59a A&P: Psychoneuroimmunology

59a A&P: Psychoneuroimmunology

Class Outline

5 minutes	Attendance, Breath of Arrival, and Reminders
10 minutes	Lecture:
25 minutes	Lecture:
15 minutes	Active study skills:
60 minutes	Total

59a A&P: Psychoneuroimmunology

Class Reminders

ABMP Exam Coach

- "Access your ABMP account" using instructions on page A-74
- Familiarize yourself with ABMP Exam Coach, especially the "Study Subjects" section
- Preview the preparation assignments for MBLEx Prep classes (74a, 75a, 80a, 81a, 84a, 86a, 87a)

Assignments:

- 62a Deep Tissue: Outside Massages (due before class starts)
- 64b Executive Summary (due before the end of class)
  Packet pages 21-22; Sections 1-4 to be done ***in*** class.
  The completed Executive Summary to be handed in at end of class.

Exams:

- 60a Exam
- 62b Deep Tissue: Touch Assessment **Bring your grading sheet for evaluation A: 83**

Preparation for upcoming classes:

- 60a Exam
- 60b Chair Massage: Technique Review and Practice

Classroom Rules

Punctuality - everybody's time is precious

- Be ready to learn at the start of class; we'll have you out of here on time
- Tardiness: arriving late, returning late after breaks, leaving during class, leaving early

The following are not allowed:

- Bare feet
- Side talking
- Lying down
- Inappropriate clothing
- Food or drink except water
- Phones that are visible in the classroom, bathrooms, or internship

You will receive one verbal warning, then you'll have to leave the room.

59a A&P: Psychoneuroimmunology

Packet E - 135

Psychoneuroimmunology

Psychoneuroimmunology (AKA: PNI) Study of the interaction between psychological processes and the nervous and immune systems of the human body.

Overview of Communication/Control Systems

Central Nervous System: organs and ganglia send nerve impulses via neurons to skeletal muscle, cardiac muscle, smooth muscle, and glands.

Endocrine System: organs send hormones to target organs via the bloodstream.

Hypothalamus: the link between the Nervous and Endocrine systems.

Overview of Communication/Control Systems

Peptides Protein molecules released by neurons and cells of the immune system. They circulate in blood, lymph and cerebrospinal fluid attaching to receptor sites on other cells and affecting their behavior. They may excite, inhibit, or merely render unusable, the cells they attach to. *Some are taken into the nucleus of the cell, and affect its DNA expression.*

The PNI Communication Network

- Body-wide network that includes all major systems
- Continually communicates via “information substances” which are primarily peptides
- Coordinates body-mind functions including consciousness, memory, digestion, and immunity

Nodes

Nodes Concentrated areas of peptide receptors that allow peptides to influence memory, learning, and interpretation of reality. They are found in many places:

- Brain
  - Limbic area (emotions)
  - Cerebral cortex (interprets sensory input)
  - Amygdala (rage center)
  - Hypothalamus (hunger, thirst, anger, sleep, sexual behavior)
- G.I. Tract
- Endocrine glands
- White blood cells
- All cell membranes

Opiate Peptides (endorphin family)

- Chemically similar to morphine
- Produced by immune cells, GI tract, gonads, pituitary, and hypothalamus

Opiate Peptides (endorphin family)

- Can increase immune function, alpha waves (relaxation), feelings of happiness and are associated with states of expanded consciousness

Opiate Peptides (endorphin family)

- Released regularly in circadian rhythm – also from exercise, breathing, orgasm, smiling, laughing, exposure to art, beauty, and nature

- Found in the brains of fish, reptiles, birds, mammals, and insects

Stress

Stressor An event that occurs.

Stress Our response to an event. Some stressors produce a "stress response" in almost everyone such as loud noises, lack of sleep, and bad air.

Eustress Caused by a stressor that is perceived as a challenge, but the person maintains a sense of control over the situation.

Distress Opposite of eustress; the demand in the environment exceeds our control over it.

Stress

In 1936, Hans Selye observed that a variety of “noxious agents” introduced into the body over time produced the same syndrome of gastric ulcers, shrinkage of the thymus gland, lymph nodes and spleen, and over-activity of the adrenal glands.

