Famous Psychologists and Their Psychological Systems

This section provides an overview of the underpinnings of modern behavioral science through biographical sketches of the most influential individuals in the field of psychology as well as write-ups of the systems they introduced and their other contributions. Each new piece of the puzzle of human behavior added by these famous figures influenced those that followed, and was either built on or revised with the addition of new knowledge. Spanning the late nineteenth and twentieth centuries, the thirty-six articles in this section outline important developments in understanding human behavior that are still relevant today to modern psychological research and psychotherapy. Topics include: Jean Piaget and cognitive development, conditioning, Freudian psychology, Jungian psychology, Pavlovian conditioning, person-centered therapy, social comparison theory, social learning theory, and radical behaviorism.

headache by taking aspirin). Consequences may be natural (tomatoes to eat after a season of careful planting and watering) or contrived (receiving a dollar for earning an A on a test).

Reinforcing and punishing consequences are one example of controlling variables. Events that precede behaviors are also controlling variables and determine under what circumstances certain behaviors are likely to appear. Events occurring before a response occurs are called "discriminative stimuli" because they come to discriminate in favor of a particular piece of behavior. They set the occasion for the behavior and make it more likely to occur. For example, persons trying to control their eating are told to keep away from the kitchen except at mealtimes. Being in the kitchen makes it more likely that the person will eat something, not simply because that is where the food is kept but also because being in the kitchen is one of the events that has preceded previous eating and therefore makes eating more likely to occur. This is true even when the person does not intend to eat but goes to the kitchen for other reasons. Being in the kitchen raises the probability of eating. It is a discriminative stimulus (any stimulus in the presence of which a response is reinforced) for eating, as are the table, the refrigerator, or a candy bar on the counter. Any event or stimulus that occurs immediately before a response is reinforced becomes reinforced with the response and makes the response more likely to occur again if the discriminative stimulus occurs again. The discriminative stimulus comes to gain some control over the behavior.

DISCRIMINATIVE AND REINFORCING STIMULI

Discriminative stimuli and reinforcing stimuli are the controlling variables Skinner used to analyze behavior. These events constitute a chain of behavior called a "contingency of reinforcement." It is a contingency because reinforcement does not occur unless the response is made in the presence of the discriminative stimuli. Contingencies of reinforcement are encountered every day. For example, a soda is purchased from a machine. The machine is brightly colored to act as a discriminative stimulus for dropping coins in a slot, which in turn yields a can or bottle of soft drink. The machine comes to control a small portion of a person's behavior. If the machine malfunctions, a person may push the selector button several times repeatedly, perhaps even putting in more coins, and, still later, strike the machine. By carefully scheduling how many times an organism must respond before reinforcement occurs, the rate of response can be controlled as is done in slot or video machines, or gambling devices in general. Responses are made several hundred or thousand times for very little reinforcement—a near win or a small payoff. Schedules of reinforcement are another important set of controlling variables that Skinner explored.

Contingencies are relationships among controlling variables. Some of the relationships become abstracted and formulized, that is, put in the form of rules. When behavior is under the control of a rule, it is termed "rule-governed behavior," as opposed to contingency-shaped behavior. As a person first learns any skill, much of his or her behavior is rule governed, either through written instructions or by the person's repeating the rule to himself or herself. For example, a novice golfer might review the rules for a good swing, even repeating them aloud. Eventually, though, swing becomes automatic; it seems to become "natural." The verbal discriminative stimuli have shifted to the very subtle and covert stimuli associated with swing without the golfer's thinking about it, and the natural consequences of a successful swing take over.

OPERANT CHAMBER EXPERIMENTS

The operant chamber is a small experimental space or cage that Skinner invented to observe the effects that consequences have on behavior. A food-deprived

thought to be caused by neuropsychological problems. Dyslexia frustrates afflicted children, damages their self-image, produces grave maladjustment in many cases, and decreases their adult contributions to society.

Key concepts:

- Auditory dyslexia
- Brain dysfunction
- Computed tomography (CT) scan
- Dysgraphia
- Electroencephalogram (EEG)
- Imprinting
- Kinesthetic imprinting
- Phonology
- Self-image
- Visual dyslexia

INTRODUCTION

The ability to read quickly and well is essential for success in modern industrialized societies. Several researchers, including Robert E. Valett, have pointed out that an individual must acquire considerable basic cognitive and perceptual-linguistic skills to learn to read. First, it is necessary to learn to focus one's attention, to concentrate, to follow directions, and to understand the language spoken in daily life. Next, it is essential to develop auditory and visual memory with sequencing ability, word-decoding skills, a facility for structural-contextual language analysis, the ability to interpret the written language, a useful vocabulary that expands as needed, and speed in scanning and interpreting written language. Valett has noted that these skills are taught in all good developmental reading programs.

