Behavioral Science Basics

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ANIMAL MODELS AND HUMAN BEHAVIOR

INHERITABILITY

If physical characteristics are inherited, could behavioral patterns be inherited as well?

• isolation experiments (animal is raised in isolation from birth) are only way to determine whether behavior is innate or learned; this type of experiment is impossible to conduct in humans.

A. Inherited behavioral patterns (independent of experience of animal) - expressed in their entirety first time they appear, without practice or experience.

• some inherited behaviors are further modified by experience (i.e. practice) or physical development.

• in some instances (e.g. in hybrid animals), behavioral patterns (called fixed action patterns) are maintained even without their functional consequences.

• in humans, certain movements are independent of experience:
  1) Moro’s reflex (phylogenetic remnant of movements used by subhuman primates in cling to their mothers).
  2) smiling accompanied by direct gaze (occurs even in blind infants).
  3) locomotion (innate behavior that is modified by both practice and physical development).

B. Learned behavioral patterns (dependent on experience - are learned over time) - increasingly larger part of behavioral repertoire in phylogenetically higher animals (particularly mammals).

• advantage - greater ability to adapt to changing environmental conditions and novel situations.

• disadvantage - increased period of dependency of infant while behavioral repertoire is acquired (i.e. greater amount of time spent by parents in offsprings rearing –> smaller number of offspring [lower reproductive rate]).
**SEXUALITY**

**MOTIVATION & CONSUMMATORY BEHAVIORS**

- **directly related to survival** of individual and species (for this reason, these behaviors are likely to be examples of fixed action patterns and are likely to be inherited in phylogenetically lower animals).

**EATING**

- large part of behavior of many animal species is devoted to finding, acquiring, and ingesting food.
- following eating behaviors occur in rats (rats are omnivorous similar to humans):
  1. **nephotic drive** - when rats encounter novel food, they sample small amount before eating substantial quantity (limits ingestion of poisonous substances).
  2. **conditioned taste aversion (CTA)** - rats avoid substances that cause illness; learning plays role; CTA is strongest when illness closely follows food ingestion.
  3. **selecting nutritional diet** - rats that have access to variety of foods self-select balanced diet; learning plays role (as in CTA); children also self-select adequate diet under conditions that do not include availability of highly palatable foods (e.g. sweets).
  4. **dietary obesity** - when rats are given highly palatable diet containing typical human foods and sweets (e.g. cookies), they become obese because of excess food consumption.
  5. **specific hunger** - rats that are deprived of specific nutrients* attempt to obtain and ingest foods that contain these nutrients, most specific hunger appears to be learned (N.B. sodium-specific hunger is not acquired because there are specific taste receptors for sodium).

*Such as calcium, thiamine, sodium.

**HUNGER** - **physiologic control of eating behavior**

- Hunger - internally perceived state that is associated with increased propensity to ingest food in animals, internally perceived state cannot be measured, nor it can be shown to exist → in animals, term 'hunger' is used to describe propensity to ingest food, not internal state.
  1. **Peripheral signals** (e.g. oopharyngeal and gastric sensations) - little importance (however, gastric distension and food entry into intestine contribute to satiety).
  2. **Variety of chemical signals** can regulate hunger and satiety;
   - e.g. glucose, insulin, free fatty acids, ketone bodies, glucagon, cholorectokinin, calmin, norepinephrine.
   - **central control mechanisms** are located primarily in hypothalamus;
     - glucoreceptors in ventromedial hypothalamus respond to changes in glucose use and to levels of insulin and free fatty acids;
     - lesions of ventromedial hypothalamic cause syndrome of overeating and extreme obesity (altered body weight set point).
     - bilateral lesions of lateral hypothalamus cause apathy, grooming impairment, sensory neglect (i.e. normal orienting responses to sensory stimuli);
     - electric stimulation of lateral hypothalamus produces immediate vigorous eating, drinking, and other behaviors.

**DRINKING**

1. **Primary drinking** - response to physiologic need: a. **DEHYDRATION-induced drinking** (osmotic thirst) → via hypothalamic osmoreceptors sensitive to cellular dehydration.
   b. **HYPOVOLMEME drinking** (volumetric thirst) → baroreceptors in great veins; several additional reflexes occur:
      1. (vasopressin release → water reabsorption from urine).
      2. (norepinephrine and epinephrine release → heart rate and vasokonstriction).
      3. (rein release → angiotensin II acts on hypothalamus & submarginal organ → drinking).
   - both rats and humans compensate for water deficit slowly; dogs compensate for water deficit rapidly and accurately by ingesting large quantity of water in single drinking session.
   - how do animals humans know how much to drink? by oral measuring, cooling of mouth and ingested volume.
   - **dry mouth** may affect timing of drinking behavior (but not total amount of water consumed); case report describes man born without salivary glands → he drank frequently, but ingested normal quantities of water.

2. **Secondary drinking** - not motivated by actual physiologic need; common in humans;
   a. drink in advance of dehydration (caused by ingestion of dry food).
   b. palatable fluid.
   c. social habits (coffee breaks, tea-time).
   d. pharmacologic effects (alcoholism - most common form of abnormal drinking behavior in humans).

**SEXUAL AND REPRODUCTIVE BEHAVIOR** - determines species survival

- species that are low on phylogenetic scale have more rigid and stereotypical mating behaviors.
- sex hormones influence sexual and reproductive behavior patterns that are not expressed in many cases.
- despite direction of sexual behavior patterns is determined earlier, expression of these patterns is stimulated at puberty.
- in males, sexual behavior is strongly influenced by sociocultural factors, and it serves purposes other than reproduction (e.g. recreation, emotion express between individuals).

**Sexual Development**

- in utero (sexual differentiation) presence of inappropriate sex hormones during sexual development period may produce abnormal individuals.
- Sex hormones influence sex typing of brain during fetal development
  - e.g. androgen insensitivity syndrome (deficient male hormone response to androgen) - individual is born with feminized external genitalia; such individuals are raised as females and as adults behave as females.
  - this differentiating effect is seen not only for sexual behavior, but also for other gender-specific behavioral patterns.
  - e.g. although testosterone normally stimulates fighting in male mice, it does not in animals that are genetically male but do not respond to androgen (e.g. in dwarfs that are not differentiated males).
  - puberty occurs at ≈13 years; although direction of sexual behavior patterns is determined earlier, expression of these patterns is stimulated at puberty.
  - three sexes: neurologically undeveloped secondary sexual characteristics and stimulate or inhibit sexual behavior (if sex hormones are absent during puberty, secondary sex characteristics and sexual behavior patterns are not expressed).
  - e.g. 5a-reductase deficiency (genetic male lacks enzyme to convert testosterone to dihydrotestosterone for development of male external genitalia) - individual is born with ambiguous or feminized genitalia and is raised as female; however, testosterone causes development of secondary male characteristics (growth of penis, voice lowering, development of chest) → individual usually adopts male gender identity and eventually makes adequate adjustment.

**Sexual Behavior**

- control of sexual behavior by hormones is direct and pronounced in lower animals; in higher animals, hormones play less important role, and neuronal, social, and environmental factors are more important.
- N.B. in higher animals, presence of sex hormones during sex development influences connections of neurons in preoptic area of hypothalamus, which can have lasting effects on sexual behavior.
- normal sexual and maternal behavior in humans is dependent on environmental and social interactions during infancy.
aggression
- aggression in animals depends on stimulus (e.g. aggression elicited by pain may differ from aggression exhibited by predator in search of prey).
- in rats, two types of aggression are caused by stimulation of hypothalamus:
  - stimulation of lateral hypothalamus → affective rage-like attack.
  - stimulation of lateral hypothalamus → quiet biting attack (predator response without rage-like features).
- amygdala has important role in aggression and emotional response.
  - bilateral removal of amygdala of monkey causes Klüver-Bucy syndrome, (includes lack of fear of natural enemies, etc); one case of Klüver-Bucy syndrome is reported in human.
- role of amygdala in human aggression is controversial; some violent patients have tumors or other abnormalities of amygdala; amygdala has been removed in some extremely violent patients, although this surgery produces changes in addition to reduction in violent behavior.
- clinically, there appears to be some correlation between temporal lobe seizures and aggressive behavior.
  - bilateral temporal lobectomy results in less aggressive behavior in some patients.
  - in humans, lesions of orbitofrontal cortex may cause aggressive behavior and disregard for societal rules.

