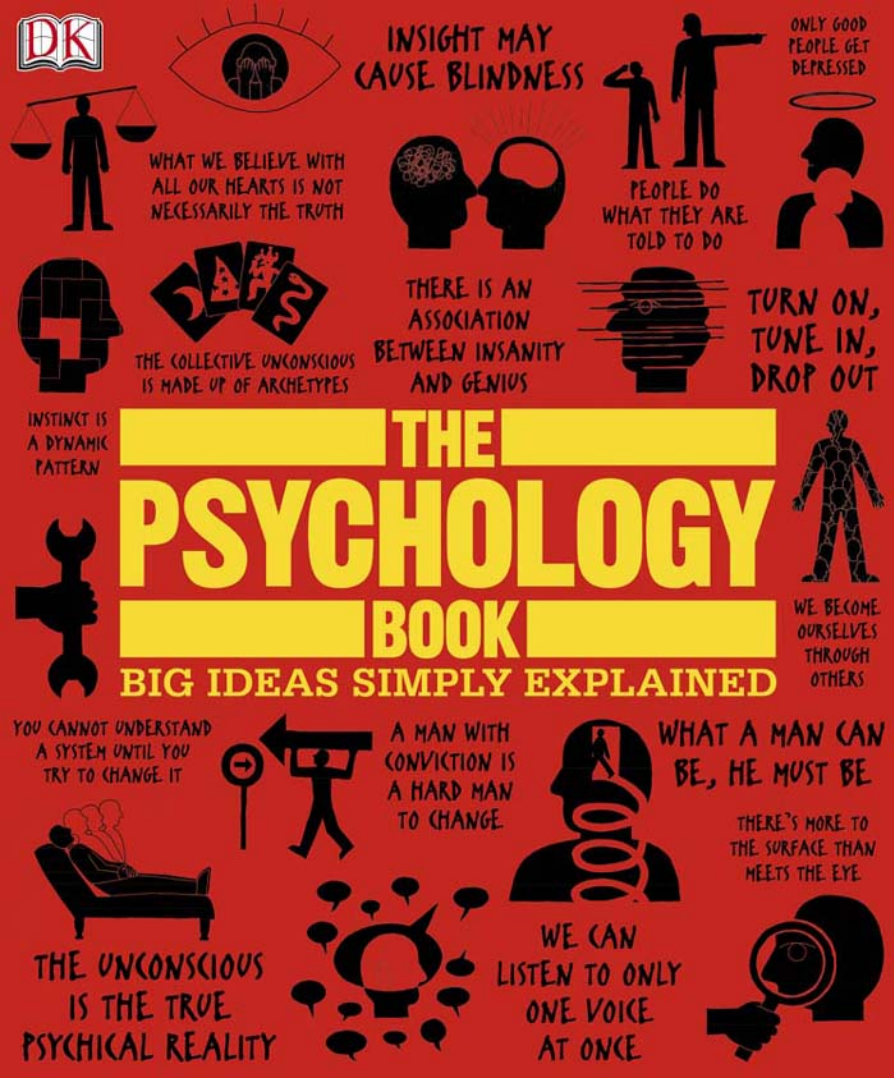
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INSIGHT MAY CAUSE BLINDNESS
ONLY GOOD PEOPLE GET DEPRESSED
WHAT WE BELIEVE WITH ALL OUR HEARTS IS NOT NECESSARILY THE TRUTH
PEOPLE DO WHAT THEY ARE TOLD TO DO
THERE IS AN ASSOCIATION BETWEEN INSANITY AND GENIUS
TURN ON, TUNE IN, DROP OUT
THE COLLECTIVE UNCONSCIOUS IS MADE UP OF ARCHETYPES
INSTINCT IS A DYNAMIC PATTERN
THE PSYCHOLOGY BOOK
BIG IDEAS SIMPLY EXPLAINED
WE BECOME OURSELVES THROUGH OTHERS
YOU CANNOT UNDERSTAND A SYSTEM UNTIL YOU TRY TO CHANGE IT
A MAN WITH CONVICTION IS A HARD MAN TO CHANGE
WHAT A MAN CAN BE, HE MUST BE
THERE'S MORE TO THE SURFACE THAN MEETS THE EYE
THE UNCONSCIOUS IS THE TRUE PSYCHICAL REALITY
WE CAN LISTEN TO ONLY ONE VOICE AT ONCE

THE PSYCHOLOGY BOOK

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CONTRIBUTORS

CATHERINE COLLIN

A clinical psychologist, our consultant Catherine Collin is an Associate Professor (Senior Lecturer in Psychological Therapies) at the University of Plymouth in England. Catherine's interests lie in primary care mental health and cognitive behavior therapy.

NIGEL BENSON

A lecturer in philosophy and psychology, Nigel Benson has written several bestselling books on the subject of psychology, including *Psychology for Beginners* and *Introducing Psychiatry*.

JOANNAH GINSBURG

A clinical psychologist and journalist, Joannah Ginsburg works in community treatment centers in New York City, Boston, Philadelphia, and Dallas, and regularly contributes to psychology publications. She is joint author of *This Book has Issues: Adventures in Popular Psychology*.

VOULA GRAND

As a business psychologist, Voula Grand consults for international corporations on leadership and executive performance. Her first novel is *Honor's Shadow*. She is currently writing the sequel, *Honor's Ghost*.

MERRIN LAZYAN

A writer, editor, and classical singer, Merrin Lazyan studied psychology at Harvard University and has worked on several fiction and nonfiction books, spanning a broad range of topics.

MARCUS WEEKS

A writer and musician, Marcus Weeks studied philosophy and worked as a teacher before embarking on a career as an author. He has contributed to many books on the arts and popular sciences.

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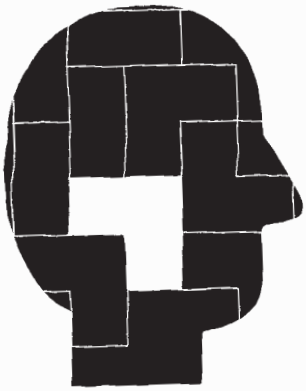

DEVELOPMENTAL PHILOSOPHY

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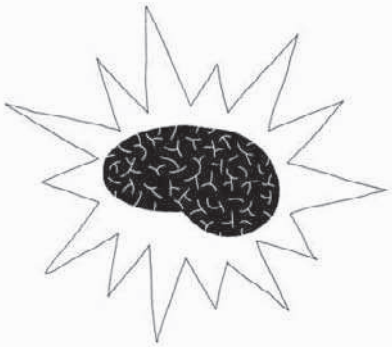
PERSONALITY AND INTELLIGENCE



Among all the sciences, psychology is perhaps the most mysterious to the general public, and the most prone to misconceptions. Even though its language and ideas have infiltrated everyday culture, most people have only a hazy idea of what the subject is about, and what psychologists actually do. For some, psychology conjures up images of people in white coats, either staffing an institution for mental disorders or conducting laboratory experiments on rats. Others may imagine a man with a middle-European accent psychoanalyzing a patient on a couch or, if film scripts are to be believed, plotting to exercise some form of mind control.

Although these stereotypes are an exaggeration, some truth lies beneath them. It is perhaps the huge range of subjects that fall under the umbrella of psychology (and the bewildering array of terms beginning with the prefix "psych-") that creates confusion over what psychology entails; psychologists themselves are unlikely to agree on a single definition of the word. "Psychology" comes from the ancient Greek *psyche*, meaning "soul" or "mind," and *logia*, a "study" or "account," which seems to sum up the broad scope of the subject, but today the word most accurately describes "the science of mind and behavior."

The new science

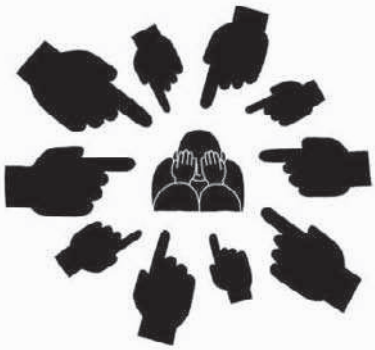
Psychology can also be seen as a bridge between philosophy and physiology. Where physiology describes and explains the physical make-up of the brain and nervous system, psychology examines the mental processes that take place within them and how these are manifested in our thoughts, speech, and behavior. Where philosophy is concerned with thoughts and ideas, psychology studies how we come to have them and what they tell us about the workings of our minds.

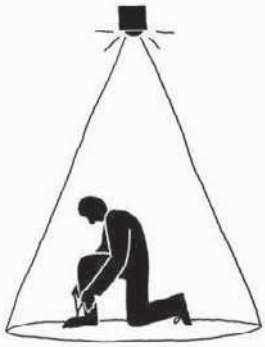
All the sciences evolved from philosophy, by applying scientific methods to philosophical questions,

> "Psychology has a long past, but only a short history."
> **Hermann Ebbinghaus**

but the intangible nature of subjects such as consciousness, perception, and memory meant that psychology was slow in making the transition from philosophical speculation to scientific practice. In some universities, particularly in the US, psychology departments started out as branches of the philosophy department, while in others, notably those in Germany, they were established in the science faculties. But it was not until the late 19th century that psychology became established as a scientific discipline in its own right.

The founding of the world's first laboratory of experimental psychology by Wilhelm Wundt at the University of Leipzig in 1879 marked the recognition of psychology as a truly scientific subject, and as one that was breaking new ground in previously unexplored areas of research. In the course of the 20th century, psychology blossomed; all of its major branches and movements evolved. As with all sciences, its history is built upon the theories and discoveries of successive generations, with many of the older theories remaining relevant to contemporary psychologists. Some areas of research have been the subject of study from psychology's





earliest days, undergoing different interpretations by the various schools of thought, while others have fallen in and out of favor, but each time they have exerted a significant influence on subsequent thinking, and have occasionally spawned completely new fields for exploration.

The simplest way to approach the vast subject of psychology for the first time is to take a look at some of its main movements, as we do in this book. These occurred in roughly chronological order, from its roots in philosophy, through behaviorism, psychotherapy, and the study of cognitive, social, and developmental psychology, to the psychology of difference.

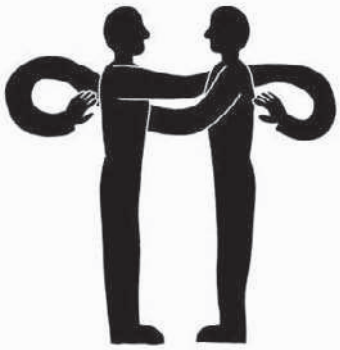
Two approaches

Even in its earliest days, psychology meant different things to different people. In the US, its roots lay in philosophy, so the approach taken was speculative and theoretical, dealing with concepts such as consciousness and the self. In Europe, the study was rooted in the sciences, so the emphasis was on examining mental processes such as sensory perception and memory under controlled laboratory conditions. However, even the research of these more scientifically oriented psychologists was limited by the introspective nature of their methods: pioneers such as Hermann Ebbinghaus became the subject of their own investigations, effectively restricting the range of topics to those that could be observed in themselves. Although they used scientific methods and their theories laid the foundations for the new science, many in the next generation of psychologists found their processes too subjective, and began to look for a more objective methodology.

In the 1890s, the Russian physiologist Ivan Pavlov conducted experiments that were to prove critical to the development of psychology in both Europe and the US. He proved that animals could be conditioned to produce a response, an idea that developed into a new movement known as behaviorism. The behaviorists felt that it was impossible to study mental processes objectively, but found it relatively easy to observe and measure behavior: a manifestation of those processes. They began to design experiments that could be conducted under controlled conditions, at first on animals, to gain an insight into human psychology, and later on humans. The behaviorists' studies concentrated almost exclusively on how behavior is shaped by interaction with the environment; this "stimulus–response" theory became well known through the work of John Watson. New learning theories began to spring up in Europe and the US, and attracted the interest of the general public.

However, at much the same time as behaviorism began to emerge in the US, a young neurologist in Vienna started to develop a theory of mind that was to overturn contemporary thinking and inspire a very different approach. Based on observation of patients and case histories rather than laboratory experiments, Sigmund Freud's psychoanalytic theory marked »

> The first fact for us then, as psychologists, is that thinking of some sort goes on.
> **William James**



a return to the study of subjective experience. He was interested in memories, childhood development, and interpersonal relationships, and emphasized the importance of the unconscious in determining behavior. Although his ideas were revolutionary at the time, they were quickly and widely adopted, and the notion of a "talking cure" continues within the various forms of psychotherapy today.

New fields of study

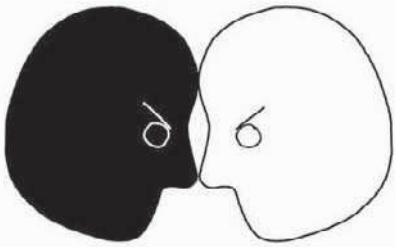
In the mid-20th century, both behaviorism and psychoanalysis fell out of favor, with a return to the scientific study of mental processes. This marked the beginning of cognitive psychology, a movement with its roots in the holistic approach of the Gestalt psychologists, who were interested in studying perception. Their work began to emerge in the US in the years following World War II; by the late 1950s, cognitive psychology had become the predominant approach. The rapidly growing fields of communications and computer science provided psychologists with a useful analogy; they used the model of information processing to develop theories to explain our methods of attention, perception, memory and forgetting, language and language acquisition, problem-solving and decision-making, and motivation.

Even psychotherapy, which mushroomed in myriad forms from the original "talking cure," was influenced by the cognitive approach. Cognitive therapy and cognitive-behavioral therapy emerged as alternatives to psychoanalysis, leading to movements such as humanist psychology, which focused on the qualities unique to human life. These therapists turned their attention from healing the sick to guiding healthy people toward living more meaningful lives.

While psychology in its early stages had concentrated largely on the mind and behavior of individuals, there was now an increasing interest in the way we interact with our environment and other people; this became the field of social psychology. Like cognitive psychology, it owed much to the Gestalt psychologists, especially Kurt Lewin, who had fled from Nazi Germany to the US in the 1930s. Social psychology gathered pace during the latter half of the 20th century, when research revealed intriguing new facts about our attitudes and prejudices, our tendencies toward obedience and conformity, and our reasons for aggression or altruism, all of which were increasingly relevant in the modern world of urban life and ever-improving communications.

Freud's continuing influence was felt mainly through the new field of developmental psychology. Initially concerned only with childhood development, study in this area expanded to include change throughout life, from infancy to old age. Researchers charted methods of social, cultural, and moral learning, and the ways in which we form attachments. The contribution of developmental psychology to education and training has been significant but, less obviously, it has influenced

> If the 19th century was the age of the editorial chair, ours is the century of the psychiatrist's couch.
> **Marshall McLuhan**



thinking about the relationship between childhood development and attitudes to race and gender.

