
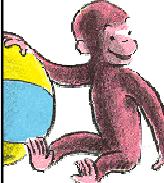


Consciousness?

- Most animals like change in their environments.
- Seek out new things.
- Innate curiosity.
- Need for stimulus change.
- Seek optimal level of arousal.

Consciousness and Evolutionary Psychology

Becoming Conscious
FIRST A Look at Some Evolutionary Approaches to Studying Consciousness-

Defining Consciousness?

- Dictionary definitions are HOPELESS:
 - 'state of being conscious' (Oxford)
 - 'not sleeping or comatose' (Collins)

Dawkins' Conceptualization

- "Perhaps consciousness arises when the brain's simulation of the world becomes so complete that it must include a model of itself (Dawkins, 59)."
- As language grew exponentially, it developed MOSTLY in the left hemisphere (Broca's Area). Over time this created hemispheric lateralization, which led to an increase in the Corpus Collosum and therefore increased **CONSCIOUSNESS**
- 100,000 years ago general intelligence combined with language, social intelligence, naturalistic intelligence and technical intelligence thus creating **symbolism** and "**cognitive fluidity**"

Antonio Damasio's Theory of Consciousness

- Examines the phenomenon of consciousness using:
 - Neurological evidence
 - Evolutionary theory
- Consciousness evolved with an organisms' ability to "know" itself.
- The 3 evolved processes leading to human consciousness:
 - Proto-Self (created by the "Life Urge")
 - Core Consciousness
 - Extended Consciousness

Damasio Continued

The Life Urge: an inexplicable desire to maintain homeostasis. Life Urge is common from the single cell to the human being and led to:

1. Proto-Self: A coherent collection of neural patterns which map, moment-by-moment, the state of ALL physical organisms.
 - Non-conscious
 - Solely concerned with homeostasis

Damasio Continued

2. Core Consciousness: Occurs when the brain's representation devices generate a cause and effect relationship between the organism (the self) and its environment. Found in many mammals.

Damasio Continued

3. Extended Consciousness: The system of memories that are consciously accessible to the organism (both of the past and of the future)
 - May be uniquely human
 - Working memory is where the action takes place
 - Awareness of one's actions on one's SELF and others.
 - The ability to change reality (fantasy).

Necker Cube Illusion!

[Mark Newbold's Animated Necker Cube](#)

Damasio Continued

- Proto-Self: Installed at genetic level.
 - Hypothalamus; brain stem nuclei
- Core Consciousness: Installed at genetic level.
 - Cingulate cortex; superior colliculi; thalamus
- Extended Consciousness: Installed initially at genetic level, but then accumulates memories (former pulses of core consciousness)
 - Cerebral cortex

Damasio Continued

- Three tenets of his proposal
 - Expertise requires deliberate practice
 - Deliberate practice requires consciousness
 - Consciousness allows the owner to:
 - Remember complex behaviors (hand-axe production)
 - Keep track of friends vs. enemies
 - Predict the future:
 - Rain
 - Body language
 - Planning FOR the future

- Example: the Acheulean hand Axe
 - Homo Erectus hard at work



OK, so how do we study it?
Especially Extended Consciousness

- One of the early definitions of psychology was 'the study of consciousness'.
- How do we study the unobservable
- Behaviourism took over
- Big problem is, how do you define it?
 - Self awareness?
 - How do you measure that?

What if
this is
how the
world is?

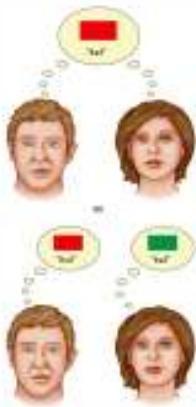


FIGURE 4.20

Psychological Science, 10th Edition
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Group work

Using your text
design a web of
chapter 5

Natural States of Consciousness

- Consciousness (both Core and Extended)
 - Our awareness of ourselves and our environment (mostly done at the unconscious level).
 - Our awareness of ourselves as unique beings that can transform themselves (mostly done at the conscious level).

Selective Attention
the narrowing of conscious awareness on a particular stimulus



● ● ● | Selective Attention: count the “f”s

The field of psychology is full of fascinating findings!

Yell out your answer

The field of psychology is full of fascinating findings!