Dyslexia may make it difficult to distinguish letters and words that are mirror images of each other. Yet 20 to 25 percent of the population of the United States and many other industrialized societies, people who otherwise possess at least average intelligence, cannot develop good reading skills. Many such people are viewed as suffering from a neurological disorder called "dyslexia," a term that was first introduced by a German ophthalmologist, Rudolph Berlin, in the nineteenth century. Berlin meant it to designate all those individuals who possessed an average or above-average performance intelligence quotient (IQ) but who could not read adequately because of an inability to process language symbols. Others reported children who could see perfectly well but who acted as though they were blind to the written language. For example, they could see a bird flying but were unable to identify the word "bird" written in a sentence.

Although the problem has been redefined many times over the ensuing years, the modern definition of dyslexia is still fairly close to Berlin's definition. The American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders: DSM-IV-TR* (rev. 4th ed., 2000) labels this condition "reading disorder" and defines it as reading achievement substantially below that expected given chronological age, measured intelligence, and age-appropriate education that interferes significantly with academic achievement or activities of daily living requiring reading skills.

BRAIN DEVELOPMENT

Two basic explanations have evolved for dyslexia. Many physicians propose that it is caused by either brain damage or brain dysfunction. Evolution of the problem is attributed to accident, to disease, or to faults in body chemistry. Diagnosis is made by the use of electroencephalograms (EEGs), computed tomography (CT) scans, and other related technology. After such evaluation, medication is often used to diminish hyperactivity and nervousness, and physical training procedures called "patterning" are used as tools to counter the neurological defects.

In contrast, many special educators and other related researchers believe that the problem is one of dormant, immature, or undeveloped learning centers in the brain. The proponents of this concept encour-

- Frotteurism
- Sexual masochism
- Sexual sadism
- Transvestic fetishism
- Voyeurism
- Zoophilia

INTRODUCTION

Paraphilias are sexual behaviors that differ from the society's norms; a paraphilia is classified as a psychological disorder when the deviant fantasies, sexual urges, or behaviors cause the individual significant distress or impairment in social, occupational, or other important areas and persist for longer than six months, or when they cause harm to others. Psychologist John Money, who has studied sexual attitudes and behaviors extensively, claims to have identified about forty such behaviors.

TYPES OF PARAPHILIAS

Exhibitionism. Exhibitionism is commonly called "indecent exposure." The term refers to behavior in which an individual, usually a man, experiences recurrent, intense sexually arousing fantasies or urges about exposing his genitals to an involuntary observer, who is usually a female. The key point in exhibitionistic behavior is that it involves observers who are unwilling. After exposure, the exhibitionist often masturbates while fantasizing about the observer's reaction. Exhibitionists tend to be most aroused by shock and typically flee if the observer responds by laughing or attempts to approach the exhibitionist. Most people who exhibit themselves are adolescent or young adult men. They tend to be shy, unassertive people who feel inadequate and afraid of being rejected by another person. People who make obscene telephone calls have similar characteristics to the people who engage in exhibitionism. Typically, they are sexually aroused when their observers react in a shocked manner. Many masturbate during or immediately after placing an obscene call.

Voyeurism. Voyeurism is the derivation of sexual pleasure through the repetitive seeking of or intrusive fantasies of situations that involve looking, or "peeping," at unsuspecting people who are naked, undressing, or engaged in sexual intercourse. It may also involve secretly filming or photographing the target. Most individuals who act on these urges masturbate during the voyeuristic activity or immediately afterward in response to what they have seen. Further sexual contact with the unsuspecting stranger is rarely sought. Like exhibitionists, voyeurs are usually not physically dangerous. Most voyeurs are not attracted to nude beaches or other places where it is acceptable to look because they are most aroused when the risk of being discovered is high. Voyeurs tend to be men in their twenties and may have a high sex drive along with strong feelings of inadequacy.

Sadomasochism. Sadomasochistic behavior encompasses both sadism and masochism; it is often abbreviated S&M. The term "sadism" is derived from the Marquis de Sade, a French writer and army officer

The term "sadism" is derived from the French writer Marquis de Sade. Charles-Amédée-Philippe van Loo, Public domain, via Wikimedia Commons.

means genetic and social surroundings reciprocate to yield obvious outcomes.

