

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 primate infants to 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 offspring rearing → smaller number of offspring [lower reproductive rate]).

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) **neophobia** - 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 nutritious 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 hungers appear 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 can it be shown to exist → in animals, term "hunger" is used to describe propensity to ingest food, not internal state).

1. **Peripheral signals** (e.g. oropharyngeal and gastric sensations) - little importance (however, gastric distention and food entry into intestine contribute to satiety).
 2. Variety of **chemical signals*** may regulate hunger and satiety.
 - *e.g. glucose, insulin, free fatty acids, ketone bodies, glucagon, cholecystokinin, calcitonin, glycerol.
- **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 hypothalamus cause syndrome of overeating and extreme obesity (altered body weight **set point**).
 - bilateral lesions of LATERAL HYPOTHALAMUS cause aphagia, grooming impairment, sensory neglect (i.e. no 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 (osmometric thirst)** – via hypothalamic **osmoreceptors** sensitive to cellular dehydration.
 - b. **HYPVOLEMIC drinking (volumetric thirst)** - via **baroreceptors** in great veins; several additional reflexes occur:
 - (1) vasopressin release → water reabsorption from urine.
 - (2) norepinephrine and epinephrine release → heart rate↑ and vasoconstriction.
 - (3) renin release → angiotensin II acts on hypothalamus & subfornical 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 metering** - 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, teatime).
- d. pharmacologic effects (**alcoholism** - most common form of abnormal drinking behavior in humans).

SEXUAL AND REPRODUCTIVE BEHAVIOR

- determines species survival.

also see p. A139 >>

- species that are low on phylogenetic scale have more rigid and stereotypical mating behaviors.
- in humans, 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** (cells of genetic male do not respond 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 castrated at birth (i.e. animals 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.
 - sex hormones stimulate development of 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. **5α-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; at puberty, however, testosterone causes development of secondary male characteristics (growth of penis, voice lowering, descending of testes) → 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 cats, two types of aggression are caused by stimulation of **HYPOTHALAMUS**:
 - stimulation of *medial hypothalamus* → affective rage-like attack.
 - stimulation of *lateral hypothalamus* → quiet biting attack (predatory response without rage-like features).
- **AMYGDALA** has important role in aggression and emotional response.
 - bilateral removal of amygdala of rhesus monkeys 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 **ORBITAL PREFRONTAL 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, as do natural rewards.
 - in one well-known example, rat stimulated itself 2000 times per hour for 26 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 sensation 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:
 - self-administration** - animals learn to press lever or nose-poke (behavior exhibited by rats in their normal environment) to receive drug infusion; **work required to obtain infusion is increased over time** to determine how much animals will work for reward; drugs for which animals of various species (nonhuman primates, dogs, rats) will work include **opiates**, **stimulants**, and **nicotine**.
 - choice paradigms**:
 - conditioned place 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).
 - conditioned reinforcement paradigm** – animal is trained in operant box with two levers (responses on one lever produce brief stimulus followed by drug injection; responses on other lever have no effect); after animals learn to self-administer drug, pressing active lever produces stimulus followed by saline injection (testing phase); responses on levers during testing phase are compared with responses before drug administration - number of responses on active lever provides measure of incentive properties of neutral stimulus.
 - 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 duration) is determined.
 - after administration of stimulant, such as cocaine, threshold diminishes, whereas administration of dopamine antagonists 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 depending on behavioral alternatives:

- Approach-approach conflict** - occurs when **incompatible approach** responses are present (e.g. animal has access to more than one sexual partner).
- Approach-avoidance conflict** - occurs in presence of **incompatible approach and avoidance** responses (e.g. animal finds food source that is in open area and is susceptible to predators).
- 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:

- Suppression of lower-priority responses**
 - e.g. birds spend approximately 30% of day grooming and resting in summer. However, in winter, when food is less plentiful, birds spend 90% of day feeding, so less time is available for other activities.*
- Preparatory movements** with components of alternative behaviors that are in conflict (i.e. may alternate between preparatory movements for each behavior).
- 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.
- Humans** address unresolved conflict differently:
 - action aimed at changing person's *perception of stressful event* (e.g. practicing before giving speech).
 - palliation** - addressing *symptoms of stress* (e.g. taking tranquilizer before giving speech).
 - 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**CONDITIONED (EXPERIMENTAL) NEUROSES**

- 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:
 - strong motivators, such as shock, are used.
 - positive and negative stimuli are alternated without repetition.
 - stimuli are presented rapidly.

e.g. dogs were trained to discriminate between circle and ellipse → ellipse was gradually made more and more like circle → when ratio between length of axes was 9:8, dogs could no longer discriminate between shapes - they began to show violent and emotional behaviors.

RESPONSE-SUPPRESSION PARADIGMS

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

Geller-Seifter conflict test - animals are trained to press lever to obtain food, but only some of lever presses are rewarded with food; during some periods, all levers pressed 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 method of testing **ANTI-ANXIETY AGENTS** - drugs (such as benzodiazepines) which reduce anxiety in humans, increase lever pressing during shock periods of this test.

OBSESSIVE-COMPULSIVE DISORDER

- some species have naturally occurring behavioral disorders of grooming (resemble obsessive-compulsive disorder in humans):

- Canine acral lick dermatitis** occurs in some breeds of dogs (e.g. setters, German shepherds) - dogs lick their paws excessively → hair loss and ulceration.
- Some avian species engage in excessive **preening** and **feather plucking**.
- Some nonhuman primates show excessive **autogrooming** and **trichotillomania** (hair pulling).

DEMENTIA

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

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

DEPRESSION

- 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 new testing situation, in which animals can escape shock, animals that previously received inescapable shock passively accepted shock and do not learn to escape (attributed to formation 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.

SCHIZOPHRENIA

- behavioral changes induced in animals by **STIMULANT DRUGS** (such as phencyclidine, 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.

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** (1856-1939) 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 **revived childhood sexual wish** and **force of conscience**.
- PSYCHOANALYSIS** - body of theoretic concepts, method 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.
- parts of personality that are also considered unconscious:
 - conscience (superego)** - provides judgment associated with feelings of guilt or shame.
 - defenses** (e.g. denial, projection).
 - 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).

INSTINCTS (DRIVES)

- motivating forces behind thoughts and behaviors; originate from biosomatic processes and are experienced as **urges, wishes, and fantasies**; two major categories of drives:

- sexual drive (libido)
 - 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)**.

- Oral stage** (birth ÷ 1½ years) - primary means of drive discharge and gratification is through *sucking* (innate behavior), *chewing*, and *feeding*.
- Anal stage** (1 ½ ÷ 3 years) - sphincter control is achieved and primary focus shifts to anal zone and behaviors associated with *expulsion* and *retention*.
- 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 *masturbation*.
 - OEDIPUS complex** (central theme of this stage and core concept of early psychoanalytic theory) involves triadic relationship among father, mother, and child in which child wishes to have sole 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.
- 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), identification (e.g. superheroes), 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, devalued parents, but that he has "real" parents who are rich and powerful; child may have imaginary companion who is individual (sometimes twin) or animal that provides companionship, love, and attention.
- Genital stage** (begins with 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 foreplay into primary genital sexuality.