Self-stimulation of Brain
- differs from other motivated behaviors that is not directly related to survival.
- motivated by artificial rewards or reinforcers, such as electric stimulation of brain.
- in rats, most vigorous intracranial self-stimulation is obtained from areas with connections to medial forebrain bundle, including lateral hypothalamus.
- effects of intracranial self-stimulation are dramatic; rapidity and persistence of response might occur because stimulation does not satiate, so as natural rewards.
- in one well-known rat, rat stimulated itself 2000 times per hour for 28 hours, slept continuously for almost 1 day, and then resumed self-stimulation at previous rate.
- stimulus that supports self-stimulation often induces eating or drinking responses; brain stimulation that produces rewards does not necessarily cause cessation of eating, but rather, seems to cause motivation to eat.
- in humans, pleasurable sensations are elicited mainly from stimulation of septal area; although sensations are pleasurable, they are not overwhelming and do not exceed pleasurable sensations obtained by natural rewards.
- intracranial self-stimulation is used to study drugs of abuse.

Animal Models of Substance Abuse
- in addition to primary reinforcers, substances other than food and water may sustain behavioral responses in animals and humans.
- animal models to test drugs for their abuse potential
  a. self-administration - animals learns to press lever or nose-poke (behavior exhibited by rats in their normal behavior) to receive drug infusion (test required to obtain increased over time to determine how much animals will work for drugs; for drugs which animals of various species (nonhuman primates, dogs, rats) will work include opiates, stimulants, and nicotine.
  b. choice paradigms
    - condition choice preference - animal is given choice between going into chamber associated with test substance (e.g. amphetamine) and another chamber associated with control substance (e.g. saline).
    - animal is given choice between drug or primary reinforcer (such as food).
  c. conditioned negative punishment paradigm - animal trained in operant box with two levers (responses on one lever produce brief stimulation followed by drug injection; responses on other lever have no effect); after animals learn to self-administer drug, pressing active lever produces stimulation followed by saline injection (testing phase); responses on levers during testing phase are compared with responses before drug administration - number of responses on one lever is reduced, which suggests that test substance suppresses incentive properties of neutral stimulus.
  d. self-stimulation paradigm - after animal is trained to self-stimulate, experimenter controls intensity (current) and duration of stimulus - minimum duration required to maintain behavior (threshold criterion) is determined.
    - after administration of stimulant, such as cocaine, threshold decreases whereas administration of dopamine antagonist increases threshold duration.
    - such studies can identify drugs that have limited potential for abuse.

Conflict Situations
- conflict occurs when alternatives exist; unresolved conflict → stress occurs.

Classification of conflict situations depend on behavioral alternatives:
- 1. Approach-approach conflict occurs when incompatible approach responses are present (e.g. animal has access to more than one sexual partner).
- 2. Approach-avoidance conflict - occurs in presence of incompatible approach and avoidance responses (e.g. animal must choose between open area and is susceptible to predators).
- 3. Avoidance-avoidance conflict - occurs when incompatible avoidance responses are present (e.g. animal must choose between uncomfortably cold area and area that is open to predators).

Behaviors in conflict situations:
1. Suppression of lower-priority responses
   - acute stress: brief period of 25-30% of day grooming and resting in сумм.; however, in winter, when food is less plentiful, brief 80% of day feeding, so less time is available for other activities.
2. Preparatory movements
   - components of alternative behaviors that are in conflict (i.e. may alternate between preparatory movements for each behavior).
3. Displacement behavior occurs when animal is prevented from executing prominent behavior (e.g. behavior may be suppressed by sudden appearance of competitor → animal suddenly exhibits apparently irrelevant behavior, such as grooming or pecking at ground); in humans, due to societal constraints, other behaviors, such as vigorous exercise, substitute for aggressive behavior.
4. Humans adapt unresolved conflict differently:
   - a) action aimed at changing person's perception of stressful event (e.g. practicing before giving speech).
   - b) palliation - addressing symptoms of stress (e.g. taking tranquilizer before giving speech).
   - c) intrapsychic techniques (Freud described defense mechanisms, which are unconscious mental techniques that are used to protect ego from anxiety): denial, rationalization, displacement, repression (e.g. person giving speech may dismiss importance of situation by rationalization).

Animal Models of Psychiatric Disorders

Conflict and Experimental Models
- animal is evaluated with discrimination tests (e.g. animal must discriminate between two different, but similar, tones) → discrimination is gradually made more difficult → at some point, animal may show inappropriate behavior (experimentally conditioned NEUROSIS).
conditioned neuroses are most likely to develop when:
1) strong motivators, such as shock, are used.
2) positive and negative stimuli are alternated without repetition.
3) stimuli are presented rapidly.

- experiment uses motivator (such as food) but requires animal to endure threatening or painful situation to obtain food.

- stimulus use (trials use) - animals trained to press lever to obtain food, but only some of lever presses are rewarded with food, during some periods, all lever presses are rewarded, but animals are also shocked each time they press lever; light signals shock periods, and lever pressing is normally suppressed.

- test is useful model of treating ANXIETY AGENTS - drugs (such as benzodiazepines) which reduce anxiety in humans, increase lever pressing during shock periods of this test.

- some species have naturally occurring behavioral disorders of grooming (semblable obsessive-compulsive disorder in humans):
  1. Canine acral lick dermatitis occurs in some breeds of dogs (e.g. setters, German shepherds) - dogs lick their paws excessively - hair loss and ulceration.
  2. Some avian species engage in excessive preening and feather plucking.

- some nonhuman primates show excessive autistic grooming and trichotillomania (hair pulling).

- such animals perform poorly in maze-learning tasks designed to measure cognitive function and attentional processes.

- experimentally induced lesions of nucleus basalis magnocellularis and medial septal area (anatomical analogues of nucleus basalis of Meynert) are used to reproduce some of pathologic changes observed in Alzheimer's disease.

- some animals perform poorly in maze-learning tasks designed to measure cognitive function and attentional processes.

- maternal separation of young animals in nonhuman primates: initially, protest behavior is observed (increased vocalizations and increased activity with attempt to return to mother) - later, despair, or depression, occurs (animals are socially withdrawn and hypoactive, reduce food and water intake, spend more time engaged in self-directed behaviors + neurobiologic changes [changes in heart rate, body temperature, sleep behavior, adrenocortical responses]).
  - similar symptoms are observed in children who are neglected or abandoned for long periods.

- learned helplessness - avoidance of shock becomes impaired because of prior exposure to unavoidable shock.
  - in a new testing situation, in which animals can escape shock, animals that previously received inescapable shock passively accepted shock and did not learn to escape (attributed to fixation of expectation that outcome of subsequent situations cannot be controlled).
  - such animals show (in addition to deficits in shock avoidance) weight loss and anorexia, reduced aggression, deficits in social and sexual behavior - resemble major depressive disorder.
  - learned helplessness occurs in humans in laboratory situations (subjects are given problem-solving tasks, but experiment is structured so that subjects cannot succeed; after subjects realize that they cannot control outcome, they typically stop attempting to solve subsequent problems).
  - learned helplessness can be prevented by prior exposure to escapable shock (esp. when exposure occurs in infancy).

- antidepressants and electroconvulsive therapy reverse learned helplessness in rats.

- behavioral changes induced in animals by STIMULANT DRUGS (such as phenylcyclidine, amphetamine) are used as models of schizophrenia - useful for testing antipsychotic drugs.

- Hippocampal lesions are used to augment effects of stimulant drugs or to produce behavioral abnormalities as in schizophrenia.

- behavioral disorders related to mental disorder (schizophrenia).

THEORIES OF MIND

1. PSYCHOANALYTIC (PSYCHODYNAMIC) THEORY, s. FREUDIAN THEORY

- based on concept of conflict among forces within mind (intrapsychic conflict).

- theory is work of Sigmund Freud (1859-1939) that began in early 1890s; subsequent work has greatly added to and changed many of Freud's initial concepts.

- theory originally developed as explanation of behavior and symptoms known as neuroses (e. g. phobias, obsessions, hysteria) that were understood as result or solution of intrapsychic conflict between repressed childhood sexual wish and force of conscience.

- PSYCHOANALYSIS - body of psychiatric concepts, methods, and technique for treatment of certain mental disorders and method for learning about mental process.

- unconscious mental process is key concept of psychoanalytic theory - great deal of mental activity occurs outside of individual's awareness, but is influential in determining conscious thought and behavior.

- unconscious mental activity includes thoughts, wishes, urges, feelings, and fantasies that would be considered unacceptable or dangerous if they became conscious or if individual acted on them.

