

Terms

Abnormal Psychology: A branch of psychology studying the unusual patterns of behaviour, emotion and thought that vary between people and cultures. Typically, it is summarized with "the four D's": Deviance, Distress, Dysfunction and Danger.

Accommodation: The process in which the lens of the eye changes shape to focus on objects at varying distances. It becomes flatter when looking at closer objects and rounder when looking at further objects.

Action Potential: The fundamental unit of communication for neurons. It involves a series of ionic events along the axon: reaching the threshold potential of -50 mV, a rapid increase in membrane potential, a decrease in membrane potential and ending with the refractory period.

Active Correlations: An individual's genotype influences the kinds of environments that person seeks out. This correlation plays a larger role in development as an individual begins to make more of their own decisions.

Adaptation: Biological traits or characteristics that help an individual survive and reproduce in its habitat. Each adaptation performs a specific function.

Adaptationist Perspective: A label to describe how hypotheses about adaptive functions guide scientists' investigations.

Additive Colour Mixing: When lights of different wavelengths combine to form a different colour. This is the colour system used by the visual system, where the effects of different wavelengths are added together.

Adipose: An endocrine organ, this tissue acts as a long-term energy source, stored in virtually every part of the body as fat. It is also an active part of regulatory physiology as it produces leptin.

Afterimages: A phenomenon in which the complementary colours of an image are seen after staring at the image, and then viewing a white surface. Afterimages occur when a colour receptor that has been excited for a prolonged period of time while viewing the image goes into the opposite, inhibited state, resulting in the perception of the complementary colour.

Allele: A single pair of genes, one inherited from each parent.

Altruism: A social behaviour in which an actor incurs a cost in order to provide a benefit to a recipient.

Amacrine Cells: Similar to the horizontal cells, these cells allow adjacent photoreceptors to combine their information such that 130 million photoreceptors converge on 1 million axons in the optic nerve

Amplitude: The height of a wave. For light, amplitude corresponds to the perception of brightness. Larger amplitude corresponds to a brighter colour (Vision). For sound, it corresponds to the perception of loudness. Waves of larger amplitude correspond to louder sound, (Audition)

Amygdala: An almond shaped structure located below the surface of the temporal lobe that plays a role in decoding emotions

Anti-Psychotic Medication: A drug therapy medication used to alleviate symptoms of psychosis. They work to reduce levels of dopamine activity in the brain

Anvil: Also known as the incus, it is the second of the ossicles found in the middle ear, It projects to the stirrup

Axon: A long fibre that projects from the receptive zone of a neuron, through which the electrical signals of an action potential pass. At the end of the axon is the transmission zone, whereby the signal is passed to neighbouring neurons.

Babbling Principle: An example of the canalization principle, all infants babble the same speech sounds, regardless of which culture they are born into. Their external environment will later shape this babbling to produce different languages. E.g. Korean infants will process both /ra/ and /la/ phonemes but lose an ability for them, they become adults unless they are exposed to English.

Basilar Membrane: The flexible membrane that runs the length of the cochlea, vibrating in different regions along its length in response to different frequencies. It contains the hair cells, which transduce sound into electrical signals perceived by the brain. (Audition)

Closure: The Gestalt Principle that refers to our ability to fill in gaps in the contours of a shape, thus perceiving the whole object. E.g. if a ball is partially occluded by a rock, an individual will still perceive it as a whole ball.

Cochlea: A coiled, fluid-filled tube in the inner ear containing the basilar membrane.

Cochlear Nerve: A bundle of axons carrying action potentials from the hair cells of the cochlea toward the brain, through the cochlear nucleus

Cochlear Nucleus: A region in the hindbrain that serves as the first stop in the brain for axons from the cochlea

Co-Dominance: Two dominant alleles are both fully and equally expressed to produce a phenotype that is an intermediate of the two alleles.

Coefficient of Relatedness: Referred to as "r", the mathematic term in Hamilton's Rule that represents the probability that an actor and recipient share a gene in question.

Co-evolution: The process by which the evolution and adaptation of traits in another species can directly affect the evolution of traits in another species

Cognitive-Behavioural Therapy: A type of psychological treatment for mental disorders. It aims to make patients aware of how they think and understand how that contributes to the way they feel. It also teaches patients to apply these thought patterns to more productive behaviours

Colour Constancy: The ability to perceive objects as being of a constant colour even though the light stimulus reaching the retina changes with different illuminations.

Common Fate: The Gestalt Principle that describes our tendency to group together objects that change in the same way.

Cooperation: According to evolutionary theory, it is the process of an actor working with a recipient to help both themselves and the recipient for personal gain

Cornea: The transparent window at the front of the eye allowing light to first pass through and where the focusing of light begins. It is the most external structure of the eye.

Corpus Callosum: A thick bundle of axons passing through the centre of the brain and allowing for communication between the left and right hemispheres.

Cortex: A part of the forebrain, it is the largest part of the brain. It contains the occipital, temporal, parietal, and frontal lobes and is where most of the actual information processing, behaviours and cognitive functions take place

Critical Period: A window of time during development in which particular environmental stimulation is necessary to see permanent changes in developmental abilities. After this time, the same environmental stimulation will not have the same developmental benefit.