DEFENSES

- mental 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):
 - denial** - blocking perceptual information from awareness or conscious acceptance.
e.g. woman refuses to believe that her father is seriously ill.
 - projection** - attribution of unacceptable inner wish, feeling, or thought to another person or entity; projection is common in individuals who believe that their angry or sexual wishes are unacceptable; it is core component of **paranoia**.
e.g. man experiences anger toward his wife as her anger toward him.
 - splitting** - perception of individuals as all good or all bad.
e.g. woman sees herself as virtuous and views rival at work as evil.
 - repression** - urges, thoughts, wishes, or feelings that individual considers unacceptable or dangerous are maintained at unconscious level.
e.g. man feels tense around coworker but is unaware he feels competitive and views him as rival.
 - reaction formation** - exaggerated recognition of only one side of attitude or relationship.
e.g. woman is aware only of loving her younger sister, never of any resentment or rivalry.
 - isolation of affect** - separation of thought or event from difficult or painful feeling.
e.g., seriously injured accident victim calmly describes incident, but experiences no emotion.
 - rationalization** - substituting acceptable motive for all attitude or behavior that otherwise might be self-serving or unacceptable.
e.g. "the reason I did that was for your own good".
 - undoing** - thought / action that individual believes neutralizes consequences of another thought / action; this defense is often unconscious and is associated with rituals and superstition.
e.g. person knocks on wood to ward off danger.
 - 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 his thumb after new sibling is born.
 - intellectualization** - mastery of painful or threatening issue with knowledge and explanations.
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:

- Id** - **psychic representation of drives (wishes)**; these drives are largely unconscious, particularly sexual and aggressive infantile and childhood drives (e.g. sucking drives, anal-retentive drives, sadistic and destructive drives).
- 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:
 - maturational functions** (i.e. biologic, genetic) include motor activity, sensory function, language, and cognition and memory.
 - developmental functions** include defenses and signal anxiety, reality testing, object relationships, sexual development, identity, and overall integration of personality.
- Superego** encompasses:
 - conscience** - **judgment** and **self-criticism** are *affectively regulated by guilt* (individual's sense of what he should and should not think, feel, or do).
 - ego-ideal** - **aspirations** and **values** are *affectively regulated by shame*.
 - conscience and ego-ideal develop through transfer of prohibitions, permissions, expectations, and values from **external authority figures** (usually parents) to **internal agency**.

FIVE PERSPECTIVES OF PSYCHOANALYTIC THEORY

- approaches to viewing and organizing thoughts, feelings, and behavior.

- 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).
- Dynamic perspective** - all behavior is *compromise among internal largely unconscious intrapsychic forces*.
- 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; blocked energy is transformed into tooth grinding or aversion to certain foods.
- Structural perspective** organizes mental activity and behavior into *stable and enduring structures* (id, ego, and superego).

5. **Adaptive perspective** - psychological processes and mental development are rooted in behavior that is genetically programmed to provide for adaptation to environment (e.g. grasping, sucking, head turning, eye following) - all behavior represents some aspect of *adaptation to reality*.

PSYCHOANALYSIS

- **encouragement of free association** as method 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 reenacted* with individuals in present; this process in patient progressively focuses on analyst and is then 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 affects 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 (i.e. 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** (*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 eliciting, 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**.
- **response** may be motoric, 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.
- **reinforcement** is similar to reward.
 - 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).
 - **reward reinforces behavior** that is used to communicate need (e.g. if child is praised for eating, praise becomes learned reward and secondary reinforcer).
 - **continuous 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 or all four-footed animals).

Extinction - *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.

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) stimulus 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 she 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.

- at basic level, infant assimilates nipple into inborn reflex schema of sucking.
- at higher level, child retains preexisting understanding, even in presence of new or different perception (e.g. if child identifies flying objects as birds, then he identifies airplane as bird as well, and this perception is assimilated into preexisting schema).

Accommodation - reflex, reflex 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 interaction involves varying degrees of assimilation and accommodation that progress to **equilibrium**.
- equilibrium (reestablished by assimilation and accommodation) becomes adaptation.

Motivation (origin of action) may be *change in state of organism* (e.g. hunger activates sucking and crying behaviors), *environment*, or *both*

- this change creates **disequilibrium in reflex schema** (or, later, in **cognitive system**); equilibrium is reestablished by assimilation and accommodation.
- reflex systems, or schemata, are activated only by appropriate stimulus (e.g. nipple does not activate grasping reflex, and rattle does not activate sucking schema).