Almost every psychological school has touched upon the subject of human uniqueness, but in the late 20th century this area was recognized as a field in its own right in the psychology of difference. As well as attempting to identify and measure personality traits and the various factors that make up intelligence, psychologists in this growing field examine definitions and measures of normality and abnormality, and look at how much our individual differences are a product of our environment or the result of genetic inheritance.

An influential science

The many branches of psychology that exist today cover the whole spectrum of mental life and human and animal behavior. The overall scope has extended to overlap with many other disciplines, including medicine, physiology, neuroscience, computer science, education, sociology, anthropology, and even politics, economics, and the law. Psychology has become perhaps the most diverse of sciences.

Psychology continues to influence and be influenced by the other sciences, especially in areas such as neuroscience and genetics. In particular, the nature versus nurture argument that dates back to Francis Galton's ideas of the 1920s continues to this day; recently, evolutionary psychology has contributed to the debate by exploring psychological traits as innate and biological phenomena, which are subject to the laws of genetics and natural selection.

Psychology is a huge subject, and its findings concern every one of us. In one form or another it informs many decisions made in government, business and industry, advertising, and the mass media. It affects us as groups and as individuals, contributing as much to public debate about the ways our societies are or might be structured as it does to diagnosing and treating mental disorders.

> The purpose of psychology is to give us a completely different idea of the things we know best.
> **Paul Valéry**

The ideas and theories of psychologists have become part of our everyday culture, to the extent that many of their findings about behavior and mental processes are now viewed simply as "common sense." However, while some of the ideas explored in psychology confirm our instinctive feelings, just as many make us think again; psychologists have often shocked and outraged the public when their findings have shaken conventional, long-standing beliefs.

In its short history, psychology has given us many ideas that have changed our ways of thinking, and that have also helped us to understand ourselves, other people, and the world we live in. It has questioned deeply held beliefs, unearthed unsettling truths, and provided startling insights and solutions to complex questions. Its increasing popularity as a university course is a sign not only of psychology's relevance in the modern world, but also of the enjoyment and stimulation that can be had from exploring the richness and diversity of a subject that continues to examine the mysterious world of the human mind.

PHILOSO
ROOTS
PSYCHOLOGY
IN THE MAKING

PHICAL

René Descartes publishes *The Passions of the Soul*, claiming that **the body and soul are separate**.

1649

Abbé Faria investigates **hypnosis** in his book *On the Cause of Lucid Sleep*.

1819

Charles Darwin publishes *On the Origin of the Species*, proposing that all our traits are inherited.

1859

Francis Galton's research suggests that **nurture is more important than nature**, in *Hereditary Genius*.

1869

1816

Johann Friedrich Herbart describes a dynamic mind with **a conscious and an unconscious** in *A Text-book in Psychology*.

1849

Søren Kierkegaard's book *The Sickness Unto Death* marks the beginning of **existentialism**.

1861

Neurosurgeon **Pierre Paul Broca** discovers that the left and right hemispheres of the brain have separate functions.

1874

Carl Wernicke provides evidence that damage to a specific area of the brain causes the loss of specific skills.

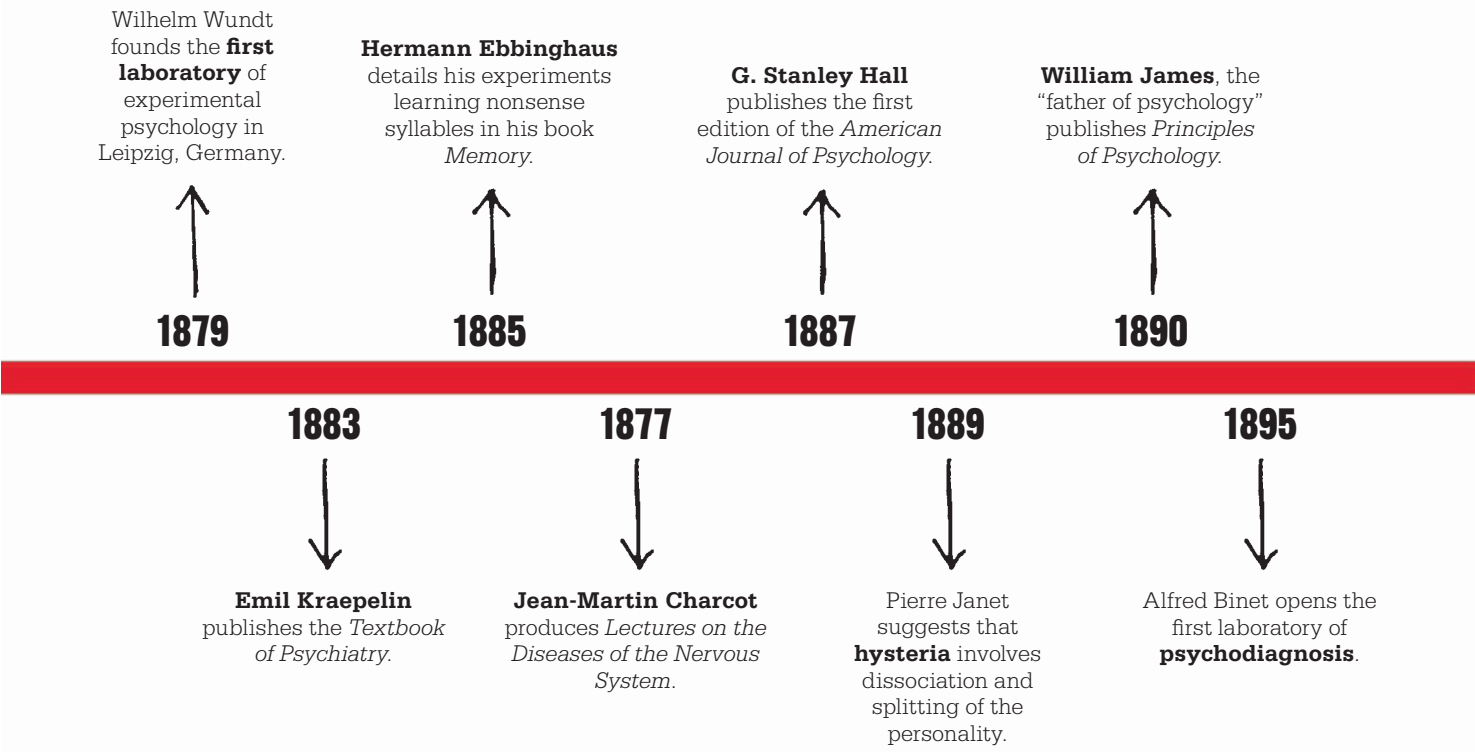
Many of the issues that are examined in modern psychology had been the subject of philosophical debate long before the development of science as we know it today. The very earliest philosophers of ancient Greece sought answers to questions about the world around us, and the way we think and behave. Since then we have wrestled with ideas of consciousness and self, mind and body, knowledge and perception, how to structure society, and how to live a "good life."

The various branches of science evolved from philosophy, gaining momentum from the 16th century onward, until finally exploding into a "scientific revolution," which ushered in the Age of Reason in the 18th century. While these advances in scientific knowledge answered many of the questions about the world we live in, they were still not capable of explaining the workings of our minds. Science and technology did, however, provide models from which we could start asking the right questions, and begin to test theories through the collection of relevant data.

Separating mind and body

One of the key figures in the scientific revolution of the 17th century, the philosopher and mathematician René Descartes, outlined a distinction between mind and body that was to prove critical to the development of psychology. He claimed that all human beings have a dualistic existence—with a separate machinelike body and a nonmaterial, thinking mind, or soul. Later psychological thinkers, among them Johann Friedrich Herbart, were to extend the machine analogy to include the brain as well, describing the processes of the mind as the working of the brain-machine.

The degree to which mind and body are separate became a topic for debate. Scientists wondered how much the mind is formed by physical factors, and how much is shaped by our environment. The "nature versus nurture" debate, fueled by British naturalist Charles Darwin's evolutionary theory and taken up by Francis Galton, brought subjects such as free will, personality, development, and learning to the fore. These areas had not yet been fully described by philosophical inquiry, and were now ripe for scientific study.



Meanwhile, the mysterious nature of the mind was popularized by the discovery of hypnosis, prompting more serious scientists to consider that there was more to the mental life than immediately apparent conscious thought. These scientists set out to examine the nature of the "unconscious," and its influence on our thinking and behavior.

The birth of psychology

Against this background, the modern science of psychology emerged. In 1879, Wilhelm Wundt founded the very first laboratory of experimental psychology at Leipzig University in Germany, and departments of psychology also began to appear in universities across Europe and the US. Just as philosophy had taken on certain regional characteristics, psychology developed in distinct ways in the different centers: in Germany, psychologists such as Wundt, Hermann Ebbinghaus, and Emil Kraepelin took a strictly scientific and experimental approach to the subject; while in the US, William James and his followers at Harvard adopted a more theoretical and philosophical approach. Alongside these areas of study, an influential school of thought was growing in Paris around the work of neurologist Jean-Martin Charcot, who had used hypnosis on sufferers of hysteria. The school attracted psychologists such as Pierre Janet, whose ideas of the unconscious anticipated Freud's psychoanalytic theories.

The final two decades of the 19th century saw a rapid rise in the importance of the new science of psychology, as well as the establishment of a scientific methodology for studying the mind, in much the same way that physiology and related disciplines studied the body. For the first time, the scientific method was applied to questions concerning perception, consciousness, memory, learning, and intelligence, and its practices of observation and experimentation produced a wealth of new theories.

Although these ideas often came from the introspective study of the mind by the researcher, or from highly subjective accounts by the subjects of their studies, the foundations were laid for the next generation of psychologists at the turn of the century to develop a truly objective study of mind and behavior, and to apply their own new theories to the treatment of mental disorders. ■

THE FOUR TEMPERAMENTS OF PERSONALITY

GALEN (c.129–c.201 CE)

IN CONTEXT

APPROACH
Humorism

BEFORE
c.400 BCE Greek physician Hippocrates says that the qualities of the four elements are reflected in body fluids.

c.325 BCE Greek philosopher Aristotle names four sources of happiness: sensual (*hedone*), material (*propraietari*), ethical (*ethikos*), and logical (*dialogike*).

AFTER
1543 Anatomist Andreas Vesalius publishes *On the Fabric of the Human Body* in Italy. It illustrates Galen's errors and he is accused of heresy.

1879 Wilhelm Wundt says that temperaments develop in different proportions along two axes: "changeability" and "emotionality."

1947 In *Dimensions of Personality*, Hans Eysenck suggests personality is based on two dimensions.

All things are combinations of **four basic elements**: earth, air, fire, and water.

The **qualities** of these elements can be found in **four corresponding humors** (fluids) that affect the functioning of our bodies.

These humors also affect our emotions and behavior—our **"temperaments."**

Temperamental problems are caused by an **imbalance** in our humors…

…so by **restoring the balance** of our humors a physician can cure our emotional and behavioral problems.

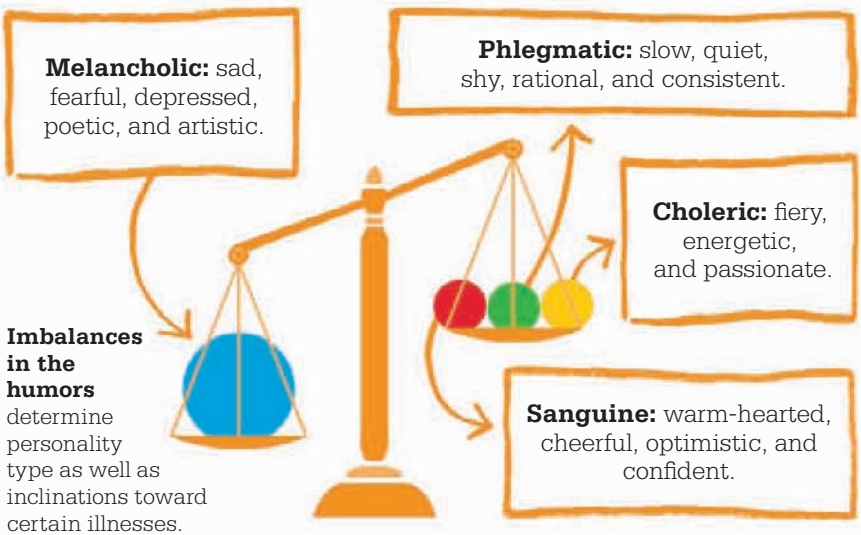
The Roman philosopher and physician Claudius Galen formulated a concept of personality types based on the ancient Greek theory of humorism, which attempted to explain the workings of the human body.

The roots of humorism go back to Empedocles (c.495–435 BCE), a Greek philosopher who suggested that different qualities of the four basic elements—earth (cold and dry), air (warm and wet), fire (warm and dry), and water (cold and wet)—could explain the existence of all known substances. Hippocrates (460–370 BCE), the "Father of Medicine," developed a medical model based on these elements, attributing their qualities to four fluids within the body. These fluids were called "humors" (from the Latin *umor*, meaning body fluid).

Two hundred years later, Galen expanded the theory of humorism into one of personality; he saw a direct connection between the levels of the humors in the body and emotional and behavioral inclinations—or "temperaments".

Galen's four temperaments—sanguine, phlegmatic, choleric, and melancholic—are based on the balance of humors in the body.

See also: ▪ René Descartes 20–21 ▪ Gordon Allport 306–09 ▪ Hans J. Eysenck 316–21 Walter Mischel 326–27



If one of the humors develops excessively, the corresponding personality type begins to dominate. A sanguine person has too much blood (*sanguis* in Latin) and is warm-hearted, cheerful, optimistic, and confident, but can be selfish. A phlegmatic person, suffering from excess phlegm (*phlegmatikós* in Greek), is quiet, kind, cool, rational, and consistent, but can be slow and shy. The choleric (from the Greek *kholé*, meaning bile) personality is fiery, suffering from excess yellow bile. Lastly, the melancholic (from the Greek *melas kholé*), who suffers from an excess of black bile, is recognized by poetic and artistic leanings, which are often also accompanied by sadness and fear.

Imbalance in the humors

According to Galen, some people are born predisposed to certain temperaments. However, since temperamental problems are caused by imbalances of the humors, he claimed they can be cured by diet and exercise. In more extreme cases, cures may include purging and blood-letting. For example, a person acting selfishly is overly sanguine, and has too much blood; this is remedied by cutting down on meat, or by making small cuts into the veins to release blood.

Galen's doctrines dominated medicine until the Renaissance, when they began to decline in the light of better research. In 1543, the physician Andreas Vesalius (1514–1564), practicing in Italy, found more than 200 errors in Galen's descriptions of anatomy, but although Galen's medical ideas were discredited, he later influenced 20th-century psychologists. In 1947, Hans Eysenck concluded that temperament is biologically based, and noted that the two personality traits he identified—neuroticism and extraversion—echoed the ancient temperaments.

