Outline of Psychology
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Note: To look up references, see the Consciousness Bibliography, listing 10,000 books and articles, with full journal and author names, available in text and PDF file formats at http://www.outline-of-knowledge.info/Consciousness_Bibliography/index.html.

SOCI>Psychology

psychology general

People can study individual thoughts and actions {psychology, science}. Psychology topics are anxieties, attention, attitudes, abnormal and typical behaviors, children, cognition, conscience, consciousness, creativity, freedom, goals, learning, memory, morals, motivations, personality, punishments, purposes, rewards, self, techniques, values, and will.

feelings

People summarize their current overall state as positive or negative, bad or good. They can have pleasant memories and feelings of accomplishment, success, attachment, satisfaction, and pride. They can have unpleasant memories and feelings of defeat, failure, loneliness, dissatisfaction, nostalgia, and remorse.

needs

For well-adapted life, people need positive communication with other people, love, affection, trust from others, freedom to act independently, opportunity to act and have success, respect from others, self-respect, power to satisfy needs or as end in itself, material possessions and wealth as means and as end, manual skills, mental skills, curiosity satisfaction, and security. Complex needs include religious salvation, aesthetic satisfaction, variety, new experiences, and opportunities for creativity.

evolutionary psychology

Psychological functions, such as cognition and behavior, are naturally selected adaptations to primate and hominin environments {evolutionary psychology}. However, some adaptations arise by exaptation.

SOCI>Psychology>Attitude

attitude in psychology

Ideas, opinions, and values {attitude, psychology} have cognitive side and emotional side.

halo effect

People can favorably receive respected or charismatic people's attitudes, opinions, and friends {halo effect}. Speaker reputation can affect people's judgment.

implicit association test

People have unconscious associations. Tests {implicit association test} (IAT) can measure response quickness for pairing or categorizing things.

prejudice
People often have emotional opinions {prejudice}|, without rational evidence, based on other's opinions.

reference group
People learn attitudes from their social group {reference group} by association with other good things gained from their group.

scapegoat
People who make mistakes or do harm can attribute blame or fault to another person {scapegoat}| outside their group or with low status, to remove blame from themselves.

sleeper effect
Source authority or reliability affects attitude or message acceptance {sleeper effect}. People most favorably receive complete, true, and fair attitude conveyed by expert or authority.

stereotype
People can attribute personality type {stereotype}| to other people based on social class, race, or culture.

SOCI>Psychology>Behavior

behavior
Animals perform standard actions {behavior} that depend on bodies, objects, and events.
causes
Personal and social states, such as shame, taboo, awe, mystery, and consensus, control behavior.
motor response
Motor response starts assembling early in visual analysis, using orientation cues and learned behaviors.
will
Motor cortex receives input before people act [Walter, 1953].
voluntary muscle control
Voluntary muscle control requires current-state consciousness.
aging
Manual abilities increase to maximum at age 26 and then slowly decline. Verbal ability increases after age 21, peaks at age 50, and then declines sharply after age 70.
children
Children often annoy or injure people without control or concern for situation. Children often escalate playful fighting into deliberate injury.
explanation
Human-action explanations must differ from physical-event explanations {Verstehen, explanation}. Action explanations use beliefs, intentions, desires, judgments, perceptions, decision theory, rationality, and agency.

affordance
Objects have the property {affordance}| that people can do something with them or near them in space or time.

agency in behavior
People can choose action, act upon the choice, know their minds through intuition and introspection, understand other minds through empathy, assume that other agents have similar mental states, and predict other-agents' behavior {agency, behavior}. Agents transmit information and/or force. Agent actions can depend on beliefs and desires.

anchoring
People presented with stimulus tend to use it as reference point for the next decision {anchoring}.

asymmetric paternalism
Public policy {asymmetric paternalism} should help people make rational decisions, by accounting for human emotions.

bystander intervention
If other people are around, people tend not to help people in distress {bystander intervention} [Darley and Latane, 1968].

candle problem
Given matchbook, some candles, cardboard box with thumbtacks inside, and vertical corkboard, attach candle to corkboard so it burns normally {candle problem}. Tacks break candle, so it does not hold. Corkboard does not stick to melted wax on candle bottom. Put candle in box and attach box with thumbtacks.

Cockpit Resource Management
Airplane pilots use strategies {Cockpit Resource Management}, for making decisions, that involve input from all crew members.

dictator game
Person with ten dollars gives some to another person {dictator game}. If dictator can see the person, he or she gives more.

drive
Direct biological motivators {drive}| are hunger, thirst, and sexual desire. All mammals have drives. Drive requires sensation, does not require perception, and does not require awareness. Drive is not emotion, because emotion requires cognition.

framing effect
Descriptions can set reference frame for making decisions {framing effect}. Framing depends on loss aversion.

Hawthorne effect
Increased experimenter attention to people affects experiment outcome {Hawthorne effect}.

loss aversion
People are more afraid of losing than gratified by winning {loss aversion} (Daniel Kahneman and Amos Tversky) [1974].

negativity bias
Bad is more important than good {negativity bias}.

personal equation
Response times have individual differences {personal equation}.

premium equity puzzle
Stocks outperform bonds significantly over the long term, but people still buy half bonds {premium equity puzzle}.

reaction time
Periods {reaction time}| (RT) are between stimulus onset and behavioral response. Reaction time increases if signals are more similar. Reaction time increases logarithmically as number of signals among which to discriminate or choose increases. Shorter reaction times have more errors.

reward and punishment
Money, praise, hugs, and smiles {reward} can cause work or approach. Rewards are positive reinforcers.
smaller punishment
Rewards can be punishment omissions, terminations, or reductions.
punishment
Fines, pain, fear, and jail {punishment, psychology} can cause avoidance or escape. Punishments are negative reinforcers.
smaller reward
Punishments can be reward omissions, terminations, or reductions.
emotion

Rewards and punishments cause emotions.

Stanford Prison Study

People playing prisoners and guards enacted their roles with little thought of their own attitudes or values {Stanford Prison Study}.

stereotyping

Society's implicit effects typically build stereotypes and prejudices {stereotyping}.

synergy in behavior

Brain timing signals link muscle reflexes {synergy, behavior}|. Breathing, posing, walking, running, swimming, throwing, striking, and jumping connect muscle reflexes. Walking control includes goal or route selection, visual path and obstacle feedback, and feet and body feedback.

ultimatum game

Person with ten dollars proposes to another person how much to transfer, and other person can accept or refuse {ultimatum game}. If accepted, both players keep their share. If rejected, both keep nothing.

SOCI>Psychology>Behavior>Handedness

handedness in behavior

People are 90% right-handed and 10% left-handed {handedness, behavior}. Few people are ambidextrous.

animals

Mammals have paw preferences but 50% for left or right.

age

Handedness begins at 24 months.

brain

Until age three or four, brain hemispheres have little specialization.

In right-handers, left cerebral hemisphere has sense and motor connections to both body sides, and right hemisphere connects to only one side. In left-handers, cerebral lateralization is less. Adult human skulls are asymmetric.

brain: language

Left-handers typically have left-brain language region, but 30% have language regions on both brain sides. 95% of right-handers have left-brain language region.

brain: evolution

Human cerebral dominance probably started 300,000 years ago, when human skulls first appear asymmetric.

left side

In right-handers, left side has fewer skills, poorer timing and coordination, more variability, and more frequent and slower corrections.

hand usage

Right-hander typically supports and orients object in left hand, without using visual feedback, and performs fine movements with right fingers, using visual feedback {hand usage}. Most people use right hand for gesticulation.

causes

People inherit handedness. Handedness also results from social pressures or early experience, especially with objects designed for right-handers. Brain damage before or after birth can shift cerebral dominance or prevent hemispheric specialization. Subnormal and epileptic people have more left-handedness.

causes: twin

Perhaps, left-handedness is because there was a twin in utero. Twenty percent of twins are left-handed.

intelligence

Performance by right-handers and left-handers is equal on all tasks. No special ability or disability distinguishes left-handers.

Subnormal people have more left-handedness.

disease: dyslexia

Dyslexics often are neither strongly right-handed nor left-handed.

disease: epilepsy

Epileptic people have more left-handedness.

disease: synesthesia

Synesthesia is more with left-handedness [Stein and Meredith, 1993] [Stein et al., 2001].

disease: early death

Perhaps, left-handers die nine years earlier.

ambidexterity

People can use right and left hands equally well {ambidexterity}|. Ambidextrous people typically have less skill on their better side than left-handers or right-handers on their better side.

left-hander

Left-handed people {left-hander} are 4% to 36% of people in different races and cultures.

SOCI>Psychology>Behavior>Motivation

motivation in behavior

Need, intention, goal, energy, or force {motivation, behavior}| can cause behavior.

cause

Stimulus or perception arouses organism, and then aroused organism performs the behavior.

cause: intention

Behavior uses intentions and goals. Intention happens after deliberation and is desire or purpose to perform behavior [Järvilehto, 2000].

types

Motivations can be innate or acquired. Innate motivations include drives, such as hunger, thirst, and sexual desire. Acquired motivations include achievement, failure fear, power need, and affiliation need.

Motivations include self-preservation, fear of death, and finding meaning for life. Motivations include physical contact, genital stimulation, approval, praise, autonomy, domination, competency, skill, and learning.

People can like to receive assistance from others. People can need to reduce uncertainty and anxiety, by setting rules. Frustrations and threats can cause wishes for harm or actual harm to others. People conform to standards and do what other same-age-and-sex persons do. Telling the truth and being kind receive praise. Fine-arts students like self-discovery.

factors

Deprivation, stimulation, previous learning, and past successes and rewards increase motivated behavior.

satisfaction

People can satisfy needs directly, perform intermediate behaviors toward satisfying needs, substitute other behaviors to indirectly satisfy needs, or delay or stop satisfying needs.

comparison: beliefs

Beliefs are dispositions to act.

adjunctive behavior

Intermittent rewards induce excessive behavior {adjunctive behavior}.

local-stimulus theory

Perhaps, imbalanced physiological states motivate behavior {local-stimulus theory of drive}. However, this theory has limited applicability.

thematic organization packet

Knowledge structures {thematic organization packet} categorize human goal types and how they are met. Goals can be possession, aggression, love, and hunger satisfaction.

vicarious satisfaction

People's motives can relate to other people or objects {vicarious satisfaction}|, for example, people living for their children.

SOCI>Psychology>Behavior>Motivation>Goal

goal

Differences from current situation {goal, behavior} can motivate behavior. For example, people have goal to find patterns and structures that indicate what to do next.

plan

Behaviors are relative to plans to reach predetermined goals. Failures change methods used to reach goal.

subgoals

Goal involves simpler goals, such as holding object, movements, and placing object.

value

Different goals have different values, so goals can conflict. Attachments change goal values. Fears change situation and goal [Järvilehto, 2000].

approach goal

Goals {approach goal} can be desirable, such as mastery, discovery, prestige, achievement, and adventure [Järvilehto, 2000].

avoidance goal

Goals {avoidance goal} can be undesirable, such as fear, pain, threat, injury, and death [Järvilehto, 2000].

SOCI>Psychology>Behavior>Motivation>Reinforcement

reinforcement

Rewards {reinforcement}| can affect practice amount, not learning itself.

positive reinforcement

Rewards can be food or pleasure {positive reinforcement}.

negative reinforcement

Rewards can be punishment reductions {negative reinforcement}.

SOCI>Psychology>Behavior>Theories

behavior theories

Behavior has theories {behavior theories}. Mind has many non-conscious specialized sensory-motor systems, such as eye movements, posture changes, pointing, reaching, grasping, and walking. Perhaps, propositions referring to person's mental states or processes are logically equivalent to propositions referring to person's overt behavior. Perhaps, behaviors with same onset, duration, and decay times use same regulatory processes.

balance theory

If actions do not correspond with opinions, people change one or the other {balance theory}.

behavior genetics

Genes that specify nervous system structures and functions {behavior genetics} affect individual and group behaviors, as well as behavior-related psychological characteristics, such as intelligence, temperament, learning, and perception. Genes partially determine differences in behavior [Scheller and Axel, 1984].

behaviorism

Response reinforcement determines behavior response to physical stimulus {behaviorism}|. Behavior control and prediction are possible by determining stimuli and reinforcements. Mind and mental representations are not real or relevant. Thoughts, feelings, and intentions do not determine what people do. People do not consciously act but only react to stimuli.

control theory

For behaviors, mind generates control signals to time muscle contractions {control theory}. Control signals trigger linked reflexes in synergy. Breathing, posing, walking, running, swimming, throwing, striking, and jumping are linked muscle reflexes.

ergonomics

People can have efficiency at work {ergonomics}| {human engineering}. Control knobs and switches can move in natural or expected direction {control-display compatibility}. Controls can be next to displays. Controls can have adjustable height and distance. Workspace layout can match operation sequence. Machine design can allow easy maintenance.

inferiority

Behavior tends to relieve inferiority feelings {inferiority}|. Seeking success and asserting oneself are reactions to inferiority feelings and are part of will to power.

least effort

People expect that animals expend minimal energy {least effort} to survive, but instead they keep moving and processing information.

schema in behavior

People organize simple responses into repeatable behaviors {schema, behavior}. New adaptations, stimuli, objects, or situations go into existing schema or build new schema {assimilation, schema}. New stimuli, objects, or situations cause behavioral changes {accommodation, behavior} [Järvilehto, 2000].

spiritualism in behavior

Preliterate societies have possession {possession, behavior} by spirits and mediums for spirits {spiritualism, behavior}. Spirit possession cults can attract women and other deprived people. In European and American society starting about 1850, spiritualism was non-religious, and young, vulnerable, beautiful, and naive women practiced it.

SOCI>Psychology>Behavior>Kinds

behavior types

Behaviors {behavior types} include feeding, eating specialized foods, aggressing, fighting, fleeing, performing courtship rituals, mating, caring for young, sleeping, hibernating, sheltering, teaching, communicating, expressing individuality, expressing territoriality, using tools, communicating with signals, using symbols, using language, and having consciousness.

factors

Individual and group behaviors involve reflexes, instincts, goals, emotions, motivations, and learning.

jobs

Jobs can have tension or responsibility. Administrator attitudes and behaviors affect worker psychology most. People can become bored with job. People can have overwork. Perhaps, people change jobs when marginal job-satisfaction rate continues to fall.

accident

Accidents {accident, behavior} happen if information rate is too high or time allowed to process information is too short. Accident frequency inversely relates to ability to control behavior. Accident frequency varies with temperature, lighting, and humidity.

automatic writing

People can feel like they are writing under someone else's control {automatic writing}.

blushing

Embarrassment, guilt, or consciousness of another person's thoughts or opinions can cause uncontrollable face reddening {blushing}|. Only humans, who have consciousness, can blush. Women blush more than men. Young children, who do not understand social rules, do not blush. Blind people can blush.

confinement

Living in confined environment {confinement}|, such as in space or in submersible, has low privacy, few people, artificial day-night cycles, circadian rhythm shifts, anxiety about mechanical systems and safe return, tiredness from long work schedules, delays in completing assigned tasks, frustration with failure, and boredom.

crying

Only humans cry {crying}|.

deception in behavior

Social species try to create false beliefs in other group members by intentionally deceiving them {deception, behavior}| {Machiavellian intelligence hypothesis}. However, it is unlikely that non-human animals have theories of mind. Deception is likely to be association.

decision-making

Animals select behavior from available behaviors {decision-making}|, to attain or avoid something. Minds decide to act by non-linear process. Excitatory neurons stimulate inhibitory neuron, which inhibits excitatory neurons. Learning builds larger behavior units and so reduces number of decisions that consciousness makes.

eye-hand coordination

Vision and hand motions can link {eye-hand coordination}|. Hand and vision coordination can happen without sight of hand, if another experience links hand motion to seen object.

fantasizing

People can imagine different situation or outcome {fantasizing, behavior}|.

fatigue in behavior

Over time, performance slows, people make more errors, concentration is poor, perception fades, and memory decreases {fatigue, behavior}|. Little sleep typically causes fatigue. Fatigue increases during adverse conditions and anxiety. High motivation can overcome fatigue.

flight-or-fight response

When faced with threat or aggression, animals flee or fight {flight-or-fight response}|. The flight-or-fight response uses aminergic signals in autonomic nervous system.

frustration

Interference with goal-directed activity, interference with arousal or desire, choice between two incompatible responses, tension creation, forced activity, or forced withdrawal can cause frustrations {frustration}|. Frustration can cause imagining different situation or outcome {fantasizing, frustration}, committing violence against others or objects {aggression, frustration}, going back to childish behaviors {regression, frustration}, or not thinking about or acting on situation {withdrawal, frustration}.

galvanic skin response

Emotional arousal causes sweating and lowers skin electrical resistance {galvanic skin response}|.

gesture

Body and limb movements {gesture, behavior} can signal intentions, commands, or suggestions. Gestures can evolve from behaviors used for survival. Gestures can be specific to groups.

imitation

Imitation is seeing action, remembering it, and then doing it {imitation, behavior}| [Thorndike, 1903] [Thorndike, 1911]. In organisms with voluntary muscles, behavior perception can lead to voluntary independent similar behavior, if organism can already perform the behavior by learning or random exercise, and if perception and memory can form behavior representations that can initiate movements. Imitation is voluntary but is also an automatic response. Sense input sets up motor reaction tendency and/or elicits memory.

facial expressions

Facial imitation involves matching seen faces to felt proprioceptive signals while trying to mimic. Minutes after birth, babies can imitate some facial expressions, without visual feedback.

innate

Ability to imitate body or facial expression probably is innate.

age

Infants imitate sounds, gestures, and body positions. From 12 to 15 months, children can imitate up to week after perceiving action. They also can tell when others are imitating them [Meltzoff, 1996].

animals

Birds can imitate bird songs. Parrots can imitate sounds. However, apparent imitation is usually only accidental learning in same situation.

Whales can imitate whale songs [Reiss, 1998].

Perhaps, chimpanzees do not imitate but only transfer skills by being in same situation or learning to conform [Heyes and Galef, 1996] [Tomasello, 1999].

animals: parrots

Sounds must sound the same to parrot as to people in order for parrot to imitate people.

properties: medium

When recreating perceptions, imitation uses a medium, such as paper. When imitating actions, imitation uses the body as medium.

properties: representation

Imitation uses mental representation to imitate actions, such as yawning, or recreate perceptions, such as drawings and sounds.

properties: voluntary muscles

Action imitation uses voluntary muscles.

factors: behavior

Imitation can happen only if people already can perform the automatic procedure.

effects: emotion

Imitating human expression causes people to have associated emotion. Even infant can imitate expression and can have associated emotion.

copying

Imitation allows copying and variation. In competitions, imitations can have different values, and imitated events can evolve. Events copied more have better copies and are more valuable. Events have groups with levels and rules [Blackmore, 1999] [Schoenauer et al., 2000] [Steels, 2000].

imprinting in behavior

Animals can learn to fixate on another animal {imprinting, behavior}, so they ignore or avoid other individuals.

instinct

Animals have automatic behavior patterns {fixed-action pattern} {modal action pattern} that start by stimulus {sign stimulus}. Animals react to external or internal stimuli with inherited related-reflex patterns {innate behavior} {instinct}|.

properties

Fixed-action patterns are hereditary, specific, and complex responses to external or internal stimuli. Innate behaviors happen without training and are more probable the longer the time since the previous one. Animals perform them completely once started.

effects

Fixed-action patterns can remove drive or need.

will

Fixed-action patterns can be partially under voluntary control.

motivation

Instinctive action is its own motivation.

emotion

Instinctive action seems to have emotion.

goals

Instinctive action has no goals or reasons.

behaviors

Most animals never produce new behaviors but only link new stimuli to innate behaviors.

interviewing

Interviewer needs to obtain and interpret information from interviewee to make decision {interviewing}.

technique

Interview technique {seven-point plan} for defined job obtains information about physique, intelligence, aptitude, attainments, interests, disposition, and circumstances.

properties

Time interviewer talks correlates with probability that candidate receives job offer.

negative information

Job interviewers can want to obtain negative information, to exclude someone.

learning

Interviewing can improve by profiling interviewer's style and providing feedback about good and bad things.

isolation

Prolonged isolation {isolation, behavior}| causes anxiety and hallucinations. After isolation, people have strong visual and other illusions.

lying

People can make false statement {lying}| to confuse, mislead, gain, or protect self.

obedience

Humans and other mammals can obey {obedience}|. People that obey authority do not feel that they are responsible for their actions but feel that they are only agents for other people. In famous experiment, people kept giving strong electrical shocks to other people, though givers experienced stress and protested to experimenter.

optimal state

People can engross themselves in activities and lose self or time feelings, with no anxiety or boredom {flow} {optimal state} [Csikszentmihalyi, 1975] [Csikszentmihalyi and Csikszentmihalyi, 1988].

persuasion

People can persuade others {persuasion}|, because people feel that they should reciprocate, be consistent, and do what other people do {social validation}. People can like persuader, want to follow authority, or want to hedge against scarcity.

play

Behaviors {play, behavior} can involve role practice, aggression, sex, and exploration.

reading rate

Humans can choose reading or speaking symbols {reading rate} {speaking rate} at 20 to 40 bits per second.

serial chaining

People can perform organized action sequences {serial chaining}|.

sneezing

Eyes reflexively close when sneezing {sneezing}|, to prevent damage. Mouth opens to let air out. People can sneeze in bright light {autosomal dominant compelling helio-ophthalmic outburst} (ACHOO).

weightlessness

In zero gravity {weightlessness}|, people learn how to move themselves around using hands and arms, rather than legs. People learn to judge object mass using inertia, rather than weight. Body fluids shift to head. Bones lose calcium. Muscles atrophy. Blood changes composition.

motion sickness

Sensory conflict causes space motion sickness. Semicircular canals operate normally, but otoliths do not. Drugs can reduce motion-sickness symptoms.

effects

Returning astronaut feels heavy and clumsy. Head movements make world seem to move.

withdrawal from life

Stress can lower aspirations, cause escape to fantasy, or result in not thinking about or acting on situations {withdrawal from life}|.

SOCI>Psychology>Behavior>Kinds>Aggression

aggression in behavior

Human behavior can try to cause physical or psychological injury to other people {aggression, behavior}|. Aggressive behavior is either fear/submission behavior or preparation to fight.

purposes

Aggression exercises or tests power. Aggression is also for defense and self-protection. In animals, aggression settles status, dominance order, and possession of, or access to, objects and territories.

causes

Direct aggression causes include consciously desiring to kill or harm someone, feeling anger, feeling fear, feeling anxiety, feeling inadequate, wanting approval from one's group, being blocked or delayed during goal-directed behavior, being denied gratification, being threatened, facing disrespect, having one's dignity or pride threatened or reduced, having group or personal symbols desecrated, having internal conflicts, committing crime already, and competing with others.

causes: competition

Competition causes aggression. Human males compete for females. Children fight to obtain or retain objects, positions, or activities. Children defend against adult aggression.

causes: frustration

Aggression results from frustration, but frustration can have other results {frustration-aggression hypothesis}. Removing or altering frustration cause can reduce aggression.

causes: arousal

Aggression level relates to activity level. Lowering arousal, acquisitiveness, or assertiveness lowers aggressiveness.

causes: biology

Hormones directly affect aggressive behavior. Aggression level in boys stays constant from age three to adulthood.

responses

Aggressive behavior typically causes withdrawal behavior in people aggressed against.

People can diffuse aggression by diverting attention, leaving people alone, substituting for behavior cause, removing behavior cause, or ignoring behavior.

Coaxing, soothing, reasoning, scolding, and giving up do not lessen aggression. Allowing aggression increases it. Low punishment encourages aggression. Fear of retaliation or punishment inhibits aggression.

Successful aggression causes imitation by others, even if they have no frustration.

aggression between groups

Group aggression against another group depends on member feelings about their group, knowledge of other group, approval from their group, and reinforcement.

aggression in group

In groups with aggressive individuals, stability can happen only at specific proportions of conventional and vicious fighters.

catharsis after aggression

Aggressive acts reduce urge to aggress {catharsis, aggression}|.

displacement of aggression

People can direct aggression toward something that cannot retaliate or punish them {displacement, aggression}|.

eye contact

Animals look into each other's eyes {eye contact}| {mutual gaze}, often for aggression. Animals can avert gaze after eye contact, to show submission. Animals can have eyespots, which can be threats.

threat posture

Postures {threat posture}| can elaborate or ritualize into symbols, to show aggression.

SOCI>Psychology>Behavior>Kinds>Conflict

conflict behavior

People often make either-or choices, or people compete with other people for rewards {conflict, behavior}. Personal conflicts include whether to accept or give love, choose autonomy or dependence, choose competition or cooperation, and think before acting or express impulse immediately. Sports and business have interpersonal conflicts.

approach-approach conflict
Two desirable, but incompatible, goals can be available simultaneously {approach-approach conflict}.

approach-avoidance conflict
Goals can have both good and bad attributes {approach-avoidance conflict}.

avoidance-avoidance conflict
Two goals can both be undesirable, but people must choose one {avoidance-avoidance conflict}.

double approach-avoidance conflict
Often two available goals have good and bad aspects {double approach-avoidance conflict}.

SOCI>Psychology>Behavior>Kinds>Displacement

displacement behavior
Animals can perform automatic activities typically performed in standard situations in inappropriate situations {displacement behavior}|. Displacement activities are hurried, stereotyped, or incomplete compared to same behavior in normal context. Displacement activities can reveal animal motivations.

coping behavior
Displacement activities enable animal to resolve conflicts {coping behavior}| and involve inhibition release.

motivational conflict
Displacement happens when two behaviors or goals are incompatible {motivational conflict}.

thwarting
Displacement happens when something prevents actions toward behaviors or goals {thwarting}|.

SOCI>Psychology>Behavior>Kinds>Habit

habit
People can repeat automatic behaviors {habit}. Serial chaining can become habit.

functionally autonomous habit
People can have reflex-like, repeated behaviors {functionally autonomous habit}|. They originally are independent of drives. Functionally autonomous habits can associate with drive and thus become drives.

habit family hierarchy
People build and alter habitual behaviors {habit family hierarchy}|.

SOCI>Psychology>Behavior>Kinds>Humor

laughter as behavior
Only humans laugh {laughter, behavior}| {humor}. Laughter involves mental censors and suppressers.
purposes
Perhaps, laughter is for alliance making.
factors
Humor and laughter can still happen when people suffer, starve, are in pain, or have oppression. Social situation determines laughter quality and quantity. Laughter can interrupt another person's speaking and thinking, and so to take control [Ramachandran, 2004].
animals
Other mammals appear happy. Young chimpanzees puff air when they play, sort of like laughing. Chimpanzees smile when submitting, but not from happiness.

incongruity in humor

Perhaps, laughter happens if actual situation differs from expected situation {incongruity, laughter}|, but not if situation is too simple or too complex. Expression or perception that deviates from normal thoughts or images, such as something ludicrous, can cause laughter. Laughter happens only if unexpected caused no harm. Perhaps, it only upsets dignity [Ramachandran, 2004].

disposition theory
Perhaps, humor depends on criticizing or disparaging other people and on emotions generated by being in or out of groups {disposition theory}.

relief theory
Perhaps, laughter happens after relief from physically or psychologically dangerous situation {relief theory}. Most jokes are about possible harm: taboos, injuries, and logical absurdities. Perhaps, laughter happens only if unexpected caused no harm [Ramachandran, 2004].

SOCI>Psychology>Behavior>Kinds>Novelty

novelty seeking
People seek new experiences {novelty, motivation}, probably for stimulation.

novelty reaction
New stimuli or environment changes cause most animals first to flee and then to approach and investigate {novelty reaction}|. More novelty causes more fear.

curiosity
People can like to learn more about new object or event {curiosity}|. Curiosity is thinking about something in new way.

exploring behavior
Feeding behaviors involve exploring {exploring behavior}. Following behaviors and searching behaviors develop from exploring behaviors and enhance perception and learning.

preferential looking time procedure
Surprise or novelty causes longer looking {preferential looking time procedure}, which can test for surprising features.

SOCI>Psychology>Behavior>Kinds>Pain Infliction

sadism
People can gain sexual pleasure by inflicting pain or cruelty on others {sadism}|.

masochism
Pleasure, especially sexual pleasure, can come from subjection to pain or cruelty {masochism}|.

SOCI>Psychology>Behavior>Kinds>Stimulus Response

dishabituation
Habituation to stimulus can stop {dishabituation}| suddenly or gradually. Habituation to stimulus immediately ends if another stimulus begins. Sensitization affects same synapses affected by habituation.

fixed sequence
Animal behavior has unchanging action programs {fixed sequence}|, which can combine.

mere exposure
Exposure to stimulus {mere exposure} makes people favor stimulus.

motor routine

Stereotyped behavior distributes spatiotemporal signals to target neurons {motor routine}| in response to stimulus or brain signal. The same motor routine can distribute signals to different locations and at different spatial scales.

reflex in behavior
Receptor stimulation can send signal to spinal cord and then to muscle or gland, resulting in involuntary action {reflex, behavior}.

sensitization in behavior
If dangerous or important stimuli happen, escape or fighting reflexes can heighten for several minutes {sensitization, behavior}. Repeated dangerous stimuli make sensitization last days or weeks. Response to other stimuli also increases. Sensitization affects same synapses affected by habituation. Sensitization releases more vesicles by increasing interneuron activity on habituated-reflex sense and motor neurons. Sensitization is not associative.

startle response
Fear increases response to startling {startle response, fear}.

SOCI>Psychology>Behavior>Kinds>Tropism

ergotropic behavior
Active animal behaviors {ergotropic behavior} involve fighting, fleeing, seeking food, and looking for mate. Pupils dilate, respiration increases, and blood pressure rises.

trophotropic behavior
Animal resting and building-up behaviors {trophotropic behavior} involve sleeping, eating, digesting, eliminating, replenishing glucose, and building cells from protein and fat. Pupils are small, respiration is slow, and alimentary canal glands secrete.

SOCI>Psychology>Child Psychology

child psychology
Children have psychology {child psychology}.
early childhood needs
Early childhood needs are physical care, personal attention, sensory stimulation, exploratory behavior, and contact with people. Young deprived children show apathy, unresponsiveness, anxiety, and fetal posture. Unmet needs can lead later to desire to get affection or inability to demonstrate affection.
parenting
Parent's absence can lead to too little or too much aggression, adjustment, and peer interactions.
parenting: model for imitation
Children often try to imitate other people. Adults and children typically try to emulate and strongly identify with real people as ideal self.
parenting: family social class
In middle class, children can determine their behavior and internalize their standards of conduct. Parents punish violence and aggression but not defiance or speech. In lower class, parents can impose standards of conduct and respectability, punishing transgressions.
parenting: personality
Parent attitudes are important to personality. Weak and ineffectual fathers and mothers tend to have hyperaggressive children. Dictatorial and uncaring parents tend to have shy children, who feel inferior. Bottle feeding or breast feeding, regular feeding or demand feeding, abrupt rearing or gradual rearing, early bowel training or late bowel training, and punishment or non-punishment of toilet errors, have little effect on personality or adjustment.
parenting: institutionalization
Institutionalized children have higher mortality rate, more disease, and lower intellectual and social development.
theories
Child psychology theories are psychoanalytic, learning, and cognitive. Psychoanalytic theory depends on stages of instinctual-energy expression. Learning theory emphasizes behavior modification through conditioning. Cognitive theory emphasizes cognitive-skill development for adaptation through self-activation and is the most accepted.
theories: Piaget

Piaget tested children's cognition by asking questions about what happens. Children seem to know concepts that Piaget's theory predicts that they cannot know. Social interaction and cultural effects seem to affect cognition as much as individual experience and maturation. Equilibration is not a proven learning mechanism. Child may not understand instructions and so cannot perform task.

enrichment

Enriched and secure environment {enrichment, child} can aid higher intellectual development.

identification in psychology

People, especially children, need to center their lives and emotions on another person {identification, psychology}|. Children and adults identify with adult as role model.

imaginary companion

Many children have imaginary playmates {imaginary companion}|.

nursery school

Early schooling {nursery school}| leads to more independence, more interaction with peers, more aggression and assertiveness, and fewer bad habits. Nursery school does not affect anxiety and does not affect personality.

SOCI>Psychology>Cognition

cognition and psychology

People have overall brain functions {cognition}|. Cognition involves symbolic information processing, typically using syntax. Cognitive processing is like transitions between states or representations. Perhaps, cognition has semantic content. Attitudes and propositions involve rational cognition.

Cognition is making logic-like transformations over language-like representations [Dosher and Sperling, 1998] [Hochberg, 1998].

requirements

Cognition requires sensation, requires perception, and does not require awareness. Cognition can be conscious or unconscious. Cognition can be not intentional or logical. All mammals have cognition.

processes

Cognition includes attention, imagination, learning, memory, and perception [Best, 1992] [Goldman, 1993] [Kazdin, 2000] [Lindsay and Norman, 1977] [Poggio, 1990] [Reichardt and Poggio, 1981] [Savage, 1978]. Cognition also uses language and reporting.

Cognitive processes are selecting stimulus and then labeling or imaging it {encoding, cognition}, remembering, perceiving, generating ideas, evaluating, reasoning, and associating freely. Associating freely is dreaming or having random thoughts. Generating ideas is classifying objects based on attributes or making hypothesis.

behavior

Thought and reasoning cause behavior.

no cognition

Sense qualities, emotions, and reflexes do not involve cognition.

atmosphere effect

People often choose problem solution using emotion {atmosphere effect}.

cognitive dissonance

Inconsistencies in themselves or environment can cause tension {cognitive dissonance}|.

cognitive map

People have mental images {cognitive map}| of environment around them [Järvilehto, 2000].

metacognition

Humans and primates, and possibly other mammals and birds, can think about what is in memory and decide what to do {metacognition}.

problem solving in cognition

Problem solving involves encoding, remembering, generating hypotheses, deducing, evaluating, and reporting {problem solving, cognition} [Bruner, 1956].

problem set

Problems have types {problem set}. Recognizing problem set makes similar problems easy to solve. When problem is of different type, assuming wrong problem set uses wrong memories. People can solve problems automatically by using problem set unconsciously, and this is intuition or insight [Berry and Broadbent, 1984] [Claxton, 1986] [Claxton, 1994] [Claxton, 1997] [Greenwald, 1992] [Lewicki et al., 1987] [Lewicki et al., 1988] [Lewicki et al., 1992].

verbal mediation

Problems typically involve concepts and principles, so talking to others or oneself can help find solution.

SOCI>Psychology>Cognition>Cognitive Style

cognitive style

To respond to stimuli and perceive, people have fundamental mental processes {cognitive style}|.

SOCI>Psychology>Cognition>Cognitive Style>Orientation

field dependence

People can orient toward outside world {field dependence}.

field independence

People can orient toward their bodies {field independence}.

SOCI>Psychology>Cognition>Cognitive Style>Time

impulsivity

People can immediately perform the first alternative {impulsivity}.

reflectivity

People can take time to think about alternatives {reflectivity}.

SOCI>Psychology>Cognition>Cognitive Style>Reference

leveling

People can maintain reference frame {leveling}.

sharpening

People can change reference frame {sharpening}.

SOCI>Psychology>Cognition>Cognitive Style>Thinking

analytic thinking

People can use stimulus component {analytic thinking}.

relational thinking

People can use stimulus function {relational thinking}.

SOCI>Psychology>Cognition>Attention

attention

People can observe scenes and then concentrate on organisms, self, objects, features, times, or locations {attention}|. Attention is on whole-object center, not just to initial cue or feature. Attention can focus on objects of different sizes and at different distances, so size and distance do not matter. Attending reduces noticing other organisms, objects, features, times, and locations. Attention filters, amplifies, or suppresses data.

processes

To guide attention, mind uses hypotheses about scene or object to test if distinctive properties are at distinctive locations. General search method does not guide attention. Attention uses image spatial coordinates to move to locations. Body, head, eyes, and attention window move to focus on stimulus location. Minds shift visual attention to new object before saccadic eye movement [Culham et al., 1998] [Posner and Gilbert, 1999] [Umiltà and Moscovitch, 1994].

processes: selection

Attention can affect early information processing {early selection} and not cause later perception. Attention can affect responses, memory, or high-level information processing and not prevent later perception {late selection}. Attentional load studies indicate that attention affects early selection.

processes: figure

Attention selects figure from ground.

purposes

Attention to object allows quicker reaction, smaller stimulation, more accuracy, and better recall.

properties: attention to painting

In perspective painting, observer attention typically moves along eye-level line.

properties: distance

Attention does not decrease or increase perceived distance.

properties: EEG

Attention to object, to recognize it or use it, causes 40-Hz EEG oscillation.

properties: extinction

If stimulus is present in one visual field, it can prevent attention to later stimulus in other visual field, especially if the stimuli have similar positions.

properties: information

Minds track object parts with highest information and strongest features, which are often along outer contour.

properties: intensity

Attention does not increase stimulus intensity.

properties: time

Attention can turn off but only for short time.

causes: texture discrimination

Texture discrimination precedes attention and looks for visual-field texton-kind and density changes, in parallel. If elongated blobs are the same because blob terminators total same number, texture is the same. If texton changes, mind calls attention processes.

causes: pain

Pain causes attention to object and causes motivation and response to push object farther away and/or stop pain. Attention, anxiety, and prior experience influence pain. Pain makes other goals seem unimportant.

causes: pleasure

Pleasure causes attention to object.

factors: classifying

The categorizing process begins before attention and continues independently after attention.

factors: consciousness

Animals with consciousness can attend to something only if they are aware of it already. Attention can be faster than consciousness. Attention can distract before consciousness. Consciousness can be selective attention. Brain regions for attention, shape, planning, and goals are for sensory consciousness [Chalmers, 2000] [Ffytche, 2000] [Kanwisher, 2001] [Lumer, 2000] [Lumer et al., 1998].

factors: dreaming

In dreams, attention easily distracts, and people cannot consciously attend.

factors: emotion

Attention is before emotions associated with events.

factors: hypnosis

Hypnosis typically restricts attention to small field.

factors: learning

Rewards and punishments determine attention to features and objects, so learning affects attention.

factors: meditation

Concentrative meditation pays attention to one object or event, such as breathing or mantra.

factors: memory

Memories are weak if attention is weak. More attention strengthens declarative memory encoding, because more conscious processing makes more cues for retrieval. Animals with consciousness must pay attention to remember declarative facts. Animals with no consciousness can orient but cannot attend or use declarative memory. Making iconic memory requires attention. Attention to sensory memory causes automatic entry into verbal short-term memory. Attention is part of working memory, or working memory holds attended conscious content, and vice versa.

factors: near-death experience

Near-death experiences have focused attention.

factors: perception

Attention precedes perception and so is apperceptive.

factors: recognition

Recognizing object requires attention.

factors: sensation

Attention requires sensation and does not require awareness.

factors: sleep

Little sleep causes attention loss.

factors: will

Animals with consciousness must pay attention to take voluntary action. Animals with no consciousness can orient but cannot attend or perform voluntary actions.

effects

Attention can enhance all processing related to object attended.

effects: association

Attention to two object features associates their features. Attention can associate two features by placing them in same spatial location [Treisman and Gelade, 1980].

effects: orientation followup

The orienting response precedes slower process that gathers information about time, place, and person to recognize object {orientation followup}.

effects: orientation response

Response to new stimulus directs attention to spatial location {orientation response, attention}, probably before consciousness starts.

effects: binding

Attention can be necessary for binding. However, binding can happen for non-conscious information processing with no attention. Adjacent-object properties can bind to half-attended objects.

effects: response enhancement

Perhaps, attention to stimulus increases response of neuron that receives stimulus input.

effects: sharper tuning

Perhaps, attention to stimulus decreases stimulus range to which neuron responds.

effects: structural model

Attention selects one information channel, which has maximum serial information-flow rate.

biology: animals

All mammals have attention.

biology: excitation

Attention excites affected neurons temporarily [Chelazzi et al., 1993] [Crick and Koch, 1990] [Desimone and Duncan, 1995] [Kastner et al., 1998] [Lee et al., 1999] [Luck et al., 1997] [Miller et al., 1993] [Moran and Desimone, 1985] [Reynolds et al., 1999] [Reynolds and Desimone, 1999] [Rolls et al., 2003] [Rolls and Tovee, 1995] [Treue and Maunsell, 1996].

biology: neuron

Attention reduces neural responses in unattended cortex and increases neural responses and synchronous firing in attended cortex.

biology: development

At 6 to 7 years, ability to sustain attention increases greatly, in all cultures.

biology: drug

Drugs, such as modafinil, can provide atypical attention states [Atkinson and Shiffrin, 1968] [Atkinson et al., 1999] [Atkinson et al., 2000] [Farthing, 1992] [Hobson, 1999] [Metzner, 1971] [Spence and Spence, 1968] [Tart, 1972] [Tart, 1975].

biology: synchrony

Awake brain has synchrony, which increases with attention and preparation for motor acts.

biology: fruitfly

In fruitfly, attention affects specific neurons [Heisenberg and Wolf, 1984] [Tang and Guo, 2001] [van Swinderen and Greenspan, 2003].

brain

Attention involves anterior attention network, cingulate nucleus, frontal lobe attentional network, hypothalamus, inferotemporal region, lateral pulvinar nucleus, lateral reticular system, locus coeruleus, orbito-frontal lobe, pons, posterior parietal lobe, prefrontal lobe, reticular formation, spatial attention system, superior colliculus, tectopulvinar pathway, tegmentum, thalamus, and ventral temporal lobe.

brain: anterior cingulate

Consciousness reduces anterior-cingulate-gyrus activity {anterior cingulate, attention} [Chalmers, 2000] [Ffytche, 2000] [Kanwisher, 2001] [Lumer, 2000] [Lumer et al., 1998].

brain: frontal lobe

Consciousness increases right-frontal-lobe attention-center activity [Chalmers, 2000] [Ffytche, 2000] [Huerta et al., 1986] [Kanwisher, 2001] [Lumer, 2000] [Lumer et al., 1998] [Schall, 1997].

brain: parietal lobe

Attention affects posterior parietal lobe [Bisley and Goldberg, 2003] [Colby and Goldberg, 1999] [Gottlieb et al., 1998].

brain: PIP

PIP controls attention [Chalmers, 2000] [Ffytche, 2000] [Kanwisher, 2001] [Lumer, 2000] [Lumer et al., 1998].

brain: prefrontal cortex

Focal attention originates in prefrontal cortex and can affect thalamus or sense-cortex areas [Boff et al., 1986] [Braun, 1994] [Braun, 2003] [Braun and Julesz, 1998] [Braun and Sagi, 1990] [de Fockert et al., 2001] [Lennie, 2003] [Li et al., 2002] [Reddy et al., 2004] [Rousselet et al., 2002] [Sperling and Dosher, 1986] [Strayer and Johnston, 2001] [Tsotsos, 1990] [Ullman, 1984].

brain: V1 region

Attention affects area V1 [Brefczynski and DeYoe, 1999] [Fries et al., 2001] [Gandhi et al., 1999] [Ito and Gilbert, 1999] [Ito et al., 1995] [Kastner and Ungerleider, 2000] [Motter, 1993] [Niebur and Koch, 1994] [Niebur et al., 1993] [Niebur et al., 2002] [Noesselt et al., 2002] [O'Connor et al., 2002] [Posner and Gilbert, 1999] [Roelfsema et al., 1998] [Somers et al., 1999] [Watanabe et al., 1998].

attentional blink

If second stimulus is 200 ms to 500 ms after attending first stimulus, people cannot perceive second stimulus {attentional blink}. People can accurately detect a stimulus in a stimulus series with separation 100 ms, because they can use immediate memory. People can somewhat accurately detect which stimulus preceded and which was later in stimulus series, if stimuli are less than 100 ms or more than 400 ms apart, but not 200 ms to 300 ms apart, because they cannot use immediate memory.

attentional shift

Attention can shift from object or location to another object or location {attentional shift}. Attention switches no more than twice per second. Attention shifts 50 milliseconds to 100 milliseconds after brain signal to shift attention. Attentional shift can involve eye movement {overt attentional shift} or no eye movement {covert attentional shift}. Attention shift uses dorsolateral prefrontal cortex, cingulate nucleus, frontal eye fields in area 8, area-7a posterior-parietal lobe, pulvinar nucleus, and superior colliculus.

biased competition

Attention excites a neuron set and inhibits other sets {biased competition} [Desimone and Duncan, 1995].

Broadbent filtering effect

People can prevent meaningful sounds received at unattended channel from becoming conscious {Broadbent filtering effect, attention} [Broadbent, 1958].

deception in primates

To steal food or to mate, primates distract others' attention {deception, attention} [Byrne and Whiten, 1988] [Whiten and Byrne, 1997].

inattentional blindness

While concentrating on other events or paying attention to one object, people do not necessarily see unusual events happening {inattentional blindness}, even in vision center. If attention is elsewhere, people do not necessarily see objects and events in scenes.