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) - reflex patterns 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); infant does not act on or search for object that he cannot see - infant does not realize that objects, including persons, have independent existence.
 - 3) **secondary circular reactions** (5 ÷ 9 months) - beginning of intentional activity and interest in results of that activity (e.g. causing object to move or swing and then repeating that action on other objects); infant gradually learns that objects have separate existence, and truly imitative 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 or image of self; stage is set for intelligent, 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 intuit, 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 square root, between water 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 without presence of concrete objects and therefore is capable of purely 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 final, mature terms; adolescent becomes capable of both logical planning for future and philosophic thought about values, ideals, and meaning of life.

4. PSYCHOSOCIAL 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 stimulated, and 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 region** 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 authority; **task** is achievement 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 **intrusive (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 intrafamilial focus 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 *industry* (competence) or sense of *inferiority* (incompetence).
5. **Adolescence** (12 ÷ 20 years) - **continuation** and **upheaval** of previously established sense of self; 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 that all options are no longer open and that choices are limited - he 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.
 - **ego integrity** involves individual's sense of pride or satisfaction in her past and her family (children and grandchildren) and sense of equanimity about life cycle.
 - alternative is **despair** - depression, lack of self-regard, and sense of futility associated with increase in alcoholism, physical illness, and in men, suicide.

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

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, phylogenically determined*, sequential evolution of forms and functions.

Development - acquisition of abilities and functions *through experience*.

INFANCY ÷ TODDLERHOOD

BIOLOGIC FACTORS

motor, vocal, and sensory development milestones → see p. D5 >>

- response to sensory **stimulation in utero** is shown by fetal monitoring - fetus responds to stimuli with certain reflex patterns (sucking, kicking).
- ≈ 160 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.
 - 5% of middle-class boys and 10% of lower-class boys have attention deficit hyperactivity disorder (male-female ratio ≈ 10:1).
- **ATTACHMENT behaviors** (e.g. crying, clinging) are present at birth - increase likelihood of maternal care and aid infant in attaching to mother.
 - neonates have number of innate, simple **reflexes** (Moro's, palmar grasp, rooting & sucking, etc). see p. D5 >>

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.
- **smile** is innate reflex response at birth (i.e. **endogenous smiling**); infants smile 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.
 - **anaclitic depression** is name given by René Spitz to reaction of apathy, 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 psychoanalytic theory:

- birth ÷ 1 month - infant has little self-aware interaction with environment (stage of **normal autism**).
- 2 ÷ 4 months - infant experiences **sybiotic development** - sense of oneness with mother (infant is unaware that he and mother are separate individuals).
- 5 ÷ 9 months - infant experiences **differentiation** - gradually increasing awareness that mother is separate entity; infant performs customs inspection of mother (explores her eyes, nose, and mouth, and pulls at her hair).
- 10 ÷ 17 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.
- 18 ÷ 36 months - child experiences **rapprochement sub-phase** - child's sense of invulnerability and omnipotence is tempered by increasing realization that mother is not always available to protect him.
 - **SEPARATION ANXIETY** (another marker of attachment process) reaches its peak at 18 months of age - child manages her anxiety by clinging to mother, or shadowing, and darting away.
 - as psychological separation of mother and child is accomplished, child gradually realizes that he is distinct entity (**individuation**).

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 peekaboo and later hide-and-seek to master anxiety associated with separation and loss; 18-month child will spend hours practicing going up and down stairs).
- **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. shaving, 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 - collectively, these conflicts are 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 steps in terms of socioeconomic level:
 - typical middle-class infant is weaned from breast or bottle to cup at 1 year of age; many lower-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.