● ● ● |

○ The States of Consciousness

- Conscious (normal?)
- Sleep and Dreams
- Hypnosis
- Meditation
- Drugs
- New Age Claptrap
- Bull&^\$@

○ Consciousness is also affected by

- Chronobiology, aka Circadian rhythms
- Physical problems
- Psychological problems

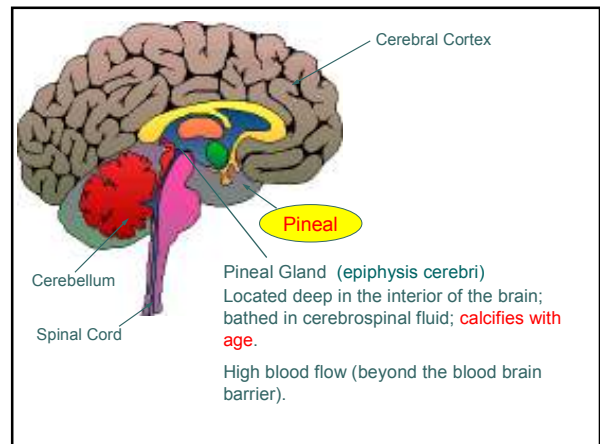
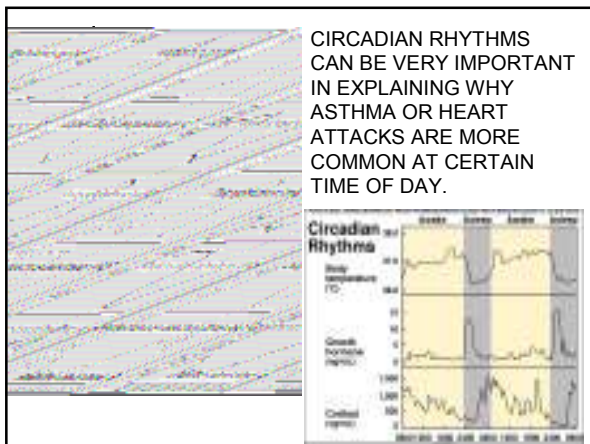
● ● ● | Circadian rhythms

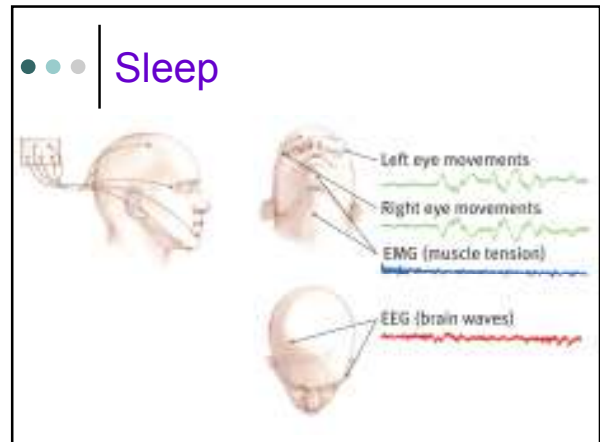
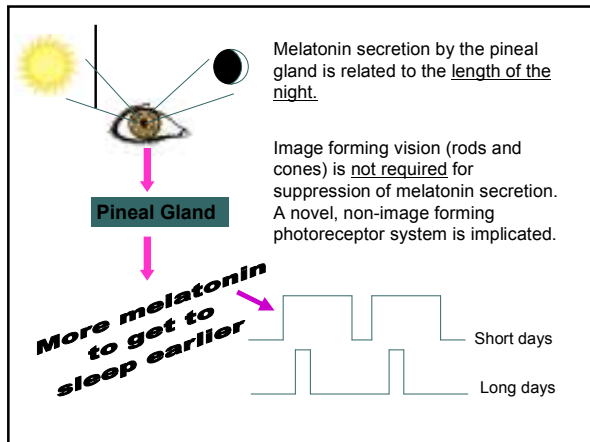
- 24 hr clock, entrained from a natural 24.8 hr. clock
- Clock can be set and reset
 - Jet lag
 - Exercise
 - Pineal gland and SCN play a role
 - Sleep and wakefulness cycle