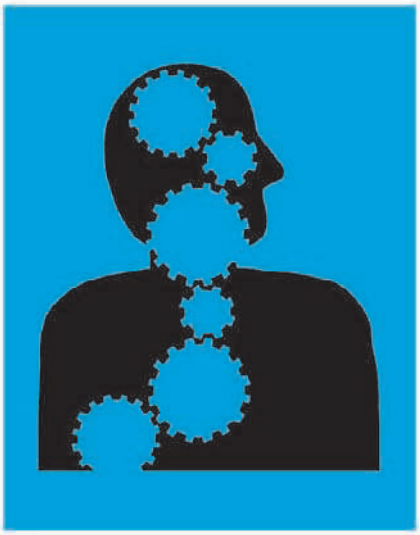
Although humorism is no longer part of psychology, Galen's idea that many physical and mental illnesses are connected forms the basis of some modern therapies. ■

Galen

Claudius Galenus, better known as "Galen of Pergamon" (now Bergama in Turkey) was a Roman physician, surgeon, and philosopher. His father, Aelius Nicon, was a wealthy Greek architect who provided him with a good education and opportunities to travel. Galen settled in Rome and served emperors, including Marcus Aurelius, as principal physician. He learned about trauma care while treating professional gladiators, and wrote more than 500 books on medicine. He believed the best way to learn was through dissecting animals and studying anatomy. However, although Galen discovered the functions of many internal organs, he made mistakes because he assumed that the bodies of animals (such as monkeys and pigs) were exactly like those of humans. There is debate over the date of his death, but Galen was at least 70 when he died.

Key works

c.190 CE *The Temperaments*
c.190 CE *The Natural Faculties*
c.190 CE *Three Treatises on the Nature of Science*



THERE IS A REASONING SOUL IN THIS MACHINE

RENE DESCARTES (1596–1650)

IN CONTEXT

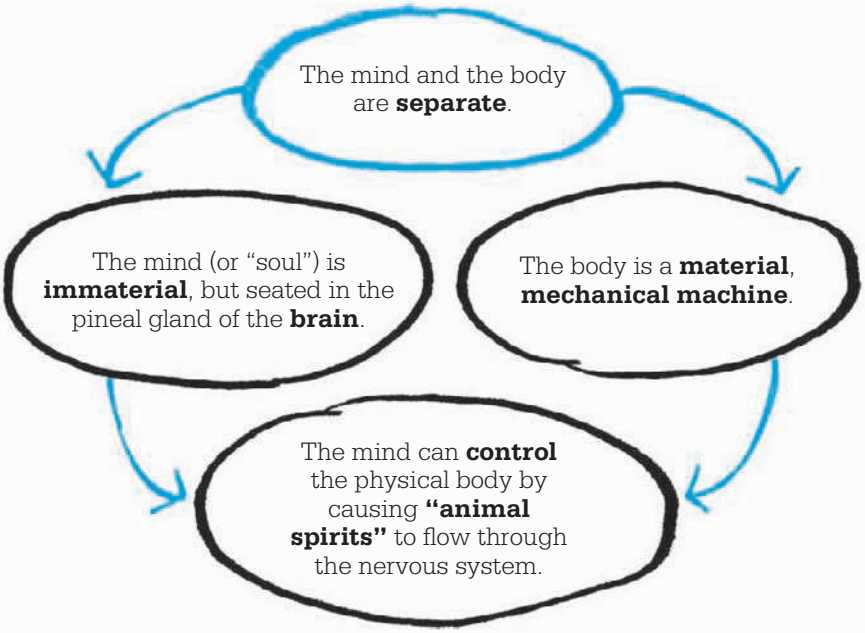
APPROACH
Mind/body dualism

BEFORE
4th century BCE Greek philosopher Plato claims that the body is from the material world, but the soul, or mind, is from the immortal world of ideas.

4th century BCE Greek philosopher Aristotle says that the soul and body are inseparable: the soul is the actuality of the body.

AFTER
1710 In *A Treatise Concerning the Principles of Human Knowledge*, Anglo-Irish philosopher George Berkeley claims that the body is merely the perception of the mind.

1904 In *Does Consciousness Exist?* William James asserts that consciousness is not a separate entity but a function of particular experiences.

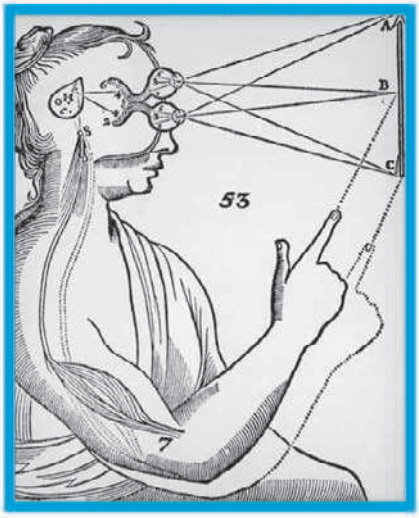


The idea that the mind and body are separate and different dates back to Plato and the ancient Greeks, but it was the 17th-century philosopher René Descartes who first described in detail the mind-body relationship. Descartes wrote *De Homine* ("Man"), his first philosophical book, in 1633, in which he describes the dualism of mind and body: the nonmaterial mind, or "soul," Descartes says, is seated in the brain's pineal gland doing the thinking, while the body is like a machine that operates by "animal spirits," or fluids, flowing through the nervous system to cause movement. This idea had been popularized in the 2nd century by Galen, who attached it to his theory of the humors; but Descartes was the first to describe it in detail, and to emphasize the separation of mind and body.

See also: Galen 18–19 ▪ William James 38–45 ▪ Sigmund Freud 92–99

In a letter to the French philosopher Marin Mersenne, Descartes explains that the pineal gland is the "seat of thought," and so must be the home of the soul, "because the one cannot be separated from the other." This was important, because otherwise the soul would not be connected to any solid part of the body, he said, but only to the psychic spirits.

Descartes imagined the mind and body interacting through an awareness of the animal spirits that were said to flow through the body. The mind, or soul, residing in the pineal gland, located deep within the brain, was thought to sometimes become aware of the moving spirits, which then caused conscious sensation. In this way, the body could affect the mind. Likewise, the mind could affect the body by causing an outflow of animal spirits to a particular region of the body, initiating action.



Descartes illustrated the pineal gland, a single organ in the brain ideally placed to unite the sights and sounds of the two eyes and the two ears into one impression.

> There is a great difference between mind and body.
> **René Descartes**

An analogy for the mind

Taking his inspiration from the French formal gardens of Versailles, with their hydraulic systems that supply water to the gardens and their elaborate fountains, Descartes describes the spirits of the body operating the nerves and muscles like the force of water, and "by this means to cause motion in all the parts." The fountains were controlled by a fountaineer, and here Descartes found an analogy for the mind. He explained: "There is a reasoning soul in this machine; it has its principal site in the brain, where it is like the fountaineer who must be at the reservoir, whither all the pipes of the machine are extended, when he wishes to start, stop, or in some way alter their actions."

While philosophers still argue as to whether the mind and brain are somehow different entities, most psychologists equate the mind with the workings of the brain. However, in practical terms, the distinction between mental and physical health is a complex one: the two being closely linked when mental stress is said to cause physical illness, or when chemical imbalances affect the brain. ■

René Descartes

René Descartes was born in La Haye en Touraine (now called Descartes), France. He contracted tuberculosis from his mother, who died a few days after he was born, and remained weak his entire life. From the age of eight, he was educated at the Jesuit college of La Flèche, Anjou, where he began the habit of spending each morning in bed, due to his poor health, doing "systematic meditation"—about philosophy, science, and mathematics. From 1612 to 1628, he contemplated, traveled, and wrote. In 1649, he was invited to teach Queen Christina of Sweden, but her early-morning demands on his time, combined with a harsh climate, worsened his health; he died on February 11, 1650. Officially, the cause of death was pneumonia, but some historians believe that he was poisoned to stop the Protestant Christina converting to Catholicism.

Key works

1637 *Discourse on the Method*
1662 *De Homine* (written 1633)
1647 *The Description of the Human Body*
1649 *The Passions of the Soul*

DORMEZ!

ABBE FARIA (1756–1819)

IN CONTEXT

APPROACH
Hypnosis

BEFORE
1027 Persian philosopher and physician Avicenna (Ibn Sina) writes about trances in *The Book of Healing*.

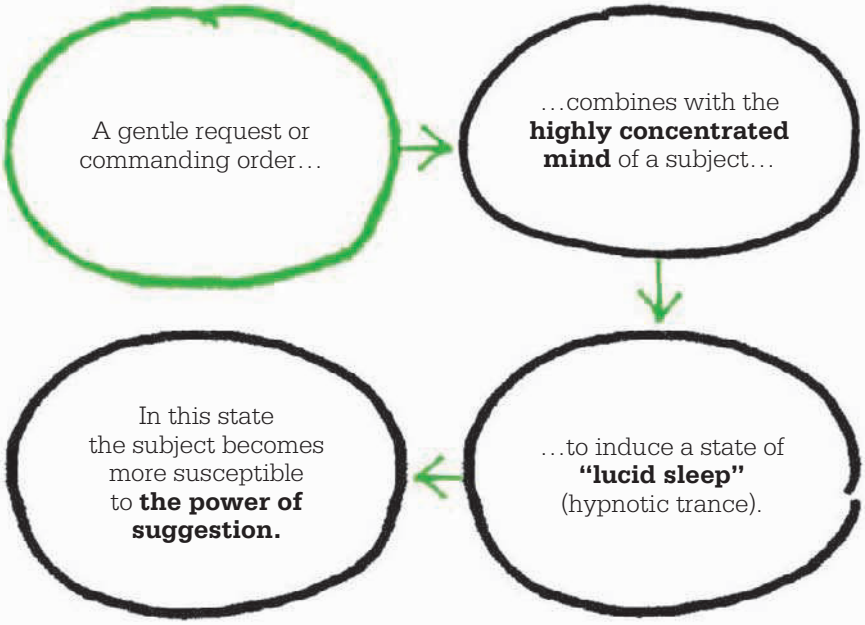
1779 German physician Franz Mesmer publishes *A Memoir on the Discovery of Animal Magnetism*.

AFTER
1843 Scottish surgeon James Braid coins the term "neuro-hypnotism" in *Neurypnology*.

1880s French psychologist Emile Coué discovers the placebo effect and publishes *Self-Mastery Through Conscious Autosuggestion*.

1880s Sigmund Freud investigates hypnosis and its apparent power to control unconscious symptoms.

The practice of inducing trance states to promote healing is not new. Several ancient cultures, including those of Egypt and Greece, saw nothing strange about taking their sick to "sleep temples" so they could be cured, while in a sleeplike state, by suggestions from specially trained priests. In 1027, the Persian physician Avicenna documented the characteristics of the trance state, but its use as a healing therapy was largely abandoned until the German doctor Franz Mesmer reintroduced it in the 18th century. Mesmer's treatment involved manipulating the body's natural, or "animal," magnetism, through the use of magnets and suggestion. After being "mesmerized," or "magnetized," some people suffered a convulsion, after which they claimed to feel better.



See also: Jean-Martin Charcot 30 ▪ Sigmund Freud 92–99 ▪ Carl Jung 102–07 ▪ Milton Erickson 336

A few years later, Abbé Faria, a Portugese-Goan monk, studied Mesmer's work and concluded that it was "entirely absurd" to think that magnets were a vital part of the process. The truth was even more extraordinary: the power to fall into trance or "lucid sleep" lay entirely with the individuals concerned. No special forces were necessary, because the phenomena relied only upon the power of suggestion.

Lucid sleep

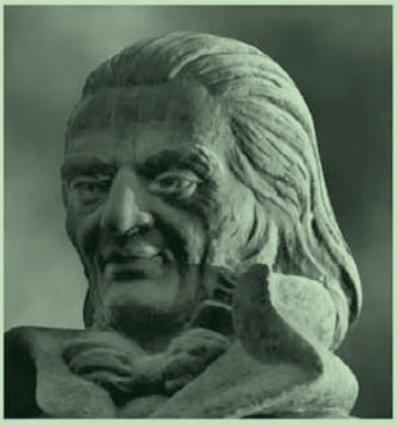
Faria saw his role as a "concentrator," helping his subject get into the right state of mind. In *On The Cause of Lucid Sleep*, he describes his method: "After selecting subjects with the right aptitude, I ask them to relax in a chair, shut their eyes, concentrate their attention, and think about sleep. As they quietly await further instructions, I gently or commandingly say: '*Dormez*!' (Sleep!) and they fall into lucid sleep".

It was from Faria's lucid sleep that the term "hypnosis" was coined in 1843 by the Scottish surgeon James Braid, from the Greek *hypnos*, meaning "sleep" and *osis* meaning "condition." Braid concluded that hypnosis is not a type of sleep but a concentration on a single idea, resulting in heightened suggestibility. After his death, interest in hypnosis largely waned until the French neurologist Jean-Martin Charcot began to use hypnotism systematically in the treatment of traumatic hysteria. This brought hypnosis to the attention of Josef Breuer and Sigmund Freud, who were to question the drive behind the hypnotic self, and discover the power of the unconscious. ■

> Nothing comes from the magnetizer; everything comes from the subject and takes place in his imagination.
> **Abbé Faria**

Franz Mesmer induced trance through the application of magnets, often to the stomach. These were said to bring the body's "animal" magnetism back into a harmonious state.

Abbé Faria



Born in Portuguese Goa, José Custódio de Faria was the son of a wealthy heiress, but his parents separated when he was 15. Armed with introductions to the Portuguese court, Faria and his father traveled to Portugal where both trained as priests. On one occasion, the young Faria was asked by the queen to preach in her private chapel. During the sermon, he panicked, but his father whispered, "They are all men of straw—cut the straw!" Faria immediately lost his fear and preached fluently; he later wondered how a simple phrase could so quickly alter his state of mind. He moved to France, where he played a prominent part in the French Revolution and refined his techniques of self-suggestion while imprisoned. Faria became a professor of philosophy, but his theater shows demonstrating "lucid sleep" undercut his reputation; when he died of a stroke in 1819 he was buried in an unmarked grave in Montmartre, Paris.