Even if attention is on location or object, people can still not notice, if they do not store enough object detail. People do not see unexpected objects and events [Gladwell, 2001] [Haines, 1991] [Mack and Rock, 1998] [Obrecht and Stark, 1991].

attentional load

If attentional load increases, inattentional blindness increases.

masking

Changes can have masking.

gradient

Change can be too gradual.

neglect in attention

If stimulus is in contralesional visual field, such as when right brain has lesion and stimulus is in left visual field, people cannot attend to it {neglect, attention}. Neglect can be for object or body right or left side.

orientation map

A cortical-area-6 map {orientation map} computes locations in nearby space, using body-based coordinates. Perhaps, it guides orienting responses, like tectofugal pathway.

searchlight

Mental process {searchlight of attention} {spotlight of attention} {attentional spotlight} can focus attention on objects in mental space, to find, select, and recognize scene objects. Attention probably does not move across space or time, but jumps or expands and then contracts {zooming, attention} [Bergen and Julesz, 1983] [Cave and Bichot, 1999] [Julesz, 1971] [Julesz, 1981] [Sperling and Weichselgartner, 1995] [Treisman, 1988] [Treisman, 1998] [Treisman and Gelade, 1980] [Wolfe, 1992] [Wolfe, 1998] [Wolfe, 1999].

Stroop test

Researchers can ask people to name the color used for word letters, or to name color patch near black-lettered word {Stroop test}. The word is or is not the color name. If word is different-color name, color-naming response time increases, showing that attention and perception can conflict.

time gap

Sudden consciousness, of having no memory of just-passed time {time gap}, results from low attention and failure to register event times.

SOCI>Psychology>Cognition>Attention>Forms

bottom-up attention

Consciousness of sense input has two forms, top-down and bottom-up, corresponding to the two attention stages. Quick consciousness {exogenous attention} {bottom-up attention} {saliency-based attention} is automatic, depends only on input features, and can use single neurons to detect perceptual features, as in orienting response [Braun and Julesz, 1998] [Duncan, 1998] [Duncan, 2001] [Egeth and Yantis, 1997] [Nakayama and Mackeben, 1989] [Shimojo et al., 1996] [VanRullen and Koch, 2003] [Watanabe and Rodieck, 1989].

top-down attention

Sense-input consciousness can be top-down or bottom-up, corresponding to attention stages [Bülthoff, 2002] [Hamker, 2004] [Hamker and Worcester, 2002] [Hardcastle, 2003] [Kentridge et al., 1999] [Lamme, 2003] [Lee et al., 1999] [Naccache et al., 2002] [Osaka, 2003] [Posner et al., 1980] [Reddy et al., 2002] [Rolls and Deco, 2002] [VanRullen and Koch, 2003] [Wen et al., 1997].

Long-term consciousness {top-down attention} {endogenous attention} {task-dependent attention} {volitional-controlled attention} {focal attention} is through will, has tasks, and uses focusing, short-term memory, and cortical and thalamic sense centers. Example is orientation sense. Focal attention uses locations, features, and objects.

Attention to sense input causes subjective feeling of emptying the head of other thoughts and feelings.

SOCI>Psychology>Cognition>Attention>Properties

attention span
Stimulus can be held in memory without loss up to one second {attention span}|. Attention changes every few seconds.

attentional load
If number of objects increases {attentional load}, perceptual-task difficulty increases. If attentional load increases, inattentional blindness and change blindness increase.

covert attention scanning
While looking at location or object, people can attend to another object or place {covert attention scanning} [Rizzolatti et al., 1994].

electrodermal response
When organisms respond to environment changes, unconscious skin responses {electrodermal response} {electrodermal activity} can happen with orienting response (OR) or to defensive response (DR). Electrical skin activity changes skin potential {endosomatic response} and skin electrical resistance or conductance {exosomatic response}.

biology
Sympathetic nervous system controls electrodermal activity.
Bulbar reticular formation stimulation inhibits electrodermal response. Amygdala removal inhibits skin conductance.

factors: sweat
Sweat affects exosomatic responses.

factors: schizophrenia
Schizophrenia patients can have no or large electrodermal response.

preattentive processing
Before people attend to stimulus or time or space location, they mentally prepare {preattentive processing}.

selective attention
People can pay attention to different stimulus parts {selective attention} [Broadbent, 1958].

SOCI>Psychology>Cognition>Attention>Theories

attentional capacity model
Perhaps, attention has one channel, with strength {attentional capacity model}. Attentional strength correlates with general intelligence and ability to block proactive interference. Attention tries to block interference and distractions. Attention tracks goals, activates data, and calls parallel subsystems.

coherence field
Perhaps, attention binds related features to produce temporarily integrated scene {coherence field} {virtual representation} [Rensink, 2000].

feature integration theory
Perhaps, attention and visual search first process basic visual features preattentively and automatically and then use attention to associate features with objects and find higher level properties {feature integration theory}. Attention integrates or selects basic features such as color and orientation [Chun and Wolfe, 1996] [Driver and Baylis, 1998] [Duncan, 1984] [Jolicoeur et al., 1986] [Kanwisher and Driver, 1997] [Rock and Gutman, 1981] [Wolfe, 1994] [Wolfe, 1999].

filter theory
Perhaps, mind transforms information flowing through one information channel, which filters information at low rate to select high-priority information {filter theory}. Filtering can affect sense input, emotion, language, color, and response. People can control information channel to block or weaken incoming messages or to interpret information

differently. For example, people can keep meaningful sounds received at unattended channel from becoming conscious {Broadbent filtering effect, filter theory} [Broadbent, 1958].

guided search theory

Perhaps, attention and visual search process basic visual features preattentively and automatically and then use that information to control attention processes {guided search theory, attention}.

preattentive task

Perhaps, image features compete in decision and attention processes as mind finds, selects, and recognizes object in image {preattentive task} {pop-out task}.

pre-motor theory

Perhaps, same neurons that tell eyes to move toward location are for attention to location {pre-motor theory}. Attention changes depend on plans to move eyes to new directions [Kustov and Robinson, 1996] [Rizzolatti et al., 1994] [Sheliga et al., 1994].

saliency map

Perhaps, attention uses map {saliency map} with neurons that detect differences [Itti et al., 1998] [Itti and Koch, 2000] [Itti and Koch, 2001] [Koch and Ullman, 1985] [Treisman and Gelade, 1980] [Walther et al., 2002] [Wolfe, 1994] [Wolfe, 1999].

supervisory attentional system

People can make attention metarepresentations {supervisory attentional system} [Shallice, 1988].

SOCI>Psychology>Cognition>Emotion

emotion

People can have anger, contempt, disgust, fear, happiness, sadness, and surprise {emotion}|. Derived emotions are affection, annoyance, anxiety, awe, despair, ecstasy, embarrassment, forgiveness, guilt, hate, hope, humility, jealousy, joy, love, mercy, pride, rapture, regret, remorse, repentance, revenge, reverence, rue, shame, satisfaction, and sulkiness. Social animals can have shame and submissiveness.

types

The fundamental genetic emotions are anger, fear, surprise, disgust, sadness, contempt, and happiness [Damasio, 1999] [Dolan, 2002] [LeDoux, 1996] [Damasio, 1994] [Damasio, 2000] [Damasio, 2003].

Emotions are affection/eros/love, anger/hate, anxiety/fear, disgust, happiness, hunger, joy/elation, sadness, sexual desire, shame/guilt, surprise, and thirst. Higher emotions combine lower emotions: affection, anxiety, awe, contentment, despair, disgust, embarrassment, excuse, forgiveness, guilt, hope, humility, icy calm, ironic detachment, jealousy, mercy, pride, rapture, regret, remorse, repentance, revenge, rue, satisfaction, and shame.

Mental states compound emotions: ambition, belief, curiosity, humor, hypnosis, idea, imagination, insight, recognition, recall, stupor, and will.

cognition

Emotions are cognitive and can involve judgments. People can have a wide range of emotional responses to the same situation. People can hide emotions.

requirements

Emotion does not require sensation, does not require perception, and does not require awareness. People do not necessarily know the emotion they actually have.

properties

Human emotions are compound and complex sensations, have qualitative feel, and have facial muscle movements.

properties: intensity

Emotions stimulated by body or spontaneous emotions caused by signals from cerebral cortex have same intensity.

properties: timing

Emotions can be current, dispositional, or long-term.

properties: will

Emotions can be voluntary.

causes

Rewards and punishments cause emotions.

causes: visceral changes

Visceral changes do not account for emotions. Emotional behavior happens even with cut viscera-to-central-nervous-system nerves. Emotional behavior does not always happen when viscera respond to stimulation. Different emotions cause similar visceral changes. People cannot localize or differentiate changes to viscera. Emotional experience is relatively fast, but visceral autonomic nervous system responses are relatively slow.

effects

Emotions can cause fast autonomic responses, motivate action, make intimate bonds between individuals, affect memorization, and affect recall.

factors: behavior

Behavior types affect emotions.

factors: context

Context affects emotions.

factors: expectation

Emotions can relate to expectations. People can imagine emotion that they will feel in future situation, such as embarrassment, regret, or fear. People can become aroused and attentive just before situation. People can be happy that they anticipated situation correctly or unhappy that they anticipated situation incorrectly. People can react quickly to situation. People can react after deliberation about past situation.

People form impressions of each other by applying previously established expectancies.

factors: facial expression

In all cultures, the same facial expressions accompany the same major emotions. Facial expressions for different emotions are often similar.

Facial expressions used in emotions arose from other functions. For example, muscles surrounding eyes contract to protect eyes from increased blood pressure or from assailant's blow.

Repeated emotions, moods, and behaviors repeat facial muscle contractions and modify face bulges, lines, and wrinkles. People can determine emotions, moods, and character from facial expressions and features [Darwin, 1872].

factors: gender

Emotions have equal frequencies in men and women.

factors: color

Color can express emotions such as happiness, worry, sadness, fright, and anger. The same colors express same emotions over human history and among different cultures.

biology

Amygdala and/or hypothalamus stimulation can trigger emotions. Emotions do not require body stimulation or cerebral-cortex signals.

biology: animals

All mammals have emotions.

biology: baby

Babies show joy, anger, annoyance, and sulkiness, but brain regions for emotion have little activity.

comparison: drives

Emotions do not include hunger, thirst, or sexual desire, because they are biological drives.

comparison: feeling

People can have emotion without feeling.

affect in emotion

Feeling emotion {affect, emotion} can lead to action.

anxiety

Chronic fear or apprehension {anxiety}, without stimulus, can cause physiological discomfort.

guilt

People have feelings that they were, are, or will be at fault. Guilt is anxiety.

shame

People feel shame when they believe that others know their guilt.

types

Anxiety can be transitory {state anxiety} or long lasting {trait anxiety}.

causes

Traumatic, dangerous, unexpected, or embarrassing thoughts, events, or impulses, especially if they associate with pain or punishment, trigger anxiety. Worry or fear of something in the future can cause mental distress. Pain, severe punishment, frequent mood changes, guilty feelings, and inability to adapt can cause anxiety.

Anxiety can result from stimulus-punishment pair, such as sexual stimuli and aggression.

When mothers bear siblings, or people receive continual reproval, anticipating losing parent affection and nurturance can cause anxiety.

Unexpected people and events in familiar situations can cause anxiety.

Guilty feelings can be because one's thoughts and actions differ from high standards set by self or others.

effects

Anxious people can have rapid pulse, strong heartbeat, perspiration, trembling, throat and mouth dryness, and empty feelings in stomach.

effects: avoidance

Anxiety is an avoidance goal or drive, and danger signal arouses it. Behavior that reduces anxiety has reinforcement, so one response is to avoid signal.

factors: age

Anxiety can begin at age two or three.

factors: learning

People can learn anxiety arousal.

contrastive valence

Contrasting emotion preceding emotion makes second emotion stronger {contrastive valence}.

death

Dying {death, psychology} adds fear, tension, and other emotions to life. Death makes one think of legacy. Death can be an escape. Death establishes deadline for activity.

feelings: dying

Dying people hope doctors or god will save them. They want to live. They want to know all about their case. They often talk about their philosophy.

People can face death by denial. People can face death by mastery behavior.

feelings: fear

People can fear death by imagining it or by fearing loss.

feelings: after death

After death, family is either angry or in despair. Mourners can be angry with dead person for leaving them. They can punish themselves, because they wished for person's death or feel that they caused death. They can want to elicit pity. They can need to talk, to free their emotions.

feelings: mission

People can give dying person mission.

feelings: problems

Financial problems, feelings of being a burden, loneliness, fear of pain, fear of dying, and fear for ability of loved ones to be able to adapt, all make dying harder.

feelings: reaction stages

If family member will soon die, family members go through same stages that typically happen during all life's changes: shock, denial, search for meaning, comfort, and hope.

The first stage in facing one's death is shock. Then comes denial and isolation. Partial acceptance follows. Anger can try to force another person to treat dying person as still a human being. People can project anger randomly. Bargaining is a brief attempt to offer good behavior to God to get favor. Bargaining can relate to guilt. Loss of body control, job, wealth, or ability to care for children can cause depression. Depression causes shortened sleep. Instead of depression, people can prepare for death, express and share sorrow, have long sleeping periods, and be silent. Then acceptance has tiredness, weakness, need for sleep, no feelings, no interests, desire to be left alone, and no talking.

factors: children's feelings

For ages up to three years old, death is like separation or like body mutilation. From three to five years old, death is like temporarily going away. From five to nine years old, death is person coming to take them away. After nine years old, death is biological death.

factors: custom

Customs can allow dying people to accept death. Customs can help people to share guilt or spread guilt over time.

factors: society

Death is more isolated, avoided, or ignored now than before. People have more fear of death, which relates to society violence level. Fewer people believe in life after death now. Suffering has no meaning now, so there is no reason to die or suffer.

emotionality
Personality dimension is emotional reactivity {emotionality}, which varies from low to high.

feelings
All mammals have emotion cognitions {feelings}|.

impression
People's general feeling about newly met people {impression}| depends on cold or warm personality or other basic trait. People recognize people quickly, using minimum evidence.

mood in emotion
Non-specific mental feelings {mood, emotion}| include contentment, depression, mania, happiness, and calm. People can have tense-energy for flight-or-fight response, tense-tiredness for frustration or depression, calm-energy for euphoria, or calm tiredness for satisfaction [Thayer].
requirements
Mood does not require sensation or perception.
biology: animals
All mammals have moods.
biology: chemicals
Corticosteroid, adrenalin, and glucose concentrations in blood cause mood. High corticosteroid makes more tension. High adrenalin and glucose make more energy.

threat
People can experience threats {threat} of bodily harm and react to that experience with heightened awareness and aggression. War and crime use threats.
properties: threshold
The consciousness threshold for threatening words or pictures can be significantly higher or lower than that for neutral ones.
causes: dominance hierarchy
Dominance hierarchy causes hostility to strangers, maintains peace in society, decreases new behaviors, and causes threats from younger males toward older males.
effects: aggression
Threat can cause aggression. Frustrations and threats can cause wishes for harm or actual harm to others.
effects: response
In response to threat, people can fight or flee.
biology: escape
Voluntary escape behaviors use small efferent fibers in spinal cord with long latencies and variable responses, which react to visual, tactile, and vibratory threats.
biology: sympathetic nervous system
Sympathetic nervous system nerves contribute to threat and aggression behaviors.
factors: games
Games involve threats to plans and goals [Chernoff and Moses, 1959].
factors: negotiations
Negotiations often involve coercive threats.
factors: posture
Threat postures can elaborate into symbols.
factors: schizophrenia
Schizophrenics can hear voices threatening to kill them.
factors: symbol
Raised fist or skull and dagger is for threat.
theories: dreaming
Perhaps, dreams are rehearsals or practice against threats {threat simulation theory, dreaming}.

SOCI>Psychology>Cognition>Emotion>Theories

bodily upset theory
Emotions can be body changes {bodily upset theory}.

emotivism in cognition
Emotions can cause cognitions {emotivism, cognition}.

feeling theory
Emotions can be sensations {feeling theory}.

SOCI>Psychology>Cognition>Emotion>Kinds

bonding and attachment
Innate behaviors triggered by another individual, or several individuals in preference order, lead to affection bonds {attachment behavior} {bonding}|.
biology
The young of all mammals have attachment. In humans, attachment behavior develops during the first nine months and can happen until end of third year. Children typically have special relation to adult, which is an innate response to stimulation by adult. Different emotions accompany attachment beginning, maintenance, disruption, and renewal.
Children develop schema for adult face at 3 to 4 months old. Later, face and feelings generalize to other people, who can then receive affection.
properties
Attachment causes pleasant feelings.
properties: care
Behavior goal is to receive care from others. Care-giving behavior from one person terminates attachment behavior in other person.
properties: location
If children know attached-person location, children do not show attachment behavior and explore environment instead.
properties: time
Attachments last many years.
causes
Connections between individuals develop because people reduce basic drives by such connections. Strangeness, hunger, fatigue, and anything frightening can activate attachment process.
purposes
Attachment protects young from predators and allows safe environment exploration.
factors
Learning to distinguish familiar from strange is main factor in attachment development. Conversation, rewards, and punishments have small importance.
factors: contact
Attachment behavior typically is between child and parent interacting in close physical contact, in supportive and comforting environment.

courage
Continuing behavior despite fear requires courage {courage}|. Courage can be recklessness or stubbornness if activity has little value. People can learn to control subjective fear or achieve a fearlessness state. Preparing people to do dangerous jobs requires practice in actual tasks.

fear
Apprehension {fear}| has associated physiological changes and/or behavior to avoid or escape specific and real danger in outside world.
biology
Fears can be innate.
causes

Traumatic stimulation, repeated subtraumatic situations {sensitization, fear}, direct or indirect fear-behavior observation, and fear-provoking information can cause fear. Fear ends after removing or avoiding stimulus.

therapy

Therapy can reduce fear directly, as in behavior therapy. Therapy can reduce fear by modifying causes, as in psychoanalysis. Therapy can reduce fear by desensitizing, flooding, or modeling.

grief

After death, divorce, or crime, people experience feelings of loss {grief}|.

causes

Separation causes search for loved person or object. Grief is search frustration. Grief is over lost thing itself, not about symbolic significance.

factors: guilt

Grief does not associate with guilt.

stages

People go through stages when recovering from loss, death, or divorce. Stages are denial of loss, anger at God or other people, despair at low hope or bad life, and acceptance of fate and of consequences.

expression

People that do not express feelings can suffer delayed or distorted grief. Religious ceremonies about death allow expressions of sorrow, in all cultures.

happiness

Happiness {happiness}| strongly correlates with income and wealth.

causes

People can attain happiness in three ways.

One is to help other people. This gives satisfaction that world is becoming better. It also provides warm human contact. It makes the helper feel good.

Another is to do something creative. This can involve arts, such as music, painting, sculpture, and writing, but it can also be making new software, products, and inventions. Creative work keeps mind and hands busy at productive and constructive tasks. It also allows one new imagination and delight. It can also provide insights into nature and people.

The third is to love and have love. This means deep mutually shared love based on strong emotion and cognition. However, everyone knows it is also exciting and fun to meet someone new, have crescendo of sexual and warm feelings, and fall in love.

needs

Perhaps, these factors also meet human needs. Humans need another's touch, in hugs and embraces. They need to have freedom and telling stories, to experience the creative. They need to have meaning in their lives, which translates into how they deal with other people.

horror as emotion

Something disgusting and negative, such as mutilated bodies, can cause a feeling {horror, emotion}|.

joy

Fun {joy}| can depend on exploration and self-stimulation.

love

Sexual attraction, flirtation, and companionship {love}| are common love types in all societies. Obsession, self-sacrifice, and convenience are rare in all societies.

love

Strong sexual and aesthetic attraction involves one person, high intimacy, feeling of merging, need to know all about other person, and need to serve. Love is sexual attraction, affection, friendship, and desire for beauty in another, sometimes with power and control.

flirting

Flirtation or play involves several people, low dependence, low strength, and no attachment.

friendship

Friendship or companionship involves stable relationship, low passion, and emphasis on home and children.

obsession

Obsession involves jealousy, possessiveness, despair, and ecstasy.

devotion
Self-sacrificing devotion involves patience, low jealousy, love, caring, and no need for return of love.
compatibility
Compatibility and convenience involve rules based on mutual interests and needs.

panic
People can have uncontrollable fear {panic}| in response to repetitive or imminent danger.

stress as emotion
People often feel rushed, harassed, or overwhelmed by demands {stress, emotion}|. Environment often blocks people's will.
causes
Noise, smell, monotonous work, excessive information flow, or interpersonal conflict can cause stress.
effects: illness
Stress can cause myocardial infarction, high blood pressure, gastro-intestinal disorders, asthma, and migraine.
effects: escape
Stress can cause escape from situation.
effects: aggression
Stress can cause aggression.
effects: apathy
Stress can cause state with little emotion, listlessness, preoccupation with self, and detachment from environment.
effects: regression
Stress can cause regression to earlier life stages.
effects: fixation
Stress can initiate old, stereotyped response to new stimulus, such as obsessive or compulsive actions.
effects: withdrawal
Stress can lower one's aspirations, cause escape to fantasy, or result in not thinking about or acting on situations.
effects: projection
Stress can cause illogical action, attributed to another's orders.
effects: denial
Stress can cause denial of, or minimization of, stress.
effects: suppression
Stress can cause people to forget the problem, to try to be calm, or to reassure themselves.
effects: biology
In response to stress, sympathetic nervous system and adrenal medulla secrete adrenaline and noradrenaline, and pituitary and adrenal glands secrete cortisol.
factors
Stress increases with fear, dependency, and weakness.
factors: age
People learn some stress responses as early as infancy.
factors: arousal
Both low and excess stimulation affect arousal.

suffering as emotion
People can have thwarted desires, intentions, hopes, plans, and projects {suffering, emotion}|. There are degrees of suffering. Mind is necessary to have suffering, because suffering depends on expectations and desires. Ability to reason and ability to suffer differ but relate. Animals that are smart enough to suffer include horse, dog, apes, elephants, and dolphins, because they can do something about conditions that make them suffer.

terror
People can have specific fear that evil events or actions are going to happen {terror}|. Terror relates to trembling.

SOCI>Psychology>Cognition>Imagination

imagination

Thinking about unobserved things {imagination, cognition} is under voluntary control and depends on physical and cultural reality. However, imagination can be about unreal, possible, untrue, incomplete, and opposite things. Imagination can be about negative statements, recursions, and contradictions [Johnson, 1987] [Morris and Hampson, 1983] [Popper and Eccles, 1977] [Sartre, 1948] [Zeki, 1992].

imagery

Imagery is under voluntary control and depends on physical and cultural reality. Making visual mental images depends on how grouping organizes information, how quickly perceptual units fade, and how quickly and how often mind can remake image. Imagery transfers from one eye to the other [Kosslyn, 1980] [Kosslyn, 1994] [Kosslyn et al., 1997] [Kosslyn et al., 2001] [Kreiman et al., 2000] [O'Craven and Kanwisher, 2000] [Sacks, 2003] [Shiekh, 1983] [Tomita et al., 1999].

People use viewer-centered coordinates in imagery.

comparison: hallucination

Hallucinations are unreal and involuntary, but imagery is under voluntary control and depends on physical and cultural reality. Imagination and hallucination differ.

comparison: reality

Compared to reality, imagination is less intense and changes more easily, voluntarily or involuntarily. They are distinguishable, because people have expectations about environment and body, but imagination has fewer constraints.

biology: brain

Premotor frontal lobe is for imagination.

biology: drug

Drugs can provide atypical imagination states.

biology: EEG

Alpha waves disappear when mental imagery begins.

factors: deafness

Deaf children use imagery instead of sound. They have same ability to solve problems.

factors: hypnosis

Imagination has no relation to hypnotizing.

factors: intelligence

Ability to use imagination is an intelligence factor. More intellectually gifted people have less vivid imagery [Galton, 1883].

factors: mnemonics

Mnemonics all use mental imagery.

factors: out-of-body experience

High imagination favors out-of-body experiences.

factors: personality

Authoritarian personality has little imagination.

factors: reporting

Reports can be about imagined things.

creativity

Making variations on themes {creativity, imagination} can find meaningful concept components and make new patterns. Creativity involves using irrational or unrelated ideas to construct something new.

requirements

Creativity requires alternating problem concentration and conscious-control relaxation.

factors

Creative people can be withdrawn, skeptical, preoccupied, precise, critical, dominant, introspective, restrained, solemn, independent, curious, hard-working, enthusiastic, motivated, confident, intelligent, unreliable, dirty, and irresponsible. They can avoid social contacts, avoid personal controversy, have high ego, control impulses, use abstract thinking, tolerate cognitive ambiguity, and be independent in judgment. Creative people tend to think about one problem only. Creative people like new, unsettling, challenging, asymmetric, complex, live, and playful things, and only moderate stress.

People can like new things, challenges, unsettling ideas, asymmetry, complexity, aliveness, to play with ideas, to do uncompleted things, and to analyze themselves and others.

Creativity associates with imagery use, fantasizing, hypnotizability, and absorption [Hadamard, 1945] [Hudson, 1973] [Poincaré, 1952] [Schooler et al., 1993] [Schooler and Melcher, 1995] [Smith et al., 1995].

Perky effect
If people see an object on a screen, and a dim object image projects onto screen, people can detect object more readily {Perky effect} [Perky, 1910].

source monitoring
Reality provides related events, times, and places that locate stimuli received from environment or body {source monitoring}, but imagination is not as constrained by background information. Knowledge of past, present, and future can distinguish imagination, memory, and reality.

SOCI>Psychology>Cognition>Learning

learning and cognition
People can attend to verbal or other stimuli with intention to remember facts or events {learning}|.
types: knowledge
People can learn facts and concepts about world, declarative knowledge. People can learn how to perform tasks in world, procedural knowledge [Campbell, 1994].
types: sense qualities
Sense qualities change with learning or training. Learning affects verbal and spatial abilities. Sights, smells, feelings, and sounds change as relations to other things change. Long training typically makes sense qualities less salient or makes them vanish, as people do more things automatically and/or become habituated to stimuli. Varying information flow changes seeing [Underwood and Stevens, 1979].
properties: relearning
Relearning same verbal-item sequence requires fewer repetitions than the first learning.
requirements
Learning requires sensation and perception.
processes
Systems can learn if they or outside forces can alter system relations. Learning uses input information to direct mechanism that can change system relations and/or rules. Learning leads to new states or new state trajectories.
processes: behavior
Learning requires both old and new behaviors to exist simultaneously for testing and comparison until one proves better. Old-behavior structures still remain and are available for other uses.
processes: cognitive map
Animals can orient themselves in space and make cognitive maps of environment to guide behavior [1950].
processes: cue
New learning requires distinctive stimuli {cue, learning} to elicit new responses. Cueing sends signals to lower elements to get responses, along paths to elements or around circuits. Cueing can search, question, request address, activate behavior, or change state.
processes: description
Learning combines several descriptions into one description, groups incompatible descriptions, modifies description, or integrates structures, functions, or actions.
processes: drive reduction
Learning can involve drive reduction. However, learning can happen without drive reduction.
processes: expectation
Association cortex compares expected to actual, to maximize new information. People know expected value because they encounter same situations many times. Perceptual learning requires ability to detect differences.
processes: experience
Perhaps, learning phenomenal concepts requires phenomenal qualities. Perhaps, learning phenomenal concepts is purely physical.
processes: goal
Learning sets goals. However, learning can happen without goal seeking.
processes: imitation
Animals can change behavior by imitation.
processes: information
Minds learn patterns that have least amount of new information, because they happen most often and so are most redundant.
processes: memory

Learning stores information in mind. Learning {verbal learning} and memory can be about words, sentences, and stories. People can learn word sounds and visual appearances.

processes: parameters

Task uses muscles. Signals to muscles are parameter or variable values, which have limited range. Success requires combining parameter values. To learn to perform task requires methods to set and remember variable values and record success or failure. Upon failure, system suppresses parameter settings. Upon success, system enhances settings. Systems cannot change variables themselves, unless they alter from outside or change system level.

processes: reasoning

Animals can change behavior by reasoning.

processes: result knowledge

Direct and precise knowledge of action results is best for learning.

processes: repetition

For verbal items, more rehearsal improves learning and recall. More repetition also results in fewer errors. Learning longer sequences requires more repetition to achieve same success percentage. For example, learning twice as many items requires more than twice as much repetition.

processes: reward

Learning is painful because it is hard, slow, and takes time from other activities, so later rewards must overcome current pain. Reward affects practice amount, not learning itself. Rewards assist learning if people have physical or psychological overt response. Cognitive or mediational response, like idea, logical deduction, perception, or definition, does not help learning.

Rewards strengthen successful subsystem processes or combinations.

Reward for proper behavior is pleasure and satisfaction.

Stimulation variety is itself rewarding. The penalty for not seeking and not finding stimulation is boredom.

People do not need to know rewards for them to be good rewards.

Reward should immediately follow success, but not every time, so people do not expect it.

If organism does not have essential needs, it becomes active.

The punishment for biologically wrong behavior is unhappiness.

Rewards and punishments determine attention to features and objects, so learning affects attention.

Something that animal chooses over something else is rewarding. Rewards are relative.

processes: visualization

If people can visualize referents, learning word sets is easier.

causes

Responses to successes or failures in performing functions can cause learning. Evaluation function sends input information.

effects

Learning does not change fundamental behaviors, such as postures, calls, and scratching behaviors.

effects: action coordination

Learning coordinates actions.

effects: emotion

Emotions are automatic but learning and consciousness can affect them.

factors: amnesia

Amnesia still allows short-term memory, procedural learning, and conditioning. People can improve performance even if they cannot remember previous practice [Farthing, 1992] [Young, 1996].

factors: activity level

Person's activity level affects learning rate and retention.

factors: body geometry

Learning new behavior depends on body spatial geometry.

factors: exploration

Active exploration aids learning. Scanning and exploration precede understanding and decision.

factors: motivation

Interest and concern aid learning.

factors: metaknowledge in learning

Knowledge about knowledge aids memory and learning. Metaknowledge includes perception, thinking, purpose, situation, mental process, function, and set patterns. It relates to previous knowledge. It relates learning to larger units. It finds learning patterns. It applies knowledge to new situations.

factors: stress level

Person's stress level affects learning rate and retention.

factors: temperature

Person's temperature affects learning rate and retention.

biology

All mammals learn.

biology: ape

Apes recognize objects using fast multisensory processes and slow single-sense processes. Apes do not transfer learning from one sense to another.

The bonobo Kanzi learned to use and understand 150 words, typically to express desires or refer to present objects, using instrumental association. The words probably did not refer to things, as humans mean them to do. Kanzi did not learn grammar [Savage-Rumbaugh, 1986].

biology: invertebrate learning

Bees can learn [Menzel and Erber, 1978].

Fruitflies can learn by trace conditioning or delay conditioning [Tully and Quinn, 1985].

Snails can learn [Alkon, 1983] [Alkon, 1987].

biology: drug

Depressants and stimulants affect learning.

biology: cerebellum

All timed perceptions and responses, such as eye-blink conditioning, involve cerebellum.

biology: frontal lobe

Frontal lobe damage causes impaired associational learning.

biology: immediate early gene

Learning activates immediate early genes, which use cAMP signal path.

ventral premotor area

New brain area in humans aided visually guided hand movements and learning by watching.

biology: zinc

Low zinc can cause slow learning.

acquisition in learning

People can learn behavior, perception, or statement {acquisition, learning}.

chaining

Remembering and analyzing stimuli and responses can form associations and generalizations from particular examples to class or set {chaining}| {verbal association}.

generalization in learning

People can derive knowledge from experiences, perform other actions related to learned skills, predict future situations from past experiences, and make analogies {generalization, learning}|.

overlearning

Learning {overlearning} can become automatic. Overlearning comes from frequently repeated experience.

learning stages

Learning has stages {learning stages}.

stage 1

In learning stage, students follow rules, in proper order. Rules are "if A then B" statements. Rules can send student backward or forward to another rule or switch student to another rule set.

The first learning stage is to become familiar with situation, possible actions based on abilities, and possible goals, inputs, and outputs. Playing, reading, and wide experience all contribute to first stage. Students need time to gain experience in particular area and to organize data. Students do not take such time unless personal need or goal makes student want to take time to learn.

The first rules are general hypotheses and are often abstract and verbal, coming from parents or teachers. They can also be personal rules coming from previous situations.

stage 2

In learning stage two, students find rule incompleteness or inconsistency, or find cases not covered by rules, and modify rules to make them more complete, consistent, or specific to situation, based on environment facts. New

statements have "if A" clauses including environment facts and "then B" clauses telling what to do if situation has that fact. Second stage is to pair input to output relative to task.

stage 3

In learning stage three, students reorganize rules to make hierarchy and group facts and rules. Rules and facts have importance. Learner makes overall action plan.

stage 4

In learning stage four, students see many similar situations and organize the whole scene or situation into a hierarchy. Students can have 10,000 to 100,000 possible situations. Rules can recognize situations.

stage 5

In learning stage five, students integrate goal, situation, and action into unconscious process and gain confidence and competence.

social reinforcement

Strong reward is friend and parent affection and approval {social reinforcement}.

transfer of learning

Learning skills or facts can affect performance on other tasks, as perceptual abilities and skills transfer from one body part to others {transfer of learning}| {learning transfer}. Learning transfer happens only in similar situations. Learning transfer can generalize stimuli to make a stimulus class. Perceptual-skill transfer goes from one sense to another sense. Motor skill transfer goes from one muscle to another muscle. Learning transfer can go from one body side to the other {bilateral transfer of learning}.

SOCI>Psychology>Cognition>Learning>Problems

learning disorder

Learning can be physically disrupted {learning disorder}.

neurofibromatosis

Neuron diseases {neurofibromatosis} can disrupt learning.

SOCI>Psychology>Cognition>Learning>Techniques

mnemonics

Organizing information using standard and general memory techniques {mnemonics}| aids learning and remembering. Mnemonics always uses mental imagery. For example, method of loci associates a sequence of familiar places with images about information, by attaching symbols to sequence of place objects.

method of loci

Learning techniques {method of loci}| {loci method} can associate a sequence of familiar places with images {imagines} about information, by attaching symbols to sequences of place objects.

SOCI>Psychology>Cognition>Learning>Theories

afferent field

Learning skill has development stage, in which inadequate movements are only secondarily corrected. Learning skill then has skilled stage, in which secondary corrections become primary corrections, mind has developed movement pattern, and mistakes do not require secondary corrections.

Learning movements uses self-regulatory system. Movements start with goals, which provide models of expected future results.

All nervous-system levels integrate, from reflex or spinal level, to coordination or thalamo-striatum level, to spatial/symbolic or cortical level {afferent field, learning} [Bernstein, 1947] [Bernstein, 1967].

association theory

Learning involves dissociation and association equally {association theory}.

Baldwin effect

Learning finds optimum and maintains it {Baldwin effect}. Learning optimizes whole-system input-output function, by altering structures and relations, and requires method to inform system about optimum output.

capacity model thinking

Mind as whole has processing capacity, and brain modules have processing capacities {capacity model of learning}. For example, while learning word lists, seeing or hearing second list earlier or later uses mental capacity and interferes with learning list.

contiguity theory

Simultaneity can be sufficient for learning {contiguity theory}, with no reinforcement. Mind automatically joins objects or events perceived or performed simultaneously.

cumulative learning

Learning has eight types {cumulative learning theory} {cumulative learning model} [Gagné, 1977].

dual-coding hypothesis

Several code types can operate in cognitive tasks {dual-coding hypothesis}. Learning can be passive increase in association strength during repetition, or it can be an active cognitive process using conscious strategies.

learning set

Recognizing image, situation, or problem type {learning set} can solve problem. Monkeys repeatedly trained to select one of two food objects improved learning speed. Perhaps, they learned rule: Correct means repeat, and incorrect means change to the other. All vertebrates show learning set formation, at similar rates [Harlow and Harlow, 1949].

learning unit

Learning new behavior depends on learning thousands of simpler behaviors {learning unit}.

levels-of-processing model

Memorizing uses attention and cognitive strategies, just like other cognitive processes {levels-of-processing model}. Memory strength depends on processing amount, which moves information to different coding levels in system: physical properties, phonemes, and semantic meanings. Recall is worse for incidental learning than for deliberate learning. However, studying difficult sentences longer does not increase memory ability. Coding phonemically does not necessarily code semantically.

reinforcement theory

Perhaps, learning requires rewards and reinforcement for motivation and attention {reinforcement theory}.

sign-gestalt theory

Animals form hypotheses and expectations. They can recognize problem types in environment. Signs or cues indicate problem type, especially goal type {sign-gestalt theory} [Tolman, 1932] [Tolman and Brunswik, 1935].

stimulus-response bond

Learning first builds new stimulus-response associations {stimulus-response bond} and then organizes them into systems. Situations have specific responses and no general rules.

Yerkes-Dodson law

If skill is more complex to learn, it needs less motivation to learn it {Yerkes-Dodson law}. Important goals aid simple learning but hinder complex learning.

SOCI>Psychology>Cognition>Learning>Kinds

activity-dependent enhancement

Learning releases more vesicles from presynaptic terminals release than sensitization does {activity-dependent enhancement}. Calcium ion binds to calmodulin, and complex binds to and activates adenyl cyclase. Increased transmitted glutamate binds to ionotropic alpha-amino-3-hydroxy-5-methyl-4 isoxazole proprionic-acid receptor (AMPA receptor), which lets sodium ion in and potassium ion out. If action potentials increase, postsynaptic-

membrane depolarization increases, and magnesium ions leave N-methyl-D-aspartate receptor (NMDA receptor) channels and go into intercellular space. NMDA receptors are glutamate-gated channels that can open with the artificial substance NMDA, which does not affect other glutamate-gated channels. The empty channel allows more sodium ion to enter, potassium ion to leave, and calcium ion to enter, and changes metabolism to make and send transmitter back to presynaptic terminal to make more action potentials.

conditioning

Fruitflies with mutations to proteins in this pathway cannot learn many classical conditioning tasks involving harmful stimuli, pleasant stimuli, and different responses. Mutants {dunce gene mutant} do not break down cAMP. Mutants {rutabaga mutant} can have little adenyl cyclase. Mutants {amnesiac mutant} do not make peptide transmitter that activates adenyl cyclase. Mutants {DCO mutant} can have altered cAMP-dependent protein-kinase-A catalytic subunits. Other mutants {cabbage mutant} {turnip mutant} can happen.

autoshaping

If stimulus precedes stimulus that causes behavior, first stimulus then causes the behavior {autoshaping}. Autoshaping is stimulus-stimulus response, as in classical conditioning.

blocking effect

If conditional stimulus pairs with reinforcer, and then second stimulus pairs with first stimulus and reinforcer, animals do not later respond to only second stimulus {blocking effect}. Low attention, little surprise, or looking for likely cause can cause blocking effect. However, cognition can prevent conjunctions from causing associations.

critical period

Learned associations can happen only at specific times {critical period}| {sensitive period} during development. Psychological processes can develop quickly over short times. For example, in the first year, children learn to trust other people. In preadolescence, delinquent behavior can begin.

eye-blink conditioning

Cerebellar cortex and interpositus nucleus store eye-blink conditioning {eye-blink conditioning}. Mossy-fiber input comes from pons and goes to granule cells, which send parallel fibers to Purkinje cells. Climbing-fiber input comes from dorsal accessory olivary nucleus and goes to Purkinje cells. Purkinje cells send to interpositus nucleus, which sends to superior cerebellar peduncle and then to red nucleus to perform conditioned response.

free recall

Learning tasks can use verbal-item lists. Recall can be in the same order {order recall} or any order {free recall}.

habit formation

Reward or reinforcement can be greater or smaller to change behavior {response-stimulus conditioning} {habit formation} [Watson, 1913] [Watson, 1924].

habit learning

In response to signal, people can unconsciously repeat mental tasks {habit learning}. Habit learning improves with practice. Habit learning involves activating neostriatum, caudate nucleus, putamen, and substantia nigra after learning. Neostriatum receives from sense and motor cortex and associates them. Substantia nigra and caudate nucleus have dopamine neurons. Perhaps, they are feedback channels for rewards.

Hebbian learning

If two inputs to one neuron are almost simultaneous {pairing}, either input later has larger effect on neuron than it did before {Hebbian learning}.

latent learning

Stimulus association can happen even with no reward {latent learning}. If animals can explore region before learning path to goal, learning is faster.

multiple discrimination learning

Mind can discriminate objects and events {multiple discrimination learning}, to understand scenes or situations.

observational learning
Learning {observational learning} {imitation learning} can use watching and copying. More imitation results if imitated person's prestige is high, if imitated person is similar to imitator, if rewards are more, and if responses are specific.

omission training
Omitting expected reward {omission training} changes behavior.

perceptual learning
Reading is a perceptual skill. Repeating perceptual discriminations in context {perceptual learning} unconsciously improves discriminations up to weeks later. Coordinating perception with action and adapting to new perceptions involve different learning than for concepts or conditioning.

factors
Discrimination depends on feature such as texture, motion direction, and line orientation, with no reward or feedback. Seemingly, people learn underlying rules.

transfer
No learning transfer goes to other locations, other brain parts, or similar objects.

comparisons
Besides perceptual learning, there is also language learning and social learning, such as imitation, modeling, and teaching.

principle learning
People can observe, manipulate, and analyze multiple examples, scenes, or situations to generalize and discriminate and to combine concepts to form principles or laws {principle learning}.

subliminal learning
Subliminal learning is not effective {subliminal learning}| [Merikle, 2000].

SOCI>Psychology>Cognition>Learning>Kinds>Verbal

articulatory suppression
Articulating repeated simple linguistic units while hearing target items decreases memory {articulatory suppression}. Articulatory suppression causes no difference in memory with different vowel sound lengths.

discriminability
While learning two lists, people assign items to List1 or List2 and build concepts of List1 and List2 {list distinctiveness} {list differentiation} {discriminability}. More list repetitions make more discriminability.

distractor in learning
People can see target sequence, then see distractor sequence {distractor, learning}, and then take test. People remember the first trial perfectly, by semantic coding.

irrelevant speech
Simultaneously presented unrelated linguistic items {irrelevant speech} decreases memory.

mediated generalization
Children over five can use word that symbolizes category {mediated generalization} {learned generalization}. First, word overgeneralizes, and then word further discriminates.

nonsense syllable
Artificial syllables {nonsense syllable} have beginning and ending consonants and middle vowel. Consonant-vowel-consonant nonsense syllables can standardize material to learn. It can minimize affects of meaning, emotion, attention, imagery, and background knowledge. Nonsense syllables can prevent previous associations from affecting learning or memory [Ebbinghaus, 1913].

However, nonsense syllables are not equal in learning ease, because learners still try to match sound or symbol sequences to real words. People no longer use nonsense-syllable learning.

paired-associate learning
People can learn verbal-item-pair lists {paired-associate learning}. Later, learners hear or see the first item of pair, then recall second.

reading span task
Given a sentence sequence, subjects recall sentence meaning and last sentence word {reading span task}. Number of sentences recalled correctly is reading span, which correlates strongly with prose comprehension and short-term-memory information content, better than with word span or digit span.

suffix effect
Adding an independent verbal item with a new vowel sound, in any language or with no meaning, to series ends can decrease memory {suffix effect}. Other items do not affect memory.

SOCI>Psychology>Cognition>Learning>Kinds>Skill

skill learning
People can unconsciously learn repeated motor procedure {skill, learning}| {motor skill} in response to instruction or will. Skill improves with practice.
brain
At skill-learning beginning, prefrontal cortex stores temporary information, parietal cortex is for attention, and cerebellum coordinates movements. Skill learning enlarges sensorimotor cortex. After learning, neostriatum caudate nucleus and putamen activity increases and prefrontal-cortex, parietal-cortex, and cerebellum activity decreases.
practice
Training and experience make behaviors more coordinated, nuanced, and unconscious. Practice develops efficient strategies. Improvement with practice is rapid at first and then is gradual but always continuing.
properties
Skill holds over many years. Interference from other learning, not decay over time, causes people to forget discrete motor skills over time.

performance strategy
Skill involves learning efficient chained action programs, from initiation to result {performance strategy}. Performance strategy involves perceptions, analyses, and responses. Practice develops efficient strategies.

sequence learning
People can unconsciously learn to perform movement sequence {sequence learning}. Such motor skill learning improves with practice.

SOCI>Psychology>Cognition>Learning>Kinds>Concept

conceptual learning
Mind can form object or event idea {conceptual learning}, by deriving abstract ideas and rules from perception.
comparison
Conceptual learning differs from action learning, conditioning, language learning, and social learning, such as imitation, modeling, and teaching.
process
To form concept, mind uses example object or event and then generalizes. Mind does not use abstract statements.
Mind compares later perceptions to generalized example, using both denotations and connotations for identification, categorization, and discrimination.
process: combination
New concepts can combine existing-concept parts. Methods of combining ideas are type, token, argument, function, predication, and quantification.
referents
Concept categories are actions, amounts, events, objects, places, paths, properties, and states. Concept categories include subjects, verbs, adjectives, and other syntactic categories.

Concrete concepts are easiest to learn. Spatial concepts are next easiest to learn. Number concepts are hardest to learn [Dehaene, 1997].

relations

Concepts depend on shared place or time {locational concept}, stimulus part {analytic concept}, idea or attribute {categorical concept} {superordinate concept}, or relation {relational concept}.

Older children use fewer relational concepts and more categorical and analytic concepts.

