Application Of A Programmable Auditory Evaluation System (PAVES) To Aphasia Rehabilitation

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The use of machines in aphasia rehabilitation is fairly common. Probably the most widely used machine in aphasia treatment is the Language Master (Black, 1968; Keith & Darley, 1967). Schuell (Sies, 1974) advocated its use for presenting combined auditory-visual materials, while Keenan (1966) proposed a program using it to improve naming ability in aphasia.

Although not advocated by all clinicians (Wepman, 1968), the application of specific teaching machines or instrumentation to aphasia rehabilitation has been reported by several investigators and has produced a variety of results. Some of these studies used teaching instrumentation to present stimuli in the visual modality (Edwards, 1965; Keith & Darley, 1967; Pizzamiglio & Roberts, 1967; Rosenberg, 1965; Rosenberg & Edwards, 1964, 1965; Sarno & Sands, 1970). At least one investigation used instrumentation for only auditory stimuli presentation (Holland, 1970), while other studies employed machines capable of being used for combined auditory-visual stimuli presentations (Brien, 1968; Doehring, 1968; Ferguson & Culton, 1976; Holland, 1969; Holland & Harris, 1968; Sarno, Silverman, & Sands, 1970).

The purpose of this paper is to introduce you to a teaching machine which is undergoing research and development at our treatment center and discuss some applications it may have for aphasia rehabilitation.

---(Videotape shown, text follows:) We would like to introduce you to a Programmable Auditory Visual Evaluation System (PAVES) and demonstrate how it works. PAVES is an integrated system consisting of auditory, visual, and control instrumentation. The components of PAVES are placed side by side for demonstration purposes but they may be separated. Desired auditory materials are recorded on a special, electronically controlled cassette deck. In addition to auditory materials which the individual will hear, control signals are also recorded and appropriately placed for tape system control. Multiple choice visual materials are prepared on standard 2 x 2 slides and placed in a standard remote control Carousel projector. The visual materials are presented on a rear projection screen in a special carrel so as to reduce external visual distractions. Around the viewing screen, there are eight response keys for the individual's response. An indicator light will light when a response key is pushed by the individual. If he later decides that the pushed key was not a correct response it may be re-operated; the key light will go out, and the individual's initial response is effectively erased. A new response key may then be pushed. An answer consists of operation of one or more response keys in any combination followed by operation of the "try" button.

PAVES has data retrieval on an eighteen column printer. When a single trial is completed, the print out indicates the slide number, the individual's response (color coded as correct or incorrect), and single trial latency in tenths of seconds. After the last item in a program, the cumulative latency in seconds is printed.

This system presently has two basic methods of presentation: 1) test mode and 2) training mode. In the test mode, PAVES can present a test item consisting of a slide accompanied by an auditory command. After the individual responds, the printer records the described single trial data. Then the next test item is automatically presented.

After inserting the appropriate slides and audio-cassette, PAVES may be used in the training mode in the following manner: 1) a training item consisting of a slide and auditory stimulus is presented, 2) the individual selects and tries his answer, 3) PAVES prints the retrieval data, and 4) responds with appropriate, recorded auditory feedback about the quality of the answer. If the individual's response is incorrect, PAVES will automatically repeat presentation of the slide and auditory stimulus. After a correct response, a new training item may be automatically presented.

PAVES has three alerting systems. The first system alerts the instructor by tone or light when the student's incorrect responses on an individual item exceed a pre-set number. This may be set for up to nine errors.

The next system alerts the instructor when the student's cumulative number of incorrect responses during an entire program exceeds a pre-set number. This may be set for up to 99 errors.

The last system alerts the instructor when the student's response latency on an individual item exceeds a pre-set time limit. This may be set up to 99 seconds. (End of videotaped text.)

PAVES can perform a wide variety of other tasks which use either unimodality or multi-modality presentations. Practice in categories (e.g. which two go together?, which one doesn't belong?); matching printed words to pictures; matching auditory, spoken words to printed words; and intensive auditory stimulation programs could all be used. Another application of PAVES might be to test or treat a patient in a foreign language.

The individual aphasic client could be taught to use PAVES to drill on his own, outside of personal, clinician directed therapy. After the client's self-practice, the data retrieval tape could be evaluated by the clinician so that an accurate record of the client's progress can be kept. The variety of clinical applications of PAVES is broad enough to meet several of the needs of the aphasic client through the resourcefulness of the aphasia therapist.

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    State University (1968).

Discussion

Q. How much does PAVES cost and where can I get it?
A. Questions on availability and cost should be directed to Gordon N. Stowe
    & Associates, 3217 Doolittle Drive, Northbrook, Illinois 60062.

Q. Can PAVES evaluate the sequence in which more than one response key is
    pushed?
A. At the present time PAVES does not judge the sequence or order in which
    response keys are pushed.