Key work

1819 *On the Cause of Lucid Sleep*

CONCEPTS BECOME FORCES WHEN THEY RESIST ONE ANOTHER

JOHANN FRIEDRICH HERBART (1776–1841)

IN CONTEXT

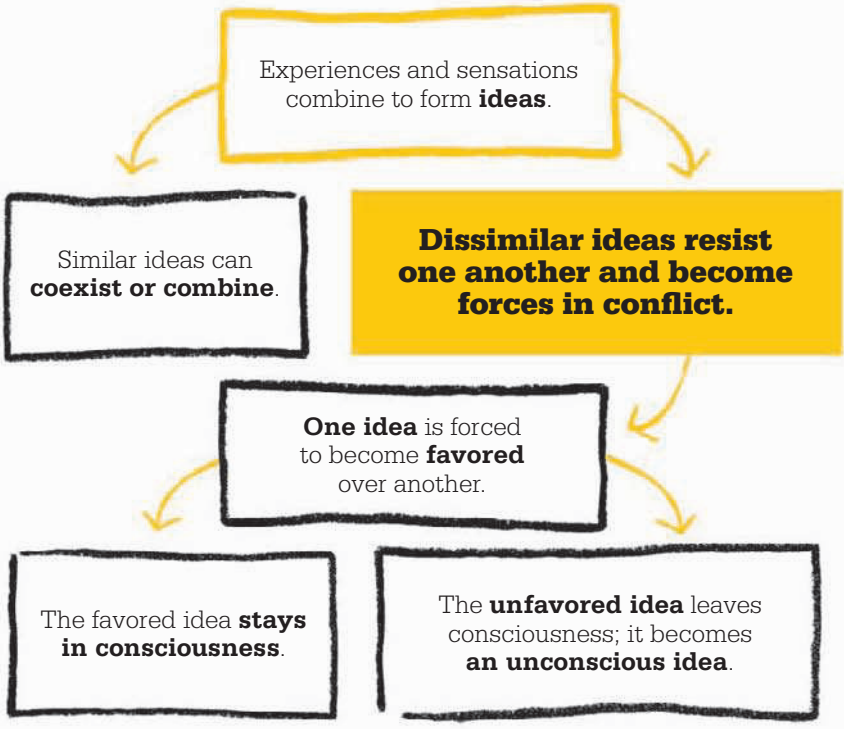
APPROACH
Structuralism

BEFORE
1704 German philosopher Gottfried Leibniz discusses *petites perceptions* (perceptions without consciousness) in his *New Essays on Human Understanding*.

1869 German philosopher Eduard von Hartmann publishes his widely read *Philosophy of the Unconscious*.

AFTER
1895 Sigmund Freud and Josef Breuer publish *Studies on Hysteria*, introducing psychoanalysis and its theories of the unconscious.

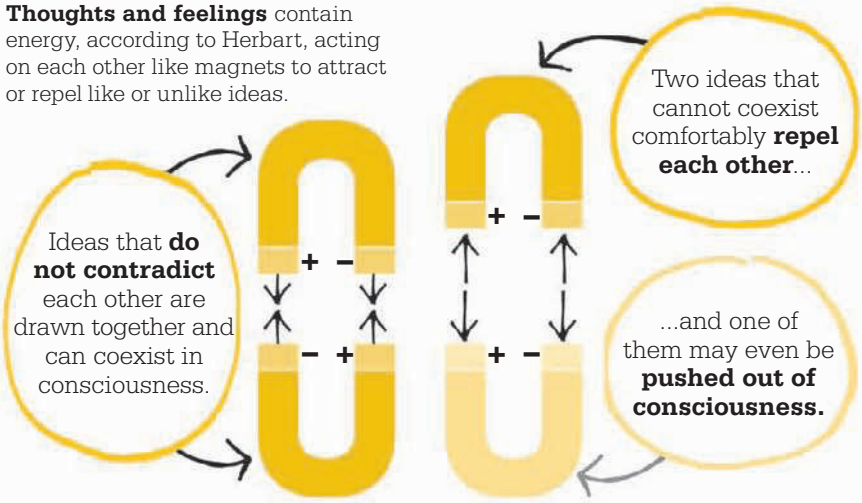
1912 Carl Jung writes *The Psychology of the Unconscious*, suggesting that all people have a culturally specific collective unconscious.



Johann Herbart was a German philosopher who wanted to investigate how the mind works—in particular, how it manages ideas or concepts. Given that we each have a huge number of ideas over the course of our lifetime, how do we not become increasingly confused? It seemed to Herbart that the mind must use some kind of system for differentiating and storing ideas. He also wanted to account for the fact that although ideas exist forever (Herbart thought them incapable of being destroyed), some seem to exist beyond our conscious awareness. The 18th-century German philosopher

See also: Wilhelm Wundt 32–37 ▪ Sigmund Freud 92–99 ▪ Carl Jung 102–07 ▪ Anna Freud 111 ▪ Leon Festinger 166–67

Thoughts and feelings contain energy, according to Herbart, acting on each other like magnets to attract or repel like or unlike ideas.



Gottfried Leibniz was the first to explore the existence of ideas beyond awareness, calling them *petite* ("small") perceptions. As an example, he pointed out that we often recall having perceived something—such as the detail in a scene—even though we are not aware of noticing it at the time. This means that we perceive things and store a memory of them despite the fact that we are unaware of doing so.

Dynamic ideas

According to Herbart, ideas form as information from the senses combines. The term he used for ideas—*Vorsfellung*—encompasses thoughts, mental images, and even emotional states. These make up the entire content of the mind, and Herbart saw them not as static but dynamic elements, able to move and interact with one another. Ideas, he said, can attract and combine with other ideas or feelings, or repulse them, rather like magnets. Similar ideas, such as a color and tone, attract each other and combine to form a more complex idea.

However, if two ideas are unalike, they may continue to exist without association. This causes them to weaken over time, so that they eventually sink below the "threshold of consciousness." Should two ideas directly contradict one another, "resistance occurs" and "concepts become forces when they resist one another." They repel one another with an energy that propels one of them beyond consciousness, into a place that Herbart referred to as "a state of tendency;" and we now know as "the unconscious."

Herbart saw the unconscious as simply a kind of storage place for weak or opposed ideas. In positing a two-part consciousness, split by a distinct threshold, he was attempting to deliver a structural solution for the management of ideas in a healthy mind. But Sigmund Freud was to see it as a much more complex and revealing mechanism. He combined Herbart's concepts with his own theories of unconscious drives to form the basis of the 20th-century's most important therapeutic approach: psychoanalysis. ■

Johann Friedrich Herbart

Johann Herbart was born in Oldenburg, Germany. He was tutored at home by his mother until he was 12, after which he attended the local school before entering the University of Jena to study philosophy. He spent three years as a private tutor before gaining a doctorate at Göttingen University, where he lectured in philosophy. In 1806, Napoleon defeated Prussia, and in 1809, Herbart was offered Immanuel Kant's chair of philosophy at Königsberg, where the Prussian king and his court were exiled. While moving within these aristocratic circles, Herbart met and married Mary Drake, an English woman half his age. In 1833, he returned to Göttingen University, following disputes with the Prussian government, and remained there as Professor of Philosophy until his death from a stroke, aged 65.

Key works

1808 *General Practical Philosophy*
1816 *A Text-book in Psychology*
1824 *Psychology as Science*

BE THAT SELF WHICH ONE TRULY IS

SØREN KIERKEGAARD (1813–1855)

IN CONTEXT

APPROACH
Existentialism

BEFORE
5th century BCE Socrates states the key to happiness is discovering the "true self."

AFTER
1879 Wilhelm Wundt uses self-analysis as an approach to psychological research.

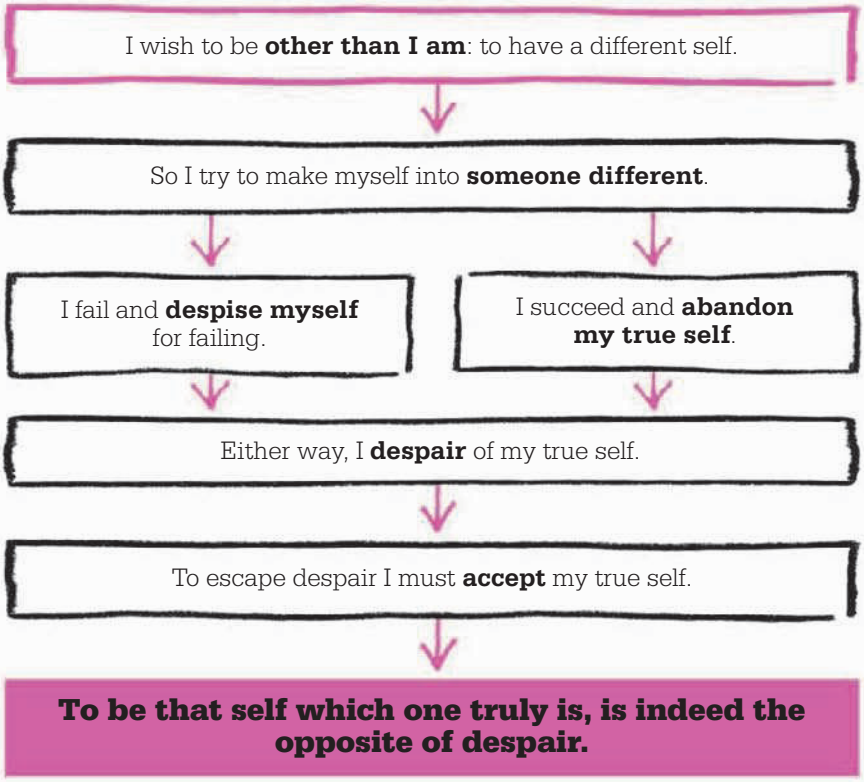
1913 John B. Watson denounces self-analysis in psychology, stating that "introspection forms no essential part of its methods."

1951 Carl Rogers publishes *Client-centered Therapy*, and in 1961 *On Becoming a Person*.

1960 R.D. Laing's *The Divided Self* redefines "madness," offering existential analysis of inner conflict as therapy.

1996 Rollo May bases his book, *The Meaning of Anxiety*, on Kierkegaard's *The Concept of Anxiety*.

The fundamental question, "Who am I?" has been studied since the time of the ancient Greeks. Socrates (470–399 BCE) believed the main purpose of philosophy is to increase happiness through analyzing and understanding oneself, famously saying: "The unexamined life is not worth living." Søren Kierkegaard's book *The Sickness Unto Death* (1849) offers self-analysis as a means to understanding the problem of "despair," which he



See also: Wilhelm Wundt 32–37 ▪ William James 38–45 ▪ Carl Rogers 130–37 ▪ Rollo May 141 ▪ R.D. Laing 150–51

Napoleon's overreaching ambition for power, as depicted in this painting of him as a student, led him to lose sight of his true self and all-too-human limitations, and ultimately to despair.

considered to stem not from depression, but rather from the alienation of the self.

Kierkegaard described several levels of despair. The lowest, and most common, stems from ignorance: a person has the wrong idea about what "self" is, and is unaware of the existence or nature of his potential self. Such ignorance is close to bliss, and so inconsequential that Kierkegaard was not even sure it could be counted as despair. Real desperation arises, he suggested, with growing self-awareness, and the deeper levels of despair stem from an acute consciousness of the self, coupled with a profound dislike of it. When something goes wrong, such as failing an exam to qualify as a doctor, a person may seem to be despairing over something that has been lost. But on closer inspection, according to Kierkegaard, it becomes obvious that the man is not really despairing of the thing (failing an exam) but of himself. The self that failed to achieve a goal has become intolerable. The man wanted to become a different self (a doctor), but he is now stuck with a failed self and in despair.

Abandoning the real self

Kierkegaard took the example of a man who wanted to become an emperor, and pointed out that ironically, even if this man did somehow achieve his aim, he would have effectively abandoned his old self. In both his desire and accomplishment, he wants to "be rid of" his self. This disavowal of the self is painful: despair is overwhelming when a man wants to shun himself—when he "does not possess himself; he is not himself."

However, Kierkegaard did offer a solution. He concluded that a man can find peace and inner harmony by finding the courage to be his true self, rather than wanting to be someone else. "To will to be that self which one truly is, is indeed the opposite of despair," he said. He believed that despair evaporates when we stop denying who we really are and attempt to uncover and accept our true nature.

Kierkegaard's emphasis on individual responsibility, and the need to find one's true essence and purpose in life, is frequently regarded as the beginning of existentialist philosophy. His ideas led directly to R.D. Laing's use of existential therapy, and have influenced the humanistic therapies practiced by clinical psychologists such as Carl Rogers. ■

Søren Kierkegaard

Søren Kierkegaard was born to an affluent Danish family, and raised as a strict Lutheran. He studied theology and philosophy at Copenhagen University. When he came into a sizeable inheritance, he decided to devote his life to philosophy, but ultimately this left him dissatisfied. "What I really need to do," he said, "is to get clear about what I am to do, not what I must know." In 1840, he became engaged to Regine Olsen, but broke off the engagement, saying that he was unsuited to marriage. His general state of melancholy had a profound effect on his life. A solitary figure, his main recreational activities included walking the streets to chat with strangers, and taking long carriage rides alone into the countryside.

Kierkegaard collapsed in the street on October 2, 1855, and died on November 11 in Friedrich's Hospital, Copenhagen.

Key works

1843 *Fear and Trembling*
1843 *Either/Or*
1844 *The Concept of Anxiety*
1849 *The Sickness Unto Death*

PERSONALITY IS COMPOSED OF NATURE AND NURTURE

FRANCIS GALTON (1822–1911)

IN CONTEXT

APPROACH
Bio-psychology

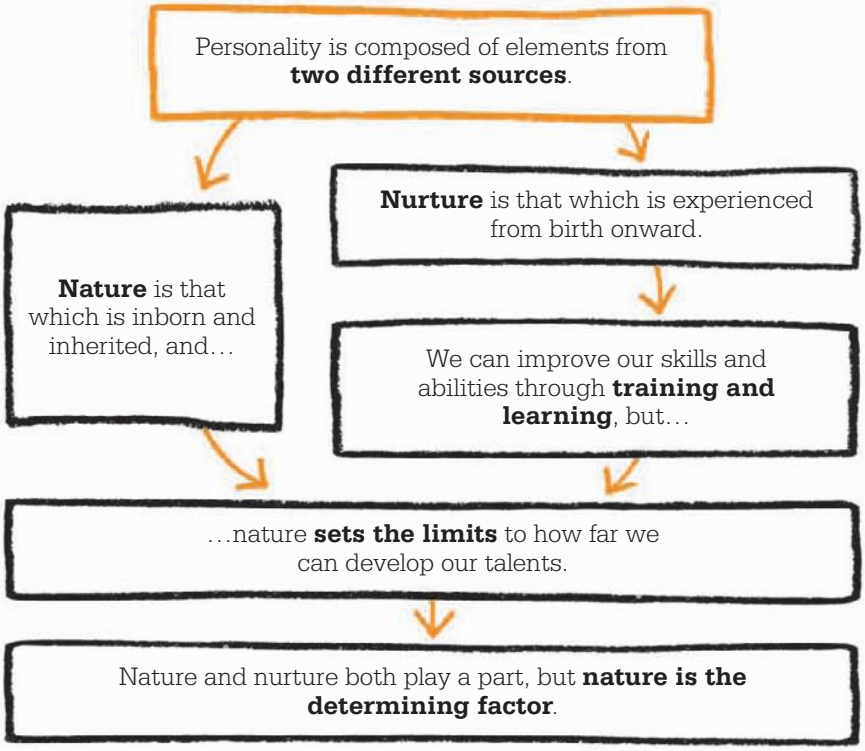
BEFORE
1690 British philosopher John Locke proposes that the mind of every child is a tabula rasa, or blank slate, and hence we are all born equal.

