Health Psychology

Psychology 46.339 (01)
Summer 2007
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Monday July 9:
Lecture 2
Prep. Guide 1

Respiratory system

3 functions
- Take in oxygen
- Excrete CO₂
- Regulate blood composition
Disorders
- Hay fever, Asthma
Diseases
- URIs – viral, bacterial
- Pneumonia
- SARS
- Chronic conditions: COPD, TB, Lung cancer

Digestive system

Functions
- Converts food into heat and energy via metabolism processes
Disorders
- Gastroenteritis
- Peptic ulcer
- Hepatitis
- Irritable bowel syndrome (IBS)
  - No clear organic cause
- Inflammatory Bowel Disease (IBD)
  - Colitis and Crohn's disease
  - Chronic, organic basis
**Digestive System**

- Consists of the esophagus, stomach, small intestine, large intestine, liver, gall bladder, pancreas, and appendix.

**The Renal System: Overview**

- Consists of the kidneys, ureters, urinary bladder, and urethra.
- Kidneys regulate bodily fluids, primarily they produce urine.
- Urine contains surplus water, surplus electrolytes, waste products from metabolism of food, and surplus acids.
- Sodium and Potassium are key electrolytes.

**The Renal System: Disorders**

- Urinary tract infections – if untreated they may lead to more serious infections.
- Acute glomerular nephritis – usually a secondary response to a Strep infection
- Tubular necrosis – when cells in the tubules of the kidneys are destroyed then acute renal shut down can occur.

**The Immune System**

- Function is to protect the invasion of foreign bodies into our system
- Transmission of disease via infection
- 4 routes
  - Direct transmission - physical
  - Indirect transmission - environmental
  - Biological transmission – via other live agent
  - Mechanical transmission – via carrier
The Immune System

**Antigens**: an invading microbe that is foreign to our physiology

**Pathogens**: an antigen that has the potential to cause disease

Infections can be localized, focal or systemic
- Primary infections may lead to secondary infections

Immune system action to eliminate an antigen can be **specific or non-specific**

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The Immune System: **Immunity**

- Body’s resistance to injury from invading organisms
  - Develops naturally or artificially
- Temporary natural immunity
  - when breast fed
- Natural immunity
  - acquired through disease.
- Artificial immunity
  - acquired through vaccinations/inoculations

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**Immunity**

**Specific or Acquired Immunity**
- i.e., acquired after birth
  - memory, specificity, tolerance
- Via antigen-antibody reaction

**Immune System memory**: certain cells learn to recognize antigens that they have encountered before

**Specificity**: cells only respond to specific antigen

**Tolerance**: cells do not react to “the self”, but only attack antigens which are “non-self”

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**Non-specific Immune Response**

2 General mechanisms:

- Phagocytosis & Inflammation

1. **Phagocytosis**: white blood cells consume antigens
   - Attachment --> ingestion --> killing --> digestion

2. **Inflammation**: antimicrobial substances that kill antigens are released by damaged cells
- Fluids carrying white blood cells enter the infected area and help attack antigens
2 Types of Immunity

1. Humoral Immunity: B lymphocytes produce antibodies to attack antigens
   - Most effective for viral & bacterial infections
   - Special B cells called memory B cells develop recognition of specific antigens
   - T lymphocytes & helper T cells help B cells
   - Helper T cells (CD4) produce interleukins to help speed up division of B cells

2. Cell-mediated Immunity: cells battle cells
   - Cytotoxic T lymphocytes secrete chemicals to kill antigens and infected cells
   - Natural killer (NK) cells seek and destroy infected, cancerous or altered cells (e.g. read as “non self”)
The Immune System: Disorders

- AIDS
  - progressive impairment of immunity
- Cancer
  - depends heavily on immunocompromise
- Infectious Disorders
  - at one time thought to be acute problems ending when their course had run
  - new developments merit closer look
  - Terrorism concerns: smallpox and other agents

Immune System

Disorders

- Autoimmune disorders
  - Characterized by response that attacks body’s own tissues
  - Causes include genetic predisposition, infectious agent trigger
- Examples
  - Lupus (SLE)
  - Fibromyalgia
  - Sjogren’s Syndrome
  - Arthritis

Responses to Stress

Short and long term consequences

Physiological responses to stress
- Hard-wired, automatic, little control once set in motion

Behavioral responses to stress
- Reflect underlying physiological changes
- Learned component

What physical sensations or changes do you experience when you are stressed?