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

COGNITIVE MATURATION

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 feces, and therefore may affect toilet training (e.g. child may not want to give up something perceived as alive inside).
- **artificialism** is belief that all 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

Psychosexual 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

BIOLOGIC FACTORS

- **adolescence** begins at puberty (i.e. adolescence is transition from childhood to adulthood); **adult** status is confirmed at age 18 yrs with ability to vote.
- cognitive development reaches its final stage - **formal operational stage** (> 11 years) - most adolescents can perform **abstract and propositional thinking** about multiple variables, consider 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 *midadolescence*, 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 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).
- SOCIOECONOMIC LEVEL significantly influences nature of middle and late adolescence:
 - 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 ÷ 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 dramatically different at 25 years of age than at 65 years of age.
- having children provides 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 in many American families.
 - 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.

SOCIOCULTURAL 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.
 - less severe form is *midlife transition* (occurs in 80% individuals in their forties) - begin to sense finiteness of time - experience discrepancy between aspirations and actual lives.
- relationships with children change - 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 many people, 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 in both men and women, even into their nineties.
- **retirement** is critical point in development - individual may believe that he is of no more use + 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).
 - 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

CHILD'S PERSPECTIVE

Children < 5 years view death as **abandonment** - they do not understand its finality and irreversibility - they cannot fully mourn important individuals in their lives. They may say, "When Grandma comes back to life . . ." or "When Grandma comes to visit . . ." even when they are told explicitly about her death.

Middle childhood - **more realistic view** of death emerges.

- anxiety about death concerns not only loss of, or separation from, loved ones but also **fears about mutilation** (castration anxiety), **suffering, pain**.
- children's thinking is **egocentric** - often experience guilt and **view themselves as responsible** for their own or others' illness / death (may view illness / 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!

- if 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 and parents' minds 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, although unconsciously and in advance.

ADULT'S PERSPECTIVE

- adults are anxious about their own death because of:
 - 1) dread of separation from their loved ones.

- 2) concern about pain and suffering.
- 3) fear that they will not leave indelible mark on world that will ensure their perpetual existence and thus avoid nothingness.

Elisabeth Kübler-Ross states that dying patients experience five stages before death occurs:

1. **Denial** - patient cannot believe that he is dying.
2. **Anger** - range of reactions (rage, bitterness, confusion).
3. **Bargaining** - search for meaning in life, return to religious institutions, belief that some magical power will intervene.
4. **Depression** involves two phases of grieving:
 - 1) **preparatory grief** - emotional detachment and relinquishing of social and family bonds and responsibilities.
 - 2) **final grief** - patient's preoccupation with his own death; often marked by reflections about existence and life.
5. **Acceptance** - emotional detachment or neutrality or calm (even euphoric) state.

PHYSICIAN'S RESPONSE

- *sense of failure* is common; despite knowing otherwise, many physicians believe that if they had tried harder, outcome might have been different.
- occasionally, patient reminds physician of loved one (either child, spouse, friend, parent, or colleague).

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. **Morphostasis - homeostasis (stability)** - system attempts to maintain original structure as much as possible.
 2. **Morphogenesis (change)** - system undergoes maximal change or innovation in structure.

Disintegration - **system dissolves if it cannot adapt** to environmental stress.

- some families cannot adapt to demands of their environments → 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 is *dominant conceptual model in contemporary medicine* - it is **reductionistic** (i.e. it attempts to explain all complex phenomenon in language of molecular biology), **dualistic** (i.e. it gives priority to somatic variables and ignores psychosocial 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 woman wait until breast lump reaches massive proportions, perhaps even eroding through her skin, before consulting her physician?).

Engel's **BIOPSYCHOSOCIAL MODEL** proposes that, **to understand human illness adequately, physician in addition must consider factors other than biomedical data**; these factors include following:

1. **Intrapsychic factors**
e.g. adolescent focused on his physical appearance may be noncompliant with his regimen of systemic steroids 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. opinions differ as to whether individuals 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 opinions of her peers.

