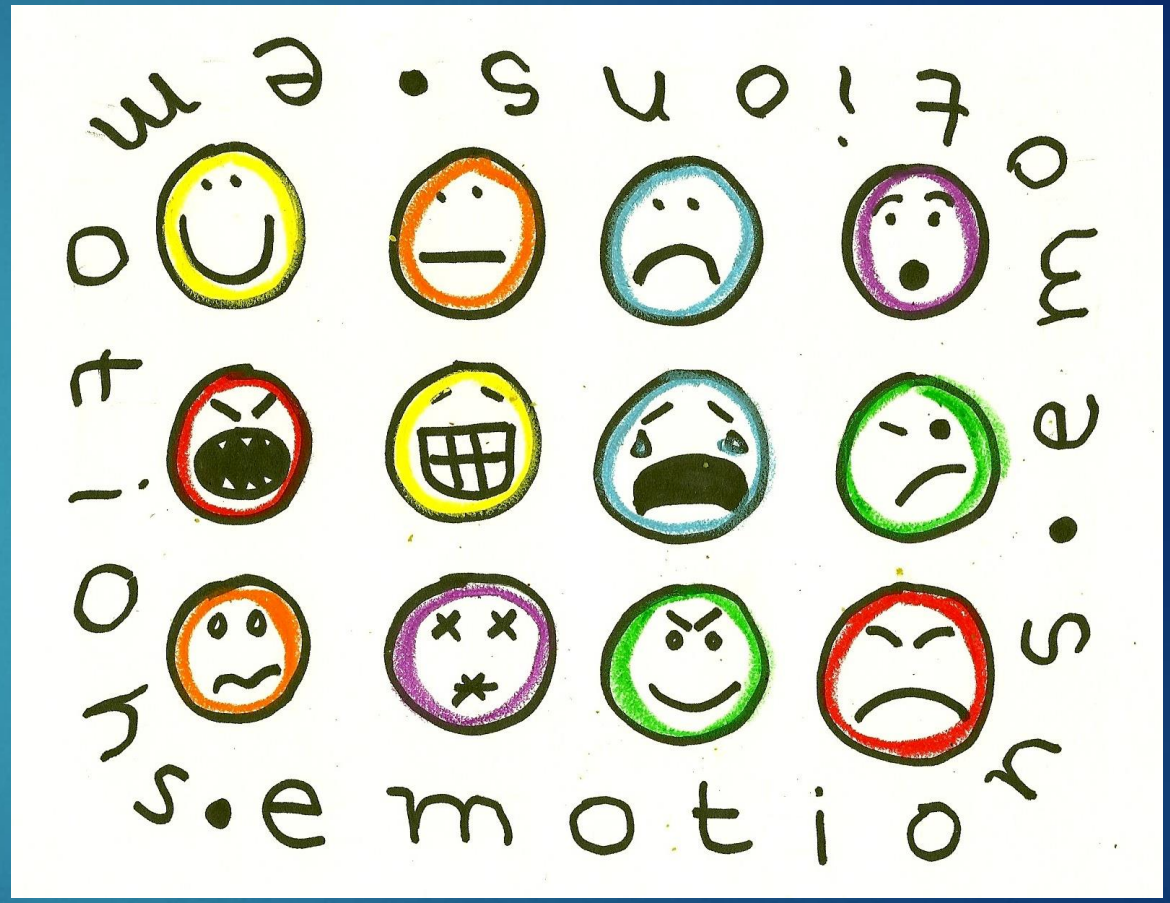
Emotion

CHAPTER 13

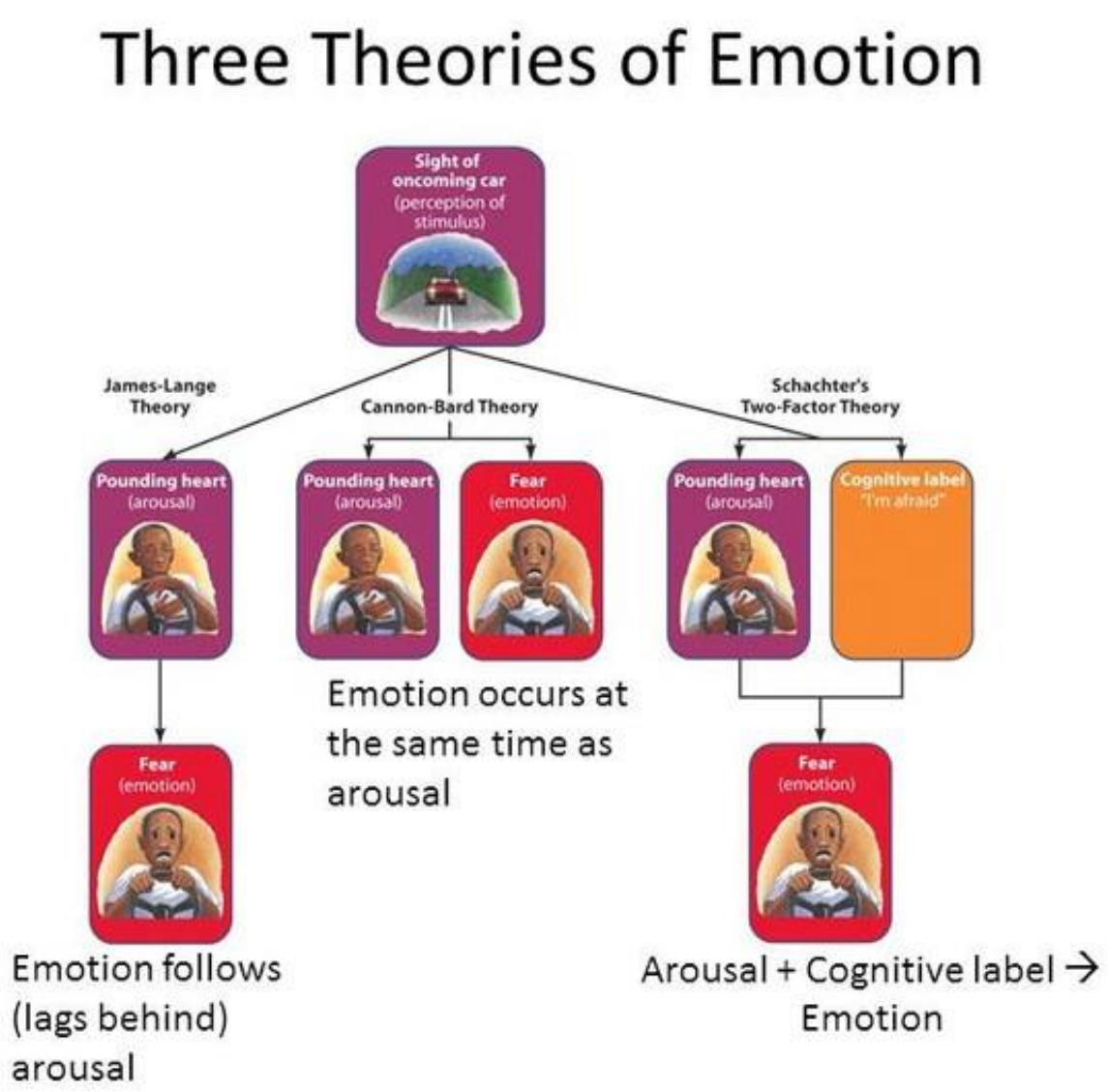
UNIT 7



What are emotions

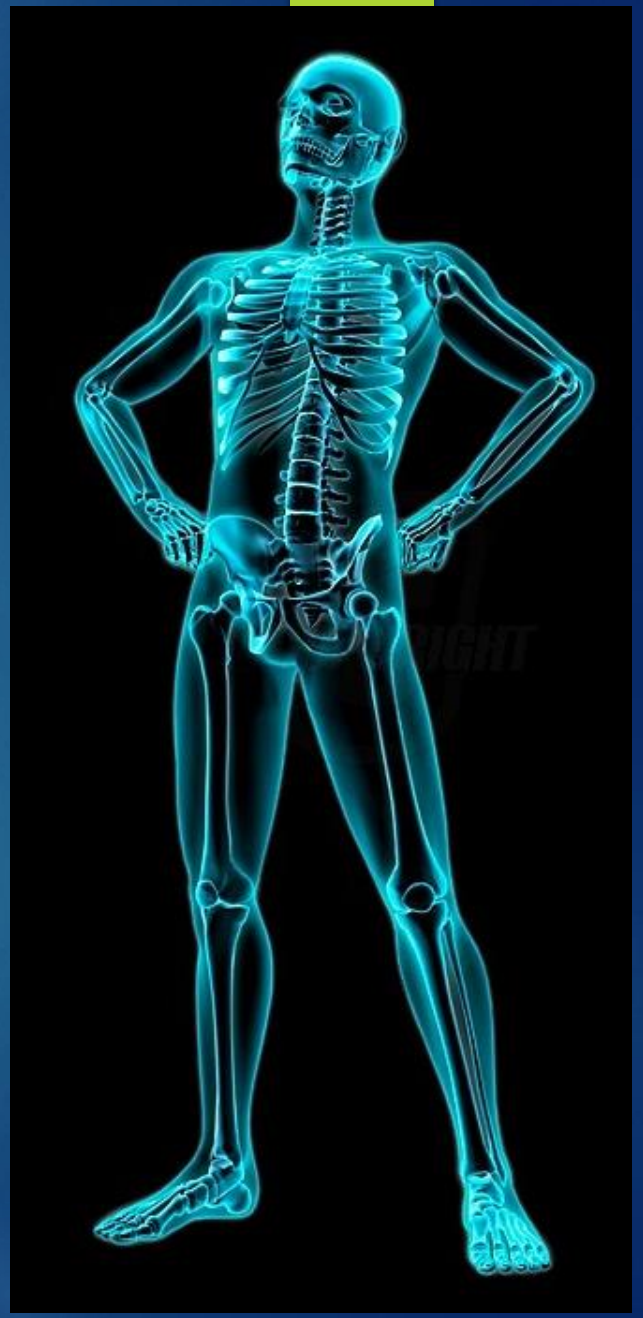
- Physiological arousal
- Expressive behaviors
- Conscious experience
- Feelings

Theories of Emotion

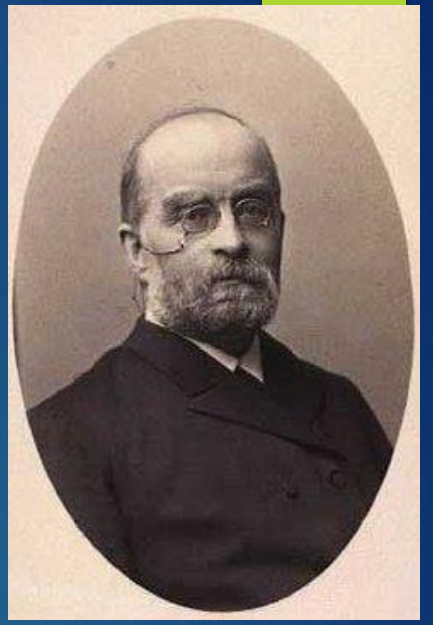


Physiology and Psychology

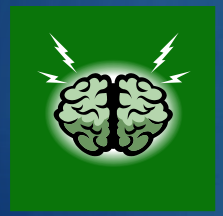
- Chicken or the egg?
- Does physiological arousal leader to emotional experience or vice versa?
- Does your heart pound because you are afraid or are you afraid because you feel your heart pounding.
- Does thought lead to the emotional experience or vice versa?



Theory of Emotion

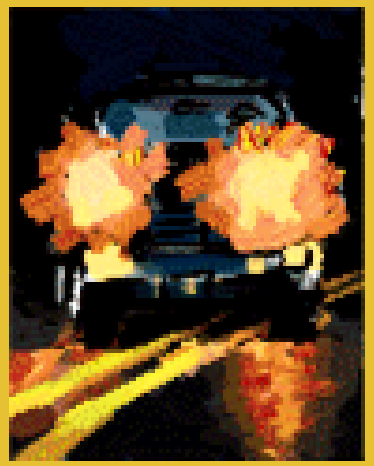


- James-Lange Theory (causation)
  - Body response→emotional response
- Cannon-Bard Theory (non-causation)
  - Body's response is not specific enough to yield an emotion
  - Psychological and emotional response occur simultaneously:
    - Emotion stimulus is routed to the brain cortex creating awareness of emotion and arousal through sympathetic nervous system



Which Theory?

Sight of oncoming car (perception of stimulus)



Pounding heart (arousal)

Fear (emotion)

James-Lange

Which Theory?

