

Psyc 101, Pomerantz
Section 13: Stress, health, and coping

Stress: the body's psychological and physical response to stimuli (*stressors*) that disrupt equilibrium / homeostasis.

- Clear link between the stress response and the fight-or-flight response of the autonomic (sympathetic) nervous system
- Short-term (acute) vs. long-term (chronic) stressors
- Stressors can be:
 - Physical (e.g., pain; cold pressor test): tend to be universal
 - Psychological (guilt; conflict)
 - Social (exclusion; shaming)
- Perception of stressor is what matters; objective reality is not the key.
- Stressor of the day: public speaking? teachers' red ink?

Biology of stress

- Hans Selye (1907-1982, U. Montreal):
http://www.youtube.com/watch?v=YJCeDtNh_Aw
- Selye's theory of stress: General Adaptation Syndrome (GAS)
- GAS has three phases:
 - (1) Alarm phase: sympathetic nervous system kicks in for fight or flight (parasympathetic gets inhibited)
 - Neurotransmitters epinephrine and norepinephrine are generated; they
 - Increase breathing, heart rate, blood pressure and sugar
 - Increase pupil dilation (improves vision in low light)
 - Increase palm sweat (better grip?)
 - Hypothalamus secretes a substance that causes release of glucocorticoids (another group of hormones)
 - Boosts metabolism, increases production of energy from glucose
 - Acts as an anti-inflammatory, helps cope with physical injury
 - Sharpens memory
 - (2) Resistance phase: body begins its response to the ongoing stressor
 - Digestion, etc. is slowed as resources are shifted into battle
 - Energy storage ceases, leading to sense of fatigue
 - Cortisol (a steroid hormone) helps restore balance
 - More glucocorticoids are released, depressing the immune system
 - (3) Exhaustion phase, when resistance phase goes on too long: resources become depleted
 - Survival value in "giving up the fight"?
 - Perhaps it's genuine damage rather than just exhaustion
 - E.g., cortisol can damage cells in hippocampus, harming learning, memory

- Selye's model still influential but has been modified over time: different stressors trigger different reactions.
 - Shelly Taylor: women not as driven as men by "fight or flight"
 - Childcaring, pregnancy
 - "tend or befriend": quiet the children, create social connections
 - Nonetheless, women show a GAS similar to men

Sources of stress

- Again, perceptions are the key
- Cognitive appraisal of stressor: Three elements
 - Primary: assessing actual likelihood of danger
 - Secondary: assessing what resources are available to deal with danger
 - Coping: selecting a course of action for dealing with the stressor
- Sense of control over a stressor
 - Perceived control is critical. Cf. pain management
 - Perceived lack of control => learned helplessness (Seligman)
 - <http://www.youtube.com/watch?v=gFmFOmprTt0>
 - Predictability is as important as control
 - Greater sense of control => improved health
 - Warnings of stressor: mixed bag (c.f., color-coded threat levels post 911) – too early leads to increased stress, too late means no time to act.
 - With catastrophic stressors: perceived control may boost stress (e.g., delegate control to physicians)
 - Current view: perceived control helpful mainly when one considers what could have been.
- Stress and internal conflict: Neal Miller
 - Approach-approach: chocolate vs. vanilla
 - Avoidance-avoidance: rock vs. hard place (max stress; leave the field)
 - Approach-avoidance: a single stimulus has both properties
- Stress and everyday life
 - First notion: only major negative events lead to stress
 - Second notion: even major positive events lead to stress (lottery winners)
 - Contemporary view: it's how the events are perceived that is key
 - Work as a source of stress: bosses, deadlines, information overload, floor plans, raises and promotions, loss of control, predictability => burnout
- Stress, personality types, and health
 - Type A personality: urgency, competitiveness, interpersonal hostility
 - Dubious link to coronary heart disease
 - Contemporary view: **hostility** is a predictor of stress-induced health problems
 - Mistrust
 - Expectation of harm by others
 - Cynical attitude

