The Aware Mind
Elements of Consciousness

Understanding biological rhythms

Consciousness
Awareness of oneself and the environment

Biological rhythms
A periodic, more or less regular fluctuation in a biological system; may or may not have psychological implications

Entrainment
Biological rhythms are synchronized with external events such as changes in clock time, temperature, and daylight.

Endogenous biological rhythms

Circadian rhythms
Once about every 24 hours
Example: the sleep-wake cycle

Infradian rhythms
Occur less frequently than once a day
Examples: birds migrating, bears hibernating

Ultradian rhythms
Occur more frequently than once a day
Examples: stomach contractions, hormone fluctuations

Circadian rhythms

Occur in animals, plants, and people

To study endogenous circadian rhythms, scientists isolate volunteers from time cues.

Suprachiasmatic nucleus
Located in hypothalamus, regulates melatonin, a hormone secreted by the pineal gland
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
Adjusting to new work shifts
Illness, stress, fatigue, excitement, drugs, and mealtimes

Realms of sleep

- Stage 1. Feel self drifting on the edge of consciousness
- Stage 2. Minor noises won't disturb you
- Stage 3. Breathing and pulse have slowed down
- Stage 4. Deep sleep
- REM. Increased eye movement, loss of muscle tone, dreaming

Why we sleep

The exact function of sleep is uncertain but sleep appears to provide time for the body to carry out important functions.
To eliminate waste products from muscles
To repair cells
To strengthen the immune system
To recover abilities lost during the day

Typical night’s sleep for a young adult

- Stage 1
- Stage 2
- Stage 3
- Stage 4

Why we sleep

The exact function of sleep is uncertain but sleep appears to provide time for the body to carry out important functions.
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Sleep disorders

Sleep deprivation leads to decreases in physical and mental functioning.

Sleep apnea
Breathing briefly stops during sleep, causing the person to choke and gasp and momentarily waken.

Narcolepsy
Sudden and unpredictable daytime attacks of sleepiness or lapses into REM sleep

Staying up late and not allowing oneself enough sleep
2/3 of Americans get fewer than recommended 8 hours.

Mental benefits of sleep

Sleep helps to improve memory by contributing to consolidation in which synaptic changes associated with recently stored memories become durable and stable.

Improvements in memory have been associated with REM sleep and slow-wave sleep (stages 3 and 4), and with memory for specific motor and perceptual skills.

Dream Quiz 15pts!

What is your experience?

1. Do you typically remember your dreams?
   A. Yes
   B. No
What is your experience?

2. Have you ever died in a dream?
   A. Yes
   B. No

What is your experience?

3. Do you have a recurring dream?
   A. Yes
   B. No

What is your experience?

4. Have you ever dreamed about doing something impossible (e.g., flying, playing music even though you can't)?
   A. Yes
   B. No

What is your experience?

5. Have you ever had a dream in which one person transformed into another?
   A. Yes
   B. No
What is your experience?

6. Do your dreams often contain inconsistencies?
   A. Yes
   B. No

What is your experience?

8. Have you ever dreamed about a sexual experience?
   A. Yes
   B. No

What is your experience?

9. Have you ever dreamed about being attacked or pursued?
   A. Yes
   B. No

What is your experience?

10. Have you ever dreamed about arriving too late for something important?
    A. Yes
    B. No
Dreams as unconscious wishes

Freud concluded that dreams might provide insight into our unconscious.

*Manifest content* includes aspects of the dream we consciously experience. *Latent content* includes unconscious wishes and thoughts symbolized in the dream.

To understand a dream we must distinguish manifest from latent content.

But even Freud said, not everything in dreams is symbolic...

Dreams as interpreted brain activity

*Activation-synthesis theory*

Dreaming results from the cortical synthesis and interpretation of neural signals triggered by activity in the lower part of the brain.

At the same time, brain regions that handle logical thought and sensation from the external world are shut down.

Does not explain coherent, story-like dreams or non-REM dreams

Science of Dreaming

Dreams usually involve familiar places and routine activities; frequently reflect ordinary ongoing 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 as thinking
Dreaming is the same kind of activity we engage in when we are awake.

The difference is that the cerebral cortex is cut off from external stimulation.

Predicts that if we were awake, but cut off from external stimulation, our thoughts would have the same hallucinatory quality we experience in dreams!

Hypnosis
A procedure in which the practitioner suggests changes in the sensations, perceptions, thoughts, feelings, or behavior of the subject.

