DOWNLOAD PDF CAUSAL RESEARCH AND INTERNAL VALIDITY: DISCUSSION, QUESTIONS, AND ANSWERS

Chapter 1 : Common Threats to Internal Validity - WikiEducator

this type of research is person-focused: the experience of the individual, in-depth questions and answers (open-ended questions) drawbacks to qualitative research could be potentially emotionally distressing to participant and/or the researcher.

Unsurprisingly, experimental research tends to have the highest internal validity, followed by quasi-experimental research, and then correlational research, with case studies at the bottom of the list. Nonetheless, there are several potential threats to internal validity that are especially relevant to nonexperimental designs. These include the following eight threats, which may be remembered by using the acronym "MRS. Maturation Physiological processes occurring within the participants that could account for any changes in their behaviour. Subjects may change between test sessions of the experiment such that any changes in scores between testing sessions may simply be due to the passage of time rather than any treatment effects. This phenomenon is the result of the fact that all measurement instruments are not perfectly reliable i. It is this error that most likely accounts for the extreme score, not some inherent characteristic within the individual. Extreme scores typically become less extreme. The implication is that the difference between groups formed based on extreme scores tend to become smaller even in the absence of any treatment effects. Selection of Subjects Any bias in selecting and assigning participants to groups that results in systematic differences between the participants in each group. The differences exist before one group is exposed to the experimental treatment. This threat to validity is great in quasi-experiments where the random assignment to treatment conditions is not possible. Selection by Maturation Interaction The treatment and no-treatment groups, although similar at one point, would have grown apart developed differently even if no treatment had been administered. Even though pretest scores may have been the same, groups that are not matched as well on other relevant variables that may cause the groups to naturally become different after a period of time Example: Long-term Head Start research comparing middle-class and disadvantaged children. Mortality Differential dropping out of some subjects from the comparison groups before the experiment is finished, resulting in differences between the groups that may be unrelated to the treatment effects. The problem is that the subjects who drop out of the study for whatever reasons may be different than those who complete it. This may inflate, obscure, or confuse the treatment effects of interest. The researcher excluding the data of particular subjects based on some criterion can also cause this bias. Instrumentation Changes in the measurement procedures may result in differences between the comparison groups that are confused with the treatment effects. Observers may become more experienced or careless over time which results in differences between the pretest and posttest measurements that are unrelated to the treatment effects. Calibration of testing apparatus may change from one test to another. Testing When participants are repeatedly tested, changes in test scores may be more due to practice or knowledge about the test procedure gained from earlier experiences rather than any treatment effects Similar to maturation except that the change is caused by the testing procedure itself. Could be major events occurring in society e. Clearly describe one correlational result reported in the news study. Your description should include the variables involved as well as the direction of the correlation. Draw and clearly label a scatterplot that illustrates this correlation using 10 data points. Did the researcher s consider whether a third variable might have influenced this correlation? If so, which variable did they measure? How do the researchers interpret this correlation? Do they explain the correlation in a particular causal direction? Can you suggest an alternative interpretation of this correlation? Consider how you might be able to address the same question using a different non-experimental research design. Your proposed study should use the same variables but should operationalize them differently. Briefly outline your proposed study. For additional practice you can browse through the studies analyzed by Beth Morling on her website:

Chapter 2 : Causal Analysis in Theory and Practice

Causal validity is also referred to as internal validity. It refers to how well experiments are done and what we can infer from those results.

