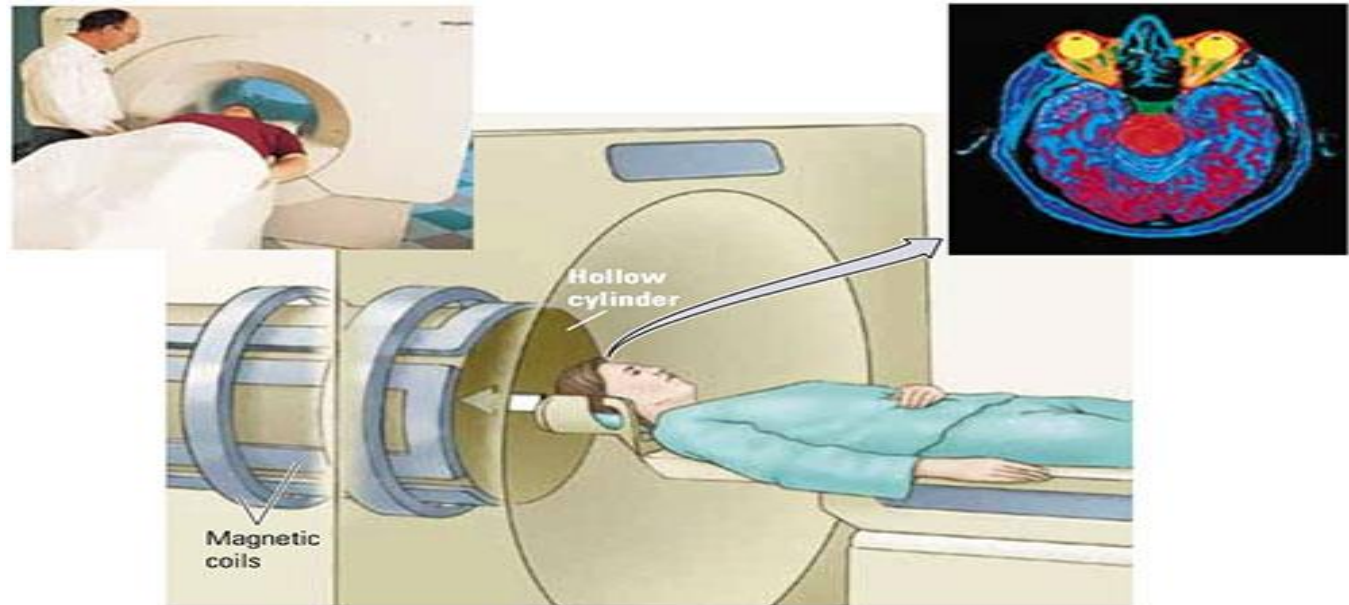


Measurement of consciousness



Measurement of consciousness

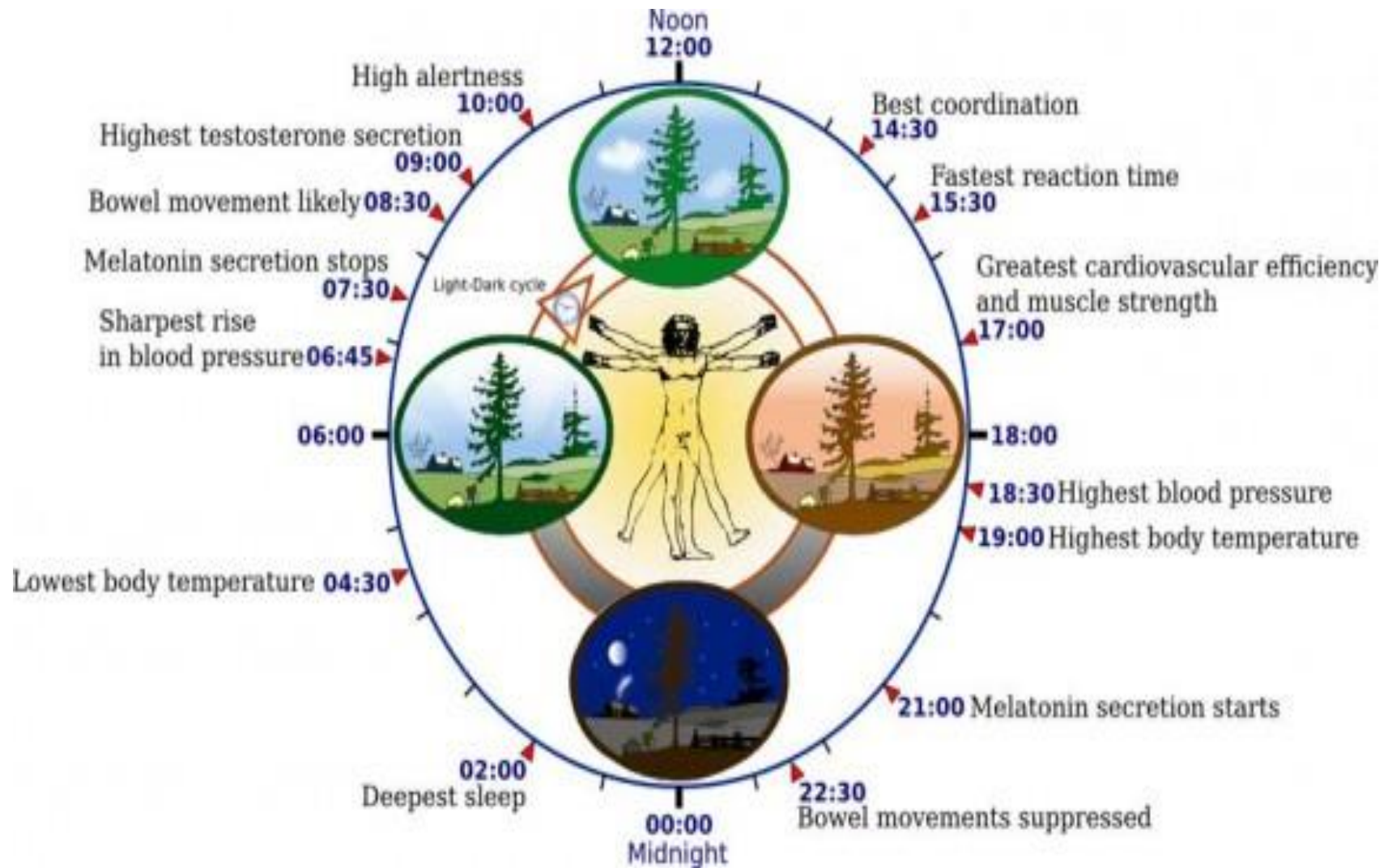
- ❖ The **magnetic resonance imaging (MRI)** uses strong magnets, radio waves and computers to take detailed photos of the anatomy



Biological Clock and Sleep

- ❖ Biological rhythm
- ❖ Periodic fluctuations in physiological functioning
- ❖ People generally fall asleep as their body temperature begins to drop (after 7pm) and awaken as it begins to ascend once again (after 6am)
- ❖ Periodic, more or less regular fluctuations in a biological system; may or may not have psychological implications





