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The following page shows the career & education requirements, salary and job outlook for Physiological Psychology around the country. What We Do The field of physiological psychology is biological in nature. It is a field of research and diagnostics, connecting what people say and do to how their brain cells, chemistry, and structures actually work. Psychologists in this particular field also study the five senses, developing theories on the relationships between brain and behavior. Although heavily based in research, physiological psychology is also practical in nature. They aim to understand what certain behaviors are caused by, including reproductive behavior, ingestion, communication, memory, learning, and the senses, applying this knowledge to improve neurological disorders. As such, they also study psychopharmacology, determining the impact of drugs on the brain. Work Environment Many physiological psychologists work in hospitals, as they are able to have access tools, such as PET scanners and MRI technology, to monitor reactions in the brain. They also work closely with patients who have brain surgery or brain illnesses, such as cancer or epilepsy, performing research withing laboratories and medical facilities. Controversially, many work in animal research. Animal rights groups strongly oppose this work, but physiological psychologists believe they follow the necessary ethical guidelines when it comes to the treatment of animals, and that the results of their research can help improve the lives of many people. How to Become a Physiological Psychology To become a physiological psychologist, you must first complete a four year bachelor's degree. While this does not have to be in psychology, it is often recommended to build up a solid foundation in the subject area. After the bachelor's degree, you must enroll in a two year master's degree, where you can choose the medical psychology specialization. In order to call yourself a psychologist, you must also complete a doctoral degree, with is either the research based Ph.D., or the clinically based Psy.D. The Ph.D. is the more relevant degree for a physiological psychologist. Training & Certification Requirements Each state has its own requirements in terms of licenses and certification for physiological psychologists. The American Psychological Association and the Association of State and Provincial Psychology Boards both list what the requirements within each state are. Certification is usually valid for a certain period of time only, and must be maintained either through proof of continuous education credits, or by retaking the examination. Physiological Psychology Related Job Titles According to Indeed.com, the following career/job titles with salary figures are most closely related to Physiological Psychology. Physiological Psychology Earning Potential According to the U.S. Bureau of Labor Statistics, all psychologists, regardless of their field of specialization, earned a median salary of $72,580 per year as of May 2015. Physiological Psychology Job Outlook Growth in demand for professionals is expected to be strong in the field of psychology, with the U.S. Bureau of Labor Statistics projecting a 19% growth from 2014 to 2024, which is much faster than the national average for most other professions. According to Indeed.com, the average national salary of jobs for Physiological Psychology was $50,000.00 with a high confidence ranking based on over 250 sources. Average Physiological Psychology salaries for job postings nationwide are 13% lower than average salaries for all job postings nationwide. Physiological Psychology Salary by State The following lists Physiological Psychology salaries in each state around the country. The figures are based on the total number of job postings by employers through Indeed.com. For example, DC had the largest quoted salary of $63,000 while Hawaii had the smallest quoted salary of $31,000. Alaska – $37,000 (High Confidence (more than 250 sources)) Rank: 48th Average Physiological Psychology salaries for job postings in Alaska are 26% lower than average Physiological Psychology salaries for job postings nationwide. The average salary ranks 48th among states in the country. There were no current job openings from employers in this state. In USD as of October 24, 2016 60k 120k 180k Physiological Psychology $37,000 . Alabama – $51,000 (High Confidence (more than 250 sources)) Rank: 11th Average Physiological Psychology salaries for job postings in Alabama are 1% higher than average Physiological Psychology salaries for job postings nationwide. The average salary ranks 11th among states in the country. There were also job openings from employers like Samford University and WeightNot. In USD as of October 24, 2016 60k 120k 180k Physiological Psychology $51,000 . Arkansas – $51,000 (High Confidence (more than 250 sources)) Rank: 12th Average Physiological Psychology salaries for job postings in Arkansas are 2% higher than average Physiological Psychology salaries for job postings nationwide. The average salary ranks 12th among states in the country. There were also job openings from employers like WeightNot. In USD as of October 24, 2016 60k 120k 180k Physiological Psychology $51,000 . Arizona – $41,000 (High Confidence (more than 250 sources)) Rank: 43rd Average Physiological Psychology salaries for job postings in Arizona are 18% lower than average Physiological Psychology salaries for job postings nationwide. The average salary ranks 43rd among states in the country. There were also job openings from employers like WeightNot, Arizona State University, Arizona State University / School of Life Sciences, and Unlisted Company. In USD as of October 24, 2016 60k 120k 180k Physiological Psychology $41,000 . California – $54,000 (High Confidence (more than 250 sources)) Rank: 7th Average Physiological Psychology salaries for job postings in California are 7% higher than average Physiological Psychology salaries for job postings nationwide. The average salary ranks 7th among states in the country. There were