

bodies. Man's taste buds are confined to the mouth because they must be kept moist and will only respond to chemicals when they are in solution.

—Nina Adams, *Yale University*
See also Sensation.
Consult (4) Geldard, 1971.

TAXIS, the postural or spatial orientation of organisms with reference to some point source or gradient of stimulation. Orientations directed toward the stimulus are termed positive, while those turned away are negative. Taxes encompass a broad range of behavior. They can be classified by stimulus, including phototaxis (light), thermotaxis (heat), geotaxis (gravity), and rheotaxis (water current, wind). Other classifications are based on the presumed mechanisms used by the species involved—usually invertebrates.

—Gordon M. Burghardt, *University of Tennessee*
Consult (3) Fraenkel and Gunn, 1961; Jander, 1963.

TEACHING MACHINE. See Programmed Instruction.

TELEKINESIS, physical changes not caused by normal means. These are usually associated with spiritualistic seances, held in darkness, that are said to produce raps (perhaps spelling messages), movement of tables, ectoplasm, and other phenomena. Careful observation, aided by infrared photography, has uncovered so many frauds among such claims that the technical term used to label them, "telekinesis," is in disrepute.

See also Parapsychology.

TELEPATHY (one form of extrasensory perception, or ESP), a direct response to someone else's mental activity. Anecdotes frequently report it, as when someone "knows" who is calling when the telephone rings or when a mother "knows" of injury to her child or when friends say the same thing at the same time. But such cases cannot prove telepathy: perhaps some word triggered the same association in both friends, or the mother habitually feared accidents.

Even in the laboratory, telepathy is hard to identify. If an "agent" tries to send telepathic messages about random targets, scores higher than chance may be clairvoyant responses to the targets instead of telepathic responses to the messages. However, some experiments circumvented this difficulty by having the agent use a private code to translate random digits into symbols. Subjects guessed the symbols (which existed only in the agent's consciousness). Extrachance results gave good evidence for telepathy.

Other research, which did not exclude clairvoyance, found significantly higher ESP scores when "agent" and subject were engaged or married than when they were strangers and also when they were congenial than when they were reserved or hostile. This is consistent with anecdotal evidence about conditions for successful telepathy.

—Gertrude R. Schmeidler, *The City College of The City University of New York*
See also Extrasensory Perception; Parapsychology.

Consult (14) McMahan, 1946; Rice and Townsend, 1962; Schmeidler, 1961.

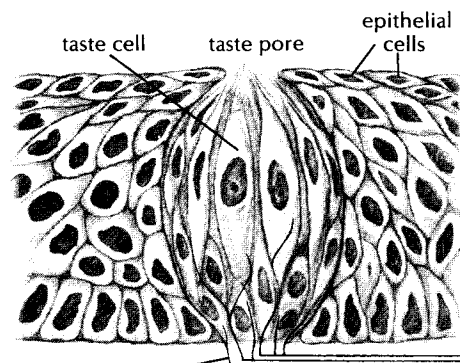
TELEVISION EFFECTS ON CHILDREN. Most television research has been focused on violence, partly because American commercial television is saturated with violence. Children's cartoons have an average of twenty-five violent acts per hour. Eighty percent of all prime time programs contain at least one violent incident with about eight per hour. Violent and illegal actions are often presented as approved and highly successful ways of coping with conflicts and frustrations. [Consult (11) Gerbner, 1972.]

Research on the effects of observing violence consistently shows increased aggressive behavior among children from preschool through adolescent years. Long-term effects of childhood viewing are suggested by one study in which the aggressive behavior of eighteen-year-olds was predicted by their exposure to television violence at age eight. Other behaviors affected include reduced self-control, lowered tolerance for minor frustrations, and increased anxiety. However, extensive investigations failed to find any effects on dream content or anxiety in dreams. [Consult (11) Foulkes, *et al.*, 1972; Lefkowitz, *et al.*, 1972; Siegel, 1956; Stein and Friedrich, 1972.]

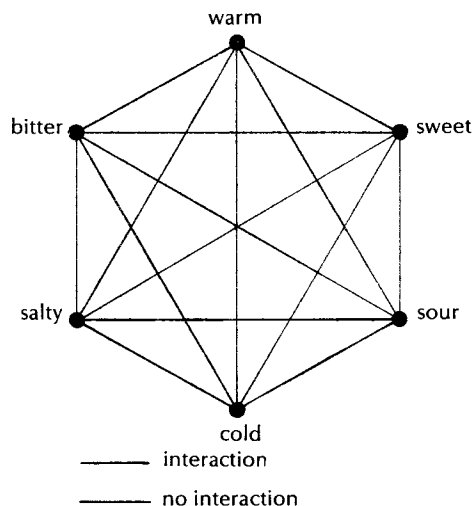
The impact of televised violence depends on the context in which it occurs. In experimental studies, imitation of aggression is enhanced when the model is rewarded or when he has laudable motives. In one study of children from four through eighteen, there was an increase with age in understanding the consequences and motives portrayed in actual programs, but aggression increased regardless of motives or consequences. There is some evidence that aggression is more likely if children believe televised violence is real rather than fictional, but cartoons are as effective as other fictional presentations despite their obvious unreality. [Consult (11) Feshbach, 1972; Leifer and Roberts, 1972.]