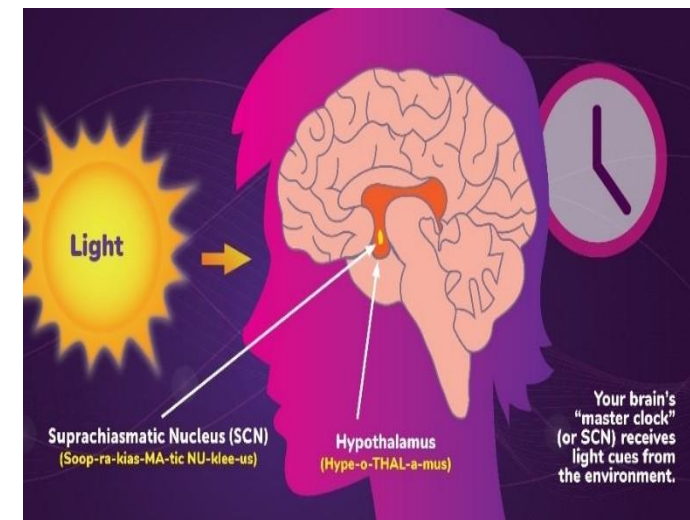
Circadian Rhythm

- ❖ Circadian rhythm was derived from the Latin words “circa” meaning “about” and “diem” meaning “day”
- ❖ It refers to the cycles that are connected with the 24-hour period of the earth’s rotation.
 - ❖ E.g., your stomach “calls” you to eat at 8am, 12noon & 7pm or the sleep–wake cycle
- ❖ **Governed by**
 - ❖ Internal brain structure: hypothalamus (for altering consciousness)
 - ❖ External environmental factors like temperature and lightness of the surroundings