also job openings from employers like WeightNot, Quantum Applied Science and Research (QUASAR), Inc., California State University, and Argosy University. In USD as of October 24, 2016 60k 120k 180k Physiological Psychology $54,000 . Colorado – $44,000 (High Confidence (more than 250 sources)) Rank: 33rd Average Physiological Psychology salaries for job postings in Colorado are 11% lower than average Physiological Psychology salaries for job postings nationwide. The average salary ranks 33rd among states in the country. There were also job openings from employers like STG International, University of Northern Colorado, Kaiser Permanente, and WeightNot. In USD as of October 24, 2016 60k 120k 180k Physiological Psychology $44,000 . Connecticut – $58,000 (High Confidence (more than 250 sources)) Rank: 4th Average Physiological Psychology salaries for job postings in Connecticut are 15% higher than average Physiological Psychology salaries for job postings nationwide. The average salary ranks 4th among states in the country. There were also job openings from employers like WeightNot. In USD as of October 24, 2016 60k 120k 180k Physiological Psychology $58,000 . DC – $63,000 (High Confidence (more than 250 sources)) Rank: 1st Average Physiological Psychology salaries for job postings in Washington, DC are 25% higher than average Physiological Psychology salaries for job postings nationwide. The average salary ranks 1st among states in the country. There were also job openings from employers like Fairfax County Government, ICF, WeightNot, and SPARK Experience. In USD as of October 24, 2016 60k 120k 180k Physiological Psychology $63,000 . Delaware – $44,000 (High Confidence (more than 250 sources)) Rank: 34th Average Physiological Psychology salaries for job postings in Delaware are 12% lower than average Physiological Psychology salaries for job postings nationwide. The average salary ranks 34th among states in the country. There were no current job openings from employers in this state. In USD as of October 24, 2016 60k 120k 180k Physiological Psychology $44,000 . Florida – $47,000 (High Confidence (more than 250 sources)) Rank: 26th Average Physiological Psychology salaries for job postings in Florida are 7% lower than average Physiological Psychology salaries for job postings nationwide. The average salary ranks 26th among states in the country. There were also job openings from employers like WeightNot, Quantum Improvements Consulting, and Argosy University. In USD as of October 24, 2016 60k 120k 180k Physiological Psychology $47,000 . Georgia – $57,000 (High Confidence (more than 250 sources)) Rank: 5th Average Physiological Psychology salaries for job postings in Georgia are 14% higher than average Physiological Psychology salaries for job postings nationwide. The average salary ranks 5th among states in the country. There were also job openings from employers like OFS FITEL LLC, WeightNot, Entourage Consulting LLC., and Loyal Source Government Services. In USD as of October 24, 2016 60k 120k 180k Physiological Psychology $57,000 . Hawaii – $31,000 (High Confidence (more than 250 sources)) Rank: 51st Average Physiological Psychology salaries for job postings in Hawaii are 38% lower than average Physiological Psychology salaries for job postings nationwide. The average salary ranks 51st among states in the country. There were also job openings from employers like College of Social Sciences, Department of Psychology UH Manoa. In USD as of October 24, 2016 60k 120k 180k Physiological Psychology $31,000 . Iowa – $49,000 (High Confidence (more than 250 sources)) Rank: 16th Average Physiological Psychology salaries for job postings in Iowa are 2% lower than average Physiological Psychology salaries for job postings nationwide. The average salary ranks 16th among states in the country. There were also job openings from employers like WeightNot. In USD as of October 24, 2016 60k 120k 180k Physiological Psychology $49,000 . Idaho – $33,000 (High Confidence (more than 250 sources)) Rank: 50th Average Physiological Psychology salaries for job postings in Idaho are 34% lower than average Physiological Psychology salaries for job postings nationwide. The average salary ranks 50th among states in the country. There were no current job openings from employers in this state. In USD as of October 24, 2016 60k 120k 180k Physiological Psychology $33,000 . Illinois – $57,000 (High Confidence (more than 250 sources)) Rank: 6th Average Physiological Psychology salaries for job postings in Illinois are 13% higher than average Physiological Psychology salaries for job postings nationwide. The average salary ranks 6th among states in the country. There were also job openings from employers like DePaul University, WeightNot, and University of Illinois at Chicago. In USD as of October 24, 2016 60k 120k 180k Physiological Psychology $57,000 . Indiana – $48,000 (High Confidence (more than 250 sources)) Rank: 20th Average Physiological Psychology salaries for job postings in Indiana are 4% lower than average Physiological Psychology salaries for job postings nationwide. The average salary ranks 20th among states in the country. There were also job openings from employers like WeightNot. In USD as of October 24, 2016 60k 120k 180k Physiological Psychology $48,000 . Kansas – $46,000 (High Confidence (more than 250 sources)) Rank: 28th Average Physiological Psychology salaries for job postings in Kansas are 9% lower than average Physiological Psychology salaries for job postings nationwide. The average salary ranks 28th among states in the country. There were also job openings from employers like WeightNot. In USD as of October 24, 2016 60k 120k 180k Physiological Psychology $46,000 . Kentucky – $43,000 (High Confidence (more than 250 sources)) Rank: 41st Average Physiological Psychology salaries for job postings in Kentucky are 14% lower than average Physiological Psychology salaries for job postings nationwide. The average salary ranks 41st among states in the country. There were also job openings from employers like WeightNot. In USD as of October 24, 2016 60k 120k 