1859 Biologist Charles Darwin suggests that all human development is the result of adaptation to the environment.

1890 William James claims that people have genetically inherited individual tendencies, or "instincts."

AFTER
1925 Behaviorist John B. Watson says there is "no such thing as inheritance of capacity, talent, temperament, or mental constitution".

1940s Nazi Germany seeks to create a "master Aryan race" through eugenics.



Francis Galton counted many gifted individuals among his relatives, including the evolutionary biologist Charles Darwin. So it's not surprising that Galton was interested in the extent to which abilities are either inborn or learned. He was the first person to identify "nature" and "nurture" as two separate influences whose effects could be measured and compared, maintaining that these two elements alone were responsible for determining personality. In 1869, he used his own family tree, as well as those of "judges, statesmen,

See also: John B. Watson 66–71 ▪ Zing-Yang Kuo 75 ▪ G. Stanley Hall 46–47 ▪ Eleanor E. Maccoby 284–85 ▪ Raymond Cattell 314–15

> Characteristics cling to families.
> **Francis Galton**

commanders, scientists, literary men… diviners, oarsmen, and wrestlers," to research inherited traits for his book *Hereditary Genius*. As predicted, he found more highly talented individuals in certain families than among the general population. However, he could not safely attribute this to nature alone, as there were also conferred benefits from growing up in a privileged home environment. Galton himself grew up in a wealthy household with access to unusually good educational resources.

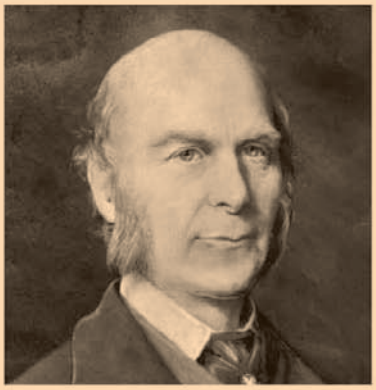
A necessary balance

Galton proposed a number of other studies, including the first large survey by questionnaire, which was sent out to members of the Royal Society to inquire about their interests and affiliations. Publishing his results in *English Men of Science*, he claimed that where nature and nurture are forced to compete, nature triumphs. External influences can make an impression, he says, but nothing can "efface the deeper marks of individual character." However, he insists that both nature and nurture are essential in forming personality, since even the highest natural endowments may be "starved by defective nurture." Intelligence, he says, is inherited, but must be fostered through education.

In 1875, Galton undertook a study of 159 pairs of twins. He found that they did not follow the "normal" distribution of similarity between siblings, in which they are moderately alike, but were always extremely similar or extremely dissimilar. What really surprised him was that the degree of similarity never changed over time. He had anticipated that a shared upbringing would lessen dissimilarity between twins as they grew up, but found that this was not the case. Nurture seemed to play no role at all.

The "nature–nurture debate" continues to this day. Some people have favored Galton's theories, including his notion—now known as eugenics—that people could be "bred" like horses to promote certain characteristics. Others have preferred to believe that every baby is a tabula rasa, or "blank slate," and we are all born equal. Most psychologists today recognize that nature and nurture are both crucially important in human development, and interact in complex ways. ■

Galton's study of twins looked for resemblances in many ways, including height, weight, hair and eye color, and disposition. Handwriting was the only aspect in which twins always differed.



Francis Galton

Sir Francis Galton was a polymath who wrote prolifically on many subjects, including anthropology, criminology (classifying fingerprints), geography, meteorology, biology, and psychology. Born in Birmingham, England, into a wealthy Quaker family, he was a child prodigy, able to read from the age of two. He studied medicine in London and Birmingham, then mathematics at Cambridge, but his study was cut short by a mental breakdown, worsened by his father's death in 1844.

Galton turned to traveling and inventing. His marriage in 1853 to Louisa Jane Butler lasted 43 years, but was childless. He devoted his life to measuring physical and psychological characteristics, devising mental tests, and writing. He received many awards and honors in recognition of his numerous achievements, including several honorary degrees and a knighthood.

Key works

1869 *Hereditary Genius*
1874 *English Men of Science: Their Nature and Nurture*
1875 *The History of Twins*

THE LAWS OF HYSTERIA ARE UNIVERSAL

JEAN-MARTIN CHARCOT (1825–1893)

IN CONTEXT

APPROACH
Neurological science

BEFORE
1900 BCE The Egyptian Kahun Papyrus recounts behaviorial disturbances in women caused by a "wandering uterus."

c.400 BCE Greek physician Hippocrates invents the term "hysteria" for certain women's illnesses in his book, *On the Diseases of Women*.

1662 English physician Thomas Willis performs autopsies on "hysterical" women, and finds no sign of uterine pathology.

AFTER
1883 Alfred Binet joins Charcot at the Salpêtrière Hospital in Paris, and later writes about Charcot's use of hypnotism to treat hysteria.

1895 Sigmund Freud, a former student of Charcot, publishes *Studies on Hysteria*.

Known as the founder of modern neurology, French physician Jean-Martin Charcot was interested in the relationship between psychology and physiology. During the 1860s and 1870s, he studied "hysteria," a term then used to describe extreme emotional behavior in women, thought to be caused by problems with the uterus (*hystera* in Greek). Symptoms included excessive laughing or crying, wild bodily movements and contortions, fainting, paralysis, convulsions, and temporary blindness and deafness.

From observing thousands of cases of hysteria at the Salpêtrière Hospital in Paris, Charcot defined "The Laws of Hysteria," believing that he understood the disease completely. He claimed that hysteria was a lifelong, inherited condition and its symptoms were triggered by shock. In 1882, Charcot stated: "In the [hysterical] fit… everything unfolds according to the rules, which are always the same; they are valid for all countries, for all epochs, for all races, and are, in short, universal." Charcot suggested that hysteria's similarity to a physical disease warranted a search for a biological cause, but his contemporaries dismissed his ideas. Some even believed that Charcot's "hysterics" were merely acting out behavior that Charcot had suggested to them. But one student of Charcot, Sigmund Freud, was convinced of hysteria's status as a physical illness, and was intrigued by it. It is the first disease Freud describes in his theory of psychoanalysis. ■

Charcot gave lectures on hysteria at the Salpêtrière Hospital in Paris. He believed hysteria always followed ordered, clearly structured phases, and could be cured by hypnotism.

See also: Alfred Binet 50–53 ▪ Pierre Janet 54–55 ▪ Sigmund Freud 92–99

A PECULIAR DESTRUCTION OF THE INTERNAL CONNECTIONS OF THE PSYCHE

EMIL KRAEPELIN (1856–1926)

IN CONTEXT

APPROACH
Medical psychiatry

BEFORE
c.50 BCE Roman poet and philosopher Lucretius uses the term "dementia" to mean "being out of one's mind."

1874 Wilhelm Wundt, Kraepelin's tutor, publishes *Principles of Physiological Psychology*.

AFTER
1908 Swiss psychiatrist Eugen Bleuler coins the term "schizophrenia," from the Greek words *skhizein* (to split) and *phren* (the mind).

1948 The World Health Authority (WHO) includes Kraepelin's classifications of mental illnesses in its International Classification of Diseases (ICD).

1950s Chlorpromazine, the first antipsychotic drug, is used to treat schizophrenia.

German physician Emil Kraepelin believed that the origins of most mental illnesses are biological, and he is often regarded as the founder of modern medical psychiatry. In his *Textbook of Psychiatry*, published in 1883, Kraepelin offered a detailed classification of mental illnesses, including "dementia praecox," meaning "early dementia," to distinguish it from late-onset dementia, such as Alzheimer's.

Schizophrenia

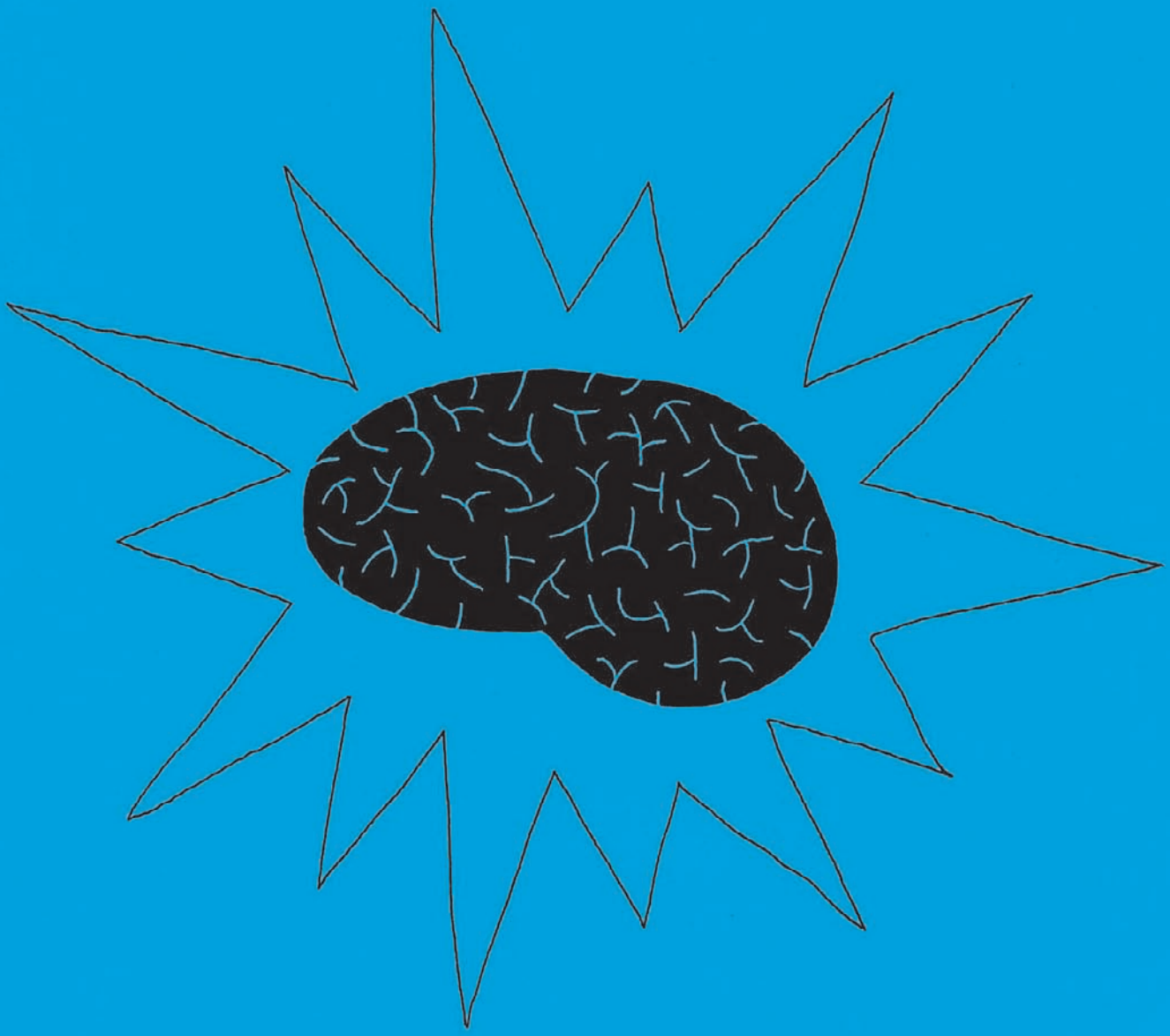
In 1893, Kraepelin described dementia praecox, now called schizophrenia, as consisting "of a series of clinical states which hold as their common a peculiar destruction of the internal connections of the psychic personality." He observed that the illness, characterized by confusion and antisocial behavior, often starts in the late teens or early adulthood. Kraepelin later divided it into four subcategories. The first, "simple" dementia, is marked by slow decline and withdrawal. The second, paranoia, manifests in patients as a state of fear and persecution; they report being "spied upon" or "talked about." The third, hebephrenia, is marked by incoherent speech, and often by inappropriate emotional reactions and behavior, such as laughing loudly at a sad situation. The fourth category, catatonia, is marked by extremely limited movement and expression, often in the form of either rigidness, such as sitting in the same position for hours, or excessive activity, such as rocking backward and forward repeatedly.

Kraepelin's classification still forms the basis of schizophrenia diagnosis. In addition, postmortem investigations have shown that there are biochemical and structural brain abnormalities, as well as impairments of brain function, in schizophrenia sufferers. Kraepelin's belief that a great number of mental illnesses are strictly biological in origin exerted a lasting influence on the field of psychiatry, and many mental disorders are still managed with medication today. ■

See also: Wilhelm Wundt 32–37 ▪ R.D. Laing 150–51

THE BEGINNINGS OF THE MENTAL LIFE DATE FROM THE BEGINNINGS OF LIFE

WILHELM WUNDT (1832–1920)



IN CONTEXT

APPROACH
Experimental psychology

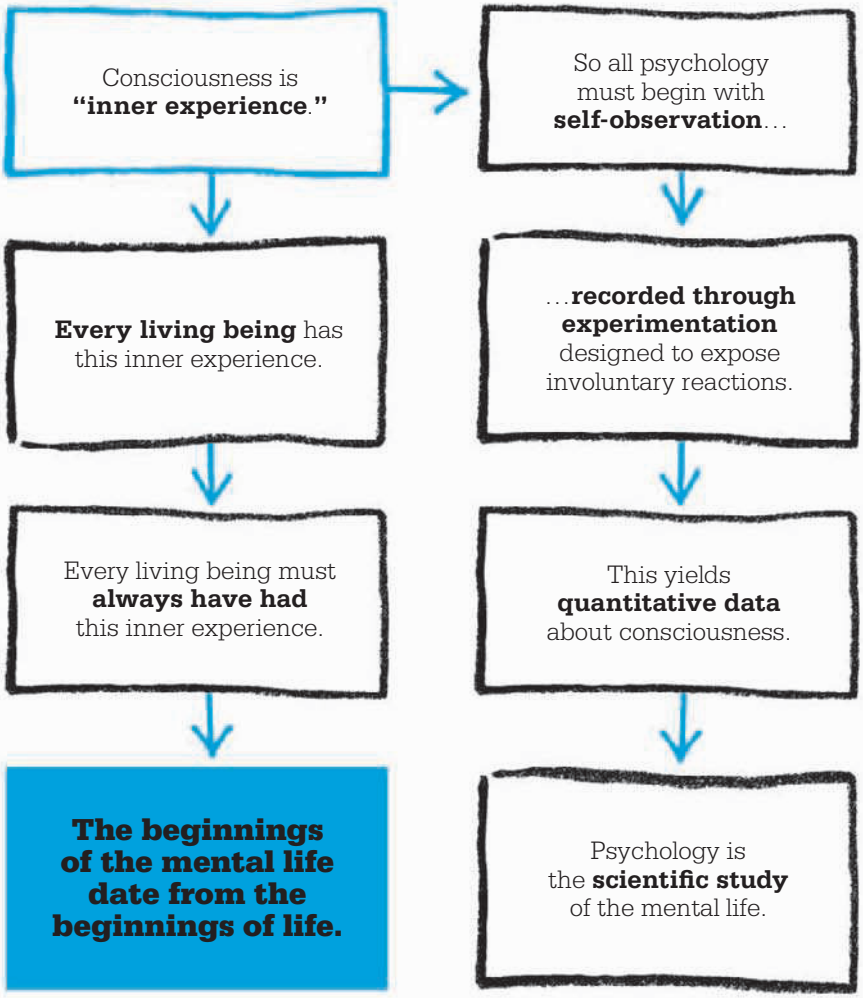
BEFORE
5th century Ancient Greek philosophers Aristotle and Plato claim that animals have a low level, distinctly nonhuman consciousness.