Cross-Sectional Design: A developmental research design in which different age groups are studied at the same point in time to observe age-related differences

Cross-Sequential Design: A developmental research design that combines both longitudinal and cross-sectional designs. While it combines the strongest features of both designs, it is also the most costly and time consuming.

Cumulative Selection: The evolutionary process whereby new adaptations are layered upon old adaptations, gradually increasing the sophistication of a trait. The human eye is an example of cumulative selection

Curved "Cup" Eye: The primitive design of the eye that can still be found today in clams. It allows only for basic functions of vision but has an advantage over the light sensitive patch as it allows the organism to sense the direction of the light.

Danger: One of "the 4 D's", it is when an individual presents a danger to themselves or others

Ear Canal: Part of the external ear, it is used to transmit and amplify sounds from the pinna to the eardrum

Eardrum: Part of the external ear, it is a thin membrane that vibrates at the frequency of incoming sound waves and forms the back wall of the ear canal

Echolocation: The process by which a receiver emits sound pulses and analyzes the returning echo to form a perceptual image of objects in its environment. It is a "visual" technique used by some species of animals, including bats and dolphins

Endogenous Opioids: Naturally occurring chemical substances that have morphine-like analgesic effects in the body. They contribute to palatability and reward-driven feeding, which may explain the pleasure that results from eating

Event-related potentials: A method of measuring brain activity evoked by the presentation of stimuli. An electrode cap is placed on an individual's scalp to measure electrical activity across a population of neurons in the brain.

Evocative Correlations: In this correlation, traits that an individual has inherited through genes influence how others in their environment behave towards that individual.

Excitatory Postsynaptic Potential (EPSP): An event in the post-synaptic neuron in which the Na⁺ channels open, allowing positive ions to flow into the cell, depolarizing it above the -70mV resting potential and bringing it closer to the -50mV threshold to fire an action potential

Experience-Dependent Growth: The unique way in which the brain develop according to personal experiences. This type of brain growth is specific to each individual

Experience-Expectant Growth: Brain growth that is dependent on a certain amount of environmental input in order to develop properly

External Ear: The part of the auditory system that collects sound from the surrounding environment. It is made up of the pinna, ear canal and eardrum.

Functional Magnetic Resonance Imaging (fMRI): A functional neuroimaging technique using magnetic fields to measure the relative use of oxygen throughout the brain, creating a functional map of brain activity.

Functional Neuroimaging: A variety of techniques used to learn how brain activity relates to specific cognitive tasks, such as fMRI, PET scans or EEG.

Ganglion cells: The layer of cells in the retina that bipolar cells send their information to. They are the front layer of the cells in the retina. Their axons converge on a single point of the eye called the optic disc.

Generalized Anxiety Disorder: An anxiety disorder characterized by excessive and irrational worry about minor things. An individual with GAD may experience minor life stressors as significant sources of anxiety due to their inability to cope)

Genes: Segments of DNA that provide the chemical code for development.

Genetic Point of View: The opposite extreme as the behaviourist point of view, it is the view that who a person becomes is largely predetermined by genetics with little to no environmental influence.

Geons: Simple geometrical forms stored in memory that are used to create millions of recognizable objects, as part of the Geon Theory

Gestalt Principles: A set of principles that collectively suggest that the whole is greater than the sum of its parts when it comes to object recognition

Gyri: Ridges, or bulge outward, on the cortex. These, along with sulci form folds that provide the additional surface area required for cortical processing.

Hair Cells: The auditory receptors found in the basilar membrane that convert sound waves into neural impulses that the brain can understand.

Hamilton's Rule: An equation, which predicts when altruistic behaviour will be performed, defined by the inequality $B > C$ (benefit to recipient * coefficient of relatedness > cost to altruist).

Homozygous Condition: When two alleles at a locus have the same effect on the phenotype.

Horizontal Cells: Similar to amacrine cells, these cells allow adjacent photoreceptors to combine their information such that 130 million photoreceptors converge on 1 million axons in the optic nerve

Hypercomplex Cell: A visual cortical cell that responds maximally to a bar of light at a particular orientation and begins and ends at specific points within the receptive field.

Illness Anxiety Disorder: A somatoform disorder characterized by a persistent fear of having a serious illness despite medical evaluations to the contrary.

Indirect Fitness: An individual's genetic contribution to the next generation through the reproduction of close genetic relatives. E.g. a mother may help to raise her daughter's children to ensure that the genes of those children survive and reproduce. (Evolution II)

Lateral Geniculate Nucleus (LGN): The part of the thalamus that receives visual information from the optic chiasm and relays it to the primary visual cortex

Learning: Acquiring neuronal representations of new information which lead to permanent changes in thoughts and behaviours as a result of experiences.