180k Physiological Psychology $43,000 . Louisiana – $45,000 (High Confidence (more than 250 sources)) Rank: 32nd Average Physiological Psychology salaries for job postings in Louisiana are 11% lower than average Physiological Psychology salaries for job postings nationwide. The average salary ranks 32nd among states in the country. There were also job openings from employers like WeightNot. In USD as of October 24, 2016 60k 120k 180k Physiological Psychology $45,000 . Massachusetts – $60,000 (High Confidence (more than 250 sources)) Rank: 2nd Average Physiological Psychology salaries for job postings in Massachusetts are 20% higher than average Physiological Psychology salaries for job postings nationwide. The average salary ranks 2nd among states in the country. There were also job openings from employers like Massachusetts General Hospital(MGH), WeightNot, Commonwealth of Massachusetts, and Alkermes, Inc.. In USD as of October 24, 2016 60k 120k 180k Physiological Psychology $60,000 . Maryland – $51,000 (High Confidence (more than 250 sources)) Rank: 13th Average Physiological Psychology salaries for job postings in Maryland are 3% higher than average Physiological Psychology salaries for job postings nationwide. The average salary ranks 13th among states in the country. There were also job openings from employers like WeightNot, ICF, Sodexo, and SPARK Experience. In USD as of October 24, 2016 60k 120k 180k Physiological Psychology $51,000 . Maine – $44,000 (High Confidence (more than 250 sources)) Rank: 35th Average Physiological Psychology salaries for job postings in Maine are 12% lower than average Physiological Psychology salaries for job postings nationwide. The average salary ranks 35th among states in the country. There were also job openings from employers like Husson University. In USD as of October 24, 2016 60k 120k 180k Physiological Psychology $44,000 . Michigan – $50,000 (High Confidence (more than 250 sources)) Rank: 14th Average Physiological Psychology salaries for job postings in Michigan are 1% higher than average Physiological Psychology salaries for job postings nationwide. The average salary ranks 14th among states in the country. There were also job openings from employers like WeightNot. In USD as of October 24, 2016 60k 120k 180k Physiological Psychology $50,000 . Minnesota – $44,000 (High Confidence (more than 250 sources)) Rank: 36th Average Physiological Psychology salaries for job postings in Minnesota are 13% lower than average Physiological Psychology salaries for job postings nationwide. The average salary ranks 36th among states in the country. There were also job openings from employers like Minnesota Department of Human Services, St. Olaf College, WeightNot, and Bethel University. In USD as of October 24, 2016 60k 120k 180k Physiological Psychology $44,000 . Missouri – $49,000 (High Confidence (more than 250 sources)) Rank: 17th Average Physiological Psychology salaries for job postings in Missouri are 2% lower than average Physiological Psychology salaries for job postings nationwide. The average salary ranks 17th among states in the country. There were also job openings from employers like WeightNot and Southeast Missouri State University. In USD as of October 24, 2016 60k 120k 180k Physiological Psychology $49,000 . Mississippi – $52,000 (High Confidence (more than 250 sources)) Rank: 9th Average Physiological Psychology salaries for job postings in Mississippi are 5% higher than average Physiological Psychology salaries for job postings nationwide. The average salary ranks 9th among states in the country. There were no current job openings from employers in this state. In USD as of October 24, 2016 60k 120k 180k Physiological Psychology $52,000 . Montana – $42,000 (High Confidence (more than 250 sources)) Rank: 42nd Average Physiological Psychology salaries for job postings in Montana are 17% lower than average Physiological Psychology salaries for job postings nationwide. The average salary ranks 42nd among states in the country. There were no current job openings from employers in this state. In USD as of October 24, 2016 60k 120k 180k Physiological Psychology $42,000 . North Carolina – $48,000 (High Confidence (more than 250 sources)) Rank: 21st Average Physiological Psychology salaries for job postings in North Carolina are 5% lower than average Physiological Psychology salaries for job postings nationwide. The average salary ranks 21st among states in the country. There were also job openings from employers like WeightNot, Apex Tool Group, Pinehurst Surgical, and Wake Forest University. In USD as of October 24, 2016 60k 120k 180k Physiological Psychology $48,000 . North Dakota – $44,000 (High Confidence (more than 250 sources)) Rank: 37th Average Physiological Psychology salaries for job postings in North Dakota are 11% lower than average Physiological Psychology salaries for job postings nationwide. The average salary ranks 37th among states in the country. There were no current job openings from employers in this state. In USD as of October 24, 2016 60k 120k 180k Physiological Psychology $44,000 . Nebraska – $36,000 (High Confidence (more than 250 sources)) Rank: 49th Average Physiological Psychology salaries for job postings in Nebraska are 27% lower than average Physiological Psychology salaries for job postings nationwide. The average salary ranks 49th among states in the country. There were also job openings from employers like WeightNot. In USD as of October 24, 2016 60k 120k 180k Physiological Psychology $36,000 . New Hampshire – $49,000 (High Confidence (more than 250 sources)) Rank: 18th Average Physiological Psychology salaries for job postings in New Hampshire are 1% lower than average Physiological Psychology salaries for job postings nationwide. The average salary ranks 18th among states in the country. There were no current job openings from employers in this state. In USD as of October 24, 2016 60k 120k 180k Physiological Psychology $49,000 . New Jersey – $54,000 (High Confidence (more than 250 sources)) Rank: 8th Average Physiological Psychology salaries for job postings in