

PRIMER81: COMPUTER-ASSISTED TRAINING
IN READING SKILLS

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The following excerpt from a medical report describes the background of the co-author:

"Mr. David Farmer was hospitalized...after sustaining a spontaneous subarachnoid hemorrhage. ...he was found to have a tumor in the left occipital lobe ... giving rise to a right homonymous hemianopsia field defect. He underwent surgical removal of this tumor ... his visual field defect has remained stationary. There is considerable disturbance in his ability to read (i.e. dyslexia or 'word-blindness') and comprehend..."

Based on experiences with conventional therapy, the authors have concluded that mastery of the reading process is inhibited by: 1) inappropriate subject matter for reading practice drills (unmatched with age or level of interest); 2) delay or omission of an analysis of errors; 3) lack of interaction of the subject with the tutor or with the reading material; 4) the inability to quickly differentiate between letters and words which are similar in appearance; 5) boredom or frustration on the part of the user.

To address these problems, a software package targeted on needs of the adult dyslexic was designed and tested using these criteria: 1) no prior computer experience and no threshold level of literacy; 2) maximum degree of independence; 3) multisensory stimuli; 4) instantaneous feedback as well as delayed analysis; 5) creativity and amusement; 6) objective improvement of reading speed and comprehension.

An Apple II* microcomputer with a disk drive and phoneme speech synthesizer was selected for the system.

By using taped instructions for program use, masking non-essential elements of the keyboard, employing specially designed key caps and the speech synthesizer, it is not necessary for the user to have any initial literacy. One program, TALKWRITER, uses synthesized speech feedback to teach keyboard use while displaying a video-graphic keyboard. As each key is pressed, its name is spoken and its position filled in on the graphic representation. The speech synthesizer is used in all programs to provide verbal in-

structions and to give auditory clues to the text being displayed.

PRIMER81 consists of three major programs-- LETTERFLASH, WORDFLASH, and SENTENCEFLASH-- designed to train the user to recognize characters, words, and sentences, respectively. A choice of fonts is available and a utility enables the user to redesign standard character fonts or create his own to aid discrimination. To assist the user or therapist in screening test data and in choosing additional exercises, another program, TROUBLESHOOT, can statistically test the consistency of errors and identify the probable cause.

LETTERFLASH drills the user in recognition of randomly selected characters. A menu depicts all available user options including speech, letter subsets, case, and speed of presentation. A tone gives an instant error message if the wrong response is keyed. Automatic data collection of response time and errors can be used to isolate specific problems.

WORDFLASH, at a higher level, presents common words in graded groups. Additional words may be added by the user. Errors are automatically stored for later analysis.

SENTENCEFLASH generates over 6000 sentences from the 600 word vocabulary of WORDFLASH. Training in speed reading and grammar (basic and advanced) is provided by questions dealing with parts of speech.

In addition to the three main programs, two motivational programs were written. One displays song lyrics word-by-word in cadence with synthesized music. The other generates semi-random "science-fiction stories".

It is suggested that these training concepts apply not only to those known to be dyslexic, but also as a mass screening device to locate learning disabilities in pattern recognition, color perception, etc. and that these methods could serve in learning speed recognition of specialized vocabularies associated with unfamiliar disciplines, including foreign languages.

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