- personality of those who are considered unconscious:
  1) conscience (superego) - provides judgment associated with feelings of guilt or shame.
  2) defenses (e. g. denial, projection).
  3) automatic behavior (e.g. driving home from work without thinking about it).

- PSYCHIC DETERMINISM - all mental activity (conscious and unconscious) is meaningful and purposeful and is connected with previous life experiences - no mental activity (behavior) is random, accidental, or meaningless (unless it is caused by abnormal brain activity, such as seizure).

- DEFENSE MECHANISMS:

- motivating forces behind thoughts and behaviors; originate from instinctive processes and are experienced as urges, wishes, and fantasies, two major categories of drives:
  1) sexual drive (libido).
  2) aggressive drive.

- drives press for discharge and associated feeling of release and gratification.

- drives and methods available for discharge are in stages, known as psycho-sexual stages.

- Psychosexual stages - gradual, sequential emergence of sexual drive (instinct) from infancy (infantile sexuality) to adulthood (genital sexuality); stages reflect interaction between physical and nervous system maturation and individual experience (development).
1. Oral stage (birth – 1½ years) - primary means of drive discharge and gratification is through tactile and oral behaviors, such as sucking and feeding.

2. Anal stage (1½ + 3 years) - sphincter control is achieved and primary focus shifts to anal zone and behaviors associated with expulsion and retention.

3. Phallic (oedipal) stage (3 – 6 years) - genitals become primary source of interest, discharge (pleasure), and organization of urges into wishes and fantasies; characteristic behaviors include curiosity, exhibitionism, and sexual inhibition.

4. Oedipus complex (central theme of this stage and core concept of early psychoanalytic theory) involves intrapsychic conflict among father, mother, and child in which child wishes to have possession of parent of opposite sex; wish includes desire to exclude and replace same-sex parent, who is perceived as rival.

- Conflict results from fear of parental displeasure and retaliation and from attachment to same-sex parent.
- Boys experience this fear as castration anxiety, girls fear loss of mother's love and approval.

- Oedipus complex passes at 6 years of age - child relinquishes desire for parent of opposite sex and resolves to grow up to be like parent of same sex; child also identifies with authority of parent, and internalized conscience (superego) develops.

5. Latency stage (6 years + onset of puberty) - drive interests are invested in peer relationships, socialization, and acquisition of knowledge and skills (e.g. athletics).

- Period is characterized by strict conscience and strong defenses, such as reaction formation (e.g. I hate girls),introjection (e.g. supererothems), and displacement (e.g. competition through involvement in Little League instead of with father).

- Fantasies are common during this stage; in "family romance" fantasy, child imagines that he is not product of his own, deceived parents, but that he has "real" parents who are in love and powerful; child may have imaginary companion who is individual (sometimes twin) or animal that provides companionship, love, and attention.

6. Genital stage (beginning of onset of puberty) - only stage that is associated with explicit neuroendocrine and biosomatic maturational components.

- Drives, aims, and objectives of earlier stages are integrated as components of foray into primary genital sexuality.

DEFENSES

- Radical operations that develop and function outside of awareness.
- Help people to ward off anxiety (danger) and maintain sense of safety, well-being, and self-esteem.

- Defenses may emerge episodically (as in reaction to traumatic event); may become habitual as part of individual's personality; or may become fixed as part of neurotic symptom.

- Defenses are classified (in order from earliest and most primitive to later and more complex):

  1. Dental - blocking perceptual information from awareness or conscious acceptance.
     - E.g. woman refuses to believe that her father is seriously ill.
  2. Projection - attribution of unacceptable inner wish, feeling, or thought to another person or entity; probably common in individuals who believe that their angry or sexual wishes are unacceptable; it is core component of paranoia.
     - E.g. woman experiences anger toward her husband; tells him it is toward you.
  3. Splitting - perception of individuals as all good or all bad.
     - E.g. woman sees herself as圣人 and viles rival as evil.
  4. Repression - urges, thoughts, wishes, or feelings that individual considers unacceptable or dangerous are maintained at unconscious level.
     - E.g. child is ashamed of sexual curiosity but is not able to be sexuаlly active or express feelings that involve sexual excitement.
  5. Reaction formation - exaggerated recognition of only one side of attitude or relationship.
     - E.g. woman is aware only of having younger sister; never of any resentment or rivalry.
  6. Isolation of affect - separation of thought or event from difficulty or painful feeling.
     - E.g. woman acquires sexual activity and is unable to feel guilty or shame.
  7. Reaction formation - exaggerated recognition of only one side of attitude or relationship.
     - E.g. woman is aware only of having younger sister; never of any resentment or rivalry.
  8. Undoing - thought / action that individual believes neutralizes consequences of another thought / action; this defense is often unconscious and is associated with ritualism and superstition.
     - E.g. person knocks on wood to ward off danger.
  9. Regression - return to earlier form of thought / behavior, often in response to current stress or threat; common in young children.
     - E.g. child begins to suck her thumb after new sibling is born.
  10. Rationalization - mastery of threatening or threatening news item is known.
     - E.g. woman learns everything she can about her recently diagnosed illness.

STRUCTURAL MODEL OF MENTAL FUNCTIONING

- Mental processes and behavior are organized into related groups of functions that are referred to as:

  1. Id - psychic representation of drives (wishes); these drives are largely unconscious, particularly sexual and aggressive; they are the primitive and childhood drives (e.g. sucking drives, anal-erotive drives, sadistic and destructive drives).
  2. Ego - group of functions that permit adaptation to demands of drives and to requirements of external reality; they allow for drive discharge and gratification and take safety and feelings into account; functions are classified:
     - (1) maturational functions (i.e. biologic, genetic) include motor activity, sensory function, language, and appearance and memory.
     - (2) developmental functions include defenses and signal anxiety, reality testing, object relationships, sexual development, identity, and overall integration of personality.
  3. Superego encompasses:
     - Inhibitory judgment and self-criticism are affectively regulated by guilt (individual's sense of what he should and should not think, feel, or do).
     - (2) ego-ideal - aspirations and values are affectively regulated by shame.
     - Consistency and ego-ideal develop through transition of prohibitions, permissions, expectations, values, and emotions from external authority figures (usually parents) to internal agency.

PSYCHOTIC STATES

- Approaches to viewing and organizing thoughts, feelings, and behavior.
  1. Genetic perspective - all types of mental activity and behavior are related to earlier development and experience; therefore, earlier forms of thinking, wishing, and behavior may reemerge (e.g. regression).
  2. Dynamic perspective - all behavior is compromise among internal largely unconscious processes.
  3. Economic perspective focuses on psychological energies that are analogous to physical energy and originate in biologic instinctual drives; energies are subject to blockage, transformation, and discharge.
     - E.g. biting may be direct discharge of oral aggressive drive; biting may be inhibited by fear of punishment; flight of earth energy is transformed into both running away or reverting to certain foods.
  4. Structural perspective organizes mental activity and behavior into stable and enduring structures (id, ego, and superego).
Psychological approaches to the treatment of free association as methods of observing derivatives of unconscious process, associated defenses, and resultant behaviors.

- usually 4-5 times per week for 3-5 years.
- Transference and countertransference are important components of treatment.
- Transference - attitudes, feelings, thoughts, and wishes that originate with important figures in past (e.g. parents) and are unconsciously reactivated with individuals in present; this process in patient progressively analyzed by analyst and is subject to analysis.
- Countertransference - transference on part of analyst toward patient; to minimize role of countertransference, personal analysis is essential in individual who is considering becoming analyst.

Techniques of psychoanalysis
1. Clarification - obtaining further associations and information about past issues and relationships (e.g. connecting present to past).
2. Confrontation - identifying defenses, resistance, and other unconscious influences on behavior by noting connections, continuities, and inconsistencies.
3. Interpretation - identifying patient's unconscious wishes and thoughts and their associated effects as they emerge through clarification and confrontation.

Defense analysis and working through - understanding that intrapsychic conflict is most apparent through operation of defenses of ego - as nature and operation of these defenses are identified, conflicts and unconscious wishes emerge; process of working through requires repeated examination of all connections and ramifications of personality structure.

2. LEARNING THEORY (BEHAVIORISM)
- based on assumption that all types of behavior and personality development represent acquisition and organization (or learning) of reactions, responses, and patterns - i.e. subject primarily to environmental influences.
- theory is particularly associated with work of Pavlov (conditioned reflex or classic conditioning), Watson (negative behaviorism) and Thorndike and Skinner (reward and punishment paradigms, or operant conditioning).
- although internal motivations (e.g. hunger, thirst) are acknowledged, focus is on external events in shaping, maintaining, or eliminating behavior.
- anything that cannot be observed / described / measured is unimportant (concepts as unconscious, intrapsychic conflict, and disease, or medical, model are considered unnecessary or inappropriate).
- maladaptive behaviors (such as phobias and aggression) are learned in same way as adaptive, or normal, behaviors.

