TV, brain waves and human behavior

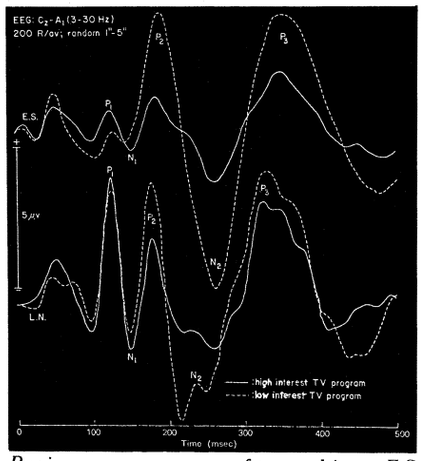
Although television is primarily an entertainment and educational vehicle, it is also being used to study the brain processes underlying the human behavioral states of attention and distraction. In fact, television may even prove useful for exploring the psychophysiological impact of television programs on humans.

In 1970 brain-behavioral researchers started finding that when people or animals direct their attention to something, the amplitude (fullness from height to depth) of their brain waves reflecting visual attention increases, and that when people or animals are distracted by something, the amplitude of their brain waves decreases. For instance, a toe pinch would distract a person from reading and hence, would suppress the intensity of brain waves that reflect attention to the printed page. Similarly, a mouse would distract a cat from eating cat food and hence, would suppress the intensity of any brain waves indicating attention to the cat food.

All of these experiments, however, were conducted under rather artificial conditions. But Edward W. P. Schafer, a brain-behavioral scientist at the University of California at San Francisco, has now attempted to repeat them in a more real-life situation. And the tool he opted to use was television.

First, Schafer made sure that when brightness was introduced into a television picture, he could accurately measure the amplitude of subjects' brain waves that reflected their attention to the visual stimulus, that is, the amplitude of waves coming from the occipital (visual) cortex of the brain. He did this by comparing brain waves evoked by brightness stimuli in a television picture with those evoked by light flashes. He found that wave forms for both kinds of visual stimuli were comparable. Schafer then tested the hypothesis that subjects' brain waves in response to a television flicker should be smaller in amplitude during television programs of high, in contrast to low, interest, because subjects' attention to the stimulus would be less during programs of keen interest than during programs of lesser interest. His testing involved three related, but separate, experiments.

Viewers sat in front of a television in the dark, watching videotaped presentations of various programs. Experimental instructions made no mention of the brightness stimuli, but simply asked that the viewers sit quietly and watch the television programs as they would in their own living rooms. The stimulus, appearing to the viewers as a momentary faint flicker, consisted of a quick brightness increase in the video picture. In the first experiment, stimuli occurred randomly from one to five seconds, while in the second and third experiments, they occurred at the rate of one every six seconds. When questioned after a particular screening, most viewers reported that they hadn't noticed any flickers in the television picture.



Schafer/International Journal of Neuroscience

Brain wave responses of two subjects, E.S. and L.N., to light stimulus are greater during "Face the Nation" than an erotic movie, because the latter is more distracting.

For the first program comparison, brain waves were recorded from six male and six female viewers while they watched two 10-minute, black and white programs — a high-interest program of erotic movies and a relatively low-interest segment of news/interviews for "Face the Nation." For the second program comparison, brain waves were recorded from eight male and eight female viewers while they watched a specially produced black and white videotape presentation. During the first 20 minutes of this program, a couple conversed in a monotonous manner about classical music; during the second 20 minutes, they made love. Then, for the third program comparison, brain waves were recorded from 10 male and 10 female viewers while they watched regular television programs of high and low personal interest selected by the subjects themselves, such as "M*A*S*H," "The Waltons," and "Face the Nation."

The results, which are in press with the INTERNATIONAL JOURNAL OF NEUROSCIENCE, confirmed Schafer's hypothesis. Interesting programs consistently reduced the amplitude of brain waves reacting to brightness stimuli, and dull programs increased the amplitude of brain waves reacting to brightness stimuli. Specifically, in the first experiment, all 12 viewers showed smaller brain waves during the erotic movies than during "Face the Nation." In the second experiment, all 12 subjects showed smaller brain waves while watching a couple make love than while listening to them discuss classical music. And finally, in the third experiment, all 20 subjects showed smaller brain waves while watching their favorite shows than while watching shows of less interest to them.

What is the practical significance of these findings? They demonstrate that any television set, with appropriate electronic modification, can function as a light stimulator for evoking reliable, event-related brain waves from people while they watch television, and that this procedure can provide a unique method for studying the brain's attentional mechanisms under more real-life conditions than previously. Schafer also foresees this technique being used "for examining the psychophysiological impact of television program content such as violence, and for rating, without conscious bias, the interest value of any material shown on television." □

Last Intelsat IV-A is launched

Hughes Aircraft Co.

The sixth and last of the Intelsat IV-A series of communications satellites was successfully launched on March 31, bound for a geostationary position at 63°E longitude over the Indian Ocean. The 1,480-kilogram probe is capable of handling more than 6,000 simultaneous telephone conversations and two television programs. Now drifting in a sub-synchronous orbit, it is due to reach its assigned station in mid-June, where it will serve about 40 countries in the Indian Ocean region. It joins a family of commercial communications satellites that began with Early Bird in 1965, and later included four Intelsat IIs, eight Intelsat IIIs, eight Intelsat IVs and five Intelsat IV-As. The fifth IV-A, which was launched on Jan. 6 of this year, will be moved to 60°E to serve as a backup to the newcomer. The Intelsat satellites are owned by the International Telecommunications Satellite Organization, whose U.S. member — the Communications Satellite Corp. — is also the system's management services contractor. □