The Pituitary-Adrenal-Axis

cortisol exerts a negative feedback effect on the hypothalamus that inhibits further release of CRF

- hypothalamus
- anterior pituitary
- adrenal cortex

CRF (corticotrophin releasing factor)
ACTH (adrenocorticotrophic hormone)

cortisol increases: blood glucose, blood pressure, amino acids

cortisol
Physiological responses to stress

But what do YOU experience psychologically when you are stressed?

Endocrine responses to Stress

Endocrine System → Pituitary & Thyroid glands
Hypothalamus → corticotropin-releasing factor (CRF)
Pituitary → adrenocorticotropic hormone (ACTH)
ACTH acts on Adrenal Cortex → corticosteroids = glucocorticoids + mineralocorticoids
Glucocorticoid = cortisol → helps provide energy
Corticosteroids suppress inflammation & the immune system response over time
Thyroid → thyroxine to increase fat metabolism

SNS responses to Stress

• Hypothalamus triggers Sympathetic arousal via release of catecholamines (adrenaline and noradrenaline) in adrenal medulla
• Limbic system (emotions) & reticular formation (filters info) also involved

Psychophysiology of Stress: Endocrine & SNS

SNS & adrenal medulla work synergistically to increase cardio-vascular activity, respiration, perspiration, muscle strength, & mental alertness - sympathoadreno-medullary system (SAM)
Hypothalamic-pituitary-adrenocortical (HPAC) system is the 2nd way in which the endocrine system is involved in the stress response
• Response to stress is slower than that of NS, but effects generally last longer
• WHY?
Health Promotion: An Overview

- The World Health Organization defines health promotion as "the process of enabling people to increase control over, and to improve, their health." (WHO, 1986)
- Cost effectiveness
  - Less costly than disease prevention
- Occurs through individual efforts, interaction with the medical system, mass media, and legislation

What are health behaviors?

Health behaviors
- Behaviors to maintain or enhance health
- Often referred to as “Wellness Behaviours” esp. when focused on positive behaviors

Health habits
- Firmly established health-related behaviors
- When do they form?

Health Behaviors

Vickers, Conway, and Hervig (1990) proposed that health behaviors form replicable dimensions that can be classified into two broad domains

Preventive health behaviours
- Wellness, Health Maintenance & Enhancement
- Accident Control

Risk-taking behaviours
- Substance Risk
- Traffic Risk
Preventive Health Behaviors

Wellness, Health Maintenance & Enhancement
- Exercise
- Eating healthy
- Avoiding bad foods
- Taking vitamins
- Seeing doctor for regular check-ups
- Seeing dentist for regular check-ups
- Watching one's weight
- Taking natural supplements
- Using dental floss regularly
- Gathering information about health
- Getting proper sleep

Accident Control
- Having emergency numbers nearby
- Destroying old or unused medicines
- Having a first aid kit
- Fixing broken things around the house right away
- Monitoring the condition of electrical appliances, car, etc. to avoid accidents
- Learning first aid techniques

Unintentional Injuries in Canada
- Unintentional injuries are the leading cause of death for Canadians between the ages of 1 – 44 and the fourth leading cause of death for Canadians of all ages
- Each year, Canadians spend about $8.7 billion due to unintentional injuries
- As many as 9 out of 10 unintentional injuries can be prevented
Procrastination, Health & Safety Behaviours

• Previous research suggests that procrastination is associated with poor health behaviours
  – Perform fewer wellness behaviours
  – Drink & smoke more
  – Visit the doctor less often

• WHY?
  – Procrastinators may lack a long term perspective
  – They may be less conscientious about daily tasks
  – They feel less able to follow through with health-relevant tasks.

Procrastination & Household Safety Behaviours

Community based study to examine links between procrastination & the performance of household safety behaviours.

Demographics
• N = 261, community-dwelling adults
• Mean age = 34.0 years, SD = 12.6 years
• 76 males, 184 females (1 data not available)

Recruitment
• Community postings – mail-in survey (n = 41)
• Internet message boards – online survey (n = 220)

Measures

Procrastination
• Lay’s General Procrastination scale (GP; Lay, 1986); 20 items, α = .90

Household Safety Behaviours; 8 items, α = .84
‘I make sure that broken things around the house are fixed right away.’
‘I destroy/dispose of old or unused medicines.’