1630s René Descartes says that animals are automata without feeling.

1859 British biologist Charles Darwin links humans to animal ancestors.

AFTER
1949 Konrad Lorenz changes the way people see animals by showing their similarities to humans in *King Solomon's Ring*.

2001 American zoologist Donald Griffin argues in *Animal Minds* that animals have a sense of the future, complex memory, and perhaps consciousness itself.



The idea that nonhuman animals have minds and are capable of some form of thought dates back to the ancient Greek philosophers. Aristotle believed that there are three kinds of mind: plant, animal, and human. The plant mind is concerned only with nutrition and growth. The animal mind has these functions, but can also experience sensations, such as pain, pleasure, and desire, as well as initiating motion. The human mind can do all this and reason; Aristotle claims that only humans have self-awareness and are capable of higher-level cognition.

The similarity of humans to animals was a critical issue for philosophers, but even more so for psychologists. In the 15th century, the French philosopher René Descartes claimed that animals are no more than reflex-driven, complex machines. If Descartes was correct, observing animals could tell us nothing about our own behavior. However, when Charles Darwin asserted some 200 years later that humans are linked to other animals genetically, and that consciousness operates from the creatures at the very lowest end of the evolutionary scale to ourselves, it became clear that experiments on animals might be revealing. This was the position held by the German physician, philosopher, and psychologist Wilhelm Wundt, who described a continuum of life from even the smallest animals to ourselves. In his book *Principles of Physiological Psychology*, he claimed that consciousness is a universal possession of all living organisms, and has been since the evolutionary process began.

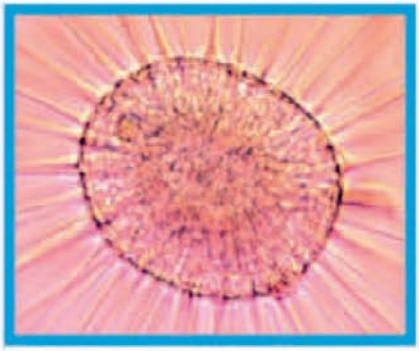
To Wundt, the very definition of life includes having some kind of mind. He declared: "From the standpoint of observation, then, we must regard it as a highly probable

See also: René Descartes 20–21 ▪ William James 38–45 ▪ Edward Thorndike 62–65 ▪ John B. Watson 66–71 ▪ B.F. Skinner 78–85

> The beginnings of a differentiation of mental function can be found even in the protozoa.
> **Wilhelm Wundt**

hypothesis that the beginnings of the mental life date from as far back as the beginnings of life at large. The question of the origin of mental development thus resolves itself into the question of the origin of life." Wundt went on to say that even simple organisms such as protozoa have some form of mind. This last claim is surprising today, when few people would expect a single-celled animal to demonstrate even simple mental abilities, but it was even more surprising when first stated more than 100 years ago.

Wundt was keen to test out his theories, and he is often called "the father of experimental psychology" because he set up the world's first formal laboratory of experimental psychology in Leipzig University, Germany, in 1879. He wanted to carry out systematic research on the mind and behavior of humans, initially through subjecting the basic sensory processes to close examination. His laboratory inspired other universities in the US and Europe to set up psychology departments, many



Even single-celled organisms have some form of consciousness, according to Wundt. He suggested the amoeba's ability to devour food items indicates a continuity of mental processes.

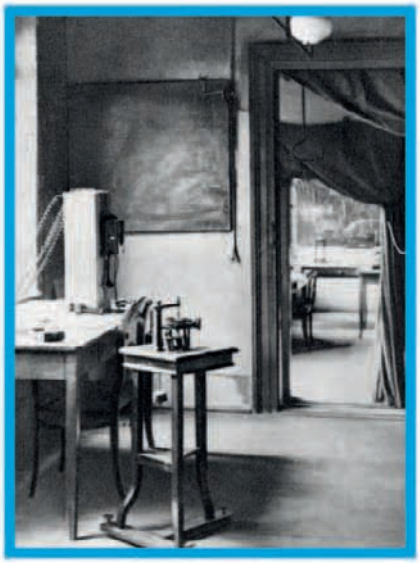
of which were modeled on his original laboratory and were led by pupils such as Edward Titchener and James Cattell.

Observing behavior

Wundt believed that "the exact description of consciousness is the sole aim of experimental psychology." Although he understood consciousness as an "inner experience," he was only interested in the "immediately real" or apparent form of this experience. This ultimately led him to the study of behavior, which could be studied and quantified by "direct observation."

Wundt said that there are two types of observation: external and internal. External observation is used to record events that are visible in the external world, and is useful in assessing relationships such as cause and effect on physical bodies—for example, in stimulus and response experiments. If a nerve fiber in a dead frog is given a small electric shock, the connecting muscles twitch, causing the legs to move. The fact that this happens even in a dead animal illustrates that such movements can occur without any consciousness. In living creatures, such actions are the basis of the automatic behavior that we call "reflexes," such as immediately moving your hand when you touch something hot.

Wundt's second type of observation, termed "introspection" or "self-observation," is internal observation. This involves noticing and recording internal events such as thoughts and feelings. It is crucial in research because it provides information about how the mind is working. Wundt was interested in the relationship between the inner and outer worlds, which he did not see as mutually exclusive, but as interactive, describing it as »



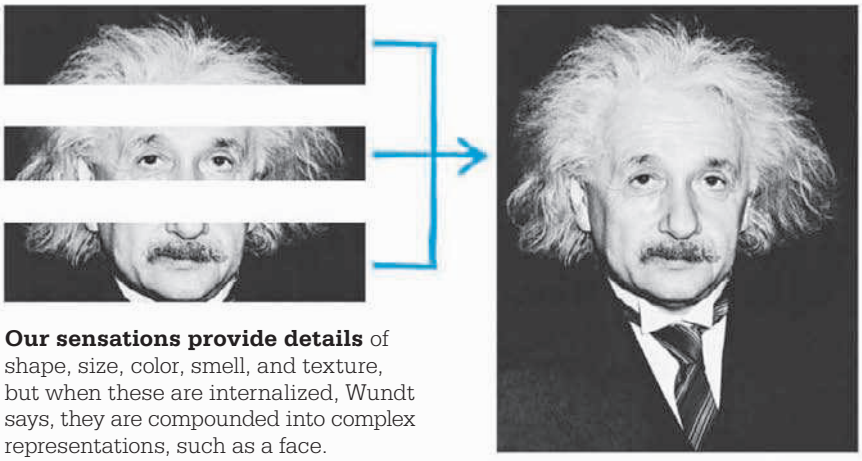
Wundt's laboratory set the style for psychology departments around the world. His experiments moved psychology out of the domain of philosophy and into science.

"physical and psychical." He began to concentrate on the study of human sensations, such as the visual sensation of light, because these are the agencies that link the external physical world and the internal mental world.

In one experiment, Wundt asked individuals to report on their sensations when shown a light signal—which was standardized to a specific color and a certain level of brightness, and shone for a fixed length of time. This ensured that each participant experienced exactly the same stimulus, enabling responses of different participants to be compared and the experiment to be repeated at a later date, if required. In insisting upon this possibility for replication, Wundt set the standard for all future psychological experiments.

In his sensory experiments, Wundt set out to explore human consciousness in a measurable way. He refused to see it as an unknowable, subjective experience that is unique to each individual. In the light-response experiments, he was particularly interested in the amount of time between a person receiving some form of stimulus and making a voluntary reaction to it (rather than an involuntary one),

> The exact description of consciousness is the sole aim of experimental psychology.
> **Wilhelm Wundt**



Our sensations provide details of shape, size, color, smell, and texture, but when these are internalized, Wundt says, they are compounded into complex representations, such as a face.

and he used various instruments to measure this response exactly. He was also just as interested to hear what his participants reported in common as he was in apparent individual differences.

Pure sensations, Wundt suggested, have three components: quality, intensity, and "feeling-tone." For example, a certain perfume may have a sweet odor (quality) that is distinct but faint (intensity) and is pleasant to smell (feeling-tone), while a dead rat might give off a nauseating (quality), strong (intensity) stench (feeling-tone). All consciousness originates in sensations, he said, but these are not internalized as "pure" sensory data; they are perceived as already collected or compounded into representations, such as a dead rat. Wundt called these "images of an object or of a process in the external world." So, for example, if we see a face with certain features—mouth shape, eye color, nose size, and so on—we may recognize the face as a person we know.

Categories of consciousness

Based on his sensory experiments, Wundt claimed that consciousness consists of three major categories of actions—representation, willing, and feeling—which together form an impression of a unitary flow of events. Representations are either "perceptions," if they represent an image in the mind of an object perceived in the external world (such as a tree within eyesight), or "intuitions" if they represent a subjective activity (such as remembering a tree, or imagining a unicorn). He named the process through which a perception or intuition becomes clear in consciousness "apperception." So, for example, you may perceive a sudden loud noise and then apperceive that it is a warning sign, meaning that you are about to be hit by a car if you don't get out of the way quickly enough.

The willing category of consciousness is characterized by the way it intervenes in the external world; it expresses our volition, or "will," from raising an arm to choosing to wear red. This form of consciousness is beyond experimental control or measurement. However, Wundt found that the third category of consciousness, feeling, could be measured through subjective reports from experimental

participants, or through measuring levels of behavior such as tension and relaxation or excitement.

Cultural psychology

For Wundt, the psychological development of a person is determined not only by sensations but also by complex social and cultural influences, which cannot be replicated or controlled in an experimental situation. He included religion, language, myths, history, art, laws, and customs among these influences, discussing them in a ten-volume work, *Cultural Psychology*, which he wrote during the last 20 years of his life.

Wundt saw language as an especially important part of culture's contribution to consciousness. Any verbal communication begins with a "general impression," or unified idea of something we wish to say. Having "apperceived" this general starting point, we then choose words and sentences to express it. While speaking, we monitor the accuracy of the intended meaning. We might say, "No, that's not right, I mean…," and then choose a different word or phrase to express ourselves better. Whoever is listening has to understand the meaning that the speaker is trying to convey, but the actual words may not be as important as the general impression, especially if strong emotions are involved. As evidence of the fact that we use this process, Wundt points out that we often remember the general meaning of what a person has said long after we've forgotten the specific words that were used.

> In the course of normal speaking… the will is continuously directed to bringing the course of ideas and the articulatory movements into harmony with each other.
> **Wilhelm Wundt**

The ability to use true language, as opposed to just exchanging limited signs and signals, is today considered by many psychologists to be a key difference between human beings and the rest of the animal kingdom. There may be a few exceptions, including nonhuman primates such as chimpanzees, but language is generally considered to be a human ability that is very important in consciousness.

Consciousness and species

The definition of consciousness continues to be debated, but it has not fundamentally changed since Wundt. The level of consciousness within animals has not yet been established, and this has led to the formation of special Codes of Ethics for animal experiments, intensive farming, and blood sports such as fox hunting and bull fighting. Of particular concern is whether animals experience discomfort, fear, and pain in ways that resemble the form in which we feel them ourselves. The fundamental question of which animals have self-awareness or consciousness remains unanswered, although few psychologists today would assume, as Wundt did, that it applies even to the microscopic protozoa. ■

Wilhelm Wundt

Born in Baden (now Mannheim) Germany, Wilhelm Wundt was the fourth child in a family with a long history of intellectual achievement. His father was a Lutheran minister. The young Wundt was allowed little time for play, as he was pushed through a rigorous educational regime, attending a strict Catholic school from the age of 13. He went on to study at the universities of Berlin, Tübingen, and Heidelberg, graduating in medicine in 1856.

Two years later, Wundt became assistant to the physician Hermann von Helmholtz, who was famous for his work on visual perception. While at Heidelberg, Wundt started teaching the world's first course in experimental psychology, and in 1879 opened the first psychology laboratory. Wundt wrote over 490 works and was probably the world's most prolific scientific writer.

Key works

1863 *Lectures on the Mind of Humans and Animals*
1896 *Outline of Psychology*
1873 *Principles of Physiological Psychology*

WE KNOW THE MEANING OF "CONSCIOUSNESS" SO LONG AS NO ONE ASKS US TO DEFINE IT

WILLIAM JAMES (1842–1910)

IN CONTEXT

APPROACH
Analysis of consciousness

BEFORE
1641 René Descartes defines consciousness of self in terms of the ability to think.

1690 English philosopher and physician John Locke defines consciousness as "the perception of what passes in a man's own mind."

1781 German philosopher Immanuel Kant states that simultaneous events are experienced as a "unity of consciousness."

AFTER
1923 Max Wertheimer in *Laws of Organization in Perceptual Forms* shows how the mind actively interprets images.

1925 John B. Watson dismisses consciousness as "neither a definite nor a usable concept."

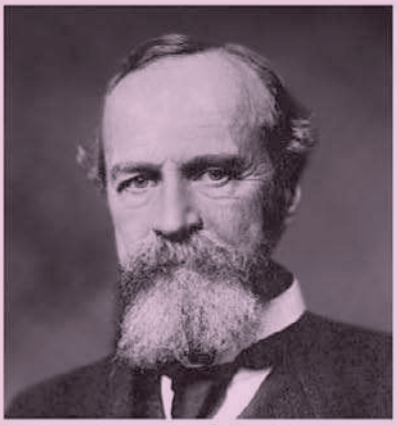
The term "consciousness" is generally used to refer to an individual's awareness of his or her own thoughts, including sensations, feelings, and memories. We usually take this awareness for granted, except when we are having difficulties—such as trying to do something when we are very tired. But if you focus your thoughts on your consciousness, you soon become aware that your conscious experiences are constantly changing. While reading this book, for example, you may be reminded of past experiences or present discomforts that interrupt your concentration; plans for the future may spontaneously spring to mind. Thinking about your conscious experiences makes you realize just how much your thoughts are changing, and yet they seem to come together, merging and carrying on smoothly as a whole.