We might say that a measure is a valid one, or that a valid sample was drawn, or that the design had strong validity. But all of those statements are technically incorrect. Technically, we should say that a measure leads to valid conclusions or that a sample enables valid inferences, and so on. We make lots of different inferences or conclusions while conducting research. Many of these are related to the process of doing research and are not the major hypotheses of the study. Nevertheless, like the bricks that go into building a wall, these intermediate process and methodological propositions provide the foundation for the substantive conclusions that we wish to address. For instance, virtually all social research involves measurement or observation. And, whenever we measure or observe we are concerned with whether we are measuring what we intend to measure or with how our observations are influenced by the circumstances in which they are made. We reach conclusions about the quality of our measures -- conclusions that will play an important role in addressing the broader substantive issues of our study. When we talk about the validity of research, we are often referring to these to the many conclusions we reach about the quality of different parts of our research methodology. We subdivide validity into four types. Each type addresses a specific methodological question. In order to understand the types of validity, you have to know something about how we investigate a research question. Because all four validity types are really only operative when studying causal questions, we will use a causal study to set the context. The figure shows that there are really two realms that are involved in research. The first, on the top, is the land of theory. It is what goes on inside our heads as researchers. It is where we keep our theories about how the world operates. The second, on the bottom, is the land of observations. It is the real world into which we translate our ideas -- our programs, treatments, measures and observations. When we conduct research, we are continually flitting back and forth between these two realms, between what we think about the world and what is going on in it. When we are investigating a cause-effect relationship, we have a theory implicit or otherwise of what the cause is the cause construct. For instance, if we are testing a new educational program, we have an idea of what it would look like ideally. Similarly, on the effect side, we have an idea of what we are ideally trying to affect and measure the effect construct. But each of these, the cause and the effect, has to be translated into real things, into a program or treatment and a measure or observational method. We use the term operationalization to describe the act of translating a construct into its manifestation. In effect, we take our idea and describe it as a series of operations or procedures. Now, instead of it only being an idea in our minds, it becomes a public entity that anyone can look at and examine for themselves. It is one thing, for instance, for you to say that you would like to measure self-esteem a construct. But when you show a ten-item paper-and-pencil self-esteem measure that you developed for that purpose, others can look at it and understand more clearly what you intend by the term self-esteem. Now, back to explaining the four validity types. They build on one another, with two of them conclusion and internal referring to the land of observation on the bottom of the figure, one of them construct emphasizing the linkages between the bottom and the top, and the last external being primarily concerned about the range of our theory on the top. Assume that we took these two constructs, the cause construct the WWW site and the effect understanding , and operationalized them -- turned them into realities by constructing the WWW site and a measure of knowledge of the course material. Here are the four validity types and the question each addresses: In this study, is there a relationship between the two variables? There are several conclusions or inferences we might draw to answer such a question. We could, for example, conclude that there is a relationship. We might conclude that there is a positive relationship. We might infer that there is no relationship. We can assess the conclusion validity of each of these conclusions or inferences. Assuming that there is a relationship in this study, is the relationship a causal one? Both could, for example, be caused by the same factor. For instance, it may be that wealthier students who have greater resources would be more likely to use have access to a WWW site and would excel on objective tests. When we want to make a claim that our program or treatment caused the outcomes in our study, we can consider the internal validity of our causal claim. Assuming that there is a causal relationship in this study, can we claim that the program reflected well our construct of the program and that our measure reflected well our idea of the construct of the measure? In simpler terms, did we implement the program we intended to implement and did we measure the outcome we wanted to measure? In yet other terms, did we operationalize well the ideas of the cause and the effect? When our research is over, we would like to be able to conclude that we did a credible job of operationalizing our constructs -- we can assess the construct validity of this conclusion. Assuming that there is a causal relationship in this study between the constructs of the cause and the effect, can we generalize this effect to other persons, places or times? We are likely to make some claims that our research findings have implications for other groups and individuals in other settings and at other times. When we do, we can examine the external validity of these claims. Notice how the question that each validity type addresses presupposes an affirmative answer to the previous one. This is what we mean when we say that the validity types build on one another. The figure shows the idea of cumulativeness as a staircase, along with the key question for each validity type. For any inference or conclusion, there are always possible threats to validity -- reasons the conclusion or inference might be wrong. Ideally, one tries to reduce the plausibility of the most likely threats to validity, thereby leaving as most plausible the conclusion reached in the study. For instance, imagine a study examining whether there is a relationship between the amount of training in a specific technology and subsequent rates of use of that technology. Because the interest is in a relationship, it is considered an issue of conclusion validity. Assume that the study is completed and no significant correlation between amount of training and adoption rates is found. On this basis it is concluded that there is no relationship between the two. How could this conclusion be wrong -- that is, what are the "threats to validity"? Perhaps the sample size is too small or the measure of amount of training is unreliable. Or maybe assumptions of the correlational test are violated given the variables used. Perhaps there were random irrelevancies in the study setting or random heterogeneity in the respondents that increased the variability in the data and made it harder to see the relationship of interest. The inference that there is no relationship will be stronger -- have greater conclusion validity -- if one can show that these alternative explanations are not credible. The distributions might be examined to see if they conform with assumptions of the statistical test, or analyses conducted to determine whether there is sufficient statistical power. The theory of validity, and the many lists of specific threats, provide a useful scheme for assessing the quality of research conclusions. The theory is general in scope and applicability, well-articulated in its philosophical suppositions, and virtually impossible to explain adequately in a few minutes. As a framework for judging the quality of evaluations it is indispensable and well worth understanding.

