A manual and computer programs for analyzing digitally coded observational data

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A number of electronic devices have been described for collecting digital data in behavioral observation research (e.g., Stephenson, Smith, & Roberts, 1975; White, 1971). Commercial equipment is available for digital data acquisition, with the most modern using microprocessor techniques and solid state memories, eliminating any need for electromechanical tape recorders (e.g., Datamyte 900 series, Electro/General Corp., Minnetonka, Minnesota). These instruments allow the researcher to record frequency, duration, and/or sequence of behavioral events entered into keyboards by human observers. The methods allow great flexibility in generating coding schemes and producing summary data and analyses with large quantities of data. This flexibility cannot be matched using more traditional paper and pencil methods. However, these techniques do demand reasonably sophisticated computer systems for efficient data management and low analysis costs.

The present authors have previously described one system that has been in use at the University of Washington for the past 6 years (Sackett, Stephenson, & Ruppenthal, 1973). Applications of this device have ranged from field studies of blue jays, through behavioral assessment of alcoholic mothers and their newborns in a high-risk nursery, to observation of retarded children in classrooms. Investigator and programmer experiences (some of them almost pure disasters) led to the production of a manual for using the equipment, and the writing of programs for editing, storing, summarizing, and statistically analyzing digital data (Hollenbeck, Smythe, & Sackett, 1975). This note describes the manual and program system. The manual should be useful for investigators beginning to use digital methods, regardless of the particular hardware employed, as it may aid in avoiding the mistakes that the present authors have made. The computer programs will be useful for any methods

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that generate frequency, duration, event sequence, and/or modified frequency (time-sampled) data.

The manual. Chapters 1-3 of the manual provide a general introduction to basic observational measurement and digital coding systems, as well as explanation of the use and maintenance of tape recorder equipment. Chapter 4 details methods for entering data into a CDC 6400 computer via cards or teletype terminal. Chapter 5 describes card or terminal procedures for using the computer programming system. Chapter 6 discusses problems encountered in using tape recorder and terminal devices, emphasizing both mechanical and human failures.

The computer program system. All programs are written in FORTRAN IV for processing on CDC 6000 series equipment. B-START prepares magnetic tapes for storing data from card or terminal input. I-BOSS adds new data to old tape files and outputs basic data summaries. B-EDIT allows correction of data already stored on tape. B-REPORT allows data sets to be combined, provides summary outputs, and calculates intra- and interobserver reliability coefficients, including KAPPA. BAMP removes old data sets or merges a number of sets together. B-LAGS computes conditional probability statistics for event or time sequential data.

Obtaining materials. Any combination of the manual and programs described above can be obtained by writing to BOSS, c/o Ms. Tali Ott, University of Washington, Child Development and Mental Retardation Center, Seattle, Washington 98195. Requests should include a check, money order, or purchase order to cover mailing costs and CDC 6400 charges for producing program listings and documentation as follows: (1) Mailing, \$.50; (2) Manual, \$1.00; (3) B-START, \$.50; (4) I-BOSS, \$.70; (5) B-EDIT, \$.70; (6) BAMP, \$.60; (7) B-REPORT, \$.90; (8) B-LAGS, \$.60 for listing and documentation or \$1.00 for listing, documentation, and source card deck.

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