Genes make proteins, and proteins cause biochemical responses in cells. The behavior of an animal takes place under the combined influences of its genes, expressed through the actions of proteins, and its environment.

HEREDITY AND ENVIRONMENT

A good example is the phenomenon of mating seasons in many animals. As day length gradually increases toward spring and summer, a critical length is reached that signals the release of hormones that result in increased sexual activity, with the ultimate goal of seasonal mating. The production and activity of hormones involve genes or gene products. If the critical number of daylight hours is not reached, the genes will not be activated, and sexual behavior will not increase.

Each neuron making up the intricate networks and circuits throughout the cerebrum (about 80 percent of the human brain) has protein receptors (chemoreceptors) that respond to specific signaling molecules. The production of the receptors and signaling molecules used for any type of brain activity is directly tied to genes. A slightly different gene may lead to a slightly different signaling molecule or receptor and thus a slightly different cell (neuron) response. A larger difference among genes may lead to a larger difference among signaling molecules or receptors and thus a larger variation in cell response. Since human behavior involves the response of neurons and neuron networks in the brain to specific signals, and because the response of neurons occurs from the interaction between a signaler and a receptor built by specific genes, the genetic link seems straightforward: input, signal, response, behavior. However, when the slight variations between genes are added to the considerable variation among noncoding or regulatory sequences of deoxyribonucleic acid (DNA), the genetic connection to behavior becomes much less direct. Because a gene is under the control of one or several regulatory sequences that in turn may be under the control of various environmental inputs, the amount of genetic variation among individuals is compounded by two other critical factors: the environmental variations under which the brain develops and the daily environmental variations to which the individual is exposed. A convenient way to think of genetics and behavior is to consider that genes allow humans to respond to a specific stimulus by building the pathway required for a response, while behavior is defined by the degree and the manner of human response.

EUGENICS

Eugenics is the categorization of a specific human behavior to an underlying genetic cause. People inherit specific genes to build specific pathways that allow them to respond in certain ways to environmental input. With variations possible—from the gene-to-gene regulators to the final cellular response—it is virtually impossible to disconnect the nature-versus-nurture tie that ultimately controls human behavior. Genes are simply the tools by which the environment shapes and reshapes human behavior. There is a direct correlation between gene and protein: Change the gene, change the protein. However, there is no direct correlation between gene and behavior: Changing the gene does not necessarily change the behavior. Behavior is a multifaceted, complex response to environmental influences that is only partially related to genetic makeup.

QUANTITATIVE TRAIT LOCI (QTLS)

Another important fact is that almost no behaviors are controlled by a single gene locus, and the more complex the behavior, the more likely that it is controlled by several to many genes. Hence, not only do environmental effects cloud the picture, but each gene involved in more complex behavioral traits represents just a small part of the genetic basis for the trait as

COMPONENTS

The components of the Mental Status Exam (MSE) can be divided into four main categories with the acronym A-B-C-T: Appearance, Behavior, Cognition and Thought. These categories and their components are described below.

Appearance. An individual's appearance can provide a wealth of information. It is a broad term that includes elements such as posture, position, hygiene, grooming, and dress. Normal posture is usually erect while position is relaxed. Abnormal findings may include uneven standing position, sitting slumped in a chair, visible facial or general muscle tension, sitting on edge of a chair, or lying curled in bed. Hygiene and grooming should also be considered. Some patients with a history of a stroke may present with unilateral neglect, a condition characterized by complete inattention to one side of the body.

Poor hygiene and inappropriate dress may be indicative of depression, dementia, frontal lobe dysfunction, delirium, or schizophrenia. On the other hand, excessive makeup or flamboyant attire may indicate a manic state or schizophrenia, while meticulous or fastidious grooming may suggest obsessive-compulsive disorder. General appearance such as cachexia or obesity may occur in conjunction with a systemic disease or a mental health disorder such as anorexia nervosa or binge eating disorder.

Behavior. The most important components of behavior include level of consciousness, emotional state, body movements, speech, facial expressions, and general manner of behavior. Level of consciousness (LOC) is one of the most important components of the MSE. A person with a normal LOC is awake, alert, aware of internal and external stimuli, and shows appropriate responses to such stimuli. Impaired consciousness expressed by somnolence, lethargy, stupor, or coma may indicate a neurologic or medical emergency.