• Hypnosis doesn’t increase accuracy of memory.

• Hypnosis doesn’t produce a literal re-experiencing of long-past events.

• Hypnotic suggestions have been used effectively for many medical and psychological purposes, including pain relief, anxiety and many others.

Meditation
Techniques can be religious or non-religious.

• Experienced practitioners describe a conscious state without thought and blissful emotions.

• Experienced meditators (more than 3 years) showed increased theta waves in frontal lobes (positive emotions).

• Physical brain changes such as increased cortical thickness may protect against age-related thinning.

Intentional Alterations
People use drugs for a variety of reasons ranging from escape to a desire for intense connection to more pathological seeking of mindless states that enhance actions.

Many religions promote ecstatic states of dancing fasting, and other intentional states of altered consciousness.

Children engage in games of “spinning until dizzy” (remember) and often report feeling simultaneously more “earth-bound” (grounded centered) and aware.
They all came together at Raves

- Children Spinning ( hiển thị) just kidding
- Dancing, mystical and non-mystical
- Music and drumming
- Raves, MDMA research, controversy and acronym PLUR (unity and positivity emotion says text)

Classifying drugs

Psychoactive drug
Substance capable of influencing perception, mood, cognition, or behavior

Types
- Stimulants speed up activity in the CNS.
- Depressants slow down activity in the CNS.
- Opiates relieve pain.
- Psychedelic drugs disrupt normal thought processes.

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 or neuromodulator

Cocaine’s effect on the brain

Blocks the brain’s reuptake of dopamine and norepinephrine, raising levels of these neurotransmitters.
- Results in over-stimulation of certain brain circuits and a brief euphoric high
- When drug wears off, depletion of dopamine may cause user to “crash.”
Psychology of drug effects

Reactions to psychoactive drugs depend on several factors.
Physical factors such as body weight, metabolism, initial state of emotional arousal, and physical tolerance (not purely biological either!)
The number of times a person has used a drug affects withdrawal.
Environmental factors such as where and with whom one uses a drug
Mental set or expectations of a drug’s effects

In the 1920’s cocaine was advertised as an “instantaneous cure”.

Psychology of drug effects

Expectations can sometimes even have a more powerful effect than the chemical properties of the drug itself.
The “think-drink” studies.

Set and Setting. Drinking Bourbon at 9am with a doctor in a florescent lit hospital room not the same experience as at your favorite nicely lit bar with a best friend. This includes culture...

Expectations and beliefs about drugs are shaped by the culture in which you live.
In the 19th century, Americans regarded marijuana as a mild sedative, they did not expect it to get them high and it didn’t. It merely put them to sleep. That changed in the 1930's...And scare tactic ads are still being used
**Psychology of drug effects**

This does not mean drugs are only placebos, they can have very powerful effects. *Reactions to psychoactive drugs depend on several factors, and not merely the chemical itself. Understanding the psychological and sociocultural factors can help us think critically about the both the national drug debates & increasing pharmaceutical advertising!*

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**The Drug Debate**

*Drug USE can turn into drug ABUSE. And drug abuse, in some but not all kinds of drugs for all people can lead to addiction, a complicated topic involving the brain and the environment!*

*Because the consequences of drug abuse and addiction be so devastating for people and their families we often have trouble thinking critically about drug use and our arguments and stances can become overly emotional.*

*For example, tobacco contributes to over 400,000 deaths in the US each year...that’s 24 times the number of deaths from all illegal forms of drug use combined.*

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**The Drug Debate**

Currently the debate over marijuana and its legitimate medical uses runs high. At the same time, new research is studying the possibility that psychedelic and other similar drugs can be used as part of psychotherapy to treat anxiety, distress and other psychological problems (Griffiths et al 2008)

Controversy over MDMA (ecstasy) currently seems to the most controversial, probably because it reached such high numbers of users in the early 2000’s and research published by the journal Science had to retracted for serious. Textbooks can not agree on the consequences of MDMA use and even yours is very cautious in it’s stand about this drug. See my website links about this issue.

At one extreme, some people refuse to accept that their favorite drugs may have some harmful effects. At the other extreme, many people refuse to accept that their most hated or feared drug may not be harmful psychologically for all people, in all amounts, in all settings. Or even that some currently illegal drugs may have medical or psychological benefits.

Where do you Stand? Examine the evidence. Think Critically.