Stress

External stressors:

- Lack of supportive relationships, change in family relations, divorce, death, change of living arrangement, overcrowding.

Stress

Internal stressors:

- Feeling of helplessness, hopelessness, low self-esteem, boredom, depression, fear of failure, unexpressed feelings (anger, resentment, hostility, grief), not living up to your expectations of yourself.

The Stress Response

- Beneficial in the short run if we need to fight or flee, but exhausting if prolonged
- Phase 1 (via nervous system)
- Phase 2 (via endocrine system)

The Stress Response

Phase 1 (via nervous system): the hypothalamus triggers the release of:

- Epinephrine from the adrenal medulla that increases:
  - Heart rate
  - Respiratory rate
  - Metabolic rate
  - Clotting ability
  - Blood sugar
  - Stomach acid
- Norepinephrine from the adrenal medulla that increases:
  - Blood pressure
  - Blood flow to skeletal muscle
  - NOTE: Long-term effects may include stomach ulcers, and heart disease

The Stress Response

Phase 2 (via endocrine system): triggers the release of:

- Cortisol from the adrenal cortex to:
  - Sustain high blood sugar and fat
  - Suppress inflammation and other immune function

- NOTE: Long-term effects may include diabetes, arteriosclerosis, sluggish immune function, and osteoporosis

Compounding

- A certain amount of stress is unavoidable because of our nervous system – designed to create boundaries, stabilize (inevitable) change, and hold onto (fleeting) pleasures and avoid pain

- But we often tend to compound our stress by loading unnecessary suffering (berating ourselves, guilt, worry, etc.) on top of the initial stressor

Stress Related Disease

- 70-80% of all physician visits are for stress-related problems
- 80% of all diseases are stress-related
- Anger and hostility are highly correlated with high blood pressure and coronary artery disease
- Feelings of isolation are correlated with significantly higher risk of early death
- Hardy personality (sense of personal control over life events, viewing change as challenge, committed to people and activities in life) correlates with improved immune function and 60% lower risk of early death

Managing Stress to Optimize Health and Happiness

- Recognize signs of stress
- Manage what is manageable (diet, exercise, relationships, sleep, etc.)

Managing Stress to Optimize Health and Happiness

- Make different choices about your Thoughts and Feelings
  - First there are Feelings
  - Next there are Thoughts for observing, analyzing and considering
  - The cycle continues as you have Feelings about your Thoughts, and Thoughts about your Feelings

- We can learn to *exercise choice over how we respond to our thoughts and feelings*. This begins by observing how our mind works, and noticing our patterns.

Managing Stress to Optimize Health and Happiness

- Are we taking things personally that may not be intended to insult us?
- Are we allowing ourselves to unnecessarily feel humiliated or offended by the actions or opinions of someone else?
- Are we projecting a negative outcome on something that has not happened yet?
- Are we looking to lay blame?

Managing Stress to Optimize Health and Happiness

- Are we actually "choosing" to experience these "unproductive" thoughts or "unpleasant" feelings? There is some kind of "payoff" for this habitual behavior. Perhaps it allows us to at least control events.

Managing Stress to Optimize Health and Happiness

We all have habitual patterns of thinking and feeling, learned long ago, which may not serve us or others, and can be replaced through repetition of more functional thoughts or healing practices. The brain is more verb than noun, and can be changed!

Cues that we are experiencing or creating stress

- Breath is short
- Blood pressure is going up
- Feeling irritable, angry, blaming, negative
- Projecting anger out or in
- Getting ready to complicate an interaction
- Procrastinating

Strategies for making change in the moment

- Tune into and deepen breathing
- Ask for a break (to relax and think)
- Relax what you can
- Do not respond immediately
- Try to step outside the interaction and “see” it differently

Strategies for making change in the longer term

- Get out of the rushing stream of events regularly
- Breathe and relax
- Meditate/pray (repetition of sound or movement pattern)
- Receive bodywork
- Get out in nature (water)
- Try on different choices, try adopting new attitudes
- Be committed to treating yourself as well as your dearest love
- Be gentle with yourself, and persist

59a A&P: Psychoneuroimmunology