Further Reading
Mesic, Penelope. “Presence of Minds.” Chicago (September 1992): 100.

Divergent thinking
The ability to develop original and unique ideas and to envision multiple solutions to a problem.

The concept of divergent thinking was developed in the 1950s by psychologist J.P. Guilford, who saw it as a major component of creativity and associated it with four main characteristics. The characteristics were fluency (the ability to rapidly produce a large number of ideas or solutions to a problem); flexibility (the capacity to consider a variety of approaches to a problem simultaneously); originality (the tendency to produce ideas different from those of most other people); and elaboration (the ability to think through the details of an idea and carry it out). Guilford, whose research was oriented toward testing and measurement (psychometrics), believed that creative thinkers are at a disadvantage when taking standard intelligence tests, which penalize divergent thinking and reward its opposite, convergent thinking—the ability to narrow all possible alternatives down to a single solution (the type of thinking required by multiple choice tests).

Over a number of years, the Aptitudes Research Project (ARP) at the University of Southern California, under Guilford’s leadership, devised an extensive sequence of tests to measure intellectual abilities, including creativity. Some of the ARP divergent thinking tests have been widely adapted for use in placing students in gifted programs and evaluating the success of such programs. They include a number of different assessment techniques that measure the key characteristics of fluency, flexibility, and originality. Among the fluency tests are word fluency, which asks test-takers to think of as many words as they can that contain a given letter, and ideational fluency, which involves naming things that belong to a specific category, such as fluids that will burn. Other tests included listing all the possible jobs that might be represented by a specific emblem and writing titles for short stories after having been told their plots. Another popular creativity test derived from the ARP project is the consequences test, in which a person is asked to list the possible consequences of an imaginary event (“What would happen if everyone were immortal?”). In addition to these verbal tests, ARP also devised tests to measure spatial aptitude, which include such tasks as drawing objects using geometrical shapes.

Although creativity is associated with the highest levels of achievement in many fields and presumably valued by society, the educational system often penalizes divergent thinkers. The typical standardized measure of intelligence is the multiple-choice test, which is diametrically opposed to the divergent thinker’s problem-solving process. To a creative thinker, it may seem more productive to try finding reasons why all the choices on a multiple-choice question could be correct than to select the preferred answer. In addition, most classroom teaching is heavily biased toward the learning style of convergent thinkers, a fact that helps explain the dismal school performance of such legendary geniuses as Albert Einstein and Thomas Alva Edison, who was considered retarded and expelled from school.

Further Reading

Divorce
The legal dissolution of a marriage.

The divorce rate in the United States began rising in the 1960s and continued for more than two decades, with a decline in the trend in the 1990s. In 1960 the divorce rate per 1,000 population was 2.6. By 1980, the rate had reached 5.2 and in 1990 dropped to 4.7. This decline continued to 4.3 in 1997. Based on current societal trends, researchers project that 40 to 50 percent of all first marriages in the United States will end in divorce.

Possible factors for the high incidence of divorce include the enactment of “no-fault” divorce laws that make it easier legally to get divorced; a decline in the number of couples who stay together for religious reasons; the
increased financial independence of women; conflicts resulting from the growing number of dual-career marriages; and a greater social acceptance of divorce.

Divorce is generally preceded by a breakdown in communication between the partners. Research indicates that marriages may also breakdown because of the manner in which couples argue and attempt to repair their relationship after quarreling. Other factors leading to divorce include alcoholism and drug abuse, domestic violence, extramarital affairs, and desertion. Divorce generally causes significant stress for all family members. After the death of one’s spouse, divorce is considered the single greatest stressor on the Holmes and Rahe Social Readjustment Scale, which assigns point values to a variety of stress-producing life changes. Both partners must make financial adjustments—an area of much bitterness during divorce proceedings. Social relationships with friends and family often change, and the newly divorced person will likely face the challenges and insecurities of dating. Divorced parents have to adjust to raising children on their own, adjust or adapt to noncustodial parenthood. In adults, divorce may cause feelings of guilt over one’s share of the responsibility for a failed marriage, anger toward one’s spouse, and feelings of social, emotional, and financial insecurity. Also common to divorce are feelings of anxiety, incompetence, depression, and loneliness.

Children—who are involved in 70 percent of American divorces—may be even more severely affected than their parents, although this also depends on such factors as custody arrangements and parental attitudes. Divorce often results in economic stress and disorganization for the family. Divorce is thought to be hardest on young children, who tend to blame themselves, fantasize that their parents will get back together, and worry about being abandoned. Sometimes the effects on younger children do not become apparent until they reach adolescence. Children who are teenagers at the time of the divorce are strongly affected as well. In one study, subjects who were in early adolescence when their parents divorced had trouble forming committed relationships ten years later. The effects of parental divorce on children have also been linked to phenomena as diverse as emotional and behavioral problems, school dropout rates, crime rates, physical and sexual abuse and physical health. However, the effects of divorce must be weighed against the difficulty of continuing to live in a household characterized by conflict and estrangement. Researchers have found evidence that of the two alternatives, divorce can be the less emotionally damaging one. After an initial period of turmoil, stability generally returns to the lives of adults and children. Both may function more competently than they did before the divorce and show improved self-esteem. Most divorced people remarry within three years, but many second marriages have not been found to be successful.

The prevalence of divorce has led to a number of prevention programs to train couples how to prevent divorce. Research indicates a small percentage of couples considering divorce seek counseling, usually six years after problems have developed in the marriage.

**Further Reading**


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**DNA**

See Deoxyribonucleic acid

**Double-blind study**

See Experimental design

**Down syndrome**

A hereditary mental disorder present at birth resulting from an abnormality in the number of chromosomes; also known Trisomy 21.

Down syndrome was named after John Langdon Haydon Down, a British physician and advocate of education for the mentally retarded, who first described it in 1866. In 1959, the French pediatrician Jerome Lejeune discovered that the disorder is caused by a chromosomal abnormality. Ninety-five percent of individuals with Down syndrome have Trisomy 21, an extra chromosome in the 21st pair (altogether, they have 47 chromosomes instead of the normal 46); four percent have translocation, a chromosomal abnormality; and one percent have mosaicism. Down syndrome is characterized primarily by varying degrees of mental and motor retardation.