Health-Specific Self-Efficacy
• Control Beliefs Inventory (CBI; Sirois, 2003); 8 items, α = .80
  ‘I know that I can do what is necessary to improve my health.’

Consideration of Future Consequences
• Consideration for Future Consequences (CFC; Strathman et al., 1994); 12 items, α = .82
  ‘I am willing to sacrifice my immediate happiness or well-being in order to achieve future outcomes.’

Results

Table 1. Zero-order correlations between procrastination and safety-related variables

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Note. CFC = Consideration for Future Consequences.
*p < .05, **p < .01
Mediation Analysis

![Diagram showing the relationship between procrastination, importance of household safety, and household safety behavior.](image1)

**Figure 3.** Mediational model of the relationship between procrastination, attitudes towards household safety, and household safety behavior. Values reflect standardized regression coefficients.

*p < .05, **p < .01

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Mediation Analysis

![Diagram showing the relationship between procrastination, health-specific self-efficacy, and household safety behavior.](image2)

**Figure 4.** Mediational model of the relationship between procrastination, health-specific self-efficacy, and household safety behavior. Values reflect standardized regression coefficients.

*p < .05, **p < .01

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Mediation Analysis

![Diagram showing the relationship between procrastination, consideration of future consequences, and household safety behavior.](image3)

**Figure 5.** Mediational model of the relationship between procrastination, consideration of future consequences, and household safety behavior. Values reflect standardized regression coefficients.

*p < .05, **p < .01

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**Household Accidents**

- Has there ever been an accident in your household that *could have been prevented* had you or someone else taken the necessary precautions?

- 29% of sample reported previous preventable household accidents
  - 62% of household accidents involved injury
  - Those who had experienced a previous household accident also had higher procrastination scores
Practicing and Changing Health Behaviors

- Demographic factors
- Age
- Values
- Personal control
- Social influence
- Personal goals

Socialization influences early health habits

Prevention

Primary Prevention
- Actions taken to avoid disease or injury.
- Examples?

Secondary Prevention
- Actions taken to identify and treat an illness early.
- Includes patient’s symptom-based behavior.
- Examples?

Tertiary Prevention
- Involves treatment and rehabilitation of a disease that already has clinical symptoms

Changing Health Habits

Barriers to changing health habits:
- Poor health habits are difficult to change.

WHY?

Changing Health Habits: Attitude Change and Health Behavior – Fear Appeals

If people are fearful, then they will change behavior to reduce fear.

Research has found this doesn’t always hold.
Too much fear may undermine change.

WHY?????
Changing Health Behaviors

Message Framing
- influences how it is received
- fear appeals
- role of individual differences

Changing Health Behaviors

Intervention
- Childhood and adolescence
- Vulnerable periods
- Vulnerable populations
- Early identification is key – WHY?
- Problems: People don’t always perceive risk accurately
- Short term vs. long term costs and gains

Cognitive-Behavioral Approaches
- Self-monitoring & self-observation
- The Self-Control of Behavior
  - Self-reinforcement
    - Positive self-reward (adds a desired factor)
    - Negative self-reward (removes an aversive factor)
    - Positive self-punishment (adds an unpleasant stimulus)
    - Negative self-punishment (removes a pleasant stimulus)
- Contingency Contracting
  - Contract regarding rewards and punishments is with another individual

From Health Beliefs to Health Behaviors
- The Health Belief Model
  - health behaviors are explained by our health beliefs
- The Theory of Reasoned Action
  - other people influence beliefs about a behavior, & behaviors are preceded by intentions/attitudes
- The Theory of Planned Behavior
  - perceived behavioral control influences behaviors
Health Belief Model

Health Threat Present?

- YES
  - Behavior can reduce threat?
    - YES: Behavior Change
    - NO: No Behavior Change

Health Threat =
- personal vulnerability + severity of consequences

Belief that action will reduce threat =
- efficacy belief + cost/gain belief

The Health Belief Model

Health behavior =
- belief that a health threat exists + the belief that action will lessen that threat