Inferences can be associations.

truth

Truth is judgment about concepts in conceptual structure.

status

Concepts can have good or poor articulation.

validity

Person's concepts can match other people's concepts.

biology

All mammals can form concepts.

accessibility of concept

Concepts can be communicable and so useful for others {accessibility, concept}. Models or interpretations can allow people to know possible worlds.

activity theory

Object meaning depends on object actions, uses, movements, and interactions with other things {activity theory}. People develop meaning as they learn about motion types. Children learn how to move things and then build concepts of how things can move. Activities involve person's own movements and reactions and so are not merely symbolic.

cognitive unit

Cognition involves different levels {cognitive unit}. Image is first-level unit. Object or image symbol is second-level unit. Concept or class of symbols, objects, or images is third-level unit. Rule about concept relations is fourth-level unit.

conceptual well-formedness rule

Concepts have forms, connect to other concepts using rules {conceptual well-formedness rule}, and belong to categories. These properties allow concept learning.

gist

People have a meaningful visual-scene overview {gist}| [Biederman, 1972] [Hochstein and Ahissar, 2002] [Kreiman et al., 2000] [Mack and Rock, 1998] [Potter and Levy, 1969] [Wolfe and Bennett, 1997] [Wolfe, 1998] [Wolfe, 1999]. Perhaps, gist involves weak associations {proto-object} [Rensink, 2000]. Perhaps, gist involves weak associations {fringe consciousness} [Galin, 1997] [James, 1962].

ideation

People have thought formation process {ideation}|. New ideas combine existing-idea parts.

minimum sufficient causation

Animals seem to assume cognitive principle that effect requires cause {minimum sufficient causation}.

SOCI>Psychology>Cognition>Learning>Kinds>Concept>Categorization

categorization

Mind can build object or event classes {categorization} {conceptualizing} {categorizing, learning} {category learning} and can apply verbal labels to objects or events. Categories have an overall concept.

categories

People typically use categories whose members have approximately same values for several independent attributes. People typically do not use categories based on relations between attributes. People typically do not use categories that have two member types, two relation types, or two attribute values.

Category members typically do not share necessary and sufficient attributes. Category members have many independent attributes, and members have different sets of values, with some values outside normal range. Different member pairs typically share different attribute values.

processes

Categorization can generalize several examples, combine existing categories, divide existing categories, or make analogies from existing categories to other objects or events. Learning generalizes unconsciously and consciously from specific objects, scenes, and situations to what they have in common, what is invariant, or what is similar. Perhaps, sensory cortex averages over examples.

processes: definition

To form category, propose category member, choose attribute, and use attribute value. For example, for bird, choose wing color, and use the color blue.

People typically do not define categories using non-member or opposite attribute value.

requirements

Categorization requires perceiving whole objects and their attributes or actions, understanding truth and falsehood, using reference and association, using words as symbols for things, knowing to which attributes people pay attention, and knowing what people already know.

development

Children first make semantic categories and then build grammatical categories.

equivalence category

Category items can be of same class {equivalence category} or be the same {identity category}. Items in equivalence category can have same attribute value or same attribute relations.

SOCI>Psychology>Cognition>Learning>Kinds>Concept>Categorization>Strategy

conservative focusing

Find situation that makes one hypothesis true, find second situation that differs from first in only one way, and test hypothesis on second situation {conservative focusing}.

focus gambling

Find situation that matches one hypothesis, find any other situation, and test hypothesis on other situation {focus gambling}.

simultaneous scanning

For situations, test all hypotheses {simultaneous scanning}.

successive scanning

For hypotheses, test all situations {successive scanning}.

SOCI>Psychology>Cognition>Learning>Kinds>Drive Reduction

drive reduction

Behavior that satisfies need reduces drive stimuli {drive reduction} and so causes reinforcement [Hull, 1940] [Hull, 1943].

need

Deviation from equilibrium {need, learning} causes drive stimuli. Needs are physiological {primary need} or psychological {secondary need} [Hull, 1940] [Hull, 1943].

SOCI>Psychology>Cognition>Learning>Kinds>Effort

deliberate learning

People can try to memorize {deliberate learning}. Recall is worse for incidental learning than for deliberate learning.

incidental learning

Doing cognitive tasks strengthens cognitive processes and results in memory {incidental learning}. Recall is worse for incidental learning than for deliberate learning. People can learn just by observation, consciously but with no instructions how to learn or to what to attend and no reason to learn.

SOCI>Psychology>Cognition>Learning>Kinds>Conditioning

conditioning in learning
Learning {conditioning, learning}| can be association between stimulus and response or response and reward.
theories
Main theories about conditioning are stimulus-stimulus (S-S), stimulus-response (S-R), and expectancy [Watson, 1913] [Watson, 1924].
factors
Animal drives, habits, and sensitivities affect conditioning.
factors: reward
Punishment intensity or reward intensity affects conditioning speed and effectiveness.
Conditioning can depend on reinforcement unexpectedness. Surprise is a cognitive act.
factors: stimulus
The stronger the conditioned stimulus, the greater the reflex {stimulus strength, conditioning}
effects
Only conditioning can alter autonomic nervous system, which controls heart rate and blood pressure. Conditioning can alter voluntary nervous system.
timing
Maximum interval for conditioning is 30 minutes, but 0.5 sec is best.
biology
Conditioning is in brains, not peripheral organs.
biology: animals
Classical and instrumental conditioning are similar in many species [Hull, 1940] [Hull, 1943].
awareness
Instrumental conditioning can reflect learning about relationship between action and reinforcement, rather than just unconsciously increasing reflex or habit frequency.

SOCI>Psychology>Cognition>Learning>Kinds>Conditioning>Classical

classical conditioning
If unconditioned stimulus elicits response and stimulus pairs in space and time repeatedly with another stimulus, second conditioned stimulus elicits conditioned response {classical conditioning}| {signal learning} {Pavlovian conditioning}.
properties: rules
Conditioned stimulus must predict conditioned response {contingency, conditioning}. Conditioned stimulus must be close in time to unconditioned stimulus {temporal contiguity, conditioning}.
passivity
Conditioning does not depend on human or animal actions. Pavlovian conditioning is unconscious for reflexes, autonomic nervous system, and emotions.
extinction
If pairing ceases, conditioning decreases by extinction.
comparison: sensitization
Classical conditioning is stronger and longer than sensitization.

conditioned taste aversion
Classical conditioning can teach people to avoid taste {conditioned taste aversion}.

delay conditioning
For reflexes, classical conditioning can apply conditioned stimulus and then unconditioned stimulus, to cause conditioned response {delay conditioning} [Carrillo et al., 2000] [Carter et al., 2003] [Clark and Squire, 1998] [Clark and Squire, 1999] [Han et al., 2003] [Knuttinen et al., 2001] [Lovibond and Shanks, 2002] [Öhman and Soares, 1998] [Quinn et al., 2002].

fear conditioning
Shock, noise, or scary image {fear conditioning, learning} {conditioned fear} changes skin conductance or makes animal stand still. Putting animal in same location used for fear conditioning causes fear {context fear conditioning} [Quinn et al., 2002].

sensory preconditioning
In senses, when second stimulus follows first stimulus, second stimulus can pair with first stimulus {sensory preconditioning}. Second stimulus can cause the behavior that first stimulus causes. Sensory preconditioning is stimulus-stimulus classical conditioning.

trace conditioning
Classical conditioning can use conscious conditioned stimuli {trace conditioning}, which involve declarative memory [Carrillo et al., 2000] [Carter et al., 2003] [Clark and Squire, 1998] [Clark and Squire, 1999] [Han et al., 2003] [Knuttinen et al., 2001] [Lovibond and Shanks, 2002] [Öhman and Soares, 1998] [Quinn et al., 2002].

SOCI>Psychology>Cognition>Learning>Kinds>Conditioning>Factors

conditioned response
After conditioning, conditioned stimuli elicit the same response {conditioned response} (CR) that unconditioned stimuli elicit.

conditioned stimulus
After conditioning, stimuli {conditioned stimulus} (CS), such as musical notes, that were neutral before conditioning elicit conditioned responses.

unconditioned stimulus
Stimuli {unconditioned stimulus} (US) can naturally elicit behavioral responses and can pair in space and time with conditioned stimuli.

activity dependence
Conditioned stimuli have an optimum interval, starting 0.2 to 1 second before unconditioned stimulus and ending when both stimuli stop simultaneously {activity dependence}.

SOCI>Psychology>Cognition>Learning>Kinds>Conditioning>Rules

contingency conditioning
Conditioned stimuli must predict conditioned responses {contingency}.

temporal contiguity
Conditioned stimuli must be close in time to unconditioned stimuli {temporal contiguity, learning}.

SOCI>Psychology>Cognition>Learning>Kinds>Conditioning>Instrumental

instrumental learning
If a stimulus elicits a response, and then organism gets a reward, response frequency to stimulus increases {instrumental learning}| {instrumental conditioning} {stimulus-response learning} {trial and error learning}.
process
Learning can be by trial and error, using instinctive movements. Accidental successes have satisfying effects. Failures have annoying effects. Behavior changes gradually, rather than by sudden insights. Over time, only correct movements survive.
Training on one task can transfer to training on different tasks, but does not necessarily transfer [Thorndike, 1903] [Thorndike, 1911].
emotion
People learn reactions, such as aggression, withdrawal, and persistence, to emotions through instrumental conditioning.

operant conditioning
If organism performs behavior and receives reward, response frequency increases {operant conditioning, learning}|{response conditioning}. Higher animals can perform new behaviors, and rewarded operants reappear more frequently. Response conditioning does not associate stimulus and response. Operant conditioning does not need goals, only rewards. Operant conditioning is stronger if rewards are unpredictable [Watson, 1913] [Watson, 1924].

puzzle-box
Instrumental learning experiments can use maze or box {puzzle-box}, from which animal escapes [Thorndike, 1903] [Thorndike, 1911].

token economy
Operant conditioning can happen in spontaneous, not learned, motor activities. Reinforced actions increase in frequency. Reward kinds and timing {token economy} affect instrumental conditioning [Bekhterev, 1913].

SOCI>Psychology>Cognition>Learning>Kinds>Conditioning>Behavior

continuity theory of learning
People repeat behaviors useful for drive and need reduction {continuity theory of learning}. As they develop, children internalize repeated actions [Hull, 1940] [Hull, 1943].

behavior segment
As children develop, they internalize repeated actions {behavior segment}. Practice leads to memory. Young children cannot combine behavior segments, but older children can combine two behavior segments to reach goal [Hull, 1940] [Hull, 1943].

freeze
Shock, noise, or scary image {fear conditioning, freezing} can make animal stand still {freeze, animal}|.

galvanic skin conductance
Fear conditioning changes skin conductance {galvanic skin conductance}.

mediation of stimulus
External stimulus can cause covert internal response {mediation, stimulus}, which causes internal stimulus, which causes body response.

SOCI>Psychology>Cognition>Learning>Kinds>Conditioning>Forgetting

forgetting
Over time, without stimulus repetition, conditioned responses to conditioned stimuli decrease {forgetting}|. Over time, without reinforcement, instrumental responses to conditioned stimuli decrease. All stimulus-response associative links or conditioned reflexes gradually disappear without reinforcement.
cause
Forgetting happens because events repeat without reward, not because time passed or people did not use response.
level
Forgetting can be complete, with no response or memory.
purpose
Forgetting allows retaining most-useful information.
forgetting rate
Maximum forgetting rate is immediately after learning. Forgetting rate decreases over one day and then levels off.

extinction of learning
If stimulus pairing ceases, conditioned response fades {extinction, learning}|. Extinction has same stages and processes as conditioning. Near extinction time, activity level, response variation, and response force increase [Watson, 1913] [Watson, 1924].

suppression in learning
Other learning causes forgetting {suppression, learning}|. Newer memories can modify older ones. More suppression results when more activities intervene between learning and recall. Blocking new learning prevents suppression.

SOCI>Psychology>Cognition>Learning>Kinds>Conditioning>Laws

law of effect
Pleasurable or painful experience, above minimum level but not beyond maximum intensity, strengthens the bond between stimulus and response {law of effect}. People learn, remember, and repeat actions that immediately lead to pleasure, and these become habits. People do not remember actions leading to pain, to avoid painful behavior later [Thorndike, 1903] [Thorndike, 1911].

law of exercise
Repeating response under good conditions strengthens stimulus-response association, and reinforcement increases practice {law of exercise} {law of use} [Thorndike, 1903] [Thorndike, 1911].

law of readiness
Learning can happen if learner can respond, has interest, has background knowledge, is mature enough, and has motivation {law of readiness} [Thorndike, 1903] [Thorndike, 1911].

response-response law
Behaviors can be similar to previous behaviors {response-response law} (R-R law).

stimulus-response law
Behaviors can always happen, given environment states or events {stimulus-response law} (S-R law).

SOCI>Psychology>Cognition>Learning>Kinds>Training

massed training
Training can take short time {massed training}.

spaced training
Training can take long time {spaced training}.

SOCI>Psychology>Cognition>Memory

memory and cognition
People can remember facts or events {memory}|. Memory allows information recall and use [Baddeley, 1990] [Dudai, 1989] [LeDoux, 1996] [Martinez and Kesner, 1998]. Memory stores information. Memory storage can be inaccurate.

comparison: learning
Learning places information in memory. Memory implies learning. People learn some memories better than others. Perhaps, they repeat them often.

comparison: recall
Recall retrieves information from store. Memory recall can be inaccurate.

types
People can perform habits and procedural skills {procedural memory, cognition}. People can remember facts, previous actions, predictions, goals, objects, locations, and times {declarative memory, cognition}. Long-term memory can be declarative/explicit or non-declarative/implicit. Memory can be episodic, procedural, categorical, or semantic. Episodes and procedures are personal. Words and statements are not personal.

processes
Forming memory requires timed inputs, conditional branches, and delays while some processes wait for other processes to finish.

Mind has fast and slow processes. Short-term memory and attention involve intensive, detailed, and fast processes, which have limited information capacity and can create information structures available to consciousness. Long-term memory involves slow processes, which have unlimited information capacity and cannot create information structures

available to consciousness. People cannot be aware of mental processes, computations, or abstract representations, so consciousness is viewpoint-specific representations {intermediate-level theory of consciousness, memory}. Consciousness stores computation results {information structure}. Consciousness is a viewer-centered representation, in short-term memory, of a three-dimensional model, and involves position, shape, color, motion, attention, and representation [Crick and Koch, 2000] [Jackendoff, 1987] [Jackendoff, 1996] [Jackendoff, 2002] [Siewert, 1998] [Strawson, 1996]. Perceptual primary sensory cortex stores perceptions. Short-term memory can hold all object features simultaneously and so unify perception. Some perceptions do not become memories.

Complex memories have same laws as basic unit memories {memory theories} [Ebbinghaus, 1913].

processes: analog process

Forming and retrieving memories, and other mental processes, are analog processes, not digital.

processes: indexing

Memories depend on indexing by location, time, and image. Index uses a lookup table sorted by use probability. Index can have inhibition and excitation to expand or prune.

processes: information processing

Mind actively processes data consciously and non-consciously.

processes: interactive memory

Memories are made, stored, and recalled using active cognitive processes, which relate existing memories and interpret memory content {interactive memory, cognition}, so memory has no bound.

processes: knowledge structure

Memory uses space, time, subject, and so on, in an interrelated knowledge hierarchy. Meaning and understanding require knowledge schemas and hierarchies {knowledge structure}. Such structures both provide background information and integrate current stimuli and facts. For example, stories have schema, with setting, characters, goal, plot, and resolution. Meaning relates to what object can do or is for [Schank and Abelson, 1977] [Schank, 1997].

processes: perception

All memories are about past perceptions.

processes: repetition

Repetition strengthens memory.

processes: representation

Memories have multiple mental representations. Mental representations build from familiar parts. Parts have one and only one object.

processes: storage

Mind has mechanisms to store mental representations. Mental processes store memories for use within several seconds in immediate memory or sensory memory, for use up to 45 seconds in short-term memory or working memory, and for use after 45 seconds in long-term memory. These processes differ for different senses. Perhaps, long-term memories are never lost. Only ability to recall them fails. Perhaps, associations are weak, or needed stimuli do not happen. Perhaps, long-term associations are never lost. Perhaps, associations strengthen during conscious processing only. Perhaps, non-conscious processing also happens during and after learning, affecting representations or associations.

processes: units

Memory content involves storing basic units, such as shapes, sizes, motions, and qualities.

requirements

Memory does not require sensation, does not require perception, and does require awareness.

biology: ampakine

Ampakines increase glutamine binding to AMPA receptor and increase glutamate release from AMPA receptor, and so affect memory and cognition.

biology: animals

All mammals have procedural and declarative memory.

biology: brain

Memory involves caudate nucleus, cerebellum, frontal lobe, hippocampus, inferotemporal cortex, lateral prefrontal cortex, mamillary bodies, medial temporal lobe, posterior superior temporal lobe, putamen, septo-hippocampal system, and thalamus. Stimulating brain position repeatedly results in same memory. Most brain damage does not affect short-term memory.

biology: connection strength

Memory coding changes neuron connection strengths and patterns.

biology: CREB

Calcium influx activates protein kinases that phosphorylate other enzymes that activate or deactivate CREB. CREB enhances memory protein genes, such as zif268. Cell stimulus patterns activate gene set. High-frequency, middle-frequency, and low-frequency stimuli affect different enzymes. Signals strengthen synapses sensitized by stimulus that released enzymes that activate CREB. Synapses themselves do not send signal molecules to cell nucleus.

biology: drug

Drugs can make atypical memory states. If drugs reduce brain electrical activity, memories do not consolidate. After memory consolidates, drugs do not affect memory. Anti-cholinesterase, physostigmine, puromycin, and scopolamine affect memory [Atkinson and Shiffrin, 1968] [Atkinson et al., 1999] [Atkinson et al., 2000] [Farthing, 1992] [Hobson, 1999] [Metzner, 1971] [Spence and Spence, 1968] [Tart, 1972] [Tart, 1975]. Drugs do not affect short-term memory.

biology: EEG

Brain wave changes do not affect memory.

Short-term memory has gamma oscillations in local field potentials, which can result from reverberating brain activity [Tallon-Baudry and Bertrand, 1999].

biology: electrical shock

If electrical shock reduces brain electrical activity, memories do not consolidate. After memory consolidates, electrical shock does not affect memory.

biology: hippocampus

After temporal-lobe and hippocampus removal, people cannot make long-term declarative memories but can learn motor tasks [Scoville and Milner, 1957].

biology: ion channel

Brain information processing code uses ion channels and molecules. Protein alters cell-membrane ion-channel-use probabilities.

biology: myelination

Myelination extent does not affect memory.

biology: neocortex

Long-term memories go to neocortex. Perhaps, it happens at night.

biology: neuron

Short-term memory and long-term memory use same neurons and networks.

biology: NGF

NGF increases choline acetyltransferase (CAT), which synthesizes acetylcholine in hippocampal neurons. NGF reverses poor spatial memory.

biology: protein synthesis

Long-term memory needs protein synthesis [Agranoff, 1967] [Flexner et al., 1963]. Non-declarative memory uses proteins [Benzer, 1967]. Protein-synthesis inhibitor prevents memory formation.

biology: synapse

Memory involves cholinergic synapses.

properties: defaults

Memories provide assumptions and defaults to compare to current perceptions.

properties: encoding

Encoding context should match cue information.

properties: expertise

Experts in subject have large working memory for that subject, gained by active learning with high motivation.

properties: familiarity

Better perception, concepts, and encoding make better storage, so people have better memory for more familiar things.

properties: feeling of knowing

If people cannot recall, they can judge whether they can retrieve the memory in the future.

properties: loss

Mind does not lose memories, only access to memories.

properties: information

People recall high-level information best.

properties: music

Tunes ending in harmonic cadence are easier to remember than those that do not end in harmonic cadence.

properties: learning

While people are learning something, they can judge whether they can retrieve it in the future.

properties: non-accidental properties

Memory stores non-accidental properties and their relative positions as object templates [Anderson, 1983] [Anderson, 1995] [Aristotle, -350] [Niesser, 1967] [Niesser, 1982] [Rose, 1993].

properties: non-consciousness

Memory survives unconscious periods.

Intense stimuli can cause memory without consciousness.

properties: number

Number of objects that people know is approximately 10,000,000. Number of patterns is 50,000, for useful objects. Similar objects can have different property values. Objects can be in hierarchies.

properties: organization

Memory is better for related events.

properties: reading problems

People with reading problems have small working memory information content.

properties: repeated sequence

People remember repeated sequences better in verbal short-term memory tests, perhaps from beginning long-term memory or maintaining short-term memory traces.

properties: rhythm

Rhythm change aids memory.

properties: search

People can search 50,000 pictures per second in long-term memory.

properties: size

Human memory can hold 10^20 bits.

properties: smell

Smell short-term memory is poor.

properties: strength

Memory strength is number of stored or recalled units. Memories are weak if event does not repeat, emotion is low, or attention is weak. Certain content types also result in weak memories. Strong memories involve close attention or repeated study.

properties: sentence subject

People remember sentence subjects best, not objects, predicates, or relations.

properties: tempo

People perceive presentation speed. Slow tempo allows active tone coding. Fast tempo allows only overall tone patterns.

properties: time

Verbal short-term memory lasts up to 45 seconds. Processing decay causes decrease. Interference among memories decreases long-term memory over time. Memory is outside time. Memory causes the ideas of time and motion. Memory maps time to make a time field. Time measurement is only in the present.

properties: tip of tongue

If people cannot remember something, they can judge whether they will soon recall it.

properties: verb tense

Verbal memory requires verb tense.

effects: automatic response

Memories allow automatic responses. Automatic responses do not necessarily fit current problems, so memories must alter.

factors: age

Newborns can learn but need longer times for memory consolidation. At 3 to 6 years, hippocampus becomes mature and so long-term memories can form. Working memory information content increases up to age 20 to 35 and then declines. Perhaps, old age does not affect short-term memory [Selkoe, 1992]. At all ages, people can access memories by cues, such as habits.

factors: anesthesia

Even light anesthesia causes memory loss and analgesia.

factors: anxiety

Anxiety can cause consciousness loss and long-term memory loss.

factors: arousal

Long-term memory improves with increased arousal but short-term memory does not.

factors: consciousness

Attended items in sensory memory can become experiences. Consciousness uses external stimuli and memories {remembered present, consciousness} to make images. Short-term memory holds image parts and features as whole image develops. Sense-quality representations can be in short-term memory. People without long-term memory can be conscious. Sense-quality representations can be in long-term memory. Long-term declarative-fact memories can become conscious. Reporting recalled items requires consciousness.

factors: dreaming

Dream pattern changes do not affect memory.

factors: emotion

Because emotions include semantic and perceptual codes, more inferences, more intense perceptions, or more integration into life causes stronger coding. Positive and negative emotions attach to memories unconsciously. Sense signals go from thalamus to amygdala basolateral nucleus, then perirhinal and entorhinal cortex, and then amygdala central nucleus, which sends signals to make fear responses, such as freezing motion, high heart rate, and slow digestion. Stress hormones, like adrenaline, cortisol, and ACTH, activate amygdala. Perhaps, amygdala stores memory emotional part or transfers it from perirhinal and entorhinal cortex.

factors: environment

Environment does not much affect memory and ability to concentrate. Environment, especially social environment, affects memory storage and retrieval.

factors: fatigue

Over time, performance slows, people make more errors, concentration is poor, perception fades, and memory decreases.

factors: hypnosis

People can remember what happened while under hypnosis.

factors: inference

Inferences derive from knowledge structures. Inferences seem to affect encoding process and recall process.

factors: intelligence

Developmentally disabled people can have special right-brain talents, such as music, painting, or procedural memory.

factors: motivation

Motivation does not affect ability to retrieve information, only persistence in trying.

factors: perception

Memory affects extracting perceptual features.

factors: reflex inhibition

Inhibiting reflexes does not affect memory.

factors: sleep

Perhaps, paradoxical sleep is for memory consolidation. Brain substance can contain memories, and memory is a material process, because memory survives unconsciousness and sleep [Hering, 1878].

problems

People can have amnesia, anterograde amnesia, dementia, Korsakoff syndrome, and senility.

problems: schizophrenia

Schizophrenia has memory disturbances.

problems: amnesia

After brain damage, people cannot recall recent long-term memories. Amnesia still allows short-term memory, procedural learning, and conditioning. People can improve performance even if they cannot remember previous practice [Farthing, 1992] [Young, 1996]. Amnesiacs can feel that they are not fully conscious [Campbell and Conway, 1995] [Sacks, 1985] [Wilson and Wearing, 1995].

infantile amnesia

People can only remember events from after they were three or four years old {infantile amnesia}. However, babies actually have good long-term memory. Perhaps, mind represses early memories. Perhaps, early memories are not strong, differ, or depend on self-concept. Perhaps, people need language, with verbal recall and storage, to access memories by intention.

source amnesia

Healthy people typically cannot remember where they learned declarative knowledge {source amnesia}.

story schema

Stories have schema {story schema} {story grammar}, with setting, characters, goal, plot, and resolution [Schank and Abelson, 1977] [Schank, 1997].

SOCI>Psychology>Cognition>Memory>Anatomy

distributed memory

Minds have no single, central memory system but store memories in sense and motor regions {distributed memory}, probably in different ways.

mass action law

Cerebral cortex lesions affect rat intelligence and maze learning. Learning and memory impairment seem to depend on lesion extent {mass action law} {law of mass action}, rather than lesion location [Lashley, 1956] [Solomon et al., 1958]. Whole association cortex can acquire and recall habits. However, effect happens because lesion also cuts subcortical regions. Maze running is complex activity using many functions, which can have substitutes. Many locations process and store memories.

SOCI>Psychology>Cognition>Memory>Errors

memory errors

Memory recall can have inaccurate information {memory, errors} {recall, errors} that cannot have come from guessing or wrong cueing.

Without extra context, minds can make no distinction between mistake in storing memory, recalling memory, or making original perception.

properties: verbal errors

Typical verbal errors sound similar to accurate item.

properties: meaning

Errors can arise from trying to make events meaningful, because meaning is more important than detail. General concept stored with detail can change the detail. Context or assumptions can change memory logically.

memory change

Memory change happens in weak memories. Memory change can happen at storage, when misunderstandings cause coding misrepresentations. Memory change can happen at recall, when inferences override coded representations.

memory decay

For visual situations with attention but no rehearsal, activation loss decreases memory. Forgetting increases with time elapsed. However, people can later remember memories forgotten at one time, so information is still in memory.

recall

Recalling can change unconscious memories.

perception

Perception does not confound units and produces non-contradictory results, with no chimeras. Mind eliminates contradictions preconsciously, before conscious memory.

absent-mindedness

Memory formation and retrieval can fail with low attention at storage or recall {absent-mindedness}|.

bias in memory

Memory can alter to make events, objects, or scenes consistent, emotionally right, or pleasant {bias, memory}.

blocking in memory

Memory retrieval can fail if something else is on the mind {blocking, memory}.

consolidation failure

Coding failure {consolidation failure} can decrease memory.

discrimination failure

Inability to discriminate {discrimination failure} between two groups, locations, or times that are close together can decrease memory.

encoding deficiency
Memory failure can be at encoding {encoding deficiency}.

false memory
Memory can mix real and imagined events {false memory}| [Loftus and Ketcham, 1994].

illusory conjuncture
Sensory recall can combine different stimulus features {illusory conjuncture}. Features are in different mental regions, and features recombine at recall. Recombination requires attention.

misattribution
Memory can associate with wrong place, time, situation, or object {misattribution}. Recall can use guessing or associate to wrong memory {source misattribution}. Source misattribution has low probability, because cue must be precise to keep memory coherent.

persistence
Memory can be obsessive {persistence, memory}.

retrieval failure
Memory failure can happen at retrieval {retrieval failure}.

storage loss
Memory failure can happen at storage {storage loss}.

suggestibility
Current information {suggestibility}| can change memory.

transience
Memory can decay or fade away {transience}.

SOCI>Psychology>Cognition>Memory>Interference

interference in memory
During learning, intervening activities inhibit learning retention {interference, memory}|. Newer items occupy memory. Later learning also affects memory consolidation. Interference effects happen only for verbal items learned transiently, not for facts and procedures. Interference effects happen only for items learned successively, not for longer time intervals. Echoic memory can exhibit interference. Iconic memory does not exhibit interference.

proactive interference
Earlier learning can disrupt later learning {proactive interference} {proactive inhibition}. Proactive interference can be high. Release from proactive inhibition can happen when subject matter changes or time between trials is long enough. Retroactive interference is more than proactive interference. Over time, retroactive interference decreases, but proactive interference increases.

retroactive interference
Later learning can disrupt previous learning {retroactive interference} {retroactive inhibition}. For two verbal-item lists, recall is harder if lists share items. With more interfering-list repetition, retroactive interference increases, up to a limiting value. Retroactive interference appears high. Retroactive interference is more than proactive interference. Over time, retroactive interference decreases, but proactive interference increases. There can be output interference.

output interference
Recalling some class members inhibits memory of other members {output interference}. Recalling an item inhibits memory of other items.

similarity-based interference

Semantically related items increase interference in order recall and decrease interference in free recall {similarity-based interference}. Opposites increase interference in order recall and decrease interference in free recall, because they relate semantically. Visually or aurally related items have small interference effects compared to semantic effects.

SOCI>Psychology>Cognition>Memory>Interference>Theory

response competition

Perhaps, interference provides alternative response to stimulus {response competition}. Response competition increases with few interfering-list repetitions but then decreases. However, most list-recall errors are not other-list items, so response competition is only one interference factor.

stimulus absence

Perhaps, interference removes needed stimulus {stimulus absence}.

SOCI>Psychology>Cognition>Memory>Processes

consolidation of memory

Short-term memory becomes long-term memory over time {consolidation}|.

brain

In mammals, consolidation is in cerebral cortex, especially temporal lobes.

Hippocampus is for early memory consolidation. Perhaps, it uses pointers to link representation parts.

synapses

Synaptic vesicle number increases, synapse area widens, neuronal firing rate increases, and synapse number increases. Enzymes modulate synaptic transmission. Glycoprotein receptors go to synaptic membranes. Only activated synapse regions start to grow more synapses. Quiet regions do not respond to new proteins.

time

Short-term memory consolidates in one hour, but further consolidation takes years.

drugs

If drugs reduce brain electrical activity, memories do not consolidate.

electrical shock

If electrical shock reduces brain electrical activity, memories do not consolidate.

cue in memory

Stimulus {cue, memory} starts memory recall. Cue information determines probability of accessing memory. Cue should match cue used at storage.

elaboration

Forming associations with existing memories, or forming images of existing parts {elaboration, memory}, transfers items to long-term memory and aids recall. Associations can be among items in short-term memory or to items in long-term memory. Images can combine items in short-term memory or associate features to items in long-term memory. Elaboration increases memory compared to rehearsal but takes more time.

engram

Brain regions, mainly in cerebral cortex, that encode event also store and record event {engram}| {memory trace}. Data processing and data storage combine in mind. Coding, recursion, self-reference, and goals affect both. Forming memory changes neuron structure.

identification in memory

Attention and recognition give meaning to stimulus and allow it into short-term memory {identification, memory}. Item identification happens in parallel. Identification requires one quarter second.

linkword

Two words {linkword} can associate using image that combines their referents.

masking in memory

A new stimulus, immediately happening at same location as previous stimulus, causes immediate previous-stimulus forgetting {masking, memory}|. Brightness masking uses a higher-intensity second stimulus and affects retina. Pattern masking uses pattern, affects mental processing, and has no brightness effect. Masking does not necessarily replace the first image but only prevents consciousness [Keysers et al., 2001].

phonemic code

People remember verbal items by sound {phonemic code}, even for visual material. People also use weaker visual and semantic codes. People remember items better than order. Phonemic code can be how to represent physical sounds or articulate sounds.

pop-out

Mind places object in scene in short-term memory {pop-out, memory}|, using motion, depth, texture, and color cues.

post-event information

Information supplied after memory storage {post-event information} can cause memory change, if information is not suspect and if memory was weak. Memories change to be consistent with new information.

compromise

Conscious recall does not allow unreal or contradictory contents. However, feature mixing can happen {compromise memory, post-event information}, such as using one-object's color for another object.

recall

People take longer to recall items if they have to take into account new information.

repetition

Repeating new information increases confidence in changed memories.

priming memory

Recent experience, even just one, with words, strings, lines, images, sounds, or objects unconsciously improves recognizing same experience up to one year later {priming, memory} [Bar and Biederman, 1998] [Bar and Biederman, 1999] [VanRullen and Koch, 2003]. Prime can be same as target {repetition priming}. Prime can have similar meaning {semantic priming}. Processing can aid {positive priming} or inhibit {negative priming} other processing.

perception

Perceptual processing causes priming effect, because slightly different words or objects do not prime. Priming can activate processing [Mandler, 1980].

Priming can activate transfer-appropriate processing for different memory types [Roediger and McDermott, 1993].

brain

After priming, cortex activity decreases during recognizing.

consciousness

Priming is equally in conscious and unconscious processing.

reconsolidation

To retain retrieved or activated memory, mind must store the memory again {reconsolidation}, using proteins.

rehearsal

People can repeat items in verbal short-term memory in sequence {rehearsal, memory}. More rehearsal improves recall. Consciously repeating verbal items transfers them to long-term memory.

remembered present

Consciousness uses external stimuli and memories {remembered present, cognition} to make images. Consciousness requires short-term memory. Short-term memory holds image parts and features as whole image develops.

SOCI>Psychology>Cognition>Memory>Properties

accessibility of memory

Memory retrieval tries to find and use memories in memory store {accessibility, memory}, but memories can be unavailable.

apprehension span of memory

People typically can apprehend up to six or seven items {span of apprehension, memory} {apprehension span, memory}|.

availability of memory
Memories are in memory store {availability, memory}, but memories can be inaccessible.

episodic tag
People typically have poor time and location {episodic tag} recall. People forget time and location before other content. Weak or missing episodic tags reduce fact or episode memory organization, causing more recall errors.

process purity problem
In memory tests, conscious and unconscious processing can happen. Processing task has automatic/unconscious and controlled/conscious processing components, which affect behavior differently {process dissociation procedure} [Jacoby, 1991] [Reingold and Merikle, 1990]. Perhaps, they are separable {process purity problem} {method of opposition} {opposition method}.

Ribot law
Amnesia is greater for more recent memories {Ribot's law} {Ribot law}.

stage analysis
Memories are representations that are made, stored, and retrieved {stage analysis}.

voluntary suppression of memory
People can will not to remember {voluntary suppression, memory}. Perhaps, it involves frontal lobes and hippocampus.

SOCI>Psychology>Cognition>Memory>Properties>Hypothesis

co-existence hypothesis
Memories that are semantically contradictory can co-exist non-consciously {co-existence hypothesis, memory}. Mind inhibits recall of semantically contradictory non-conscious memories.

erasure hypothesis memory
New memory can erase semantically contradictory non-conscious memory {erasure hypothesis, memory}, to conserve limited memory capacity.

SOCI>Psychology>Cognition>Memory>Properties>List Learning

primacy effect
During list recall, people recall first items better {primacy effect}. For long list, people recall most words poorly. People recall items in middle worst.
behaviorism
By behaviorism, all previous words excite all following words and so associations for middle words are least correct, because they get the most-incorrect associations.
cognition
By cognition, mind rehearses first words when short-term memory is not full and so remembers them better, but middle words have poor rehearsal because they happen when short-term memory is full and so are not in short-term memory ready for recall.

recency effect
People recall items at end {recency effect} best under free recall but not under order recall. Auditory items have recency effect but not visual items. For long list, people recall most words poorly. People recall items in middle worst.
behaviorism
By behaviorism, all previous words excite all following words and so associations for middle words are least correct, because they get the most-incorrect associations.
cognition

By cognition, last words are still in short-term memory and memory can recall them right away. For middle words, short-term memory is full, rehearsal is poor, and words have left short-term memory by recall time.

memory

Recency effects happen even when mind uses no short-term memory, only long-term memory.

SOCI>Psychology>Cognition>Memory>Properties>Inference

constructionist theory

Perhaps, relevant local and global inferences relate to content, causes, situations, and goals {constructionist theory}.

minimalist theory

Perhaps, mind makes only familiar inferences and inferences needed for sentence coherence {minimalist theory}.

promiscuous theory

Perhaps, mind always generates inferences {promiscuous theory}, but this can exceed processing capacity.

SOCI>Psychology>Cognition>Memory>Recall

recall in memory

Retrieving information {recall}| from memory uses different mechanisms to return memory representations to consciousness or near consciousness. Recalling declarative knowledge creates experiences.

processes: cueing

Externally or internally supplied stimulus recalls memories from storage.

processes: errors

Recall can be inaccurate. People recall some memories better than others. Perhaps, they repeat them often.

processes: inhibition

Memories or cues can inhibit recalling other memories, because memories are contradictory or substitute.

processes: reconstruction

Recall builds from memories. Memories do not mix, but only select from among choices. However, features, such as color, can mix. People do not recall chimeras and contradictions.

Reporting recalled item requires consciousness.

processes: time coordinates

Memory creates time coordinates and uses them for recall and storage.

processes: voluntary retrieval

Information retrieval can be voluntary or automatic. Voluntary retrieval involves search strategy. Information non-retrieval is not voluntary.

properties: contradiction

Conscious recall does not allow unreal or contradictory contents.

properties: free recall

In free recall, people recall more items that are near each other in space or time {contiguity principle, recall}. In free recall, people recall class members better when cued with class but not classes when cued with class members. In free recall, people typically do not recall items in original order but form orders and repeat orders on subsequent recalls.

properties: time of day

Recall is better in morning than evening.

factors: context

People can recall same memory in one context but not another.

factors: hypnosis

Hypnosis does not increase memory retrieval. Memories retrieved under hypnosis are unreliable. Especially, early-infancy memories are probably not true.

factors: meaning

Meaningful events cause better and more accurate recall.

categorical clustering

In free recall, people recall more items that have similar meaning {categorical clustering}.

compromise memory

Conscious recall can mix features {compromise memory, recall}, such as using one-object's color for another object.

context dependency

Recall is easier and better if current conditions, internal and external, are similar to learning conditions {context dependency} {context-dependent retrieval}. The main internal context is mood. Recall is slightly, but significantly, better in same environment as learning environment. Environment can include learning act, material learned, place, time, mood, and physiological state. Context increases recall of items that match context itself.

Setting context before, but not after, performing recall task improves performance. Using context with same feature cues but not correct spatial relations does not improve performance.

meaning

Context can change memory meaning.

direct retrieval hypothesis

Perhaps, recall moves percept from coded content in unconsciousness to consciousness {direct retrieval hypothesis, recall}, based on association cues.

generate-recognize model

Searching can use a strategy {generate-recognize model} {generate/recognize model}, to test hypotheses.

operation span

Given arithmetic problems, subjects can recall problem answers or words. Number correctly recalled {operation span} depends on prose comprehension and short-term-memory information.

retrieval in recall

People can recall and re-express memory information {retrieval, memory}|. Memory reconstructs perception, starting from cue, by assembling information from mental regions.

process

Recall associates memory with current thought. The first step in recall or pattern detection is to identify expected object type. The second step is to select node or node system.

factors

Context, mood, and mental state affect retrieval.

How information makes categories affects recall. Recall is better if unusual event, image, or story connects with memory.

Practicing recall aids recall. Cramming increases success.

brain

Recall is poor if catecholamine level is low, because catecholamines arouse brain.

time

Retrieving memory using sequential search takes 0.5 seconds.

tag in memory

Perhaps, memory representations have concept, image, time, or context information {tag, memory} about target. Perhaps, memory representations have direct target association information.

SOCI>Psychology>Cognition>Memory>Recall>Model

single-stage model

If retrieval takes one step, mind retrieves the most-strongly activated target {single-stage model} {single-process model}.

two-stage model

If retrieval takes more than one step, cognitive decision or passive process determines retrieval from activated material {two-stage model} {two-process model} {decision model}.

SOCI>Psychology>Cognition>Memory>Recall>Cue

cue in recall

Memory retrieval requires externally or internally supplied stimulus {cue, recall} related to information to retrieve {cueing, recall}. Cue quality determines retrieval, no matter memory or association strength. Strong and internal cue is mood. Everyday experiences provide retrieval cues for most information. Good retrieval cues come from good encoding.

working memory

One working-memory part stores cues, and other part stores retrieved representations. Conscious thoughts retrieve further conscious representations.

efficiency

Working memory depends on cue efficiency. Efficiency increases with long-term-memory organization and cueing strategies.

cue-dependent forgetting

Retrieval places activated content into consciousness. If access does not encounter target memory, recall does not happen {cue-dependent forgetting}.

cue-dependent recall

Retrieval places activated content into consciousness. If access encounters target memory, recall happens {cue-dependent recall}.

SOCI>Psychology>Cognition>Memory>Kinds

behavioral memory

Most memories {behavioral memory} {procedural memory, behavior} are about actions and behaviors. Primary motor cortex stores behavioral memories.

categorical memory

Memories {categorical memory} can be about classes or words.

declarative memory

People can learn facts and concepts {declarative memory}|. Declarative knowledge includes episodic memory and semantic memory. Declarative knowledge is things that people can remember and know. Declarative knowledge is proposition sets [Campbell, 1994]. People can recall declarative memory without affecting external behavior. Declarative knowledge contrasts with procedural knowledge.

echoic memory

Mental process {echoic memory}| briefly preserves stimulus pattern. Echoic memory is better than iconic memory.

eidetic imagery

People can have perfect image recall and can re-perceive images {eidetic imagery}|. People can preserve visual scenes and then scan them. Eidetic images are richer than other images. People who can recall everything rely on imagery but cannot understand general ideas or concepts, because details are too numerous [Luria, 1968] [Luria, 1980].

episodic memory

Memory of personal events {episodic memory} has location and time, is in frontal lobe, and involves medial temporal lobe and cortex. It can be unconscious or conscious.

explicit memory

Semantic memory, spatial memory, or episodic memory {explicit memory} {conscious memory} is conscious and reflective and encodes object, event, and relation representations. Memory associates two arbitrary stimuli.

Repetition, meaning, interest, attention, importance, previous-knowledge relations, and rehearsal strengthen declarative-memory encoding, because more conscious processing makes more retrieval cues [Corkin et al., 1997] [Damasio et al., 1985] [Milner, 1972] [Milner et al., 1998] [Sacks, 1985] [Scoville and Milner, 1957] [Standing, 1973] [Sternberg, 2001] [Wilson and Wearing, 1995].

eyewitness testimony

Eyewitnesses {eyewitness testimony}| to crimes see fast, confusing, and unsettling events and so have weak memories, even if their confidence is high. Eyewitness people identification is especially poor.

familiarity

The feeling that one knows something {familiarity, memory} is an immediate response to an event. The first concept about perception is if it is familiar or strange. It requires no conscious processing. Frequent observations cause it. It is independent of context and associations.

flashbulb memory

Emotion in amygdala, and arousal in serotonin, norepinephrine, dopamine, and acetylcholine systems, can cause people to remember one event strongly and in detail {flashbulb memory}.

iconic image

Short-term visual memory {iconic image} {iconic memory} {fleeting memory} has images that persist after removing objects. Iconic image looks like image but faded. People can see all items but have not yet identified them.

Image is at fixed position on retina. New information there erases it.

Iconic images can appear to move, if moving stimuli are near them.

attention

Making iconic memory requires attention [Billock, 1997] [Coltheart, 1983] [Coltheart, 1999] [Crick, 1984] [Freedman et al., 2001] [Freedman et al., 2002] [Gegenfurtner and Sperling, 1993] [Keysers and Perrett, 2002] [Levick and Zacks, 1970] [Loftus et al., 1992] [Potter, 1993] [Potter and Levy, 1969] [Rolls and Tovee, 1994] [Sperling, 1960].

time

Echoic memory lasts longer than iconic memory.

cue

After looking tasks {Sperling task}, cues can help memory.

immediate memory

People can remember immediately after one presentation {immediate memory}| {latent memory}. Immediate memory lasts seconds. Immediate memory is neural-pathway electrochemical activity, like reverberations in circuits. Immediate memory can change synaptic strengths temporarily by affecting presynaptic biochemical pathways. Changing presentation rate or delaying recall time does not affect recall.

implicit memory

Memory can be for skill or task {implicit memory} {non-representational memory} {non-declarative memory} {procedural memory, implicit}. Implicit memory includes habituation, sensitization, motor skill, priming, habit, classical conditioning, operant conditioning, emotional learning, and perceptual skill.