Learning - acquisition, modification, and elimination of behaviors and response patterns that occur in association with environmental conditions.

- learning establishes connection between stimulus and response.
- any internal or external event may act as stimulus.
- reinforcing stimuli, cognitive, affective, or imaginal.
- LEARNED MOTIVES are behaviors that are rewarded by reduction in painful tension and are repeated and refined throughout life cycle.

Reward:
1) primary rewards satisfy primary needs for food, drink, shelter.
2) learned rewards satisfy motive rather than primary need.
3) reinforcement is similar to reward.
4) when primary need or learned motive is satisfied, association is established between stimulus and response (e.g. when child indicates that he is hungry and is given food, primary need is satisfied with primary reward).
5) reward reinforces behavior that is used to communicate need (e.g. if child is praised for eating, praise becomes learned reward and secondary reinforcer).
6) conditioned reinforcement (presented after every response) eventually loses its reward value → behavior is extinguished; fixed ratio reinforcement (given after every second or every third response) is more effective than continuous reinforcement; variable, intermittent, and unpredictable reinforcement establishes strongest, most effective type of learning (i.e. Las Vegas slot machine is classic example).

Punishment is aversive, painful, or frustrating event as defined by subject.
- punishment may eliminate or simply suppress behavior.

Stimulus generalization - application of response that is learned in one situation (e.g. fear of particular dog) to similar situations (e.g. fear of all dogs).

Exinction - previously learned behavior disappears if reward is withheld so that behavior is not reinforced or if reward is continuous and thereby loses its reinforcing quality.

Behavioral treatment techniques related to learning theory (in order from behaviorally most objective to most subjective)
1. Aversive conditioning is linking unwanted behavior (e.g. drinking alcohol) with noxious or painful stimulus (e.g. electric shock), leading to aversion for alcohol; conditioning can be extended to thought of alcohol, smell of alcohol, and so on.
2. Positive reinforcement and extinction links desired behavior (either spontaneously occurring or taught) with immediate reward, at first consistently and then intermittently; conversely, this technique links undesirable behavior with absence of response.
3. Systematic desensitization - used to eliminate phobic behaviors (e.g. irrational fear, avoidance); avoidance reduces or eliminates anxiety and therefore is positively reinforcing in self-defeating way; goal is to desensitize individual to situation.
   1) individual is taught how to relax completely.
   2) sensitized (anxiety-provoking) stimuli is gradually introduced so that link between stimulus and anxiety is gradually weakened.
   3) sensitized stimulus is introduced by asking patient to imagine anxiety-provoking situation while he is relaxed.
4. Modeling - learning new behaviors and overcoming inhibitions to desired behavior - patient observes someone else performing desired action or imagines himself or others performing behavior.

3. COGNITIVE THEORY
- theory is based primarily on observations, experiments, and inferences of Swiss epistemologist Jean Piaget.

Infant is born with two types of reflex patterns:
1. Classic reflexes - inherent, fixed stimulus—response patterns that are not significantly affected by learning or experience (e.g. Babinski, knee jerk reflexes).
2. Innate reflex patterns (reflex schema) - present at birth, but they require stimulation for activation and stabilization (e.g., sucking reflex, grasping reflex, eye following, and smiling).

Assimilation and accommodation describe all interactions between organism and environment.

Assimilation - incorporation of external stimuli into existing innate reflex patterns; these stimuli enlarge, but do not fundamentally alter pattern, or schema.

Accommodation - reflects schema, or conceptual understanding is changed by experience to fit new perception → reflex systems are progressively modified to form new behavioral units; infant behavior provides several examples:

- sucking behavior is activated and modified into different types, or patterns, of sucking for different objects (e.g. breast (nutritive), pacifier (nonnutritive)).
- eye-following and smiling reflex patterns are initially activated by broad range of stimuli; infant progressively discriminates meaningful stimuli, especially mother's voice and face.

Adaptation is result of interaction of assimilation and accommodation.

Each stage involves varying degrees of assimilation and accommodation that progress to equilibrium.

- equilibrium (reestablished by assimilation and accommodation) becomes adaptation.

Stages of cognitive development

1. Sensorimotor stage (birth - 2 years) - divided into 6 periods (relatively fixed sequence of progressively emerging cognitive abilities):

1) reflex operations (birth - 1 month) - exercise, consolidation, and early differentiation of innate reflex patterns (e.g. sucking, grasping, crying) occur.

2) primary circular reactions (2 - 5 months) - reflexes are activated and coordinated (e.g. if infant sees both his hand and object at same time, he will grab at object - coordinating seeing and grabbing).

3) secondary circular reactions (5 - 9 months) - beginning of intentional activity and interest in results of actions, movement, and action to move or squeeze and then repeating the action on other objects; infant gradually learns that objects have separate existence, and truly initiative behavior begins.

4) coordination of schemata (9 months - 1 year) - goal-oriented behavior begins; infant can remember objects that are out of sight; infant realizes that objects, including people, have independent existence and independent properties.

5) tertiary circular reactions (1 year - 18 months) - child becomes increasingly aware of objects as independent and therefore separate from self; language begins to develop (words represent things).

6) invention of new means (18 months - 2 years) - capacity for true mental representation of objects develops (e.g. child will look for object where it might be, rather than where it was last seen); child achieves clear sense of separation of external events and objects from self as well as sense of self; stage is set for formation of conceptual thought.

2. Conceptual- representational stage (2 years - maturity) - divided into 4 periods:

1) preoperational period (2 - 4 years) - child's capacity for symbolic and representational thought expands; child can learn by considering action and its consequences rather than by performing action.

2) intuitive thought (4 - 7 years) - child has increasing capacity for symbolic thought; child comprehends classes of objects and can classify them according to their similarities and differences; child can intut, or arrive at correct answer without being able to explain why or how.

3) concrete operations (7 - 11 years) - child acquires three important capacities for logical thought:

- reversibility - involves reciprocal or two-way relations (e.g. between square and round, between weep and vapor).
- conservation - involves changes in dimension, color, or location that do not change essential nature or identity of object.
- rules of logic - involve concepts of similarities, differences, and relativity (e.g. greater than, less than).

4) formal operations (adolescence - maturity) - individual can reason and arrive at conclusions; child understands the difference of concrete objects; before is capable of abstract, symbolic thought; adolescent can conceptualize past, present, and future as continuum and consider what might be possible; individual can conceptualize death and finiteness of existence in formal thought; child is capable of both logical planning for future and philosophic thought about values, and meaning, and life of meaning.

4. PSYCHOANALYTIC THEORY

- broad systematic framework for understanding patterns and sequences of psychological development in context of social and cultural factors.

- approach is identified with work of Erik Erikson, who originally was trained as teacher in Montessori method. Erikson's approach is significantly influenced by psychoanalytic theory.

Eight stages that extend from infancy through old age (each early stage has primary zone, or part of body, around which major social interactions occur; and each zone has primary mode by which interactions and transactions occur):

1. Oral-sensory stage (birth - 1 year) - mouth is dominant zone; dominant modes of behavior are taking in feeling filled and satisfied; consistent experience and parental stimulation help child to achieve task of developing sense of basic trust versus sense of mistrust.

2. Muscular-anal stage (1 - 3 years) - anal area is dominant zone; voluntary sphincter control is usually achieved at approximately 18 months of age; child experiences general neuromuscular maturation and increasing motor autonomy (walking, balance, language); dominant, but not exclusive, mode of behavior is holding on and letting go; child must balance internal drives with external control and action; task of achievement is maintenance of healthy sense of autonomy and acceptance of limits versus control by shame and doubt.

3. Locomotor-genital stage (3 - 6 years) - genital (phallic) area is dominant zone; task of child is to be like her parents; dominant modes of behavior during this stage are intrusiv (phallic) and competitive for boys and inclusive and competitive for girls; crisis of this stage is conflict between aggressive, risk-taking, exuberant, competitive behavior, known as initiative, and fear of punishment and retaliation, which is internalized as inhibiting sense of guilt.
4. (6 – 12 years) - no dominant somatic zone or mode; development shifts from predominantly self- centered and intramural to larger world of school, other adults, and peers. During this stage, acquisition of knowledge and skills by externally, or objectively, measured learning, achievement, and mastery is important; outcome is either realistically based and rewarding sense of competency (independence) or sense of inferiority (incompetence).