Circadian Rhythm and Sleep

- ❖ Sleep is believed to be regulated by
 1. Brain structure called suprachiasmatic nucleus (SCN) located in the hypothalamus
 - ❖ sensitive to light received by the eyes
 2. Secretion of melatonin
 - ❖ Day and night
 - ❖ Enhance desire to sleep
 3. Temperature
 - ❖ Low and high temperature



Circadian Rhythm and Sleep

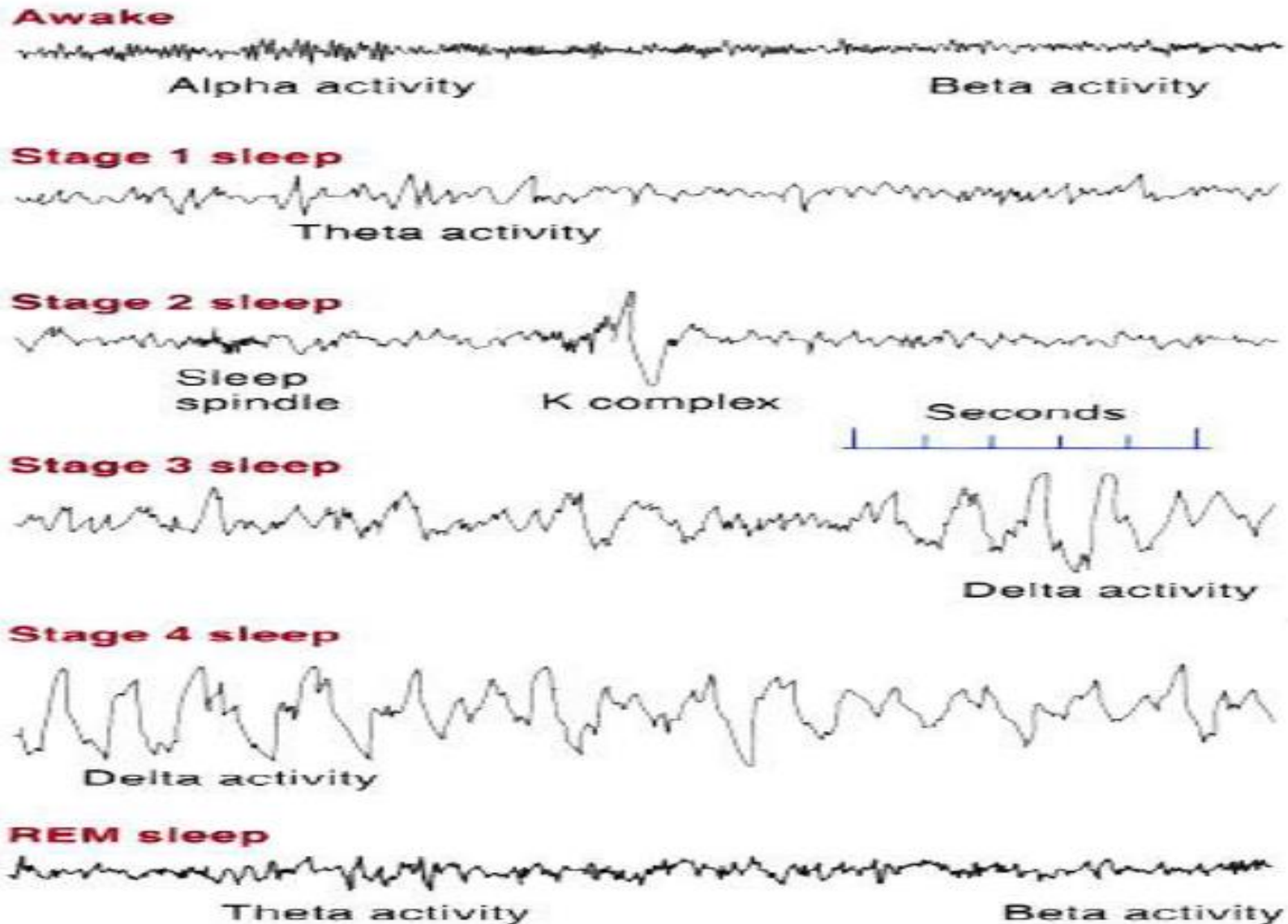
- ❖ **Internal desynchronization**: a state when biological rhythms are not in phase with each other
- ❖ Circadian rhythms are influenced by changes in routine.
 - ❖ Airplane flights across time zones (jet lag)
 - ❖ Adjusting to new work shifts
 - ❖ Affected by illness, stress, fatigue, excitement, drugs, mealtimes, and daily experiences