People can learn how to perform tasks and to think and follow rules. Procedural knowledge can be production systems. Procedural knowledge is motor skills and perceptual and cognitive skills. Procedural knowledge is habits and know-how [Campbell, 1994].

process

Procedural memory uses many circuits and neuron groups but does not use representations.

consciousness

Implicit memory is unconscious and never becomes conscious. It is reflexive.

brain

Sense and motor processes integrate over thalamocortical system, cerebellum, hippocampus, and basal ganglia {global mapping}.

animals

Implicit memory is the same in animals and humans.

comparison

Procedural knowledge contrasts with declarative knowledge.

imprinting in memory

Animals can learn to fixate on another animal {imprinting, memory}|, so they ignore or avoid other individuals. Imprinting can be on parent {filial imprinting} or mate {sexual imprinting}. Imprinting is most effective between members of same species.

process

Imprinting is gradual but not associative. Imprinting with one object prevents further imprinting with other objects, except by prolonged exposure. Prolonged exposure does not eliminate the memory but only suppresses it. After prolonged exposure, original imprint comes back readily.

long-term memory

Brain processing can change short-term memories into stable memories {long-term memory}| (LTM) {labile memory} {secondary memory} {structural memory}. Short-term memory is process, but long-term memory is structure. Long-term memory involves interactions between two memory types: personal-experience episodic memory and fact semantic memory.

coding

Long-term memory uses mostly semantic code but also uses visual and phonemic codes. All three codes also operate in short-term memory but with different strengths and uses.

time

Long-term memory takes more than 45 seconds to form and can last lifetime.

properties: consciousness

Long-term memory is unconscious.

properties: interference

LTM can have phonological interference.

biology

Long-term memory involves cell changes and protein synthesis. Brain damage can impair long-term declarative and procedural memory but not short-term memory.

biology: drugs

After memory consolidation, drugs do not affect the memory [McCullough et al., 1999].

biology: electrical shock

After memory consolidation, electrical shock does not affect the memory [McCullough et al., 1999].

factors

Greater word concreteness, word frequency, imagery strength, and semantic similarity increase long-term memory. Phonetic similarity decreases long-term memory.

comparison

Perhaps, short-term memory and long-term memory differ only in retrieval method.

phonological loop

Working memory {phonological loop} can store sounds with meaning, such as spoken words. Perhaps, phonological loop has passive phoneme coding and active rehearsal [Baddeley, 1986] [Baddeley, 1990] [Baddeley, 2000].

recognition memory

Recall can be for recognition {recognition memory}. Memory can be about whether stimulus is familiar or not, was in place or at time, or associates with name or image.

process

To recognize if symbol is in short-term memory, people compare features. Matching determines recognition. With no overlap, knowledge of no match is rapid.

properties

Recognition is better for incidental learning than for deliberate learning. Recognition is typically better than recall, unless semantic association is very strong. Memory organization and repetition affect recognition memory and recall memory in same way, but word frequency, associations, presentation rate, concreteness, meaning, and imagery do not affect recognition memory and recall memory in same way, because some items are more and some less noticeable than others, and this affects recognition {mirror effect, recognition}.

semantic memory

Memories {semantic memory} can be about facts, meanings, and concepts. Conscious or unconscious fact memory has no particular location or time. Semantic memory involves medial temporal lobe but does not involve frontal lobe.

sensory memory

In senses, memory {sensory memory} first peripherally codes stimulus physical properties {physical code} {structural code} for sounds in echoic memory, sights in iconic memory, smells, tastes, and touches, taking one-third second. Sensory memory first stage does not need attention or consciousness.

Sensory memory second stage uses semantic coding and is central and automatic, taking two to 20 seconds.

recall

Higher overall stimulus intensity during and after stimulus decreases recall.

forgetting

Forgetting happens by decay and is minimal after one second for vision and four seconds for hearing. Forgetting loses location information but not item meaning or nature.

short-term memory

Memory {short-term memory}| (STM) {active memory} {primary memory} {working memory} {activity-dependent memory} can rehearse immediate memories, hold memories in consciousness, assist long-term memory, and decay in minutes to hours. Short-term memory puts objects and events in sequence to coordinate acquisition and retrieval.

properties: chunks

Short-term memory holds data chunks. Short-term memory holds 30 bits. People can remember chunks of three, if they must remember sequence. People can remember chunks of six or seven if there is no order [Cowan, 2001] [Miller, 1956] [Riddoch and Humphreys, 1995] [Shallice, 1988] [Sternberg, 1966] [Vallar and Shallice, 1990].

properties: interference

STM can have semantic interference.

biology: cells

Short-term memory involves no cell changes or protein synthesis.

biology: drugs

Amphetamine and strychnine affect short-term memory.

biology: brain

Prefrontal cortex neurons hold short-term memories for objects, locations, or both [Baddeley, 1986] [Baddeley, 1990] [Baddeley, 2000].

factors: age

Old age or brain damage does not affect short-term memory.

factors: language

Language production and comprehension require short-term memory.

working memory

Phonological loop stores sounds with meaning, such as spoken words. Visuospatial sketchpad stores images, such as faces and scenes. Working memory encodes attended content from sensory memory for non-conscious storage into long-term memory or other processing, such as sentence comprehension, and integrates content activated from long-term memory. Working memory holds content being actively processed, including conscious and near-conscious experiences and recently attended content, and includes perceptual and semantic representations. Working memory includes a goal-driven controller to determine which process to perform. Attention is part of working memory, or working memory holds attended conscious content {focus, Baddeley} [Baddeley, 1986] [Baddeley, 1990] [Baddeley, 2000].

source memory

Frontal lobe stores conscious event location and time memories {source memory}. Animals have less frontal lobe and so less source memory.

spatial memory

Spatial information travels from thalamus to neocortex to hippocampus {spatial memory}. Hippocampus has non-topographic cognitive space map, stored in pyramidal place cells. Place fields are stable and form in minutes [Brown et al., 1998]. Hippocampus place cells increase firing when body is at that location [Ekstrom et al., 2003] [Frank et al., 2000] [Nadel and Eichenbaum, 1999] [O'Keefe and Nadel, 1978] [Rolls, 1999] [Scalaidhe et al., 1997] [Wilson and McNaughton, 1993] [Zhang et al., 1998].

verbal memory

Memory {verbal memory} {verbal short-term memory} can be about words, sentences, and stories. People can learn word sounds and visual appearances [Campbell, 1994].

properties

Words are easier to learn if they have high imagery, are highly concrete, have high frequency, have many associations, or have high meaningfulness.

Verbal short-term memory has small register and rapid decay.

factors

Imagery, frequency, familiarity, concreteness, semantic similarity, and meaningfulness influence verbal short-term memory only little, unlike for long-term memory.

interference

Phonemic similarity interferes.

working memory

Working memory includes module for verbal short-term memory. Working memory executive controls module but does not interfere with other cognitive work.

SOCI>Psychology>Cognition>Memory>Theories

bounded memory

Perhaps, memory content is only coded percepts {bounded memory}, with no other representation types, such as memory hierarchy or higher-order structures.

constructivist model

Memories represent percepts {perceptual code} and meanings {semantic code}.

meaning

Meaning and understanding are more important than percepts. Mind uses schema memory structures that contain meaning hierarchies, relating lower-level parts and higher-level wholes, and have semantic relations among concepts. General information integrates memory contents.

Memories are made, stored, and recalled using active cognitive processes {constructivist model} {interactive memory, constructivism}, which relate existing memories and interpret memory content, so memory has no bound. Storage and reconstruction are non-conscious. Information acquired after storing original memory can affect memories. Memory content can weaken over time.

strength

Memory assimilation to whole meaning structure determines memory strength.

recall

Reconstruction often supplies purposes, intentions, or missing information. Recall can often be inaccurate, because interpretation always happens. Recall depends on memory strength and related evidence.

individuality

Differences in understanding cause individual memories to vary.

contractive affine

Perhaps, memory storage involves linear functions over metric space {contractive affine transform}. Functions can be fractals. Mapping function can alter image location, orientation, and size. To recall, abstract-space trajectories specify imaged patterns as attractors.

declarative memory theory

Perhaps, cerebral cortex added declarative memory {declarative memory theory}. Cerebral cortex added processing loop between sense and motor processing regions and loops to anticipate sense information and prepare actions. Improved readiness offsets delay in processing between sense and motor regions. Training or other repeated use bypasses loop.

empiricism

Perhaps, stored object and episode memories are percept copies or representations, coded in long-term memory {empiricism, memory}. Memory content is only coded percepts.

process

Perception is first. Representation follows.

units

Basic memory units are non-conscious shapes, sizes, motions, and percept qualities. Memory units can associate by being close in space, time, shape, or quality.

strength

Memory strength depends on number of stored units.

time

Stored memory codes do not change over time. Because perception is reliable, memories are typically accurate. Differences in perception cause memories to vary.

recall

Recall moves percept from unconscious coded content to consciousness, based on association cues {direct retrieval hypothesis, empiricism}.

featural model

Perhaps, short-term memory involves storing perceptual features, and memories are linked feature sets {featural model}. Features are about stimulus intensity, location, time, frequency, and quality and about higher-level stimulus combinations. Sense-input memories have features about sense mode and stimuli. Memories of thoughts and memory rehearsal have higher-level stimulus combinations and few modal features. The featural model does not use associations among features.

probability

Features have values or probabilities. Excitations and inhibitions during memory formation depend on reinforcement pathways and change feature probabilities.

recall

Recall involves selection among alternatives by feature probability. Mind compares cues, which can generate secondary cues, to features. If match is above threshold, mind recalls object or word {reintegration}. Recall takes one step. If new memory has same feature value as existing memory, new-memory feature value replaces previous-item feature value, and previous-item memory degrades.

intermediate-level theory

Perhaps, consciousness is viewpoint-specific representations in short-term memory {intermediate-level theory of consciousness, cognition} [Crick and Koch, 2000] [Jackendoff, 1987] [Jackendoff, 1996] [Jackendoff, 2002] [Siewert, 1998] [Strawson, 1996]. Consciousness is at level intermediate between sense qualities and thought. Consciousness stores computation results in information structures. Consciousness is a three-dimensional model and involves position, shape, color, motion, attention, and representation. People cannot be aware of mental processes, computations, or abstract representations.

library memory

Perhaps, memories use index {library memory}. Perceptual patterns find indices and trigger memories.

mnemon

Perhaps, memory units {mnemon} are anatomical or logical structures. However, memory and recall have no basic units {memory unit}. Abstract higher-level categories are important for memory and recall. Stimulus recalls multiple memories.

memory organization packet

Perhaps, in situations in which habits do not apply, people use knowledge structures {memory organization packet, cognition} involving causes, effects, goals, and rewards to account for actions and facts. For example, movements can have 20 causal chains. Similar knowledge structures apply to places, physical actions, social relations, and personal intentions.

mental model

Perhaps, people try to generate spatial context, time context, and other overall representations {mental model} as they read or see something.

mirror effect

Perhaps, memory organization and repetition affect recognition memory and recall memory in same way {mirror effect, memory}. Word frequency, associations, presentation rate, concreteness, meaning, and imagery do not affect recognition memory and recall memory in same way, because some items are more and some less noticeable than others, and this affects recognition.

scene in memory

Perhaps, memory parts exist independently in long-term memory, and higher-order structures {scene, memory} assemble them.

schema for memory

Perhaps, memory organization uses non-conscious linked-data hierarchies {schema, memory}.

recall

People better remember things related to goals, plans, actions, beliefs, attitudes, moods, emotions, and expectations. They remember new, inconsistent, surprising, or changed events better.

Schemas more integrated with other schemas have better recall. Schema integration increases during development [Schank and Abelson, 1977] [Schank, 1997]. Memory strength depends on object and event relation to constructed schema [Schank and Abelson, 1977] [Schank, 1997].

amount

Memory holds maximum content amount, depending on schemas.

individuality

Different people use different schemas.

script

Perhaps, many life facets involve standardized behavior sequence {script, memory}. People develop habits through repeated same-type experiences. Scripts define events relative to whole, strengthen memories, infer missing information, point to episode memories, and predict future events. People expect events that match script and retain them more. People remove events that do not match from script, note them as exceptions, or modify script. Memories from scripts are indistinguishable subjectively from actual memories.

selectionist theory

Perhaps, evolutionary models for self-redesigning or learning systems show how neural models can evolve themselves {selectionist theory} [Young, 1976] [Young, 1978].

situation model

Perhaps, people use background information and structure or situation types {situation model}, which have goals or reasons. Comprehension involves different processing levels. First, mind codes relations among items {surface code}. Then mind generates propositions {text base}.

somatic marker

Perhaps, mind represents body activities {somatic marker}. Reason and emotions work together to determine choices and actions.

stages model

Perhaps, stimuli are first encoded for sensory memory {stages model} {modal model}. If people attend to stimuli, they encode into short-term memory. From short-term memory, stimuli go into long-term memory. Items in short-term memory transfer to long-term memory by rehearsal, image forming, or association forming. Short-term memory can only hold up to seven items for up to 45 seconds. Short-term memory receives input from sensory memory.

template storage memory

Perhaps, memories {template storage memory} can compare input data to stored patterns to find match.

SOCI>Psychology>Cognition>Memory>Theories>Association

association in memory

Perhaps, memories are representations. The simplest representations follow same memory rules as the most-complex representations. Perhaps, long-term memory has association networks or pairs {association} {associative model of memory}.

contiguity

In networks, associations can have different distances. If two images are near in space or time {contiguity principle, association}, they associate. Closeness increases association strength. Items farther apart have weaker associative links. Recall involves one associative link.

strength

Pair associations have different strengths. More repetitions increase association strength. Association recency increases association strength.

recall
Recall involves associative links. Mind recalls by moving from starting point name, list concept, environmental stimulus, or spatial position to first item and then to succeeding items, by following associative links to goals {target, recall}.

labeled link
Associative links have different known types {labeled link, memory}, such as identity, similarity, and opposition.

propositional model
In network, memory representations and associations can have language-like structure {propositional model} {statement model}, with subject and predicate. Associative links can be syntactical relations, such as "agent", "action", and "direct object". Associative links can be semantic or cognitive.

SOCI>Psychology>Cognition>Memory>Theories>Recall

compound cue model
Perhaps, recall involves cue sets {compound cue model} for context, time, meaning, images, and concepts. First cue activates other memories from long-term memory, which then contribute to recall process. Memory does not use spreading activation.

content-addressable memory
Perhaps, cues activate specific features {content-addressable memory} {direct access}, not cluster or class.

cueing model
Perhaps, conscious concept, feeling, or memory cues can activate identical or similar long-term-memory representations and so provide non-conscious access to memories {access, memory} {cueing model}. Pattern portions can trigger retrieval of rest of pattern. First memory sets pattern. Later patterns reinforce or change memory. Cues can place secondary cues in consciousness.

dynamic reconstruction
Perhaps, recall activates stored perceptual and semantic codes that interact with all other memory content. Recall interprets content to make meaningful response {dynamic reconstruction hypothesis}, using background and inferred information.

erasure hypothesis for recall
Perhaps, recalling one alternative erases other alternative from memory {erasure hypothesis, recall} {replacement hypothesis}. However, after leading suggestion, people can recall original memory, supporting the idea that both memories exist at same time and all memories are permanent {co-existence hypothesis, recall} [Loftus and Ketcham, 1994].

inhibition hypothesis
Perhaps, misleading semantic suggestions can affect stored memories and recall, by making original memory become contradiction and so causing inhibition {inhibition hypothesis}.

lock-and-key theory
Perhaps, stimulus must match receptor to open memory {lock-and-key theory}. However, this process requires trying each key in each lock.

message and rule system
Perhaps, data has regularities, which activate rule, which is conditional statement {message and rule system theory}. Mind checks data to see if it matches condition.

Proust principle
Important nodes in memory structures can activate memory {Proust's principle} {Proust principle}.

reconstruction

Perhaps, memory stores information samples, and recall is memory reconstruction {reconstruction, memory}. Retrieval cues are the most-strongly encoded memory parts. Retrieved memories use information from stored representation and from related memories and current perceptions.

spreading activation model
Perhaps, in spatial network, cue activates memory, and the memory activates another memory {spreading activation model}, until reaching target or losing activation because too far away or too long in time. Recall involves associative links.

SOCI>Psychology>Cognition>Memory>Theories>Sound

articulatory loop
Perhaps, phonological store and subvocal-rehearsal system form a feedback loop {articulatory loop} [Baddeley, 1986] [Baddeley, 1990].

phonological store
Brain regions {phonological store} can represent sounds being remembered [Baddeley, 1986] [Baddeley, 1990].

subvocal rehearsal system
Brain regions {subvocal rehearsal system} can rehearse information without actually producing sound. Subvocal rehearsal system is possibly where prearticulation happens. Rehearsing is always by sounds, not images [Baddeley, 1986] [Baddeley, 1990].

two-code theory
Perhaps, verbal information first enters sensory memory {two-code theory}. Attended sense qualities passively enter phonological store for up to two seconds. Non-conscious articulation recodes visual information into sound. It also can recycle sounds back into phonological store depending on capacity and other factors. Phonological store and articulation coding are short-term memory.

SOCI>Psychology>Cognition>Memory>Theories>Thinking Capacity

thinking capacity
Perhaps, thinking has capacity {thinking capacity}. Optimum group size is three items.

capacity model memory
Perhaps, mental function has only one information channel, which has maximum serial information-flow rate {capacity model of memory}. Channel is for both data processing and storage. If one increases, the other must decrease. Channel is for both semantic and syntactic processing. Poor readers with low information rate can use only one processing type, but good readers can use both simultaneously.

chunk
Perhaps, concepts or perceptions can be sets {chunk, capacity}| of previous concepts or perceptions. Chunk can contain several smaller chunks, by grouping in space or time {chunking} [Cowan, 2001] [Miller, 1956]. Number of chunks that people can keep in immediate memory is seven, plus or minus two. Chunking can synchronize information subsets into unit in time [Miller, 1962]. Bigger chunks can cause weaker memory. For example, longer vowel sounds reduce memory, because it takes longer to articulate items.

consolidation theory
Perhaps, mind as whole has processing capacity, and modules have processing capacities {consolidation theory}.

memory span
People can recall approximately seven independent verbal items {chunk, memory}, such as digits, letters, syllables, or words, after hearing them once. Range is five to nine items {memory span}. Chunks are single meaningful symbols, so consonant series are not chunks. Number of verbal short-term-memory items inversely relates to remembering ease. If verbal short-term memory is full, a new item causes immediate forgetting of a previous item.

mental capacity

Perhaps, mind transforms information flowing through communication channels, so memory has limited capacity {mental capacity}. Content in short-term memory decays but can go to long-term memory if rehearsed.

slot theory

Perhaps, immediate memory has seven registers {slot theory}. People remember fewer items if items are similar or complex.

SOCI>Psychology>Cognition>Memory>Theories>Working Memory

activation model

Perhaps, working memory is long-term-memory activated part {activation model of memory}.

structural model

Perhaps, attention selects one information channel at time, which has maximum serial information-flow rate {structural model of memory}. Working memory has several subsystems and controllers. One is phonological loop and has no semantic component. Another is visuo-spatial sketchpad and has no semantic component. Subsystems do not interfere with each other. Subsystems have subsystems. During learning, controllers are active, but, after learning, controller use is small.

visuospatial sketchpad

Working memory stores images, such as faces and scenes [Baddeley, 1986] [Baddeley, 1990] [Baddeley, 2000]. Working-memory subsystems {visuospatial sketchpad} {visuo-spatial sketchpad} can be for visual and spatial information and have no semantic components. Perhaps, visuo-spatial sketchpad has passive color and shape processing and active location processing.

SOCI>Psychology>Cognition>Perception

perception

People can process information from sensation and memory to detect, acquire, select, organize, recognize, identify, categorize, discriminate, and interpret information about organisms, objects, features, times, and locations {perception}|. Perception establishes current environment and organism state and does not initiate or control action or behavior.

Perception acquires information about physical objects and events, using unconscious inductive inference. Senses measure pressure, temperature, concentration, frequency data, sound intensity, light intensity, angle, position, and time. It detects perceptual features and feature relations. It can detect angles and orientations. It can detect separateness and overlap. It can detect bilateral, radial, rotational, and translational symmetries. It can detect straight, curved, rotational, spiral, translational, and oscillatory trajectories. It can detect circular, elliptical, ovoid, heart, diamond, square, rectangle, and triangle shapes. It can detect spatial and temporal relations, such as under, over, near, far, before, and after. It can separate figure and ground, horizontal and vertical, and static and moving [Goldstein and Maiden, 2001].

requirements

Perception requires sensation and does not require awareness. Perception does not require consciousness, subject, or person.

biology

All mammals have perception. Perception can involve amygdala, septum, hypothalamus, insula, and cingulate gyrus.

properties

Perception has limited information capacity.

Initial perceptions can change with further mental processing.

Sense receptors respond to stimuli with sensitivity, accuracy, and precision.

properties: continuity

Perception is continuous, not discrete. Perceptions have no gaps and no overlaps in intensity, time, space, frequency, or quality.

properties: discrimination

Perception can detect differences between stimuli, patterns, or objects, if difference is above threshold. Visual discrimination takes 40 milliseconds to 100 milliseconds.

properties: formal system

Perception is complete and consistent and so is formal system, which can have axioms, statements, and reasoning. Formal properties describe how mind uses sensations to get perceptions.

properties: intensity

Feature values have intensity range. People typically can identify no more than five different intensity levels. The lowest intensity detectable during measured time is one energy unit, such as photon, which causes one chemical reaction. The highest intensity detectable causes physical changes rather than chemical reactions. It can saturate receptors, stretch cell membranes past elastic limit, coat receptors, or damage cells. Intensity accuracy is one to two orders of magnitude poorer than just-noticeable-difference accuracy. People judge intensity relative to other intensities. Sense qualities change with intensity. Isolated sensory signals can only signal that stimulus exists, not define intensity value.

If people judge intensity by ratio {magnitude estimation, perception}, the preferred method, power law relates perceived intensity {subjective magnitude} and stimulus intensity: S = a * I^k, where a is a constant that depends on sense, k is a constant that depends on attribute, I is stimulus intensity, and S is perceived intensity. Exponent k varies from 0.33 for luminance to 3.5 for electric shock. Using logarithms, subjective magnitude to stimulus magnitude equation is: r = a + b * log(s), where r is response magnitude, s is stimulus magnitude, and a and b are constants.

Neuron has refractory period after spike, so spikes have frequency. Frequency is higher if stimulus is greater, until frequency maximizes. Number of spikes per second is also energy flow. If frequency/flow passes threshold, synapse sends signal to next neuron. Higher frequencies send more signals until flow maximizes. Neurons have energy flow, with amplitude, frequency if flow varies, pressure, resistance, and capacitance. Circuits and processes are the same as fluid or electrical flow in pipes and circuits. Variations in flow make perception speckle or vary in density.

properties: intensity fade

If not renewed, inhibition reduces intensity, leaving only empty space.

properties: invariance

Connected lines, topological order, texture, and color do not change with distance or perspective.

properties: labeling

Mind labels intensities, locations, times, and objects and labels links among features and objects {labeled link, mind}. Mind uses labels for learning, memory, and recall.

properties: reference frame

Perceptions seem to be in a stationary world, in which body, head, and eyes move. Fixed reference frame optimizes distance and trajectory calculations and minimizes body, head, and eye deviations from straight-line motion. Fixed reference frame minimizes intensity and distance ratios, allowing perceptual constancies.

Babies develop fixed reference frame as they compensate for motions as they move.

properties: scale

Mind represents sizes and locations at multiple scales. Local signals have high precision, and global signals have low precision [Clarke, 1995].

properties: senses inside and outside

Sight, hearing, touch, taste, and smell detect stimuli outside body {outside sense, perception}. Posture, movement, and pain detect stimuli inside body {inside sense, perception}.

properties: sense interaction

Perception in one sense can affect perception in another sense. Smell and taste affect each other when eating food, in retronasal area. Taste and touch affect each other when eating food. Balance and sight affect each other for head and eye position and to find vertical. Touch and sight affect each other when handling nearby objects. Touch and hearing mechanical vibrations overlap near 20 Hertz.

properties: shortest perception

The shortest perception lasts 120 milliseconds to 130 milliseconds. Visual stimuli lasting less than 120 milliseconds make perceptions that last 120 milliseconds to 130 milliseconds.

properties: simultaneity

Events whose times differ by less than 100 milliseconds seem simultaneous to perception, but not to sensation or neurons.

properties: spatial relations

Spatial relations among object features do not change with changing viewpoint.

properties: subject

Perception is subjective and requires subject. Body-movement, sense-quality, and mental-state covariance defines subject and location, distinguishing it from environment, other organisms, and other minds. Subjective states have different being/reality than objective things [Schreiber, 1973].

properties: synchronicity

Events whose times differ by less than several milliseconds seem to be same event to perception.

properties: timing

Perceptual quality appears 20 milliseconds to 200 milliseconds after stimulus signal reaches brain. During interval between signal and perception, other stimuli can affect lateral inhibition, contrast enhancement, color finding, depth estimation, line orientation, texture analysis, feature detection, iconic memory, short-term memory, and long-term memory [Clifford et al., 2003].

properties: transformations

Object subtends different visual angles at different distances. It can retain same shape as it grows or shrinks in size. It can add or subtract parts or change spatial relations among parts. It can have different textures and lighting. It can have partial occlusion. It can fall on different retina locations. Viewing objects from different positions can change line orientations and angles.

properties: transient

Mind tends to perceive movement or change. However, high attentional load can cause change blindness, repetition blindness, attentional blink, and inattentional blindness.

properties: perception principles

Principle 1: Discontinuous motion between two nearby points indicates boundary. Principle 2: Similar-size surface markings indicate object, especially if other-size markings surround surface. Principle 3: Shallow objects have smooth boundary above deeper objects. Principle 4: Objects are rigid, so curvatures stay constant. Principle 5: Projection laws are true. Principle 6: Oscillating and swinging are in planes. Principle 7: Two surfaces intersect to make concave discontinuities. Principle 8: Minimum-curvature points mark section boundaries.

purpose

Perception evolves to detect behaviorally useful information. Perception models physical reality. Perception improves survival, adaptation, and reproduction. It models reality for these purposes.

Perception does not find true nature of physical world.

factors: awareness

People can be aware that they perceive stimulus. Perhaps, people have experiences when they think about perceptions [Burle and Bonnet, 1997] [Burle and Bonnet, 1999] [Colquhoun, 1971] [Dehaene, 1993] [Efron, 1970] [Fries et al., 2001] [Geissler et al., 1999] [Gho and Varela, 1988] [Harter, 1967] [Hirsch and Sherrick, 1961] [Kristofferson, 1967] [Lichtenstein, 1961] [Makeig et al., 2002] [Pöppel, 1978] [Pöppel and Logothetis, 1986] [Purves et al., 1996] [Quastler, 1956] [Rizzuto et al., 2003] [Rock, 1983] [Sanford, 1971] [Stroud, 1956] [VanRullen and Koch, 2003] [Varela et al., 2001] [Venables, 1960] [Wertheimer, 1912] [White, 1963] [White and Harter, 1969].

factors: consciousness

Conscious processes can modify perceptions.

factors: culture

Fundamental sense qualities can be innate, with no affect from culture, environment, or experience. For example, all cultures have same basic colors, though languages can have rudimentary or sophisticated color vocabulary. Alternatively, different cultures and environments can cause different sense categories. People can learn colors and other sense qualities by perceiving environment and using language. For example, culture affects shape perception, geometric pattern orientation, and shape constancy. Differences in behavior and language indicate differences in perception.

Figures that cause illusions in USA have less effect in cultures in which rectangular objects and arrangements are rare. Horizontal-vertical illusions are stronger for observers living in savanna.

Cultures can describe salt as sour. Cultures can describe sweet, sour, and bitter as tasting like monosodium glutamate salt (MSG).

Ability to interpret relations among items in pictures differs with culture.

Child-rearing style and culture social structure vary with field dependence.

factors: individuality

Receptor and brain differences, and different viewpoints, cause the same physical event to cause different perceptions in different people.

factors: learning

Learning can change later object or event perceptions by changing how perception extracts, values, and links perceptual features.

factors: memory

Memory can change how perception extracts, values, and links perceptual features.

processes: curvature and orientation

To find curvature and orientation at a surface point, measure angles or areas of six equilateral triangles forming a regular hexagon around the point.

processes: deconvolution

If situation has many sources, use convolution and deconvolution to reduce number of source tests. To convolute sources, array cells can receive from more than one source. Some sources cause effects, but most do not. Test cells for effect. Cells with effective source will have responses in all cells in which source is present. Compare results from cells to see which sources are effective. If pattern determined the convolution, deconvolution pattern indicates effective sources. If sources must interact to be effective, pattern shows effective interactions. Brain uses interacting sources to cause effects, so deconvolution can be way that memory and action work. For example, ten feature sensors can feed into 100 cells, with each node receiving from two sensors. Sensors are in two array nodes. If two sensors need to interact to be effective, only the cell with both will have response over threshold. Array can have weights for sensors or node connections. If weights can change, it is like neural net but with starting structure.

processes: declarative knowledge

Perception involves statements about objects and events. Mind can process declarative knowledge both non-consciously and consciously.

processes: distance

To find surface distance, measure surface-orientation and sight-line angle. Angle becomes smaller as objects become more distant. Angle is near perpendicular for nearer objects. At very great distances, brain cannot measure orientation angle accurately. Brain also uses triangulation to find distance.

processes: equilibrium

Perhaps, input disturbs equilibrium, and sense qualities restore equilibrium. New stimuli cause imbalance, then flows associated with sense qualities restore balance.

processes: magnitude

Mind can compare two stimulus intensities by ratio {magnitude, perception}, rather than difference. For small intensity range, next higher magnitude n+1 can be double or triple preceding magnitude n. For large intensity range, next higher magnitude can be ten times more than preceding magnitude. Magnitude judgments require minimum-stimulus zero level but no intensity measurement unit.

processes: motion as cause

Perceptions grow out of objects in motion. At extremes of pain and low frequency, mechanical movements, involving only mass, charge, space, and time, blend with and are identical to sense qualities, in all senses.

Mind can detect mechanical vibration up to twenty cycles per second, the same as lowest detectable sound frequency. Sound detects rapid mechanical vibrations. Mind can feel sound, as well as hear it, at low frequency. Vision blurs succession of frames at twenty cycles per second into continuous motion. Touch and temperature border each other at twenty cycles per second. Below twenty cycles per second, senses perceive mechanical motion, which has and needs no sense qualities. People cannot breathe, flick tongue, or do anything at rates greater than twenty cycles per second. Twenty cycles per second is limiting rate for body mechanical motions.

All sense qualities use sense organ motions. Smell and taste use matter in motion. Food or air texture is always part of taste and smell, as is pressure. Fingers move. Eyes move. Ears cock, or heads turn.

At high intensity, pain is similar for all senses, and all senses are alike at high intensity. High firing rate overcomes all correlations that distinguish senses, and sense qualities become only pain. High intensity can feel like pressure [Smith and Smith, 1962].

processes: movement

Perception laws depend on movement patterns [Smith and Smith, 1962].

processes: prediction

Organisms detect stimulus associations, patterns, laws, and regularities and use them to predict or track events, by analogy or generalization. Mind uses most stimuli to build predictive abilities, rather than to initiate response. Animals habituate to stimuli that have no predictive value [Dodwell, 1970].

processes: object categories

Organisms need to recognize food/prey, dangerous situation/predator, and related organism: mate, child, relative, and self. They can recognize different levels, such as food that is easier to get or more nutritious.

processes: optimization

Perception is like relaxation or optimization, which finds the most-likely pattern.

processes: response to stimulus

All stimulus responses are complex. Response motor output causes internal feedback stimuli by stimulating kinesthetic receptors and external feedback stimuli by changing environment. All responses involve anticipation.

processes: space

Psychological spatial concepts derive from object location, size, and orientation perceptions. Special visual system encodes spatial properties.

Separate visual system encodes object shapes, colors, and textures.

processes: stimulus

Stimuli are structured energy patterns that reach body sensors. All stimuli affect multiple sensors and are complex.

processes: surface perception

Surfaces have extents, locations, orientations, durations, depths, and other perceptual properties. Greatest perceptual-property change rate is at surface boundaries. Surface has temporal and spatial scale, which mind can expand and contract. Mind uses surfaces and surface boundaries to perceive patterns, objects, scenes, and events. Objects or patterns are surface sets. Object sides are convex, concave, or flat surfaces, which have surface textures, such as number of points or bumps.

indestructible simple

Perceptual experience corresponds to unique object or event {indestructible simple, perception}, which has name.

microgenesis

Perception can use temporal steps {microgenesis} [Bachmann, 1994] [Bachmann, 2000].

psychophysics

Physical stimuli evoke measurable perceptions, including subjective sense qualities, and psychological changes {psychophysics}.

referent

Propositions about facts require words for classes {referent, perception}, which refer to multiple objects.

SOCI>Psychology>Cognition>Perception>Theories

specificity theory

Specific receptors detect different skin sense qualities {specificity theory}, such as temperature, vibration, and deformation.

state-identity theory

The same mental function can always use same physiology {state-identity theory, perception} {type-identity theory, perception} [Churchland, 1979] [Churchland, 1986] [Churchland, 1988] [Churchland, 1995] [Churchland, 2002] [Farber and Churchland, 1995] [Pylyshyn, 1984].

utilitarian theory

Mind uses sense information and learned, rapid, ad hoc rules to perform appropriate action {utilitarian theory of perception} [Ramachandran and Blakeslee, 1998].

SOCI>Psychology>Cognition>Perception>Features

perceptual feature

Perception detects distance, angle, size, shape, speed, brightness, hue, lightness, loudness, pitch, attack, decay, pressure, temperature, texture, taste, and smell {perceptual feature}. Perhaps, sense has 100,000 independent features. Features are frequent and regular, so people soon memorize them in all possible states and combinations.

processes

Mind derives features from local spatial and temporal relations among intensities in sense information channels. Features are about stimulus intensity, location, time, frequency, and quality and about higher-level stimulus combinations.

processes: association

Mind associates two features if they are simultaneous, at rate higher than chance.

processes: feature analysis

Perception distinguishes and links features, values, and probabilities. Perception excitations and inhibitions depend on reinforcement pathways and change feature probabilities. Feature analysis {feature analysis} works for independent variables with discrete values but not for clustered variables or continuous values.

properties: continuity

Feature values are always continuous, with no discreteness, edges, jumps, or skips, though neuron signals are discrete. Feature values are continuous even for neurons far apart and for small intensities. Movement, blinking, and other transformations never cause feature value to be discrete.

Perhaps, continuity results from insensitivity to change. Perhaps, coordinate units are larger than feature sizes. Perhaps, information channel and signal number are large, so graininess is small. Perhaps, continuity results from integration, over multiple information channels, of overlapping regions of different sizes, displacements, and orientations.

properties: discontinuity

Missing features cause discontinuities in events.

properties: probability

Features have probabilities of happening if another feature happens.

effects

Recognized features and feature combinations cause actions. Unrecognized features suppress actions [Werner, 1974].

accidental feature

Perceptual features {accidental feature}| or regularities, such as aligned edges and reflected colors, can result from viewing position {accidental viewpoint}.

non-accidental feature

Perceptual features {non-accidental feature}| {non-accidental property}, such as mass, can not depend on observation point. Non-accidental features stay constant from multiple viewpoints and under transformation, reflection, rotation, translation, and zooming. Relative feature positions stay the same.

recognition

Memory uses non-accidental properties and relative positions to make object templates for perceptual recognition.

projection

Straight edge tends to project collinear lines. Curved edge tends to project lines that fall along smooth function. Parallel edges tend to project parallel lines. Edge intersections tend to project lines that meet at point. Parts that are close together tend to project lines that are close together. Symmetrical parts tend to project symmetrical line patterns.

SOCI>Psychology>Cognition>Perception>Masking

masking in perception

Two stimuli can mutually inhibit {masking, perception}| [Bachmann, 1994] [Bachmann, 2000] [Breitmeyer, 1984] [Breitmeyer and Ögmen, 2000] [Dehaene et al., 2001] [Dennett, 1991] [Enns and DiLollo, 2000] [Flanagan, 1991] [Flanagan, 1992] [Flanagan, 2002] [Keysers and Perrett, 2002] [Keysers et al., 2001] [Macknik and Livingstone, 1998] [Macknik et al., 2000] [Rolls and Tovee, 1994] [Thompson and Schall, 1999] [Thompson and Schall, 2000] [VanRullen and Koch, 2003].

backward masking

If, after a several-millisecond stimulus, a second stimulus is at the same location, people do not perceive first stimulus {backward masking}. Masking is greatest when second stimulus is 70 milliseconds to 90 milliseconds after first. Second stimulus has no affect after 100 milliseconds. For sound stimulus, second stimulus is noise. If first stimulus causes emotion, emotion results even if stimulus is not conscious.

forward masking

Masks can precede targets {forward masking}.

metacontrast masking

Masks can be simultaneous with targets, or masking stimulus can follow short stimulus {metacontrast masking}, to improve detection.

SOCI>Psychology>Cognition>Perception>Perceptual Bias

perceptual bias

People skew their reports about perceptions {perceptual bias}, for example, when experimenters ask people to report intensity using number scale.

centering bias
People's responses can have symmetric distribution around central value {centering bias}. Avoid this bias by using response-scale numbers equally.

contraction bias
People's responses can use shortcuts based on associations {contraction bias}. Avoid this bias by reversing stimuli and responses.

logarithmic response bias
People can respond to high and low stimuli differently {logarithmic response bias}. Avoid this bias by using number range with only single digits, with no ratios.

range equalizing bias
Smaller stimulus ranges have steeper slopes {range equalizing bias}. This bias is unavoidable, so people underestimate large sizes and differences and overestimate small sizes and differences.

stimulus frequency bias
People's responses can group stimuli by time {stimulus frequency bias}. Avoid this bias by presenting all stimuli equally often.

stimulus spacing bias
People's responses can group stimuli in space {stimulus spacing bias}. Avoid this bias by spacing stimuli at subjectively equal intervals.

transfer bias
Previous conditions can influence later performance {transfer bias}. Avoid this bias by using separate groups of uninitiated people for each investigation or judgment.

SOCI>Psychology>Cognition>Perception>Properties

amodal perception
Stimulus intensity, location, size, form, number, and duration {amodal feature} do not depend on sense, can transfer among senses, and allow equivalence judgments among sense modes {amodal perception}|. Perhaps, they allow desire, expectation, or pain judgments.

blur
At space locations, mind can average sense qualities with neighbors {blur}|. Sampling error, background noise, and sense organ imperfections, such as imperfect lenses, retina veins, and dust, cause blur.

categorical perception
People perceive continuously varying intensity or frequency as discrete ranges {categorical perception}. Sense processing divides continuous range into intervals and so discrete categories [Damper and Harnad, 2000] [Harnad, 1987]. For example, people perceive pitch as tones and half tones. People perceive tone durations as eighth notes, quarter notes, half notes, and whole notes.
Categorical perception detects musical intervals, animals, faces, and face expressions. People identify and label perceptual features and feature combinations with sharp boundaries, using many dimensions. Labeling/identifying and discrimination are two aspects of one mechanism.

cognitive habituation
Smell perception diminishes during continuous exposure {cognitive habituation}, though receptor and neuron sensitivity do not change.

cross-modality matching

People can correlate intensities in two different senses {cross-modality matching}. For example, mind can match taste intensity with pain intensity. The cross-modality matching technique can test sensitivity to stimuli.

cue in perception
Stimuli {cue, perception}| before other stimuli can indicate second-stimulus types, times, or locations. Cues have maximum effectiveness 150 ms before second stimulus. Cues can provide correct information {valid cue}, incorrect information {invalid cue}, or no useful information {neutral cue}.

deja vu
People can have feeling that they have seen or heard something before {déja vu}|. For déja vu, people typically have fatigue, have experienced component features before, are young, and have heightened sensitivity.

domain warping
Different contexts can make the same object or event signal differ, because context expands or contracts at varying rates {domain warping}. Transforming space and structure representations can find geometric analogies and trajectories.

fause reconnaissance
People can have false recognition {fause reconnaissance}.

frontier effect
Mind places new features at locations that have easily described relationships to already represented features {frontier effect}.

global superiority effect
Objects have properties, and features have properties. In most perception, object properties override feature properties {global superiority effect}.

lateral thinking
Novel unrelated stimuli can aid pattern, poetry, idea, and hypothesis recognition {lateral thinking}. Random words are examples.

limen
Experience thresholds {limen} are not constant.

magnitude estimation
Observer can assign or choose natural number to estimate stimulus intensity magnitude {magnitude estimation, observer}, such as 1 to 10 for minimum to maximum.

metamer
Mind can perceive two different stimuli {metamer} as the same. For example, two different wavelength and intensity combinations can result in same color. Objects with different surface reflectances can cause same color perceptions.

order discrimination
Perception can distinguish event order {order discrimination}, though events seem to be simultaneous in sensations.

perceptual moment
Perhaps, perception is continual every 20 to 200 milliseconds {perceptual moment} {frame, perception} {snapshot, perception}. Perception is not continuous [Burle and Bonnet, 1997] [Burle and Bonnet, 1999] [Colquhoun, 1971] [Dehaene, 1993] [Efron, 1970] [Fries et al., 2001] [Geissler et al., 1999] [Gho and Varela, 1988] [Harter, 1967] [Hirsch and Sherrick, 1961] [Kristofferson, 1967] [Lichtenstein, 1961] [Makeig et al., 2002] [Pöppel, 1978] [Pöppel and Logothetis, 1986] [Purves et al., 1996] [Quastler, 1956] [Rizzuto et al., 2003] [Rock, 1983] [Sanford, 1971] [Stroud, 1956] [VanRullen and Koch, 2003] [Varela et al., 2001] [Venables, 1960] [Wertheimer, 1912] [White, 1963] [White and Harter, 1969].

rivalry

Perception can alternate between two interpretations {rivalry, perception}|, though stimulus pattern stays the same.

saliency perception

Stimulus can have higher intensity than neighboring stimuli {saliency, perception}|. Saliency originates in dorsomedial pulvinar, lateral-intraparietal lobe, and frontal lobe. Saliency can affect thalamus or sensory cortex [Blaser et al., 1999] [Braun and Julesz, 1998] [Braun and Sagi, 1990] [Braun et al., 2001] [Itti et al., 1998] [Itti and Koch, 2000] [Itti and Koch, 2001] [Jovicich et al., 2001] [Koch and Ullman, 1985] [Nakayama and Mackeben, 1989] [Parasuraman, 1998] [Pashler, 1998] [Treisman, 1988] [Treisman and Gelade, 1980] [Walther et al., 2002] [Wolfe, 1994] [Wolfe, 1999].

sensitization in perception

Animals can become ready for specific stimuli or general stimulation {sensitization, perception}. In harsh environments, animals sensitize to all stimuli. In favorable environments, animals become responsive to stimuli about desirable goals. Rearing animals in restricted environments, in which they see only vertical stripes, results in cortical neurons more sensitive to vertical orientations.

subliminal perception

External stimuli of which people are unaware, just below conscious {subliminal perception}|, can affect perception and memory. All sensory modes have subliminal range [Dixon, 1971] [Merikle and Daneman, 1998]. Subliminal stimulus in "blind" eye transfers perception to that side.

synesthesia in perception

Sense-organ stimuli can cause different sense qualities {synesthesia, perception}|.

colors

White numeral symbol can have color. However, Roman numeral can have no color when the Arabic numeral of same number has color, indicating that synesthesia is for perception, not abstract concept.

Perhaps, connections between brain areas V4 and area in V8 {number-grapheme area}, which are adjacent in fusiform gyrus, cause color-numeral synesthesia.

Months and weekdays can have colors. Perhaps, connections between TPO and angular gyrus areas cause day-month and numeral synesthesia.

tastes

Shapes can have associated tastes. Insula is for tastes and is close to sensory hand area.

sounds

Shapes can have associated sounds. Low sounds can associate with dark colors, and high sounds with light colors [Cytowic, 1989] [Cytowic, 1993] [Cytowic, 2002] [Galton, 1997] [Grossenbacher and Lovelace, 2001] [Nunn et al., 2002] [Paulesu et al., 1995] [Ramachandran and Hubbard, 2001] [Ramachandran and Hubbard, 2003] [Ramachandran, 2004] [Stein and Meredith, 1993] [Stein et al., 2001].

factors: age

Infants have cortex and thalamus auditory-visual brain connections.

factors: brain

Brain regions can activate each other through atypical stimulation pathways or through inhibition pathway loss.

factors: drugs

Drugs can cause stimuli in sense organs to result in another sense's sense qualities.

properties: occurrence

Less than 0.5% of people have synesthesia, usually as just black and white colors. Such synesthesia is involuntary, starts early in life, and lasts a lifetime. It is hereditary. It happens more in lefthandedness, more in females, more with better memory, more with bad math and spatial ability, and more in creative people [Baron-Cohen and Harrison, 1997].

properties: unconscious

Synesthesia is not under conscious control.

temporal buffering

Mind stores sensory signals and features temporarily {temporal buffering} while receiving signal remainder. Natural stimuli are not stationary, do not move regularly, and require time interval.

visual dominance

If vision analyzes spatial relations differently than hearing or kinesthesia, vision overrides hearing or kinesthesia {visual dominance}. For example, sound direction depends on direction of visual object associated with sound [Ingle et al., 1982]. If kinesthesia or touch analyzes spatial relations differently than hearing, kinesthesia or touch overrides hearing. Taste and smell have little effect on spatial relations.

SOCI>Psychology>Cognition>Perception>Properties>Level

primary property

Sense qualities have physical measurements {primary property} about space and time, such as object size, shape, motion, number, solidity, hardness, mass, and extension.

secondary property

Sense qualities have mental measurements {secondary property}, such as color, touch, aroma, taste, timbre, and sound. Secondary qualities do not derive from primary qualities but come from stored knowledge and assumptions. They affect even simplest perceptions.

SOCI>Psychology>Cognition>Perception>Representation

representation in perception

Stimuli are energy patterns representing information about objects in environment or body {representation, perception} {internal model}. Mental representation organizes perception and guides behavior. Objects have more than one representation and template, using different viewpoints and/or viewer-centered or absolute coordinates. Mind represents objects by shape, size, orientation, and feature and part relations. Mind stores features and relations in flexible templates.

processes

Parallel and serial information flows convey data for object and event variables. Sense receptors transform energy and code useful information parts. Nervous systems process and store object-and-event information. Information directs muscle and gland actions.

processes: object properties

Mind represents object by shape, size, orientation, and feature and part relations. Visual system encodes object properties of shape, color, and texture. A separate and independent visual system encodes spatial properties of location, size, and orientation.

processes: arrays

Representation can be two-dimensional array coding variable intensities. For example, colorful scenes can be like television screens, with intensity levels for red, green, and blue phosphors at screen points. However, representations cannot be point-for-point copies of visual images, because sense receptors communicate laterally, so points include data from surrounding points.