Sight of oncoming car (perception of stimulus)

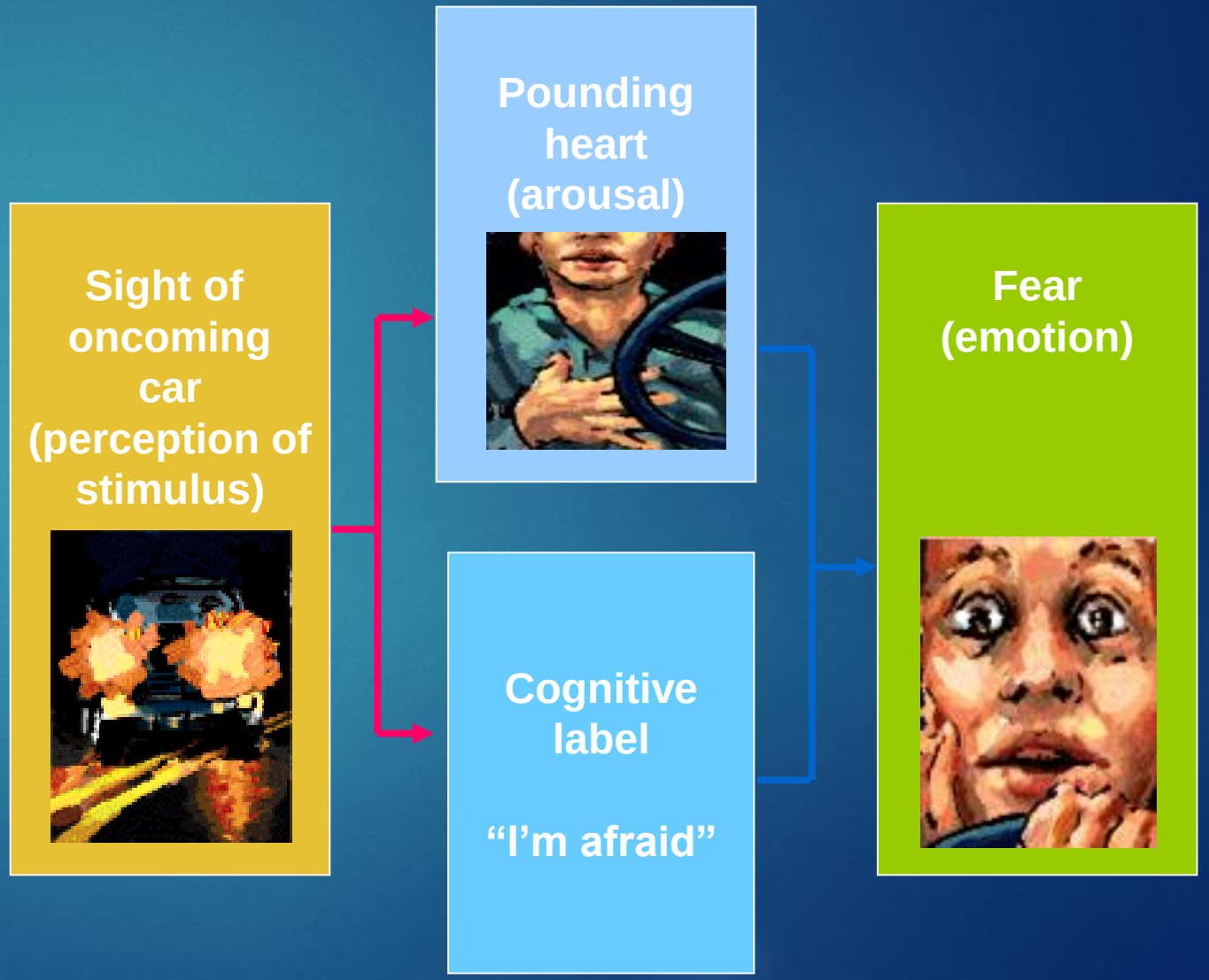
Pounding heart (arousal)

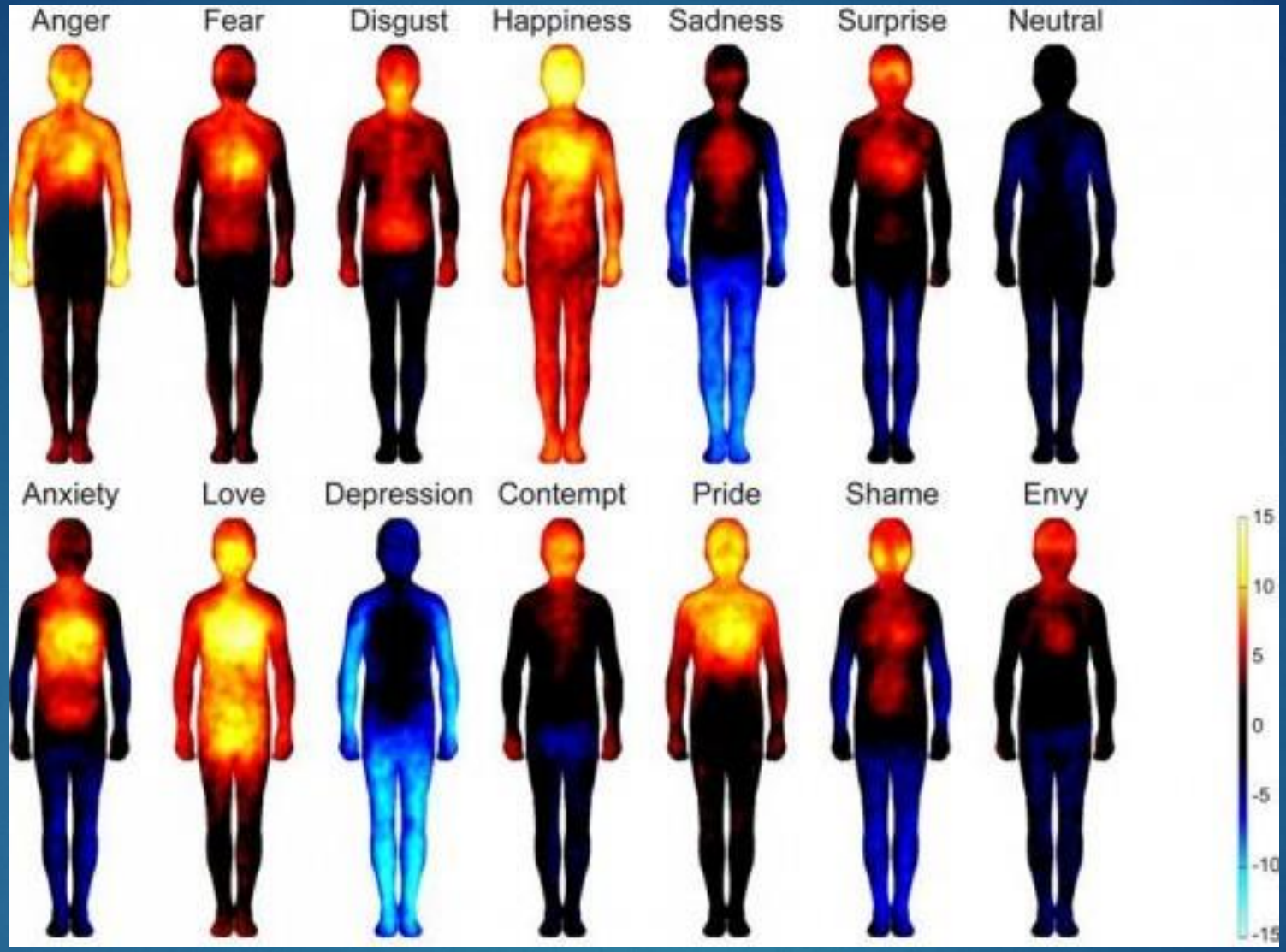
Fear (emotion)

Cannon-Bard

Theory Three: Schachter-Singer

- Two-factor Theory
  - Physiology+cognition →emotion
- Emotions grew from our awareness of arousal, but we must interpret our arousal

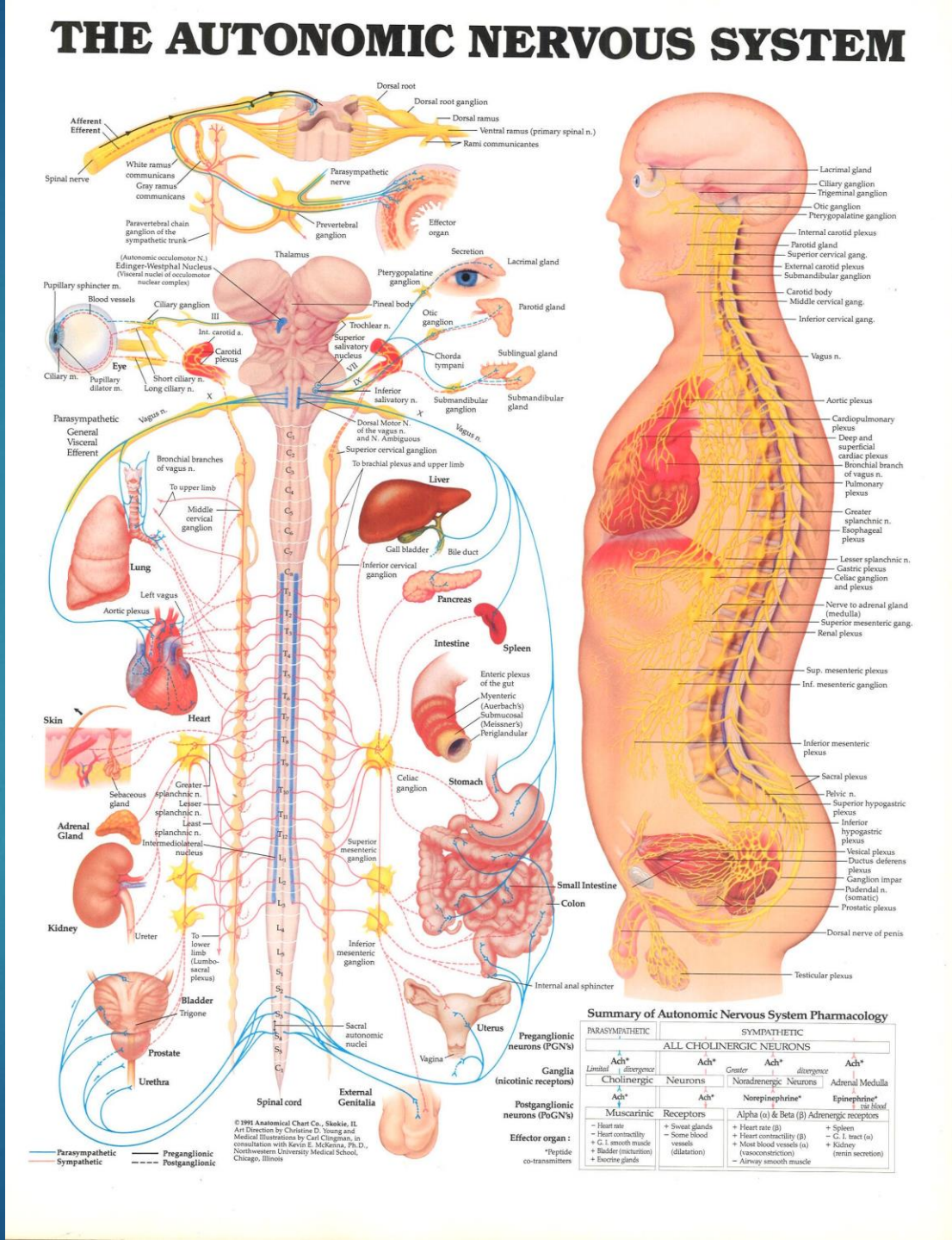




Emotion and The Body

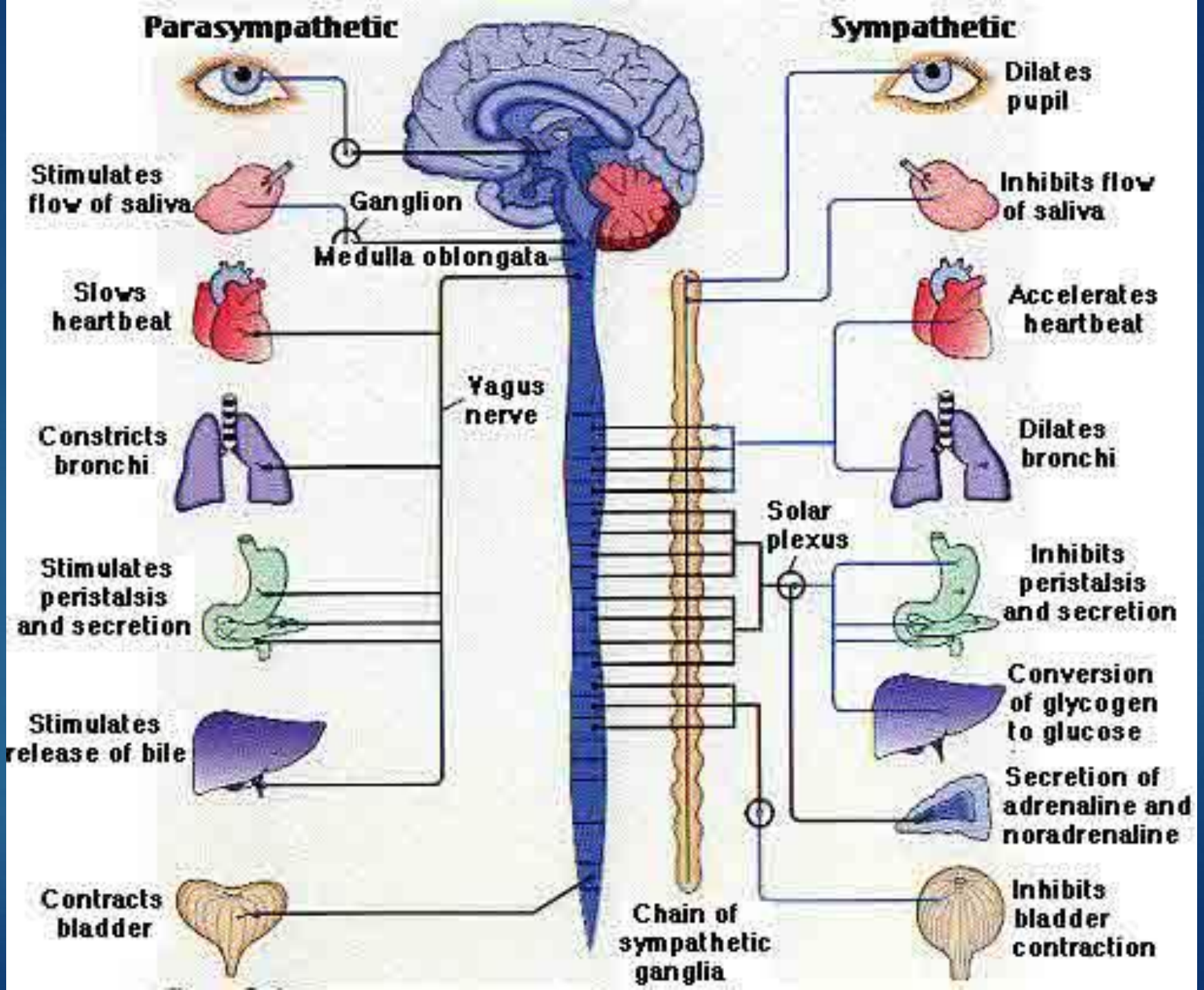
Autonomic Nervous System

- ANS mobilizes the body for action
  - Liver adds sugar into blood stream
  - Digestion slows
  - Blood to large muscles
  - Pupils dilate
  - Perspiration



