The following outline is a general set of directions to be used in writing laboratory reports. The reports are to be written on the perforated sheet appended to each problem. Obviously, a general set of directions cannot cover every possible contingency that may arise. If, for example, you consider something to be important and it is not covered in this outline, feel free to add it. These directions provide only a sketch of the minimum material to be covered in your reports. They are designed to guide your thoughts rather than straitjacket them.

HYPOTHESIS. (1) A hypothesis is a statement of an anticipated relationship between variables, as for example, “high income families have less children than low income families,” or “persons with a college education are more tolerant than persons with a high school or grade school education.” In phrasing the hypothesis, emphasize the way the independent variable is related to the dependent variable. You should base your hypothesis primarily on the findings of the original study which is reprinted as the reading for each problem. However, information available from other sources such as your textbook, lectures, previous courses, or the special characteristics of the replication (such as the nature of the sample) might lead you to pose a different hypothesis. (2) State the hypothesis in the present tense. This custom is followed because a hypothesis is a statement of what the investigator thinks is the actual present state of the real world and of the relationships which exist between variables. (3) Always be sure to give a brief justification or explanation for your hypothesis. (4) Write the hypothesis before coming to class to do the problem, or in any case before tabulating the data. Do not change the hypothesis to fit the findings. Hypotheses are often proved wrong by evidence, and this may be the basis for a new understanding of the issue being investigated. Bear in mind, however, that the hypothesis may be correct despite your findings. This could happen if the sample is inappropriate for the issue being tested or if the measurement of the variable used to test the hypothesis is inadequate.

SAMPLE. (1) Describe how the sample was chosen and how many cases are included. (2) Describe relevant characteristics of the sample such as age, sex, SES. (3) If there are any characteristics of the sample which might influence the findings, list and explain them. NOTE: After the first laboratory report only those characteristics of the sample which might affect the findings need be given.

INDEPENDENT VARIABLE (OR VARIABLES). The variable which is assumed to be causing change is the independent variable. State what the variable is and how it is measured. It is important to specify how a variable is measured because different measurement procedures can produce different results, as in the case of an oral and rectal thermometer.

DEPENDENT VARIABLE (OR VARIABLES). The variable which is assumed to be caused by or influenced by changes or variations in the independent variable. State what the variable is and how it is measured.

OTHER FACTORS. Confine the listing to those which are important for understanding the results of the research. If a control variable is employed, explain it here.

SUMMARY OF FINDINGS. Summarize the literal facts or relationships found. State the findings without using statistics: for example, “First born children are more often high in social responsibility than later born children.” However, you may also use specific figures if these can be given briefly. You could, for example, add to the previous statement: “... as shown by the finding of 20% of first-born children with high responsibility scores as compared to only 10% of middle or youngest children.” State whether your hypothesis is refuted, accepted, or partially accepted. Remember that your results can differ from those of the original study in certain ways yet still lead to the same conclusion. For example, suppose the original study used a ten-point scale to measure a variable and found that group A had an average of 7.3 as compared to 5.8 for group B. Suppose further that your replication used a five-point scale rather than the original ten-point scale to measure this variable. If the analysis showed group A to have a mean score of 3.5 and group B to have a mean score of 2.4, you would conclude that the replication confirmed the finding of the original study because in both the original study and in your replication group A had a higher score than group B. In short, you should base your summary of the findings and acceptance or rejection of the hypothesis on what the statistics show about relationships between variables, rather than on the absolute values of the score.

DISCUSSION. This section should provide an interpretation of the findings, i.e., (1) what accounts for the findings, or (2) what do the findings mean, or (3) what is the importance of the findings. Example: “The findings are consistent with and support the theory that parents have stricter expectations for first-born children, and tend to let later born children get away with more. Thus first borns grow up...” The discussion is one of the places where the scientist can (and should) be speculative and imaginative.

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1 Although the terms “cause” and “influenced by” are used to describe the independent and dependent variables, it is important to note that most of the problems in this book do not provide clear evidence of cause and effect. See the “Note On Interpreting Cause and Effect” on page 336 for further explanation.

2 See footnote 1.

A note on interpreting cause and effect

The goal of all sciences is to discover cause-and-effect relationships. To establish causality, three criteria have to be met: It must be demonstrated first that there is a relationship between two variables; second, that this relationship is due to the variables under examination and not to some third, “confounding” variable; and third, that the presumed causal or independent variable occurs prior in time to the presumed effect, or the dependent variable (see Sellitz et al., 1960).

The difficulties in establishing causal sequences in sociology stem primarily from the fact that much research is inadequately designed to provide information on the temporal sequence of variables. In most examples of sociological research, as in most of the problems contained in the present laboratory manual, data are gathered from a cross-section of some population at one particular point in time. Whatever the advantages of cross-sectional research may be in terms of minimizing the costs of data collection, the procedure imposes severe limitations on assessing causality: Information obtained at a single point in time provides few clues as to whether one variable occurred prior to the other. For example, if a “status concern” scale and also a “racial prejudice” scale were given to a sample, it might be found that those with high scores for status concern also have high prejudice scores. It would be plausible to maintain that status concern brings about feelings of insecurity that are eventually manifested in prejudice. However, this relationship, while interesting, would not constitute proof that status concern causes prejudice. It would be equally plausible to argue that persons already prejudiced develop an awareness of status to rationalize their racial views. With cross-sectional data the researcher may have little besides his own intuitive judgment to determine which alternative represents the correct causal sequence.

In some instances judgments about the temporal sequence may be easy to make and need not rest heavily on speculation. For example, if a relationship was demonstrated between religion and fertility plans, it would be relatively safe to say that religion, a status usually ascribed at birth, precedes fertility plans rather than vice versa. Even in this illustration, however, it is not legitimate to maintain that religion causes differences in fertility plans. Religious denominations and fertility plans are each known to differ by social class, and it may be that the observed relationship is due to the tendency of one religious group to be higher than the other group in social class standing, and the additional tendency of persons high in class standing to plan having fewer children. (See Problem 21.)

Control variables. The problem just described can be handled with cross-sectional data by introducing “controls” for class. To do this, it would be necessary to divide the sample into relatively homogeneous social class groupings, and within each class group compare the relationship between religion and fertility plans. By confining comparisons to each homogeneous class group, the effects of social class are ruled out, or at least minimized. Two outcomes are relevant: If the original relationship between religion and fertility was not due to class, the relationship should persist for each comparison; if, however, the relationship was due to class, then holding class constant should make the relationship disappear. Again, however, the use of a control for class does not prove causality; it is always possible that class is the wrong variable to control. This additional difficulty illustrates the endless problems involved in establishing cause-and-effect relationships with data gathered from cross-sectional research designs.

The one research procedure capable of most clearly establishing cause and effect is the experimental method. In the experiment the researcher introduces a variable to one group, withholds it from another group, and then observes whether differences between groups emerge on some dependent variable. If differences do come about, the researcher can often attribute them to the experimental variable. Unlike cross-sectional research, experimental variables are introduced at a definite point in time prior to the emergence of the dependent variable, thus clarifying the temporal sequence. Also, it is possible in experiments to administer the experimental variable to a randomly selected group of persons. This method minimizes the possibility that other common characteristics and experiences of these persons may confound the relationship (Sellitz et al., 1960). Because of these and other advantages, all sciences try to use the experimental method wherever possible. In sociology the use of this method is slowly gaining acceptance (Zelditch and Hopkins, 1961). The present manual contains three studies (Problems 4, 5, and 6) which approximate experimental designs.

References