Representation can be two-dimensional array coding interference pattern intensities. For example, black-and-white scenes can be like holograms, with intensity levels at points determined by illumination phase from all scene points. However, representations are unlikely to be holograms, because mind does not use phase information at sense receptors and mind has no reference beam with which to reconstitute holographic images.

Representations can be sets of two-dimensional arrays, each coding one variable. For example, parallel information pathways can code for red, green, and blue intensities and combine the three later to give net color. Representation uses different topographic maps to code for location, orientation, depth, color, shape, motion, and time. After initial processing for variables, outputs cross-correlate to integrate information.

Representation can be information packets routed through mental networks. Like Internet, mind can divide information into data blocks sent over alternative pathways to destinations, where mind reunites them. Representations probably use information packets, tagged with relations to other packets and timed to synchronize with other packets.

processes: hierarchy

Pre-representations code for intensities and have no meaning. Representations combine innate and remembered information with sense information. Further processing makes semantic object and event relations, and gist allows thoughts and goals. Mind has representation-type hierarchies [Booth and Rolls, 1998] [Posner and Raichle, 1997] [Posner, 1978] [Posner, 1989].

processes: proposition

Mind uses propositions to represent images and describe shapes, without using size or orientation. Mind manipulates images by logical operations on propositions. Propositions can have variables.

coding

Space-time pattern representations use neuron signal-intensity functions. Visual system samples scene at various spatial positions, in sequences based on experience, to derive curvatures, surfaces, textures, reflectances, colors, orientations, eye positions, head position, hand positions, constancies, and co-variances.

coding: analog and digital

Depolarization impulse cycles require one millisecond, so each millisecond axon has depolarization or not. Axons carry OFF/ON signals and so are digital.

At synapses, variations in neurotransmitter vesicle size and release time make analog flow through receptors.

Neural processing has advantages and avoids disadvantages of analog and digital coding. OFF-signals set a steady baseline. ON-signals have equal strengths. Neuron coding has no timing, is not stepwise, and is not linear. Axon coding depends on impulse rate or flow.

coding: codes

Simple code can use neuron average firing frequency. Another simple code can modulate firing frequency, as in FM radio, in which fundamental frequency is like carrier wave. In temporal code, steady frequency is like clock, and frequency changes carry information. Code can superimpose frequencies to make beat frequencies. Code can superimpose frequencies, so axons carry composite signals, and different receptors use different components. Code can be waveforms of frequency sets.

spatial coordinates

Minds use three-dimensional spatial coordinates to navigate, to encode spatial information into memory, to transform images, and to specify feature locations, sizes, and orientations. Mind represents image by specifying intensities at locations in space array. Space array can show object parts, relations, and spatial axes. Representation spatial and temporal relations correspond to actual relations. Mind can manipulate size and orientation.

Minds convert categorical relations to spatial coordinates, and vice versa, to link size, distance, orientation, front/back, and reference frame to classification.

spatial coordinates: types

Mind can use locations relative to retina {retinotopic coordinate} or relative to spatial reference point {spatiotopic coordinate}. Spatiotopic coordinates can be relative to body {body-centered coordinate} {egocentric coordinate} or to another object {allocentric coordinate}. Body-centered coordinates can relate to head {craniotopic}. Mind plans and performs behavior using egocentric coordinates, compensating for body movements. Body movement coordination requires only egocentric space, not images. Egocentric space can transform to conceptual space representations.

Allocentric representations can transform to egocentric representations. Allocentric coordinates can be specific to view {viewer-centered} or object itself {object-centered}.

Mind can specify location in Cartesian coordinates, along X, Y, and Z dimensions from origin, or polar coordinates, by radius and planar and depth angles from origin.

Processes that guide action need coordinates {implicit coordinates}. Processes that store representations need coordinates {explicit coordinates}.

Local coordinates specify part locations, using many separate origins to form interlocking coordinate system. Global coordinates specify part locations relative to one origin.

Topographic maps compute locations in nearby space using body-based coordinates. Topographic maps compute locations in far space using allocentric coordinates.

Not all directions relative to body are equally accessible in image.

Subjects do not image themselves in centers of three-dimensional scenes.

People use viewer-centered coordinates in imagery.

image

Image is private symbol system that specifies local object geometry using categories and coordinates. Mind makes general, specific, and autobiographical images. Unlike perceptions, image has interpreted perceptual units, orients in space, aids event recall, and solves problems. Mind can remember images. Mind cannot readily manipulate image. Image is not picture in the head.

image: scanning

Mind can scan image, and scanning time increases linearly with distance.

image: information

Image information depends on element number and arrangement. Image does not have as much detail as physical object.

image: cue

Eye position can cue access to next image in sequence.

image: spatial frequency

Images do not include perception fundamental spatial frequency.

image: brain

In brain, membrane electrochemical signals can alter molecules that eventually produce enzyme sequences, forming patterns. Enzyme patterns can affect nearby cells or affect transferred nerve signals, making effect cascades. Both hemispheres can generate images.

Brain-damaged patients that cannot recognize faces report that they also cannot image faces. Patients that cannot distinguish colors after suffering brain damage also cannot form mental images that include color. Patients with hemi-neglect cannot see mental-image or dream right or left half.

image: time

Mind requires 100 milliseconds to 200 milliseconds of light to see image. Processing image takes 60 milliseconds to 70 milliseconds [Shiekh, 1983].

image: network

Images have parts and relations. Images are networks of nodes on surfaces and connections of spatial relations. If nodes and connections are abstract-space dimensions, patterns are abstract-space points. Similar images are near each other in state space.

primal image representation

Mind can store center/surround information at several, separated locations {primal image representation}, rather than high-level feature sets.

schema perception

Internal interaction, past reaction, experience, goal, framework, available information, and action representations {schema, perception}| can direct perceptual exploration {anticipatory schema}. Mind updates integrated prior-movement representations {postural schema} after position changes. Schemas are rule groups. Rules generalize inference patterns. Schemas are for concept formation [Schank and Abelson, 1977] [Schank, 1997].

slope-centroid model

Animals navigate environment using map with reference point {centroid} and gradient {slope, gradient} {slope-centroid model}. Mind can calculate direction and distance to target by triangulation using centroid and slope.

SOCI>Psychology>Cognition>Perception>Techniques

adjustment

Observer can change stimulus intensity or frequency until it matches, or differs from, reference stimulus, or until observer does or does not perceive it {method of adjustment} {adjustment method}. It is a method of limits.

constant stimuli method

Observer experiences many stimuli covering whole stimulus range and reports perception or no perception {method of constant stimuli} {constant stimuli method}. Alternatively, observer compares many stimuli covering whole stimulus range to reference stimulus and reports if they differ from reference or not.

dichotic listening

Observer can attend to sound in one ear while distracted by sound in other ear {dichotic listening technique}. Alternatively, observer can attend to voice while another voice speaks.

forced-choice

After seeing stimulus {target, perception}, observer can respond if he or she sees stimulus among distracting stimuli {n-alternative forced-choice} {forced-choice}.

limits method

Starting from no difference in frequency and/or intensity and increasing difference, observer can note when there is difference {method of limits} {limits method}. Alternatively, starting from big difference and decreasing difference, observer can note when there is no difference.

position discrimination

Observers can respond after detecting stimulus on right or left {position discrimination}.

selective reading paradigm
Observers can attend to text lines in one color and ignore lines in another color {selective reading paradigm}.

stimulus detection
Observer can respond after detecting stimulus {stimulus detection}.

word discrimination
Observer can respond if stimulus is word or not {word discrimination}.

SOCI>Psychology>Cognition>Self

self
Something {self, cognition} about people provides agency and identity. Selves persist through amnesia, sensory deprivation, minimal information, body-perception loss, distorted perceptions, and hallucinations.
agency
Selves have will and control and perform actions. Selves have a continuous history as agents in space and time {narrative self, agent}.
identity
People feel personal identity, unity, unique individuality, and continuity. Perception continuity implies permanent, unified, and immaterial self. Selves are aware of themselves.
subject
Selves are subjects of conscious experiences. Selves {embodied self} have proprioception related to physical body. Selves are in bodies. Selves are also objects.
self and other
Ideas of self and not-self can be innate and develop as verbal concepts develop. Organisms must categorize what they can encounter as prey, predator, self, same-sex species member, or opposite-sex species member. Knowledge of self or not-self controls action inhibition or permission. Subject, person, I, or self involves self-protection.
memory
"I am who I remember myself being" is an idea about subjective self.
reference
Self is always something and is never a property of something. Self always refers to same thing.
reference point
Self is body reference point in space and time. Observation point causes viewpoint [Gallagher and Shear, 1999] [Hurley, 1998].
soul
Self can be or have soul [Augustine, 427] [Brown et al., 1998] [McMullin, 2000] [Murphy, 1998] [Sloan, 2000].
alternatives: composite
Though they seem to have unity, selves have several functions.
alternatives: no continuity
Though selves seem to stay the same, split-brain patients, multiple personalities, and self disorders indicate that selves do not have personal identity and continuity.
alternatives: no integration
Though selves seem to have beliefs, thoughts, and memories, brain processes these concepts at myriad places, so integration is fleeting.
alternatives: no person
Though selves seem to have personality, motivations and behaviors have multiple sources.
alternatives: no unity
Though selves seem to be just one observer, split-brain patients, multiple personalities, and self disorders indicate that selves do not have unity.
alternatives: no non-physical self
Though selves seem to have unique type, non-physical substance cannot affect physical brain.
alternatives: no self
Perhaps, there is no self.
alternatives: only collection
Though selves seem to be at experience centers, they are only experience collections.

alternatives: only referral
Perhaps, self is center of three-dimensional space and one-dimensional time created by spatial and temporal referral.
causes: coordination
Selves result from body-movement and sensation covariance, which distinguishes self from background environment and other organisms.
causes: society
Psychological properties cause psychological reactions in other people, which people can recognize by comparison with their psychological properties, and so create ideas of self, others, and their relations.
brain damage
Temporary or permanent brain damage can cause loss of aspects of self [Ehrlich, 2000] [Ramachandran, 2004]. Past, present, or future can be unusable. Selves can become discontinuous. Self can seem to be outside body. People can lose will and agency. Self-awareness can end. Selves end at death.
teletransporter
Imagine that machines can analyze all body cells, molecules, and momenta and can use that information, and necessary raw materials, to recreate exactly that body and brain anywhere, with no errors {teletransporter} [Parfit, 1984] [Parfit, 1987]. Imagine also that the machines destroy original body. Now imagine that machines can destroy and re-create body parts in same places.

agency of self
Selves cause effects in space and time through voluntary movements {agency, self}, while trying to reach goals and satisfy wants. Selves are highest agent and organize brain functional modules.

body image
People need a mental image {body image} of their physical dimensions to perform actions.

first person and self
Speaking in first person {first person} includes idea that "I" differs from "you" or "it". First person implicitly refers to self and intention [Gallagher and Shear, 1999] [Hurley, 1998]. First person reports knowledge about report producer. First person requires self-knowledge, just as speaking in second or third person requires knowledge about other objects.

not-self
Organisms must distinguish self and other {non-self} {not-self}. Organisms that can bite or claw need sense of self and other to ensure behavior is toward right object. Because it reverberates in body, sense information from self differs fundamentally from information from other.

personal identity
Constant mind {personal identity} exists through all experience. Identity is intentions and their relations. Personal identity provides an unchanging basis for learning and adaptation. Personal identity depends on apparent conscious-experience unity, continuing goals, sustained wants, memory continuity, physical causes and effects, and connections between what people plan to do and what they actually do.

SOCI>Psychology>Cognition>Self>Theories

descriptive metaphysics
Perhaps, persons in bodies are individual subjects, are real, and have physical and psychological properties or predicates {descriptive metaphysics, self}. Selves are subjects of experience that are one mental thing {subject of experience as one mental thing} (SESMET). Experience is a series of mental states {pearl view}. Self is new each time. Introspection shows that consciousness alternates with unconsciousness. There is no personality or agent. Neural processes have mental as well as non-mental properties [Strawson, 1999].

discursive psychology
Perhaps, selves are abstract mind-process collections. Perhaps, mind can hold different stories and memories, and these "discourses" create the "I" {discursive psychology}. If brain produces self as narrator {discursive turn}, body can have several selves [Harré and Gillett, 1994].

ego diffusion

Perhaps, people build ego identity to oppose loss of self {ego diffusion, self}.

ego identity
Perhaps, people build ideas of their capabilities and opportunities {ego identity, self} to oppose ego diffusion.

executive level
Perhaps, mind has high-level processes {executive level} that know goals and coordinate actions. Self-supervisory processes {self-supervisory level} set goals and their priorities. Using self-supervisory processes makes consciousness. Alternatively, selves are abstract concepts built by mental processes combining functional elements [Mackay, 1987].

memeplex
Perhaps, selves are concept collections {memeplex, self}, based on first-person language usage [Dawkins, 1976] [Dawkins, 1995].

no-ownership theory
Perhaps, experiences depend on persons or selves {no-ownership theory} [Strawson, 1999].

unity relation
Perhaps, all psychological states relate to body {unity relation}. Body and body experiences cause mental states and so create self. Self develops as body develops.

SOCI>Psychology>Cognition>Self>Theories>Self Types

autobiographical self
Perhaps, linking declarative memories can produce feelings {autobiographical self}.

core-self
Perhaps, object and event perceptions and responses define observer and agent {core-self}, which can use procedural memories but has no unity and is not continuous.

narrative self
Perhaps, identity and agency are like stories or narratives {narrative self, cognition}. Stories have scenes and characters. Situations or problems arise, develop, and resolve. Stories can guide or suggest action. Goals, wants, and hopes organize narratives, which are self-representations.

People can recall narratives. Perhaps, multiple interconnected and independent narrative fragments are at various editing stages in various mind places.

Narratives assume unified action agents, but narratives are thoughts, not thinkers. Selves are narratives, not entities.

proto-self
Perhaps, all animal minds have processes that define an overall state {proto-self, cognition} that has no unity, is not continuous, and does not use memory.

SOCI>Psychology>Cognition>Will

will and cognition
Brain can initiate, control, and stop behavior independently of environmental influences {will, cognition}|, using internal states and processes. Will is ability to use voluntary muscles. Will reveals tendencies to actions.

requirements
Will does not require sensation, perception, or awareness.

consciousness
People are conscious of will but have no consciousness about how they performs behavior. Consciousness can control will.

animals
All animals make choices and act to reach goals. Perhaps, all mammals have will.

authorship

The feeling of willing has the idea of agent {authorship}. The feeling of willing comes from judging that thought caused event. Minds plan action, organize motor signals, and send motor signals. Such mental events later cause thought about action [Wegner, 2002].

preplanning

Subjects can plan movements {preplanning}. When subjects experience no preplanning feeling, consciousness of intention to flex muscle is 350 milliseconds after readiness-potential beginning and 200 milliseconds before muscle movement. When subjects experience a preplanning feeling, several seconds before muscle flexion, they can distinguish preplanning stage from immediately following urge to flex.

SOCI>Psychology>Cognition>Will>Intention

intention in will

Mind forms plans {intention, will} to act or decides not to act. Intention is not desire or belief but mental state. Many human movements do not involve intention, are just effects, or are accidents.

action by will

People can do something intentionally {action, will} {omission, will}, using reasoning, values, goals, and choices. Actions and omissions have different reasoning and responsibilities. Beliefs and desires cause change will.

omission and responsibility

People can intentionally fail to act {omission, responsibility} in situations in which action is typical or expected. Omissions rarely cause responsibility, because choosing to act can result in harm.

priority principle

If related thought precedes action {priority principle}, with no other causes, mind judges situation to have intention as cause of effect [Wegner, 2002].

SOCI>Psychology>Cognition>Will>Theories

free will

Will can be free {free will}| in different ways.

contingency

Though they believe in physical determinism, people can feel that they have free will {contingency, will}. People do not know determining motions and matter, only thoughts and feelings, and thoughts seem to be free. Future events depend on what people do now, and people know that there is a future, so what people do has effect, meaning, and importance. If predetermination, why do anything {fatalism, will}? Doing nothing still has effects.

dependency

Healthy, typical, unforced individuals in societal settings are free to use their functional modules to do possible things without uncontrollable outside or inside constraints. Functional modules depend on environment, society, mind, development, and biology. Influences and alternatives are many, and flexibility and unpredictability are high. Free will depends completely on knowing what first-person situation is.

knowledge

Freedom depends on ability to be self-conscious, and knowledge causes more consciousness of thinking.

number of choices

With too many choices, reason cannot choose the best one. With no choices, people cannot exercise free will.

choosing

Many situations have two possible rational acts. People feel that they can choose freely between two motives or actions. People deliberate over actions. People have purposes and goals. People try to persuade others. People feel personal responsibility and duty. People feel regret and tragedy. People can be spontaneous or choose to demonstrate their freedom. People can create.

reconciliationism

Free action has no constraints from external forces {reconciliationism}.

incompatibilism

Universe is deterministic, and people are neither free nor responsible {incompatibilism}, because people are not free to make choices (origination) or differences (indifference), with no causes. Only processes inside brains cause action. Rigid natural laws cause mental states that decide choices. Will only appears to be free, because brains are actually deterministic, and evolution and natural selection determine nerve signals.

indifference
People are not free to make differences {indifference, will}, with no causes.

origination
People are not free to make real choices {origination, will}, with no causes.

compatibilism
Though universe and human actions have causes and are deterministic, people are free and responsible {compatibilism}, because world and other people typically do not compel them to perform actions, so they actually make real choices.

voluntariness
Though universe and human actions have causes and are deterministic, world and other people typically do not compel people to perform actions, so they actually make real choices {voluntariness} {spontaneity, will}.

SOCI>Psychology>Cognition>Philosophy

classic model of cognition
Object classes are examples that have defining characteristics {Greek ideas about cognition} {classic model}, though they have different features.

ideal
Real objects are imperfect copies of ideal abstract objects {Ideal object} or are examples of abstract concepts {form, concept}. Real objects have matter units {substratum, matter}. Element arrangements and movements allow form, but form is separate and independent thing unrelated to parts.

ideal: function
Forms have main purposes, functions, or uses.

learning
Minds hold innate class concepts. Minds can learn form names.

hierarchy
Classes form a hierarchy. Subclasses inherit higher-class form. Higher class abstracts something common from subclasses.

association
Object or feature perception allows similar or identical objects or features to enter mind.

inference
Mind also makes and stores inferences, such as cause and effect.

constructivism in cognition
Mind has innate thinking and knowing methods, such as number, space, time, causation, and logic, which interpret sense qualities and make perceptions and concepts {constructivism, cognition}. Meaning combines perceptions and abstractions into schema structures [Schank and Abelson, 1977] [Schank, 1997].

empiricism in cognition
Minds build concepts by abstracting common properties from perceptions, which have sensory units {empiricism, cognition}. Complex ideas are simple-idea combinations {image, cognition}. Mind can compare, identify, use logic, and actively perform other mental activities. Abstract ideas, such as mathematics or self, can come from sensory ideas. Ideas become associated if they are experienced to be near each other in time or space {contiguity principle, cognition} {associationism, cognition}.

functionalism in cognition
Mental representations, ideas, beliefs, and intentions are computations and are both mental functions and physiological states {functionalism, cognition}. States are not neurons and their actions, but their information and

algorithms. The same information can be in different neurons. The same mental function can use different physiology {token-identity theory, functionalism}, rather than always the same physiology {state-identity theory, functionalism} {type-identity theory, functionalism}. The same physiology can serve different functions [Churchland, 1979] [Churchland, 1986] [Churchland, 1988] [Churchland, 1995] [Churchland, 2002] [Farber and Churchland, 1995] [Pylyshyn, 1984].

Gestalt in cognition
Structures have components, and their relations depend on laws about structures {Gestalt, cognition}. They do not depend on ideas about components.

logical positivism in cognition
Concepts develop from perceptions and cognitive operations on perceptions {logical positivism, cognition} {radical positivism}. Propositions are for understanding and meaning. Perceptual experience corresponds to unique object or event {indestructible simple, logical positivism}, which can have proper noun for name. However, propositions about facts require words for classes, but such words refer to multiple objects {referent, logical positivism}. To be meaningful, language can build concepts from simple perceptual experiences, just as mind does.

nativism in cognition
People have innate ideas and abilities {nativism, cognition}, as well as learned and observed ones.

neoclassic model of cognition
Memories about classes {neoclassic model} include actual perceptions and ideal forms, as well as secondary functions and typical features {epistemological information}. Ideal-form information is invariant, while perceptual and epistemological information can vary, like colors can vary. Ideal-form, perceptual, or epistemological information can identify class members.

physiological psychology
Mind and mental states are all conscious experience {physiological psychology} {sensationism}. Experience has elementary sense qualities {sensation unit} and their relations [Hume, 1739].

rationalism in cognition
Minds have perceptual-image copies and abstract concepts {rationalism, cognition}. Abstract concepts are Mind's innate abilities, such as reasoning. Knowledge can be true a priori, but sensory knowledge is not absolute truth. Concepts and perceptions in Mind are codes {sign}. Minds are separate reality from physical world and have their own laws [Plato, -380] [Plato, -360].

structuralism in cognition
Structures have components, and analyzing components and their relations provides cognition {structuralism, cognition}.

SOCI>Psychology>Defense Mechanism

defense mechanism
People can use unconscious behaviors and reactions {defense mechanism}| to relieve anxiety.

amnesia as defense
People can be unable to recall past experience {amnesia, defense mechanism}. Amnesia without physical cause typically is an attempt to escape from social stress using dissociation. Memory recovers within one or two days.

avoidance defense mechanism
People can avoid situations or make no decisions {avoidance}.

compensation defense mechanism
Behavior can make up for deficiencies or inferiority {compensation defense mechanism}.

compromise formation

Action or thinking can express more than one drive {compromise formation}, so neither drive has results.

denial defense mechanism
People can deny reality {denial defense mechanism}.

fantasy
People can have thoughts of unreal situations {fantasy, anxiety}, with several themes and few but realistic characters. In fantasies, people never change into someone else.

projection defense mechanism
People can attribute undesirable traits to others or assign their psychological states to other objects {projection defense mechanism}.

rationalization defense
People can give plausible but untrue reasons for their conduct {rationalization defense mechanism} and hold two conflicting beliefs.

reaction formation
Behavior can be opposite to original impulse {reaction formation}.

regression defense mechanism
People can escape from conditions that arouse anxiety by returning to previous or youthful mental states {regression defense mechanism}.

repression defense mechanism
People can prevent unacceptable thoughts from entering conscious mind {repression, defense mechanism}.

sublimation defense mechanism
People can repress and socialize impulses {sublimation defense mechanism} to modify anxiety. If instincts have no gratification, instinct energy displaces onto more socially acceptable interests or activities.

suppression defense mechanism
People can forget traumatic, dangerous, or embarrassing thoughts, memories, events, or impulses {suppression defense mechanism}, so they are unavailable in consciousness.

SOCI>Psychology>Defense Mechanism>Phobia

phobia
People can have unreasonable fear {phobia} {phobic reaction} {phobic neurosis} of objects or situations.
symptoms
Phobia involves persistent, irrational, and generalized fear or panic, provoked by specific stimuli, and autonomic-nervous-system over-activity, such as sweating, tremors, faintness, choking, breathlessness, and stomach queasiness.
age
Specific and limited phobias typically start in early childhood, and diminish during adolescence.
theories
According to learning theory, if people are intensely afraid of objects or situations that others do not fear, the objects or situations associate with childhood fears, such as loud noises or falling. According to psychoanalytic theory, feared objects or situations have become symbols of something feared unconsciously. However, facts do not support these theories.

agoraphobia
People can fear public places {agoraphobia}|.

claustrophobia
People can fear confining spaces {claustrophobia}|.

SOCI>Psychology>Defense Mechanism>Displacement

displacement defense mechanism
People can disguise anxiety sources by association between original stimulus and substitute stimulus {displacement defense mechanism}, as in dreams.

identification defense
People can believe that they are another person {identification defense mechanism}, a displacement.

introjection
Imitating another person {introjection} is displacement.

SOCI>Psychology>Defense Mechanism>Dissociation

dissociation defense mechanism
Consciousness loss and long-term memory loss {dissociation defense mechanism} {dissociation state} {dissociation reaction} {dissociative reaction} are similar defense mechanisms. Repression includes dissociation. Dissociation states are conscious and aware, with experienced sense qualities but with altered perspective.

amnesia
Amnesia without physical cause typically is an attempt to escape from social stress using dissociation.

hypnosis
Dissociation, not to suggestion, cause anesthesia and analgesia under hypnosis.

hysteria
Hysteria involves dissociation.

identity
Schizophrenia, dissociative identity disorder, and other diseases show abnormal experience of identity (Ich-Störungen).

split personality
Dissociation can result in feeling that, or acting as if, one person is two different people at once {split personality}, two different people at different times {dual personality}, or more than one different people at different times {multiple personality}. People can have several personalities, typically caused by prolonged and harsh early childhood sexual abuse {multiple personality disorder} (MPD). People create second personality that does not know first personality and that feels no pain or believes pain is happening to someone else. Personalities have separate memories, and personalities have amnesia for the others. One personality can know about other one and know its memories, and that personality is present even when the other is directing body. Perhaps, people do not actually have multiple personalities but are only deceiving themselves [Hacking, 1995] [Schreiber, 1973].

fugue as defense
People can behave as if they do not have memories {fugue, memory}, as in sleepwalking trances and post-hypnotic suggestions.

hysterical amnesia
People can behave as if they do not have memories {hysterical amnesia}, as in sleepwalking trances and post-hypnotic suggestions.

hysterical dissociation
People can behave as if they do not know who or where they are {hysterical dissociation}, as in sleepwalking trances and post-hypnotic suggestions.

SOCI>Psychology>Family

family in psychology
Families have psychology {family, psychology}. Before the 17th century, people older than three to seven were like adults, did same activities as adults, and dressed the same as adults. In 17th century, thinkers and clergymen emphasized children's specialness and innocence. Children should receive education in morals, manners, and attitudes. Family formality is less now, as respect for children as people has grown.

alienation
Intimate, intense, and identification relations can end by separation or by disruption from within or without {alienation, psychology}|. People that experience social or cultural alienation can become activists, social dropouts, non-conformists, school dropouts, or juvenile delinquents.

toilet training
In USA, potty training {toilet training}| begins at 9 to 12 months and ends at 18 months, when maturation makes control possible. Parents should not use coercion, start too early, or use too much punishment.

SOCI>Psychology>Family>Children

children
Offspring {children, family} continue family line, achieve immortality for parents, provide labor source, contribute to family survival, and are investments for future. Wanted children have parents that believe in their beauty, goodness, and creativity and believe that love and education can control children's energy, sexuality, and changes.
law
Parents must protect and support their children and educate them, in accordance with state law, until they reach majority. In some states, parents must send qualified children to college and pay their expenses, even past majority age. States can require support after majority if child has disability, has retardation, or cannot care for himself or herself.
Emancipation ends parental duties toward child.
Some states do not require that parents support children away from home, if they have consented to support them at home.
baby
Parents typically do not immediately feel love for newborn child. Loving and protective attitude develops through social interaction between infant and parents. Babies that are irritable, sick, difficult to feed, or hard to pacify can cause love not to develop. Parents can feel rejection if baby is unresponsive or seldom smiles. Infant behavior often makes parents feel inadequate.
In different cultures, babies can have schedules or immediate satisfaction, adults can talk a lot or a little to baby, and one mother or many women can tend baby.
first-born child
First-born child faces higher standards, has only adult models, has better world model, has high anxiety at second child's birth, and has more dependence, more guilt, more conformity, less aggression, more achievement, more sensitivity, less sociableness, and more carefulness.
youngest child
The youngest in family is typically the most-active and independent.

emancipation
Before majority, child can marry, be in military service, or have full-time job {emancipation}|. Emancipation ends parental duties toward child.

enuresis
Children can have chronic bed-wetting {enuresis}.

SOCI>Psychology>Family>Majority

majority by age
age greater than legal age {majority, age}|.

age of consent
People can freely engage in sexual relations after reaching age {consent age} {age of consent}|.

minority by age
age less than legal age {minority, age}|.

SOCI>Psychology>Family>Parents

parents
Parenting {parents} has properties.
parental behavior
Parental behavior can show love, affection, and warmth, or hostility and rejection. It can exercise control and authoritarianism, or allow autonomy and freedom. It can be permissive or restrictive. It can be possessive and involved or detached. Parents are more authoritarian in lower social classes.
Parents that show affection and allow autonomy tend to have children that are active, bossy, high in self-esteem, high in achievement, friendly, and confident.
Parents that are affectionate and in control tend to have children that have high esteem, are dependent, are not aggressive, and conform.
Parents that are hostile and restrictive tend to have children that are hostile, have low confidence, have low achievement, and are withdrawn.
Parents that are hostile and permissive tend to have children that are aggressive, have poor self-control, are delinquent, have low confidence, and have low achievement.
mother
Children with no mother have poor language skills and social relations, but their memory and motor skills are normal.
same-sex parent
Absence of a same-sex model is a factor in delinquency and poor school attendance.

anxious attachment
Mother or father can seek affection and security from child {anxious attachment}. Such parent typically alternates abruptly from concern to hostility and had difficult childhood.

SOCI>Psychology>Family>Sexual Actions

sexual activity
Sexual behavior {sexual activity} can persist into seventies or eighties.
Men are most active sexually, and the most interested in sex, from late teens through twenties. Male sexual responsiveness declines from late twenties onwards. In fifties and sixties, sexual-arousal vasocongestive responses become less, sexual desire remains high, and urgency to ejaculate upon sexual arousal diminishes.
Women's sexual responsiveness and interest increases to peak in middle thirties and can stay for next thirty years. Hormonal changes cause vagina-wall thinning and drying after 50.

exhibitionist
People can bare body private parts in front of other people {frotteur} {exhibitionist}|.

pedophilia
Sexual practices between adults and children {pedophilia}| are harmful to child development.

SOCI>Psychology>Intelligence

intelligence
People have general abilities {intelligence}| used to adapt to environment. Intelligence is the way that mind processes information.
decision making
Intelligence is ability to do something person never did before. It is making good predictions about what will happen and making good behavior choices. It is grasping essentials in given situation and responding appropriately to them. It detects relations and associations to improve decision making, by formulating hypotheses and finding implications. It includes deductive reasoning and problem solving. It is quickness and efficiency in doing many abilities. It involves flexibility and creativity. It involves responding correctly to stimuli, thinking abstractly, adjusting to environment, adapting to new situations, knowing, unifying complex stimuli, inhibiting instincts, using trial and error, socializing well, learning easily, learning from experience, and solving problems.
properties

Intelligence provides the following abilities. Respond flexibly to situations. Recognize change. Understand ambiguous or contradictory information. Know object and event relative importance. Perceive similarities. Perceive distinctions. Use concepts to synthesize new concept. Imagine well. Create. Recognize patterns or repetitions. Generalize from cases. Have complex world model.

poison

Perhaps, intelligence relates to ability to resist poisons and infections or to make few poisons and toxins in environment.

symbols

Perhaps, intelligence relates to want, need, or motivation for symbols. It is not an aptitude but desire or emotion.

achievement

Above IQ 85, correlation between IQ and achievements {achievement}| is small.

adaptability

People have ability to adjust self and environment {adaptability}| to obtain pleasure and survival.

aptitude

People have ability {aptitude}| in task.

expertise

Experts {expertise}| in subject have large working memory for that subject, gained by active learning with high motivation.

faculty psychology

Mind has inherited, separate powers, such as memory, learning, intelligence, perception, and will {faculty psychology}. They do not come through use, exercise, or study.

gifted children

More intelligent children {gifted children}| are taller, heavier, more socially poised, better in school, more active in play, more developed, and have less headaches and nervous habits. As adults, they have average problems but better jobs and education.

prototype of intelligence

Intelligence can compare with an ideal intelligent human {prototype, intelligent human}. Prototype only explains what people think intelligence is, not what intelligence actually is. Actually, multiple prototypes exist.

SOCI>Psychology>Intelligence>Components

intelligence factor

When solving problems on tests and in life, elementary abilities {intelligence factor} perform operations on contents to produce products. There are more than 100 intelligence factors. Reflexes, learned associations, verbal comprehension, word fluency, number fluency, spatial visualization, perceptual speed, memory, and reasoning are primary factors. Factors include abilities to perform movements, use concepts, handle tools, keep items in mind simultaneously, establish relationships, use imagination, form tactics, and form strategies. Verbal-educational ability and practical-mechanical ability are secondary factors, derived from primary factors.

testing

Intelligence as measured by tests involves verbal ability, spatial ability, numerical ability, reasoning, word fluency, and memory.

learning

Learning and environment affect verbal and spatial abilities. Learning and environment do not affect memory and ability to concentrate much.

metacomponent

People use control processes {metacomponent} to plan how to solve problem, make decisions about alternatives, and monitor progress.

acquisition component
People have processes {acquisition component} to acquire knowledge.

performance component
People have processes {performance component} to solve problems.

retention component
People have processes {retention component} to remember.

transfer component
People have processes {transfer component} to generalize.

SOCI>Psychology>Intelligence>Levels

genius intelligence
People can have IQ greater than 150 {genius, intelligence}|. Genius associates with motivation, expertise, self-confidence, novel thinking, intelligence, effective learning, management, brilliance, creativity, talent, interest, achievement need, self-control, curiosity, stamina, good work habits, and appropriate situation. Genius does not associate with madness.

retardation
People can have low mental age and intelligence quotient {retardation}| {mental retardation}. Subnormal maturation, learning, intelligence, adaptation, and social functioning are like arrested or incomplete mind development. In USA, retarded and handicapped children are ten percent of children. Four people per thousand are slow in social and occupational situations.
classification
Lowest IQ range is 0 to 25 {profound mental retardation}. Next lowest IQ range is 20 to 39 {severe mental retardation}. Middle low IQ range is 36 to 54 {moderate mental retardation}. Higher low IQ range is 52 to 69 {mild mental retardation}. Low IQ range is 68 to 84 {borderline mental retardation}.
causes
Poor nutrition, drugs, rubella, syphilis, age, irradiation, Rh factor incompatibility, low oxygen at birth, and birth injury impair mental development.
differences
If asked to think about their experiences, low-IQ and high-IQ children differ less than expected.

idiot
Lowest retardation class {idiot}| has mental age less than two years or IQ below 26.

imbecile
Next lowest range {imbecile}| is IQ 31 to 50.

moron
Low range {moron}| is IQ 51 to 70.

subaverage
IQ 71 to 84 is borderline retardation {subaverage}.

subnormal intelligence
One person per thousand is more than one standard deviation below average intelligence score {subnormal intelligence}. Subnormality associates with aggressive and irresponsible conduct and neurotic and psychotic disorders.

SOCI>Psychology>Intelligence>Single Factor

calculating genius

Ability to calculate rapidly {calculating genius} depends on knowing numerical facts and short-cut methods. It does not develop by prolonged, cumulative experience. It atrophies with disuse. Calculating geniuses generate answers right-to-left, in same way as if using paper-and-pencil procedure.

idiot savant

Developmentally disabled people can have special right-brain talents {idiot savant}|, such as music, painting, or procedural memory. Idiot savant typically has left-hemisphere damage.

SOCI>Psychology>Intelligence>Tests

intelligence test

Intelligence tests {intelligence test} are good predictors of academic or vocational success. Intelligence tests assess cognitive, spatial, and/or quantitative ability. They do not measure motivation, social skill, persistence, or goals. They measure cognitive skills, deductive reasoning, verbal reasoning, numerical reasoning, or perceptual reasoning. They can emphasize speed or accuracy. They can emphasize abstract or practical situations. They use only some intelligent activities. They cannot measure intelligence itself.

test-taking ability

Test-taking ability {test-taking ability} depends on two factors: question-answering speed and number of concepts that mind can hold simultaneously.

test-taking ability: anxiety

Anxiety can cause people to be unable to take tests.

test-taking ability: learning

Test-maker experiences affect tests, and these experiences are not the same as test-taker experiences, so acquired knowledge affects test.

questions

Intelligence test must use problems that have all information required to solve the problem. Solutions must be unambiguous, with only one close to true.

types

Tests include Stanford-Binet, Weschler Adult Intelligence Scale (WAIS), and Weschler Intelligence Scale for Children (WISC).

infants

Infant sense and motor tests show little relation to later intelligence tests.

simple test

What is the simplest intelligence or understanding test? Given examples, intelligent entities can find a rule. Alternatively, given a rule, intelligent entities can give examples. Rules take input states to output states. Intelligence involves using the rule in reverse: to get output state by setting input state.

The simplest input is constant value. The simplest output is constant value. The simplest rule is "stays the same". Rule to test intelligence must have change. What is simplest rule possible? Perhaps, one rule is not sufficient. What are fewest simple rules? What are the fewest inputs and outputs for one rule?

The simplest rule can have one input that can be in either of two states and one output that can be in either of two states. It has four states. If input is ON and output is ON, input stays ON and output stays ON. If input is ON and output is OFF, input stays ON and output stays OFF. If input is OFF and output is ON, input becomes ON and output stays ON. If input is OFF and output is OFF, input stays OFF and output stays OFF.

Only third rule has change, so there is only one change.

Machines or people observe the four examples once each and can then articulate the four rules. However, can people or machines set input and output to keep both OFF or both ON? This simple way can test understanding.

intelligence quotient

Calendar age times 100 divides into mental age {intelligence quotient}| (I.Q.) (IQ).

mental age

Physical ages have average general intelligence test score {mental age}|. Mental abilities can compare to average for age level.

SOCI>Psychology>Parapsychology

parapsychology
Extrasensory perception {parapsychology}| {psi, parapsychology} {noetics} {transpersonal psychology} is perception without sense qualities. Paranormal communication has no physical links.
However, no one has evidence that parapsychological phenomena are extrasensory. All cases have explanation.
dream and future
Knowing the future through dreams seems to be common. However, it comes from person's previous knowledge and story-making abilities.
evolution and ESP
Because an evolution goal is to know the future, evolution should select for ESP strongly but does not.
magic and ESP
From Stanford Research Institute, Russell Targ and Harold Puthoff published results of experiments using Uri Geller in the journal Nature [1974]. However, magicians can do same tricks. Magicians laugh at psychokinesis or other tricks, because duplication is easy.
newspaper reports
Charles Fort wrote a book containing newspaper accounts of unbelievable phenomena, which he presented as fact but which were merely exaggerations or similes.
past people and ESP
People can claim to know about events about people who lived long ago, as revealed by hypnosis. However, many examples of multiple personalities exist, and people have easy access to historical knowledge.
psychics
Famous so-called psychics {psychics} are Edgar Cayce, Jeanne Dixon, Gerard Croiset, and Ted Serios. However, their accuracy is near zero.

extrasensory perception
Perhaps, space, time, or material things do not govern perception {extrasensory perception}| (ESP) {psi process} {psychical phenomena}. ESP is teleological, rather than mechanistic. ESP involves same mental powers that control ordinary perception and voluntary movement. ESP includes telepathy, clairvoyance, precognition, psychokinesis, survival phenomena, communicating with spirits, and astral projection. Psychical phenomena are subconscious.

SOCI>Psychology>Parapsychology>Kinds

aliens from space
K. E. Tsiolkovsky, Jacques Bergier, and Louis Pauwels believed people have been visited by other beings {aliens from space}. However, reports of what happened are always ridiculous and so in error.

apparition
Hauntings, poltergeists, and apparitions {apparition} can look and act like people. However, they are real or dream people.

astral projection
ESP includes being in spirit body {astral body} {astral projection}|.

clairvoyance
ESP includes knowledge of the future {clairvoyance}|. Soon-to-occur disasters should cause clairvoyance. However, big disasters never have previous reports.

dowsing
People can find water with dowsing rod {dowsing}| {radiesthesia}, which pulls down or revolves. However, people actually smell, feel, or perceive water presence.

Kirlian photography
Pictures of objects in high-frequency electric fields show glow, sparks, or coronas around living things {Kirlian photography}|. However, tissue electric charges cause this.

plant communication

Cleve Backster tried to measure communication in plants {plant communication}. However, what plants can communicate people cannot know.

poltergeist
Ghosts {poltergeist}| can move things around. Such phenomena usually involve disturbed children or adolescents, who are not aware that they are moving things.

precognition
ESP includes knowledge of future by knowing something will happen {precognition}|.

psychokinesis
ESP includes mentally moving or controlling matter without physical means {psychokinesis}|.

pyramid power
People can claim that pyramids have regenerative powers {pyramid power}|. However, science has found no regeneration.

seeing with other senses
People can claim to be able to see using other senses {seeing with other senses}. However, this is like what blind people do normally or else is trick.

survival phenomena
ESP includes experiencing things after death {survival phenomena}|.

telepathy
ESP includes communication between minds directly {telepathy}|.

unexplained flying object
J. Allen Hynek studied strange aerial phenomena {unexplained flying object}| (UFO). Explanations are easy, and no aliens detected.

SOCI>Psychology>Personality

personality
Stable characteristics organize into unique trait combination {personality}|. Personality determines how other people respond to people.
Personality types can list personality traits, classify main personality traits, identify personality types, or structurally analyze trait combinations.
factors
Personality has five major factors: neuroticism or emotional stability, extraversion or intraversion, agreeableness or disagreeableness, conscientiousness or uncarefulness, and openness to experience or closed world.
time and personality
In descriptive personality theory, people can perceive past, present, future, or continuous time as most important.

egoism
People can only care about themselves {egoism}|.

egotism
People can be proud of themselves {egotism}|.

temperament
Personality {temperament}| can be sanguine, phlegmatic, choleric, or melancholic.

SOCI>Psychology>Personality>Development

attachment theory

In object relations theory {attachment theory}, infant and toddler experiences with mothers and nannies build unconscious cognitive and emotional attachment-relation models {attachment style}. Children also have conflicts and problems with mothers, and these lead to attachment regulation [Bowlby, 1969] [Bowlby, 1973] [Bowlby, 1982].

ego psychology theory

In personality development theory {ego psychology theory}, unconscious motives and thoughts {primary process} can come from id and are pleasure oriented, while behaviors controlled by ego {secondary process} are rational and real. Emotional unconscious beliefs are the basis for understanding and behavior. Ego consciously does problem solving and regulates emotions and drives. People use defense mechanisms to resolve conflicts. People build ideas of their capabilities and opportunities {ego identity, development} to oppose loss of self {ego diffusion, development}.

learning theory

In personality development theory {learning theory}, personality can develop by learning from experiences and conflicts, as inner motivations generate behavior. There are no personality types, only traits. Behavior reinforcement leads to general use, and then behavior becomes personality trait. People also learn when not to generalize. People build and alter habitual behaviors in a habit family hierarchy.

object relations theory

In personality development theory {object relations theory} {relational psychoanalysis}, intimate interpersonal relations have patterns affected by cognitive and emotional processes. For example, people can stay in abusive relationships because they have other motivations. People use implicit representations, expectations, and relations to develop intimacy. Attachment theory is an object-relations theory.

SOCI>Psychology>Personality>Development>Psychoanalysis

psychoanalysis and personality

During personality development {psychoanalysis, personality}, libido can stay at any stage {fixation, psychoanalysis} and have repression.

libido

People have psychic energy {libido}. Libido is life instinct.

eros sex

Libido {eros} is sexual in nature.

narcissism

Libido can be toward others {object love} or self {narcissism}.

SOCI>Psychology>Personality>Development>Psychoanalysis>Stages

oral period

Libido from 0 to 8 months {oral period} is for sucking and biting.

anal stage

Libido from 8 months up to 2 years {anal stage} is for controlling defecation. Toilet training can have praise and blame, block anal pleasure, and cause revulsion.

phallic stage

Libido from 2 to 4 years {phallic stage} is for contacting opposite-sex parent and playing with genitals. Parent can suppress these.

latency period

Libido from 4 to 14 years {latency period} is for socialization, play with same-sex children, and dislike of opposite sex. Sexuality is low.

Oedipus complex

Children can identify with same-sex parent, to resolve conflict between desire for opposite-sex parent and fear of retaliation {Oedipus complex} {Electra complex}. Children are hostile towards same-sex parent and have sexual impulses towards opposite-sex parent.

castration complex

Oedipus-complex resolution can be unsuccessful {castration complex}.

genital phase

Libido at puberty {genital phase} is for heterosexual love.

SOCI>Psychology>Personality>Military

military personality

Societies need military people {military personality}. The military profession has skills and conduct codes. It requires elaborate rules for maintaining order and discipline.

aggression

The military practices aggressive behavior that is forbidden inside society, so it must distinguish between society members and outsiders. It provides legitimate outlets for controlled aggression. It must control aggressive behaviors.

candidates

The military can be a good environment for people that lack inner controls. It provides security, strong institution, and substitute parent.

leadership

Military commanders make most decisions using partial and uncertain information, under psychological pressure and physical danger {leadership, military}. Militaristic personality is not adaptive for commanders.

militaristic personality

Personality {militaristic personality} can be authoritarian, rigid, and obsessive. It exhibits defense mechanisms used against anxiety and aggression. Militaristic personality traits include inflexibility, low imagination, grandiose speech, obedience, new-information blockage, conservatism, and conformism. It is adaptive for soldiers and lower ranking officers.

soldier

The military needs people {soldier} that can withstand war shocks {robustness, personality}, have no introversion, do not have complex personalities, and are moldable.

military failure

Militaristic personality can cause military error patterns {military failure}. Failures use more force than needed, leaving other places unprotected or wasting resources. They are too slow in attack or defense. They follow military tradition or are too conservative on attack or defense. They are indecisive. They show obstinate persistence. They make frontal assaults on enemy's strongest points. They do not finish attack or exploit situation. They underestimate enemy and overestimate their abilities.

information

They misuse or do not use available technology. They reject new information, which is often bad or conflicts with preconceptions. They lack reconnaissance. They use force alone, rather than using trick. They lack surprise or deception.