Sleep Cycle

- ❖ Sleep is a fascinating topic in psychology
- ❖ Are our brains “tuned off” when we sleep?
- ❖ In a typical night of sleep, brain activities (as measured by EEG) and other bodily changes show cycles of activities that repeat several times throughout the night.

The Stages of Sleep



The Stages of Sleep

Stages of sleep	Wave patterns	Characteristics
Stage 1 (NREM)	Theta waves (low frequency, low amplitude)	<ul style="list-style-type: none"> • Light sleep • Last for 1-7 minutes • Slow eye movement
Stage 2 (NREM)	Sleep spindles (high frequency) and the K complex	<ul style="list-style-type: none"> • Last for about 10-25 minutes • slow heart rate • decrease in body temperature
Stage 3 (NREM) & Stage 4 (NREM)	Beginning of delta waves (low frequency, high amplitude) Delta waves continue to increase in amplitude	<ul style="list-style-type: none"> • Slow-wave sleep (deep sleep) • Last for about 30 minutes • Waking up is rare
Stage 5 (REM)	Beta waves (low amplitude and high frequency) Brain-wave patterns are very similar to those of initial NREM stage 1	<ul style="list-style-type: none"> • Rapid eye movement • Deeper dreams • Relaxed muscles

NREM = Non-rapid Eye Movement; REM = Rapid Eye Movement

Some concepts related to sleep waves

- ❖ **Non-rapid-eye movement sleep (NREM):** stages of sleep 1 through 4 characterized by non-rapid movement of the eye.
- ❖ **Rapid-eye-movement sleep (REM):** A stage of sleep characterized by rapid eye movement, which have been linked to dreaming.
- ❖ **Alpha waves:** rapid, low-amplitude brain waves that have been linked to feelings of relaxation

Some concepts related to sleep waves

- ❖ **Theta waves:** slow brain waves produced during the hypnagogic state
- ❖ **Sleep spindles:** short bursts of rapid brain waves that occur during stage 2 sleep.
- ❖ **K complex:** Bursts of brain activity that occur during stage 2 sleep and reflect external stimulation
- ❖ **Delta waves:** strong, slow brain waves usually emitted during stage 4 sleep

Non-REM and REM Sleep

- Brain waves of REM sleep patterns are similar to those in awake state
- Believed people are more likely to dream at REM stage
- 80-90% people waken up in sleep lab during REM also reported dreaming
- About 90 minutes after falling asleep frequently called “paradoxical sleep”

	Non-REM (NREM)	REM
Body	Relaxed	Immobile
Brain activity	Inactive	Active (alert & wakeful)

Your Turn

Why do we
Sleep?



Functions of sleep

The exact function of sleep is unclear, but sleep appears to provide time for the body to carry out important functions.