Sympathetic Nervous System

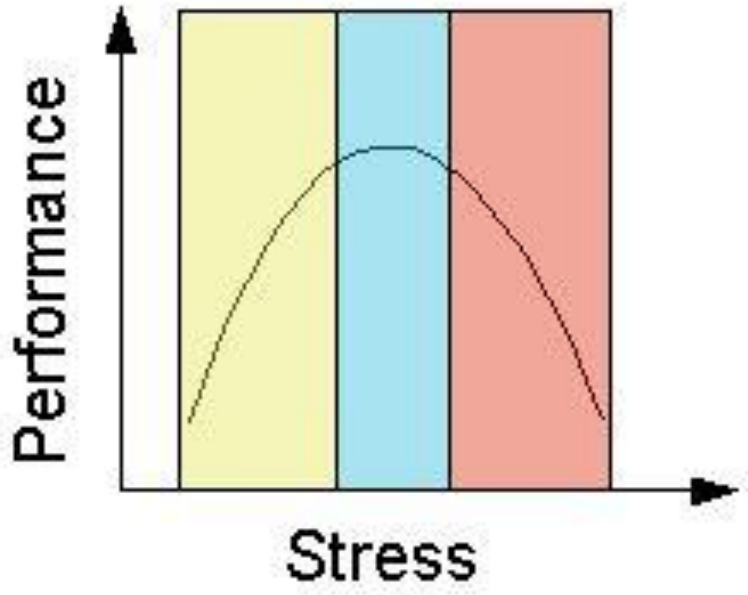
- Sympathetic System
  - Signals the adrenal gland to release epinephrine and norepinephrine
  - Increases heart rate, blood pressure, and blood sugar
- Parasympathetic System
  - Release stress hormones
  - Diminish arousal gradually


Parasympathetic
Sympathetic
Dilates pupil
Stimulates flow of saliva
Ganglion
Inhibits flow of saliva
Medulla oblongata
Slows heartbeat
Accelerates heartbeat
Vagus nerve
Constricts bronchi
Dilates bronchi
Solar plexus
Stimulates peristalsis and secretion
Inhibits peristalsis and secretion
Conversion of glycogen to glucose
Stimulates release of bile
Secretion of adrenaline and noradrenaline
Contracts bladder
Chain of sympathetic ganglia
Inhibits bladder contraction

Relationship to Performance

- Prolonged arousal from long term stress taxes the body
- Arousal must be proportionate
- Best performance is usually matched with moderately arousal
- Easy and well learned tasks: peak performance is with high arousal
- Hard tasks: peak performance is a lower arousal
- Examples?

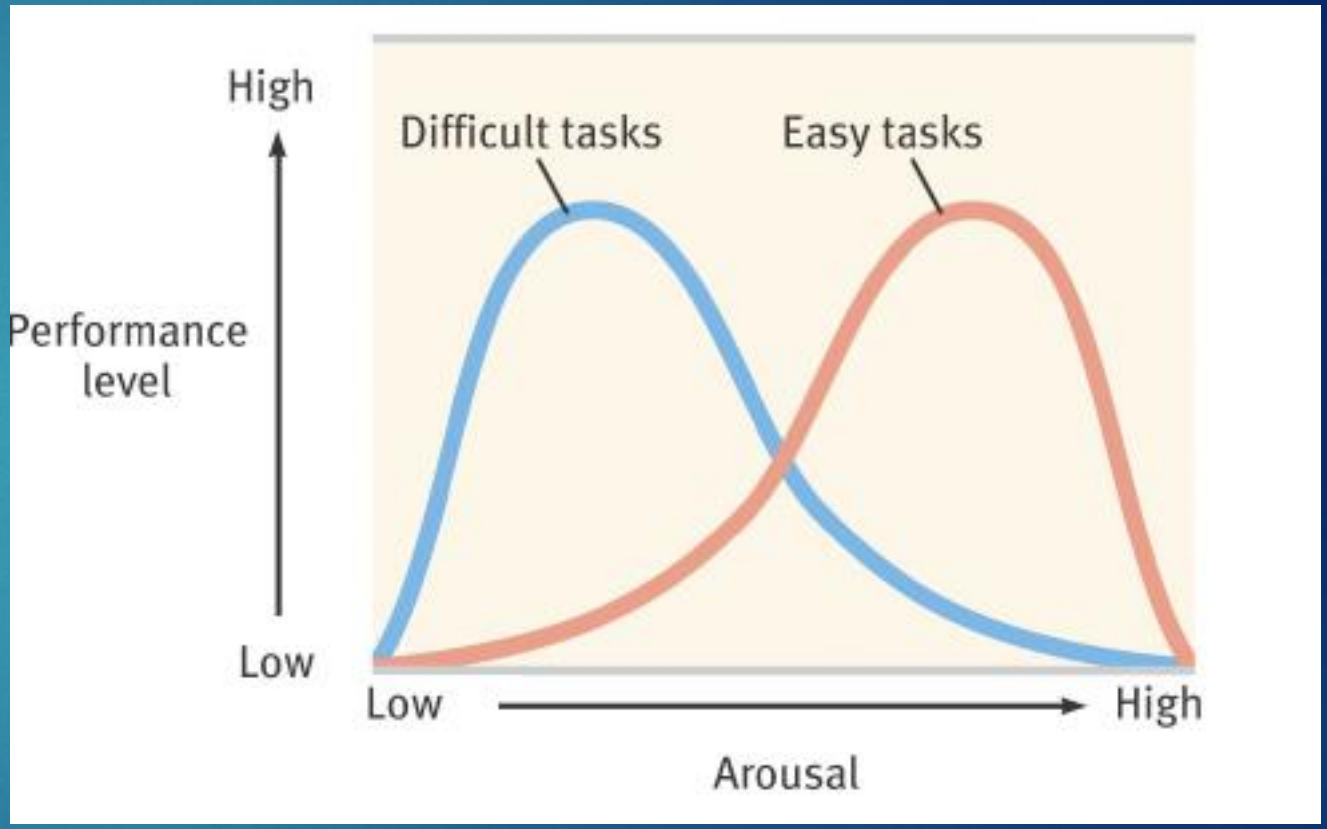
The Yerkes-Dodson Curve



Unproductive – Not Enough Stress

Optimal Production
(Width Varies Based Upon Stress Tolerance)

Unproductive-Too Much Stress



Physiological Responses to Emotion

- Different emotions correlate with different physiological responses
  - Fear/rage: different finger temp and hormones, more amygdala in fear
  - Fear/joy: same heart rate, different face
- Different emotions activate different areas of the brain's cortex
  - Negative emotions: right prefrontal cortex
  - Happy emotions: left frontal lobe (farther left more positive)
    - Dopamine: dopamine pathway runs from frontal lobe to the nucleus accumbens
- This makes James-Lange theory plausible

Further Support for James-Lange

- Different emotions=different physiological responses
- Spinal Cord Injuries
  - Soldiers with low spine injuries: no change in emotions
  - Soldiers with high spine injuries: emotions are less intense, but increase in emotions that express themselves mostly above the neck


THAT WAS FABULOUS! THE DOGS DRAGGED US OUT FOR A WALK BEFORE I COULD STRAP ON ALL MY HEALTH AND FITNESS MONITORING DEVICES!
NO STEP MONITOR! NO HYDRATION MONITOR! NO METABOLISM MONITOR! NO CARDIO MONITOR!
I FELT SO FREE! SO UNENCUMBERED! SO... SO....
...RELAXED! LOOK! THE INFRARED FINGERTIP PULSE SENSOR ON MY STRESS MONITOR INDICATES THAT I'M ACTUALLY RELAXED!!

Cognition and Emotion

- Spillover Effect: the arousal from one event spills into the next
  - Individuals experience physiological reactions from epinephrine "caught" the emotion of those around them
  - Increased arousal can spill over!
- Arousal fuels emotion; cognition channels it

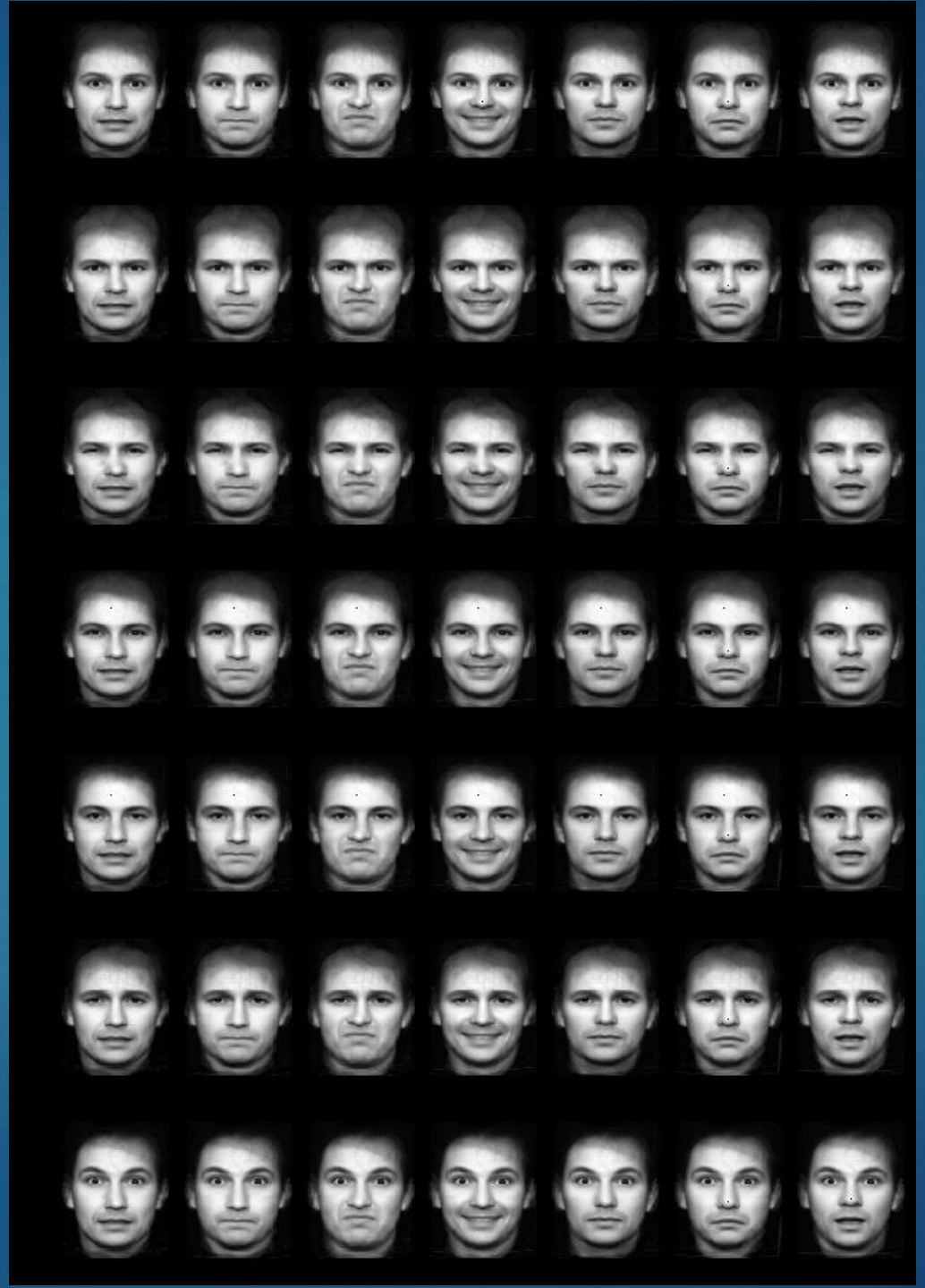
When Cognition ≠ Emotion

- Phenomena of unlabeled feelings
- Unconscious experience of emotion before cognition
  - Emotions can bypass the cortex
- Alternative pathways for emotion
  - Eye/ear→thalamus→amygdala
- Amygdala sends more messages to the cortex than vice versa
  - Ex. Getting startled
- This is more common with simple emotional responses

Nonverbal Emotion

Nonverbal Emotion

- Expression are useful for interpretation
- Expressions help one solidify memory
- More readily detect negative nonverbal cues than positive ones
- How do we read expressions?
  - Fear and anger in the eyes
  - Happiness in the mouth
  - Notice changes in expression
  - Introverts tend to be better readers and extroverts better at being read
  - Live experiences also affects ability to read people



Gender

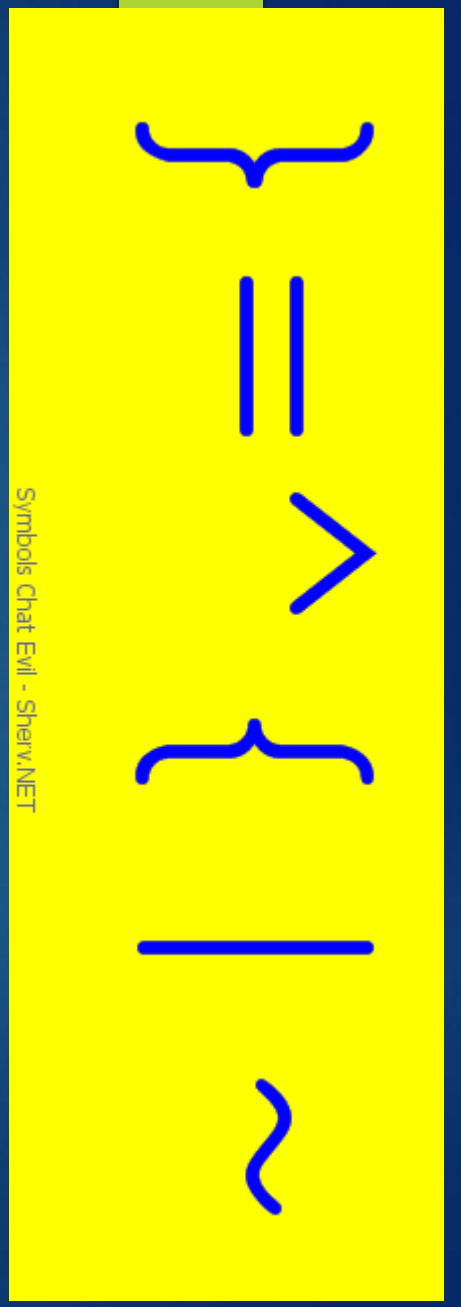
- Female superiority
  - Women are generally more sensitive than men at reading nonverbal signals
  - Women are generally better at determining true romance between a couple
  - Women are generally better at determining employee-boss relationships
- Correlates with greater emotional literacy

