

SPECIAL REPORT SECTION

Observational Research Methods: Portable Event Recording Systems

Observational research: Some instrumented systems for scoring and storing behavioral data

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During the past decade the use of observational research methods has escalated noticeably in both field and seminatural laboratory settings. And the methods, problems, and solutions to the problems involved have received widespread attention from researchers interested in both animal and human behavior (see, e.g., Bakeman, in press; Cairns, in press; Lamb, Stephenson, & Suomi, in press;¹ Sackett, 1977a, 1977b, in press). Interest in the intricacies of social interactions have led to searches for adequate statistical analysis techniques to help better understand detailed and sometimes subtle changes in behaviors and contingencies over time (Box & Jenkins, 1970; Glass, Wilson, & Gottman, 1975; Lamb et al., in press; Sackett, 1977a). Computer programs continue to be developed for purposes of summarizing and analyzing the data (e.g., Bobbitt, Gourevitch, Miller, & Jensen, 1969; Deni, 1977).

Techniques for recording the behaviors of interest vary, and generally depend on the experimental purpose and requirements, as well as on the availability of equipment. Paper and pencil techniques have been and remain popular due to their simplicity and inexpensiveness. Electrical counter/timer systems are also used, as are other relatively unsophisticated methods. Although the experimental circumstances may dictate these as the methods of choice, their uses limit the types of measures that can be made and subsequently analyzed. Of course, audio and videotapes may be used to capture behaviors for future scoring and analysis, but our interest here is in systems that allow for the recording of events over time in a manner that permits detailed sequential diagnoses and relatively simple transfer of data to a computer or computer-compatible storage device.

Over the past several years, a number of relatively sophisticated devices have been developed to aid in the collection and analyses of data gathered by observers in the laboratory and in the field. These electronic systems allow the researcher to record the occurrences of behaviors as well as their durations in real time

(allowing for subsequent sequential and time-series analyses) and to produce outputs that allow for easy transfer of data to storage devices (e.g., magnetic tape or disk) or for direct entry into a computer. These systems permit an observer to record behaviors directly in natural settings or indirectly from the original recording media (e.g., audio or videotape). At present, cassette tape is the most common method for storing input information in these systems. More recent developments in microelectronics are leading to the incorporation of electronic memories. Both types of systems are described in this section.

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The articles in the Special Report Section deal with data acquisition systems that utilize technological developments in solid state and microelectronics. All of the systems are lightweight and portable, and all use keyboard inputs.

In the first document, Torgerson describes the Datamyte hardware system, a commercial unit marketed by Electro/General Corporation. Because the Datamyte is a relatively popular instrument in several disciplines, the subsequent four articles are dedicated to describing its uses by several researchers in sociology and psychology.

In the first of these reports, Sykes describes two field studies: One deals with the collection and reduction of data gathered during police-civilian interactions; the second investigates informal group formations in U.S. Navy training units. Conger and McLeod follow with a report on the recording of verbal and physical behavior exchanges (including emotional affect) in the homes of families categorized as child abusing and/or neglectful, as well as observations of controls. Sawin, Langlois, and Roberts describe observations, coding, and analyses of parent-infant interactions during the first year of infant life. Conditional and baseline probabilities are discussed in detail. In the last paper of this group, Scott and Masi report on a study of social

responding of full-term and premature infants to their mothers and to strangers. The occurrences and durations of various visual behaviors are measured indirectly, i.e., the Datamyte is used to record behaviors originally captured on videotape.

Obviously, the Datamyte is not the only data acquisition system of this type available. Over the past several years, the nature and requirements of individual research projects have led to the development of several systems in various institutions. A few provide the types of quality hardware, software, and support that have led to their adoption by researchers other than the original developer(s). Stephenson and Roberts describe one such system. The SSR System 7 is the latest model of a system that is being adopted by researchers in a variety of disciplines. Designers of the SSR system appear sensitive to hardware and software changes required by the demands of different research programs.

The DCR-II event recorder is a portable digital cassette system described by Celhoffer, Boukydis, Minde, and Muir. The system was originally designed to record the behaviors of prematurely born infants in hospital, nursery, and home environments, but the unit has more general usefulness.

Fitzpatrick's two papers describe his ELOG data recording system and the BEHAVE data analysis package. The ELOG system consists of several hand-held five-key keyboards that plug into a central microprocessor unit with cassette data storage.

In a more general description, Fitzpatrick presents criteria for assessing data recording devices and touches upon a need for common data structure. A comparison of several data acquisition systems is presented in the same (first of two) article.

All of these systems require that the researcher provide stringent definitions of the behaviors to be observed and recorded. They also require: development of numerical codes to allow for the assignment of a code number to represent each of the behaviors of interest; the training of observers to correctly recognize the defined behaviors and to enter their coded numbers through a keyboard; methods for handling errors and editing data; means for transferring (or transmitting) the data to another storage medium (e.g., magnetic tape or

disk) or directly to a computer; and procedures and computer programs for summarizing, reducing, and analyzing the data. These requirements also generally hold for other systems (e.g., Sackett, Stephenson, & Ruppenthal, 1973; White, 1971).

NOTE

1. A small workshop group met in Madison, Wisconsin in the summer of 1977 to discuss some of the methodological problems involved in observational research. The results of the conference are to be published in the Lamb et al. book.

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