1. To eliminate waste products from muscles
2. To repair cells
3. To conserve and replenish energy stores
4. To strengthen the immune system
5. To recover abilities lost during the day

Sleep Disorders

- ❖ Sleep deprivation leads to decreases in physical and mental functioning.
- ❖ There are a number of sleep disorders including
 - ❖ Insomnia
 - ❖ Narcolepsy
 - ❖ Sleep apnea
 - ❖ Deep-sleep disorders
 - ❖ Sleep terrors
 - ❖ Bed-wetting
 - ❖ sleepwalking

Sleep Disorders

- ❖ **Insomnia** refers to three types of sleeping problems (Lacks & Moring 1992):
 - ❖ Difficulty falling asleep (sleep-onset insomnia)
 - ❖ Difficulty remaining asleep through the night
 - ❖ Early morning awakening
- ❖ **Narcolepsy** is characterized by uncontrollable seizures of sleep during the waking state.
- ❖ **Apnea** is a temporary cessation of breathing while asleep
- ❖ **Deep-sleep disorder** may include sleep terrors, bed-wetting and sleepwalk
- ❖ **Sleep terrors**: are frightening dreamlike experiences that occur during the deepest state of NREM sleep

Dreams

- ❖ Do you dream?
- ❖ Do you typically remember your dreams?
- ❖ Have you ever died in a dream?
- ❖ Do you have a recurring dream?
- ❖ Have you ever dreamed about doing something impossible (e.g., flying, playing music even though you can't)?
- ❖ Have you ever had a dream in which one person transformed into another?
- ❖ Do your dreams often contain inconsistencies?
- ❖ Have you ever dreamed about a sexual experience?
- ❖ Have you ever dreamed about being attacked or pursued?

Dream Themes

Rank	Dream content	Total prevalence
1	Chased or pursued, not physically injured	81.5
2	Sexual experiences	76.5
3	Falling	73.8
4	School, teachers, studying	67.1
5	Arriving too late, e.g., missing a train	59.5
6	Being on the verge of falling	57.7
7	Trying again and again to do something	53.5
8	A person now alive as dead	54.1
9	Flying or soaring through the air	48.3
10	Vividly sensing . . . a presence in the room	48.3
11	Failing an examination	45.0
12	Physically attacked (beaten, stabbed, raped)	42.4
13	Being frozen with fright	40.7
14	A person now dead as alive	38.4
15	Being a child again	36.7
16	Being killed	34.5
17	Insects or spiders	33.8
18	Swimming	34.3
19	Being nude	32.6
20	Being inappropriately dressed	32.5
21	Discovering a new room at home	32.3
22	Losing control of a vehicle	32.0
23	Eating delicious foods	30.7
24	Being half awake and paralyzed in bed	27.2
25	Finding money	25.7

Nielsen et al., 2003

Dreams as Unconscious Wishes

❖ Psychodynamic perspective

- ❖ Freud concluded that dreams might provide insight into desires, motives, and conflicts of which we are unaware.
- ❖ Dreams are ways of fulfilling unconscious conflict
 - ❖ *Manifest content* includes aspects of the dream we consciously experience.
 - ❖ *Latent content* includes unconscious wishes and thoughts symbolized by the dream.
 - ❖ E.g., sexually frustrated persons tend to have a highly erotic dreams

Dreams as Efforts to Deal with Problems

❖ Problem-focused model

- ❖ Dreams may reflect ongoing conscious issues such as concerns over relationships, work, sex, or health.
- ❖ Dreams are more likely to contain material related to a person's current concerns than chance would predict.
 - ❖ Example: college students and testing
- ❖ Dreams may provide an opportunity for us to attempt to “solve” problems from our lives.

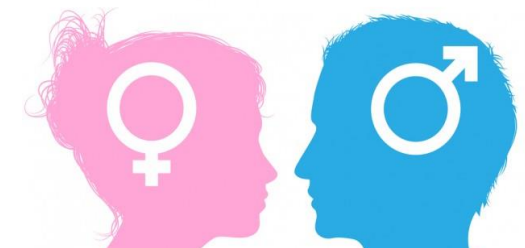
Dreams as Interpreted Brain Activity

Activation-synthesis theory (Hobson & McCarley 1977)

- ❖ Dreams reflects activation of cognitive activity by the reticular activating system and synthesis of this activity into pattern by the cerebral cortex
- ❖ Dreaming results from the cortical synthesis and interpretation of neural signals triggered by activity in the lower part of the brain.