They use belief in mystical forces, fate, and bad luck.

openness

The military often refuses to admit past mistakes, finds scapegoats for military setbacks, and suppresses or distorts news from the front.

SOCI>Psychology>Personality>Personalities

authoritarian personality

Personality {authoritarian personality} can follow conventional virtues, submit to authority, not tolerate non-conformity, have little imagination, be fatalistic, have rigid thoughts, identify with power figures, be assertive, be tough, be cynical, be hostile to others, believe in evil world, and be dogmatic.

democratic personality
Personality {democratic personality} can have belief in self and others' dignity, belief in freedom of self and others, authority distrust, non-dominating attitude, compromising attitude, openness to change and other people, sharing, acceptance, and tolerance.

fantasy-prone personality
People can have imaginary playmates, hypnotize easily, be creative, and believe in psi phenomena {fantasy-prone personality} [Wilson and Barber, 1983].

type A personality
Physical illnesses can be predominantly in people that have rigid personalities, are subject to stress, have had recent life changes, or have lost connection with other people {type A personality}. For example, coronary artery disease happens more often in such individuals.

SOCI>Psychology>Personality>Kinds

personality types
Descriptive personality theory postulates that people have some personality types {personality types}. Traits can be together, or people can have main traits. The same sets are in adults and children, men and women, different social classes, and different nations.

somatotype
People have body configurations {somatotype}. Researchers can identify over seventy individual body configurations, but they do not correlate with psychology or disease.

SOCI>Psychology>Personality>Kinds>Morphy

ectomorphy
People {ectomorphy} can be thin, sociable, and outgoing, with large surface area compared to body weight. Ectomorphism relates to the personality trait dysthymia.

endomorphy
People {endomorphy} can be plump, pleasure seeking, and inward looking, with mostly soft and rounded tissue throughout body.

mesomorphy
People {mesomorphy} can be muscular, active, and inward and outward looking, with mostly muscle, bone, and connective tissue.

SOCI>Psychology>Personality>Kinds>Tonia

cerebrotonia
Personality can depend on self-consciousness and diffidence {cerebrotonia}. Cerebrotonia relates to extreme ectomorphy.

somatotonia
Personality can depend on self-assertiveness and aggression {somatotonia}. Somatotonia relates to extreme mesomorphy.

viscerotonia
Personality can depend on sociability and love of comfort {viscerotonia}. Viscerotonia relates to extreme endomorphy.

SOCI>Psychology>Personality>Kinds>Version

extroversion

People {extroversion}| {changeableness} can change in response to others or environment. Galen's choleric and sanguine types are changeable, unlike his melancholic and phlegmatic types. Extroversion has resting states with low cortical arousal. Extroversion is not dominant trait. Heredity causes two-thirds of extroversion-introversion variation.

introversion
People {introversion}| can have resting states with high cortical arousal, caused by ascending reticular activating system. Introversion is not dominant trait. Heredity causes two-thirds of extroversion-introversion variation.

ambiversion
Extroversion and introversion {ambiversion} can mix.

SOCI>Psychology>Psychological Treatments

psychological treatments
Various treatment forms {psychological treatments} all help patients, with great variation. Psychotherapy and behavior therapy have no differences in effect, relative to ability to work and social adjustment.

therapist
People {therapist}| can help reconciliation and communication with others.

abreaction
During therapy, patients can recall or re-experience stressful or disturbing situations or events {abreaction}. Revealing underlying emotion and drive can treat neuroses and hysteria.

transference
During therapy, patients transfer onto therapist feelings experienced at earlier life stage {transference}|. Therapists assume roles of mother, father, or other important figure. Transference can overcome resistance to recalling painful experiences. Transference must terminate after revealing the past, so patients can be independent again. Perhaps, transference and positive relationship with therapist cures. However, this theory is false.

SOCI>Psychology>Psychological Treatments>Kinds

counseling
Advising {counseling} requires compassion, respect, and low hubris.

aversion therapy
Treatments {aversion therapy} can use or show situations or objects that frighten or disturb patients.

behavior therapy
Psychotherapy {behavior therapy} can use instrumental conditioning to sensitize people by reciprocal inhibition and relaxation, to reinforce good behavior or to punish bad behavior. Behavior treatments can directly manipulate verbal, motor, and autonomic behaviors.

client-centered therapy
Psychotherapy {client-centered therapy} {non-directive therapy} can re-educate patients as patients work through their problems.

cognitive-behavioral therapy
Talking about human biases {cognitive-behavioral therapy} (CBT) can help people avoid biases.

conditioning psychotherapy
Psychotherapy {conditioning psychotherapy} can involve behavior changing through learning and conditioning.

desensitization
Treatments {desensitization} {counterconditioning} can condition stimuli that produced fear or anxiety responses in patients toward positive unconditioned stimuli. Desensitization treats phobia.

directive-supportive
Psychotherapy {directive-supportive therapy} can involve persuasion and environmental manipulation.

electroconvulsive therapy
Under anesthesia or muscle relaxation, head surface electrodes apply voltage across brain to produce convulsions {electroconvulsive therapy} (ECT). ECT treats endogenous depression.

expressive-reconstructive therapy
Psychotherapy {expressive-reconstructive therapy} can involve expressing or reconstructing repressed conflict and then reorganizing personality. Therapy begins with free association. Then parental role transfers to therapist. Then therapist receives hostility and anxiety, until catharsis happens, and therapist becomes a neutral figure. Finally, people adjust to new life. Psychoanalysis is an expressive-reconstructive therapy.

flooding treatment
In one treatment {flooding, treatment}, patient receives conditioned stimulus that produces fear or anxiety responses for long time. Situation prevents flight and other defenses, so patient faces fears until they disappear.

free association
Therapy can begin with immediate verbal responses to random words {free association}.

gestalt therapy
Treatment {gestalt therapy} can be non-interpretative, emphasize awareness and personal responsibility, equally emphasize mind and body, and try to reveal figure significant patterns or constructs in whole situations or ground.

modeling
Patients can see people {model, person} {modeling, person} that cope properly with difficulties and fears, imitate the model, and lose previous conditioned responses.

psychoanalysis treatment
Therapies {psychoanalysis} can try to reveal associations between defense mechanism and fear or anxiety, by free associations and gentle questioning. It requires that patients consciously want to change, but patients unconsciously resist change, to maintain defense mechanism and avoid fear and anxiety.

Patients learn about the pleasure principle and its relation to unconscious mental activity, attitudes, wishes, motives, and fundamental impulses. They realize that instinctual-drive frustration happens and that hallucination or wish fulfillment reduces it [Freud, 1899] [Freud, 1915] [Freud, 1915] [Freud, 1966] [Kitcher, 1992].

psychosurgery
Brain surgery {psychosurgery} helps 60% of people with severe neurosis.

psychotherapy
Mental illness treatments {psychotherapy} can involve counseling, using method from interpretative or non-interpretative psychological theories. Psychotherapy success improves with low age, high intelligence, specific problems, strong desire for help, and high social class. Psychotherapies do not vary much in success rate.

rational-emotive therapy
Psychotherapy {rational-emotive therapy} can link cognitions and emotions, so thoughts can control emotions. Therapists argue and discuss {insightful countersuggestion}, to attack patient's irrational beliefs.

shock treatment
Mental illness treatments {shock treatment} can involve electric or chemical shock. Electroconvulsion, with muscle relaxer, is for severe depression and melancholia. Insulin can induce coma. Metrazol induces coma, but psychiatric treatments do not use it.

social rehabilitation
Rehabilitation {social rehabilitation} can treat schizophrenia.

spontaneous relief
Psychoneurotic difficulties tend to resolve spontaneously {spontaneous relief}, regardless of treatment.

word association
Tests {word association} {word association test} can freely associate verbal responses to words or phrases to evaluate patient mental status, by measuring delay between stimulus and response, response appropriateness, and test behavior.

In one treatment type, patient responds to spoken words and phrases, to reveal wishes and motives they want to hide.

Young children generalize most to homophones. Older children generalize most to antonyms. Adults generalize most to synonyms. Phonetically similar words do not generalize.

SOCI>Psychology>Suicide

suicide
People can intentionally end their lives {suicide}|.

incidence
It has higher rate in men than women, peaks in late fifties or sixties, and has same rate in different social or economic classes.

factors
It has higher rate among divorced people, childless women, people living alone, retired people, unemployed people, people in pain, people with terminal illness, mobile people, people under economic distress, people with severe depression, people with alcoholism, and people with epilepsy. It typically involves psychiatric illness.

war
War decreases suicide. Perhaps, it is because national cohesion happens and unemployment is less. Cultures influence suicide mode.

ritual
Killing oneself can be voluntary or ritualistic.

customs
Suicide is illegal in many countries. No theology allows it. It has stigma.

altruistic suicide
High integration into group can cause voluntary or ritualistic suicide {altruistic suicide}.

anomic suicide
High personal standards and a society lacking behavior standards can cause voluntary or ritualistic suicide {anomic suicide}.

egotistic suicide
Group beliefs, failure to meet group standards, few personal attachments, and little help from others can cause voluntary or ritualistic suicide {egotistic suicide}.

parasuicide
People can attempt suicide but not commit suicide {parasuicide}.

factors
Parasuicides are mostly females in their teens or twenties. They are commoner among married people, are more common in lower social classes, and are commoner among people living in congested, overcrowded conditions. They do not associate with physical illness. They typically come from disrupted and disadvantaged childhood, such as poor family with no father. They typically belong to group that has propensity to parasuicide when under stress.

Male parasuicides typically have criminal record, are violent, and are alcoholic.

cause
Parasuicides are expressing wish for change from current state.

results
Parasuicide precedes half of all suicides.

SOCI>Psychology>Techniques

Beck Depression Inventory
Tests {Beck Depression Inventory} can be for mental depression.

case history
Psychologists can analyze people's biographies {case history} to find mental-problem causes.

correlational investigation
Artificial state or event {correlational investigation}, such as test or poll, can predict real situation, such as manual skill or voting results.

ex post facto experiment
Psychologists can observe stimuli and responses in situation {ex post facto experimentation}, to find correlations among states and events.

leaderless group test
Manager tests {leaderless group test} {management gaming} can require leading teams of equals, without relying on rules or military discipline.

mental status exam
Mental-illness tests {mental status exam} {mental illness test} can have the following parts: attention span, appearance and behavior, emotional responses, ideas and idea formation, judgment, language and conversation, memory, time and space orientation, sense responses, and thinking.

objective test
Tests {objective test} can count or mark traits and features selected from lists. Objective tests can be cross-correlated for validity.

personality test
Tests {personality test} can try to find personality traits or general mental states. Objective personality tests {Minnesota Multiphasic Personality Inventory} (MMPI) have multiple-choice questions. Projective personality tests include Thematic Apperception Test and Rorschach test. Faking and biases cause personality tests to have low validity.

psychological observation
Psychologists can observe natural or artificial situation {psychological observation}, to look for repetitions or connections among states and events.

tachistoscope
Instruments {tachistoscope}| can alternate pictures with blank fields of similar intensity, to maintain eye adaptation and minimize afterimages, while studying visual pattern and object recognition.

SOCI>Psychology>Techniques>Projective Test

projective test
Tests {projective test}| can ask subjects to state answers, not select from lists. Projective methods {projective technique} can ask subjects to state feelings about objects. Activity methods, Draw-a-Person Test, Rorschach test, sentence completion, structured play, Thematic Apperception Test, and word association are projective techniques.

activity method
Psychologists can ask people to draw object {activity method} {Draw-a-Person Test}, usually the human figure.

Rorschach test
Psychologists can ask people to respond verbally about ink drawing {Rorschach test}.

sentence completion

Psychologists can ask people to respond verbally after beginning sentence {sentence completion}.

structured play
Psychologists can ask children to use sand tray or other toys {structured play}.

Thematic Apperception Test
Subjects can tell stories about pictures, and tests {Thematic Apperception Test} (TAT) can measure location, determinants, and content.

SOCI>Psychology>Techniques>Validity

anthropomorphism
Experimenter can attribute human thoughts to animals {anthropomorphism}|.

baseline
Experiment needs control group {baseline}| with only moderate variation. Experiment can lack control group, or control group can have too much variation or use atypical people.

bias of validity
Experimenter can try to reach foregone conclusion {bias, experiment}|.

error
Subjects can desire to please experimenter {error, experiment}|. Subjects can ignore true stimulus or response. Subjects or experimenter can forget facts or reasons. Experimenter can make errors in reporting.

valid method
Experimental technique or method {valid method}| must try to avoid error and bias {validity, experiment}.

SOCI>Psychology>History

psychology in history
psychologist
Earth
1500 to 2007
Psychology includes attitudes, cognition, attention, learning, memory, perception, child psychology, personality, and mental illness.

SOCI>Psychology>History>Attention

John Carl Flugel [Flugel, John Carl]
psychologist/psychoanalyst
Britain
1928
Practice, Fatigue and Oscillation [1928]
He lived 1884 to 1955 and studied attention.

Anne Treisman [Treisman, Anne]
psychologist
USA
1980 to 1996
Feature integration theory of attention [1980: with G. Gelade]; Perception of features and objects [1993]; Binding problem [1996]
She invented an attention theory {feature integration theory, Treisman}. Mind first processes basic visual features preattentively and automatically and then uses attention to associate features with objects and find higher-level properties.

Tim Shallice [Shallice, Tim]
psychologist
USA
1988
From Neuropsychology to Mental Structure [1988]
He studied supervisory attentional system. He invented model with functional models, contention scheduler, supervisory system, language system, and episodic memory [Shallice, 1988].

SOCI>Psychology>History>Behavior

Pierre d'Ortigue [d'Ortigue, Pierre]
writer
Paris, France
1688
Art of Pleasing in Conversation [1688]
He lived 1630 to 1693. Conversation is part of good manners.

Moritz Lazarus [Lazarus, Moritz]
philosopher
Berlin, Germany
1850 to 1883
Leadership of the Prussians in Germany [1850]; Life of the Soul [1855 to 1857 and 1883]; Journal of National Psychology and Linguistics [1860: with Heymann Steinthal]; Synthesis of Thoughts on National Psychology [1865]
He lived 1824 to 1903 and developed a new psychology {Folk Psychology, Lazarus} {Comparative Psychology, Lazarus} [1854: with Heymann Steinthal].

Heymann Steinthal [Steinthal, Heymann]
philosopher
Germany
1854 to 1860
Journal of National Psychology and Linguistics [1860: with Lazarus]
He lived 1823 to 1899 and developed new psychology {Folk Psychology, Steinthal} {Comparative Psychology, Steinthal} [1854], with Lazarus.

James Ward [Ward, James]
psychologist
England
1886 to 1918
Psychology [1886]; Psychological Principles [1918]
He lived 1843 to 1925 and wrote psychology textbook.

Conway Lloyd Morgan [Morgan, Conway Lloyd]
psychologist
Britain
1890 to 1923
Animal Life and Intelligence [1890]; Introduction to Comparative Psychology [1894 and 1903]; Emergent Evolution [1923]
He lived 1852 to 1936 and studied trial-and-error learning. He emphasized carefully observing behavior in natural settings where conditions systematically vary. He advocated finding minimal behavior causes {law of parsimony} {Morgan's canon} [1894], using higher concepts only if necessary. Evolution makes higher systems by emergence from lower ones.

Oswald Külpe [Külpe, Oswald]
philosopher/psychologist
Würzburg, Germany
1893 to 1922

Basics of Psychology [1893]; Introduction to Philosophy [1898]; Lectures on Psychology [1922]
He lived 1862 to 1917 and was at Würzburg School of experimental psychology in Bavaria.
Before performing tasks, people prepare for doing any task, prepare for doing particular task, actively recall needed information and possible responses, and select from among possible associations and responses.
Mental states such as confidence or doubt have no image, representation, or object {imageless thought, Külpe} and cannot be sensations, images, volitions, or feelings {denkpsychologie} {thought psychology}.

Sigbert J. M. Ganser [Ganser, Sigbert J. M.]
psychologist
Germany
1897 to 1898
On a peculiar hysterical state [1898]
He lived 1853 to 1931 and discovered prisoners who imitated psychotic behavior {Ganser syndrome} [1897 to 1898].

Theodore Lipps [Lipps, Theodore]
philosopher/psychologist
Germany
1897 to 1903
Empathy, Inner Imitation and Sense-Feelings [1890 to 1910]; Foundation of Aesthetics [1903]
He lived 1851 to 1914. People can have a feeling of belonging to, and associating with, something else {einfuhlung} {empathy, aesthetics} [1897]. Empathy explains aesthetics.

Functionalism
psychology school
Chicago, Illinois
1900
Mind performs functions {Functionalism} and adapts behavior to environment, to meet body needs.

Granville Stanley Hall [Hall, Granville Stanley]
psychologist
USA
1904
Adolescence [1904]
He lived 1844 to 1924 and studied many children.

Henri Pieron [Pieron, Henri]
psychologist
Paris, France
1907 to 1913
Physiological Problem of Sleep [1913]
He lived 1881 to 1964, founded French experimental psychology, and studied sleep. He claimed to find hypnotoxin or sleep-promoting substance [1907, with Rene Legendre], in cerebrospinal fluid.

Charles Samuel Myers [Myers, Charles Samuel]
psychologist
Britain
1909 to 1937
Text Book of Experimental Psychology [1909]; Mind and Work [1920]; Industrial Psychology in Great Britain [1926]; In the Realm of Mind [1937]
He lived 1873 to 1946 and studied work habits.

Roberto Assagioli [Assagioli, Roberto]
psychologist
Italy/USA
1910 to 1973

Psychosynthesis: A Manual of Principles and Techniques [1965]; Act of Will [1973]

He lived 1888 to 1974. Will and self connect {psychosynthesis}, because self acts through will in all sensations, emotions, desires, imaginings, thoughts, and intuitions [1910].

John Broadus Watson [Watson, John Broadus]

psychologist

USA

1913 to 1928

Psychology as the Behaviorist Views It [1913]; Behavior: an Introduction to Comparative Psychology [1914]; Psychology from the Standpoint of a Behaviorist [1919]; Behaviorism [1924]; Psychological Care of Infant and Child [1928]

He lived 1878 to 1958 and founded behaviorism. He emphasized being objective and working only with observables. He studied reinforcement timing in instrumental learning, conditioned responses, and forming associations. Associations can only form between stimulus and response, not between stimuli. All behaviors depend on reflexes. All behavior and thought is stimulus-response, though people cannot observe mental stimuli and responses. Conditioning determines human behavior, so people learn almost all behaviors. Previous-behavior recency and frequency determine subsequent behavior. The goal of psychology is behavior prediction and control.

Classical conditioning can change human emotions.

Edwin Bissell Holt [Holt, Edwin Bissell]

philosopher/psychologist

USA

1915

Freudian Wish and its Place in Ethics [1915]

He lived 1873 to 1946 and was behaviorist.

Arnold Lucius Gesell [Gesell, Arnold Lucius]

psychologist

USA

1915 to 1940

Embryology of Behavior [1915]; Infancy and Human Growth [1928]; Atlas of Infant Behavior [1934]; First Five Years of Life [1940]

He lived 1880 to 1961 and studied child development using movie cameras [1926].

Edward Chase Tolman [Tolman, Edward Chase]

psychologist

USA

1932 to 1950

Purposive Behavior in Animals and Men [1932]; Organism and the Causal Texture of the Environment [1935]

He lived 1886 to 1959 and developed a behavioral learning theory that did not rely on reflexes. He studied hypothesis formation and reward expectance in animal learning. He studied spatial orientation and cognitive maps [1950]. He studied latent learning and sign-gestalt theory [Tolman, 1935].

Heinrich Klüver [Klüver, Heinrich]

psychologist

Germany/USA

1933

Behavior Mechanisms in Monkeys [1933]

He lived 1897 to 1979 and discovered Klüver-Bucy syndrome, with Paul Bucy.

Clark Leonard Hull [Hull, Clark Leonard]

psychologist

USA

1933 to 1952

Hypnosis and Suggestibility [1933]; Mathematico-Deductive Theory of Rote Learning [1940]; Principles of Behavior [1943]; Behavior System [1952]

He lived 1884 to 1952, was behaviorist {neobehaviorism}, studied hypnosis, and measured attitudes. He studied behavior segments, continuity learning theory, drive reduction, primary needs, and secondary needs [Hull, 1943].

Kurt Lewin [Lewin, Kurt]
psychologist
USA
1935 to 1951
Dynamic Theory of Personality [1935]; Frontiers in Group Dynamics [1946]; Field Theory in Social Science [1951]
He lived 1890 to 1947. Internal and external stimuli cause individual differences {field theory}. Incentives come from outside and goals from inside. Rewards come from outside and success from inside.

Burrhus Fredric Skinner [Skinner, Burrhus Fredric]
psychologist
USA
1938 to 1974
Behavior of Organisms: An Experimental Analysis [1938]; Walden II [1948]; Science and Human Behavior [1953]; Verbal Behavior [1957]; Cumulative Record [1961]; Contingencies of Reinforcement [1969]; Beyond Freedom and Dignity [1971]; About Behaviorism [1974]
He lived 1904 to 1990. He studied operant conditioning or instrumental responses as explanations for internal and external behavior. Most behaviors involve voluntary movements {operant conditioning, Skinner}, rather than reflexes {classical conditioning, Skinner}. Current behavior depends on rewards or punishments experienced after previous behavior. Rewards can be food or pleasure {positive reinforcement, Skinner} or can be punishment reduction {negative reinforcement, Skinner}. Punishment can decrease behavior. Low reward can decrease behavior {extinction, Skinner}. People have private stimuli and responses. People learn to be self-aware by verbal reports. Only stimulus-response conditioning frequencies determine behavior {radical behaviorism}.
Experimental chambers {Skinner box} allow stimulus delivery and response measurement. Skinner boxes can be enclosed cribs {air-crib} for human infants.

Bruno Bettelheim [Bettelheim, Bruno]
psychologist/sociologist
Austria/USA
1943 to 1976
Individual and Mass Behavior in Extreme Situations [1943]; Informed Heart [1960]; Empty Fortress [1967]; Children of the Dream [1969]; Uses of Enchantment [1976]
He lived 1903 to 1990 and studied communal education.

Henry Schaefer-Simmern [Schaefer-Simmern, Henry]
psychologist
USA
1948 to 1958
Unfolding of Artistic Activity [1948]; Eskimo Sculpture in Canada [1958]
He lived 1896 to 1978 and studied creativity and development.

Harry Harlow [Harlow, Harry]
psychologist
USA
1949 to 1958
Learning to Think [1949: with Margaret Kuenne Harlow]; Nature of Love [1958]
He lived 1905 to 1981 and studied monkey play and learning set formation [Harlow and Harlow, 1949].

Solomon Asch [Asch, Solomon]
psychologist
USA
1952
Social Psychology [1952]

He lived 1907 to 1996 and studied conformity to others' opinions. Conformity happens even in line-length perception.

Edward Guthrie [Guthrie, Edward]
psychologist
USA
1952
Psychology of Learning [1952]
He lived 1886 to 1959 and was behaviorist. Mind automatically joins objects and events perceived or performed simultaneously {contiguity theory, Guthrie}. S-R learning can happen in one trial {one-trial learning}.

Otto Rank [Rank, Otto] or Otto Rosenfeld [Rosenfeld, Otto]
psychologist
Austria/USA
1952
Trauma of Birth [1952]
He lived 1884 to 1939, was psychoanalyst, and wrote about ethics.

Abraham H. Maslow [Maslow, Abraham H.]
psychotherapist
USA
1954
Motivation and Personality [1954]
He lived 1908 to 1970. People's needs form hierarchy {need hierarchy}.

Herbert A. Simon [Simon, Herbert A.]
psychologist/mathematician
USA
1955 to 1982
Behavioral Model of Rational Choice [1955]; Rational Choice and the Structure of the Environment [1956]; Logic Theory Machine [1956: with A. Newell]; Report on a general problem solving program [1959: with A. Newell and J. C. Shaw]; Administrative Behavior [1970]; Sciences of the Artificial [1981]; Models of Bounded Rationality, Volume 1, Economic Analysis and Public Policy [1982]
He lived 1916 to 2001 and invented administration systems theory {decision theory, Simon}, which examines human problem-solving difficulties, cognitive limits on rationality, and perceptual limits on decision making. Good chess players can remember real chess positions better but not random ones better.

Allen Newell [Newell, Allen]
psychologist/mathematician
USA
1956 to 1959
Logic Theory Machine [1956: with H. A. Simon]; Report on a general problem solving program [1959: with H. A. Simon and J. C. Shaw]
He lived 1927 to 1992.

Roger W. Brown [Brown, Roger W.]
psychologist
USA
1958 to 1972
Words and Things [1958]; Wolf Children and the Problem of Human Nature [1972]
He lived 1925 to 1997 and studied biofeedback and children raised by animals.

Robert Ardrey [Ardrey, Robert]
psychologist
England
1961 to 1970

African Genesis [1961]; Territorial Imperative [1966]; Social Contract [1970]
He lived 1908 to 1980 and studied territoriality and aggression.

Robert R. Sears [Sears, Robert R.]
psychologist
USA
1965
Identification and Child Rearing [1965: with Lucy Rau and Richard Alpert]
He lived 1908 to ?.

Lloyd Homme [Homme, Lloyd]
psychologist
England
1965 to 1968
What Behavioral Engineering Is [1968]
Covert, unobservable behaviors, such as thoughts, images, and other mental events, are similar to overt or operant behavior {coverant behavior} [1965].

Jeffrey S. Gruber [Gruber, Jeffrey S.]
psychologist
USA
1965 to 1976
Studies in Lexical Relations [1965]; Lexical Structures in Syntax and Semantics [1976]
Processes and concepts used for spatial location and motion can extend to represent other ideas, objects, and relations, such as possession {thematic relations hypothesis}.

Liam Hudson [Hudson, Liam]
psychologist
USA
1966 to 1973
Contrary Imaginations [1966]; Psychological Study of the English Schoolboy [1966]; Originality [1973]
He lived 1934 to 2005.

Elizabeth Kubler-Ross [Kubler-Ross, Elizabeth]
psychologist
USA
1969
On Death and Dying [1969]
She lived 1926 to 2004 and studied dying.

Leon J. Kamin [Kamin, Leon J.]
psychologist
USA
1969 to 1984
Predictability, surprise, attention, and conditioning [1969]; Not in Our Genes: Biology, Ideology and Human Nature [1984: with Steven Rose and R. C. Lewontin]
He lived 1927 to ?. If conditional stimulus pairs with reinforcer and then second stimulus pairs with first stimulus and reinforcer, animals do not respond to only second stimulus {blocking effect, Kamin} [1969]. Animals seem to assume minimum sufficient causation.

William C. Dement [Dement, William C.]
psychologist
USA
1972
Some Must Watch while Some Must Sleep [1972]
He lived 1928 to ? and studied sleep and dreams.

Gregory Bateson [Bateson, Gregory]
psychologist
England
1972 to 1979
Steps to an Ecology of Mind [1972]; Mind and Nature, A Necessary Unity [1979]
He lived 1904 to 1980 and studied mind in environment.

Howard H. Pattee [Pattee, Howard H.]
biologist
USA
1973 to 1995
Hierarchy Theory [1973]; Evolving Self-reference: Matter, symbols, and semantic closure [1995]
He lived 1926 to ?. Computation uses separate initial conditions and motion equations, but these are not separate in nature. Organisms have measurement methods and can interact with environment, allowing them to attach meaning to stimuli {semantic closure}.

Wolfram Schultz [Schultz, Wolfram]
biologist
England
1980 to 1998
Dopamine prediction neurons fire before rewards.

Stanley Milgram [Milgram, Stanley]
psychologist
USA
1974 to 1983
Obedience to Authority [1974]; Obedience to Authority: An Experimental View [1983]
He lived 1933 to 1984 and studied obedience to authority. People sent commands to shock people when directed to do by authority.

Ralph A. Moody [Moody, Ralph A.]
psychologist
USA
1975
Life after Life [1975]
He studied near-death experiences.

H. H. Kornhuber [Kornhuber, H. H.]
psychologist
Germany
1976
He studied EEG when people randomly chose to flex finger, with L. Deecke and B. Grötzinger. EEGs show change one second before they flex. If people reacted to light signal, EEG change was 0.2 second afterward.

Michael I. Posner [Posner, Michael I.]
psychologist
USA
1978
Chronometric Explorations of the Mind [1978]
He studied brain timing.

Jorg-Peter Ewert [Ewert, Jorg-Peter]
psychologist
USA
1980

Neuroethology [1980]
He studied mind in environment.

Jon Barwise [Barwise, Jon]
psychologist
USA
1983
Situations and Attitudes [1983: with John Perry]
Language is about situations and about relations among communicators {situation semantics, Barwise}.

Curtis G. Smith [Smith, Curtis G.]
psychologist
USA
1985
Ancestral Voices [1985]
He studied language origins.

George Johnson [Johnson, George]
writer
USA
1986
Machinery of the Mind [1986]
He writes popular science.

E. Sue Savage-Rumbaugh [Savage-Rumbaugh, E. Sue]
psychologist
USA
1986
Ape Language from Conditioned Response to Symbol [1986]
She studied ape intelligence and natural language. The bonobo Kanzi used and understood 150 words, typically to express desires or refer to present objects. Learning is instrumental association but is not necessarily referential, with no grammar.

Rodney Brooks [Brooks, Rodney]
computer scientist
USA
1991 to 2002
Intelligence without representation [1991]; Flesh and Machines: How Robots Will Change Us [2002]
Robots can have rules that are in separate modules that compete by inhibiting each other {subsumption architecture}. The outside world is the only model needed. The robot Cog goes directly from multisensory perception to action, without memory or language. The robot Genghis detects heat and moves toward or away.

Leda Cosmides [Cosmides, Leda]
psychologist
USA
1992
Adapted Mind [1992: editor with John Tooby and John Barkow]
People can easily detect rule breaking in social interactions.

John Campbell [Campbell, John]
psychologist
USA
1994
Past, Space, and Self [1994]
He studied about self.

Robin Dunbar [Dunbar, Robin]
psychologist
England
1996
Grooming, Gossip, and the Evolution of Language [1996]
Language replaced grooming in larger social groups.

Celia M. Heyes [Heyes, Celia M.]
psychologist
USA
1996 to 1998
Social Learning in Animals: The Roots of Culture [1996: editor with B. G. Galef]; Theory of mind in non-human primates [1998]
Chimpanzees have no sense of self and no awareness of mental states, though they can inspect their bodies using mirrors.

Terrence Deacon [Deacon, Terrence]
psychologist
England
1997
Symbolic Species [1997]
Brain and language allow symbolic communication {symbolic species}.

Paul Bloom [Bloom, Paul]
psychologist
USA
2000
How Children Learn the Meanings of Words [2000]
He studied language.

Marc D. Hauser [Hauser, Marc D.]
psychologist
USA
2000
Wild Minds: What Animals Really Think [2000]
Tamarin monkeys are curious about their bodies and movements that they see in mirrors, unlike cats and dogs. Monkeys can have sense of self.

Cynthia I. Breazeal [Breazeal, Cynthia I.]
computer scientist
USA
2001
Designing Sociable Robots [2001]
Kismet is robot head whose parts can move like human head parts. If it is too close to see, it cranes back, and if it is too far, it cranes forward. It checks for movement, skin color, and saturated colors and looks in weighted direction. State depends on happiness, stimulation, and willingness for new stimuli. State affects where it looks. It checks pitch for patterns of approving, disapproving, drawing attention, and soothing, but it has no language ability. It can make sounds in pitch patterns. It can move eyebrows, lips, and ears to reflect happiness, stimulation, and willingness for new stimuli.

SOCI>Psychology>History>Cognition

Carl Georg Lange [Lange, Carl Georg]
psychologist/philosopher
Copenhagen, Denmark
1885

Emotions [1885]

He lived 1834 to 1900 and was materialist. Only humans can understand and use number system. Ability to use number system and abstract space properties is innate. Emotion is bodily changes evoked by perceiving external stimuli.

James R. Angell [Angell, James R.]

psychologist

USA

1904 to 1905

Psychology: An Introductory Study of the Structure and Function of Human Consciousness [1904 and 1905]

He lived 1869 to 1949 and founded Chicago functionalist school {functionalism, Angell}. He emphasized physiological processes underlying cognition and behavior. Reaction times depend on both sense and muscle reaction times. Practicing reduces individual reaction-time differences.

William McDougall [McDougall, William]

psychologist

Britain

1911 to 1933

Body and Mind [1911]; Outlines of Psychology [1923]; Outline of Abnormal Psychology [1926]; Energies of Man [1933]

He lived 1871 to 1938. People have purposes and goals that explain thoughts and actions. Emotion happens after thwarted drives. He studied explicit recognition and implicit recognition [McDougall, 1924].

Jean Piaget [Piaget, Jean]

psychologist

Geneva, Switzerland

1923 to 1971

Language and Thought of the Child [1923]; Child's Conception of the World [1926]; Child's Conception of Physical Reality [1926]; Origins of Intelligence in Children [1952]; Child's Construction of Reality or The Construction of Reality in the Child [1954 or 1955]; Mechanisms of Perception [1961]; Psychology of the Child [1969]; Insights and Illusions of Philosophy [1971: translated by W. Mays]

He lived 1896 to 1980 and was constructivist. He studied children's cognitive development and developed cognition tests. He asked children to describe what mountains look like if they are at different locations {mountain test}. He asked what happens to liquid slopes in glass jars as they tilt. He asked what happens to liquid levels if poured into various-diameter jars {conservation test}. He wanted to make epistemology experimental science and so unify biology and logic.

Knowledge is symbolic structure. Existing knowledge structures modify perceptual input {assimilation, Piaget} and change to adapt to perceptual input {accommodation, Piaget}. Mind has cognitive processes. Self-regulating processes compare thesis to anti-thesis and synthesize contradictories {constructivism, Piaget} {dialectical constructivism}, by examining context and premises at each step. Psychological development is not only emergence of innate properties through biological maturation but also requires dialectical constructivism, as personal experience conflicts with its anti-thesis. Psychological development thus depends on active exploration to gain experiences.

In early childhood, experience involves only behaviors. Later, thought can reconstruct behavior. By middle childhood, knowledge is about objects. In early adolescence, verbal knowledge, formal reasoning, and deductive thinking develop.

"Intelligence is what you use when you do not know what to do."

Schemas exist in long-term memory and interact with other schemas {Genevan model} {Piagetian model}. Memory strength depends on schema integration. Memory has three factors: external object or fact, unconscious schema sets {memory significate}, and conscious representations {signifier}. Encoding and recall make memory significate.

Lev Semionovich Vygotsky [Vygotsky, Lev Semionovich]

psychologist

Moscow, Russia

1925 to 1934

Psychology of Art [1925]; Pedagogical Psychology [1926: with Alexei N. Leontiev]; Tool and Symbol in Children's Development [1930]; Thought and Language or Thinking and Speech [1934]

He lived 1896 to 1934 and studied significative behavior. Culture, including language, changes consciousness structure. Thought and speech are first independent. Speech is for directly communicating needs. Then children imitate formal culture properties, such as language syntax. Then they internalize them, so they can plan and think about themselves as subjects and objects [Vygotsky, 1930]. People learn best when material is only slightly above their current knowledge {zone of proximal development}.

Charles Edward Spearman [Spearman, Charles Edward]
psychologist
USA
1927
Abilities of Man [1927]
He lived 1863 to 1945, studied cognition principles, invented tetrad equation, and developed a two-factor intelligence theory. Perhaps, intelligence has general factor {mental energy}, which allows good performance on all mental tests {general ability}. General factor results from relations among primary intelligence factors.

Albert Michotte [Michotte, Albert]
psychologist
Belgium/France
1946 to 1962
Perception of Causality [1946]; Causality, Permanence, and Phenomenal Reality [1962]
He lived 1881 to 1965. Interactions among objects moving in space and time reveal causality. Experience of causality depends on actual object movements and the idea that moving objects can cause other objects to move {launching} {entraining}.

Wayne H. Holtzman [Holtzman, Wayne H.]
psychologist
USA
1956 to 1961
Inkblot Perception and Personality: Holtzman Inkblot Technique [1961]
He lived 1923 to ?, studied cognitive styles, and developed inkblot tests {Holtzman Inkblot Technique} [1956].

Jerome S. Bruner [Bruner, Jerome S.]
psychologist
USA
1956 to 1996
Study of Thinking [1956: with Jacqueline J. Goodnow and George A. Austin]; Process of Education [1960]; Man: A Course of Study [1966]; Towards a Theory of Instruction [1966]; Relevance of Education [1971]; Going Beyond the Information Given [1973]; Acts of Meaning [1990]; Culture of Education [1996]
He lived 1915 to ? and studied thinking strategies, child development, and cultural psychology.
Play has rules, and people distinguish it from reality. Creativity requires playing. For solving problems, playing with needed materials is as effective as seeing complete solution.
Memories can have no records but just be changes in whole organism skills and rules. Memories can be records about people, places, times, and events.

Leon Festinger [Festinger, Leon]
psychologist
USA
1957 to 1959
Theory of Cognitive Dissonance [1957]; Cognitive consequences of forced compliance [1959: with J. M. Carlsmith]
He lived 1919 to 1989. Inconsistencies in themselves or environment {cognitive dissonance, Festinger} can cause tension. People try to reduce cognitive dissonance.

Dean E. Woolridge [Woolridge, Dean E.]
psychologist
USA
1963 to 1968

Machinery of the Brain [1963]; Mechanical Man: The Physical Basis of Intelligent Life [1968]
He studied behavior and cognition.

Michael S. Gazzaniga [Gazzaniga, Michael S.]
psychologist
USA
1970 to 1992
Bisected Brain [1970]; Integrated Mind [1978: with Joseph LeDoux]; Social Brain [1980]; Nature's Mind [1992]
He lived 1939 to ? and developed interpreter theory.

Gordon G. Gallup [Gallup, Gordon G.]
psychologist
USA
1970 to 1998
Chimpanzees: self-recognition [1970]; Animal Self-awareness: A Debate. Can Animals Empathize? Yes [1998]
Chimpanzees, orangutans, bonobos, and humans over two years old can use their reflections in mirrors to perceive their bodies and direct actions. They can recognize themselves and have sense of self. Gorillas, monkeys, and children under two do not.

Gerhard Werner [Werner, Gerhard]
psychologist
USA
1974 to 1990
Feature Extraction by Neurons and Behavior [1974: editor]; Performance evaluation with stochastic graphs of parallel programming in multiprocessors with study method [1990: with Franz Sötz]
He studied pattern recognition.

Daniel Wegner [Wegner, Daniel]
psychologist
USA
1980 to 2002
Self in Prosocial Action [1980]; White Bears and Other Unwanted Thoughts [1989]; You can't always think what you want [1992]; Apparent mental causation: Sources of the experience [1999: with Thalia P. Wheatley]; Illusion of Conscious Will [2002]
He lived 1948 to ? and invented the priority principle [Wegner, 2002].

Robert Jastrow [Jastrow, Robert]
psychologist
USA
1981
Enchanted Loom [1981]
He studied brain anatomy.

Donald R. Griffin [Griffin, Donald R.]
psychologist
USA
1981 to 2001
Question of Animal Awareness [1981]; Animal Thinking [1984]; Animal Minds [2001]
He studied animals.

Yoh-Han Pao [Pao, Yoh-Han]
psychologist
USA
1982
Context-Directed Pattern Recognition and Machine Intelligence Techniques for Information Processing [1982: with George W. Ernst]

He studied pattern recognition.

Andras Pellionisz [Pellionisz, Andras]
psychologist
USA
1982
Brain modeling by tensor network theory and computer simulation [1982: with R. Llinas]
He studied mental models.

Stoyan O. Kableshkov [Kableshkov, Stoyan O.]
psychologist
Russia
1983
Anthropocentric Approach to Computing and Reactive Machines [1983]
He studied mental models.

John R. Anderson [Anderson, John R.]
psychologist
USA
1983 to 1995
Architecture of Cognition [1983]; Learning and Memory: An Integrated Approach [1995]
He studied learning, memory, and cognition.

Zenon W. Pylyshyn [Pylyshyn, Zenon W.]
psychologist
USA
1984
Computation and Cognition [1984]
He lived 1937 to ?.

Steven Pinker [Pinker, Steven]
psychologist
USA
1985 to 2002
Visual Cognition [1985]; Learnability and Cognition [1989]; Language Instinct [1994]; How the Mind Works [1997]; Blank Slate [2002]
He studied language and cognition relative to genetics and environment.

Max Delbruck [Delbruck, Max]
psychologist
Germany/USA
1986
Mind from Matter? [1986]
He studied mind in animals.

John J. Hopfield [Hopfield, John J.]
psychologist
USA
1986
Computing with Neural Circuits, A Model [1986: with David W. Tank]
Computation has input data, data transformations, and output {solution, Hopfield}. Brain uses algorithms to transform sense input and brain memories into motor output. Connected, non-linear, graded-response units can model brain representations, transformations, and outputs. Models use continuous analog dynamic functions, which can optimize.

Terry Winograd [Winograd, Terry]

psychologist
USA
1986
Understanding Computers and Cognition [1986: with Fernando Flores]
He lived 1946 to ?.

Susan Carey [Carey, Susan]
psychologist
USA
1987
Conceptual Change in Childhood [1987]
She studied development.

George Lakoff [Lakoff, George]
psychologist
USA
1987
Women, Fire and Dangerous Things [1987]
He studied cognition.

Mardi J. Horowitz [Horowitz, Mardi J.]
psychologist
USA
1988 to 1998
Psychodynamics and Cognition [1988]
Unconscious interactions {psychodynamics} among motives, to achieve wishes, avoid potential threats, and use control processes, provide basis for personality and personality disorders. Control processes include defenses to prevent threats.

Merlin Donald [Donald, Merlin]
psychologist
England
1991
Origins of the Modern Mind [1991]
Brain and culture allow cognition.

George Kampis [Kampis, George]
biologist
USA
1991
Self-Modifying systems in biology and cognitive science [1991]
Algorithms cannot provide new information.

Robert Rosen [Rosen, Robert]
biologist
USA
1991
Life Itself: A comprehensive Inquiry into the nature, origin, and fabrication of life [1991]
Nature does not use computations or simulations.

Gerald Fischbach [Fischbach, Gerald]
psychologist
USA
1992
Mind and Brain [1992]
He studied brain anatomy.

Doreen Kimura [Kimura, Doreen]
psychologist
USA
1992
Sex Differences in the Brain [1992]
She studied gender brain differences.

Joseph E. LeDoux [LeDoux, Joseph E.]
psychologist
USA
1996
Emotional Brain [1996]
Amygdala quickly receives input from thalamus and gives emotional responses. Amygdala more slowly receives from cortex, which analyzes stimulus.

Denise Dellarosa Cummins [Cummins, Denise Dellarosa]
psychologist
USA
1998
Evolution of Mind [1998: editor with Colin Allen]
She studied brain evolution.

Ian Glynn [Glynn, Ian]
psychologist
England
1999
Anatomy of Thought [1999]
He studied brain anatomy.

Michael Tomasello [Tomasello, Michael]
psychologist
USA
1999
Cultural Origins of Human Cognition [1999]
Chimpanzees do not imitate but learn cultural traits by being in same situation.

Philip D. Zelazo [Zelazo, Philip D.]
psychologist
USA
1999 to 2007
Developing theories of intention: Social understanding and self-control [1999: with Astington and Olson]
He invented a consciousness model with conscious-content recursion levels (Levels of Consciousness model), from perception, to self-perception, to other minds, and to social competence.

Gary Marcus [Marcus, Gary]
psychologist
USA
2001 to 2004
Algebraic Mind [2001]; Birth of the Mind [2004]
He studied mind and brain.

SOCI>Psychology>History>Consciousness

Sigmund Freud [Freud, Sigmund]
psychoanalyst

Austria

1895 to 1939

Studies in Hysteria [1895: with Marcel Breuer]; Project for a Scientific Psychology [1898 to 1899]; Interpretation of Dreams [1900]; Psychopathology of Everyday Life [1901]; Wit and its Relation to the Unconscious [1905]; Three Contributions to the Theory of Sexuality [1906]; Five Lectures on Psycho-Analysis [1909]; Totem and Taboo [1913]; Introductory Lectures on Psycho-Analysis [1915 to 1917]; Beyond the Pleasure Principle [1920]; Ego and the Id [1923]; Question of Lay Analysis [1926]; Civilization and Its Discontents [1930]; New Introductory Lectures on Psychoanalysis [1933]; Inhibitions, Symptoms and Anxiety [1936]; Moses and Monotheism [1939]; Outline of Psycho-Analysis [1939]

He lived 1856 to 1939. He invented a psychodynamic topographic mental model [1900], with rational conscious awareness, rational preconscious memories, and irrational unconscious desires. Later [1926 to 1933], he invented a psychodynamic structural model, with id ("it" in German), ego ("I" in German), and superego ("above-me" in German).