Gender Cont'd

- Women are emotional
  - Belief expressed by nearly 100% of 18-29 Americans
  - More women report being open to feelings
  - More likely to describe themselves as empathetic (physiological tests reveal men and women are not that different!)
- Ultimately it might just be greater expression
  - Female body language shows emotion better than male (minus anger)

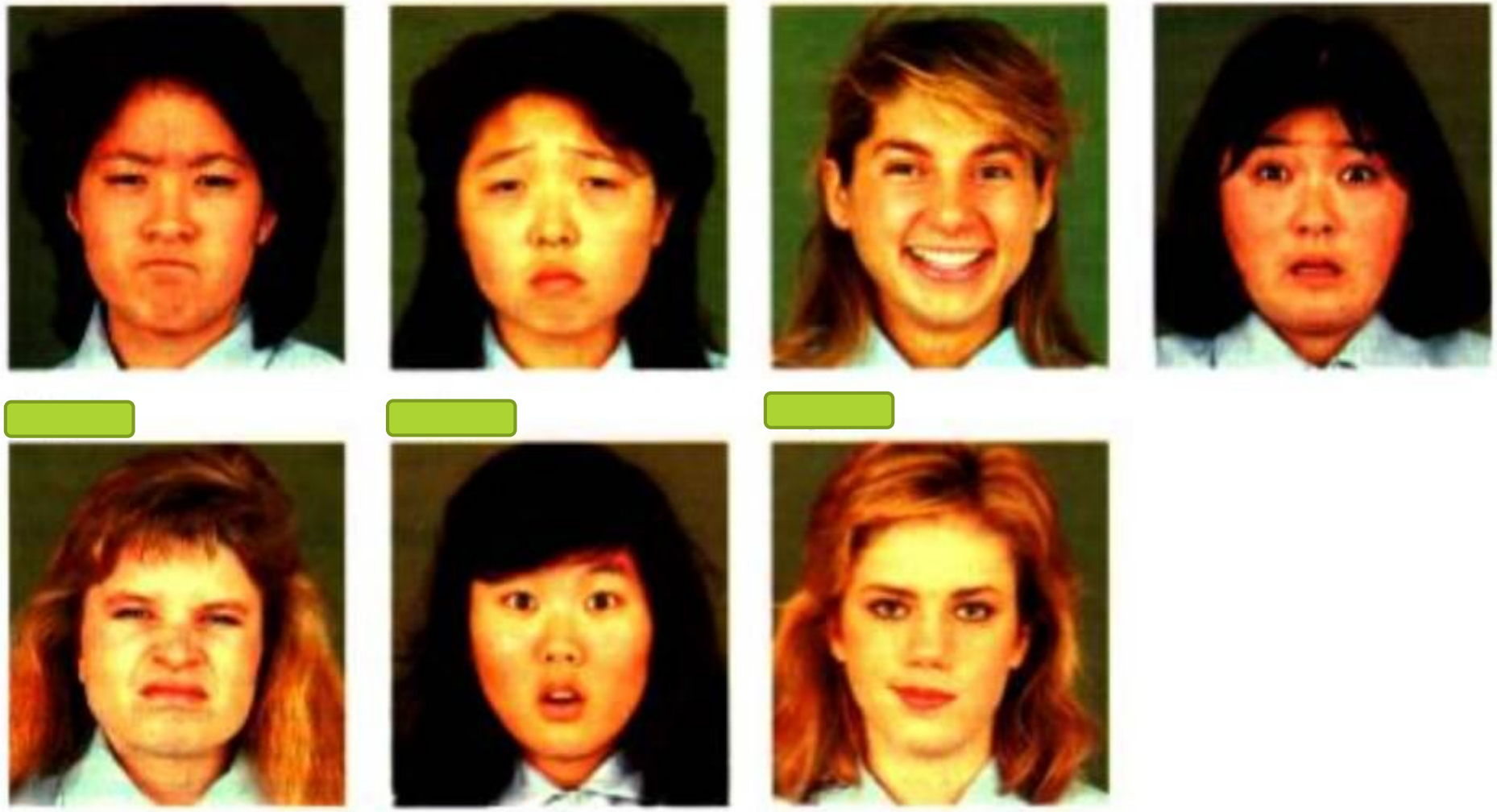
Detecting Emotion

- Facile representations of emotion
  - Examples?
- Lie Detection
  - People are bad at detecting lies: 54%
  - Signs: raised voice pitch
  - Experience helps identify, learning the "signs" not so much
- People rely on nonverbal cues and we are pretty good at using them
- Context is essential
  - Angry face in a fearful setting=afraid



Culture and Nonverbal Emotion

- Nonverbal communication varies with culture
  - Examples?
- Expressions of the core six emotions do not
  - Anger, sadness, fear, disgust, happiness, surprise
- Individualist cultures=more pronounced and longer expressions



15.3 Le espressioni facciali universali delle emozioni

Universality of Expression

- Blind from birth still make the appropriate expression
- Evolutionary purpose
  - Communicate: Convey threats, greet, submit
  - Protect: close nose (disgust), widen eyes (surprise)
- Facial expressions are often a social reflex

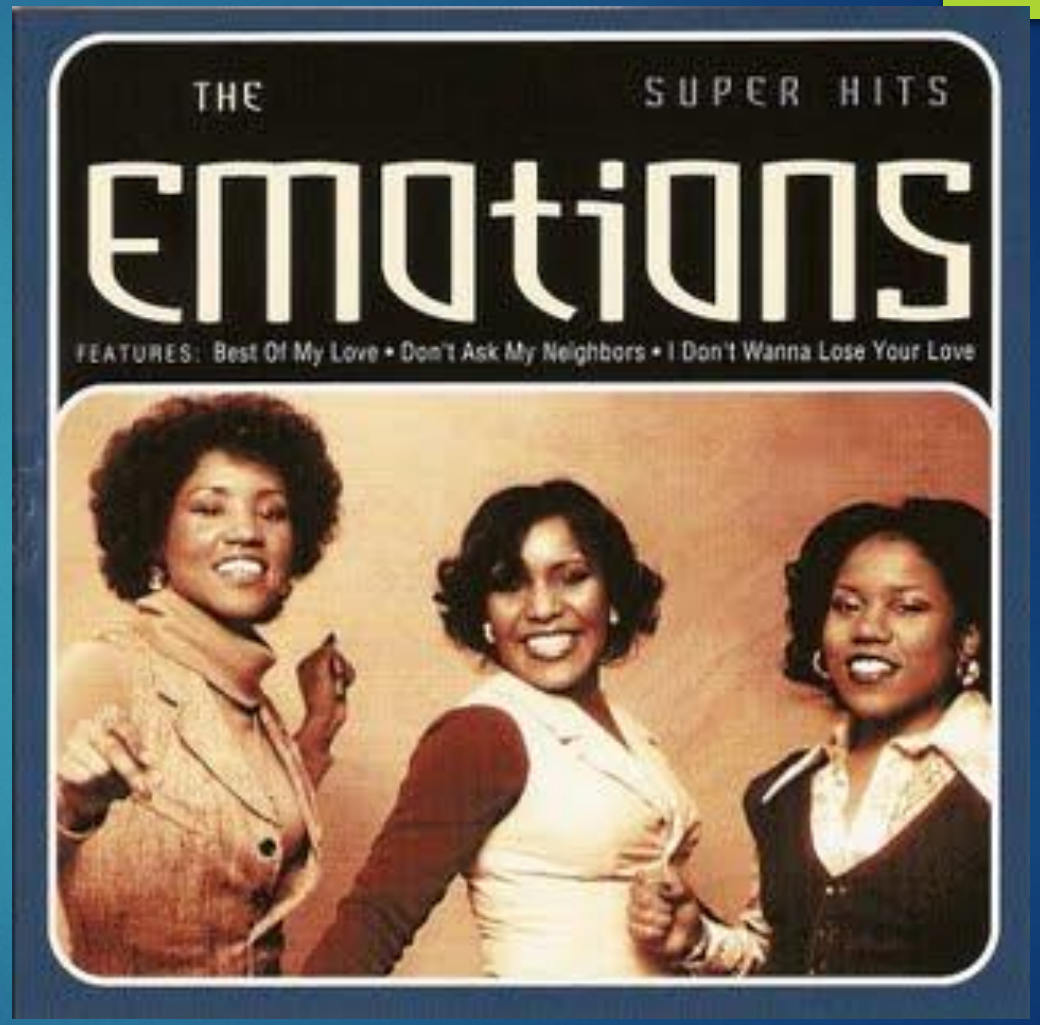
Effects of Expression

- Fake it until you make it
  - Darwin: outward expression intensifies emotion
- Facial and Behavior Feedback Effect
  - People who furrow their brows when looking at sad photos feel sadder
  - Faking a genuine smile enhances positive feelings more than hearing a joke, watching yourself do it amplifies the effect
- Acting out another's expression neurologically affects you and increases empathy

http://www.ted.com/talks/amy_cuddy_your_body_language_shapes_who_you_are.html

The Emotions

FEAR, ANGER, HAPPINESS



Fear

- Purpose to protect from harm
- Fear can be innate or learned

Learning Fear

- Fear of heights
  - Learned as a child crawls and falls
- Learning by observations
  - Monkeys fear snakes: wild v. captivity
  - 9/11→increased fear of flying

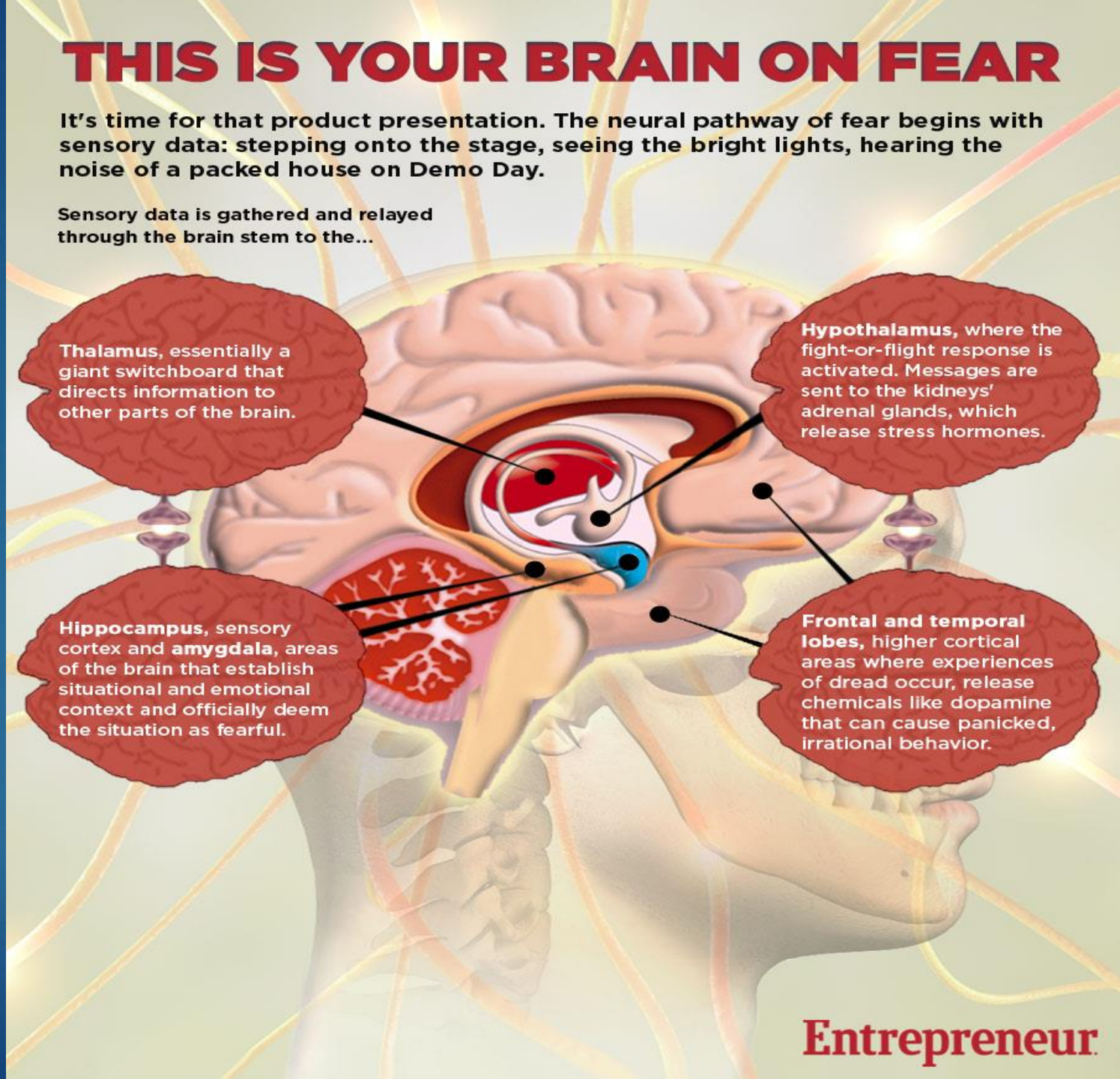
The Brain and Fear

- Product of evolution
  - Fewer fear stimulus in response to modern technologies
- Learning in amygdala
  - Associating stimulus and emotion
  - Amygdala damage→no learning of fear
  - Memo comes from anterorior cingulate cortex→amydgala→other parts of brain
- Hippocampus
  - Damage to the hippocampus: emotion still exists, but can't remember why