American psychologist William James compared these everyday experiences of consciousness to a stream that continuously flows, despite the odd interruption and change of direction. He declared: "A 'river' or a 'stream' are the metaphors by which it is most naturally described. In talking of it hereafter, let us call it the stream of thought, of consciousness…."

> Consciousness… does not appear to itself chopped up in bits… It is nothing jointed; it flows.
> **William James**

James's famous description of the "stream... of consciousness" is one that almost everyone can identify with, because we all experience it. Yet, at the same time, James points out that it is very hard to actually define: "When I say every thought is part of a personal consciousness, 'personal consciousness' is one of the terms in question… to give an accurate account of it is the most difficult of philosophic tasks."

William James



William James was born in 1842 to a wealthy and influential New York family, and traveled widely as a child, attending schools in both Europe and the US. James showed early artistic ability and initially pursued a career as a painter, but his growing interest in science eventually led to him to enrol at Harvard University in 1861. By 1864, he had moved to Harvard Medical School, although his studies were interrupted by bouts of physical illness and depression. He finally qualified as a physician in 1869, but never practiced medicine.

In 1873, James returned to Harvard, where he became a professor of both philosophy and psychology. He set up the first experimental psychology courses in the US, playing a key role in establishing psychology as a truly scientific discipline. He retired in 1907, and died peacefully at his home in New Hampshire in 1910.

Key works

1890 *The Principles of Psychology*
1892 *Psychology*
1897 *The Will to Believe*

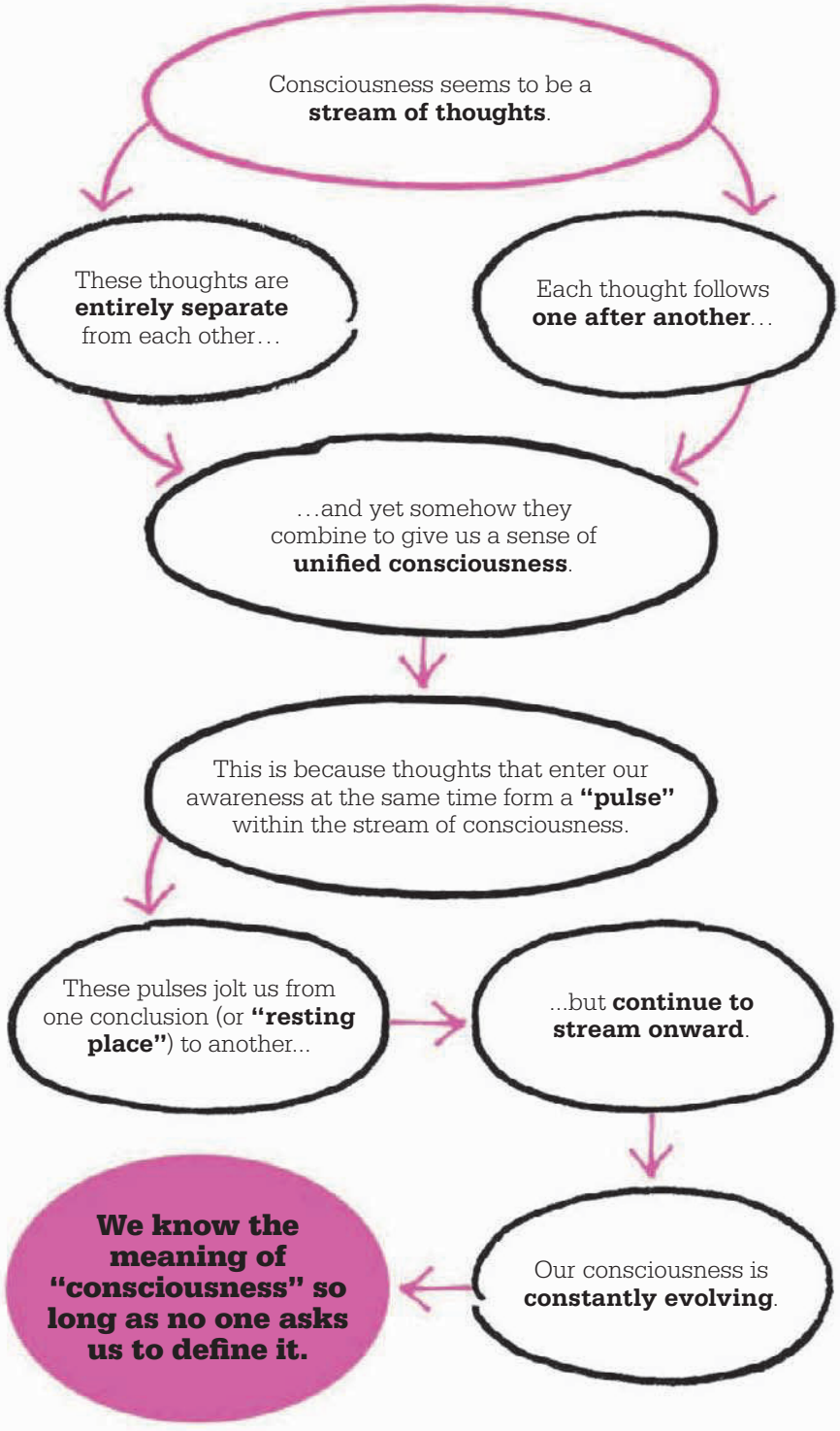
See also: René Descartes 20–21 ▪ Wilhelm Wundt 32–37 ▪ John B. Watson 66–71 ▪ Sigmund Freud 92–99 ▪ Fritz Perls 112–17 ▪ Wolfgang Köhler 160–61 ▪ Max Wertheimer 335

This "most difficult of philosophic tasks" has a long history. The ancient Greeks discussed the mind, but did not use the term "consciousness" or any equivalent. However, there was debate as to whether something separate from the body exists at all. In the fourth century BCE, Plato made a distinction between the soul and body, but Aristotle argued that even if there is a distinction, the two cannot be separated.

Early definitions

René Descartes, in the mid-17th century, was one of the first philosophers to attempt to describe consciousness, proposing that it resides in an immaterial domain he called "the realm of thought," in contrast to the physical domain of material things, which he called "the realm of extension." However, the first person accredited with the modern concept of consciousness as an ongoing passage of individual perceptions is the 17th-century English philosopher John Locke. James was drawn to Locke's idea of passing perceptions and also to the work of the 18th-century German philosopher Immanuel Kant. Kant was impressed by the way our experiences come together, noting that if we hear a noise and feel pain at the same time, we typically experience these as one event. He called this the "unity of consciousness," a concept that influenced many later philosophers, including William James.

James felt the most important point about consciousness is that it is not a "thing" but a process—it is what the brain does to "steer a nervous system grown too complex to regulate itself." It allows us to »



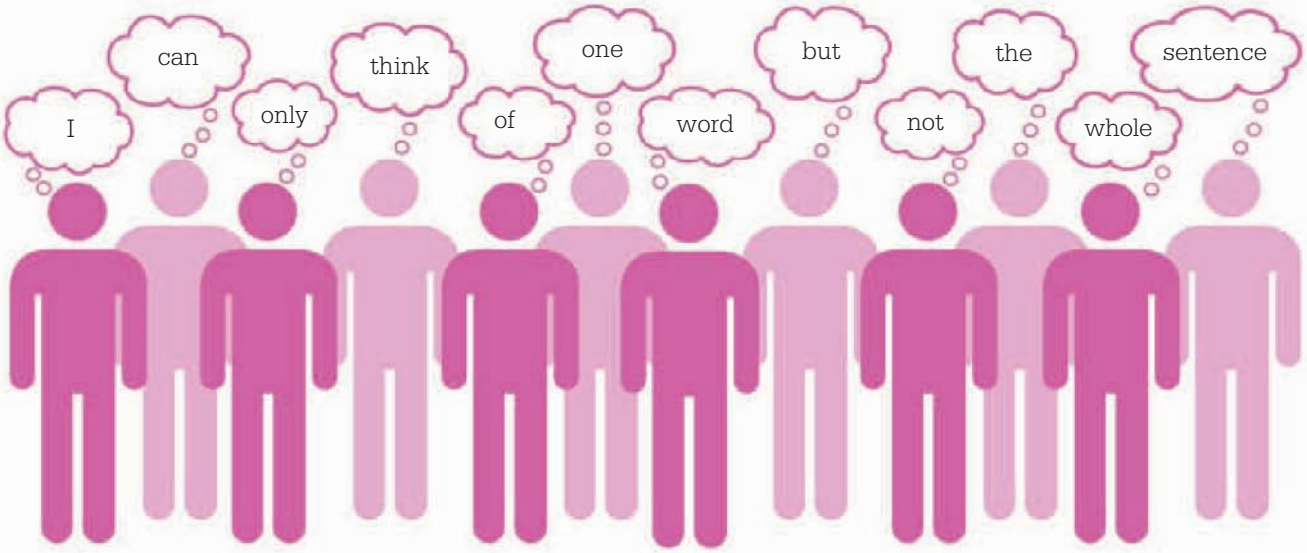
> No-one ever had a simple sensation by itself: consciousness… is of a teeming multiplicity of objects and relations.
> **William James**

reflect upon the past, present, and future, to plan and adapt to circumstances and so fulfill what he believed was the prime purpose of consciousness—to stay alive.

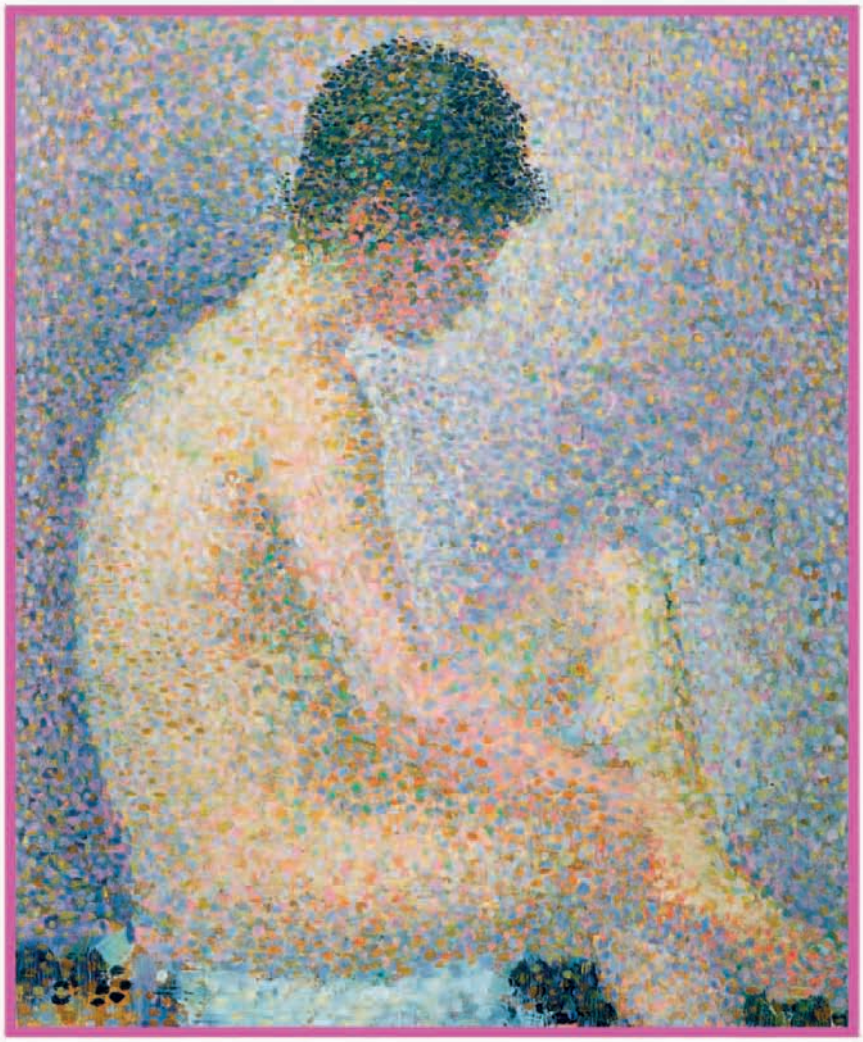
But James found it hard to imagine the structure of a unified consciousness. He likened it to a group of 12 men: "Take a dozen words, take twelve men, and to each give one word. Then stand the men in a row or jam, and let each think of his word as intently as he will; nowhere will there be a consciousness of the whole sentence." If consciousness is a stream of distinct thoughts, James struggled to see how these combine. As he said, "The idea of *a* plus the idea of *b* is not identical with the idea of *(a + b)*." Two thoughts added together cannot be made into one idea. They are more likely to form an entirely new idea. For example, if thought *a* is "it's nine o'clock," and thought *b* is "the train leaves at 9:02," thought *c*—"I'm going to miss my train!"—might follow.

Combining thoughts

James concluded that the simplest way to understand how thoughts within the stream of consciousness might combine to make sense is to suppose "that things that are known together are known in single pulses of that stream." Some thoughts, or sensations, he believed, are unavoidably connected, like Kant's example of hearing a noise and feeling pain at precisely the same time, because any thoughts that enter our awareness during the same moment of time combine to form a pulse, or current, within the stream. We may have many of these currents flowing through our consciousness, some fast and some slow. James stated that there are even resting points, where we pause to form pictures in our minds, which can be held and contemplated at length. He called the resting places "substantive parts," and the moving currents the "transitive parts," claiming that our thinking is constantly being dislodged from one substantive part toward another, propelled by the transitive parts, or current. We are, therefore, effectively "bumped" from one conclusion to another by the constant stream of thoughts, whose purpose is to pull us ever forward in this way. There is no



The 12-word sentence problem was used by James to illustrate his difficulty in grasping how a unified consciousness stems from separate thoughts. If each man is aware of just one word, how can there be a consciousness of the whole sentence?



Dots of pure color make up this work by the French Post-Impressionist painter Georges Seurat. Yet our brain combines these separate elements so that what we see is a human figure.

final conclusion; consciousness is not a thing but a process, which is constantly evolving.

James also drew attention to the personal nature of consciousness, stating that thoughts do not exist independently of a thinker—they are your thoughts or mine. Each one is "owned" by someone, and never "comes into direct sight of a thought in another personal consciousness than its own." And it is these thoughts "connected as we feel them to be connected" that form the self. As thoughts cannot be divided from the self, James said that investigating this self should be the starting point of psychology. Experimental psychologists did not agree, because "the self" cannot be offered up for experimentation, but James thought it was enough to work with our understanding of a self that does certain things and feels in certain ways. He called this the "empirical self," which manifests itself through its behavior, and suggested that it consists of several parts—the material self, spiritual self, and social self—each of which can be studied through introspection.