Dreams have meaning, can be about infantile wishes and thoughts, and have understandable symbols. Dream has images {manifest dream content}. Dreams have underlying ideas {latent dream content}, which are wishes, memories, and fantasies about emotional reactions that happened in early infancy. Latent content transforms into manifest content by condensation, displacement, dramatization, and representation, followed by secondary elaboration or revision {dream work}. Dream work tries to evade latent-content censorship by choosing acceptable manifest content. Dream transforms many or separated ideas into one image {condensation, dream}. Dream can attribute emotional significance to unimportant object {displacement, dream}. Dream can transpose thought into imagery. Dream can represent abstract ideas metaphorically by concrete images {representation, dream}. Dreams further distort or elaborate after waking {secondary elaboration}. Symbolic representations {primal symbolism} can be consistent in human dreams. Such symbols always have censored meaning, independent of manifest content, for example, symbols for male and female genitalia. Repetitive dreams reenact traumatic episode in recent experience.

In diagnosing hysteria, he used free association to reveal unconscious desires and used proper interpretation to find hysteria causes. Neurosis can result as people actively try not to remember painful, distressing, or stressful events or try to repress desires, typically sexual desires {libido, Freud}, and become unconscious of their motivations {repression, Freud}. Desires begin in infantile sexual molestation {seduction theory}, incestual feelings, or sexual desire {polymorphous perversity}.

However, many supposed experiences are imaginary fantasies that started in early years, even in infancy.

Morals block instinctual motivations, causing conflict, which causes repression of motive into unconscious. Mind can repress memories, fantasies, and thoughts associated with painful, embarrassing, or anxious emotions. Mind breaks links between ideas and emotions, but mind cannot repress emotions, which build up unless released. From fear of punishment, drives cause anxiety. Repression causes desires to express in unusual or pathological ways. Repression of bad memories becomes available after age five.

Repression causes amnesia about childhood.

In neuroses, instinctual energy expresses itself in hysteria. If people can perceive what the ways actually mean, using analysis supplied by trained person, pathology can stop {psychoanalysis, Freud}. Revealing underlying emotion and drive can treat hysteria {abreaction, Freud}. He treated hysteria using hypnosis. Hypnosis can reenact experiences that cause hysteria, to express emotions freely {catharsis, emotion}. In psychoanalysis, hypnosis involves identification.

Humor is mixture of incongruity, relief, and conflict theories [1905].

Sexual development starts in infancy with oral phase, then anal phase, and then sexual phase. Development can stop at any stage. Young children love opposite-sex parent and hate same-sex parent {Oedipus complex, Freud}. Child development can stop if rivalry with same-sex parent does not resolve through identification with parent. Child development can stop if sexual feelings for opposite-sex parent do not transfer to sexual partner outside family. Relationship between mother and child before this development stage affects oedipal impulses.

People start with unconscious instinctual energy {id}, for needs, drives, impulses, and emotions, which uses no logic, ignores external reality, and depends on the pleasure principle. They develop rational conscious mental structures and processes {ego, Freud}, which reject id, from id and adapt to maximize pleasure and minimize unpleasant. They consciously learn morality, social values, and unconscious identification with parents and their values, which cause conscience, shame, guilt, and internal standard that regulates moral conduct {super-ego} {ego-ideal}, which represses bad thoughts and gets energy from id. Superego is part of ego and develops before age five or six {oedipal period}. Judgments and prohibitions internalize {introjection, Freud} in early childhood, before child is able to question them. Feelings of hostility towards either or both parents neutralize. Conscience originates in identifying with parents and repudiating childhood. Later, teachers, admired friends, and social and moral education influence superego. Successful personality development {ego strength} depends on defenses against instinctual drives and on adaptations to social

situations. People can learn to accept society external authority more than their internal drives and values {adaptation, society}.

Unconscious mind contains repressed fantasies, memories, and thoughts, which can be self-destructive. Unconscious impulses {death-wish} can wish to end individual existence.

People have instinctual sexual-drive libido. Sexual energy builds up in body with unmet biological needs {cathexis}. Pleasure results when biological-need gratification discharges stored energy {pleasure principle}. Frustrating gratification builds stored energy {hypercathexis} and causes unpleasure. Failure to protect peripheral receptors from excessive or prolonged stimulation can cause unpleasure. Libido can channel into socially acceptable behavior {sublimation, desire}.

Theology

Eros is life instincts of sex libido, hunger, and thirst. Thanatos is death instincts of aggression, self-destruction, and sadism. Totems represent father, in oedipal conflict. Taboos represent, at first, renunciating incest. Religion involves love and fear of God. God is like father to religious believers, who are like his children. People wish this state to be true and so have illusion.

Edward Bradford Titchener [Titchener, Edward Bradford]

psychologist
USA
1901 to 1915

Experimental Psychology: a Manual of Laboratory Practices [1901 and 1905]; Lectures on the Elementary Psychology of Feeling and Attention [1908]; Lectures on the Experimental Psychology of the Thought Processes [1904]; Text-book of Psychology [1909 to 1910]; Beginner's Psychology [1915]

He lived 1867 to 1927, studied sensation and attention, and trained in introspection. He invented Titchener-circles illusion. He tried to catalog all mental elements, to find consciousness structure. Mind combines units to make objects and perceptions {structuralism, Titchener}.

Carl Gustav Jung [Jung, Carl Gustav]

psychologist
Zurich, Switzerland
1917 to 1961

On the Psychology of the Unconsciousness [1917]; Psychology and Alchemy [1944]; Man and His Symbols [1944]; Mysterious Conjunctions [1956: about alchemy]; Memories, Dreams, Reflections [1961]

He lived 1875 to 1961, founded a psychoanalysis variant {analytic psychology}, and studied psychoanalysis, symbols, myth, and cognitive styles.

People have effects {personality complex} that make a personality type. Personality types are meditative, inhibited, and withdrawn {introversion, Jung}; outgoing, active, and lively {extroversion, Jung}; or mixture {ambiversion, Jung}. Personality types depend on two opposites: feeling compared to thinking and sensation compared to intuition.

People develop in historical and cultural context, which gives life meaning, dignity, and purpose. People know unconsciousness culture, which has central objects {archetype, culture}. People also have primal symbols, which are innate and independent of history and culture. Dreams and visions include archetypes and symbols with emotional content, which all people share and which indicate destiny.

People can undergo crisis in middle life and need to achieve mental integration {individuation, Jung}.

Aesthetics

Spontaneous emergence of archetypal forms shows that people have innate symbols universally accepted as beautiful. Aesthetic sensibility developed over millions of years, as people learned to make and use tools and to undertake cooperative projects.

Georg Groddeck [Groddeck, Georg]

psychoanalyst
Austria
1928

Id [1928]

He lived 1866 to 1934 and studied unconscious self.

Edwin Garrigues Boring [Boring, Edwin Garrigues]

psychologist

USA
1929 to 1950
History of Experimental Psychology [1929 and 1950]; Sensation and Perception in the History of Experimental Psychology [1942]
He lived 1886 to 1968, reviewed sensation and perception, and studied consciousness physical dimensions.

Jacques Lacan [Lacan, Jacques]
psychoanalyst
Paris, France
1932 to 1968
On paranoid psychosis and its relationships with personality [1932]; Seminar of Jacques Lacan [1953 to 1960]; Language of the Self: The Function of Language in Psychoanalysis [1968]
He lived 1901 to 1981 and interpreted Freud by comparing unconscious to language structures. Spoken language creates person.

Fred Attneave [Attneave, Fred]
psychologist
USA
1961
In Defense of Homunculi [1961]
He lived 1919 to ?. Reticular formation can be conscious. Homunculus can be new substance. It can need previous homunculi to know later ones.

Benjamin Libet [Libet, Benjamin]
physician
USA
1966 to 1993
Brain stimulation and the threshold of conscious experience [1966]; Electrical stimulation of cortex in human subjects and conscious sensory aspects [1973]; Neurophysiology of Consciousness [1993]; Volitional Brain [1999: with Anthony Freeman and Keith Sutherland]
He studied backward referral in time, Libet's delay, neuronal adequacy, readiness potential, and time-on theory [Libet, 1993]. Neural events can make experiences have unity {conscious mental field} (CMF). CMF can affect neurons and allows subjective experience.

Roger W. Sperry [Sperry, Roger W.]
psychologist
USA
1968 to 1985
Hemisphere Deconnection and Unity in Conscious Awareness [1968]; Lateral specialization in the surgically separated hemispheres [1974]; Science and Moral Priority [1985]
He lived 1913 to ? and studied split brain. Brains are neural-network collections. They regulate each other. Consciousness emerges from activities in neural networks, and consciousness regulates networks.

Carlos Castaneda [Castaneda, Carlos]
psychologist
USA
1968 to 1993
Teachings of Don Juan [1968]; Separate Reality [1971]; Journey to Ixtlan [1973]; Power of Silence [1987]
He lived 1925 to 1998 and talked about peyote and consciousness.

Endel Tulving [Tulving, Endel]
psychologist
Canada
1972 to 1983
Organization of Memory [1972: editor with W. Donaldson]; Elements of Episodic Memory [1983]
He lived 1927 to ? and studied autonoetic consciousness and noetic consciousness [Tulving, 1983].

Philip N. Johnson-Laird [Johnson-Laird, Philip N.]
psychologist
USA
1972 to 1988
Psychology of Reasoning [1972]; Mental Models [1983]; Computer and the Mind [1988]
Consciousness is like computer operating system.

Julian Jaynes [Jaynes, Julian]
psychologist
USA
1976
Origin of Consciousness in the Breakdown of the Bicameral Mind [1976]
He lived 1920 to 1997. Consciousness arose when brain hemispheres acquired different specialized functions and unified them. Even at Homer's time, mind was not aware of itself. People seem not to have will or mind. They acted based on thoughts or impulses seemingly from separate places, which they attributed to gods. Left and right hemispheres were separate. As left hemisphere specialized for language, it allowed introspection, control, and integration.

Robert E. Ornstein [Ornstein, Robert E.]
psychologist
USA
1977 to 1997
Psychology of Consciousness [1977 and 1986]; Evolution of Consciousness [1991]; Right Mind [1997]
Brain has many modules that act together.

Gerald M. Edelman [Edelman, Gerald M.]
psychologist
USA
1978 to 2004
Mindful Brain: Cortical Organization and the Group-Selective Theory of Higher Brain Function [1978: with Vernon B. Mountcastle]; Neural Darwinism: The Theory of Neuronal Group Selection [1987]; Topobiology: an Introduction to Molecular Embryology [1988]; Remembered Present: A Biological Theory of Consciousness [1989]; Bright Air, Brilliant Fire: On the Matter of the Mind [1992]; Universe of Consciousness: How Matter Becomes Imagination [2000: with Guilio Tononi]; Wider than the Sky [2004]
He studied developmental selection, dynamic core, experiential selection, neural Darwinism, and neuronal-group selection [Edelman, 2003].

Douglas Hofstadter [Hofstadter, Douglas]
computer scientist
USA
1979 to 2007
Godel, Escher, Bach: an Eternal Golden Braid [1979]; Mind's I [1982: with Daniel Dennett, editors]; I Am a Strange Loop [2007]
Mental events are recursive self-representational loops {strange loop}. The physical basis of loops is the molecular-behavioral loop. Consciousness is higher-order thoughts or reports accompanying unconscious mental states, so brain can monitor itself {higher-order thought, Hofstadter}. This control system allows recursion through self-representations. Mental states have different levels.
Brain has complex patterns, some of which are self-referentional. Lower animals, mammals, primates, children, adults, brain-damaged adults, and senescent people have no, some, half, medium, or high self-reference. Also, self-reference can have one, some, many, or infinite numbers of levels. People can nest things to infinite self-reference. Brain complex patterns are entirely physical at microscopic levels but have descriptions, and causes and effects, that use intentions at higher levels. Self-reference threatens paradox, runaway feedback, inconsistency, and incompleteness.
Strange loops feed back, cross levels, and go back to previous loop stages.
By the theory of types, a set cannot contain itself and a proposition cannot refer to itself.

A true proposition has a proof, which makes it true. A false proposition has no proof, showing it is false. False propositions lead to contradictions.

A different integer can represent each symbol. The sequence of primes can represent each position in a string. The prime raised to the integer represents the symbol at the position. For example, if symbol = is at position 1 and integer 5 represents symbol =, 2^5 = 32 represents the string "=". For more than one position, multiply the primes raised to powers. For example, if integer 2 represents symbol 4, the string "= 4" can be 2^5 * 3^2 = 288. In reverse, knowing the number 288 (Gödel number) and factoring into primes gives the symbol string. Formulas and Gödel numbers have one-to-one mapping and so are analogous. Their meanings are the same, but the concepts differ. Natural numbers can represent any pattern, have unlimited expressivity, and are like universal language.

Formal systems cannot prove that a Gödel number is the number of a true formula.

Symbol strings can represent propositions and inference rules, or not. Proofs derive propositions from previous propositions using rules of inference, and arithmetic calculations on proposition and rule Gödel numbers are equivalent to proofs. Proofs have Gödel numbers.

Some proposition Gödel numbers are in a system, as valid formulas, and the rest are out. Valid formulas come recursively from earlier valid formulas and must get larger. Some proposition Gödel numbers are valid formulas and provable. Provable formulas come recursively from earlier valid formulas and can be smaller or larger.

By describing Gödel numbers using their computation methods, formulas can contain their Gödel numbers. Proposition subjects and verb phrases have smaller Gödel numbers than whole propositions. Propositions can have verb phrases as subjects. Propositions about themselves are not provable.

In formal systems, proofs always find true propositions (consistency). If propositions about themselves were provable, formal systems find that the statement "propositions about themselves are not provable" is false. This is inconsistent.

Formal systems can prove all true propositions (completeness). If propositions about themselves are not provable, formal systems cannot find the true statement "propositions about themselves are not provable". This is incomplete.

I is a symbol that perception sometimes triggers in brains. I becomes larger over development, with more perceptions, results of actions, memories, beliefs, goals, feelings, and imaginings. Brain has structures larger than molecules and neurons and even neuron assemblies and brain regions. Such structures correspond with objects and events in the physical world and so are analogies.

Brains have many symbols and can make symbol patterns. Some brains can make symbol patterns that refer to symbol patterns. Symbol patterns can communicate.

Universal Turing machines can read and write descriptions of themselves (and so any machine).

Geoffrey Underwood [Underwood, Geoffrey]

psychologist
USA
1979
Aspects of Consciousness [1979: editor with Robin Stevens]
He studied forgetting and learning transfer.

Colin McGinn [McGinn, Colin]

psychologist
England
1982 to 1999
Character of Mind [1982]; Subjective View [1983]; Mental Content [1989]; Problem of Consciousness: Essays Toward a Resolution [1991]; Mysterious Flame [1999]

Consciousness contents are either sensory or propositional. Sensory content is mental image or actual object. Propositional content is statement. Content is what people are aware of, rather than conscious state itself.

Perhaps, minds cannot understand or explain consciousness {mysterianism, McGinn}. People cannot perceive or conceive how brain can make consciousness. Thinking is always spatial but consciousness is non-spatial. People can only understand something if it has simpler parts, parts have relations and combine in specific ways, and combinations let properties emerge {Combinatorial Atomism with Lawlike Mappings} (CALM). Introspection is knowledge by acquaintance and needs no concepts or thinking. Introspection shows that consciousness is not spatial.

Perhaps, before universe origin, everything had no matter, mass, size, or shape. Perhaps, consciousness is about non-spatial-property worlds. Complex brains somehow enable recreating that reality.

Philosophical problems have four answer types: deflationary reductionism, irreducibility, magical, eliminativism (DIME).

Peter E. Morris [Morris, Peter E.]
psychologist
England
1983
Imagery and Consciousness [1983: with Peter J. Hampson]
He studied imagery.

Ray Jackendoff [Jackendoff, Ray]
psychologist
USA
1983 to 2002
Semantics and Cognition [1983]; Consciousness and the Computational Mind [1987]; Semantic Structures [1990]; Languages of the Mind [1992]; Patterns in the Mind [1993]; Foundations of Language [2002]
He studied information structure and intermediate-level theory of consciousness [Jackendoff, 2002].

Stephen LaBerge [LaBerge, Stephen]
psychologist
USA
1985 to 1990
Lucid Dreaming [1985]; Exploring the World of Lucid Dreaming [1990]
He lived 1947 to ?. People can be aware that they are dreaming when they have lucid dreaming, in phasic REM sleep. They can perform voluntary acts, such as moving eyeballs and changing breathing rate, but REM inhibits other muscles.

Ernest R. Hilgard [Hilgard, Ernest R.]
psychologist
USA
1986
Divided Consciousness: Multiple Controls in Human Thought and Action [1986]
He invented neo-dissociation theory.

Guy Claxton [Claxton, Guy]
psychologist
England
1986 to 1997
Beyond Therapy [1986: editor]; Noises from the Darkroom [1994]; Hare Brain Tortoise Mind [1997]
When brain evolved to respond quickly to emergency by having high alertness, consciousness began as just concomitant. As people came to have continuing little emergencies, consciousness persisted.

Lawrence Weiskrantz [Weiskrantz, Lawrence]
psychologist
England
1986 to 1997
Blindsight [1986]; Consciousness Lost and Found [1997]
Amnesiacs can respond to cues {priming, Weiskrantz} and so improve ability to recognize [1968: with Elizabeth Warrington]. He asked subjects to press key and give commentary about whether they perceived stimulus {commentary-key paradigm}.

Marian Stamp Dawkins [Dawkins, Marian Stamp]
psychologist
England
1987
Through Our Eyes Only? The Search for Animal Consciousness [1987]
Animals can suffer. Measuring suffering level observes effort that animal exerts to avoid or escape from cause. Animals with more complex behaviors probably can have more suffering. Animals with more complex physiology

probably can have more suffering. Animals use signals, such as skin color. They also can recognize species individuals and other species.

Bernard J. Baars [Baars, Bernard J.]
psychologist
England
1988 to 1997
Cognitive Theory of Consciousness [1988]; In the Theater of Consciousness [1997]
He lived 1946 to ? and studied contrastive analysis, deep context, global workspace, self-concept, and self-systems. Global workplace is an extended reticular thalamocortical activating system (ERTAS) [Baars, 2002].

Vilayanur S. Ramachandran [Ramachandran, Vilayanur S.]
psychologist
India
1988 to 2001
Perception of shape from shading [1988]; Phantoms in the Brain [1998: with Sandra Blakeslee]; Synaesthesia: a window into perception, thought and language [2001: with Edward M. Hubbard]; Hearing Colors, Tasting Shapes [2003: with Edward M. Hubbard]; Brief Tour of Human Consciousness [2004]
He lived 1951 to ?. He invented the bumps and hollows illusion and studied filling-in. He developed Utilitarian Theory of Perception. Perhaps, people produce art to play or to gain pleasure, to stimulate perceptions and exercise art laws. Perhaps, people produce art to show hand-eye coordination and attract mates. Perhaps, people want art to show wealth and attract mates, so they order art. Perhaps, people rehearse abstracting future activity. Perhaps, art has ten universal laws. Art shows and possibly amplifies individual differences from average {peak shift}. Art discovers abstract triggers of perception used by brain to recognize objects and possibly amplifies them. Perception groups surfaces that share feature to make one object {grouping}, so art uses shared features. Mind has to solve problems to perceive {perceptual problem solving}, so art encourages camouflage and ambiguity. Art uses as few features as possible in the outline {understatement, art} {isolation, art}. Art uses composition with balanced opposites {contrast, art}. Art uses composition with various symmetry forms {symmetry, art}. Art depicts universals, not chance or random coincidences. Art uses composition, including rhythm and repeats {repetition, art}, and arrangements of geometry and intensity {balance, art}. Art combines unrelated objects to emphasize feature {metaphor, art}.

David Rosenthal [Rosenthal, David]
psychologist
USA
1991
Nature of Mind [1991]
Consciousness is higher-order thoughts about representations {higher-order thought theory, Rosenthal} {meta-representation, Rosenthal}.

Stephen Stich [Stich, Stephen]
psychologist
USA
1991
From Folk Psychology to Cognitive Sciences [1991A]
He developed a materialist psychology, with no mind {eliminative materialism, Stich}.

Owen Flanagan [Flanagan, Owen]
psychologist
USA
1991 to 2002
Science of the Mind [1991]; Consciousness Reconsidered [1992]; Dreaming Souls [2000]; Problem of the Soul [2002]
He studied mind and dreaming.

Petra Stoerig [Stoerig, Petra]
psychologist

Germany
1991 to 2002
She lived 1957 to ? and studies blindsight.

G. William Farthing [Farthing, G. William]
psychologist
USA
1992
Psychology of Consciousness [1992]
He studied amnesia.

A. David Milner [Milner, A. David]
psychologist
USA
1992
Neuropsychology of Consciousness [1992: with M. D. Rugg]

Semir Zeki [Zeki, Semir]
psychologist
USA
1992 to 1993
Visual Image in Mind and Brain [1992]; Vision of the Brain [1993]
He studied microconsciousness [Zeki, 1998] and essential nodes [Zeki, 2001]. In area V5, cells detect spot or line motion direction. In V4, cells detect color difference. Cells can respond to relative intensities at different wavelengths or to actual perceived color, which depends on surroundings. Adjacent to primary visual cortex, cells can detect line orientation, receptive fields are larger, and mapping varies.

Kevin O'Regan [O'Regan, Kevin]
psychologist
England
1992 to 2001
He lived 1948 to ? and studied enactive perception. Perception depends on sense and motor actions. It is not about representation but about capacity to do something.

Antonio Damasio [Damasio, Antonio]
psychologist
USA
1992 to 2003
Brain and Language [1992: with Hanna Damasio]; Descartes' Error: Emotion, Reason, and the Human Brain [1994]; Feeling of What Happens [1999]; Looking for Spinoza [2003]
He studied extended consciousness, autobiographical self, core-self, proto-self, somatic marker, akinetic mutism, and epileptic automatism.
Consciousness involves special brain regions, which attend to brain regions that regulate body. Wakefulness, attention, and consciousness are separate. Consciousness involves perceptions and emotion mental parts, because emotions precede consciousness. Consciousness is response but is not overt.
Emotion is an innate pattern of chemical and neural responses to stimulus patterns. Emotions involve brainstem, hypothalamus, and basal forebrain, which regulate body. Reticular formation, cranial nerve nuclei, amygdala, anterior cingulate, and ventromedial prefrontal cortex send axons to periaqueductal gray (PAG), which coordinates emotions. Damage to ventromedial prefrontal cortex reduces social behaviors and emotions {prefrontal lobe syndrome}. Different emotions involve different brain regions. Emotions are automatic but learning and consciousness can affect them. Emotions lead to feelings, which involve cortex.
Images become explicit, consciously or unconsciously, in mental space {image space}. Memory, recall, movement, attention, and image processing are in implicit unconscious mental space {dispositional space}.
Symbols are mental image: spatial and temporal, concrete or abstract, conscious or unconscious, or mental patterns representing objects and concepts. Images depend on neural patterns of chemical and electrical activity. Mental uses symbols directly.

Cerebral association cortex recognizes stimulus, which sends signals to amygdala to trigger emotional reaction, which sends to basal forebrain, hypothalamus, and brainstem to perform reaction. Brain senses body changes and conveys information to trigeminal nucleus, parabrachial nucleus, nucleus tractus solitarius, ventral medial thalamus, insula, anterior cingulate, and ventromedial frontal lobes to make emotional state. Mental states arising from brain sensory events are feelings, which are ideas about body state, having both thoughts and processing methods [Damasio, 1999].

Susan Blackmore [Blackmore, Susan]
psychologist
England
1992 to 2004
Beyond the Body [1992]; Dying to Live [1993]; In Search of the Light [1996]; Meme Machine [1999]; Consciousness: An Introduction [2004]; Conversations on Consciousness [2006]
She invented dying brain hypothesis. People copy and recombine memes {memetics}. Imitation development associates with big brains and language. Imitation also allowed sense of self and other [Blackmore, 2006].

Chris J. S. Clarke [Clarke, Chris J. S.]
mathematician
England
1995
Nonlocality of Mind [1995]
Mind is non-local.

Susan Greenfield [Greenfield, Susan]
psychologist
England
1995
Journey to the Centers of the Mind [1995]; Private Life of the Brain [2000]; Brain Story [2000]; Tomorrow's People [2003]
She lived 1950 to ?. Consciousness level depends on brain size and complexity.

Thomas Metzinger [Metzinger, Thomas]
psychologist
USA
1995 to 2003
Conscious Experience [1995: editor]; Neural Correlates of Consciousness [2000: editor]; Being No One: The Self-Model Theory of Subjectivity [2003]
He lived 1958 to ?. Experience is unity {Holon}. Experience involves model of self {self-model theory}.

Steven Mithen [Mithen, Steven]
psychologist
England
1996
Prehistory of Mind [1996]
Consciousness starts from social interaction but then needs to expand to link brain modules. Mammals gained general ability to make primates, then specialized language and culture to make early hominins, and then general ability to make modern humans.

Stuart R. Hameroff [Hameroff, Stuart R.]
anesthesiologist
USA
1996 to 1998
Toward a Science of Consciousness: The First Tucson Discussions and Debates [1996: with Alfred W. Kaszniak and Anne C. Scott, editors]; Toward a Science of Consciousness II: The Second Tucson Discussions and Debates [1998: with Alfred W. Kaszniak and Anne C. Scott, editors]
He lived 1947 to ?. Anesthetics can interact with brain-cell microtubules.

David J. Chalmers [Chalmers, David J.]
philosopher
USA
1996 to 2002
Conscious Mind: In Search of a Fundamental Theory [1996]
He lived 1966 to ?. Information is physical and phenomenal, and physical properties cause phenomenal properties, so same physical situation can cause different phenomena {double-aspect theory, information} {naturalistic dualism}, which is non-reductive.
Judgments about experience have functional or physical explanations, but experience is not part of the explanation, even when the judgment is that experience is not physical or functional {paradox of phenomenal judgment}.
If artificial parts replace neurons with same functions, do qualia fade {fading qualia}?
If artificial parts switch back and forth with neurons with same functions, do qualia flip {dancing qualia}?
How do brain processes cause sensations {hard problem, consciousness}? How do brain processes cause mental functions like perceiving, attending, waking, sleeping, moving voluntarily, and categorizing {easy problem, consciousness}?
Consciousness supervenes on the physical but is a different reality type. Phenomena, conscious states, emerge from physical structures and functions according to laws. Before 1800, people thought electromagnetism was reducible to mechanics, but instead it became a new irreducible force. Phenomena are irreducible properties, not substances, of nature, requiring non-reductive theory. Experience properties, relations, and structures reflect nervous-system anatomy and physiology, as well as physical stimuli. Brain process can generate consciousness [Chalmers, 2000] [Chalmers, 2002].

Jonathan Shear [Shear, Jonathan]
psychologist
USA
1997
Explaining Consciousness: The Hard Problem [1997: editor]

Walter Schneider [Schneider, Walter]
psychologist
USA
1997
He invented, with Mark Pimm-Smith, a message-aware control mechanism, with inner loop for specific messages from sense modules, connected to controller with goals and attention.

Charles P. Siewert [Siewert, Charles P.]
psychologist
USA
1998
Significance of Consciousness [1998]
Thoughts {non-iconic thought} can have no images.

Stanislas Dehaene [Dehaene, Stanislas]
psychologist
USA
1998 to 2003
He invented global neuronal workspace theory, in which neurons have permanent and temporary modules connected over long and short distances, for perception, memory, attention, emotion, evaluation, and action.

Euan M. Macphail [Macphail, Euan M.]
psychologist
England
1999
Evolution of Consciousness [1999]
Only humans are self-consciousness and feelings, because only they have language.

Talis Bachmann [Bachmann, Talis]
psychologist
USA
2000
Microgenetic Approach to the Conscious Mind [2000]
Perception uses temporal steps {microgenesis, Bachmann} [Bachmann, 2000].

Max Velmans [Velmans, Max]
psychologist
England
2000 to 2007
Understanding Consciousness [2000]; Investigating Phenomenal Consciousness [2000]; How Could Conscious Experiences Affect Brains? [2003]; Blackwell Companion to Consciousness [2007: with Susan Schneider]
He lived 1942 to ? and is Critical Realist. Brain and mind are one, because physical world and experience have same place and time with similar intensities {reflexive monism}. He invented reflexive model of consciousness.

George Mandler [Mandler, George]
psychologist
USA
2002
Consciousness Recovered [2002]

Walter Freeman [Freeman, Walter]
psychologist
USA
2003 to 2004
He studied mind as neural dynamical system, in which waves have synchronous phase by phase locking and then transition to new phase. Brains are self-organizing systems in critical states that transition to global patterns.

SOCI>Psychology>History>Emotion

Stanley Schachter [Schachter, Stanley]
psychologist
USA
1956 to 1959
When Prophecy Fails [1956: with L. Festinger and H. Riecken]; Psychology of Affiliation [1959]
He lived 1922 to 1997. People with high or low adrenaline have same moods and so chemical levels do not cause emotions, with Jerome Singer. Moods depend on social-situation cognition. Arousal accompanies fear, sex, anger, and elation.
Differing expected and actual perception or cognition, or interrupting perception or cognition, produces undifferentiated autonomic nervous system arousal, especially in viscera. Arousal directs more attention to environment. General visceral arousal causes the feeling of emotion.
Thought, past-experience, and environmental-signal differences cause emotion differences, not visceral-arousal differences.

Daniel J. Povinelli [Povinelli, Daniel J.]
psychologist
England
1998
Animal Self-awareness: A Debate. Can Animals Empathize? Maybe Not [1998]
Chimpanzees have a sense of self from their behavior, but no awareness of mental states. Chimpanzees look to where another is looking. Chimpanzees do not realize that others are not looking, though three-year old children do realize it in same situation.

SOCI>Psychology>History>Intelligence

Alfred Binet [Binet, Alfred]
psychologist
Paris, France
1903
Experimental Study of Intelligence [1903]; Development of Intelligence in Children [1916: with Theodore Simon]
He lived 1857 to 1911 and developed Binet intelligence scale and intelligence quotient.

Edward Lee Thorndike [Thorndike, Edward Lee]
psychologist
USA
1903 to 1911
Educational Psychology [1903]; Animal Intelligence [1911]
He lived 1874 to 1949 and studied learning, education, testing, and animal intelligence. He studied instrumental learning, law of effect, law of exercise, law of readiness, operant conditioning, puzzle-box, reinforcement, and learning transfer [Thorndike, 1911]. Imitation is seeing action, remembering it, and then doing it.

Theodore Simon [Simon, Theodore]
psychologist
France
1905 to 1916
Development of Intelligence in Children [1916: with Binet]
He lived 1872 to 1961 and invented intelligence test [1905], Binet-Simon Scale, with Binet.

Lewis Madison Terman [Terman, Lewis Madison]
psychologist
USA
1916
Measurement of Intelligence [1916]
He lived 1877 to 1956, invented Stanford-Binet test and Terman group intelligence tests, and studied gifted children.

Ernst Kretschmer [Kretschmer, Ernst]
psychiatrist
Germany
1921 to 1929
Physique and Character [1921]; Psychology of Men of Genius [1929]
He lived 1888 to 1964 and studied intelligence.

Louis Leon Thurstone [Thurstone, Louis Leon]
psychologist
USA
1924 to 1959
Nature of Intelligence [1924]; Vectors of the Mind [1935]; Multiple-Factor Analysis [1947]; Measurement of Values [1959]
He lived 1887 to 1955. He worked on psychometrics, army recruiting tests, mental qualities, attitude scales, learning curves, mental development units, intelligence tests, multiple factor analyses, and psychoneurotic tendencies.

Cyril Lodowic Burt [Burt, Cyril Lodowic]
psychologist
Britain
1925 to 1940
Young Delinquent [1925]; Backward Child [1937]; Factors of the Mind [1940]
He lived 1883 to 1971. He studied individual ability and character differences and how heredity determined differences. He developed statistical methods to quantify what differed among people {factor analysis, Burt}. He invented a verbal reasoning test.

David Wechsler [Wechsler, David]
psychologist
USA
1935 to 1939
Range of Human Capacities [1935]; Measurement of Adult Intelligence [1939]; Measurement and Appraisal of Adult Intelligence [1958]
He lived 1896 to 1981, studied verbal and performance intelligence {Wechsler Bellevue Scale} [1939], and invented WAIS test [1955].

Joy Paul Guilford [Guilford, Joy Paul]
psychologist
USA
1950 to 1982
Nature of Human Intelligence [1967]; Cognitive psychology's ambiguities: Some suggested remedies [1982]
He lived 1897 to 1967 and studied intellectual structure {Structure of Intellect}.

Jacob Getzels [Getzels, Jacob]
psychologist
USA
1962 to 1976
Creativity and Intelligence [1962]; Creative Vision [1976: with M. Csikszentmihalyi]
He lived 1912 to 2001 and studied creativity and intelligence.

Howard Gardner [Gardner, Howard]
psychologist
USA
1975 to 1983
Shattered Mind [1975]; Frames of Mind [1983]
He lived 1943 to ?. Intelligence is problem-solving ability.

David Premack [Premack, David]
psychologist
USA
1976 to 1986
Intelligence in Ape and Man [1976]; Gavagai! or Rabbit! [1986]
He lived 1925 to ? and studied ape intelligence and natural language.

Horace F. Judson [Judson, Horace F.]
psychologist
USA
1980
Search for Solutions [1980]
He studied problem-solving.

SOCI>Psychology>History>Learning

George Humphrey [Humphrey, George]
psychologist
Britain
1935 to 1951
Nature of Learning [1935]; Thinking: Its Experimental Psychology [1951]
He lived 1889 to 1966 and studied conditioning and learning.

Robert M. Gagné [Gagné, Robert M.]
psychologist

France
1962 to 1977
Conditions of Learning and Theory of Instruction [1977]
He lived 1916 to 2002 and studied cumulative learning theory [Gagné, 1977].

SOCI>Psychology>History>Memory

Hermann Ebbinghaus [Ebbinghaus, Hermann]
psychologist
Germany
1880 to 1890
On Memory [1885]
He lived 1850 to 1909 and tried to find human-memory laws [1880 to 1890]. He invented novel syllables {nonsense syllable, Ebbinghaus}, with vowel between two consonants, to ensure learning had no previous associations. Memories can last for minutes or longer. Repetition strengthens memory. Memory content involves storing basic units, such as shapes, sizes, motions, and qualities. Memory strength is number of stored or recalled units. Complex memories have same laws as basic unit memories.

Théodule Ribot [Ribot, Théodule]
psychologist
Paris, France
1884
Diseases of Memory [1884]
He lived 1839 to 1916 and studied retrograde amnesia. Brain injury damages recent memories more than older ones {Ribot's law, Ribot}.

Sergei Korsakoff [Korsakoff, Sergei]
neuropsychiatrist
Russia
1887 to 1893
Alcohol Paralysis [1887]; Diseases of Memory and Their Diagnosis [1890]; Textbook of Psychiatry [1893]
He lived 1854 to 1900, discovered amnesia type [1887], and studied Korsakoff syndrome [Korsakoff, 1887].

Georg Elias Müller [Müller, Georg Elias]
psychologist
Germany
1893 to 1900
Experimental Contributions to the Science of Memory [1900: with Alfons Pilzecker]
He lived 1850 to 1934 and studied memory consolidation over time [1893: with Alfons Pilzecker].

Frederic Charles Bartlett [Bartlett, Frederic Charles]
psychologist
Britain
1923 to 1939
Psychology and Primitive Culture [1923]; Remembering [1932]; Study of Society [1939]
He lived 1886 to 1969 and helped found cognitive psychology. He used reaction times and image rotation to learn about representation properties. He studied memory using stories and pictures.

Organisms must understand current situation to know how to behave and so search for meaning in environment. Perceiving, recognition, imaging, and recall are for meaning. Thinking uses past experience to solve problems and choose from possible solutions. Thinking is skill, which improves with instruction and practice, by interpolation or extrapolation.

Memory is construction from all mental information representations and is easy to forget and distort.

Memory and recall have no basic units, because stimuli have multiple responses. Random words or nonsense syllables can have related meanings but do not have higher-level categories, making them poor memory test, because abstract higher-level categories are important for memory.

Structures organize motor events, integrate/relate/give meaning to objects and events, and interpret {schema, Bartlett}. Schemas are at every meaning level in semantic hierarchies. Schemas also underlie memory strength. Memory strength depends on object and event relation to constructed schema. Memory content is more meaningful if it matches schema. The schema can alter memory content to fit schema and improve understanding and meaning. People remember meaningful content better.

Stories, descriptions, and pictures have meaning. Confusing sentences in stories can test if recall is less and/or distorted, because they cannot be meaningful. People recall ambiguous, complex, unexpected, out-of-context, or illogical sentences relative to constructed schema more weakly and/or with more changes. Higher-order schemas isolate and connect sentences, which integrate with different strengths.

People remember sentences that evoke emotion more strongly, because they integrate more, not match cues more.

Perceptual codes have no hierarchy. Semantic codes have hierarchy and so last longer.

Memories weaken over time and people can forget them.

Edouard Claparède [Claparède, Edouard]

psychologist/educator
Switzerland
1924
On Psychoanalysis [1924]

He lived 1873 to 1940, studied human brain-injury and disease psychological consequences, and studied visual object-recognition defects. Amnesic states can have partial recent-memory preservation {implicit memory, Claparède}.

John McGeoch [McGeoch, John]

psychologist
USA
1932 to 1942
Psychology of Human Learning [1942]
He lived 1897 to 1942. Long-term memories do not change or weaken over time [1932].

Aleksandr Romanovich Luria [Luria, Aleksandr Romanovich]

psychologist
Russia
1932 to 1980

Nature of Human Conflicts [1932]; Role of Speech in the Regulation of Normal and Abnormal Behavior [1961]; Higher Cortical Functions in Man [1962]; Mind of a Mnemonist [1968]; Traumatic Aphasia [1970]; Working Brain [1973]; Man with a Shattered World; Basic Problems in Neurolinguistics [1976]

He lived 1902 to 1977 and studied emotional-stress effects on human motor reactions. He studied eidetic imagery [Luria, 1980].

Donald Hebb [Hebb, Donald]

psychologist
Canada
1949 to 1985
Organization of Behavior [1949]

He lived 1904 to 1985. Memory and information distribute among cortex cell assemblies. Synapses strengthen if presynaptic activity correlates with postsynaptic activity {Hebb rule}. Hebbian rules can only find large input correlations, like interactions between self-generated actions and perceptions. For example, neurons can correlate saccadic eye movements with neuron responses to find motion direction. Eye movement signals that direct saccades to objects initiate object representation. Network circuits {Hebbian circuit} can learn only if receiving part alters sending-part behavior.

Brenda Milner [Milner, Brenda]

psychologist
England/Canada
1953 to 1962
Memory troubles accompanying lesions [1962]
She lived 1918 to ?.

William Beecher Scoville [Scoville, William Beecher]
psychologist
Canada
1953 to 1962
Loss of Recent Memory After Bilateral Hippocampal Lesions [1957: with Brenda Milner]
He lived 1906 to 1984. He studied H.M. [1953], who had no bilateral temporal lobes or hippocampus after surgery and did not make long-term memories, though he learned motor tasks [1962: with Brenda Milner].
Another William Scoville used parts per million of capsicum {SHU scale} to measure hot pepper heat [1912].

George Miller [Miller, George]
psychologist
USA
1956 to 1962
Magical Number Seven, Plus or Minus Two: Some Limits on Our Capacity for Processing Information [1956]; Psychology: The Science of Mental Life [1962]
He lived 1920 to ?. Concepts or perceptions can be chunks of previous concepts or perceptions [1956]. Number of chunks that people can keep in immediate memory is seven, plus or minus two. Perhaps, chunking synchronizes information subsets into units.

Donald E. Broadbent [Broadbent, Donald E.]
psychologist
England
1958 to 1971
Perception and Communication [1958]; Decision and Stress [1971]
He lived 1926 to 1993 and studied Broadbent filtering effect, cocktail party effect, filter theory, memory position effects, primacy effect, and recency effect [Broadbent, 1958].

Ulrich Neisser [Neisser, Ulrich]
psychologist
USA
1967 to 1982
Cognitive Psychology [1967]; Memory Observed: Remembering in Natural Contexts [1982]
He lived 1928 to ?. Memory is like reconstructing dinosaur from bones alone.

Richard C. Atkinson [Atkinson, Richard C.]/Richard M. Shiffrin [Shiffrin, Richard M.]
psychologist
USA
1968
Human Memory: a proposed system and its control processes [1968]
They studied memory.

Marvin Minsky [Minsky, Marvin]
psychologist
USA
1968 to 1985
Semantic Information Processing [1968: editor]; Society of Mind [1985]
He lived 1927 to ?. Systems have interacting subsystems {agent} that perform actions for whole system. Agents take input and produce output. Systems perform actions for makers. Agents can restore other agents to previous states {K-line}. Brain agents {polyneme} can initiate processes in other agencies, which use learning and memory to act on signals. Agents can trigger other agents with unknown learned behaviors to respond, like triggering memory. Agents can cause agents with known fixed behaviors to act in coordinated ways {isonome}. They activate short-term memory in other agencies and coordinate activities. Similar temporary agents {pronome} hold and move mental-state active fragments. Agents can act directly on outside world. Knowledge-agent {microneme} combinations activate word agents. Agents can be forms {frame}. Form nodes can hold lower agent types. Nodes have default agents.
People can mistake failure of imagination for insight into necessity {philosophers' syndrome}.

Elizabeth Warrington [Warrington, Elizabeth]
psychologist
England
1968 to 1995
Study of learning and retention in amnesic patients [1968: with Lawrence Weiskrantz]; Single and multiple component central dyslexic syndromes [1980: with Tim R. Shallice]; Selective impairment in manipulating arabic numerals [1995: with Lisa Cipolotti and Brian Butterworth]
Small cerebral-cortex lesions can reduce object-category knowledge {category-specific knowledge}: frontal and parietal {manipulation category} or temporal {vision category}. Word categories can be lost.

John Z. Young [Young, John Z.]
biologist
England/USA
1976 to 1978
Evolution of Memory [1976]; Programs in the Brain [1978]
He described selectionist theory of memory.

Gordon Bower [Bower, Gordon]
psychologist
USA
1976 to 1983
Emotion and Social Judgments [1978]; Mood and Memory [1981]; Reminding and mood-congruent memory [1983: with S. G. Gilligan]
Mood induces memories with similar mood.

Elizabeth Loftus [Loftus, Elizabeth]
psychologist
USA
1977 to 1995
Shifting human color memory [1977]; Eyewitness testimony [1979]; Myth of Repressed Memory [1994: with K. Ketcham]; Formation of False Memories [1995: with J. E. Pickrell]
She studied co-existence hypothesis, erasure hypothesis, and inhibition hypothesis [Loftus and Ketcham, 1994].

Roger Schank [Schank, Roger]
psychologist
USA
1977 to 1997
Scripts, Plans, Goals and Understanding [1977: with Robert P. Abelson]; Dynamic Memory [1981]; Dynamic Memory Revisited [1997]
From repeated experience, people build knowledge structures that provide background information and default settings for processes {script, Schank}. Structures coordinate event sequence. People have many scripts and need to realize which script to use. As rule sets {rules of script}, scripts can predict. Scripts include all scenes and events related to process. Scenes and events share some features but not others, and scripts note differences.
People can plan events {plan application}, to reach goals that brain monitors for progress {goal tracking}. Memory {dynamic memory, brain} must be able to change, learn, include new information, and relate information to previous information.
People also remember scenes. People have general and abstract memory structures and processes, as well as scripts, which guide scene attention and selection.
People notice what deviates from general structures and incorporate the information into general knowledge if it repeats. Stimuli remind of previous scenes, scripts, and general knowledge structures {processing-based reminding}. Organizing memories causes more reminding. Mental processing includes reminding, which uses same structures as storing memories and processing input. Process repeats same structures for similar thing and has reminding. Understanding is remembering similar situation. Reminding becomes less as object or event integrates more and becomes unconscious.

Unexpected events add pointers and indexes to script to note differences and exceptions. People do not expect new things only if they see them in context in which they expected something else, so there must be conscious attention, thwarted goal, or difference from previous thing, not just something entirely new or meaningless.

Memories, reminding, and processing are simultaneous in script application, plan application, and goal tracking. Story always involves goal, why. In trying to reach goal, people can fail to perform obvious subgoals {goal subsumption failure}, face obstacles, move toward new goal, or have more than one goal.

People can search memory intentionally. Scenes connect by higher order knowledge structures {memory organization packet, scene} (MOP). Abstract concepts connect by higher order knowledge structures {thematic organization packet, Schank} (TOP).

Consciousness is just observing unconscious mental processing. It is for learning explanations, applying rules, and questioning, but it interferes with well-learned activities.

Randolf Menzel [Menzel, Randolf]
psychologist
USA
1978
Learning and Memory in Bees [1978: with Jochen Erber]

Alan Baddeley [Baddeley, Alan]
psychologist
England
1982 to 1996
Your Memory: A User's Guide [1982 and 1996]; Working Memory [1986]; Human Memory: Theory and Practice [1990]

He studied articulatory loop. He invented working-memory models, with visuospatial sketchpads, phonological loops, and episodic buffers [Baddeley, 1990]. Working memory connects to executive and long-term memory.

Patricia Goldman-Rakic [Goldman-Rakic, Patricia]
psychologist
USA
1992
Working Memory and the Mind [1992]
Frontal lobe region is for working memory.

Larry R. Squire [Squire, Larry R.]
psychologist
USA
1992
Encyclopedia of Learning and Memory [1992]
He studied learning and memory.