● ● ● |

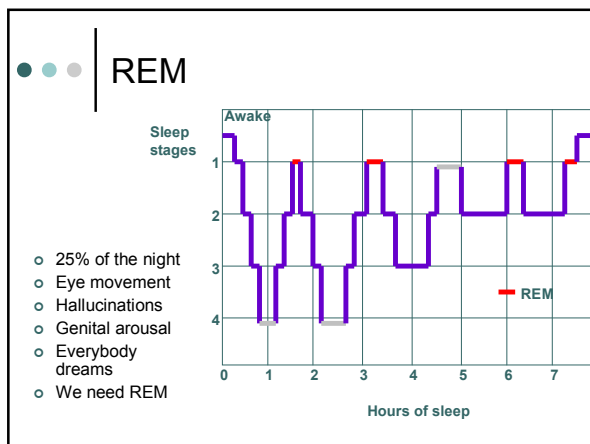
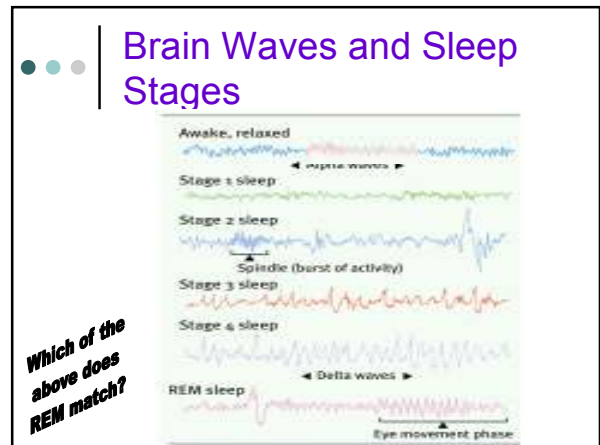
THE PINEAL GLAND SERVES AS OUR BIOLOGICAL CLOCK: IT CONTROLS CIRCADIAN AND SEASONAL RHYTHMS.

- Circadian Rhythms are daily cycles of hormone production.
- Rhythms can also occur monthly and yearly.
- Seasonal Affective Disorder and Pre-Menstrual Syndrome are two classic examples.
- During the day serotonin is released (wakefulness).
- At night serotonin is converted into melatonin creating drowsiness and sleep.
- Many anti-depressive drugs mimic serotonin/melatonin or modify their metabolism.





- Brain Waves and Sleep Stages**
- o **BETA** waves 13 to 30 Hz the fastest waves, most commonly found during our waking state, associated with outward awareness, engaged mind, arousal, actively perceiving and evaluating forms of data through the senses; also present with fear, anger, worry, hunger, and surprise.
 - o **ALPHA** waves 7 to 13 Hz associated with non-drowsy but relaxed, tranquil state of consciousness, less engagement and arousal, pleasant inward awareness, body/mind integration, present during meditation and states of relaxation
 - o **THETA** waves 3 to 7 Hz associated with increased recall, creativity, imagery and visualization, free-flowing thought, future planning, inspiration, drowsiness, present during dreaming and REM states
 - o **DELTA** waves .1 to 3 Hz associated with deep dreamless sleep, deep trance state pituitary release of growth hormone, self-healing, present during deep levels of non-REM sleep.



- Sleep and Dreams**
- o **REM (Rapid Eye Movement) Sleep**
 - o vivid dreams commonly occur
 - o also known as **PARADOXICAL** sleep
 - o muscles relaxed; brain active!

● ● ● Dreaming

- Male female differences
 - Number of characters
 - Sex of characters
- External stimuli can have an effect
- May be able to learn simple associations
- NOT taped material (Eich, 1990)

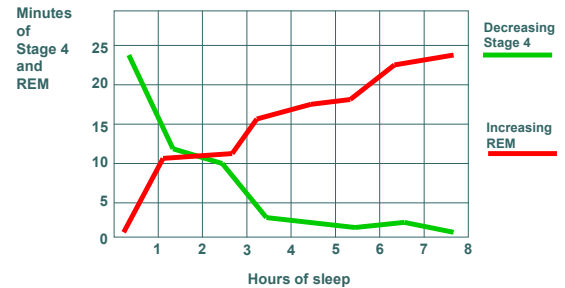
● ● ● Sleep and dreams

- sequence of images, emotions, and thoughts passing through a sleeping person's mind
- Daydreams are not sleep
- Fantasies are Ok
 - Fantasy prone personality
 - 4% of the population
 - Replaced by drugs and violence?