Theory of emotion

In the early stages of his research into consciousness, James realized that the emotions play an important role in our daily lives, and went on to develop, with his colleague Carl Lange, a theory about how they relate to our actions and behavior. What was to become known as the James–Lange Theory of Emotion states that emotions arise from your conscious mind's perception of your physiological condition. To illustrate this theory, James used the example of seeing a bear, then running away. It is not the case that you see the bear, feel afraid, and then run away because of the fear. What is really happening is that you see the bear and run away, and the conscious feeling of fear is caused by the action of running. This contradicts what most people might think, but James's view was that the mind's perception of the physical effects of running—rapid breathing, increased heartbeat, and perspiring heavily—is translated into the emotion of fear. Another example, according to his theory, would be that you feel happy because you are conscious that you are smiling; it is not that you feel happy first, and then smile.

Pragmatism

Related to James's theories about consciousness is his approach to the way we believe things to be true or not. He stated that "truths emerge from facts... but... the 'facts' themselves are not true; they simply are. Truth is the function of the beliefs that start and terminate among them." »

> There is but one indefectibly certain truth… the truth that the present phenomenon of consciousness exists.
> **William James**

James defined "true beliefs" as those that the believer finds useful. This emphasis on the usefulness of beliefs lies at the heart of the American philosophical tradition of pragmatism, which was central to James's thinking.

In the course of our lives, James claimed that we are continually testing "truths" against each other, and our conscious beliefs keep changing, as "old truths" are modified, and sometimes replaced by "new truths." This theory is particularly relevant to the way that all scientific research, including psychology, progresses. James cited the discovery of the radioactive element radium by Pierre and Marie Curie in 1902 as an example. In the course of their investigations, the Curies found that radium appeared to give off unlimited amounts of energy, which "seemed for a moment to contradict our ideas of the whole order of nature." However, after conscious consideration of this revelation, they concluded that "although it extends our old ideas of energy, it causes a minimum of alteration in their nature." In this instance, the Curies' scientific knowledge had been questioned and modified, but its core truths remained intact.

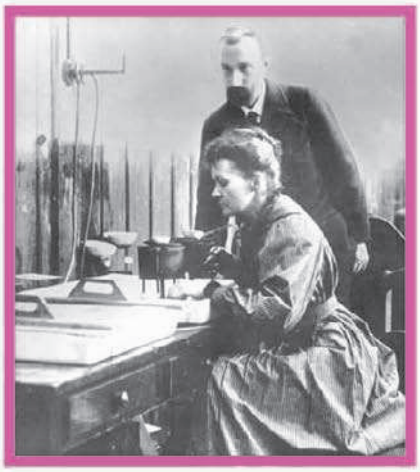
Further studies

The period following James's death saw the rise of the behaviorist movement, and a decline of interest in consciousness. Consequently, little theorizing on the subject happened from around the start of the 1920s up until the 1950s. One important exception was the German-based Gestalt movement, which emphasized that the brain operates in a holistic way, taking account of whole conscious experiences, rather than separate events—just as when we look at a picture, we see not just separate dots, lines, and shapes, but a meaningful whole. This concept is behind the now famous Gestalt phrase: "The whole is greater than the sum of the parts."

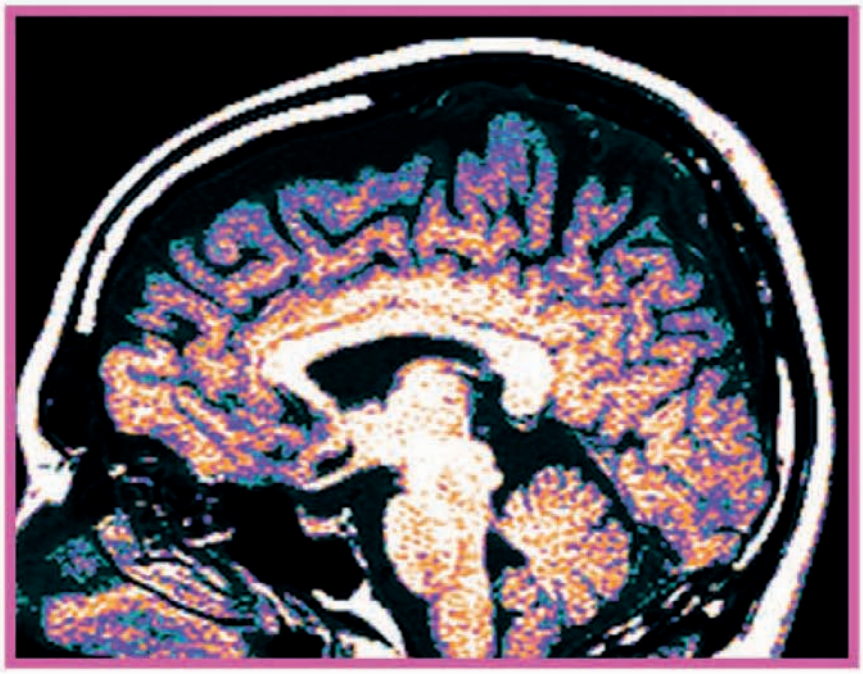
Since the 1980s, however, psychologists and neuroscientists have developed a new field of research called "consciousness studies," focusing on two main areas of interest: the content of consciousness, as reported by people who are considered to be normal and healthy; and the consciousness of people whose state of awareness has been impaired in some way. The latter group includes cases, such as when the subject is in a "persistent vegetative state" (PVS)—in which patients in a coma are awake and breathing independently, but have apparently lost all higher brain functions. The goal with both paths of research is to try to find ways of assessing consciousness as objectively as possible, and to understand its underlying mechanisms—both physical and psychological.

Modern neuroscience has demonstrated that there are mechanisms of consciousness. By the closing years of the 20th century, the British molecular biologist and biophysicist Francis Crick was claiming that consciousness is related to a specific part of the brain—the prefrontal cortex area, which is involved in thought processes such as planning, problem-solving, and the control of behavior.

Research carried out by the Colombian neuroscientist Rodolfo Linas links consciousness to the activities of the thalamus in conjunction with the cerebral cortex. The thalamus, a structure embedded deep in the center of the brain, is responsible for regulating vibrations inside the brain at certain frequencies; if these regular rhythms are disrupted—by an infection or genetic causes—then an individual may experience neurological disorders, such as epilepsy and Parkinson's disease, as well as psychological conditions, such as depression.



Pierre and Marie Curie's research, like most scientific work, modified, rather than totally contradicted, earlier theories. New "truths," James claimed, constantly modify our basic beliefs in a similar way.



MRI scans of the brain have helped to identify structures such as the thalamus, seen in the center of this scan, that appear to have links to consciousness.

But when it comes to definitions of consciousness, modern attempts still remain vague and difficult to apply. For example, the American neuroscientist Antonio Damasio calls consciousness "the feeling of what happens," and defines it as "an organism's awareness of its own self and its surroundings." As William James suggested, more than 100 years earlier, consciousness is hard to define.

Lasting legacy

An edited version of James's 1890 book, *The Principles of Psychology*, is still in print, and his ideas have been a major influence on many psychologists, as well as other scientists and thinkers. The application of his pragmatic philosophy to facts—concentrating not on what is "true" but on what it is "useful to believe"—has helped psychology move on from the question of whether the mind and body are separate or not to a more useful study of mental processes, such as attention, memory, reasoning, imagination, and intention. James claimed his approach helped to move philosophers and psychologists "away from abstraction, fixed principles, closed systems, and pretended absolutes and origins, towards facts, action, and power." His insistence on focusing on the wholeness of events, including the effects of different environments on our actions—in contrast to the introspective, structuralist approach of breaking down our experiences into small details—has also shaped our understanding of behavior.

Before James started teaching the subject at Harvard in 1875, there were no independent psychology courses available in any American university. But within 20 years, around 24 colleges and universities in the US had recognized psychology as a distinct academic discipline, and were offering degrees in the subject. Three specialist psychology journals were also founded in that time, and a professional organization—the American Psychological Association—was formed.

James introduced experimental psychology to America, despite claiming to "hate experimental work." He did so because he had come to realize that it was the best way to prove or disprove a theory. But he continued to value the use of introspection as a tool of discovery, especially of mental processes.

The shift in the perception of psychology and its concerns from being considered, "a nasty little subject" (in James's words) into a vastly beneficial discipline owes much to his work. In 1977, in a speech celebrating the 75th anniversary of the formation of the American Psychological Association, David Krech, then Professor Emeritus in psychology at the University of California at Berkeley, referred to James as the "father of psychology." ■

> "All these consciousnesses melt into each other like dissolving views. Properly they are but one protracted consciousness, one unbroken stream."
>
> **William James**

ADOLESCENCE IS A NEW BIRTH

G. STANLEY HALL (1844–1924)

IN CONTEXT

APPROACH
Human development

BEFORE
1905 Sigmund Freud, in *Three Essays on the Theory of Sexuality*, claims the teenage years are the "genital stage."

AFTER
1928 American anthropologist Margaret Mead, in *Coming of Age in Samoa*, declares that adolescence is only recognized as a distinct stage of human development in Western society.

1950 Erik Erikson, in *Childhood and Society*, describes adolescence as the stage of "Identity vs. Role Confusion," coining the term "identity crisis."

1983 In *Margaret Mead and Samoa*, New Zealand anthropologist Derek Freeman disputes Mead's claim that adolescence is merely a socially constructed concept.

Human development is determined by **nature**: it is a repetition of our **"ancestral record."**

A child has **animallike dispositions** and goes through **several growth stages**.

At **adolescence**, the evolutionary momentum subsides; this is a time for **individual change**.

During this wild, lawless time, teenagers are increasingly **sensitive, reckless, self-conscious**, and prone to depression.

The child then emerges as an adult: a more **civilized, "higher-order" being**.

Adolescence is a new birth.

See also: Francis Galton 28–29 ▪ Wilhelm Wundt 32–37 ▪ Sigmund Freud 92–99 ▪ Erik Erikson 272–73

The word "adolescence" literally means "growing up" (from the Latin *adolescere*). In theory, it describes a distinct stage between childhood and adulthood, but in practice often simply defines the "teenage" years. In most Western societies, the idea of adolescence was not recognized until the 20th century; childhood ended and adulthood began at a certain age—typically at 18.

Pioneering psychologist and educator, G. Stanley Hall, in his 1904 book *Adolescence*, was the first academic to explore the subject. Hall was influenced by Darwin's theory of evolution, believing that all childhoods, especially with regard to behavior and early physical development, reflect the course of evolutionary change, and that we each develop in accordance with our "ancestral record."

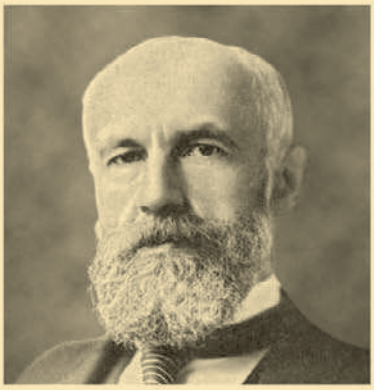
One key influence on Hall was the 18th-century *Sturm und Drang* ("Storm and Stress") movement of German writers and musicians, which promoted total freedom of expression. Hall referred to adolescence as "Sturm und Drang;" he considered it a stage of emotional turmoil and rebellion, with behavior ranging from quiet moodiness to wild risk-taking. Adolescence, he stated, "craves strong feelings and new sensations… monotony, routine, and detail are intolerable." Awareness of self and the environment greatly increases; everything is more keenly felt, and sensation is sought for its own sake.

Modern echoes

Many of Hall's findings are echoed in research today. Hall believed that adolescents are highly susceptible to depression, and described a "curve of despondency" that starts at the age of 11, peaks at 15, then falls steadily until the age of 23. Modern research acknowledges a similar pattern. The causes of depression that Hall identified are startlingly familiar: suspicion of being disliked and having seemingly insuperable character faults, and "the fancy of hopeless love." He believed the self-consciousness of adolescence leads to self-criticism and censoriousness of self and others. This view mirrors later studies, which argue that teenagers' advanced reasoning skills allow them to "read between the lines," while also magnifying their sensitivity to situations. Even Hall's claim that criminal activity is more prevalent in the teenage years, peaking around 18, still holds true.

But Hall was not totally negative about adolescence. As he wrote in *Youth: Its Education, Regiment, and Hygiene*, "Adolescence is a new birth, for the higher and more completely human traits are now born." So, for Hall, adolescence was in fact a necessary beginning of something much better. ■

> Adolescence is when the very worst and best impulses in the human soul struggle against each other for possession.
> **G. Stanley Hall**



G. Stanley Hall

Born into a farming family in Ashfield, Massachusetts, Granville Stanley Hall graduated from Williams College, Massachusetts in 1867. His plans to travel were thwarted through lack of funds, so he followed his mother's wish and studied theology for a year in New York, before moving to Germany. On Hall's return to America in 1870, he studied with William James for four years at Harvard, gaining the first psychology PhD in the US. He then returned to Germany for two years to work with Wilhelm Wundt in his Leipzig laboratory.

In 1882, Hall became a professor at Johns Hopkins University, Baltimore, where he set up the first US laboratory specifically for psychology. He also launched the *American Journal of Psychology* in 1887, and became the first president of the American Psychological Association in 1892.

Key works

1904 *Adolescence*
1906 *Youth: Its Education, Regiment, and Hygiene*
1911 *Educational Problems*
1922 *Senescence*

24 HOURS AFTER LEARNING SOMETHING, WE FORGET TWO-THIRDS OF IT

HERMANN EBBINGHAUS (1850–1909)

IN CONTEXT

APPROACH
Memory studies

BEFORE
5th century BCE The ancient Greeks make use of "mnemonics"—techniques, such as key words or rhymes, that aid memory.

1582 Italian philosopher Giordano Bruno in *The Art of Memory* gives methods for memorizing, using diagrams of knowledge and experience.

AFTER
1932 Frederick Bartlett says that every memory is a blend of knowledge and inference.

1949 Donald Hebb, in *The Organization of Behavior,* describes how learning results from stimulated brain cells linking up into "assemblies."

1960 US psychologist Leo Postman finds that new learning can interfere with previous learning, causing "retroactive interference."

Ebbinghaus's memory experiments showed that...

- ...forgetting is most rapid within the **first nine hours**.
- ...items forgotten can be **relearned faster** than new ones learned for the first time.
- ...material that is **studied beyond mastery** (over-learned) is remembered longer.
- ...**meaningful things** are remembered for about **ten times longer** than random, meaningless things.
- ...items toward the **beginning and end of a series** are most easily remembered.
- ...repeated learning sessions over a **longer interval of time** improves memory retention on any subject.