5. Adolescence (12 – 20 years) - continuation and upheaval of previously established self-concept; intense new feelings and sexual impulses, new body image, and striving for independence. During adolescence, individual must establish new sense of identity, including sexual identity and preparation for intimacy, vocational identity, and role within family and peer group.

6. Young adulthood (20 – 30 years) - attainment of vocational goals, independence from parents, and capacity for sexual and social intimacy.

7. Adulthood (30 – 65 years) - characterized by establishment of family; individual assumes parental role, individual recognizes many options are no longer open and that choices are limited, but strives to achieve balance between wish and reality and between satisfaction and disappointment.

8. Maturity - period of biologic decline (there is great individual variation!); gradual decrements in strength, energy, tolerance to stress, and physical health; retirement, change in economic circumstances, loss of loved ones, and realization of mortality; many individuals have physical and emotional reserves that enable them to adapt to change, decline, and especially loss.

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5. BIOMEDICAL THEORY

- All types of mental activity and behavior are caused by brain function, which is dependent on maturational stage and neurologic integrity of brain.

- Maturational development include factors such as myelination, endocrine influences during adolescence, effects of aging on memory, cognition, and behavior.

- Neuroanatomic status - e.g. ventricle size (often enlarged in schizophrenia), temporal lobe structures that affect sexual and aggressive behavior, limbic system damage (associated with hallucinations and intense fear and rage).

- Circulatory status may affect various areas of brain - variety of mental symptoms.

- More major psychiatric disorders have significant biologic component in their etiology and pathophysiology.

6. LIFE CYCLE

- Best understood with biopsychosocial model (all behavior can be viewed as interaction among biologic, psychological, and sociocultural variables).

- Growth - increase in physical size.

- Maturation - biologically based, phylogenetically determined, sequential evolution of forms and functions.

- Development - acquisition of abilities and functions through experience.

7. INFANCY + TODDLERHOOD

- Motor, vocal, and sensory development milestones - see p. D55:

- Response to sensory stimulation in uterus is shown by fetal monitoring; fetus responds to stimuli with certain reflex patterns (sucking, kicking).

- At 100 male conceptions occur for each 100 female conceptions; at birth, ratio is much lower – 1/3.

- Male embryos do not survive until birth:

- Some boys who survive are at considerable risk for brain dysfunction.

- At 5 months of life, 10% of lower-class boys have attention-deficit hyperactivity disorder (male-female ratio = 10:1).

- Attachement behaviors (e.g. crying, clinging) are present at birth - increase likelihood of maternal care and aid in infant adapting to her mother.

- Neonates have number of innate, simple reflexes (Moro’s, palmar grasp, rooting & sucking, etc). See p. D55:

8. PSYCHOLOGICAL AND SOCIAL DEVELOPMENT

- Principal psychological task of first year of life: formation of intimate differentiated attachment to mother (or primary care giver).

- Process is impeded when child has wide variety of care givers, or when mother is emotionally unavailable (e.g. as result of depression or serious deficits in her early development).

- Infants who do not form this early attachment -- impaired capacity for empathy and for establishing close, warm, reciprocal relationships.

- Smiles in infant response at birth (i.e. endogenous smiling); infant smiles in response to face at 8 weeks of age (i.e. exogenous smiling), and specifically to mother's face (i.e. social smiling) at 12-16 weeks of age.

- Stranger anxiety (another marker of attachment process) begins when infant is 7-9 months old - infant becomes distressed to presence of someone other than mother as well as to mother's absence.

- Infantile autism is name given by K. Spitzer to reaction of atony, emotional withdrawal, and diminished developmental quotient that occurs when infant is separated from mother between 6 and 12 months of age.

- Margaret Mahler proposed description of sequential development of object relations within framework of psychosocial development.

- Birth - 1 month, infant has little self-aware interaction with environment (stage of normal autism).

- Birth - 4 months, infant experiences symbolic development - sense of oneness with mother (infant is unaware that he and mother are separate).

- Birth - 5 months - infant experiences differentiation - gradually increasing awareness that mother is separate entity; infant pulls at her hair (experiences her eyes, nose, mouth, and pulls at her hair).

- Birth - 10 months - child practices locomotion (practicing phase) - child moves away from his mother and then returns to her for encouragement and emotional support; toddler is unaware of dangers of physical injury and moves about with exuberance.

- Birth - 18 months - child experiences rapprochement sub-phase - child's sense of vulnerability and omnipotence to mother is increasing realization that mother is not always available to protect him.

- Objectification (another marker of attachment process) reaches its peak at 18 months of age - child manages her anxiety by clinging to mother, or shadowing, and during away.

- As psychological separation of mother and child is accomplished, child gradually realizes that he is distinct entity (individual).

When 12 - 30 months child is separated from mother, his behavior follows predictable pattern:

1) Child protests (e.g. crying) for 1-2 days.

2) Child then appears subdued and quietly depressed (i.e. demonstrating despair).
3) if mother and child are not reunited in 3-4 weeks, child becomes detached, is emotionally unrelated to mother, and fails to respond to mother's leaving.

Play
initially has compensatory or self-soothing function that provides pleasure and release of tension:
• next, child plays as way to master functions (e.g. 9-month infant plays peekabo and later hide-and-seek to master anxiety associated with separation and loss; 18-month child will spend hours playing up and down stairs); and
doll play is common in toddlers; toddlers engage in dramatic play by dressing in their parents' clothing and pretending to be grown up or by imitating activities of their parents (e.g. shawing, cooking, cutting grass).

Autonomy and self-awareness - at 18-36 months, child attempts to separate psychologically from mother:
• child often exhibits noncompliant behavior and resists parental authority.
• this behavior affects all aspects of toddler's life - he may refuse to eat, sleep, or eliminate at parental request - conflicts are severe, known as "terrible twos" (when these conflicts are severe, disorders of conduct, sleeping, eating, or eliminating may develop).

SOCIOCULTURAL FACTORS
• economic and sociocultural forces influence developmental process (e.g. rate of psychiatric disorders is approximately twice as high in inner cities as it is in rural areas).
• psychosocial (sociocultural) retardation (deficiency in language, speech, or cognitive skills) is associated with inadequate early stimulation (usually in families at lower socioeconomic levels).
• developmental stages in terms of socioeconomic level:
  - typical middle-class infant is weaned from breast or bottle to cup at 1 year of age; many middle-class children still use bottles at 3-4 years of age.
  - most middle-class children achieve toilet training between 18 months and 3 years; many children from disadvantaged homes complete bowel training by 14 months.

CHILDHOOD
- between 3 years and puberty.

emphasize shifts from child's relationship with mother, to her relationship with both parents, to socialization with her peers.

COGNITIVE SATURATION
Preoperational stage (2-7 years) - transition from focus on action and sensation to focus on thought.
• symbolic function first appears - child learns that words and objects are symbols (e.g. word "doll" is symbol for object that is doll, and object that is doll is symbol for baby).
• egocentrism - child cannot put himself in place of someone else.
• animism - belief that every object is alive and has feelings and thoughts; belief includes such objects as fences, and therefore may affect toilet training (e.g. child may not want to give up someting perceived as alive inside).
• artificialism - belief that things are made by humans and for humans, and that everything has specific use; children believe that all questions have answers, and that adults know answers.
• children do not have any concept of ability to conserve (Piaget's classic example of clay - child cannot comprehend that object conserves its original mass or volume).
• child cannot distinguish between physical and psychological causality (e.g. child may believe that illness is punishment for thought or action).

Concrete operational stage (7-11 years) - child ability to master many of tasks encountered during preoperational stage:
• child understands reversibility (by learning that processes can be reversed mentally, child can grasp concept of conservation, e.g. understanding volume and mass).
• child learns to put himself in place of someone else.

PSYCHOLOGICAL AND SOCIAL DEVELOPMENT
Psychosocial development see above (in psychoanalytic theory)

Play
• at 3-4 years, role playing is common (child usually pretends to be powerful adult or, ironically, feared monster of his nightmares or fantasies).
• when young children play in group, each child functions autonomously (parallel play); capacity for interactional, or reciprocal, activity (cooperative play) develops later.

Social development
• at 3 years of age, nursery school or day care, play groups, and birthday parties help child to expand her social sphere; entry into school continues this process.
• social world is enlarged as child forms peer relationships (e.g. best friend) and enters into group relationships, especially with children of same sex.