● ● ● Why We Dream: Two Hypotheses

1. Wish Fulfillment *The Interpretation of Dreams* (Sigmund Freud, 1900)
 - dreams are "wish fulfillment"
 - Manifest Content: remembered story line of a dream
 - Latent Content: underlying, censored meaning of a dream
 - allows discharge of unacceptable feelings!
2. Activation Synthesis
 - random nerve cell firings
 - cortical interpretation of random firings

● ● ● Typical Nightly Sleep Stages



● ● ● Without REM

- Tired
- Immune system depressed
- Creativity drops
- Trouble concentrating
- Slowed performance
- Misperception
- GHG is released during sleep
- So insomnia is a big deal

● ● ● Sleep Deprivation

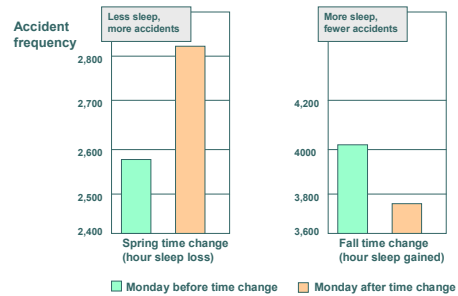
- Effects of Sleep Loss
 - fatigue
 - impaired concentration
 - immune suppression
 - irritability
 - slowed performance
 - accidents
 - planes
 - autos and trucks

Sleep Deprivation

Are You Sleep Deprived?

1. Need an alarm clock in order to wake up at the appropriate time.
2. It's a struggle for me to get out of bed in the morning.
3. Weekday mornings I hit the snooze bar 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.
9. I often fall asleep after heavy meals or after a low dose of alcohol.
10. I often fall asleep while relaxing after dinner.
11. I often fall asleep within five minutes of getting into bed.
12. I often feel drowsy while driving.
13. I often sleep extra hours on weekend mornings.
14. I often need a nap to get through the day.
15. I have dark circles around my eyes.

Sleep Deprivation

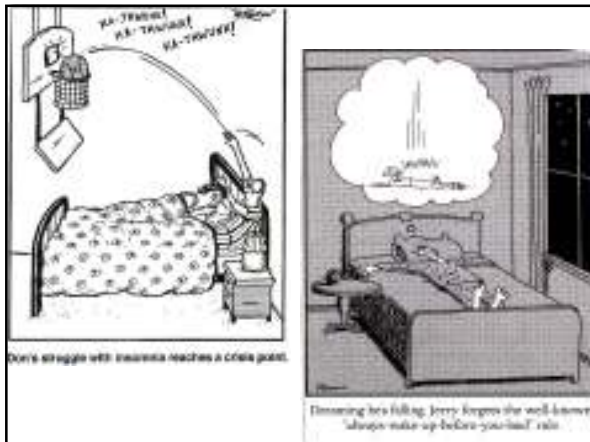


REM Rebound

- When deprived of REM sleep, we make it up!

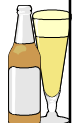
Sleep Disorders

- **Narcolepsy**
 - uncontrollable sleep attacks
- **Insomnia (most common)**
 - recurring problems in falling or staying asleep



Principles of Sleep Hygiene

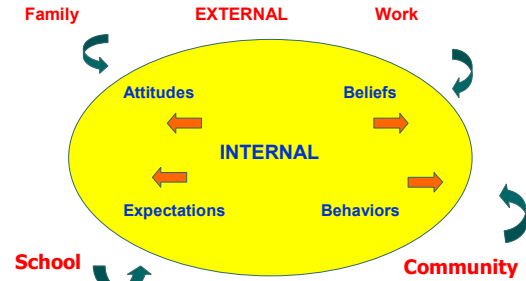
- Maintain **regular sleep / wake** schedule
- Avoid **caffeine** esp 4 to 6 hours before bedtime
- Avoid **nicotine** esp near bedtime
- Avoid **alcohol** before sleep
- **Exercise** regularly; avoid vigorous exercise within 3 to 4 hours of sleep
- Avoid **heavy meals** before bedtime



Sleep Disorders

- o Sleep Apnea
 - temporary cessation of breathing during sleep and then reawakening
- o Night Terrors
 - appearance of being terrified
 - usually in Stage 4, within 2-3 hours of falling asleep

Stress/Boredom: why many people seek alternative states of consciousness



You have minimal control over EXTERNAL variables, so get control of your INTERNAL behaviors

1. Beliefs
2. Expectations
3. Behaviors
4. Attitudes

1. Beliefs

“Whether you think you can or whether you think you can’t, you’re right!”