Interpretation of Dreams

- ❖ According to Freud, the great majority of symbols in dreams are sex symbols.
- ❖ Dreams contain symbols that have meaning
- ❖ Dreams can protect us from threatening unconscious thoughts
- ❖ Freud (1900) believed
- ❖ -male sex symbols: long objects, sticks, umbrellas, keys and pencils
- ❖ -Female sex symbols: hollow things, caves, jars and keyholes



Altering Consciousness through Drugs

❖ Psychoactive drug

❖ Substance capable of influencing perception, mood, cognition, or behavior by changing the body's biochemistry

❖ Types

❖ *Stimulants* increase the activities of the nervous system
e.g., caffeine

❖ *Depressants* lowers the activities of the nervous system
e.g., alcohol

❖ *Opiates* relieve pain e.g., heroin

❖ *Psychedelic drugs* disrupt normal thought processes e.g., marijuana

Physiology of Drug Effects

❖ Psychoactive drugs work by acting on neurotransmitters.

They can:

❖ Increase or decrease the release of neurotransmitters

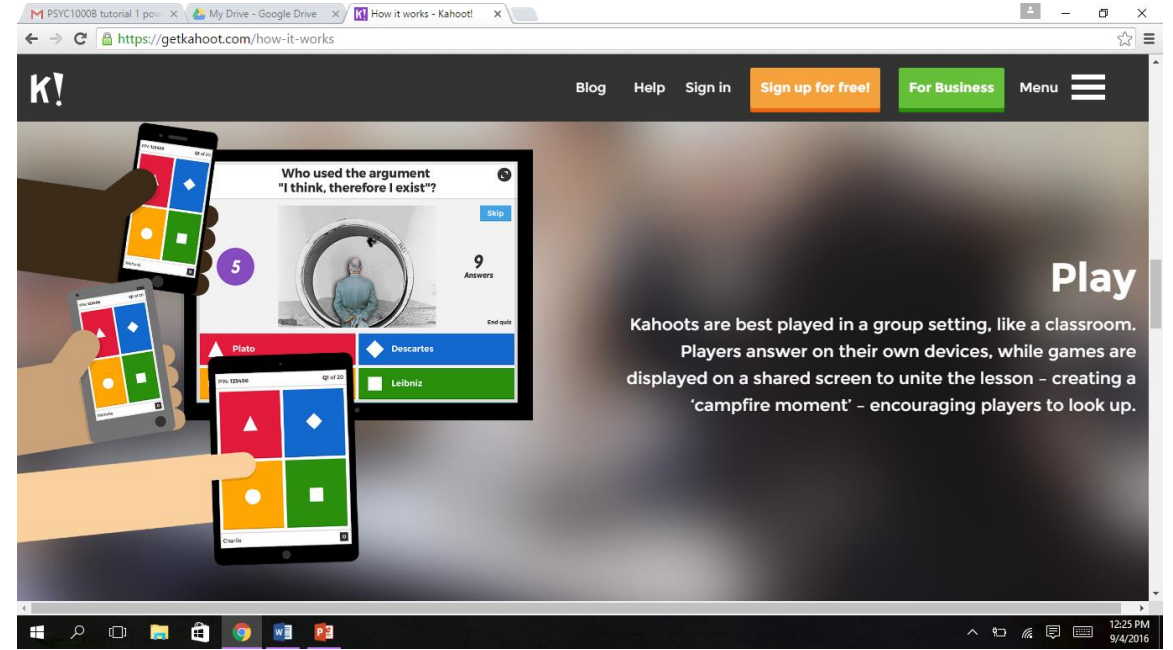
❖ Prevent the re-absorption of excess neurotransmitters by the cells that release them

❖ Block the effects of neurotransmitters on receiving cells

❖ Bind to receptors that would ordinarily be triggered by a neurotransmitter

Psychology of Drug Effects

- ❖ Reactions to psychoactive drugs depend on several factors.
- ❖ The number of times a person has used a drug
- ❖ Physical factors such as body weight, metabolism, initial state of emotional arousal, and physical tolerance
- ❖ Environmental factors such as where and with whom one uses a drug
- ❖ Mental set or expectations of a drug's effects and the reasons for taking it



Mini Quiz