The effects of television violence occur across ages, genders, social classes, ethnic groups, and intelligence levels. Nevertheless, certain types of children are especially likely to react aggressively: those with relatively high

TASTE



A single taste bud consists of a cluster of ten to fifteen sensory taste cells embedded in the epithelium of the tongue. Sensory nerve endings wrapped around the taste cells carry information to the brain.



An interesting experiment involves stimulating both sides of the tongue at the same time with different stimuli to determine when two sensations appear to fuse at the middle of the tongue (interaction) and when they remain distinct (no interaction).



Aimed at children between the ages of three and five, "Sesame Street" has demonstrated that appropriate television programming can have positive effects on social and cognitive development.

prior levels of aggression and those whose families do not convey strong alternative values.

The effects of advertising on very young children has also been studied. Children below age seven do not understand the purpose of commercials, do not separate commercials from reality, and are confused about the trustworthiness of advertisements. By age nine, children are distrustful of the claims made, they distinguish commercials from reality, and understand their sales purpose. Mothers report frequent pressures from their children to buy the products they see advertised. [*Consult* (11) Ward, 1972.]

Programs designed to promote cognitive and social development also have some effects. Preschool children who watch "Sesame Street" learn such skills as letter recognition and concept formation. Evaluations of "Misterogers' Neighborhood," which emphasizes social and emotional development, have shown improved interpersonal relations among children, improved task persistence, and increased self control. Other research suggests that, with appropriate programming, television has the potential to help children become altruistic, overcome fears, and learn achievement standards. [*Consult* (11) Ball and Bogatz, 1970; Bandura, 1969; Hoffman, 1970; Stein and Freidrich, 1972.]

—Aletha Huston Stein, *Pennsylvania State University*

Consult (11) Rubenstein, et al., 1972; Surgeon General's Scientific Advisory Committee on Television and Social Behavior, 1971.

TEMPER TANTRUMS, short-lived, violent outbursts of behavior displayed by most, if not all, preschool children. The incidence is highest in the second year of life and decreases in frequency and intensity from two to five years of age, but 3 percent of eleven-year-olds still have tantrums once weekly. Tantrums are twice as common in boys and occur more frequently in children who are emotionally disturbed or highly irritable or who have low tolerance for frustration. However, most children with tantrums are psychiatrically normal.

It is important to remember that tantrums may indicate physical illness in the young child. When they are part of a general psychiatric disturbance, their management is part of the treatment of that disturbance. The usual tantrum in psychiatrically normal children is best evaluated by considering severity, frequency, situations where shown, precipitants, and ameliorating factors. Once tantrums are charted in this fashion, behavior modification programs of an operant type can be designed to eliminate them. It is important to protect a child from harming himself or others during a tantrum. However, nothing can usu-

ally be done to eliminate the tantrum while it is occurring.

—Dennis P. Cantwell, M.D., *University of California, Los Angeles*

TEMPERAMENT, an aspect of personality believed to involve genetic predispositions toward certain types of emotional reactions and levels of sensitivity. Research with newborn infants strongly suggests that differences in temperament appear at the earliest stages of development. Thus some infants will cry considerably more than others, some will show a much higher general activity level, and some will be more placid. Other studies have shown consistent differences in such factors as response to loud noises, sensitivity to light, and pain threshold.

Although these tendencies are rather crude and undifferentiated at birth, they provide the framework within which adult personality develops. The irritable, overreactive baby is more likely to develop into an anxious, troubled adult. However, temperament can be modified somewhat, either positively or negatively, by an individual's experiences as he is maturing.

—Michael Rothenberg, *The City College of The City University of New York*

TEMPERATURE SENSE. Temperature sensibility is composed of two distinct qualities, warm and cold. Spots sensitive to either warm or cold are distributed over the surface of the skin. There are more cold spots than warm spots and many more spots on the hands and face than anywhere else on the body.

The nerve fibers from these receptive spots are very specific. Discharge of a nerve from a cold spot always produces the sensation of cold, whether it is activated by a cold stimulus or an electrical impulse. In fact, if a cold spot is stimulated with a very hot probe (45° C.) the sensation of cold is perceived. This phenomenon, called *paradoxical cold*, is probably due to discharge of cold nerve fibers during injury. The sensation of hot is due to a combined sensation of pain plus cold.

The temperature senses respond to extremely tiny shifts in temperature but not to slow gradual changes, even when they are very large.

—Nina Adams, *Yale University*
See also Sensation.

TEMPORAL LOBES, prominent structures found in primates, including man, located on the lateral surface of the brain. Each temporal lobe is partially separated from the frontal and parietal lobes by a band of tissue known as the operculum. The lateral surface of the lobe contains important regions for the processing of auditory and visual information. It also

TEMPORAL LOBE

