seizures rather than the electric current itself are the basis for the treatment’s effects, and that seizures can affect the functioning of neurotransmitters in the brain, including norepinephrine and serotonin, which are associated with depression. They also increase the release of pituitary hormones. Because of its possible side effects, as well as the public’s level of discomfort with both electrical shock and the idea of inducing seizures, ECT remains a controversial treatment method. In 1982, the city of Berkeley, California, passed a referendum making the administration of ECT a misdemeanor punishable by fines of up to $500 and six months in prison, but the law was later overturned.

Further Reading

**Electroencephalograph (EEG)**

A device used to record the electrical activity of the brain.

Electroencephalography is used for a variety of research and diagnostic purposes. It is usually conducted using electrodes, metal discs attached to the scalp or to wires connected to the skull or even to the brain itself. The signals obtained through the electrodes must then be amplified in order to be interpreted. EEG patterns typically take the form of waves, which may be measured according to both their frequency and size (also referred to as amplitude). The electrical activity of animals’ brains had been recorded as early as 1875, but it was not until 1929 that the first human EEG was reported by Austrian psychiatrist Anton Berger. Since then, it has been used to study the effects of drugs on the brain, as well as the localization of certain behavioral functions in specific areas of the brain. EEGs have also been widely used in sleep research. While the deeper stages of sleep are characterized by large, slow, irregular brain waves, and, in some cases, bursts of high-frequency waves called “sleep spindles,” REM (rapid eye movement) sleep, during which most vivid dreaming occurs, resembles the faster brain-wave pattern of the waking state.

As a diagnostic tool, EEGs have been used to diagnose epilepsy, strokes, infections, hemorrhages, inadequate blood supply to the brain, and certain tumors. They are especially useful because they can pinpoint the location of tumors and injuries to the brain. EEGs are also used to monitor patients in a coma and, during surgery, to indicate the effectiveness of anesthetics.

**Further Reading**


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**David Elkind**

1931-
American psychologist and educator.

Psychologist and educator David Elkind was born in Detroit, Michigan, to Peter and Bessie (maiden name Nelson) E. Elkind. He and his family moved to California when he was an adolescent. He received the Bachelor of Arts from the University of California at Los Angeles (UCLA) in 1952, and his Doctorate in Philosophy (Ph.D.) from UCLA in 1955. He also received an honorary Doctorate in Science from Rhode Island College in 1987.

Elkind’s father operated machinery in a factory that built parts for the automotive industry. Elkind remembered his father complaining about how the engineers who designed the parts did not understand the machinery his father was working with and thus sometimes designed things the machines could not create. This memory stuck with Elkind so that he always tried to consider the relationship between theory and practice, how theory could and would be applied.

After receiving his Ph.D., Elkind was a research assistant to David Rappaport at the Austen Riggs Center in Stockbridge, Massachusetts. There he was first exposed to the research and theory of Jean Piaget. From 1964 to 1965, Elkind was a national Science Foundation Senior Postdoctoral Fellow at Piaget’s Institut d’Epistemologie Genetique in Geneva, Switzerland.

Piaget, originally trained as a biologist, studied and observed children for over fifty years. He sought to understand how children formed knowledge of the world around them, and his theories of cognitive development have been extremely influential in psychology. Much of Elkind’s work can be seen as an attempt to duplicate, build upon, and more fully explore Piaget’s theory and research. Elkind’s research has focused on cognitive, perceptual, and social development in children and adolescents, as well as the causes and effects of stress on children, adolescents, and families. Throughout all of his work, Elkind has tried to apply theory and research to real life arenas, such as psychotherapy, parenting, and education. And he uses real life experiences to shape his theory and research.

One of Elkind’s most well-known contributions to psychology is his work on adolescent psychology in which he expands on Piaget’s description of adolescent egocentrism (difficulty in distinguishing between the
mental occupations of the self and those of other people). Elkind looked at how this egocentrism affects adolescent thought, behavior, and emotion.

According to Piagetian theory, the abilities to separate oneself from one’s own thoughts and analyze them, as well as conceptualizing others’ thoughts is developed only at young adolescence. Elkind describes how young adolescents, because they are undergoing major physiological changes, are preoccupied by themselves. The egocentrism of adolescents lies in their belief that others are as preoccupied with their appearance and behavior as they are. As a consequence, the adolescent anticipates other people’s responses and thoughts about herself, and is, in a way, constantly creating or reacting to an imaginary audience.

According to Elkind, this probably plays a role in the self-consciousness so common in early adolescence, as well as other experiences in this period of life. Elkind also introduced the idea of the personal fable, in which the adolescent constructs a story about herself, a version of her life stressing the uniqueness of her feelings and experiences. Indeed, these ideas of personal uniqueness are also seen in a common conviction that the adolescent will not die. Elkind stressed how he found these concepts useful in understanding and treating troubled adolescents. Elkind believes the egocentrism of early adolescence usually lessens by the age of 15 or 16 as cognitive development proceeds.

In his more recent work, Elkind has turned his attention to educational methods, and how recent changes in society and the family affect children, adolescents, and the family unit. Another aspect of Elkind’s work has been his focus on learning and healthy development. He believes that children need to have many and varied experiences to develop in a healthy way, and that this is also necessary for children to truly learn about and understand things. Elkind thinks parents pushing their infants and children to learn at earlier and earlier ages does not allow a child time to have the “rich” experiences necessary to absorb and learn in a deep and meaningful way.

Elkind is a well-respected speaker and author. He has written more than 400 book chapters and articles, and several stories for children. His numerous books include Reinventing Childhood (1998), All Grown Up and No Place to Go (1998), and Ties That Stress: The New Family Imbalance (1994).

In line with his efforts to apply research findings to practical problems, he has tried to communicate to the general public how his research relates to education and child rearing through writing articles for popular publications such as the magazine Good Housekeeping. In addition, he has appeared on numerous television shows including the Oprah Winfrey Show, The Today Show, and The CBS Morning News. He is member of the editorial board for a number of prestigious scientific journals, including the Journal of Youth and Adolescence, Bulletin of the Menninger Clinic, Education Digest, Journal of Science and Education, and Montessori Life.

Among his professional positions, from 1966 to 1978 Elkind served as Professor and Director of Graduate Training in Developmental Psychology at the Department of Psychology at the University of Rochester, New York. He also served as President of the National Association for the Education of Young Children. He is currently a Professor in the Department of Child Development at Tufts University in Medford, Massachusetts, which he joined in 1978. He also co-hosts the Lifetime television series Kids These Days. He has three sons and resides in Massachusetts.

Marie Doorey

Further Reading