ADOLESCENCE

EARLY ADOLESCENCE
• adolescence begins at puberty (i.e. adolescence is transition from childhood to adulthood); adult status is conferred at age 18 yrs with ability to vote.
• cognitive development reaches its final stage - formal operational stage (> 11 years) - most adolescents can perform deductive and propositional thinking about multiple variables, complex problem from multiple points of view, and analyze several variables independently and as part of whole.
• adolescents can analyze abstract concepts of truth or virtue.
• egocentrism changes in form - adolescent typically believes that he is constantly watched by others.

PSYCHOLOGICAL FACTORS
• psychological separation from parents is lifelong process, but struggle for autonomy is common feature of early adolescence.
• formation of ego identity - adolescent's sense of ideal self undergoes considerable modification (reflects values that are acquired from peers and differ from parental ideals → conflict between adolescent and his parents).
• development of capacity for love relationships outside of family - dating and crushes are common in middle adolescence, more mature love relationships often occur by late adolescence.
• adolescent turmoil (s. adjustment reaction to adolescence) - extreme behavioral and emotional shifts (once were thought to reflect normal upheaval of adolescence) → suicide attempts, sexual promiscuity, substance abuse, academic failure. N.B. normal adolescents usually do not show serious emotional or behavioral changes, and these problems are not now viewed as evidence of disorder!
• confidentiality is central concept for adolescent health care.

SOCIOCULTURAL FACTORS
more highly developed, or industrialized, culture → longer period of adolescence.

in unindustrialized cultures, young people nearing puberty join adults of same sex in performing their customary tasks; marriage and procreation usually follow shortly thereafter (by 14-15 years of age, most young people function as adults).

....

in lower-class families, formal education often ends with high school graduation or earlier → young people join workforce by 16-18 years of age.

in middle- and upper-socioeconomic groups, individuals often pursue formal postsecondary education (adolescence is prolonged until 25-26 years of age).

early adulthood (20-40 yrs)

body reaches physical, reproductive, and cognitive peaks.

adult development is less concerned with acquisition of new capacities than with application of available capacities.

psychological factors

marriage and parenthood

parenthood is dramatical different at 25 years of age than at 65 years of age:

• children provides opportunities for parents with opportunity to resolve lingering conflicts from their own childhoods; parenthood also permits people to heal wounds, hurts, and frustrations from past (e.g. giving child piano or tennis lessons that parent wanted, but never received).

• healthy families are those that can adjust to shifting demands.

• separation and divorce occur often:
  – people whose parents divorce are much more likely to divorce.
  – people who lack psychological flexibility may find strains of marriage and parenthood overwhelming.

• career:
  – competing demands for time and energy among roles of parent, spouse, and worker cause stress.

socio-cultural factors

• offspring of middle- and upper-class families usually postpone marriage and parenthood while they continue their education for number of years (e.g. to study medicine).

middle adulthood (40-60 yrs)

• muscle strength and endurance can be preserved with regular exercise.

• menopause is biologic event, but most common effects are psychological - confronted with end of reproductive life, women may experience anxiety and depression.

• midlife crisis - dramatic change in commitment to career and spouse; accompanied by self-doubt, stress, anxiety, agitation, or depression; caused by debilitating personal illness, death of spouse, responsibility of caring for elderly parent, job loss / lack of career advancement, presence of dependent adult children.

• relationships with children changing - as children grow into autonomous adults, parents must relinquish control over them; parents feel powerless or resentful.

• as children become autonomous, parenting responsibilities diminish, allowing more time for marital relationship and other pursuits.

• declining health and death of parents (for mean families, death of parent is their first personal contact with death) → fear regarding own death, begin to view time in terms of how much remains rather than how much has passed.

late adulthood and old age (> 60 yrs)

• gradually diminishing physical and cognitive capacities combine with increased likelihood of acute and chronic illness.

• frequency and intensity of sexual activity diminish with age, but interest and participation in sexual activity continue for men and women, even into their nineties.

• retirement is critical point in development - individual may believe that he is no more useful → reduction in income → increased anxiety about paying for future medical / nursing care.

• as people face prospect of dying, many people assess their lives:
  – individuals who believe that they have lived good, moral life may experience reaffirming sense of integrity (ego identity) by Erikson.
  – individuals who believe that they have lived meaningless lives may view themselves as responsible for the physical, emotional, or psychological suffering of others; "I made this happen, I caused this suffering, I destroyed this life,"...;
  – negative evaluation may cause despair (by Erikson).

• most older men are married, whereas majority of older women are widows (because of higher death and remarriage rates for men).

• only 20% older individuals require institutional care (although many older adults fear that they will become dependent or senile).

death and dying

children's perspective

children < 5 yrs view death as abandonment - they do not understand its finality and irreversibility; they cannot see an important individual in their lives. They may say, "When Grandma comes back from the dead..." or "When Grandma comes to visit..." even when they were told explicitly about her death.

middle adulthood - more realistic view of death emerges.

• anxiety about death concerns not only loss of, or separation from, loved ones; but also fear of death as punishment for bad behavior. (adolescents have adult cognitive view of death and clear understanding of its irreversibility; they have capacity to mourn.

parental response to child's death - devastating experience for parents!

• death is not sudden; parents often unconsciously undergo anticipatory mourning, during which they gradually relinquish strong emotional ties to child - this process can be painful for both child and parents (child senses diminished emotional involvement by parents - child experiences abandonment; relationship often becomes superficial as parents attempt to hide their distress; emotional barrier is erected, conversation becomes trivial, and subject that is most on child's mind: "Is it true? and parents' issue becomes taboo).

• when child dies, parents feel guilty because they are not more upset by child's death or because they are relieved that ordeal is over.

• unless properly counseled, parents may consider themselves callous when in fact they have already grieved, though unconscious and in advance.

adult's perspective

• adults are anxious about their own death because of:
  1) dread of separation from their loved one.
I. Interpersonal posture

There is an emotional support system. Engel's model (e.g. β-receptor) proposes that, in the presence of stress, the human body produces a hormone called cortisol, which helps to maintain the body's normal functioning. Engel also proposed that, in the presence of stress, the human body produces a hormone called cortisol, which helps to maintain the body's normal functioning.

2. Final goal

- Patient's preoccupation with their own death, often marked by
- Significant ability to adapt

3. Acceptance

- Emotional detachment or neutrality or calm (even euphoric) state

**PHYSICIAN'S RESPONSE**

- Sense of failure
- Occupation
- Remission
- Possible
- Colleagues

**SOCIAL AND FAMILY BEHAVIOR**

General systems theory - holistic model used by both physical and social scientists to explain how various systems function as complete entities - theory states that phenomena are embedded in their environment (not composed of separate, independent parts, as is stated in reductionistic model).

- General systems theory is useful for study of family and social behavior.

**SYSTEM**

- Set of interrelated elements that function as whole

Structure

- Elements (components) of system and relations among them define structure of system.
- Elements are dynamic entities; therefore, system can disintegrate.

- Recurrent structure - certain relations among elements of system may occur with such regularity that structure of system is predictable; recurrent structure is characteristic of system at equilibrium.
- Novel structures arise in system that is attempting to adapt to stress.

Organization - relations among components that are necessary for system to retain its identity.

- Organization of system usually allows variety of potential structures - systems usually have significant ability to adapt!

Living systems exist within environment.

- Living systems continually adjust their structure to preserve their organization in face of stresses, demands, or changes in environment; successful systems adapt in ways that combine stability and change.

1. Morphogenesis - homeostasis (stability) - system attempts to maintain original structure as much as possible.

2. Morpohogenesis (change) - system undergoes maximal change or innovation in structure.

Disintegration - system disolves if it cannot adapt to environmental stress.

- Some families cannot adapt to demands of their environment; -- these families fragment, and their members enter new systems (e.g. foster homes, halfway houses, prisons).

**BIOPSychosocial model**

- Proposed by Engel as model for medical science; it is based on general systems theory.

**BIOMEDICAL MODEL**

- Dominant conceptual model in contemporary medicine - it is reductionistic in its attempt at explaining all complex phenomenon in language of molecular biology, dualistic (i.e. it gives priority to somatic variables and ignores psycho-social variables), and assumes causal linearity (e.g. β-hemolytic streptococci cause pharyngitis).

- Although this model serves medical science as heuristic guide, it neglects certain dimensions of human experience and does not answer many important medical questions (e.g. why would a woman want until breast augmentation reaches massive proportions, perhaps even eroding through her skin, before consulting her physician?).

