

Computer Assisted Data Collection for Leisure Research

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INTRODUCTION

Computers have extended beyond the traditional business environment into academic settings where they are becoming a valued research and teaching tool. Both the IBM and Apple Macintosh personal computers have facilitated lecture and exam preparation, the calculation and recording of grades, and communication with students through internal networks. From a research perspective, co-authors can now communicate via the computer terminal from almost anywhere in the world on networks such as Bitnet. They also have the ability to transfer article drafts from one computer to another in a matter of seconds which facilitates the editing process. Several journals, such as Society and Leisure, now request that authors submit a computer disk with the hard copy of their paper.

Another application of the computer is as an aid in data collection. The use of optiscan or scantron sheets has been used quite frequently for the collection of objective type data. Studies such as those in the area of leisure behaviour, however, do not lend themselves to this format. According to Ritchie (1975), for example, similarity ratings of selected leisure activities is a more valid determinant of leisure dimension than previous studies that used behavioural data. Unfortunately, data of this type is very difficult to collect using the optiscan format. Past studies of this nature (Ritchie, 1975; Russell and Hultsman, 1988) have relied on a manual presentation of leisure activity pairs to subjects and subsequent manual data coding and computer entry.

The purpose of the present study was to demonstrate that a computerized procedure for examining leisure activity similarity could reduce errors associated with previous techniques, decrease the data collection time, and eliminate time required for coding data. As a result of the time savings, researchers would have the opportunity to increase sample sizes and the number of leisure activities submitted for study.

METHODS

The traditional approach to data collection has utilized pencil and paper instruments. Subjects complete a questionnaire, data are coded, the coded data are entered into a computer, and finally, the data are analyzed. The approach taken in this study was to have the subjects enter their data directly into the computer. In an attempt to emphasize the difference between the two methodologies, two groups of twenty students were assigned either a pencil and paper or a computerized method of assessing leisure activity similarity. Subjects were first prompted to indicate, on a scale of 1 to 7, the degree of similarity (1 = "similar", 7 = "not similar") of all possible pairs of 20 recreation activities. Activities were drawn from typologies suggested by Edginton, Compton, and Hanson (1980), Farrell and Lundegren (1978), and Russell (1982). The following leisure activities were used: photography, painting, quilting, gardening, ballet, social dancing, acting, storytelling, reading, debating, singing, guitar playing, birdwatching, fishing, partying, going to the movies, chess, hockey, going shopping, and watching television.

For the computer method group, activity pairs were presented on an IBM personal computer and subjects were instructed to depress the number key corresponding to their assessment of the

degree of similarity of the two activities. After subjects entered their selection, the computer automatically presented the next activity pair. This process continued until all activity pairs were presented. The elapsed time for completion was recorded for each subject.

The most frequent method of analysis for this type of data is multidimensional scaling (MDS) (Ritchie, 1975; Russell and Hultsman, 1988; Kanters and Anderson, in press). The required input for MDS is a matrix where each cell corresponds to the similarity assessment of each pair of leisure activities. Both a manual and a computerized procedure were used to complete this task. The computerized instrument had a test-retest reliability of 0.8181 (Kanters and Anderson, in press).

RESULTS

Results of the comparative time requirements for the pencil and paper instrument versus the computerized instrument revealed a substantial difference in the two techniques. The average completion time for the pencil and paper technique was 41.6 minutes (sd = 3.4 minutes) whereas students completing the computer version averaged 22.2 minutes (sd = 2.8 minutes)

Using an object set of 20 items, it took approximately one hour per subject to code the data into a matrix and then copy the data into a computer data file. With a sample size of 20 it would take approximately 20 hours to prepare data for analysis. The computer eliminated this entire process. A programme was written in *dbase II* to directly convert subject assessments into matrix form. A subsequent programme loaded the individual matrices into a single file for future summation.

DISCUSSION

A computerized instrument improves the accuracy and efficiency of data collection because the potential for human error is substantially reduced. The process of presenting information to subjects is more structured and uniform, and the process of coding data is eliminated. Many researchers are limited by time and resources, to the study of a relatively small number of subjects. By eliminating the need to code data and enter it into a computer data file, the researcher's time spent on a data analysis is reduced. This study also showed that the time required by subjects to complete the instrument is substantially less (difference in means of 19.4 minutes) than standard pencil and paper techniques. These time savings provide researchers with additional time and the opportunity to increase sample size or the amount of data collected on each subject. For example, Russell and Hultsman (1988) used the pencil and paper technique to examine the perceptions of only 18 subjects where Kanters and Anderson (in press), using the computer instrument, were able to test the perceptions of 263 subjects in the same time frame. A potential restriction to computerized data collection is the availability of computers and subjects. Mailed questionnaires still appear to be the easiest way to study large samples. However, computers are becoming more commonplace in schools, businesses, and homes. In the future, rather than a lengthy paper questionnaire, we may receive a computer disk in the mail.

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