determine the extent to which the increases in work performance were due to the general features of the building or to the specific workstations.

These complications are frequent in office design. New designs often are accompanied by new organizational policies and staffing changes. This makes it much more difficult to assess the impact of the design independent of the other factors. The next section deals more closely with these issues and discusses several methods for increasing the validity of design research.

Some key issues to consider in using archival data are

- ***Data should be assessed to assure that recording is performed in a consistent manner over the time period of interest. If recording policies have changed during the time period of the study, the data are no longer comparable.***
- ***In order to assure confidentiality of records, names should be deleted and a subject number assigned in place of an individual's name.***
- ***Understand what the data do and do not represent. For instance, some firms do not distinguish between absenteeism due to personal illness and time taken off to care for sick family members. Thus, if the intent is to look at the impact of the design on illness, it cannot be validly assessed through such absenteeism records. Illness would need to be assessed in a different way.***

BEHAVIORAL OBSERVATION

Behavioral observation is used to identify what kinds of activities occur where, how often, by whom, and for what purpose. The observer uses a layout of the space or a recording sheet that lists the spaces. Behaviors are identified through pilot testing and are coded for ease in transmitting to paper. Although the technique can be time consuming, it is useful when little is known about how a facility is used or when specific behavioral changes are sought. Although it is possible to ask workers what spaces they use and how frequently, these data tend to be unreliable because memory for spatial experiences is not accurate, especially if the behavior is habitual. Also, much behavior is unconscious, and people are not always aware of how they are reacting to a space—especially when their focus may be on a task or on other people. The steps involved in doing a behavioral analysis include the following:

1. ***Conduct preliminary observations to develop behavioral categories.*** This step involves spending time in the existing environment, observing the general flow of activities and behaviors. The outcome of this initial stage is referred to as an "ethogram"—an overview of the general activities and behavioral modes in a specific setting.

2. ***Conduct pretests to assure consistency among observers.*** Behaviors of interest to the research project should be identified and discussed with the researchers who will be doing observations in a pretest situation. Each person should record data independently. After the test period is completed, the group reconvenes to assess the degree of agreement among the data collectors. This process is continued until sufficiently high agreement is obtained to assure that individual observers are rating behaviors in the same way. Agreement of 80 percent or higher is desirable.

3. ***Gather data in existing space.*** The data should be gathered at a variety of times and days of the week over the course of two to three weeks. Periods of intense activity as well as low activity levels should both be included, in order to capture the overall use patterns of a space.

4. ***Gather data in new space.*** The same process and time schedule should be used in the new space to enhance the validity of comparisons. Additional behaviors and categories may be added if the observational period shows that different activities occur in the new space.

5. ***Analyze and compare the two spaces.*** This phase produces the final data output for the behavioral analyses. Primary focus is on changes in frequencies of behaviors, with special attention given to the kinds of activities the new space is designed to promote.

Data Analysis

For design evaluation purposes, data analysis should be kept simple and easy to understand. This section is broken down by data analysis appropriate for specific kinds of methodologies.

SURVEY DATA

Frequency data and mean scores can be used to assess survey data and to compare the old and new spaces. A couple of examples follow. Figure 17-2