New Jersey are 8% higher than average Physiological Psychology salaries for job postings nationwide. The average salary ranks 8th among states in the country. There were also job openings from employers like Therapeutic Outreach, Inc.. In USD as of October 24, 2016 60k 120k 180k Physiological Psychology $54,000 . New Mexico – $44,000 (High Confidence (more than 250 sources)) Rank: 38th Average Physiological Psychology salaries for job postings in New Mexico are 13% lower than average Physiological Psychology salaries for job postings nationwide. The average salary ranks 38th among states in the country. There were also job openings from employers like Northrop Grumman and WeightNot. In USD as of October 24, 2016 60k 120k 180k Physiological Psychology $44,000 . Nevada – $38,000 (High Confidence (more than 250 sources)) Rank: 46th Average Physiological Psychology salaries for job postings in Nevada are 24% lower than average Physiological Psychology salaries for job postings nationwide. The average salary ranks 46th among states in the country. There were also job openings from employers like WeightNot. In USD as of October 24, 2016 60k 120k 180k Physiological Psychology $38,000 . New York – $60,000 (High Confidence (more than 250 sources)) Rank: 3rd Average Physiological Psychology salaries for job postings in New York State are 21% higher than average Physiological Psychology salaries for job postings nationwide. The average salary ranks 3rd among states in the country. There were also job openings from employers like WeightNot, Vassar College, and University of Rochester. In USD as of October 24, 2016 60k 120k 180k Physiological Psychology $60,000 . Ohio – $48,000 (High Confidence (more than 250 sources)) Rank: 22nd Average Physiological Psychology salaries for job postings in Ohio are 4% lower than average Physiological Psychology salaries for job postings nationwide. The average salary ranks 22nd among states in the country. There were also job openings from employers like WeightNot. In USD as of October 24, 2016 60k 120k 180k Physiological Psychology $48,000 . Oklahoma – $46,000 (High Confidence (more than 250 sources)) Rank: 29th Average Physiological Psychology salaries for job postings in Oklahoma are 8% lower than average Physiological Psychology salaries for job postings nationwide. The average salary ranks 29th among states in the country. There were also job openings from employers like WeightNot. In USD as of October 24, 2016 60k 120k 180k Physiological Psychology $46,000 . Oregon – $48,000 (High Confidence (more than 250 sources)) Rank: 23rd Average Physiological Psychology salaries for job postings in Oregon are 3% lower than average Physiological Psychology salaries for job postings nationwide. The average salary ranks 23rd among states in the country. There were also job openings from employers like WeightNot and University of Oregon. In USD as of October 24, 2016 60k 120k 180k Physiological Psychology $48,000 . Pennsylvania – $48,000 (High Confidence (more than 250 sources)) Rank: 24th Average Physiological Psychology salaries for job postings in Pennsylvania are 4% lower than average Physiological Psychology salaries for job postings nationwide. The average salary ranks 24th among states in the country. There were also job openings from employers like The University of Pittsburgh, WeightNot, Clarion University of Pennsylvania, and Children's Hospital of Philadelphia. In USD as of October 24, 2016 60k 120k 180k Physiological Psychology $48,000 . Rhode Island – $46,000 (High Confidence (more than 250 sources)) Rank: 30th Average Physiological Psychology salaries for job postings in Rhode Island are 9% lower than average Physiological Psychology salaries for job postings nationwide. The average salary ranks 30th among states in the country. There were also job openings from employers like Brown University and WeightNot. In USD as of October 24, 2016 60k 120k 180k Physiological Psychology $46,000 . South Carolina – $49,000 (High Confidence (more than 250 sources)) Rank: 19th Average Physiological Psychology salaries for job postings in South Carolina are 1% lower than average Physiological Psychology salaries for job postings nationwide. The average salary ranks 19th among states in the country. There were also job openings from employers like WeightNot. In USD as of October 24, 2016 60k 120k 180k Physiological Psychology $49,000 . South Dakota – $38,000 (High Confidence (more than 250 sources)) Rank: 47th Average Physiological Psychology salaries for job postings in South Dakota are 25% lower than average Physiological Psychology salaries for job postings nationwide. The average salary ranks 47th among states in the country. There were also job openings from employers like Sanford Health. In USD as of October 24, 2016 60k 120k 180k Physiological Psychology $38,000 . Tennessee – $46,000 (High Confidence (more than 250 sources)) Rank: 31st Average Physiological Psychology salaries for job postings in Tennessee are 7% lower than average Physiological Psychology salaries for job postings nationwide. The average salary ranks 31st among states in the country. There were also job openings from employers like WeightNot. In USD as of October 24, 2016 60k 120k 180k Physiological Psychology $46,000 . Texas – $48,000 (High Confidence (more than 250 sources)) Rank: 25th Average Physiological Psychology salaries for job postings in Texas are 3% lower than average Physiological Psychology salaries for job postings nationwide. The average salary ranks 25th among states in the country. There were also job openings from employers like Dept of State Health Services, WeightNot, Devereux Advanced Behavioral Health, and North Texas State Hospital. In USD as of October 24, 2016 60k 120k 180k Physiological Psychology $48,000 . Utah – $39,000 (High Confidence (more than 250 sources)) Rank: 45th Average Physiological Psychology salaries for job postings in Utah are 22% lower than average Physiological Psychology salaries for job postings nationwide. The average salary ranks 45th among states in the country. There were also job openings from employers