Emotional state is expressed by an individual's mood and affect. Mood is a subjective and internal emotional state whereas affect is a clinician's objective evaluation of such. Mood can be assessed by asking a person about the way they feel at this time and most recently. Body language, vocal tone, and facial expressions may assist in determining a patient's affect. Affect can be characterized by emotional range (broad or restricted), intensity (blunted, flat or normal), and stability. It may be congruent with mood or may be different.

Evaluation of body movements is another key element of the MSE. General slowing of physical and emotional reactions and signs of apathy are present in depression, schizophrenia, or organic brain disease. Increased agitation, restlessness, and squirmy movements can occur with bipolar disorder or anxiety. Dragging of feet may be seen in depression or organic brain disease while unusual posturing and odd gestures may be signs of schizophrenia. Changes in body movements over a period of time can occur due to progression of an illness or caused by side effects of certain medications.

When examining speech, it is important to note its overall quality, spontaneity, pace, word choice, sentence structure, and articulation. The manner in which a person speaks is more important than the actual content in this part of the MSE. Speech that is slow and monotonous can occur in conjunction with depression or Parkinsonism. Loud, pressured, or rapid speech is common in manic syndrome. Absence of speech may indicate selective mutism, vegetative state, locked-in syndrome, or a brain lesion.

Facial expressions of a healthy person are proper to the situation and change appropriately with the topic. The eye contact is comfortable. Flat and mask-like facial expression is common in patients with depression or Parkinson's. Frowning and vigilant or darting eyes is a common observation in patients with anxiety or hyperthyroidism.

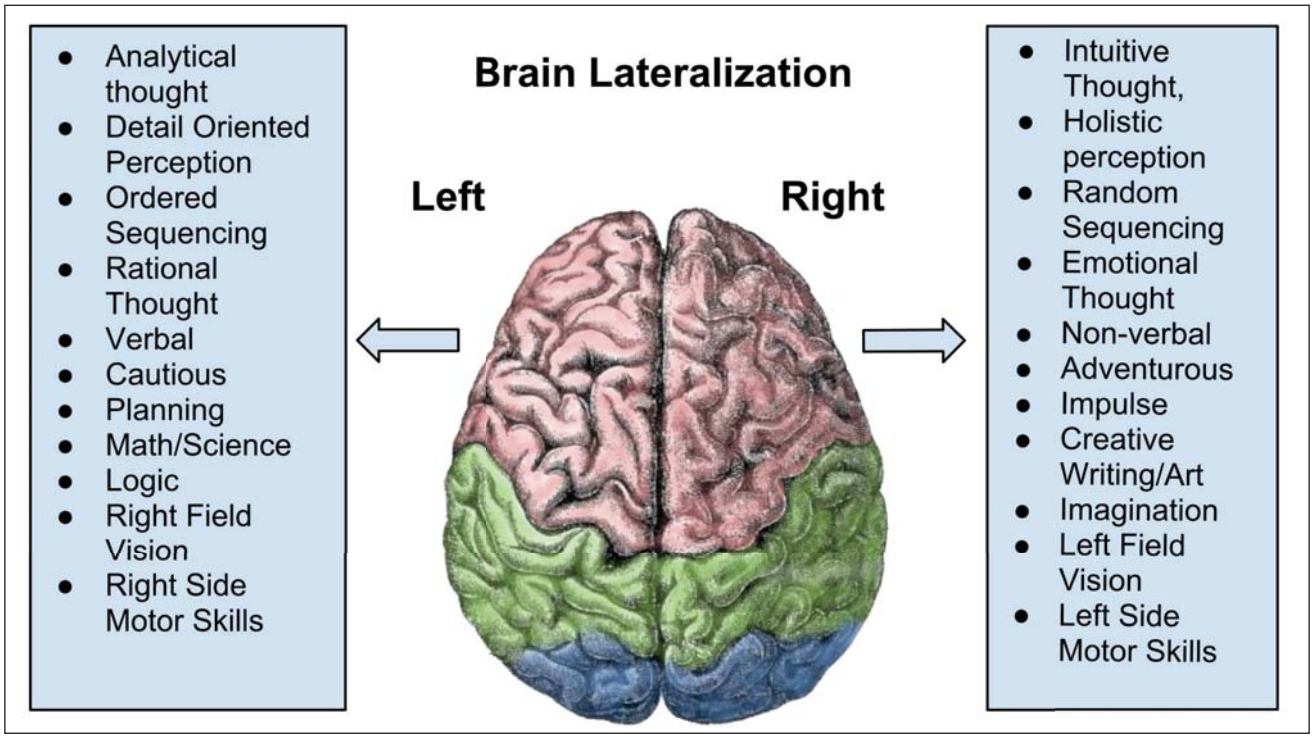
Cognition. Cognitive assessment includes orientation, attention span, recent memory, remote memory, language, new learning ability, visual spatial skills, judgment, and executive function. Orientation