INTERPERSONAL BEHAVIOR

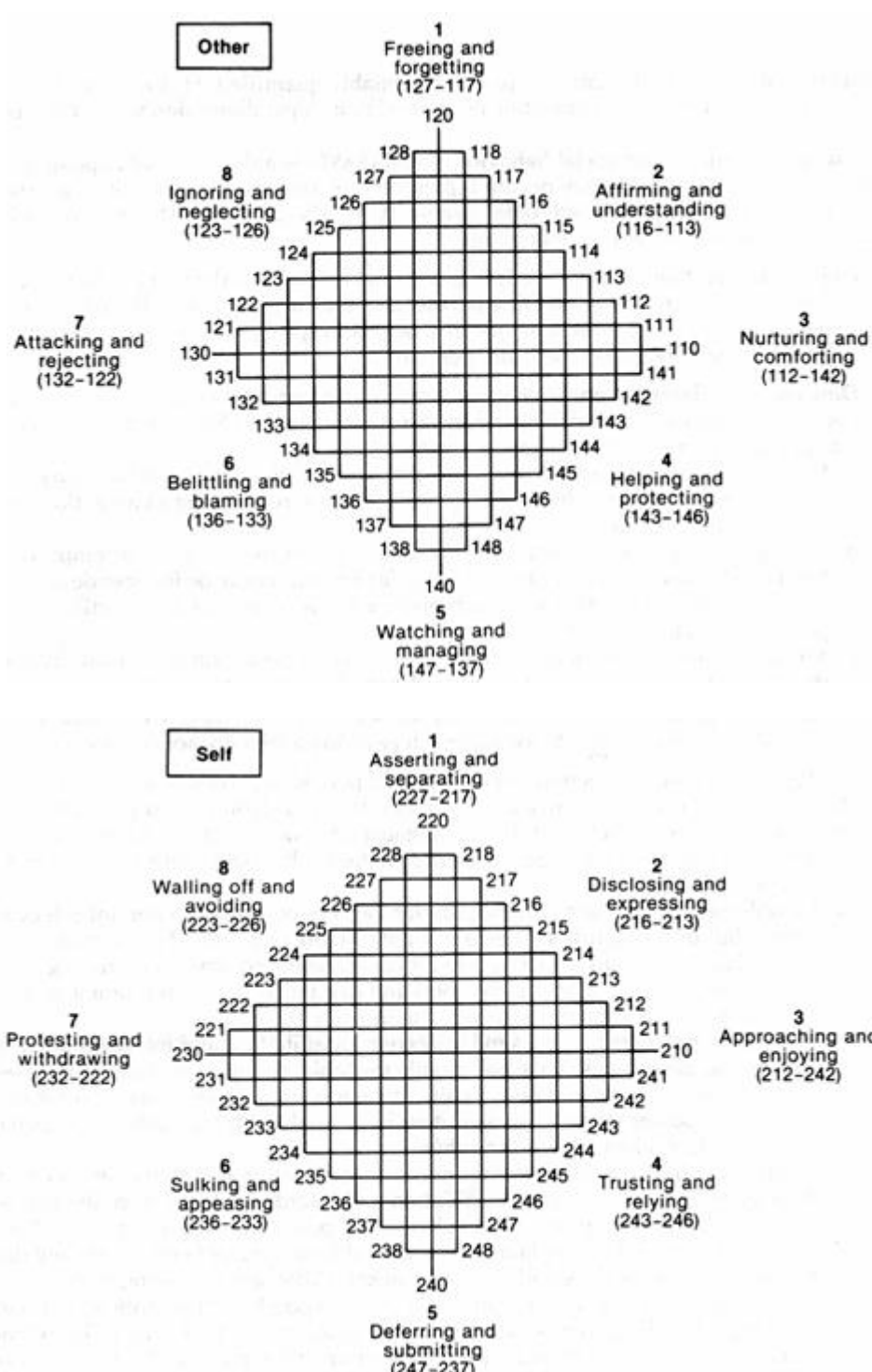
Interaction between people is inevitable - one cannot choose not to interact or behave (even silence is interpersonal posture).