- Mark Twain

- o What are your beliefs?
- o Locus of control is an important component of individual wellness – What are your beliefs?

2. EXPECTATIONS

- o Unrealistically high expectations.
 - From yourSelf
 - From Others
- o Learn to say “NO!”
 - Be honest.
 - Be brief.
 - Be positive:

3. Behaviors

Definition of Insanity:

Doing the same thing over and over and expecting different results!

Cognitive Behavioral Methods

- Can be the best way to lower your stress level
- Keep a Journal: Identify Your Stress Triggers – what stresses you out?
- Once you identify your stress triggers, you will be able to plan for them.
- You should also recognize activities that have a positive effect on your stress level, such as meeting a deadline, exercise, or reading before going to bed.

4. Attitude

Choose to look at stressful situations as challenges, opportunities or learning experiences rather than problems.

You can't control what happens to you
BUT...

You can control your reaction to it!

Symptoms of Stress

- Physical symptoms
 - Headaches
 - Heartburn
 - Muscle tension
 - High blood pressure
 - Rapid heartbeat
 - Changes in bowel movements
 - Weight gain or loss
 - Cold hands and feet

Symptoms of Stress

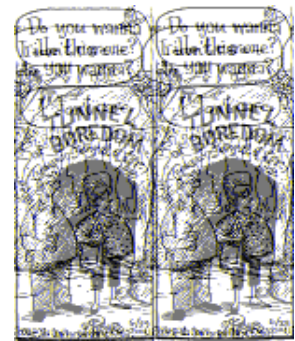
- Psychological symptoms
 - Irritability
 - Preoccupation
 - Depression or anxiety
 - Crying for no reason
 - Feeling useless
 - Nightmares

Symptoms of Stress

- Behavioral symptoms
 - Sleep problems
 - Confusion or trouble concentrating
 - Decreased productivity
 - Aggressive behavior
 - Talking too fast
 - Abuse of drugs, alcohol, sex, or gambling

Intentionally Altered States people use to reduce stress/boredom

- Relaxation:
 - Meditation
 - Biofeedback
 - Sensory Deprivation
 - Etc.
- Hypnosis
- Mysticism
- Drugs



Relaxation Techniques

- o Deep Breathing
- o Meditation
- o Biofeedback
- o Yoga / Tai chi / Chi Gong
- o Massage
- o Sensory Deprivation

Meditation

- o There's scientific evidence showing how meditation works. In people who are meditating, brain scans called MRI have shown an increase in activity in areas that control metabolism and heart rate.
- o Other studies on Buddhist monks have shown that meditation produces long-lasting changes in the brain activity in areas involved in attention, working memory, learning, and conscious perception.

Meditation

- o The soothing power of repetition is at the heart of meditation.
- o Focusing on the breath, ignoring thoughts, and repeating a word or phrase - a mantra - creates the biological response of relaxation.

Biofeedback

What is biofeedback?

Biofeedback is a method of consciously controlling a body function that is normally regulated automatically by the body, such as skin temperature, muscle tension, heart rate, or blood pressure.

Buy YOURS today

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Yoga

- Includes exercises to help improve flexibility and breathing, decrease stress, and maintain health.
- Yoga has been practiced for thousands of years in India and is based on the idea that the mind and body are one.
- Yoga improves health by improving how you see the world, which calms the spirit and decreases stress.

Massage

- Massage is one of the oldest healing arts.
- Chinese records dating back 3,000 years document its use.
- The ancient Hindus, Persians, and Egyptians applied forms of massage for many ailments, and Hippocrates wrote papers recommending the use of rubbing and friction for joint and circulatory problems.

Massage

- Massage therapy has proven beneficial for many chronic conditions, including low back pain, arthritis, bursitis, fatigue, high blood pressure, diabetes, immunity suppression, infertility, smoking cessation, depression, and more.
- Massage also helps relieve the stress and tension of everyday living that can lead to disease and illness.