like WeightNot. In USD as of October 24, 2016 60k 120k 180k Physiological Psychology $39,000 . Virginia – $50,000 (High Confidence (more than 250 sources)) Rank: 15th Average Physiological Psychology salaries for job postings in Virginia are 1% higher than average Physiological Psychology salaries for job postings nationwide. The average salary ranks 15th among states in the country. There were also job openings from employers like Fairfax County Government, WeightNot, University of Virginia, and Old Dominion University. In USD as of October 24, 2016 60k 120k 180k Physiological Psychology $50,000 . Vermont – $44,000 (High Confidence (more than 250 sources)) Rank: 39th Average Physiological Psychology salaries for job postings in Vermont are 12% lower than average Physiological Psychology salaries for job postings nationwide. The average salary ranks 39th among states in the country. There were also job openings from employers like Middlebury College. In USD as of October 24, 2016 60k 120k 180k Physiological Psychology $44,000 . Washington – $52,000 (High Confidence (more than 250 sources)) Rank: 10th Average Physiological Psychology salaries for job postings in Washington State are 3% higher than average Physiological Psychology salaries for job postings nationwide. The average salary ranks 10th among states in the country. There were also job openings from employers like WeightNot, Bastyr University, and Multicare Health System. In USD as of October 24, 2016 60k 120k 180k Physiological Psychology $52,000 . Wisconsin – $44,000 (High Confidence (more than 250 sources)) Rank: 40th Average Physiological Psychology salaries for job postings in Wisconsin are 11% lower than average Physiological Psychology salaries for job postings nationwide. The average salary ranks 40th among states in the country. There were also job openings from employers like Medical College of Wisconsin and WeightNot. In USD as of October 24, 2016 60k 120k 180k Physiological Psychology $44,000 . West Virginia – $47,000 (High Confidence (more than 250 sources)) Rank: 27th Average Physiological Psychology salaries for job postings in West Virginia are 6% lower than average Physiological Psychology salaries for job postings nationwide. The average salary ranks 27th among states in the country. There were also job openings from employers like WeightNot. In USD as of October 24, 2016 60k 120k 180k Physiological Psychology $47,000 . Wyoming – $41,000 (High Confidence (more than 250 sources)) Rank: 44th Average Physiological Psychology salaries for job postings in Wyoming are 17% lower than average Physiological Psychology salaries for job postings nationwide. The average salary ranks 44th among states in the country. There were no current job openings from employers in this state. In USD as of October 24, 2016 60k 120k 180k Physiological Psychology $41,000 . Learn More The biological approach explains human behaviour, cognition, and emotions through internal biological mechanisms like genetics, brain function, hormones, and neurotransmitters. It focuses on how our biology affects our psychology. Biological Determinism: Behaviors and mental processes are seen as products of physiological and genetic influences. Evolutionary Adaptation: Many behaviors are understood as adaptations shaped by evolutionary processes, increasing the likelihood of survival and reproduction. Scientific Methodology: Research is conducted using rigorous scientific methods such as brain imaging techniques (MRI, PET scans), genetic analyses, and controlled experiments to objectively study psychological phenomena. Genetic Influence: Psychological traits, including intelligence, personality, and vulnerability to certain disorders, have significant hereditary components, investigated through twin and family studies. Comparative Approach: Insights gained from animal studies, based on physiological similarities between humans and other species, contribute significantly to understanding human psychology. The biological approach believes behavior to be a consequence of our genetics and physiology. It is the only approach in psychology that examines thoughts, feelings, and behaviors from a biological and, thus physical point of view. Therefore, all that is psychological is first physiological. All thoughts, feelings & behavior ultimately have a biological cause. The biological approach assumes all human behaviour has a biological origin. It insists that understanding internal biological structures and processes like genes, the nervous system, and neurochemistry is necessary to fully comprehend human behaviour. Nervous System: The structure of organs like the brain, central nervous system (CNS), peripheral nervous system (PNS), and the endocrine system are believed by biological psychologists to determine behaviour. Behaviour is controlled by neuronal action, such as eating or breathing. Case studies, like that of Phineas Gage, are used to demonstrate the influence of biological structures (e.g., frontal cortex) on behaviour (e.g., inhibition) Brain: The brain is central to consciousness and controls voluntary and involuntary movements and bodily functions. It communicates with the body through the nervous system. Specific areas of the brain are linked to general functions, for example, the occipital lobe with visual perception and the parietal lobe with sensory information processing. Biological psychologists study how the structure and function of the brain relate to behaviour. Neurochemistry: Chemicals like neurotransmitters transmit signals between neurons at synapses. Imbalances in neurotransmitters are associated with atypical behaviour, such as low serotonin (mood) linked to depression or aggressive behaviour, and high dopamine (reward) associated with schizophrenia. Hormones, released by the endocrine system, organise the nervous system and body tissues and activate behaviours such as alertness, sleepiness, sexual behaviour, concentration, aggressiveness, and reaction to stress. Hormones can influence behaviour, for example, high testosterone levels are associated with defensiveness and territoriality. Genetics: The biological approach posits that genes, which carry information in the form of DNA, are passed down through generations and carry instructions for characteristics, including some behavioural or psychological traits. Genetic makeup is referred to as genotype, while phenotype is the expression of genes, influenced by both genetic inheritance and interaction with the environment. Heritability measures how strongly differences among individuals for a trait are related to differences among their genes. Twin studies seek to quantify the genetic contribution to a wide range of human traits and behaviors by comparing individuals with varying degrees of genetic relatedness raised in similar or different environments. Research of identical (MZ) and non-identical (DZ) twins, has provided evidence suggesting a genetic component to psychological conditions like schizophrenia and depression. Psychological researchers study genetics to better understand the biological basis contributing to certain behaviours, acknowledging that while humans share biological mechanisms, we are unique, and these mechanisms are expressed in a wide variety of behaviours, thoughts, and reactions The biological approach, particularly through evolutionary psychology, assumes that some human behaviours are adaptations that have evolved over time. These behaviours, influenced by genetics, are seen as having provided an evolutionary advantage, maximising chances of survival and reproduction, and thus have been 'naturally selected' and inherited across generations. This perspective originates with Charles Darwin's theory of evolution by natural selection. Evolutionary psychology seeks to understand the ultimate biological causes of behaviour, viewing behaviour like any anatomical characteristic as demonstrating adaptation to surroundings, including the physical and social environment. Research in this area empirically tests predictions about psychological adaptations, such as preferences for food, habitat, or mates, or traits that improve group living like cooperation or detecting frauds. Studies comparing mate selection preferences across cultures, for example, are presented as evidence for evolved traits promoting reproductive success. The biological approach frequently employs a comparative method by studying different species of animals to gain insights into human behaviour. This method operates on the assumption that humans share common biological mechanisms and evolutionary history with other animals, particularly primates, which allows for comparison. The ultimate goal of such animal research, when used in psychology, is often to better understand human behaviour, rather than solely the animals themselves. One reason for using animal models is that certain types of research, particularly experimental manipulations of biological structures or processes, might be unethical or impractical to conduct on human participants. Studying animals provides greater control over the experimental process, potentially minimising the influence of factors like demand characteristics or individual differences seen in human studies. Psychology should be seen as a science: The biological approach strongly promotes the use of scientific methods in investigation. This includes precise scientific methodologies such as fMRIs, PET scans, drug trials, EEGs, laboratory experiments, blood tests, and brain scanning. These techniques provide accurate measures of internal processes previously inaccessible. These highly controlled methods can be tested for reliability and allow for drawing cause-effect conclusions more easily, although it is important to remember that explanations are often based on correlational results, which do not necessarily prove causation. Everyday Examples: Biology in Action Understanding how biology affects behavior doesn't require looking far – it's evident in everyday experiences: 1. The Rush of Adrenaline (Fight-or-Flight Response) Imagine you're walking home at night, and suddenly you hear footsteps rapidly approaching from behind. Immediately, your heart races, breathing quickens, and muscles tense. This is your body's fight-or-flight response at work. Triggered by hormones such as adrenaline (released by your adrenal glands), your body rapidly prepares you to either confront the danger or run away from it. This biological mechanism has evolved to keep humans safe in life-threatening situations. 2. Heartbreak and Physical Pain Why does emotional heartbreak feel physically painful? Research suggests areas of the brain that process emotional pain (like the loss of a relationship) overlap with regions responsible for processing physical pain. This means that when you experience rejection or loss, the resulting emotional stress activates the same neural pathways as physical injury, causing genuine, physical sensations of pain or discomfort. 3. Feeling Hungry (Role of Hormones and Neurotransmitters) Ever wondered why your mood dips when you're hungry, turning you 'hangry'? Blood sugar drops trigger hormonal responses, affecting neurotransmitters such as serotonin (associated with mood regulation). Low blood sugar levels can reduce serotonin production, leaving you irritable or moody – clearly demonstrating how neurochemistry influences emotional states. Applications 1: Neurotransmitter Imbalances and Mental Health Imbalances in neurotransmitters significantly influence mental health conditions. Neurotransmitters, chemical messengers in the brain, facilitate communication between neurons. For example, serotonin is closely linked with mood regulation, where lower levels have been associated with depression and anxiety disorders. Similarly, dopamine (reward) dysregulation is implicated in schizophrenia, with elevated dopamine activity leading to symptoms such as hallucinations and delusions. The implications are largely positive because understanding neurotransmitter roles allows psychologists and psychiatrists to develop targeted treatments, like Selective Serotonin Reuptake Inhibitors (SSRIs) for depression or dopamine blockers for schizophrenia. This targeted approach