INTRODUCTION

In 1861, Paul Broca performed an autopsy on a man who had spent the last thirty years of his life in an asylum because he would not speak. Broca discovered a lesion in the posterior frontal lobe of the left, but not the right, hemisphere and concluded that this location was the speech area of the brain. Subsequent research confirmed his conclusion, and the area was named after Broca. Broca's discovery was the first tangible evidence that a function of the brain was localized to one cerebral hemisphere. It would be nearly a century, however, before the extent of cerebral lateralization would be more fully explored with individuals known as split-brain people.

Ronald Myers and Roger Sperry had demonstrated in the 1950s that severing the corpus callosum, the large band of fibers that connects the cerebral hemispheres, and smaller hemispheric connecting bands known as commissures caused behavior changes in animals. However, similar operations performed on humans in the 1940s by William Van Wagenen in order to reduce epileptic seizures appeared to result in no discernible psychological changes in these split-brain patients. This seeming contradiction between the animal and human findings was resolved in the 1960s by Sperry and Michael Gazzaniga's research with split-brain people. Knowing that stimuli presented to the right visual field of each eye go to only the left hemisphere and that stimuli presented to the left visual field only go to the right hemisphere, they presented visual stimuli briefly to one visual field or the other. Because the corpus callosum and commissures were disconnected, the brief visual presentations were available to only one hemisphere. Just as the findings in animal research, they demonstrated that there were striking differences in the functions of the two hemispheres.

Other research methods have expanded upon Sperry and Gazzaniga's findings. The Wada test, in which one hemisphere is briefly anesthetized by an in-



Lateralization of the human brain, divided into two hemispheres. Chickensaresocute, CC BY-SA 3.0, via Wikimedia Commons.

One herbal supplement, St. John's wort, is quite commonly used to counter depression and is highly effective in some studies. This herbal remedy comes from a plant with yellow flowers. Derivatives of this plant were first used medicinally in ancient Greece. Although St. John's wort was initially used for sedation or pain, presently, it is an over-the-counter antidepressant. Controlled clinical trials with St. John's wort have produced conflicting results. If this herbal supplement works for depression, it seems to work for mild to moderate depression and not severe depression. This herbal treatment has many drug interactions and is not a benign agent. Anyone taking St. John's wort, even infrequently, should tell their health-care professionals every time they have an appointment.

—Robin Kamienny Montvilo and Michael A Buratovich

Bibliography

Baumel, S. *Natural Antidepressants: Tried and True Remedies from Nature's Pharmacy*. McGraw-Hill, 1998.

Breggin, Peter R. *The Anti-Depressant Fact Book: What Your Doctor Won't Tell You About Prozac, Zoloft, Paxil, Celexa, and Luvox*. Perseus, 2001.

Elias, Alby, Naveen Thomas, and Harold A. Sackeim, H. A. "Electroconvulsive Therapy in Mania: A Review of 80 Years of Clinical Experience." *American Journal of Psychiatry*, vol. 178, no. 3, 2020, pp. 229-39, doi:10.1176/appi.ajp.2020.20030238.

Giakoumatos, Christoforos I., and David Osser. "The Psychopharmacology Algorithm Project at the Harvard South Shore Program." *Harvard Review of Psychiatry*, vol. 27, no. 1, 2019, pp. 33-52.

Glenmullen, J. *The Antidepressant Solution: A Step-by-Step Guide to Safely Overcoming Antidepressant Withdrawal, Dependence, and "Addiction."* Simon & Schuster, 2006.

Hansen, R. A., et al. "Efficacy and Safety of Second-Generation Antidepressants in the Treatment of Major Depressive Disorder." *Annals of Internal Medi*cine, vol. 143, 2005, pp. 415-26.

Kee, Joyce LeFever, Evelyn R. Hayes, and Linda E, McCuistion. *Pharmacology: A Patient-Centered Nursing Process Approach*. 8th ed., Elsevier, 2014.