THIS IS YOUR BRAIN ON FEAR

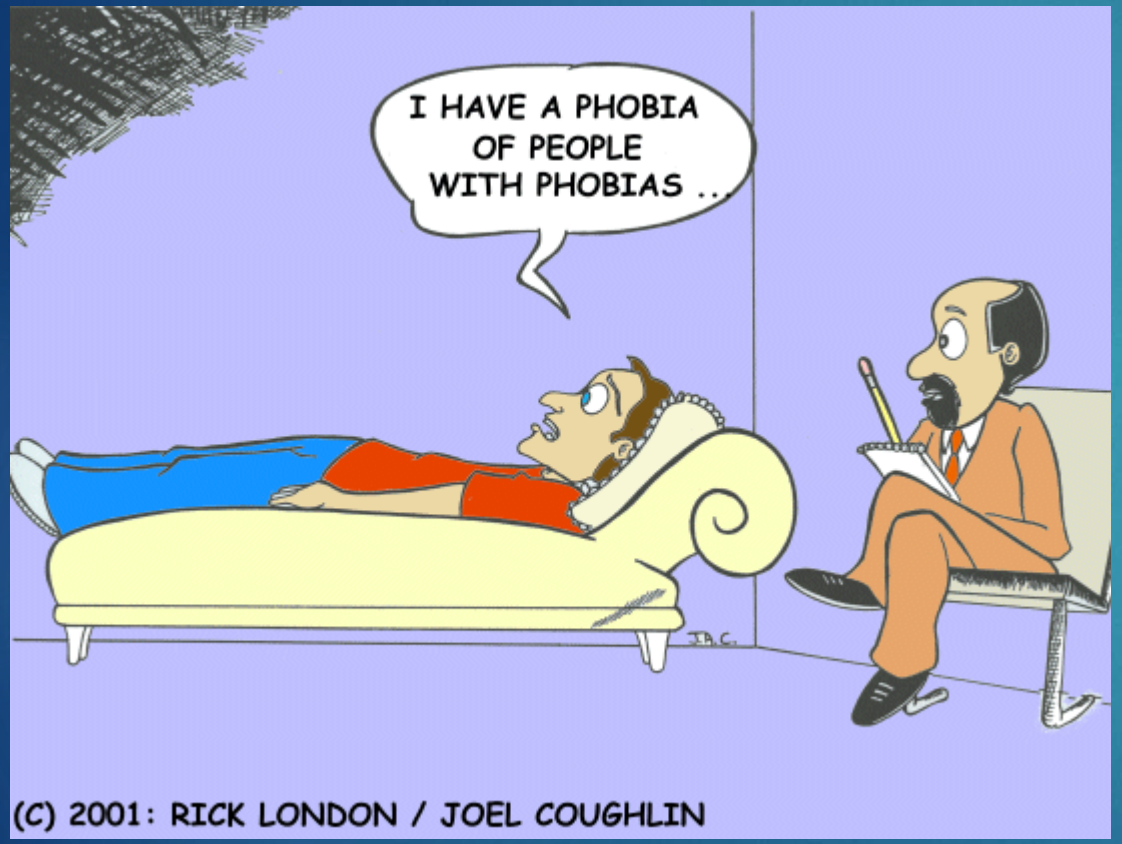
It's time for that product presentation. The neural pathway of fear begins with sensory data: stepping onto the stage, seeing the bright lights, hearing the noise of a packed house on Demo Day.

Sensory data is gathered and relayed through the brain stem to the...



Entrepreneur

Phobias



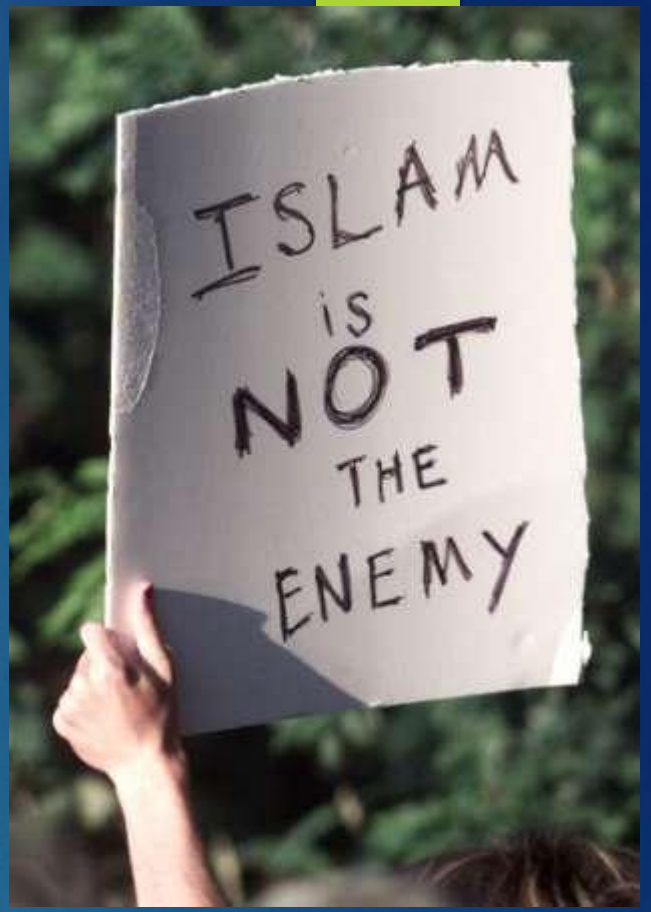
- Intense fear of specific objects or situations
- Disrupt ability to cope
- Chronically Anxious: ever-attentive to threats
- Criminals and heroes tend to be less fearful

Anger

- Anger emerges several times per week
- Stems from misdeeds and willful, unjustified, or avoidable actions
  - Minor annoyances
- Coping Strategies
  - Boys: walk it off, exercise
  - Girls: talk to a friend, music, write

Effects of Anger

- Prejudice
  - Ex: 9/11
- Chronic anger is correlated with heart disease
- Anger can lead to assertiveness
  - Talk it out, rather than hold in pent up aggression which later explodes
  - Outbursts are better than not venting

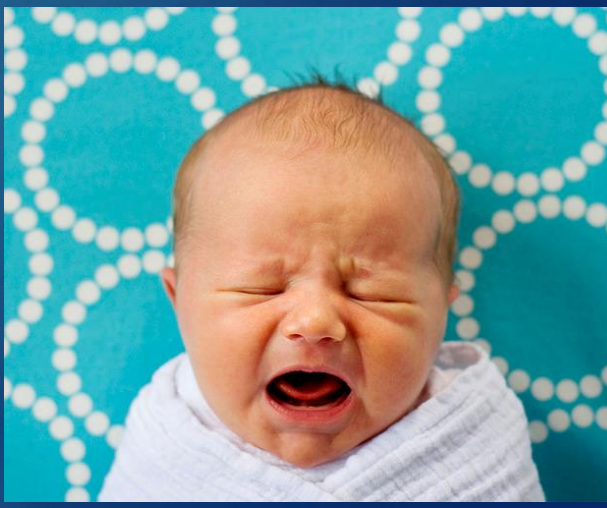


Cultural Differences

- Individualized Cultures
  - Anger is acceptable
  - People are encouraged to vent
- Interdependent Cultures
  - Anger can be a threat to group harmony
  - Anger is less common
  - Other behaviors, such as gentleness, are taught

Catharsis

- Catharsis=Emotional release
- Limits to effectiveness
  - Must address provoker (otherwise guilt)
  - Most be justifiable (otherwise guilt)
  - Target must not be intimidating (otherwise anxiety)



Catharsis: Anger→Anger

- Provoke further retaliation, leads to a snowball effect
- Expressing anger can cause us to get angrier (behavioral feedback)
  - Examples?
- Venting can be a learned habit


IT'S BAD FOR THE COUNTRY TO DEMONIZE WALL STREET, BANKERS AND CEOs
MITT
DIST. BY TRIBUNE MEDIA SERVICES
WE SHOULD FOCUS OUR ANGER ON OUR TRUE ENEMIES—
TERRORIST-HUGGING, SOCIALIST-PLOTTING, AMERICA-HATING...
WASSERMAN©2.10 THE BOSTON GLOBE
...DEMOCRATS!!
www.boston.com/wasserman

Best Ways To Handle Anger

- Wait it out
  - Your arousal will eventually decrease
- Productive coping
  - Exercise
  - Music
  - Talking
- Forgiveness
  - Rehearsal of forgiveness lowered physiological arousal
- Effective anger can be useful
  - Encourages communication

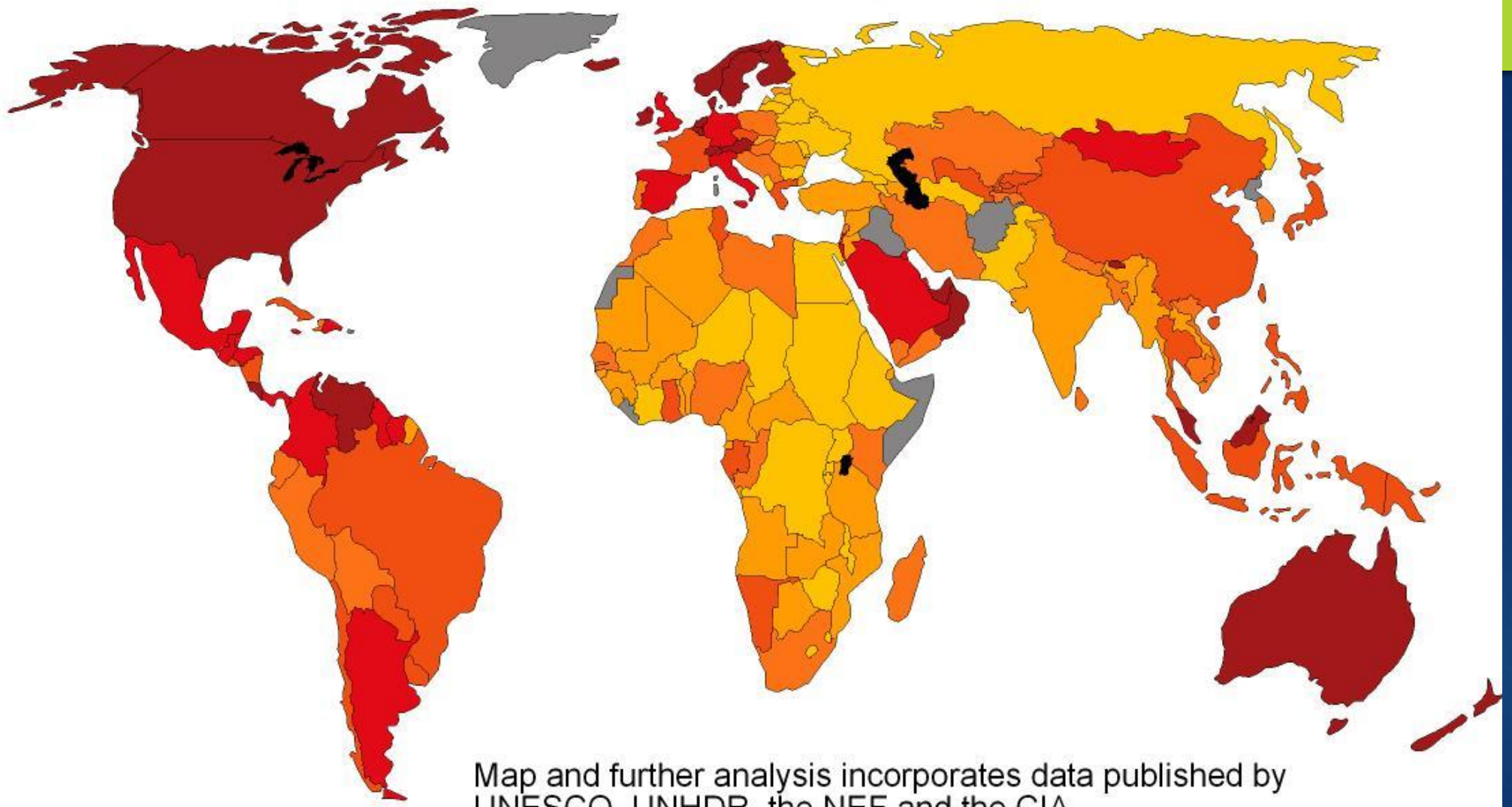
Happiness

- We want happiness
- Happy people tend to:
  - View the world as safer
  - Make decisions more easily
  - Rate job applicants more favorably
  - Be more cooperative
  - Live healthier
  - Be more energized
  - Lead satisfied lives
  - Be more helpful (feel good, do good phenomenon)

Subjective Well-Being

- Self perceived happiness/satisfaction
- Daily Ups and Downs
  - Moods rise over early/mid-day
  - Stress causes negative feelings, but usually only lasts one day
    - Usually bad days are followed by good (not neutral) days
  - Tragedy doesn't play as large of an affect as we would suspect
    - Exceptions: death of a loved one and trauma caused anxiety
  - Dramatically positive events don't dramatically increase our happiness
- We over estimate the duration of emotions and underestimate our capacity to adapt.

A Global Projection of Subjective Well-being



Map and further analysis incorporates data published by UNESCO, UNHDR, the NEF and the CIA.