enhances treatment efficacy, directly improving patients' quality of life. 2: Genetics and Behavior: Twin Studies Twin studies demonstrate a strong genetic influence on various psychological traits. Twin research compares identical (monozygotic) twins, who share 100% genetic material, with non-identical (dizygotic) twins, who share about 50%. Such studies reveal that traits like intelligence (IQ) and certain personality characteristics, including extraversion and neuroticism, have considerable genetic components. For instance, identical twins show significantly higher concordance rates for IQ (approximately 70-80%) compared to non-identical twins (around 40-50%), highlighting genetics' role in these traits. These findings have both positive and mixed implications. Positively, recognizing genetic influences helps individuals understand their predispositions, aiding personalized education and interventions. However, it could negatively promote determinism, leading individuals or societies to underestimate the role of personal effort or environmental influences, potentially limiting motivation or fostering stigma about psychological disorders. 3: Brain Structures and Behavior: Phineas Gage Case Damage to specific brain structures can profoundly change behavior and personality. Phineas Gage, a classic psychological case, survived a severe brain injury where an iron rod penetrated his frontal lobes. Previously calm and responsible, Gage experienced significant personality changes afterward, becoming impulsive, aggressive, and socially inappropriate. This case illustrated clearly how specific brain regions (e.g., the frontal lobes) control behaviors associated with impulse control, social conduct, and emotional regulation. This case study has strongly positive implications for psychology, as it established clear links between brain areas and behavioral outcomes, influencing the development of neuropsychology. Understanding brain-behavior relationships enables more precise diagnostic tools and rehabilitation strategies for brain injuries, positively impacting treatment effectiveness and patient outcomes. 4: Evolutionary Psychology and Human Behavior Evolutionary processes shape specific psychological traits and behaviors to enhance survival and reproduction. Evolutionary psychology suggests certain human behaviors, such as mate preferences, aggression, and even altruism, evolved because they provided adaptive advantages. For instance, cross-cultural research has consistently shown that females generally prefer mates with resource-providing capabilities, whereas males emphasize fertility indicators like youth. These preferences evolved because they increased reproductive success and offspring survival. The implications of evolutionary explanations are mixed. Positively, they deepen the understanding of human nature, guiding further research into universal human behaviors and informing therapeutic approaches. Negatively, oversimplification or misinterpretation of evolutionary findings can lead to stereotypes or justify harmful behaviors, limiting societal efforts towards equality and social responsibility. Twin studies provide geneticists with a kind of natural experiment in which the behavioral likeness of identical twins (whose genetic relatedness is 1.0) can be compared with the resemblance of dizygotic twins (whose genetic relatedness is 0.5). In other words, if heredity (i.e., genetics) affects a given trait or behavior, then identical twins should show a greater similarity for that trait compared to fraternal (non-identical) twins. There are two types of twins: Monozygotic = identical twins (share 100% genetic information). Dizygotic = non-identical twins (share 50% genetic information, similar to siblings). Research using twin studies looks for the degree of concordance (or similarity) between identical and fraternal (i.e., non-identical) twins. Twins are concordant for a trait if both or neither of the twins exhibits the trait. Twins are said to be disconcordant for a trait if one shows it and the other does not. Identical twins have the same genetic makeup, and fraternal twins have just 50 percent of genes in common. Thus, if concordance rates (which can range from 0 to 100) are significantly higher for identical twins than for fraternal twins, then this is evidence that genetics play an important role in the expression of that particular behavior. Twin studies have shown that genetic influence varies significantly across different traits. For example: Height: Has a high genetic influence, around 90% (0.9). General Mental Ability (IQ): Is estimated to be influenced by genetic factors by about 50% to 70%, closer to 70% according to more recent studies. Mean correlations for IQ in identical twins across multiple studies are around 0.73, suggesting about three-quarters of general ability is genetically influenced. Personality Traits (e.g., extroversion, sociability): Show a genetic influence of around 50% (0.5). Personality similarity between identical twins raised apart and those raised together did not differ, suggesting personality similarity to family is due to shared genes, not the shared environment of growing up together. Other Traits: Genetic influence has also been found for traits like sexual orientation, vocational interests, job satisfaction, migraine headaches, diet preferences, and whether someone is a morning or evening person. Dental health (cavities, appearance, missing teeth) and periodontal disease also show significant genetic effects (around 50% for periodontal disease). Bouchard and McGue (1981) conducted a review of 111 worldwide studies which compared the IQ of family members. The correlation figures below represent the average degree of similarity between the two people (the higher the similarity, the more similar the IQ scores). Identical twins raised together = .86 (correlation). Identical twins raised apart = .72 Non-identical twins reared together = .60 Siblings reared together = .47 Siblings reared apart = .24 Cousins = .15 However, there are methodological flaws that reduce the validity of twin studies. For example, Bouchard and McGue included many poorly performed and biased studies in their meta-analysis. Also, studies comparing the behavior of twins raised apart have been criticized as the twins often share similar environments and are sometimes raised by a non-parental family member. 