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

I. 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).

Benjamin's model allows classification of all behaviors in terms of three dimensions: **focus on other or self** (*surfaces*), degree of **friendliness** (*horizontal axis*), and degree of **interdependence** (*vertical axis*); cluster version shows eight groups of behaviors per surface and is condensation of full SASB model, which describes thirty-six behaviors per surface (e.g. cluster 5 from *other surface* [watching and managing] contains 5 closely related behaviors from full model [137: *intrude, block, restrict*; 138: *enforce conformity*; 140: *manage, control*; 147: *benevolently monitor, remind*; 148: *specify what is best*]).



- 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)?
 - interdependence** (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)? Does action show **submission** (focus on self) or **assertion of independence** (focus on self)?
 - affiliation** (see *horizontal axis* in above figure) - does action show **hostility toward other person** (focus on other), **friendliness** (focus on other), **withdrawal protesting 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 stabilize into characteristic patterns of interpersonal behavior (in language of GENERAL SYSTEMS THEORY, behavior develops recurrent structure).
 - complementary postures** involve **similar degrees of affiliation and interdependence, but differing focus**; they are usually **stable** over time (e.g. *enmeshed dyad* typically includes one individual with prominent controlling behavior (high interdependence, focus on other) and one individual with prominent submissive behavior (high interdependence, focus on self)).
 - symmetric postures** involve **similar degrees of affiliation and interdependence as well as same focus**; they are usually **unstable**, resulting in interaction of escalating intensity; over time, they typically move toward complementary postures (e.g. *power struggle* involves two individuals with high controlling behavior (high interdependence, focus on other)).
 - antithetical postures** involve responding with posture that **differs in focus and is directly opposite in degrees of affiliation and interdependence** 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.) 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. CATEGORICAL 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.
- tendency 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 behavioral observation procedure - **strange situation paradigm** - classifies attachment relationship between 12-month-old infants and their primary care givers (usually mother) based on infants' responses in laboratory setting to reunion with care givers after separation of several minutes:

- 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 adverse or frightening experiences - child feels bold enough to explore world and self-confident that he can handle challenges
 - insecure/avoidant attachment** - infant avoids care giver on her return; mothers of these infants provide less physical 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, delinquent.
 - 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 unchangeable, but without active intervention, it usually **remains stable over time** (stressful family events can change secure attachment relationship 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.

e.g. families in which parent-child incest occurs often have rigid cross-generation alliance between child and one parent, with other parent taking childlike role.

LARGE GROUP BEHAVIOR

SOCIAL COORDINATION OF BEHAVIOR

- social interaction requires procedures that make behavior predictable and adaptive to environment.

Cultural aspects of coordination

CULTURE is collective set of beliefs, values, and norms used by members of large group to give understanding, meaning, and purpose to their lives. Culture involves roles, rituals, and conventions that members of group use to organize their social interactions. Ease of communication between two individuals is related to their degree of cultural similarity.

- 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 physician, 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 SYSTEMS

- individuals form **networks of attachments** that promote **adaptation to 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 sociolegal 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. **Transactional**: 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).

MARRIAGE

- **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; ½ 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) premarital 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 IIa (preschool age)**; major tasks:
 - 1) dealing with intense physiologic and psychological dependence of young children.
 - 2) establishing balance between intrafamily and extrafamily responsibilities (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 (primary 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 ties 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

Crisis is 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 concern 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

- relatively rapid **physical change** that leads to maturation of sexual and reproductive anatomy.
- adolescents may experience strong sexual urges that are released through masturbation or sexual experimentation (masturbation allows adolescent to "try out" sexual functioning with aid of sexual fantasies).

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, overindulgence 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 resolution 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 has 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 >>](#)