High SWB - - - - - Low SWB

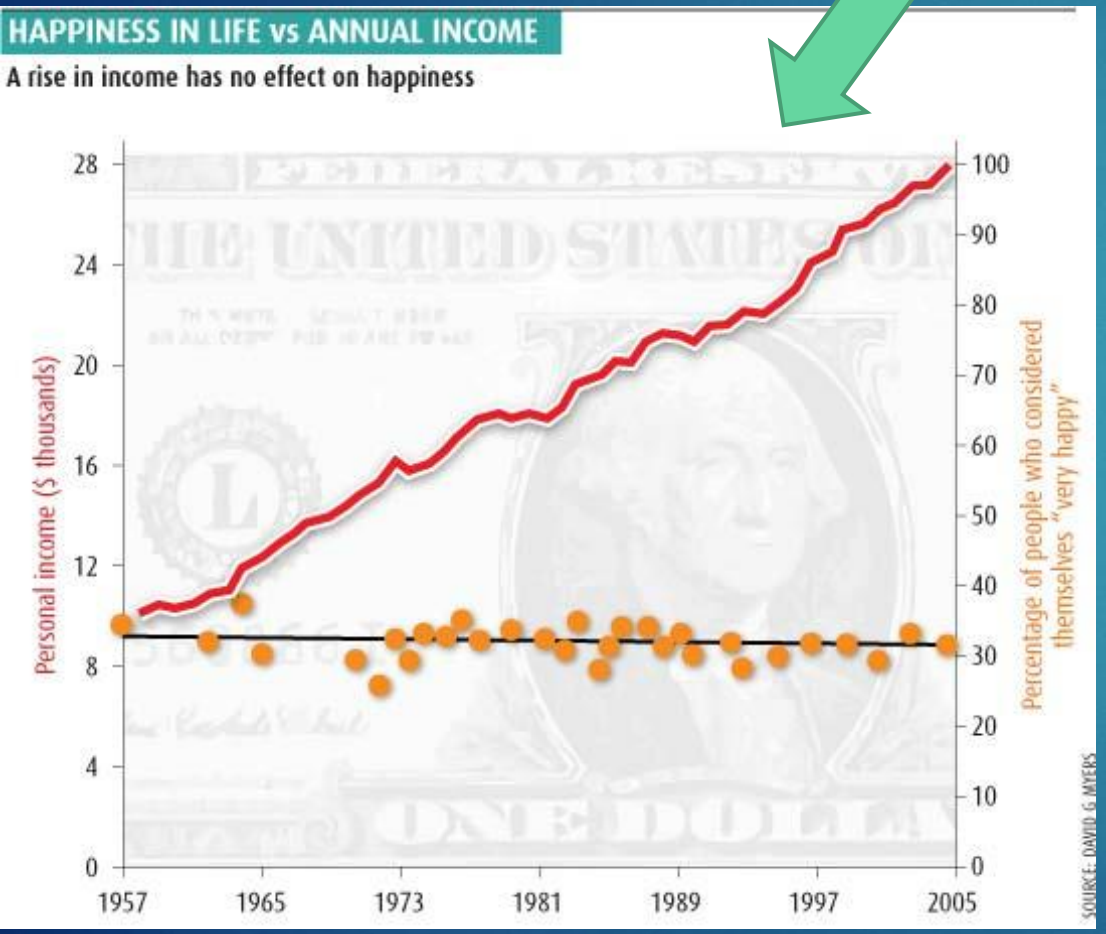
What About Wealth

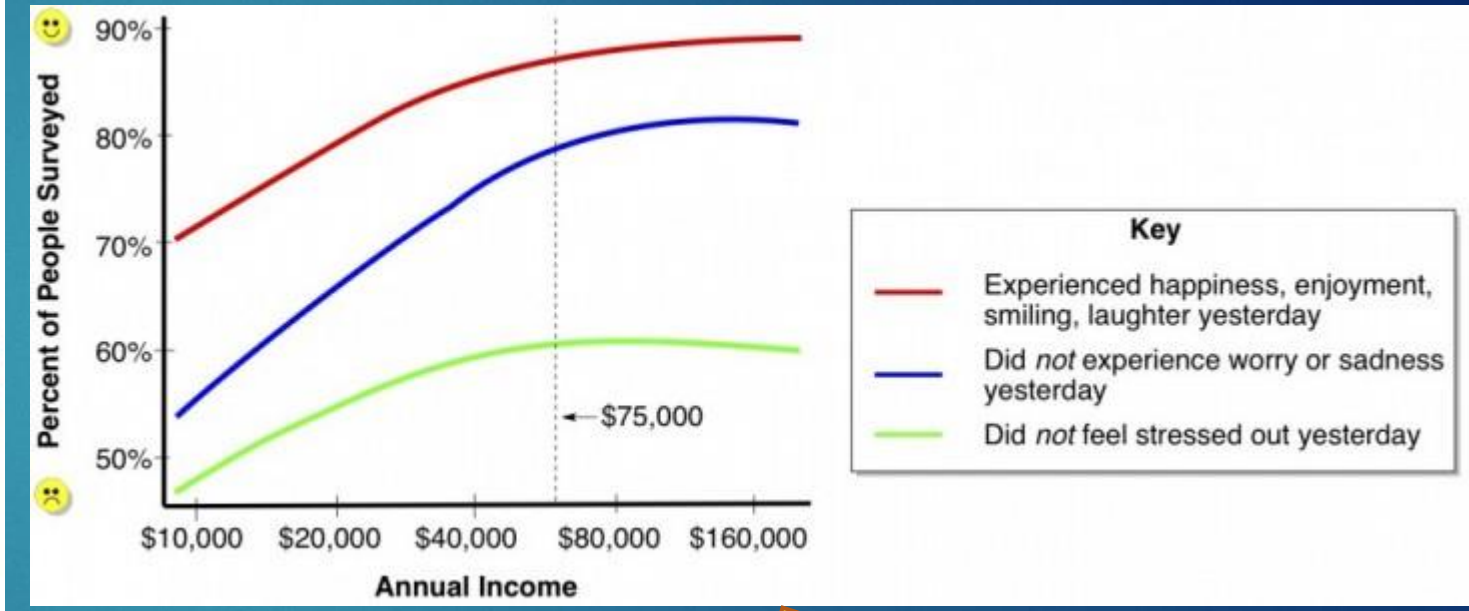
- In affluent countries: wealthier are happier than those who can't afford basic needs
- People in rich countries happier than those in poor
- Economic surge→some elation, economic loss→siginificant negative impact

Money Can't Buy Happiness

- Disclaimer: so long as you aren't at the bottom
- Perspective is what matters; Gratitude!
- Americans: on average have gotten richer
  - Divorce 2x
  - Teen Suicide 2x
  - Depression on the rise
- China
  - Urban Chinese less happy than rural Chinese
- The more you strive for wealth the lower your SWB
- Values are more indicative of happiness

Money Can't Buy Happiness





OR CAN IT....

More Happy Emotions and Less Stress

associated with...

- ✓ Being religious
- ✓ Being older than 60
- ✓ Being the weekend!
- ✓ Being married
- ✓ Having health insurance

Less Happy and More Sad Emotions

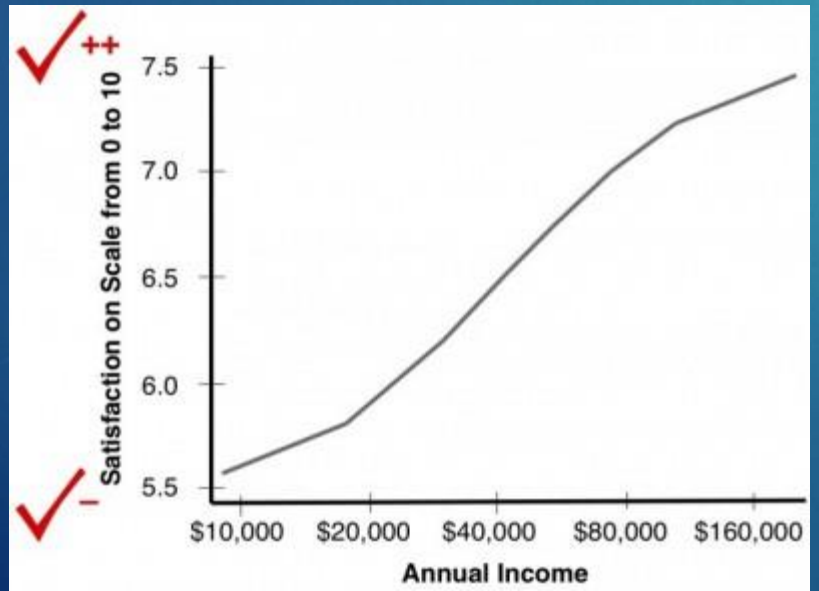
associated with...

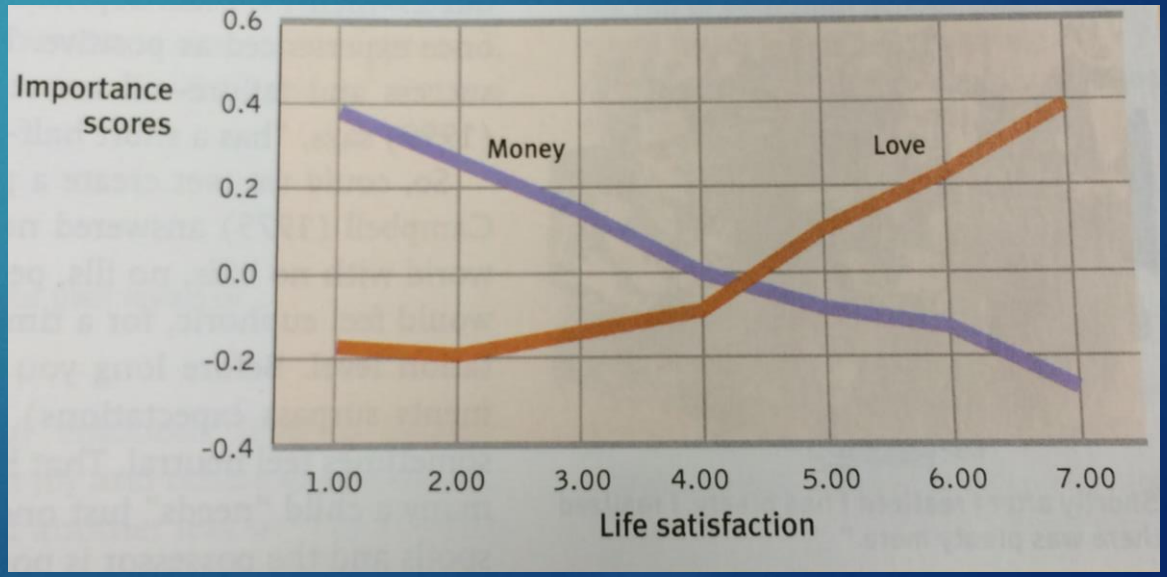
- ⊘ Being alone
- ⊘ Having a health condition
- ⊘ Being a smoker
- ⊘ Being female
- ⊘ Being a caregiver for an elderly/disabled relative

More Stress

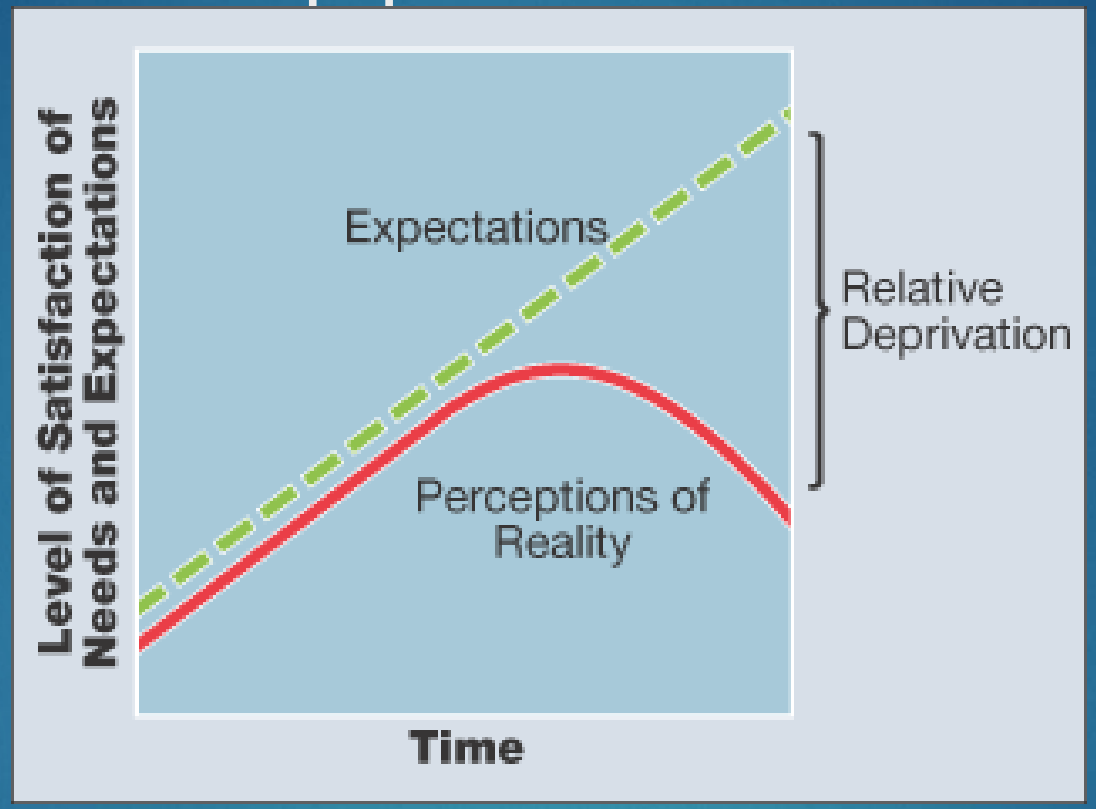
associated with...

- ⊘ Having headaches
- ⊘ Being alone
- ⊘ Having a health condition
- ⊘ Being a caregiver for an elderly/disabled relative
- ⊘ Having children at home
- ⊘ Being a college graduate





Principles of Happiness



- Two principles/phenomenon
  1. Adaptation-level phenomenon
  2. Relative deprivation

Adaptation-Level Phenomenon

- We judge things based on our experiences (personal experiences)
- Neutral=norm
  - Think about your cell phone or internet
  - Give a moose a muffin (or a mouse a cookie)
- Satisfaction and dissatisfaction are relative to experience
  - Seasons
- To seek happiness through the material world you must constantly increase your material possessions

Relative Deprivation

- We judge things based on those around us (observational experiences)
- We often feel we are worse off than those around us
  - Effect of social media?
- Observations→inflated expectations
- People constantly envy
- Explanation for happiness leveling off at a certain wealth
- Counter effect?
  - "I cried because I had no shoes, until I met a man who had no feet."