- Leads to: elevated heart rate, blood pressure, cortisol production, anger.
 - Guys tend to score higher on scales of hostility.
 - Anger management programs have proven to be somewhat effective.
- Stress and the Immune System: Psychoneuroimmunology
 - Immune system defends body against infection
 - Uses two classes of white blood cells
 - B cells (from bone marrow)
 - T cells (from thymus) – includes natural killer (NK) cell, which destroy damaged cells before they become tumors
 - Stress-induced glucocorticoids hinder formation of (or actually destroy) NK and other white blood cells: slows healing of wounds
 - Those people showing the greatest sympathetic nervous system reaction to stress also show the largest change in immune system functioning.
 - Major stresses => post-traumatic stress disorder (PTSD) in some people:
 - Involuntary re-experiencing of trauma in dreams, etc.
 - Elevated arousal
 - Avoidance of things associated with the trauma
 - <http://www.youtube.com/watch?v=FvFJgNevlzY>
- Stress and Disease: Cancer
 - Cannot cause cancer that we know
 - Can accelerate tumor growth, however, via suppression of immune system, NK cells; and via growth of capillaries supplying blood to tumors
- Stress and Disease: Heart disease
 - Stress increases blood pressure
 - In combination with narrowed arteries, this promotes *atherosclerosis* (buildup of plaque)
 - This in turn makes heart work harder to overcome resistance
 - Heart's hard work in turn causes damage to blood vessels, heart attack and/or arrhythmia.
 - Effective behavioral remedies: diet, exercise, stress management, social support
 - Depression also is associated with heart disease: faster heart beat, higher blood pressure, higher risk of heart problems. Treatment helps.
- Health-impairing behaviors: indirect effects on health
 - Smoking
 - Substance abuse including alcohol
 - Poor nutrition
 - Lack of exercise
 - Risky behaviors (no seat belts, unprotected sex, exposure to sun)

- Changing behavior: 5 stages (non-linear trajectory)
 - Precontemplation
 - Contemplation
 - Preparation
 - Action
 - Maintenance

Focus on boosting pro's early on in this stage model

Focus on reducing con's later on

- Coping Strategies
 - Vast individual differences in both stressors and in coping strategies
 - Problem-focused coping: work on the stressor when you think you can affect it
 - Active coping: try to remove or work around a stressor
 - Seek advice, assistance
 - Suppress competing activities (e.g., eliminate other stressors)
 - Emotion-focused coping: work on your reaction to the stressor if you think you cannot affect the stressor
 - Seek support groups
 - Vent your emotions by talking, writing (Jamie Pennybaker's studies on journal-keeping)
 - Cognitive reinterpret the stressor ("the challenge of work is good for me!")
 - Behavioral disengagement: tune out, avoid or deny the stressor; drop out
 - Mental disengagement: turn to other activities to distract attention
 - Thought suppression: doesn't work because of *rebound effect* (David Schneider – Dan Wegner's work: don't think about white bears)
 - Humor does seem to work: vents emotions, boosts NK cells levels
 - Laughter itself may not be the key
 - Instead it may be the cognitive reinterpretation of the stressor, e.g., mocking an authority figure
 - Aggression: when coping goes awry
 - Bad day at work, go home and kick the dog
 - Environment plays key role: noise, heat, crowding
 - Personality effects: Hostile attribution bias
 - Gender differences: male aggression is more often physical, female is more often social or relational
 - Hostile people are more likely to act aggressively
 - Hostility is not associated with low self-esteem; it often goes along with unrealistically high self-esteem and narcissism (Bushman study, 1998)
- Personality and Coping

- Hardy Personality: constellation of personality traits associated with health
- Commitment to themselves and their work, believe in themselves
- Sense of control over own lives
- View life events as challenges
- Less likely to become depressed
- High self-efficacy individuals become less ill in face of stressors
- Possible to teach hardiness, but it is not easy
- Linked to personality trait of optimism vs. pessimism
 - Optimists: more likely to use problem-oriented coping strategies
 - Pessimists: rely more on denial, avoiding dealing with the stressor
 - Optimism has a heritability of 25%