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# COMPUTERIZED ASSESSMENT OF PREFERENCE FOR SEVERELY HANDICAPPED INDIVIDUALS

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An investigation was conducted to demonstrate the application of a computerized assessment procedure for determining the preferences of persons with severe handicaps. A computer program was designed to interpret subjects' microswitch activations to produce three distinct types of events (visual, auditory, and tactile). A combination of a multiple baseline design across subjects with a multiple treatment design involving three separate conditions was used. The data obtained from the computerized assessment procedure revealed idiosyncratic preference patterns for the three subjects. Results of the investigation demonstrated that the preferences of severely handicapped individuals can be systematically assessed and analyzed.

DESCRIPTORS: preferences, severely handicapped, assessment devices, microcomputers, multiple treatment design

In order to identify and provide leisure activities for individuals with severe handicaps, it is important to give clients an opportunity to choose (Dattilo & Rusch, 1985; Gutierrez-Griep, 1984; Utley, Duncan, Strain, & Scanlon, 1983). Unfortunately, activities are frequently offered as passive stimulation, and the notion of choice-making among individuals with severe handicaps continues to receive little attention (Shevin & Klein, 1984).

Although the literature contains numerous examples of successful training programs for individuals with severe handicaps (Pace, Ivancic, Edwards, Iwata, & Page, 1985), practitioners frequently find the usual methods for determining preferences ineffective (Favell & Cannon, 1977). The limited response repertoires of individuals with severe handicaps often result in unreliable assumptions about their preferences (Rincover & Newsom, 1985; Wacker, Berg, Wiggins, Muldoon, & Cavanaugh, 1985). Therefore, it is important to develop strategies that will identify indications of preferences through modes of communication that may not include speech (Guess, Benson, & Siegel-Causey, 1985).

In response to this observation, investigators have demonstrated that, given the appropriate equipment (e.g., adaptive microswitches), individuals whose motor capacities are significantly impaired can indicate consistent and reliable individual preferences among choices (Fehr, Wacker, Trezise, Lennon, & Meyerson, 1979; Gutierrez-Griep, 1984; Rynders & Friedlander, 1972; Wacker et al., 1985). The demonstrated preference pattern of individuals with severe handicaps is often idiosyncratic (Pace et al., 1985; Rincover, Newsom, Lovaas, & Koegel, 1977). Here I attempt to build on this research and to respond to the identified need to develop a systematic method of assessing the preferences of individuals with severe handicaps.

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## METHOD

### *Subjects*

Three children (ages 6–10 years) enrolled in a local public school served as subjects. Paul was a 10-year-old boy who was severely retarded with profound visual loss due to retrolental fibroplasia. Except for the use of a few signs, Paul did not

possess an expressive vocabulary. Cris was a 9-year-old girl who recently sustained a brain injury from an automobile accident that resulted in severe motor and cognitive limitations, and who had no expressive communication. Ron was a 6-year-old boy who did not possess an expressive vocabulary and wore corrective lenses because of his severe visual impairment. He was diagnosed as having severe retardation with cerebral palsy resulting in paraplegia and additional motor problems.

### *Apparatus*

The experimental apparatus included an Apple IIe computer and associated software controlled by subjects' manipulation of microswitches. A software program was developed to interpret the subjects' switch manipulations and activate the appropriate stimulus. The program contained separate files or albums of different auditory (songs) and visual (video scenes) events. A powerport was developed to provide the opportunity to activate an electrical device through the computer, in this instance a vibrating pad. The participants could access the events by activating microswitches. A switch interface connected the microswitches with the computer.

### *Dependent and Independent Variables*

The dependent measures were the number of switch activations and the amount of time subjects were exposed to the different stimuli. These measures were automatically tabulated, analyzed, and plotted by the computer program. The independent variable consisted of the type of leisure event available to the subjects. The experimenter controlled the events by programming the computer to activate different stimuli at scheduled times throughout the investigation.

### *Experimental Design and Conditions*

A multiple baseline design across subjects was used in conjunction with a multiple treatment design that included three experimental conditions: condition 1 (visual-auditory), condition 2 (visual-tactile), and condition 3 (tactile-auditory). This hybrid design minimized the effect of substantial fluctuations in daily response rates of the subjects by conducting a series of separate assessments over time to determine idiosyncratic preferences (Rincover et al., 1977).

Each subject was presented with two switches to provide the opportunity to choose between two different events. At the beginning of each condition, subjects were taught to discriminate between switches. Three unique microswitch covers constructed of different colors and textures were developed for each subject; each cover was consistently associated with a specific event. Once a subject demonstrated the ability to consistently activate the switches, the subject participated in a series of 3-min sessions during each condition. When a microswitch was activated, a stimulus was presented for 15 s. Each subject was able to reinitiate the desired stimulus by manipulating the corresponding microswitch.

In condition 1, subjects were allowed to activate either an auditory or visual stimulus; condition 2 allowed involvement with either a visual or tactile stimulus; and condition 3 allowed activation of either a visual or tactile stimulus. Each experimental condition was run until performance stabilized.

To control for the possibility that results might be affected by a right or left side preference, the locations of the microswitches were alternated each day. The criterion that neither the right side nor the left side could be activated more than 65% of the time was established to determine the absence of switch bias. All subjects demonstrated a preference for the event rather than the location of the switch.