Causes of Happiness

- Culturally dependent
  - West: self-esteem and social acceptance
- Genes
  - Estimates argue 50% of the difference among people's happiness is heritable
- Set Point
- Cool chart on page 544: Table 13.2

Stress and Health

CHAPTER 14

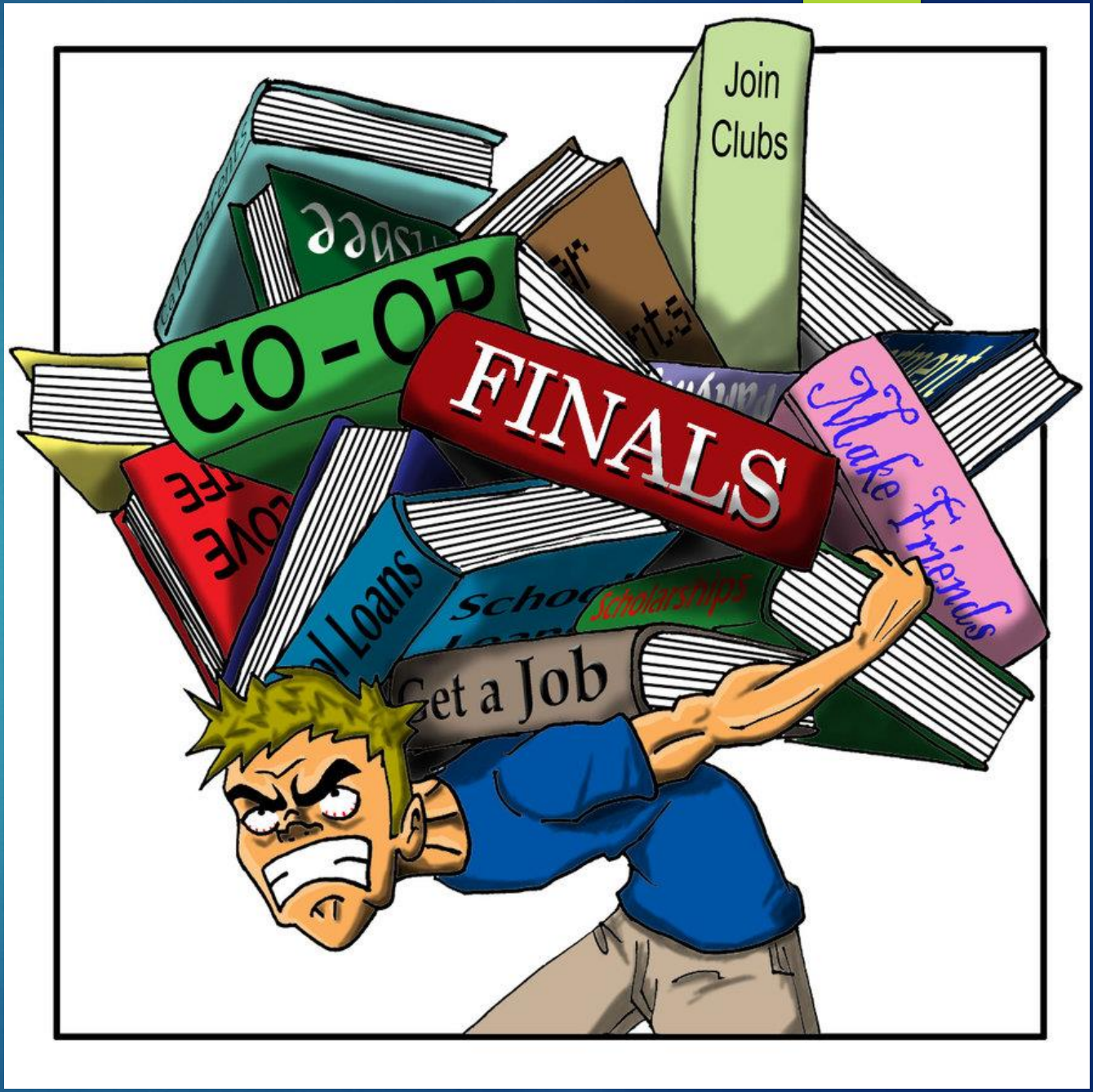
UNIT 7

Fields of Psychology

- Approximately 50% of American deaths are directly related to poor behavior
- Behavioral Medicine
  - Interdisciplinary
  - Behavioral change+medicine→treat disease
- Health Psychology
  - Psychology's contribution to behavioral medicine

What is Stress

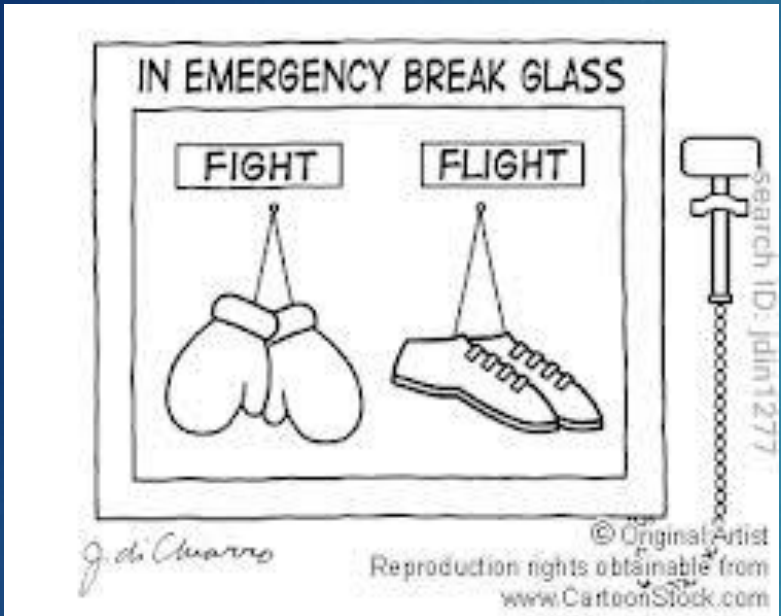
- Survival effects gone a-rye!
- Stress is the reaction to things and events that cause a threat
- Four out of 10 people on average report frequently feeling stressed
- Stress isn't about the stressor, it's about the reaction! (aka the person's perception)

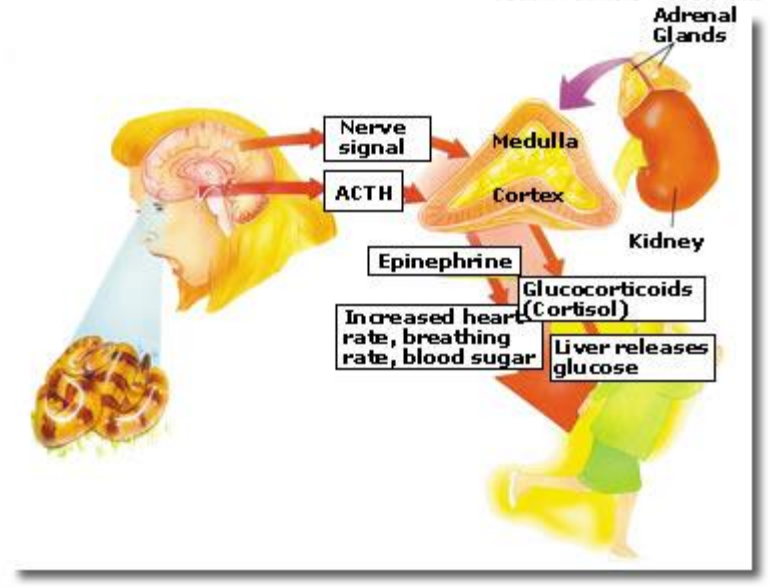


Stress has nothing to do with how many hours you work

And everything to do with how you feel during those hours

Biological Stress Response



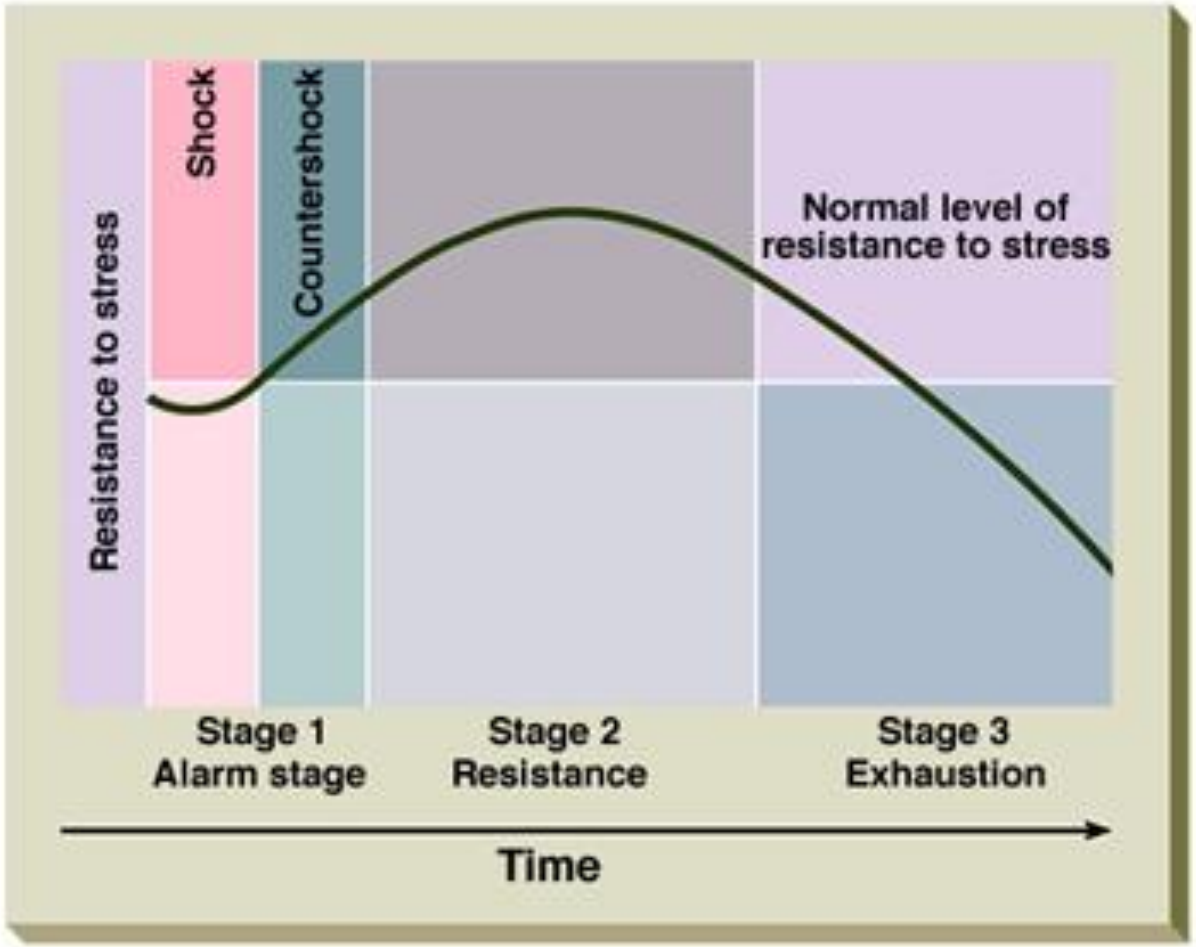


- Sympathetic Nervous System responds
- Adrenal gland releases stress hormones: epinephrine and norepinephrine
- Prepared for fight or flight (Cannon, 1929)
- More info see slide 10-12 and page 551

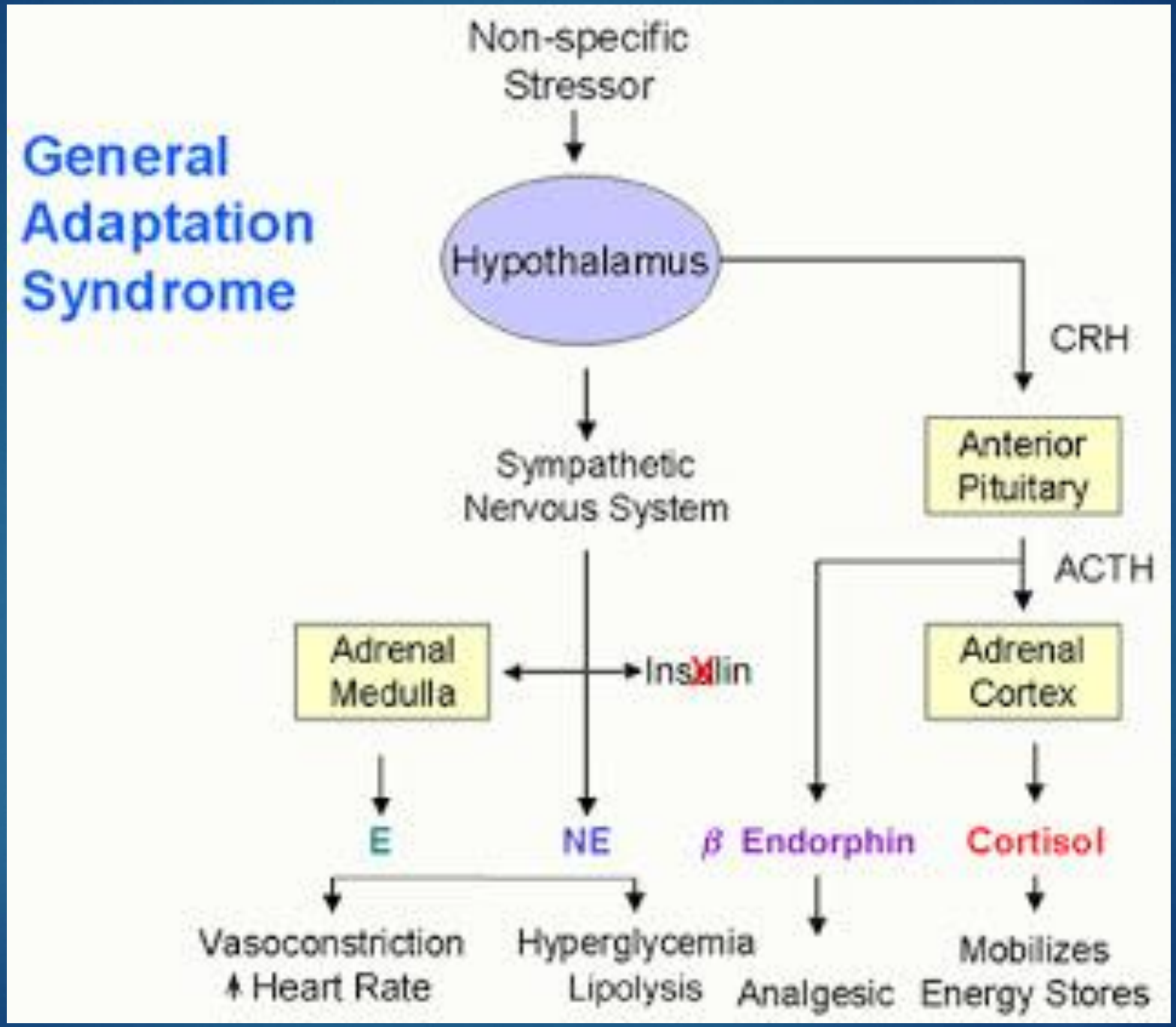
Alternatives to Fight or Flight

- Withdrawal
  - Common with the death of a loved one
- Tend and befriend
  - Seek and give support
  - Especially common among women
- General Adaptation Syndrome
  - Phase One, Alarm Reaction: physiological changes occur
  - Phase Two, Resistance: body remains alert, outpouring of hormones
  - Phase Three, exhaustion: stress lasts too long and you become vulnerable to illness, collapse,…death!