**BIPSYCHOSOCIAL MODEL**

Proposes that, to understand human illness adequately, physician in addition must consider factors other than biomedical data; these factors include following:

1. Infrastructural factors
   - e.g. adolescent focused on his physical appearance may be noncompliant with his regimen of systemic treatment after he learns that they can cause Cushingoid habitus.

2. Interpersonal behavior
   - e.g. individual who is accustomed to leadership role may have difficulty assuming role of patient.

3. Family dynamics
   - e.g. family intervention can lower serum blood sugar levels in adolescents with diabetes mellitus and reduce psychotic recurrences in young adults with schizophrenia.

4. Social groups to which patient belongs
   - e.g. opium user in whether individual who abuse alcohol have medical or moral problem; whether individual whose drinking is out of control consults physician for help is likely to be determined by opinion of users of peer.

**INTERPERSONAL BEHAVIOR**

Interaction between people is inevitable - one cannot choose not to interact or behave (even silence is interpersonal posture).

Interpersonal relationships can be reliably quantified - two major approaches: DIMENSIONAL and CATEGORICAL.

1. DIMENSIONAL APPROACH - structural analysis of social behavior model (SASB) - interpersonal behaviors are represented by dimensions that have geometrically meaningful relation to each other.

Cluster version of interpersonal surfaces of Benjamin's structural analysis of social behavior model (SASB) - interpersonal behaviors are represented by dimensions that have geometrically meaningful relation to each other.
geometric structure of such models facilitates clinical understanding.

interpersonal behavior is defined as discrete units that occur between two interacting partners, or dyad.

• dimensions of interpersonal behavior:
  - focus (see other and self surfaces in above figure) - is individual initiating action toward other individual (focus on other) or responding to action from other (focus on self).
  - independence (see vertical axis in above figure) - is action attempt to control or influence (focus on other) or offer for autonomy or independence (focus on other)?
  - affiliation (see horizontal axis in above figure) - does action show hostility toward other person (focus on other), withdrawal protest hostile act (focus on self) or approach enjoying friendly act (focus on self)?

• patterns of dyadic interaction:
  - for any pair of people (e.g. doctor and patient, husband and wife, classmates) dyadic interaction tends to settle into characteristic patterns of interpersonal relationship (in language of MINERAL SYSTEMS THEORY, behavior develops recurrent structure).

complementary postures involve similar degrees of affiliation and independence, but differing focus; they are usually stable over time (e.g. enmeshed dyad typically includes one individual with prominent controlling behavior (high independence, focus on other) and one individual with prominent submissive behavior (high interdependence, focus on self)).

antithetical postures involve opposite degrees of affiliation and independence from partner's message; antithetical postures can change posture of dyadic partner (e.g. parent who complains, "Come on doctor, you've been poking my daughter with needles for days and she looks sicker. When are you going to do something right?" may react better to physician who responds with antithetical statement (e.g. I'm disappointed too. I was hoping for more. But I want to keep trying to help you and your daughter. Our approach is more to help you and your daughter than with symmetric reply (e.g. Well, you know, you haven't done much of value either) or complementary response (e.g. you're right, I need to try harder)).

II. Categorial approaches

A. Expressed emotion construct - meaningful categories of behavior are clustered into discrete groups rather than arrayed as continuous dimensions.

• schizophrenic patients discharged to families with high level of expressed emotion have three- to sevenfold greater likelihood of relapse within 1 year; child acts compulsively self-focused on self, avoids care giver on her return; mothers of these infants show inconsistent sensitivity to them during first 12 months (as seen in above figure).

• tendancy to equate high level of expressed emotion with "bad" family is both damaging and incorrect.

• level of expressed emotion decreases in some families after patient's symptoms improve.

B. Classification of attachment style

• attachment is crucial developmental need in humans (e.g. infants need to attach to their significant care givers).

Ainsworth developed structured observational behavior procedure - strange situation paradigm - classifies attachment relationship between 12-month infants and their primary care givers (usually mother) based on infants' response to laboratory setting to reunion with care givers after separation of several minutes:

  a. secure attachment - infant seeks contact with or comfort from care giver on her return; mothers of these infants show consistent sensitivity to them during first 12 months (as measured by home observations); child is confident that parent will be available, responsive, and helpful if he encounters adversity or frightening experiences - child feels bold enough to explore world and self-confident that he can handle challenges

  b. insecure/avoidant attachment - infant avoids care giver on her return; mothers of these infants show less perceived care giver's actual contact during first 3 months and show less sensitivity during first 12 months; child expects that when she seeks help, she will not receive helpful response, but will be rebuffed - child acts compulsively self-reliant or, in severe cases, delusional.

  c. insecure/resistant attachment - infant shows angry and resistant behavior alternated with comfort-seeking behavior on care giver's return; mothers of these infants show inconsistent responses during first 12 months, child is unsure whether parent will be available or responsive - child is prone to separation anxiety, and tends to be clingy and anxious about exploring world.

• quality of infant attachment at 12 months is predictive of child's subsequent progress in several areas (incl. cognitive development, persistence in problem solving, attention to tasks, and social functioning).
attachment style is not changeable, but without active intervention, it usually remains stable over time (stressful family events can change secure attachment relationships to insecure attachment style).

Interaction in larger groups
- as individuals are added to group, number of dyads increases geometrically - social interaction becomes more complex and difficult to examine with either dimensional or categorical models.
- triads (triangles) are inherently unstable during interaction - they usually evolve into closely aligned dyad and more distant third person.
- in rigid triangles, alignment among individuals does not vary over time; these triangles are often observed in dysfunctional interactions:
  1) scapegoating triangle - individual in distant position is blamed for problems of group.
  2) inverted power hierarchy triangle - one individual (of high rank) allies with another (of low rank); third person (of high rank) is excluded.

**LARGE GROUP BEHAVIOR**

**SOCIAL COORDINATION OF BEHAVIOR**
- social interaction requires procedures that make behavior predictable and adaptive to environment.

**Cultural aspects of coordination**
- individuals from different cultures may have varying ideas about how events, including medical illness, occur.
  e.g. in many Latin cultures, somatic complaints are acceptable symptoms to report to physicians, but psychological complaints are not - depression or anxiety may be presented as series of physical complaints.
- ethnocentrism - tendency to view individual's own culture as superior and differing cultures as inferior.
- socialization - process through which cultural beliefs and practices are passed on to new members.

**SOCIAL SUPPORT SYSTEM**
- individuals form networks of attachments that promote adaptation or mastery of difficult life events.
- individual's social support system usually includes family members, but viable network can be maintained with nonrelatives (esp. those who share similar cultural beliefs and practices).
- effective social support systems can:
  1) promote adherence to medical regimens.
  2) enhance effectiveness of medical treatment.
  e.g. effective social support systems reduce steroid doses required under stress in adults with asthma and reduce complications of pregnancy in women who are at high risk.
  3) protect against depression and other psychological problems during adverse life events.
  4) promote return to normal growth and stability after severe medical illness.
  e.g. effectiveness of family's social support system predicts its development after child dies of cystic fibrosis.
- expectations of members of individual's social support system may create additional responsibility for individual.

**FAMILY BEHAVIOR**
- findings from many disciplines suggest central role of family relationships in health of family members.

**DEFINITIONS OF FAMILY**

1. **Structural**
   - extended family (United States Census Bureau definition) - any group of individuals related by blood, marriage, or adoption; definition emphasizes biologic and sociologic legitimacy of connection between family members.
   - nuclear family - family members not only have legitimate connections but also live together;
   - family of orientation - nuclear family in which individual has status of child;
   - family of procreation - nuclear family in which individual has status of parent.

2. **Functional**
   - family is psychosocial system that consists of adult and one or more other individuals (children, adults, or both) who have commitment to mutual need fulfillment and nurturance - identical to concept of social support system!

3. **Transnational**
   - family is group of individuals who share affection and loyalty, history and future, and sense of home - definition emphasizes emotional and experiential bonds that arise from recurrent face-to-face interactions.

**DEMOGRAPHICS AND CURRENT TRENDS**
- many conclusions are based on comparisons with post-World War II 1940s ± 1950s (period of unusual family cohesion and stability).
- most Americans (90%) live with relatives ± 5% individuals live alone.
- 15% of nuclear family households contain members of three generations.
- despite increased geographic distance between extended family members, there is little evidence of reduced emotional and psychological support (telephone calls, holiday visits).