Stephen J. Ceci [Ceci, Stephen J.]
psychologist
USA
1994 to 2000
Memory Work: The royal road to false memories? [1994: with E. Loftus]; Jeopardy in the Courtroom [1995: with Maggie Bruck]; Psychological Science in the Public Interest [2000: with R. A. Bjork]

Preschool children are easily suggestible about past events.

Daniel L. Schacter [Schacter, Daniel L.]
psychologist
USA
1996 to 2001
Searching for Memory: The Brain, the Mind, and the Past [1996]; Seven Sins of Memory [2001]

Memory allows efficient coding, search, retrieval, generalization, discrimination, adaptation, and survival. Brain has sensory Specialized Knowledge Modules, which can activate reflexes and awareness, and reasoning and acting

Executive System, which can inform consciousness of plans, activate habits, control senses, and respond voluntarily. Intermediate system {conscious awareness system} integrates information from modules for use by executive system and exchanges information with episodic memory. Executive only uses conscious information. He studied memory transience. He invented Dissociable Interactions and Conscious Experience (DICE) model, with consciousness-awareness system connected to executive, memory, response system, and lexical, conceptual, spatial, facial, and self-modules [Schacter, 2001].

SOCI>Psychology>History>Perception

Benedetto Castelli [Castelli, Benedetto]
priest
Rome, Italy
1628
On the Measurement of Running Waters [1628]
He lived 1578 to 1643 and described Moon illusion and afterimages.

Michel E. Chevreul [Chevreul, Michel E.]
psychologist
Paris, France
1839
On the law of simultaneous contrast of colors [1839]
He lived 1786 to 1889 and invented Chevreul's array of progressively darker gray strips, which showed edge-enhancement effects.

Heinrich Lissauer [Lissauer, Heinrich]
psychologist
Germany
1855 to 1890
Contribution on the Pathological Anatomy of Tabes dorsalis [1885]; Case of visual agnosia with contribution to theory [1889]; Thalamus Lesions in Progressive Paralysis [1890: Lissauer's paralysis]
He lived 1861 to 1891, found tractus dorsolateralis or Lissauer's tract [1855], and invented model for visual recognition [1890]. Patients can fail to form associations between memories and perceptions or fail to form perceptions {mind-blindness} [1879].

Gustav Theodor Fechner [Fechner, Gustav Theodor]
philosopher/physicist
Germany
1860 to 1876
Elements of Psychophysics [1860]; Pre-school of Aesthetics [1876]
He lived 1801 to 1887. Sensation intensity is proportional to logarithm of stimulus {Weber-Fechner law, Fechner} {Weber's law, Fechner}. Logarithmic scale measures sensation intensity: S = k * log(I) + A, where S = sensation, k = relative-difference ratio, I = intensity, and A = absolute threshold. The law applies if sensations have categories {category scaling}. To detect just noticeable difference in sensation at higher intensities, stimulus intensity must increase in geometrical proportion. Sense qualities and psychological functions relate to stimuli {psychophysics, Fechner}.
Aesthetics
Method of paired comparisons can judge aesthetic preferences.

Wilhelm Max Wundt [Wundt, Wilhelm Max]
psychologist
Germany
1873 to 1920
Principles of Physiological Psychology [1873 and 1920]
He lived 1832 to 1920 and founded experimental and physiological psychology. He studied attention, apperception, sense processes, and reaction times. He trained himself in introspection [Wundt, 1873]. Melancholic and choleric emotional types of Galen have strong emotional reactions, but phlegmatic and sanguine emotional types do not.

Epistemology
Ideas are mental processes, not objects. Mind combines units to make objects and perceptions {structuralism, Wundt}.

Hermann Munk [Munk, Hermann]
psychologist
Germany
1878 to 1879
He lived 1839 to 1900 used the term mind-blindness [1878] and found optic chiasm [1879].

E. Emmert [Emmert, E.]
psychologist
USA
1881
Large Environment Effects on Afterimages [1881]
Visual afterimage has larger size if is thought to be far away and smaller size if it is thought to be nearby, so afterimage apparent size directly relates to apparent distance {Emmert's law, Emmert}.

British Society for Psychical Research
parapsychology group
England
1882
Later, society for psychical research began in USA.

Carl Stumpf [Stumpf, Carl]
psychologist
Germany
1883 to 1890
Psychology of Sound [1883 and 1890]
He lived 1848 to 1936 and studied tone and music psychology {act psychology, Stumpf} at School of Graz. He studied experimental phenomenology [Stumpf, 1890].

James McKeen Cattell [Cattell, James McKeen]
psychologist
USA
1886 to 1902
Psychometric Investigation [1886]; Time of Perception as a Measure of Differences in Intensity [1902]
He lived 1860 to 1944, experimentally tried hashish, and measured reaction times and small perception differences [1902].

George Trumbull Ladd [Ladd, George Trumbull]
psychologist
USA
1887
Elements of Physiological Psychology [1887]
He lived 1842 to 1921 and studied perception and behavior physiology.

Franz Carl Müller-Lyer [Müller-Lyer, Franz Carl]
psychologist
Germany
1889 to 1896
Optical Illusions [1889]; Concerning the Theory of Optical Illusions: on Contrast and Confluxion [1896]
He lived 1857 to 1916 and invented illusion {Müller-Lyer illusion, Muller-Lyer} [1889]. Mind uses both figure and ground to perceive object {confluxion principle} {principle of confluxion}.

Christian von Ehrenfels [Ehrenfels, Christian von]

philosopher/psychologist
Austria
1891
On Gestalt Qualities [1891]
He lived 1859 to 1933. Shape or melody directly relates to sense-stimulation pattern, but perception infers and selects figure {gestalt, Ehrenfels} from ground. Shape or object has constancies and change directions, and these are the most-basic gestalt properties.

George M. Stratton [Stratton, George M.]
psychologist
USA
1896 to 1897
Some preliminary experiments on vision without inversion of retinal image [1896]
He lived 1865 to 1957. Distorting lenses make background appear to move at first, but soon users learn and background becomes stationary [1896 to 1897].

Joseph Jastrow [Jastrow, Joseph]
psychologist
Poland
1896 to 1900
Community of Ideas of Men and Women [1896]; Fact and Fable in Psychology [1900]
He lived 1863 to 1944 and invented duck-rabbit illusion [1899], which relates to aspect perception using concepts.

Robert Sessions Woodworth [Woodworth, Robert Sessions]
psychologist
USA
1899 to 1954
On the Accuracy of Voluntary Movement [1899]; Dynamic Psychology [1918]; Contemporary Schools of Psychology [1931]; Experimental Psychology [1938 and 1954]
He lived 1869 to 1962, measured individual differences, and invented objective emotional-stability tests.

Carl Pulfrich [Pulfrich, Carl]
psychologist
Jena, Germany
1911 to 1922
Stereoscopic Vision and Measurement [1911]; Stereoscopy in the Service of Isochromatic and Heterochromatic Photometry [1922]
He lived 1858 to 1927. If people view pendulums with sunglasses over one eye and nothing over other eye, pendulums appear to move in elliptical paths, with depth {Pulfrich's pendulum} {Pulfrich stereophenomenon} [1921]. Perhaps, sunglass delays signal transmission from retina to brain {delay line explanation}, eye sees sunglass-filtered pendulum at previous position compared to uncovered eye, and different positions cause stereoscopic disparity and appearance of depth.
Actually, eye adaptation to lower illumination causes delay. Depth effect also happens with stroboscopically lit objects and in television-set "snow".

David Katz [Katz, David]
psychologist
Germany
1911 to 1925
World of Color [1911]; World of Touch [1925]
He lived 1884 to 1953 and studied touch and color vision.

Max Wertheimer [Wertheimer, Max]
psychologist
Germany
1912 to 1945

Experimental Study of Vision in Motion [1912]; Studies on the Theory of Gestalt [1923]; Productive Thinking [1943]

He lived 1880 to 1943, founded Gestalt psychology, and studied apparent visual motion.

William Halse Rivers [Rivers, William Halse]

psychologist/ethnologist

Britain

1914 to 1923

Kinship and Social Organization [1914]; History of Melanesian Society [1914]; Instinct and the Unconscious [1920]; Conflict and Dream [1923]

He lived 1864 to 1922. He postulated that two forms of cutaneous sensation exist, broad {protopathic sensation} and narrow {epicritic sensation}. However, this theory is false. Many dreams are fantasy attempts to resolve current emotional problems.

Edgar Rubin [Rubin, Edgar]

psychologist

Denmark

1915

Competing Visual Figures [1915]

He lived 1886 to 1951 and studied figure and ground and vase-profile illusion [1915].

Kurt Koffka [Koffka, Kurt]

psychologist

Germany

1924 to 1935

Growth of the Mind [1924]; Principles of Gestalt Psychology [1935]

He lived 1886 to 1941 and helped found Gestalt psychology.

Wolfgang Köhler [Köhler, Wolfgang]

psychologist

Germany

1925 to 1940

Mentality of Apes [1925]; Task of Gestalt Psychology [1929]; Place of Value in a World of Facts [1938]; Dynamics in Psychology [1940]

He lived 1887 to 1967 and co-founded Gestalt School. Insight, not trial and error, solves problems that involve thought or tool use. Insight involves perception rearrangement {restructuring}, to reveal previously hidden or unnoticed features.

Robert Henry Thouless [Thouless, Robert Henry]

psychologist

Britain

1930 to 1972

Straight and Crooked Thinking [1930]; Experimental Psychical Research [1963]; From Anecdote to Experiment in Psychical Research [1972]; Perceptual constancy or perceptual compromise [1972]

He lived 1894 to 1984 and studied size and brightness constancies. Perceived object property, such as size, shape, or brightness, is intermediate between stimulus pattern property in peripheral senses and object property {compromise element} {element of compromise} [1972]. Learning does not affect element of compromise. Element of compromise has individual differences.

Heinrich Schenker [Schenker, Heinrich]

psychologist

Germany

1932 to 1935

Five Graphic Music Analyses [1932]; Free Composition [1935]

He lived 1868 to 1935. Some notes and chords are musical structural bases {Schenkerian analysis}. Other notes and chords are elaboration and ornamentation patterns.

John B. Rhine [Rhine, John B.]
psychologist
USA
1934 to 1947
Extrasensory Perception [1934]; Reach of the Mind [1947]
At Duke University, he was the father of parapsychology, did card guessing, and studied telepathy, clairvoyance, and psychokinesis {ESP experiment} [Rhine, 1934] [Rhine, 1947]. All his research is suspect, because his experimenters' suggestions caused positive results.

Egon Brunswik [Brunswik, Egon]
psychologist
Austria/USA
1934 to 1955
Perception and Object [1934]; Perception and the Representative Design of Psychological Experiments [1956]
He lived 1903 to 1955 and studied perception.

Harvey Carr [Carr, Harvey]
psychologist
USA
1935 to 1936
Introduction to Space Perception [1935]; Autobiography [1936]
He lived 1873 to 1954. Normal perception uses key features, such as recognizing meaningful facial expressions and other complex perceptions in simple drawings [1935].

Karl Duncker [Duncker, Karl]
psychologist
Germany
1935 to 1941
Psychology of Productive Thinking [1935]; On Pleasure, Emotion, and Striving [1941]
He lived 1903 to 1940 and studied induced motion and studied productive thinking.

Stanley Smith Stevens [Stevens, Stanley Smith]
psychologist
USA
1936 to 1962
Handbook of Experimental Psychology [1951: editor]
He lived 1906 to 1973.
Cardinal numbers, ordinal numbers, differences, and ratios measure stimuli or sensations {magnitude estimation, Stevens}. Neural signal discreteness {neural quantum theory} limits sense-discrimination sensitivity.
Sensation magnitudes S are directly proportional to physical-stimuli magnitudes I, raised to power b [1962] {Stevens' power law}: S = a*I^b, where a is constant for sense. Sound has the power 0.3, so loudness is not high as physical noise {sone scale} [1936]. Brightness has power 0.3, so sensation intensity is not as high as physical intensity. Lengths have power 1, and sensation and intensity match. Pain has power 3, so pain is more intense than the physical stimuli.

Albert Hofmann [Hofmann, Albert]
psychologist
Switzerland
1938 to 1960
LSD: My Problem Child [1960]
He lived 1906 to 2005, discovered LSD-25 [1938], and showed that related alkaloids {lysergic acid amide} {lysergic acid hydroxyethylamide} are naturally in plants [1959].

Kenneth Craik [Craik, Kenneth]
psychologist

Britain
1943
Nature of Explanation [1943]
He lived 1914 to 1945 and studied eye adaptations to illumination changes.
Retina has adaptations to both light and dark. Adaptation adjusts illumination range expected, to make eye most efficient at detecting signals in that range. Adaptation is about expectations and is predictive, just as is all thinking. Brain models external reality and can make successful predictions, just as machines can predict. Retina has visual afterimages.
Mental processes build and use representations using rules.

Walter H. Pitts [Pitts, Walter H.]
psychologist
USA
1943 to 1959
Logical Calculus of the Ideas Immanent in Nervous Activity [1943: with McCulloch]; How we know universals [1947: with McCulloch]; What the Frog's Eye Tells the Frog's Brain [1959: with Maturana, McCulloch, and Lettvin]
He lived 1923 to 1969 and studied vision and neurons.

Adelbert Ames [Ames, Adelbert]
sociologist
USA
1946
He lived 1880 to 1955, studied education, and invented distorting rooms {Ames room} [1946].

Robert W. Moncrieff [Moncrieff, Robert W.]
psychologist
Scotland
1946 to 1970
Chemical Senses [1946]; What Is Odor. A New Theory [1949]; Chemistry of Perfumery Materials [1949]; Odours [1970]
He invented stereochemical theory of odor [1946].

Jerzy Konorski [Konorski, Jerzy]
neurophysiologist
Poland
1948 to 1967
Conditioned Reflexes and Neuron Organization [1948]; Integrative Activity of the Brain [1967]
He lived 1903 to 1973 and studied interactions between classical and instrumental conditioning. He suggested that one cell (grandmother cell) can recognize a perception or store an object concept [Konorski, 1967].

Gaetano Kanizsa [Kanizsa, Gaetano]
psychologist
Italy
1950 to 1960
He lived 1913 to 1993. He invented and studied figures that had illusory contours.

James Jerome Gibson [Gibson, James Jerome]
psychologist
USA
1950 to 1979
Perception of the Visual World [1950]; Senses Considered as Perceptual Systems [1966]; Ecological Approach to Visual Perception [1979]
He lived 1904 to 1979. He studied visual shape and motion perception in natural conditions, when observer moved freely while objects were still, or objects moved while observer was still {visual flow, Gibson}.

Higher-order object features can be invariant during motion or rotation. Perception involves acquiring such information from ambient sensations. Sense qualities provide motion lines {flow line} and texture gradients {ecological optics}. People seem to perceive such features without visual computation.

People can adapt to distorting lenses but slightly overadapt.

James Olds [Olds, James]

psychologist
USA
1953 to 1954
Positive reinforcement produced by electrical stimulation of septal area [1954: with Peter Milner]
He lived 1922 to 1976.

Enjoyable feelings follow electrically stimulating septal region, lateral hypothalamus, and other limbic-system parts used for reward and motivation {pleasure center} {self-stimulation} [1953: with Peter Milner]. Sensory neocortex stimulation never causes such enjoyable feelings. Dopamines affect limbic-system septal region. Hippocampus and amygdala stimulation can cause unpleasant feelings.

Richard Held [Held, Richard]

psychologist
USA
1958
Adaptation of disarranged hand-eye coordination contingent on reafferent stimulation [1958: with Hein]

He studied eye-hand coordination. Visual depth perception requires coordinated self-movement, with Alan Hein. Self-produced movements result in sensory stimulation {reafference}. Visual motor skills require reafference, but reflexes do not. Sensory stimulation is independent of self-produced movements {exafference}.

Oliver Selfridge [Selfridge, Oliver]

psychologist
USA
1959

He invented letter-recognition models {Pandemonium model}. Lowest level recognized letter features, such as straight and curved line segments at different orientations. Middle level suggested letters based on feature combinations. Highest level chose letter based on weights from middle-level letters.

Hans-Lukas Teuber [Teuber, Hans-Lukas]

psychologist
Germany
1960 to 1967
Somatosensory Changes after Penetrating Brain Wounds in Man [1960]; Visual Field Defects after Penetrating Missile Wounds of the Brain [1960: with W. S. Battersby and Morris B. Bender]

He lived 1916 to 1977 and studied wartime brain-wound psychological effects. He investigated social networks [1967] and found how many links {six degrees of separation} can connect all population members.

Karl H. Pribram [Pribram, Karl H.]

psychologist
USA
1960 to 1991
Plans and the Structure of Behavior [1960: with George Miller and Eugene Galanter]; Languages of the Brain [1971]; Central Processing of Sensory Input [1974]; Brain and Perception [1991]

He lived 1919 to ?. Algorithms can first test, then operate, then test, and then exit {test-operate-test-exit} {TOTE unit} [1960: with Miller and Galanter]. Units are in networks. He discussed dissipative structures in neurons and holonomic theory. Cortical dendrites hold wave interference patterns, which activate by partial input [Pribram, 1991].

Bela Julesz [Julesz, Bela]

psychologist
USA
1962 to 1971

Towards the automation of binocular depth perception [1962: with J. E. Miller]; Foundations of Cyclopean Perception [1971]

He lived 1928 to 2003. Picture with random, identical, featureless dots {random-dot stereogram} {random dot stereogram} (RDS) [1971] can make perceivers see object surface lying in front of background surface or see three-dimensional object {stereopsis, Julesz}. RDS has no monocular depth cues, so only cyclopean stimuli signal depth. Object and background have same hue and brightness. Stereoscopic fusion and depth do not need recognizable objects or line features.

If dots fall randomly on surfaces with different-color regions, dots fall on colors with specific frequencies {first-order statistic} [1962]. Randomly thrown needles fall on color combinations with specific frequencies {second-order statistic}. Randomly thrown triangles have specific frequencies with which the three vertices fall on color combinations {third-order statistic}. Texture discrimination processes, which happen before attention processes, use first-order and second-order statistics but not third-order statistics. Similar textures have identical second-order and first-order statistics. Second-order texture classes are many.

Hans Wallach [Wallach, Hans]
psychologist
USA
1963
Perception of Neutral Colors [1963]
He lived 1905 to 1998 and studied color vision.

Sidney Cohen [Cohen, Sidney]
psychologist
USA
1964 to 1965
Beyond Within [1964]; Drugs of Hallucination [1965]
He lived 1910 to ? and studied mind drugs.

John E. Amoore [Amoore, John E.]
psychologist
USA
1964 to 1970
Stereochemical Theory of Odor [1964: with L. W. Johnston, Jr., and M. Rubin]; Molecular Basis of Odor [1970]
He developed stereochemical theory of smell.

Timothy Leary [Leary, Timothy]
psychologist
USA
1965
Psychedelic Experience: A Manual Based on the Tibetan Book of the Dead [1964: with Ralph Metzner, Richard Alpert, Karma-Glin-Pa Bar Do Thos Grol]; Politics of Ecstasy [1965]
He lived 1920 to 1996 and used drugs for freedom.

Ronald Melzack [Melzack, Ronald]
psychologist
USA
1965 to 1996
Puzzle of Pain [1973]; Challenge of Pain [1996]
He developed the gate control theory of pain [1965], with Patrick Wall. He said people have body image {phylomatrix} {body-schema}.

Richard I. Gregory [Gregory, Richard I.]
psychologist
England
1966 to 1987

Eye and Brain [1966]; Mind in Science [1981]; Odd Perceptions [1986]; Oxford Companion to the Mind [1987 and 2004]
He lived 1923 to ?. Perceptions are good guesses about what physical world is like.

Tom Cornsweet [Cornsweet, Tom]
psychologist
USA
1970
Visual Perception [1970]
He invented Cornsweet-Craik illusion.

Oliver Sacks [Sacks, Oliver]
psychologist
USA
1970 to 1995
Migraine [1970]; Awakenings [1973]; Leg to Stand On [1984]; Man Who Mistook His Wife for a Hat [1985]; Seeing Voices [1988]; Anthropologist on Mars [1995]
He studied deaf people.

Norman F. Dixon [Dixon, Norman F.]
psychologist
England
1971
Subliminal Perception: The Nature of a Controversy [1971]
Perception can happen without consciousness.

Norman Geschwind [Geschwind, Norman]
psychologist
USA
1972 to 1987
Language and the Brain [1972: with Walter Levitsky]; Cerebral Lateralization [1987: with A. M. Galaburda]
He lived 1926 to 1984 and traced perceptual deficits to specific brain lesions. Wernicke's areas on right and left sides differ.

John P. Frisby [Frisby, John P.]
psychologist
USA
1979 to 1991
Seeing: Illusion, Brain and Mind [1979]

Stephen Michael Kosslyn [Kosslyn, Stephen Michael]
psychologist
USA
1980 to 1994
Image and Mind [1980]; Image and Brain [1994]
He studied imagery.

Leo M. Hurvich [Hurvich, Leo M.]
psychologist
USA
1981
Color Vision [1981]
He studied color vision.

David Courtenay Marr [Marr, David Courtenay]
psychologist

Britain
1982
Vision [1982]
He lived 1945 to 1980 and modeled cerebellum function. He emphasized need to study brain's task, from requirements, to functions, to implementation. He developed theory of how visual system recognizes lines and edges, using neurophysiology and psychology. Objects have different representations at different stages, to facilitate recognition [Marr, 1982].

Roger N. Shepard [Shepard, Roger N.]
psychologist
USA
1982
Mental Images and Their Transformations [1982: with Lynn A. Cooper]
He studied imagery.

Jerome A. Feldman [Feldman, Jerome A.]
psychologist
USA
1982 to 1988
Connectionist Models and their properties [1982: with D. Ballard]; Connectionist Models and Their Implications [1988: with David Waltz, editors]

Igor Aleksander [Aleksander, Igor]
psychologist
USA
1983 to 1995
Artificial Vision for Robots [1983: editor]; Artificial Neuroconsciousness: An Update; Impossible Minds [1995]
He studied methods for vision in robots. He proposed axioms for consciousness and tests for consciousness, with Barry Dunmall.

Irvin Rock [Rock, Irvin]
psychologist
USA
1983 to 1998
Logic of Perception [1983]; Indirect Perception [1997]; Inattentional Blindness [1998: with A. Mack]
He studied perception.

Elizabeth S. Spelke [Spelke, Elizabeth S.]
psychologist
USA
1985 to 1995
Object permanence in five-month-old infants [1985: with R. Baillargeon and S. Wasserman]; Preferential looking methods as tools for the study of cognition in infancy [1985]; Does man reason better than animals? [1995: with Linda Hermer]
Objects have spatiotemporal continuity, on which perception always relies to define objects.

Irving Biederman [Biederman, Irving]
psychologist
USA
1987
Recognition-by-components: Theory of human image understanding [1987]
He said perceptions have geon units and invented a model {recognition-by-components, Biederman}.

Colin Blakemore [Blakemore, Colin]
psychologist
England

1987
Mind Matters or Mindwaves [1987: editor with Susan Greenfield]
He studied disparity detectors [Blakemore and Greenfield, 1987].

David Papineau [Papineau, David]
philosopher
England
1987
Reality and Representation [1987]; Introducing Consciousness [2000: illustrated by Howard Selina]
He studied mental representations [Papineau, 2006].

Dan Lloyd [Lloyd, Dan]
psychologist
USA
1989 to 2003
Simple Minds [1989]; Radiant Cool [2003]
Representational systems can focus attention on environment or self regions or intervals. They can extract information from environment, represent information accurately to useful detail, and use information for function. These representational abilities can evolve from simpler state. Representation does not indicate anything about representational system and cannot represent itself.
Minimum representational system has more than one information channel, whose inputs converge, and has way to use or store converged output.
However, one channel can contain as much information as two channels, if it has enough capacity. Serial-processing algorithm can be equivalent to parallel-processing algorithm. Input can be equivalent to converged inputs. Relying only on representational-system physical characteristics cannot explain representation, because representation is informational, rather than physical.

Diane Ackerman [Ackerman, Diane]
writer
USA
1990
Natural History of the Senses [1990]
She lived 1956 to ?.

Richard E. Cytowic [Cytowic, Richard E.]
psychologist
USA
1993
Man Who Tasted Shapes [1993]
He studied synesthesia, which relates to limbic system.

Barry E. Stein [Stein, Barry E.]
psychologist
USA
1993
Merging of the Senses [1993: with M. A. Meredith]
He studied synesthesia.

Antti Revonsuo [Revonsuo, Antti]
philosopher/psychologist
Finland
1995
On the Nature of Consciousness: Theoretical and Empirical Problems [1995]; Consciousness, dreams, and virtual realities [1995]; Can Functional Brain Imaging Discover Consciousness in the Brain? [2001]
Imagine a planet {Black Planet} that one cannot see or know until one puts on a spacesuit with correct sensors that transduce physical energies into what one can sense. Black Planet is Earth, and transducer and human senses.

Paul Bach-y-Rita [Bach-y-Rita, Paul]
psychologist
USA
1995 to 2002
Nonsynaptic Diffusion Neurotransmission and Late Brain Reorganization [1995]
He studied sense substitution. Tongue arrays can replace vestibular system. He invented Tactile Vision Substitution System [Bach-y-Rita and González, 2002].

Vernon B. Mountcastle [Mountcastle, Vernon B.]
psychologist
USA
1998
Perceptual Neuroscience [1998]
He found macrocolumns, with Lorente de No.

Stan Franklin [Franklin, Stan]
computer scientist
USA
1998 to 2004
IDA: A Cognitive Agent Architecture [1998: with Arpad Kelemen and Lee McCauley]; Learning in "Conscious" Software Agents [2000]; "Conscious" software: a computational view of mind [2001]
He developed the Intelligent Distribution Agent (IDA) application. IDA performs Global-Workspace-Theory top-level functions and has multiple-threaded independent agents {codelet}. IDA knows skills of Navy personnel and what they like to do after current tour ends. It also knows Navy policies and what jobs Navy needs to fill [Franklin, 1998].

Pentti Haikonen [Haikonen, Pentti]
computer scientist
Finland
2003
Cognitive Approach to Conscious Machines [2003]
He developed bottom-up system to try to build perception, imagery, inner speech, pain and pleasure, and emotions from artificial neurons, using no algorithms, but only distributed signals, cross-links, analysis, and reports. Process becomes conscious when it is sufficiently complex {emergence, Haikonen}. System uses no numbers, only meanings.

Owen Holland [Holland, Owen]
computer scientist
England
2003
Machine Consciousness [2003: ed.]
He developed robots with internal models and control systems, with Rod Goodman. Perhaps, sufficiently complex and intelligent control systems can have consciousness emerge {emergence, Holland}.

Aaron Sloman [Sloman, Aaron]/Ron Chrisley [Chrisley, Ron]
computer scientist
England
2003
Virtual machines can model consciousness-like information processing. Models can define consciousness and mind as architectures. Information processing shows that qualia-concepts depend on architecture. Architecture structures qualia themselves.

Luc Steels [Steels, Luc]
computer scientist
Belgium
2003

People speak to themselves voice {inner voice} to express their thoughts, and this information processing structure is useful.

Jeremy M. Wolfe [Wolfe, Jeremy M.]/Keith R. Kluender [Kluender, Keith R.]/Dennis M. Levi [Levi, Dennis M.]
psychologist
USA
2006
Sensation and Perception [2006]
They studied psychology and perception biology.

SOCI>Psychology>History>Personality

Hermann Rorschach [Rorschach, Hermann]
psychiatrist
Switzerland
1921
Psychodiagnostics [1921]
He lived 1884 to 1922 and developed standardized personality test {Rorschach test, Rorschach} using inkblots for free association [1921].

William H. Sheldon [Sheldon, William H.]
psychologist
USA
1940
Varieties of Human Physique: An Introduction to Constitutional Psychology [1940]
He lived 1898 to 1977. Descriptive personality theory {type theory, Sheldon} postulates that people have some personality types, which depend on a main trait or trait set: ectomorphy, mesomorphy, or endomorphy.

Raymond B. Cattell [Cattell, Raymond B.]
psychologist
England/USA
1946 to 1957
Description and Measurement of Personality [1946]; Structure and Measurement [1957]
He lived 1905 to 1998. Descriptive personality theory {trait theory} lists 35 overt personality manifestations {surface trait} caused by 16 basic factors {source trait}. Source traits are values in ranges between two extremes: reserved/outgoing, less intelligent/more intelligent, affected by feeling/emotionally stable, submissive/dominant, serious/happy-go-lucky, expedient/conscientious, timid/adventurous, tough minded/sensitive, trusting/suspicious, practical/imaginative, self assured/apprehensive, conservative/experimenting, forthright/shrewd, self sufficient/group dependent, uncontrolled/controlled, and relaxed/tense.

Gordon Allport [Allport, Gordon]
psychologist
USA
1947 to 1968
Psychology of Rumor [1947: with Leo Postman]; Nature of Prejudice [1954]; Pattern and Growth in Personality [1961]; Person in Psychology [1968: essays]
He lived 1897 to 1967 and studied personality and expressive behavior. Personality traits are pervasive, central, or weak, as determined by trait frequency, range, and intensity.

Herman A. Witkin [Witkin, Herman A.]
psychologist
USA
1954 to 1981
Personality Through Perception [1954]; Cognitive Styles in Personal and Cultural Adaptation [1977]; Field Dependence and Interpersonal Behavior [1981: with D. R. Goodenough]
He lived 1916 to 1979 and studied field dependence and cognitive styles.

SOCI>Psychology>History>Psychiatry

Robert Burton [Burton, Robert]
psychologist
England
1621
Anatomy of Melancholy [1621]
He lived 1577 to 1640 and studied melancholia.

Franz Anton Mesmer [Mesmer, Franz Anton]
physician
Vienna, Austria
1778
He lived 1734 to 1815, invented hypnosis {animal magnetism} [1778], and used tub {baquet} of magnetized water for cures.

Philippe Pinel [Pinel, Philippe]
psychologist
Paris, France
1798 to 1800
Analects on the Medical-philosophic Treatment of Mental Alienation or Mania [1800]
He lived 1745 to 1826 and divided mental disorders into four groups: mania, melancholia, dementia, and idiocy [1798].

Leopold von Sacher-Masoch [Sacher-Masoch, Leopold von]
writer/lawyer
Lemberg, Austria
1866
Don Juan of Kolomea [1866]
He lived 1835 to 1895 and studied if animal can be masochistic.

Emil Kraepelin [Kraepelin, Emil]
psychiatrist
Germany
1883 to 1927
Textbook of Psychiatry [1883 to 1927]; Directions of Psychiatric Research [1887]
He lived 1856 to 1926 and determined that manic-depressive psychosis [1899] and schizophrenia [1893] differ [1899]. Mental disorders can arise from metabolic or other defects that are not psychological adaptations. They show neurological signs for different behavioral and psychological mental-disease syndromes. They associate with painful symptom {distress} or impaired functioning {disability}. They involve behaviors that are persistent or repetitive, resist modification, and do not remove anxiety sources.

Vladimir M. Bekhterev [Bekhterev, Vladimir M.]
psychologist
Russia
1892 to 1913
Nervous Diseases in Separate Observations [1892]; Objective Psychology [1913]
He lived 1857 to 1927 and studied token economies [Bekhterev, 1913].

Havelock Ellis [Ellis, Havelock]
psychologist
USA
1897 to 1910
Psychology of Sex [1897 to 1910]

He lived 1859 to 1939. Psychotherapy can link cognitions and emotions, so thoughts can control emotions {rational-emotive therapy, Ellis}. Therapist argues and discusses {insightful countersuggestion, Ellis}, to attack patient's irrational beliefs.

Pierre Janet [Janet, Pierre]
psychologist
Paris, France
1903 to 1929
Neuroses and Fixed Obsessions and Psychoasthenia [1903]; Major Symptoms of Hysteria [1907]; Psychological Healing [1925]; Evolution of Memory and the Notion of Time [1929]
He lived 1859 to 1947 and studied neuroses, psychasthenia, anxiety states, phobias, obsessional disorders, and dissociation.
Neurosis reduces integration {sentiment d'incomplétude} among psychological functions, which ordinarily form hierarchy. People can have dependency wish {amae, Janet}.
All human communities use logical inference as thinking basis.

Eugen Bleuler [Bleuler, Eugen]
psychiatrist
Zurich, Switzerland
1911
Dementia Praecox [1911]
He lived 1857 to 1939 and studied schizophrenia and hysteria. Schizophrenia begins in adolescence or early adult life, is endogenous, and gets progressively worse if untreated [1911].

Hans Vaihinger [Vaihinger, Hans]
psychologist/philosopher
Germany
1911 to 1912
Philosophy of As-If [1911]; Neurotic Character [1912]
He lived 1852 to 1933, was Neo-Kantian, and studied Nietzsche.
Efforts to protect self-esteem and habits cause neurotic symptoms.
Epistemology
Only emotions and sensations are real. All knowledge, even logic, rests on useful fictions {as-if}. Human character and actions has teleological explanation, using mental constructs or models {fiction}. Human life has fictive goals and plans to achieve goals.
Ethics
People construct their habits and character based on meanings in their situations. Character builds unconsciously and uniquely. Children need tasks that they can accomplish, to gain confidence and build character.

Alfred Adler [Adler, Alfred]
psychoanalyst
Austria/Munich, Germany
1912 to 1927
Neurotic Constitution [1912]; Practice and Theory of Individual Psychology [1922]; Understanding Human Nature [1927]
He lived 1870 to 1937 and founded School of Individual Psychology. People can feel that they are inferior {inferiority complex} and therefore compensate. For example, people can feel physically inferior and compensate by increasing their size or abilities. People can feel their sexual organs are inferior. Small, weak, and dependent children can feel inferior and feminine.

Karl Abraham [Abraham, Karl]
psychologist
Berlin, Germany
1921 to 1924
Contributions to the Theory of the Anal Character [1921]; Short Study of the Development of the Libido [1924]

He lived 1877 to 1925 and developed a personal-development theory and a psychoanalysis variant. Instinctual energy discharge {discharge of instinct} requires another person or thing. People have emotional involvement with objects or internal representations. Obsession is strong focus on emotional object for fear of losing it. Depression is loss of emotional object, and people attempt to restore it. All children need to attachment to a mother-like person. Medial temporal lobe makes declarative memories but not short-term memory, memory storage, or procedural memories.

Émile Coue [Coue, Émile]
psychotherapist
Paris, France
1922
Suggestion and its Applications [1922]
He lived 1857 to 1926 and used self-induced suggestion {auto-suggestion}.

Harry Stack Sullivan [Sullivan, Harry Stack]
psychoanalyst
USA
1925 to 1947
Conceptions of Modern Psychiatry [1953]; Interpersonal Theory of Psychiatry [1953]; Personal Psychopathology [1972]
He lived 1882 to 1949 and was therapist.

Melanie Klein [Klein, Melanie]
psychoanalyst
Britain
1932 to 1952
Psychoanalysis of Children [1932]; Developments in Psycho-Analysis [1952]
She lived 1882 to 1960 and developed an infantile development theory, as a psychoanalysis variant.
Even infants have emotions like love, fear, hate, and concern. By observing play, people can know normal and abnormal child behavior patterns and emotional states. Object-relations between infant and parent can change at either of two stages {object-relations school}. Disturbances in first stage, pre-oedipal period before age two {paranoid-schizoid position}, lead to paranoia or schizophrenia. Children want self-survival and need love and attachment to emotional object but project death-wishes on emotional objects. Personality splitting, idealization, projection, and introjection are defense mechanisms. Disturbances in second stage, oedipal period from age two to five {depressive position}, lead to depression. Children realize that mother is a whole and separate person. Children want that mother remain an emotional object. Envy or anger can cause children to wish damage or destruction on objects. Children can identify with emotional objects in both stages, and feelings in first stage affect feelings in second stage.
Three-person family relationships, two-person relationships {attachment, Klein} {therapist-patient}, and one-person creativity require different descriptions. Two-person relationships involve transference from one person to the other and projection and introjection defense mechanisms.

Wilhelm Reich [Reich, Wilhelm]
philosopher
Austria
1933 to 1936
Character Analysis [1933]; Mass Psychology of Fascism [1933]; Sexual Revolution [1936]
He lived 1897 to 1957. Illness can result from society's repression and authoritarianism. Individuals can act to protect themselves from such society and so imprison spontaneous tendencies {bio-energy}, which normally require freedom and expression. Confined bio-energy can cause tension and illness. People express tension in faces and bodies. People choose behaviors that protect {character armor} {muscular armor} them from their own or others' anxiety or anger. Energy fills universe and can heal {orgone theory}.

Kurt Goldstein [Goldstein, Kurt]
physician/psychiatrist
Breslau, Germany/USA
1934 to 1944

Organism: a Holistic Approach to Biology [1934]; Human Nature in the Light of Psychopathology [1940]; After-effects of Brain Injuries in War: Their Evaluation and Treatment [1944]
He lived 1878 to 1965 and studied aphasia and brain injury effects.

Karen Horney [Horney, Karen]
psychologist
USA
1937 to 1967
Neurotic Personality of Our Time [1937]; Neurosis and Human Growth [1950]; Feminine Psychology [1967]
She lived 1885 to 1952 and studied repression.

Henry A. Murray [Murray, Henry A.]
psychologist
USA
1938 to 1940
Explorations in Personality [1938]; What should psychologists do about psychoanalysis? [1940]
He lived 1893 to 1988. Environment force or process {need-press theory} causes organism force or process {need}.

John Bowlby [Bowlby, John]
psychologist
USA
1938 to 1988
Review of The Development of Children's Concepts of Causal Relations [1938]; Maternal Care and Mental Health [1951]; Secure Base: Parent-Child Attachment and Healthy Human Development [1988]
He lived 1907 to 1990. Mental health and proper development depend on close and enjoyable relation to, and communication with, mother. Young children typically attach themselves to their mother in second six months. Attachment prepares children for monogamous relationships at sexual maturity.

Erich Fromm [Fromm, Erich]
psychologist
USA
1941 to 1956
Escape from Freedom [1941]; Art of Loving [1956]
He lived 1900 to 1980 and was psychoanalyst.

Theodor Reik [Reik, Theodor]
psychologist
USA
1941 to 1966
Masochism in Sex and Society or Masochism and Modern Man [1941]; Listening with the Third Ear [1948]; Temptation [1961]; Voices from the Inaudible [1964]; Curiosities of the Self [1965]; Many Faces of Sex [1966]
He lived 1888 to 1969 and studied ethics.

Karl Menninger [Menninger, Karl]
psychologist
USA
1941 to 1973
Crime of Punishment [1968]; Whatever Became of Sin? [1973]
He lived 1919 to 1990, was psychoanalyst, and started Menninger Foundation [1941].

Fritz Perls [Perls, Fritz]
psychoanalyst
Germany
1942 to 1969
Ego, Hunger, and Aggression: A Revision of Freud's Theory and Method [1942]; Gestalt Therapy [1951: with Ralph Hefferline and Paul Goodman]; Gestalt Therapy Verbatim [1969]

He lived 1893 to 1970. He used psychotherapy {gestalt therapy, Perls} to emphasize, enhance, and complete figure-ground differentiation in gestalten related to patient needs. Patient tries to understand actions and sensations, which self can then control. Gestalt therapy often involves problem dramatization and training patient to become more aware of self and environment, using both observation and inference. Patient moves attention between different focuses {shuttling}. If patient suffers from repetition or compulsion, patient comes to a satisfactory conclusion. If patient has split personality, patient is more aware of actual personality experiences. Gestalt therapy tries to change current defensive and manipulative behaviors, confront patient with real feelings and problems, and force patient to learn how to behave in new circumstances. Gestalt therapy is most effective with socialized, restrained, and constricted individuals.

Rene A. Spitz [Spitz, Rene A.]
psychologist
USA
1945 to 1965
Hospitalism [1945]; Smiling Response: A Contribution to the Ontogenesis of Social Relations [1946: with Katherine M. Wolf]; On the beginning of word use [1965]; First Year of Life [1965]
He lived 1887 to 1974 and studied child emotional deprivation {anaclitic depression} [1946].

Leonard Carmichael [Carmichael, Leonard]
psychobiologist
USA
1946 to 1954
Manual of Child Psychology [1946 and 1954]
He lived 1898 to 1973. Practice, use, and experience during early childhood are not necessarily critical for normal neural or behavioral development.

Eric Berne [Berne, Eric]
psychologist
USA
1947 to 1971
Mind in Action [1947]; Transactional Analysis in Psychotherapy [1961]; Games People Play [1964]; What Do You Say After You Say Hello [1971]
He lived 1910 to 1970. Knowledge and prejudices of each generation transmit to next generation with variable but significant effects {transactional analysis}, with Thomas Harris.

Anna Freud [Freud, Anna]
psychotherapist
Austria/USA
1950
Ego and the Mechanisms of Defense [1950]
She lived 1895 to 1982, directly observed young children's behavior, studied ego development, and studied defense-mechanism development.

Erik Erikson [Erikson, Erik]
psychologist
USA
1950 to 1975
Childhood and Society [1950]; Young Man Luther [1958]; Ghandi's Truth [1969]; Life History and the Historical Moment [1975]
He lived 1902 to 1994 and studied personality growth. Genuine intimacy is in 20's, generativity is in 30's to 50's, and self-integrity is in 50's.

Donald Winnicott [Winnicott, Donald]
psychotherapist
Britain
1951

Transitional Objects and Transitional Phenomena [1951]
He lived 1896 to 1971 and treated children.

Carl Rogers [Rogers, Carl]
psychologist
USA
1951 to 1980
Client-centered Therapy [1951]; On Becoming a Person [1961]; Way of Being [1980]
He lived 1902 to 1987. Psychotherapy type {non-directive therapy, Rogers} {client-centered therapy, Rogers} reeducates patient as patient works through his or her own problem. Therapist provides understanding and acceptance, to modify patient's self-concept and self-esteem, so people can do what they will {self-actualization}.

Ronald Fairbairn [Fairbairn, Ronald]
psychoanalyst
Britain
1952
Psychoanalytical Studies of the Personality [1952]
He lived 1889 to 1964 and developed a systematic interpersonal-relationships theory {object relation}. Depressed people can have the delusion that they are responsible for their early environment and feel guilty about it {moral defense}, to be independent and avoid helplessness.

Norman Vincent Peale [Peale, Norman Vincent]
writer
USA
1952
Power of Positive Thinking [1952]
He lived 1898 to 1993.

Hans J. Eysenck [Eysenck, Hans J.]
psychologist
USA
1952 to 1976
Structure of Human Personality [1952]; Biological Basis of Personality [1967]; Psychoticism as a Dimension of Personality [1976: with S. B. G. Eysenck]
He lived 1916 to 1997. Behavior therapy uses conditioning and learning theory to eliminate conditioned emotional responses, which are neurotic symptoms.

Roy Schafer [Schafer, Roy]
psychologist
USA
1954 to 1983
Psychoanalytic Interpretation in Rorschach Testing [1954]; New Language for Psychoanalysis [1976]; Analytic Attitude [1983]
He developed a psychoanalysis variant [1954]. Ego is an integrated and inseparable self, with personality, objects, and identifications. Ego grows by internalizing love relations.

Hans Selye [Selye, Hans]
psychologist
Canada
1956 to 1974
Stress of Life [1956]; Stress without Distress [1974]
He lived 1907 to 1982 and studied stress syndrome. Pituitary and adrenal glands activate body against stress {stress syndrome}.

Joseph Wolpe [Wolpe, Joseph]
therapist

USA
1958 to 1969
Psychotherapy by Reciprocal Inhibition [1958]; Behavior Therapy Technique [1966: with Arnold Lazarus]; Practice of Behavior Therapy [1969]
He lived 1915 to 1997 and developed behavior therapy {systematic desensitization} [1958].

Ronald David Laing [Laing, Ronald David]
psychiatrist
Britain
1960 to 1967
Divided Self [1960]
He lived 1927 to 1989. Inability to form good personal relationships with others causes schizophrenia. Counseling emphasizes experiences in social interactions and imparts sympathy and understanding to help people form social relations. Psychiatric, diagnostic, and scientific methods do not address human relations.

Henry Kempe [Kempe, Henry]
psychologist
USA
1962
Battered Child Syndrome [1962: with Frederic N. Silverman, Brandt F. Steele, William Droegemueller, and Henry K. Silver]
He lived 1922 to 1984. Parents can abuse child, if they are under sufficient stress, child is frustrating them, and they allow themselves uncontrolled anger. Most chronically abusive parents expect children to always be obedient and to know parent needs. Parents abused them. They mimic young children's emotions. Parents more often abuse youngest child, children under two years old, prematurely born children, and children with congenital deformities. One child in family typically receives the most abuse.

Thomas Szasz [Szasz, Thomas]
psychologist
USA
1965
Myth of Mental Illness [1965]
He lived 1920 to ? and questioned whether mental illness really exists.

Oscar Ichazo [Ichazo, Oscar]
psychologist/philosopher
Chile/USA
1968 to 1982
Between Metaphysics and Protoanalysis [1982]
He lived 1931 to ?, invented nine-point personality typing {Enneagram}, and followed Gurdjieff. Psychotherapy can raise awareness of altered states, to reduce ego {ego destruction}. He founded Arica School {arica training} [1968].

Rollo May [May, Rollo]
psychologist
USA
1969
Love and Will [1969]
He lived 1909 to 1994.