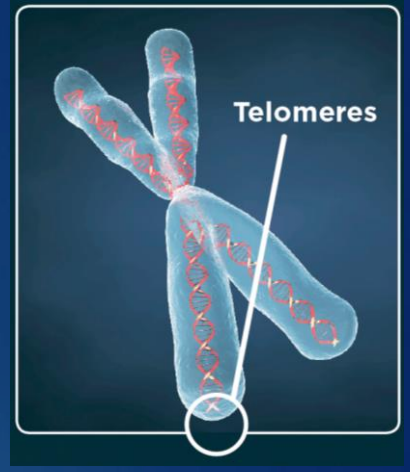
Seyle's General Adaptation Syndrome



General Adaptation Syndrome



Stress Phase Three



- Long term stress taxes the body
- Stress actually ages you!
  - Women who care for children with severe disorders (long term significant stressor)
  - DNA measured: women had short telomeres (eventually telomeres get too short to divide and cell dies)
  - DNA is about as short as someone ten years older!
  - Stressed rats die 100 days earlier than non-stressed (600 v 700 days)
- Brain effects
  - Shrunken hippocampus in victims of child abuse, combat, or endocrine disease
  - Damages ability to cement explicit memory

Stressors

- Stressors are the events that can lead to a stressful response
- Types of stressors:
  1. Catastrophes
  2. Significant Life Changes
  3. Daily Hassles

Catastrophes

- Catastrophe: unpredictable large-scale events (e.g. war, natural disaster, 9/11)
- Tend to correlate with widespread increases in
  - Depression
  - Anxiety
  - Sleeping troubles
- Stress also stems from peripheral effects of catastrophes
  - Leaving home
  - Family separation
  - Adjusting to a new culture, language, climate, etc.

Significant Life Changes

- Ex: leaving home, death, job loss, marriage, divorce, etc.
- Key time: young adulthood
- People recently fired, divorced, or widowed are more susceptible to disease
- The more changes the more at risk one is for adverse health effects

Daily Hassles

- Ex: rush hour, roommates, long lines, e-mail spam, racism, poverty, etc.
- Most significant sources of stress
- Daily life hassles add up to produce negative health effects
  - Hypertension

Stress and the Heart

- Largest cause of death in US: Coronary Heart Disease
  - Clogging of blood vessels leading to the heart
  - Directly correlated with hypertension
- Behavioral, physiological, and psychological stress factors are all key
- Stress can predict heart attack risk (Friedman and Rosenman)
  - Type A more likely than Type B (because of how they handle stressors)

Friedman and Rosenman's Types

- Type A Personality
  - Competitive, hard-driving, impatient, verbally aggressive
  - Anger (and other negative emotion) prone
  - At increased risk for heart attack
  - Increased cortisol and SNS activity in response to stressors
- Type B Personality
  - Easygoing, relaxed, mellow, laid-back
  - At lower risk for heart attack

Stress and Disease

- Psychosomatic
- Psychophysiological Illness
  - Illness related to stress
  - NOT hypochondriasis or psychosomatic

The Immune System

- Immune system serves to defend the body by destroying bacteria, viruses, and other foreign substances using white blood cells
- Lymphocytes
  - B Lymphocytes: form in bone marrow, release antibodies to fight bacterial infections
  - T Lymphocytes: form in the thymus and lymphatic tissues. Attack cancer cells, viruses, and foreign substances
- Macrophage
  - Identifies, pursues, and ingests harmful invaders

Immune Response

- Over Active
  - Attack body's own tissues
  - E.g. arthritis or allergies
- Under Active
  - Neglects to handle harmful substances
  - E.g. dormant herpes virus outbreak, cancer spreads
- Women tend to have strong systems, but this makes them more susceptible to disesase like lupus and MS

Stress and the Immune System

- Cortisol suppresses lymphocytes (competing energy needs)
- Surgical wounds heal more slowly in stressed animals and humans
- People with stress-filled lives are more likely to develop colds when exposed to the virus than their non-stressed counter parts
- Chronic stress causes wear on the immune system
  - Many people who live past 100 share the ability to manage stress well

Stress and AIDS

- Acquired Immune Deficiency Syndrome, Human Immunodeficiency Virus
- Fourth leading cause of death in the world, #1 in Africa
- Stress and negative emotions correlate with a progression from HIV to AIDS and the decline of those infected
- However, it is not a very strong correlation

Stress and Cancer

- Stress and negative emotions linked to the progression of cancer
  - Might not necessarily be linked to getting cancer
- Rats exposed to carcinogens or implanted with tumor cells and then exposed to stress were more prone to cancer and quicker, larger tumor development
- Problems: illness guilt and wellness macho

Conditioning and the Immune System

- Rats and sugar water
  - Drug (US)→Immune suppression (UR)
  - Sugar water (CS)+Drug (US)→Immune suppression (UR)
  - Sugar water (CS)→Immune suppression (CR)
- Placebos?
- What about those expecting the worst?

Coping with Stress

- Addressing Stressors
  - Problem-Focused Coping: changing the stressor
    - Often is more effective
    - Utilized when we perceive control
  - Emotion-Focused Coping: Attending to emotional needs relating to the stress reaction
- What effects our ability to cope?

Coping Influences

- Perceived Control
  - Uncontrollable threats trigger the strongest stress response
  - Individuals in nursing homes tend to die sooner (**correlation not causation**)
  - Control over work conditions→happier and more productive workers
  - See page 562-563

Coping Influences

- Explanatory Style
  - Optimism v. Pessimism
  - Optimists tend to have better moods, less stress, and longer lives
  - Humor can defuse stress and strengthen immune activity: laughter improves blood flow to the heart!

Coping Influences

- Social Support
  - E.g. feeling liked, affirmed, and encouraged by intimate friends and family (pets count too!)
  - Promotes happiness and health: these people cope better!
  - Often social networks are our most frequent source of stress, but also of happiness
  - People who are married tend to be healthier and live longer than those who aren't (however more overweight)
  - These individuals also tend to engage in healthier behaviors
  - Opportunity for venting, suppressed thoughts cause increased stress and negative health effects

Managing Stress

Aerobic Exercise

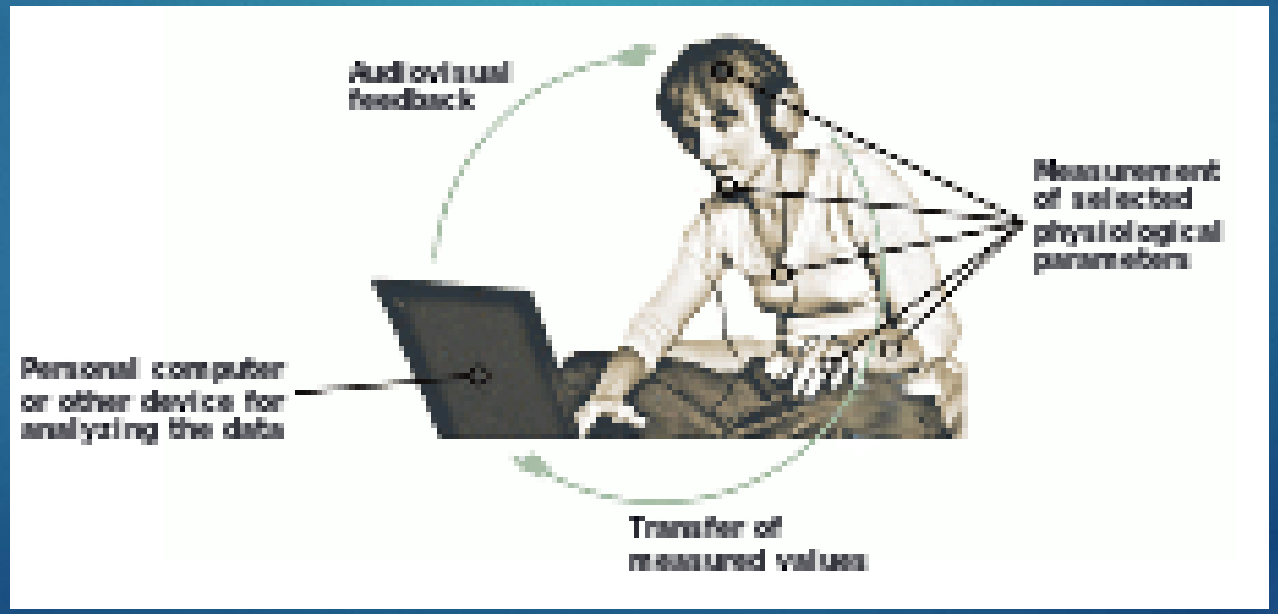
- Sustained exervise that increases heart and lung fitness
- Reduces stress, depression, and anxiety
- Non-exercisers more likely to report being unhappy
- Vigorous exercise→immediate mood boost

Aerobic Exercise

- Why?
  - Boosts norepinephrine, serotonin, and endorphins (mood boosting neurotransmitters)
  - Enhances cognitive abilities including memory
  - Promotes growth of new brain cells
  - Increases arousal
  - Causes better sleep
  - Accomplishment and improved physique make people happier
  - Improves psychological health

Biofeedback

- Biofeedback
  - Measures effort, magnifies effort, displays effort to individual
  - Overblown effectiveness



Relaxation and Meditation

- Improves headaches, hypertension, anxiety, and insomnia
- Death and heart attack rates declined for Type A individuals trained to alter thinking and lifestyle to a more Type B, relaxed manner
- Deep meditation actually changes brain function! (more left frontal lobe, less parietal lobe)

Faith and Spirituality

- At the beginning of human modernism religion and medicine were closely intertwined
- In time the two fields diverged, but there is a new trend to reconnect the two
  - Med schools offer spirituality and health courses and centers for spirituality, theology and healthy
  - Many professionals agree prayer, meditation, or other religions practices are beneficial
  - New surge in religious/health literature
- People belonging to religious communities tend to be healthier and live longer
  - Correlation, not causation. What might be some reasons? (see page 574 for answers)

Illness and Behavior

CASE STUDIES

Smoking is bad

- Tobacco kills nearly 5 million of 1.3 billion users (estimated to rise to 10 million) annually
- Each cigarette=12 min off your life
- Smoking is correlated with depression, chronic disabilities, and divorce

Causes of the smoking habit

- Usually begins during early adolescence
- Common among those with low grades, drop out of school, feel less in control, and have social contacts that smoke too
- Peer pressure
- Media pressure

Quitting

- Nicotine addiction (as addictive as heroin and cocaine…if not more so!)
- Dependency and tolerance
- Those most sensitive are most likely to develop a tolerance
- Withdrawal
  - Craving, insomnia, anxiety, irritability
- Reinforcing (classical conditioning)
  - Within 7 seconds nicotine cues release of epinephrine and norepinephrine, dopamine, endorphins
- There is a genetic link affecting responses to dopamine between smokers versus nonsmokers

Effectively Quitting

- Treatments include public health warnings, counseling, hypnosis, aversive conditioning, operant conditioning, cognitive therapy, support groups
  - Short, but not long-term effectiveness
- >50% US smokers have quit
  - Many attempts
  - Withdrawal subside over six months
- Overall smoking has decreased
  - Among high school dropouts and lower class smoking is still high
  - Socially taboo
  - In Asia smoking has skyrocketed! Why?
- See strategies on pg 580

Preventing Smoking

- Social Psychology
- Information about effects
- Information about influences
- Training in refusal skills through role playing
- Target developing countries and teens
- Raising taxes

Obesity

- Evolutionarily storing fat was good, now not so much
- Fitness>weight; however, obesity is more important than both
  - Diabetes
  - High blood pressure
  - Heart disease
  - Gallstones
  - Arthritis
  - Cancer
  - Shorter life expectancy
- Apple shape is worse than pear shape in terms of health
- Medicare classifies obesity as disease
- 6x more common in women and lower class!

Social Effects

- Stereotypes
- Social shame→lower SWB
- Obese individuals tend to make less money than their counterparts
- Bias is especially strong against women
- Some studies suggest weight discrimination is worse than race and gender discrimination

Physiology of Fat

- Fat Cells
  - Body fat is based on size and number of fat cells
  - Fat individuals have larger fat cells that divide to create more fat cells
  - Genetics also affect number of fat cells
  - Fat cells never disappear (although they may get smaller)

Physiology of Fat

- Set Points
  - Fat has a lower metabolic rate: takes less energy to maintain
  - Heavier people have higher set points
  - This explains the slow weight loss after the initial loss in a diet
- Metabolism
  - Resting rate of energy used
  - Fidgiters versus non-fidgiters
  - Largest reason for obesity

Genetics

- Clear correlation, but very complex
- Leptin
  - Leptin is produced as fat cells become full
  - More leptin→more activity and less food consumption
  - Could there be genes better or worse at this phenomenon?
  - Implications for medications?

Food and Activity

- Weight increase is correlated with TV
  - 2 hr increase in daily TV predicted a 23% obesity increase and 7% diabetes increase
- People in cities tend to be less obese than suburbanites
- Fast food and serving size
  - Freshman 15
- Since 1960 Americans grew 1 inch and gained 23 pounds!
  - 2004: US obesity is at 30% (World Wide=60% overweight)
  - New infrastructure is being designed and built to accommodate size
- Environment and habit are why we are more obese today

Losing Weight

- Often weight loss is not permanent, but can be
  - Fat cells are the same number, but abnormally small—almost like someone starved
- Most effective treatment is lifestyle change
  - See page 589 for strategies
- Most women say they are trying to lose weight (if not seriously trying)
- Solutions
  - Taxes on the bad
  - Subsidies for the good
  - Fast-food-free school zones
  - Advertising ban
  - Community activity areas
- There is value in accepting weight (personal well being, less stress, etc.)