**MARITAL**
- marriage remains popular:
  - 95% individuals marry.
  - 90% of those who divorce remarry.
  - married people are healthier than single people (protective effect of marriage appears stronger for men; marriage fosters better health by:
    1) more stable, less risk-oriented lifestyle
    2) increasing daily social contact and decreasing loneliness
    3) allowing partners to develop shared consensus of world
    4) providing forum to discuss problems
- number of children born to married couples is declining (in 1992, average American woman had 2.0 children; figure was 3.6 in 1960).
- as many as 25% of all couples remain childless (50% choose not to have children, and 50% are infertile).

**DIVORCE**
- children aspects ➔ see p. PEd13
- divorce rate remains high, but is not increasing (40% new marriages end in divorce; 1/3 of these divorces occur within first 5 years of marriage).
• increase in divorce rate during this century is linked to improvement in women's economic status as they entered work force (although economic status of most women declines after divorce and that of most men increases).

• social attitudes toward divorce changed (e.g. tax code favors single persons).

• risk factors for divorce:
  (a) short courtship
  (b) marriage at young age
  (c) premartial pregnancy
  (d) persistent parental opposition to marriage
  (e) limited social support system
  (f) extreme difference in background

N.B. history of one divorce does not increase likelihood of second divorce - many people find better match second time.

SINGLE-PARENT FAMILIES
- number is increasing rapidly
  • > 25% American families are headed by single parent.
  • figure is higher (55%) for black children.
  • > 90% of these single parents are women.

• single-parent families typically have less social support, fewer financial resources, and decreased ability to adapt to parental illness.

• families headed by single mothers are fastest growing subgroup living below poverty level.

• single-parent families are high-risk group for health problems.

• when single parent families have access to necessary resources, they can meet challenges of family life as well as two-parent families.

N.B. No clear evidence of impaired child development in these nontraditional families!

FAMILY LIFE CYCLE
- families face specific tasks at different stages of development.

1. Stage I (formation of new family)
- begins when two individuals form couple and ends when their first child is born. major tasks:
  1) transition from two individuals to dyad (creating balance between intimacy and autonomy).
  2) establishing working marital roles.
  3) restructuring relationships with both families of orientation.

2. Stage II (child rearing)
- stage Ila (preschool age).
  major tasks:
  1) dealing with intense physiologic and psychological development of young children.
  2) establishing balance between intrafamily and extrafamily responsiveness (e.g. careers, child care arrangements).
  3) blending roles of intimate partner and parent (e.g. many couples experience decrease in marital satisfaction for at least 2 years after each child's birth).
  4) renegotiating relationships with families of orientation (e.g. grandparents may expect high level of involvement with grandchildren).

- stage IIb (school age). major tasks:
  1) managing tension that occurs when child enters larger social system; this process is more difficult when family culture differs from prevailing social system.
  2) maintaining satisfying marital relationship during this demanding, child-centered period.

- stage IIc (adolescence), major task: fostering development of identity and independence of child while maintaining concern for her well-being.

3. Stage III (child launching)
- children leave home; major tasks:
  1) transferring greater freedom and responsibility to young adult
  2) maintaining supportive home base for children
  3) reestablishing individual parental interests and careers
  4) reexamining marital relationship
  5) coping with decline, increasing dependency, and eventual death of grandparents

4. Stage IV (return of independence)
- major tasks:
  1) rebuilding marital relationship
  2) continuing involvement with individual interests and careers
  3) maintaining relationships with extended family in older and younger generations

5. Stage V (dissolution of family)
- major tasks:
  1) maintaining integrity in face of both partners' decline
  2) planning for dispersion of family estate

CRISIS AND FAMILY LIFE CYCLE

Crises are any event that requires adaptive response from family.

- crises increase level of stress within family - if not mastered, they can lead to decline in family's health, or even disintegration of family.

1. Normative crises - central developmental events in family life cycle model (e.g. marriage, birth of children, children entering school) - occur in all families, but are considered crises because they require adaptive responses.

2. Paranormative crises - occur unexpectedly and distinguish each family's life cycle (e.g. divorce, miscarriage, disability).

HUMAN SEXUALITY

SEXUALITY is basic function that is present throughout life cycle.

- its development is intertwined with physical maturation, growth, and psychological development.

- involves all aspects of biologic, psychological, and social framework.

- concerns mental, physical, cultural, social, and religious aspects.

INFANCY AND CHILDHOOD

- physical correlates of genital excitation (such as erection) can be observed beginning in newborns.

- loving human touch is necessary for well-being of infants and young children (aspects of adult sexual behavior are reminiscent of infant-mother interactions - breast suckling, hugging, rocking, kissing, oral exploration).

- awareness of gender and concerns about gender conformity are seen as early as second half of third year of life (this awareness usually follows more generalized identification with parent of same sex).

- children engage in genital self-stimulation as infants and throughout childhood, mutual sexual stimulation and exploration may be seen throughout middle childhood.

- when later associated with incorporated prohibitions against certain sexual behaviors, individuals may experience guilt that may be pathogenic:
  - organized fantasies and goal of orgasm characterize masturbation beginning in early adolescence.

ADOLESCENCE
ADULTHOOD
- deepening of intimacy in marriage and parenting of children.
- sexual problems may emerge as result of poor communication between partners.
- monotony, feelings of being taken for granted, concerns with career, illness in either partner, overriding indulgence in food and alcohol all interfere with sexual activity.
- with age sexual interest and activity persist but decline (most noticeably between 46 and 55 years of age), extent of decline depends on earlier levels of sexual interest and activity (men report greater interest and activity):

  **FEMALE menopause** - mood lability and depression, vaginal lubrication decreases, vaginal vault expands less with sexual arousal, orgasmic phase becomes shorter, uterine contractions may become spastic and painful, more rapid recession phase.

  **MALE** sexual responsiveness is affected by biologic and emotional factors: delay in attaining erection, decline in fullness of erection, ejaculatory force and volume decrease, resolution is quickened, and erection is lost more rapidly, refractory period is longer; ejaculatory control improves, but desire for ejaculation may decrease.

OLDER AGE
- although desire for genital sexual activity may wane and capacity for genital sexual function decreases, sexuality, broadly defined, continues to be important - touching, caressing, hugging, emotional intimacy are very important to well-being of elderly.
- frequency of intercourse and masturbation decreases over life cycle.
- sexual activity is related to quality of health and availability of partner (it is not normal for sexual functioning to stop in elderly).

**Influences on Sexual Expression**

**Behavior that is masculine or feminine is determined more by learning and culture than by biology.**

**SOCIOCULTURAL FACTORS**
- **CULTURE** in which individual is raised (or currently lives) determines to large extent how sexuality is expressed (what is considered sexual and what is not; purpose of sex - for procreation only or for enjoyment at other times; role of woman and man; appropriateness of nonmarital sex; choices regarding sexual positions, foreplay, and duration of sexual act; and ways in which sexual feelings are communicated).
- sexual values of **FAMILY** may reflect cultural values or may be in conflict with them.
- **SOCIOECONOMIC DIFFERENCES** also affect sexual behavior.
  - in families of lower socioeconomic status (marital relationship high degree of role segregation) show less frequent and less satisfying sexual expression: vs. families of middle socioeconomic status. in which roles were more jointly organized.
- **RELIGIOUS TEACHINGS** vary from viewing sexuality as part of human relationships, to sex for procreation only, to sexual enjoyment as sign of wickedness.

**PSYCHOLOGICAL FACTORS**
- early experiences with intimacy, sexuality, trust, and guilt exert continued influence on individual through both conscious and unconscious attitudes.
- early sexual traumas may provide continuing source of anxiety and guilt later in life.

**Hormonal Influences on Sexuality**

**Men**
- administration and withdrawal of testosterone are clearly associated with frequency of sexual thoughts and desires (but not with erectile function).
- prolactin decreases and LHRH increases sexual desire and functioning.
- in aging men, testosterone & HCG, estrogen & LH & FSH!

**Women**
- androgens increase responses to erotic stimuli, coital frequency, sexual gratification ratings, masturbation frequency.
  - androgens are also associated with fewer sexual partners, lower partner-related activity.
- prolactin reduces interest in sex.
- progesterone decreases and estrogen increases sexual interest ("masculinizing" sexual behavior).

- *Low levels are associated with postpartum sadness and "blues" in some women.
- **Exogenous estrogen precipitates panic attacks in some women and creates sense of well-being in others.*

**BIBLIOGRAPHY** for ch. "Psychiatry" - follow this link >>