Sensory Deprivation

- Woodburn Heron (1957).
- *Pathology of Boredom*.
- Subject \$20 a day to lay in bed.
- Deprived of sensory input
- Vision, hearing, touch.
- Food and water on demand.
- Bathroom breaks.



Heron's subjects

- Most happy to be in study.
- Get a good rest, nothing to do.
- Soon unable to concentrate.
- Mind began to wander.
- Started to hallucinate.

Sensory Deprivation Hallucinations

- A marching procession of squirrels carrying sacks.
- Prehistoric animals walking in the jungle.
- Eyeglasses dancing down the street.
- Subjects began to look forward to images to relieve boredom.



BOREDOM



**EXTREMELY
DULL**

**SELF-ENTERTAINMENT NECESSARY
FOR MAINTAINING CONSCIOUSNESS**



So, if we hate boredom...?

- Most animals like change in their environments.
- Seek out new things.
- Innate curiosity.
- Need for stimulus change.
- Seek optimal level of arousal.



Intentional Altered States
besides Relaxation

1. Hypnosis
2. Drugs
3. Mysticism

1. Hypnosis

A social interaction in which one person (the hypnotist) suggests to another (the subject) that certain perceptions, feelings, thoughts or behaviors will occur.

1. Hypnosis

- Can anyone experience hypnosis?
- Can hypnosis enhance the recall of forgotten events?
- Does personality have anything to do with hypnosis?
- Can hypnosis force people to act against their will?
- Can hypnosis be therapeutic?
- Can hypnosis alleviate pain?

1. Hypnosis

- Unhypnotized person can also do this

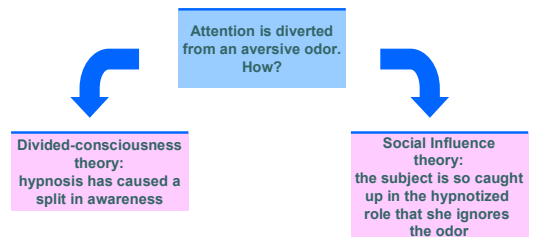


1. Hypnosis

- Posthypnotic Amnesia
 - **supposed** inability to recall what one experienced during hypnosis
- Posthypnotic Suggestion
 - suggestion to be carried out after the subject is no longer hypnotized
 - used by some clinicians to control undesired symptoms and behaviors
 - can be effective for headaches, asthma, etc!

1. Hypnosis

- Divided Consciousness or Social Phenomenon?



1. Hypnosis

- Myths debunked!
 - DOES NOT work on everyone
 - DOES NOT enhance recall
 - DOES NOT make you do stuff against your will
 - DOES NOT cure diseases, drug dependence
 - DOES alleviate pain (makes sense)
- Could be a social phenomenon
- Could be divided attention

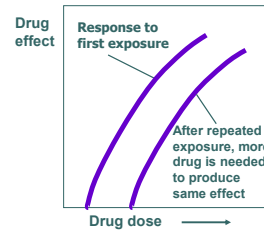
2. Drugs and Consciousness

- Psychological Dependence
 - a psychological need for a drug
 - for example, to relieve negative emotions
- Physical Dependence
 - a physiological need for a drug marked by
 - (1) withdrawal symptoms
 - (2) tolerance

2. Drugs

- Alter our inner mental life, so seems appropriate to discuss here
- Tolerance
- Dependence
- Addiction?
- Is this a disease?
- Mesolimbic dopamine system

2. Drug Tolerance



- **Withdrawal**
 - physical discomfort that follows discontinued use of an addictive drug
- **Tolerance**
 - diminishing effect with regular use of the same dose of a drug

2. Drugs and Consciousness

- **Psychoactive Drug: a chemical substance that alters perceptions and alters mood**
 1. Depressants
 2. Stimulants
 3. Hallucinogens

2. Psychoactive Drugs

- **Depressants**
 - drugs that reduce neural activity and slow body functions
 - alcohol, barbiturates, opiates
- **Stimulants**
 - drugs that excite neural activity and speed up body functions
 - caffeine, nicotine, amphetamines

