someone who believes that a specific neighbor has been sending him messages to kill himself through the walls.

While researchers such as Junginger have sought out methods to predict violence as a result of delusions, other psychologists have been attempting to explain the occurrence of delusional thoughts. One intriguing idea, proposed by G.A. Roberts in the *British Journal of Psychiatry* in 1991, is that delusions actually help psychotic and schizophrenic patients by providing them with a detailed sense of purpose for their lives. Roberts found that people currently exhibiting delusional behavior were less depressed than those who had been delusional but were recovering.

**Further Reading**


---

**Dementia**

A gradual deterioration of mental functioning affecting all areas of cognition, including judgment, language, and memory.

Dementia generally occurs in the elderly, although it can appear at any age. Several substantial studies have been done to determine its prevalence, and in 1991 a major study was conducted which found that dementia occurred in just over 1 percent of the population aged 65 to 74; in approximately 4 percent in ages 75 to 84; and more than doubling to 10.14 percent in persons 85 and over. Other studies have concluded that many as 47 percent of people over 85 suffer from some form of dementia. Prevalence rates tend to be comparable between the sexes and across sociocultural barriers, such as education and class. It is also worth noting that, despite what is often commonly thought, dementia is not an inevitable consequence of aging.

Researchers have identified many types of dementia, including dementia resulting from Alzheimer’s disease, vascular dementia, substance induced dementia, dementia due to multiple etiologies, dementia due to other general medical conditions, and dementia not otherwise specified. More than half of the persons diagnosed with dementia are classified as having dementia resulting from Alzheimer’s disease. This type of dementia occurs in more than half of dementia cases in the United States. There is no definitive method in diagnosing this kind of dementia until after the patient’s death and an autopsy can be performed on the brain. Alzheimer-related dementia is characterized by slow deterioration in the initial stages, but the rate of cognitive loss speeds up as the disease progresses. Patients with this type of dementia can generally be expected to live eight years.

Vascular dementia is the second most common type of dementia and is caused by damage to the blood vessels that carry blood to the brain, usually by stroke. Because the area of the brain that is affected differs from person to person, the pattern of cognitive deterioration in this type of dementia is unpredictable. Other diseases that can cause dementia include human immunodeficiency virus (HIV), Parkinson’s disease, Huntington’s disease, Pick’s disease, and Creutzfeldt-Jakob disease. The kind of dementia induced by these diseases is known as subcortical, meaning they affect mainly the interior structures of the brain, as opposed to cortical dementia (Alzheimer’s and vascular) which affect the outer layers of the brain. Many of these subcortical diseases have been known for some time to result in dementia, but HIV-related dementia has only recently been described and diagnosed. Recent studies have indicated that between 29 to 87 percent of people with AIDS show significant signs of dementia.

Generally speaking, dementia has a gradual onset and can take different routes in different people. All sufferers, however, are eventually impaired in all areas of cognition. Initially, dementia can appear in memory loss, which may result in being able to vividly remember events from many years past while not being able to remember events of the very recent past. Other symptoms of dementia are agnosia, which is the technical term for not being able to recognize familiar objects, facial agnosia, the inability to recognize familiar faces, and visiospatial impairment, the inability to locate familiar places.

Along with cognitive deterioration, sufferers of dementia often experience related emotional disorders as they recognize their deterioration and experience anxiety about its continuation and worsening. Typical among reactions are depression, anxiety, aggression, and apathy. Psychologists are uncertain to what extent these symptoms are direct results of dementia or simply responses to its devastation. Dementia progressively deteriorates the brain and eventually sufferers are completely unable to care for themselves and, ultimately, the disease results in death.

**Further Reading**


**Dendrite**

Nerve cell fibers that receive signals from other cells.

Dendrites are one of two types of short, threadlike fibers that extend from the cell body of a **nerve** cell, or **neuron**. The other type are called axons. Dendrites receive electrochemical signals, which are known as postsynaptic potentials, from the axons of other neurons, and the information contained in these signals is fired across a synaptic gap or cleft about 0.02 microns or about 8 millionths of an inch wide and transmitted toward the cell body, with the signals fading as they approach their destination. A single neuron can have many dendrites, each composed of numerous branches; together, they comprise the greater part of the neuron’s receptive surface.

The number of axons and dendrites increases dramatically during **infancy** and childhood—possibly to facilitate the rapid development experienced during this period—and decrease in early **adolescence**. A child of six or seven has more dendrites than an adult.

*See also* Synapse

---

**Deoxyribonucleic acid (DNA)**

An organic substance occurring in chromosomes in the nuclei of cells, which encodes and carries genetic information, and is the fundamental element of heredity.

As the transmitter of inherited characteristics, deoxyribonucleic acid (DNA) replicates itself exactly and determines the structure of new organisms, which it does by governing the structure of their proteins. The Swiss researcher Friedrich Miescher first discovered DNA in 1869 when he extracted a substance (which he called nuclein) containing nitrogen and phosphorus from cell nuclei. The question of whether nucleic acids or proteins, or both, carried the information that make the genes of every organism unique was not answered, however, until the molecular structure of DNA was determined in 1953. This pioneering work was accomplished by an American biochemist, James D. Watson, and two British scientists, Francis Crick, a biochemist, and Maurice Wilkins, a biophysicist. The thousands of genes that make up each chromosome are composed of DNA, which consists of a five-carbon sugar (deoxyribose), phosphate, and four types of nitrogen-containing molecules (adenine, guanine, cytosine, and thymine). The sugar and phosphate combine to form the outer edges of a double helix, while the nitrogen-containing molecules appear in bonded pairs like rungs of a ladder connecting the outer edges. They are matched in an arrangement that always pairs adenine in one chain with thymine in the other, and guanine in one chain with cytosine in the other. A single DNA molecule may contain several thousand pairs.

The specific order and arrangement of these bonded pairs of molecules constitute the genetic code of the organism in which they exist by determining, through the production of **ribonucleic acid (RNA)**, the type of protein produced by each gene, as it is these proteins that govern the structure and activities of all cells in an organism. Thus, DNA acts as coded message, providing a blueprint for the characteristics of all organisms, including human beings. When a cell divides to form new life, its DNA is “copied” by a separation of the two strands of the double helix, after which complementary strands are synthesized around each existing one. The end result is the formation of two new double helices, each identical to the original. All cells of a higher organism contain that organism’s entire DNA pattern. However, only a small percentage of all the DNA messages are active in any cell at a given time, enabling different cells to “specialize.”

Many viruses are also composed of DNA, which, in some cases, has a single-strand form rather than the two strands forming the edges of a double helix. Each particle of a virus contains only one DNA molecule, ranging in length from 5,000 to over 200,000 subunits. (The total length of DNA in a human cell is estimated at five billion subunits.) Radiation, thermal variations, or the presence of certain chemicals can cause changes, or “mistakes,” in an organism’s DNA pattern, resulting in a genetic mutation. In the course of evolution, such mutations provided the hereditary blueprints for the emergence of new species.