## RESULTS AND DISCUSSION

The numbers of microswitch activations for each of the three subjects are depicted in Figure 1. Paul activated the microswitches a total of 953 times; of those, 626 responses (66%) were auditory, 305 (32%) were tactile, and only 22 (2%) were visual. Paul demonstrated a clear preference hierarchy, consisting of auditory (music), tactile (vibration), and visual (video scenes), in descending order of preference. Whenever the music was available, Paul

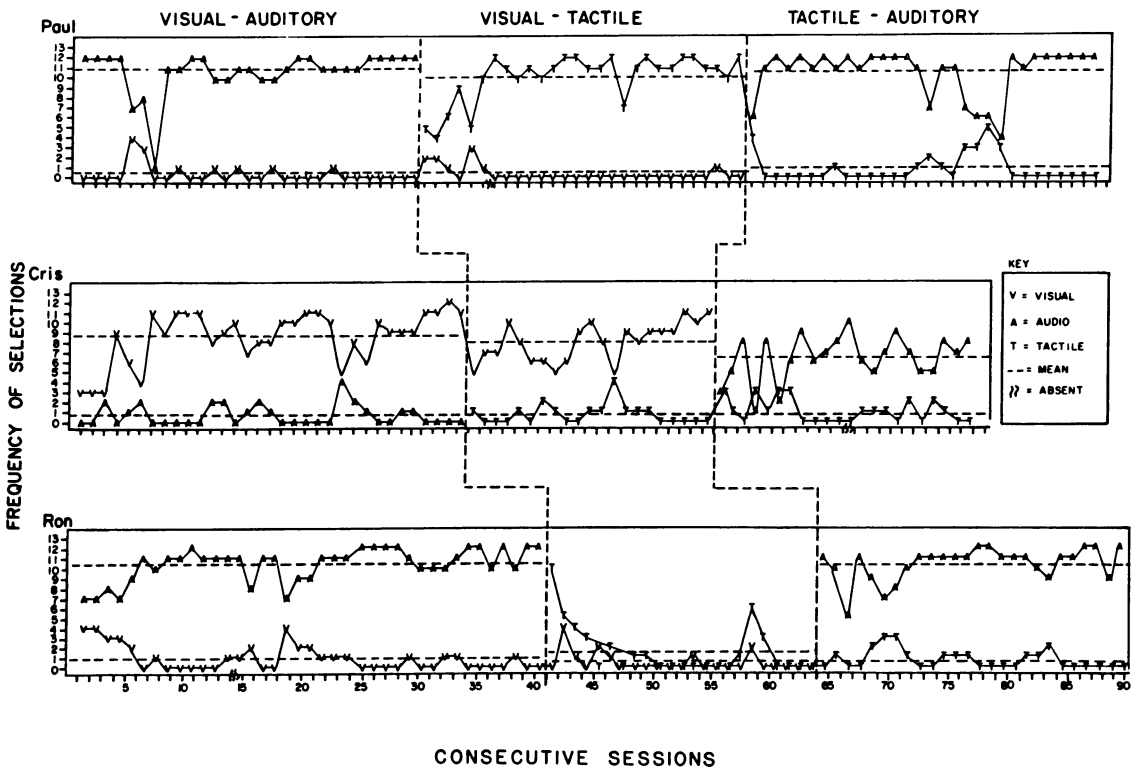


Figure 1. Frequency of selections per 3-min session within conditions across subjects.

averaged approximately 11 activations per session out of a possible 12, indicating most strongly his interest in this event.

Cris activated the switch a total of 650 times; of those, 452 responses (70%) were visual, 162 (25%) were auditory, and 36 (5%) were tactile. As with Paul, Cris demonstrated a clear hierarchy of preferences for the three events. However, Cris consistently chose the video scenes over both of the other events. When provided with only the vibrator and music, Cris demonstrated a preference for music.

Ron activated the microswitches a total of 774 times; of those, 674 responses (87%) were auditory, 53 (7%) were tactile, and 47 (6%) were visual. Ron's preference profile was different from those of Paul and Cris. Ron demonstrated a strong preference for music and chose this event at a very high rate (10.37 activations per session out of a possible 12). It appeared that if Ron was unable to choose to listen to music, he preferred to engage in self-stimulatory behaviors rather than watching the videos or experiencing the vibrator.

These results demonstrated that the preferences of individuals with severe handicaps can be systematically assessed and analyzed. Idiosyncratic written and graphic leisure profiles of each subject were developed from these data. Based on these profiles, service providers and family members have started to provide opportunities for the subjects to participate in activities they prefer (e.g., Ron and Paul access cassette players at home and in the classroom through the use of microswitches). The profile can also be used as a guide for purchasing recreational games and toys (e.g., battery-operated toys that provide significant visual stimulation would be appropriate for Cris).

Once the determination of preference has been made for an individual, further discrimination should be assessed. Applying the same procedure used to determine preference between the three primary stimuli, a hierarchy of preference can be

established within each preferred stimulus. For example, if a subject demonstrates preference for auditory stimuli (music), further assessment could occur among pop, classical, and rock selections. This procedure would allow service providers to develop a more detailed profile of the preferences of persons with severe handicaps, thereby providing clients with a greater degree of control in the selection of leisure activities.

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