Kirsch, Irving. *The Emperor's New Drugs: Exploding the Antidepressant Myth*. Basic, 2011.

Hart, Carl L., and Charles Ksir. *Drugs, Society, and Human Behavior*. McGraw-Hill, 2011.

Muir, Alice Jane. *Overcoming Depression*. McGraw-Hill, 2013.

Shelton, R. C. "St John's Wort (Hypericum perforatum) in Major Depression." *Journal of Clinical Psychiatry*, vol. 70, no. Suppl. 5, 2009, pp. 23-27, doi: 10.4088/JCP.8157su1c.05. PMID: 19909690.

Sharp, Katherine. *Coming of Age on Zoloft: How Antidepressants Cheered Us Up, Let Us Down, and Changed Who We Are*. Harper Perennial, 2012.

ANTIPSYCHOTIC MEDICATIONS

Type of psychology: Biological bases of behavior; Psychopathology; Stress

Antipsychotics are medications used to treat people who are out of touch with reality. The first antipsychotics were developed in the 1950s, and numerous, more effective types followed.

Key concepts:

- Atypical antipsychotics
- Benzisoxidil group
- Chlorpromazine
- Clozapine
- Debenzapine derivatives
- Neuroleptics
- Phenothiazines
- Phenylbutylpiperadines
- Psychosis
- Typical antipsychotics

INTRODUCTION

Antipsychotic medications were first used to treat people who were out of touch with reality (psychotic) in the 1950s with the development of chlorpromazine (Thorazine). Originally developed for surgical patients, chlorpromazine was used on patients with psy-

Altruism: A phenomenon in human and animal behaviors in which individuals unselfishly sacrifice their own genetic fitness in order to help other individuals in a group.

Alzheimer's disease: A form of presenile dementia, characterized by disorientation, loss of memory, speech disturbances, and personality disorders.

Amplitude: The peak deviation from the rest state of the movement of a vibrating object, or the ambient state of the medium through which vibration is conducted.

Anal stage: According to Sigmund Freud, the second psychosexual stage of personality development, approximately from ages two to four; sexual energy is focused on the anus and on pleasures and conflicts associated with retaining and eliminating feces.

Analgesia: The reduction or elimination of pain.

Analytical psychology: A school of psychology founded by Carl Jung that views the human mind as the result of prior experiences and the preparation of future goals; it deemphasizes the role of sexuality in psychological disorders.

Androgens: Male sex hormones secreted by the testes; testosterone, the primary mammalian male androgen, is responsible for the development and maturation of male sexual structures and sexual behaviors.

Androgyny: The expression of both traditionally feminine and traditionally masculine attributes.

Anorexia nervosa: An eating disorder characterized by an obsessive-compulsive concern for thinness achieved by dieting; often combined with extreme exercising and sometimes part of a binge-purge cycle.

Anterograde amnesia: An inability to form new memories after the onset of amnesia.

Antidepressants: Drugs that are used in the treatment of depression, many of which affect or mimic neurotransmitters; classes of antidepressants include the tricyclics and monoamine oxidase inhibitors (MAOIs).

Antisocial personality disorder: A personality disorder characterized by a history of impulsive, risk-taking, and perhaps chronic criminal behavior and by opportunistic interpersonal relations.

Anxiety: A chronic fear-like state that is accompanied by feelings of impending doom and that cannot be explained by an actual threatening object or event.

Aphasia: Partial or total loss of the use of language as a result of brain damage, characterized by an inability to use and/or comprehend language.

Applied research: Research intended to solve existing problems, as opposed to "basic research," which seeks knowledge for its own sake.

Aptitude: The potential to develop an ability with training and/or experience.

Archetypes: In Carl Jung's theory, universal, inherited themes—such as the motifs of the self, hero, and shadow—that exercise an influence on virtually all human beings.

Archival data: Information collected at an earlier time by someone other than the present researcher, often for purposes very different from those of the present research.

Artificial intelligence: The use of computers to simulate aspects of human thinking and, in some cases, behavior.

Assimilation: The interpretation of a new instance of an object or event in terms of one's preexisting schema or understanding.

Attachment: An emotional bond between infant and caregiver based on reciprocal interaction patterns.

Attention: The ability to focus mentally.

Attitude: A relatively stable evaluation of a person or thing; it can be either positive or negative, can vary in level of intensity, and has an affective, cognitive, and behavioral component.