Lens: A transparent, flexible structure that does the final focusing of light onto the retina. It may change in shape (accommodate) to focus on objects at different distances, contributing to depth perception

Leptin: A hormone produced by adipose tissue and controlled by the OB gene, involved in long-term energy balance and fat mass. High levels of leptin act on the hypothalamus to reduce appetite

Magnocellular Pathway: The pathway from the ganglion cells to the extrastriate cortex that carries movement, depth and brightness information from the magno cells in the periphery of the retina. They have larger receptive fields than parvo cells. (Form Perception II)

Major Depression: A depressive disorder characterized by severe decreased mood, loss of motivation, fluctuations in weight, lack of energy; thoughts of suicide; feelings of emptiness, worthlessness, and guilt.

Mania: A symptom of bipolar disorder in which an individual experiences heightened self-esteem, activity, and energy, as well as decreased need for sleep. They can be distressing and destructive to an individual's life

Mate Choice: A subtype of sexual selection in which the preference of the opposite sex drives selection of a trait

Necker Cube: A visual illusion in which the brain can perceive a two dimensional image of a cube as both popping out or going into a page.

Negative Symptoms: Behaviours that decrease in someone with schizophrenia. They generally point to a decrease in the individual's engagement with the outside world.

Neurogenesis: The process by which neurons are created in the nervous system.

Neuropeptide Y (NPY): A hormone in humans and other species. High levels in the hypothalamus leads to increased appetite and food seeking behaviours. Interacts with leptin to regulate weight. (Hunger and the Chemical Senses)

Optic Nerve: One of the cranial nerves, it is a bundle of ganglion cell axons that transmit visual information out the back of the eye to the brain

Ossicles: A collection of the smallest bones in the body that are found in the middle ear and used to amplify sound. They consist of the hammer, anvil, and stirrup

Oval Window: A small opening in the side of the cochlea that, when made to vibrate, causes the fluid inside of the cochlea to become displaced. It is through here that the middle ear connects to the inner ear

Postsynaptic Neuron: At a synapse, the neuron to which electrical signals are sent from the presynaptic neuron

Preference Method: A method of measuring what an infant likes and dislikes. An infant is put into a looking chamber to simultaneously look at two stimuli and the researcher observes whether the infant is directing more attention to one stimulus.

Presynaptic Neuron: At a synapse, the neuron from which an electrical signal is sent to a postsynaptic neuron.

Primary Colours: The three colours that can be combined in various proportions to produce every colour in the visual spectrum. They are base colours that cannot be reduced into other colours

Primary Visual Cortex: Labeled as area V1 in the occipital cortex, it is the first major visual relay area in the cortex where basic visual information is processed. The receptive fields of many LGN cells combine to form the receptive field of a single V1 cell

Priming: An effect in which we respond more quickly and accurately if we expect or have recent experience with a particular stimulus or category.

Purity: A physical characteristic of light, which affects the perception of the saturation, or richness of colours. A pure light wave is composed of a single wavelength of light, while impure light is a mixture of several wavelengths. (Vision)

Saturation: A psychological characteristic of light, corresponding to the purity of a light stimulus. Saturated colours are richer than de-saturated colours and de-saturated colours make up the majority of the natural world. (Vision)

Schizophrenia: The "splitting of the mind" from reality, it is a mental disorder characterized by a breakdown in thought processes and poor emotional

responsiveness. Symptoms include but are not limited to delusions, paranoia and auditory hallucinations

Sclera: A tough structural membrane that covers the portion of the eye not covered by the cornea. The sclera provides the eye with its white appearance

Simple Eye: The type of eye found in vertebrates and mollusks that contains an eyeball, lens and retina. This type may vary in exact design by species and environment but is the type of eye that we think of when we think of eyes

Size Constancy: Our ability to perceive the size of objects as unchanging despite changes in their size on the retina as distance from the retina varies

Somatosensory Cortex: The region in the brain that processes the feeling and texture of food in the mouth and the location of taste on the tongue

Split Brain Syndrome: A condition in which an individual's corpus callosum is severed such that the two hemispheres of the brain cannot communicate with each other

SSRI: A drug therapy medication used to alleviate symptoms of depression. They work to increase levels of serotonin activity in the brain

Stabilizing Selection: Selection that acts against any sort of departure from the species-typical adaptive design.

Stages of Change: The step-wise process that describes the typical progression of treatment, consisting of Precontemplation, Contemplation, Preparation, Action, Maintenance, and sometimes Relapse

Stirrup: Also known as the stapes, it is the last of the ossicles found in the middle ear. It projects onto the oval window of the cochlea in the inner ear

Structural Neuroimaging: A variety of techniques used to study the large-scale structure of the brain and identify structural abnormalities

Ventral Stream: The "what" visual pathway that starts in the extrastriate cortex and terminates in the temporal lobe. It processes information about object identity (including form and colour).

Visible Spectrum: The portion of the total range of wavelengths of electromagnetic radiation to which humans are visually sensitive, or, what humans can see. The shortest wavelength of the visible spectrum is 360 nanometers (violet) and the longest is 750 nanometers (red).

Visual Illusion: An ambiguous or incomplete image that is perceived as being something different from what it really is.