2 . Electroencrphalograms (EEGs) This is a way of recording the electrical activity of the brain (it doesn't hurt, and it isn't dangerous). Electrodes are attached to the scalp, and brain waves can be traced. EEGs have been used to study sleep, and it has been found that during a typical night's sleep, we go through a series of stages marked by different patterns of brain wave. One of these stages is known as REM sleep (Rapid Eye Movement sleep). During this, our brain waves begin to resemble those of our waking state (though we are still fast asleep) and it seems that this is when we dream (whether we remember it or not). 3 . Brain imaging (MRI, PET, EEG) More recently, methods of studying the brain have been developed using various types of scanning equipment hooked up to powerful computers. For example, brain imaging fMRI and PET scans map areas of the brain to cognitive function, allowing the processing of information by centers in the brain to be seen directly. Such processing causes the area of the brain involved to increase metabolism and "light up" on the scan. The CAT scan (Computerised Axial Tomography) is a moving X-ray beam which takes "pictures" from different angles around the head and can be used to build up a 3-dimensional image of which areas of the brain are damaged. Even more sophisticated is the PET scan (Positron Emission Tomography) which uses a radioactive marker as a way of studying the brain at work. The procedure is based on the principle that the brain requires energy to function and that the regions more involved in the performance of a task will use up more energy. What the scan, therefore, enables researchers to do is to provide ongoing pictures of the brain as it engages in mental activity. These (and other) methods for producing images of brain structure and functioning have been extensively used to study language and PET scans, in particular, are producing evidence that suggests that the Wernicke-Gerschwind model may not after all be the answer to the question of how language is possible. 4. Neuro Surgery We know so little about the brain and its functions are so closely integrated that brain surgery is usually only attempted as a last resort. H.M. suffered such devastating epileptic fits that, in the end, a surgical technique that had never been used before was tried out. This technique cured his epilepsy, but in the process, the hippocampus had to be removed (this is part of the limbic system in the middle of the brain.) Afterwards, H.M. was left with severe anterograde amnesia. I.e., He could remember what happened to him in his life up to when he had the operation, but he couldn't remember anything new. So now we know the hippocampus is involved in memory. By reducing behavior to genetics, neurotransmitters, or brain structures alone, the biological approach neglects important psychological, social, and cultural influences. For instance, the biological explanation of depression focuses primarily on neurotransmitter imbalance (low serotonin), ignoring cognitive factors like negative thinking patterns, life stressors, or social isolation. The implications of this reductionism are negative. It can lead to incomplete understanding and treatments that may overlook crucial psychological or environmental causes. Patients may be given medication to correct neurochemical imbalances without addressing underlying cognitive or social factors, potentially limiting treatment effectiveness and overlooking comprehensive, holistic interventions. Biological determinism argues behaviors result solely from genetic makeup, brain structure, or biochemical imbalances, implying limited individual agency. For instance, attributing aggressive behavior strictly to genetic predisposition could lead individuals to disclaim personal responsibility. The consequences are negative, as this perspective may undermine personal accountability, discourage behavioral change efforts, and potentially affect legal responsibility and treatment adherence. Thus, biological determinism risks socially and ethically problematic outcomes. Much biological research, particularly neuroimaging or genetic studies, is correlational. For instance, brain abnormalities observed in individuals with OCD (caudate nucleus issues) could either cause OCD symptoms or result from prolonged symptoms (reverse causality). The consequence of this limitation is negative, reducing clarity about cause-effect relationships. Misinterpreting correlational data may lead to incorrect conclusions about treatments, which might target symptoms rather than underlying causes. Highly controlled settings, such as brain scans conducted in artificial laboratory conditions, may not reflect natural brain activity. Participants might behave differently in unnatural, experimental conditions, distorting true biological responses (e.g., exaggerated stress reactions measured in a laboratory rather than real life). This negative implication limits generalisability, potentially making biological findings less relevant to everyday life contexts. Treatments or theories developed from these studies might be less effective when applied in real-world environments. Psychotropic medications, although beneficial, can have substantial side effects, including addiction, withdrawal symptoms, emotional blunting, or physical health impacts. For example, antipsychotic medications can lead to weight gain, diabetes, or motor dysfunction. The consequence is negative, as these side effects can deter patients from continuing treatment, reduce quality of life, and sometimes make the biological treatment less beneficial overall. This highlights the necessity of balanced approaches, integrating biological treatments with psychological or behavioral support. Strengths Methods such as brain imaging techniques (fMRI, PET), biochemical t