2. Psychoactive Drugs



- **Hallucinogens**
 - mind-altering drugs that distort perceptions and evoke sensory images (e.g., marijuana, LSD)

2. Depressants

- Stuff that slows you down
 - Alcohol
 - Benzodiazepines
 - Barbiturates
 - Opiates
- Brain activity slowed
- Disinhibition
- Pretty dangerous, could slow you down too much...
- expectations

2. Psychoactive Drugs: Depressants

○ Barbiturates

- drugs that depress the activity of the central nervous system
- reduce anxiety but impair memory and judgement

2. Psychoactive Drugs: Depressants

○ Opiates

- opium and its derivatives (morphine and heroin)
- depress neural activity, temporarily lessening pain and anxiety

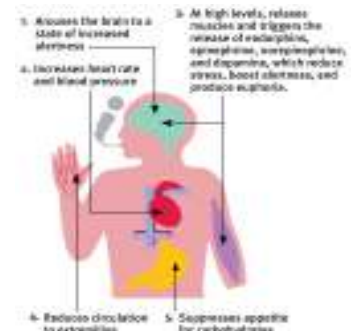
2. Psychoactive Drugs: Stimulants

○ Amphetamines

- drugs that stimulate neural activity, causing accelerated body functions
- increase energy and positive mood

2. Psychoactive Drugs: Stimulants

○ The physiological effects of nicotine



2. Stimulants

- Amphetamine
- E
- Coke
 - Both block reuptake
- Caffeine
 - Block a neuromodulator
- Nicotine

2 Hallucinogens

- Acid
- 'shrooms
- PCP
- Extremely dangerous b/c
 - Never the same dosage (their made by idiots in their bathrooms, or dealers in illegal labs).
 - At high dosages totally changes perception of reality (thinking you can fly)

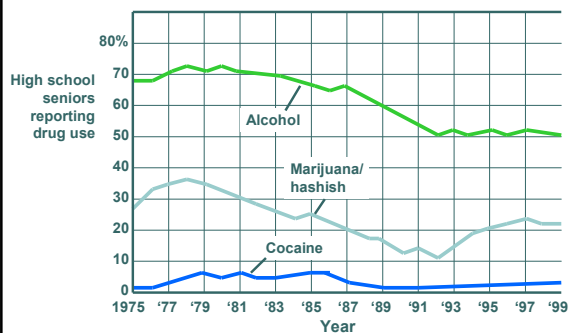
2. Pot (mild hallucinogen)

- o Cannabis sativa
- o Dangerous?
- o Birth defects?
- o Negative tolerance?
- o Everything is funny
- o You are not nearly as deep as you think you are when you are high

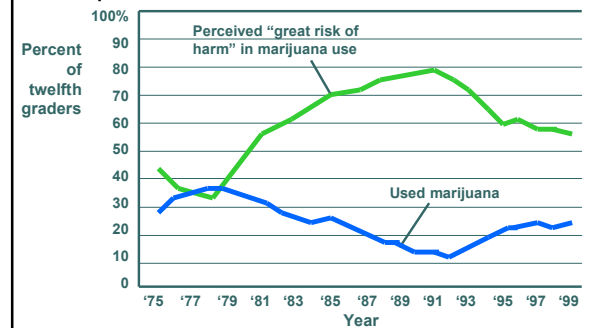
2 Psychoactive Drugs

Drug	Type	Pleasurable Effects	Adverse Effects
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
Methamphetamine	Stimulant	Euphoria, alertness, energy	Irritability, insomnia, hypertension, seizures
Cocaine	Stimulant	Rush of euphoria, confidence, energy	Cardiovascular stress, suspiciousness, depressive crash
Nicotine	Stimulant	Arousal and relaxation, sense of well-being	Heart disease, cancer (from tars)
Marijuana	Mild hallucinogen	Enhanced sensation, pain relief distortion of time, relaxation	Lowered sex hormones, disrupted memory, lung damage from smoke

2. Trends in Drug Use



Does FEAR work?



Mysticism

- o is the pursuit of achieving communion or identity with, or conscious awareness of, ultimate reality, the divine, spiritual truth, or God through direct experience, intuition, or insight; and the belief that such experience is an important source of knowledge, understanding, and wisdom.
- o Mystical experiences are a kind of religious experience that specifically involves a sense of union with God