Chapter 3 : Social Research Methods - Knowledge Base - Internal Validity

Internal validity is a way to gauge how strong your research methods were. External validity helps to answer the question: can the research be applied to the "real world"? If your research is applicable to other situations, external validity is high.

Details[edit] Inferences are said to possess internal validity if a causal relationship between two variables is properly demonstrated. In this example, the researcher wants to make a causal inference, namely, that different doses of the drug may be held responsible for observed changes or differences. When the researcher may confidently attribute the observed changes or differences in the dependent variable to the independent variable that is, when the researcher observes an association between these variables and can rule out other explanations or rival hypotheses , then the causal inference is said to be internally valid. Internal validity, therefore, is more a matter of degree than of either-or, and that is exactly why research designs other than true experiments may also yield results with a high degree of internal validity. In order to allow for inferences with a high degree of internal validity, precautions may be taken during the design of the study. As a rule of thumb, conclusions based on direct manipulation of the independent variable allow for greater internal validity than conclusions based on an association observed without manipulation. When considering only Internal Validity, highly controlled true experimental designs i. However, the very methods used to increase internal validity may also limit the generalizability or external validity of the findings. For example, studying the behavior of animals in a zoo may make it easier to draw valid causal inferences within that context, but these inferences may not generalize to the behavior of animals in the wild. In general, a typical experiment in a laboratory, studying a particular process, may leave out many variables that normally strongly affect that process in nature. Example Threats[edit] Ambiguous temporal precedence[edit] When it is not known which variable changed first, it can be difficult to determine which variable is the cause and which is the effect. Confounding[edit] A major threat to the validity of causal inferences is confounding: Changes in the dependent variable may rather be attributed to variations in a third variable which is related to the manipulated variable. Where spurious relationships cannot be ruled out, rival hypotheses to the original causal inference may be developed. Researchers and participants bring to the experiment a myriad of characteristics, some learned and others inherent. For example, sex, weight, hair, eye, and skin color, personality, mental capabilities, and physical abilities, but also attitudes like motivation or willingness to participate. During the selection step of the research study, if an unequal number of test subjects have similar subject-related variables there is a threat to the internal validity. For example, a researcher created two test groups, the experimental and the control groups. The subjects in both groups are not alike with regard to the independent variable but similar in one or more of the subject-related variables. Self-selection also has a negative effect on the interpretive power of the dependent variable. This occurs often in online surveys where individuals of specific demographics opt into the test at higher rates than other demographics. Often, these are large-scale events natural disaster, political change, etc. Maturation[edit] Subjects change during the course of the experiment or even between measurements. For example, young children might mature and their ability to concentrate may change as they grow up. Both permanent changes, such as physical growth and temporary ones like fatigue, provide "natural" alternative explanations; thus, they may change the way a subject would react to the independent variable. So upon completion of the study, the researcher may not be able to determine if the cause of the discrepancy is due to time or the independent variable. Repeated testing also referred to as testing effects [edit] Repeatedly measuring the participants may lead to bias. Participants may remember the correct answers or may be conditioned to know that they are being tested. Repeatedly taking the same or similar intelligence tests usually leads to score gains, but instead of concluding that the underlying skills have changed for good, this threat to Internal Validity provides a good rival hypotheses. Instrument change instrumentality [edit] The instrument used during the testing process can change the experiment. This also refers to observers being more concentrated or primed, or having unconsciously changed the criteria they use to make judgments. This can also be an issue with self-report measures given at different times. In this case the impact may be mitigated through the use of retrospective pretesting. If any instrumentation changes occur, the internal validity of the main conclusion is affected, as alternative explanations are readily available. Regression toward the mean[edit] Main article: Regression toward the mean This type of error occurs when subjects are selected on the basis of extreme scores one far away from the mean during a test. If the children had been tested again before the course started, they would likely have obtained better scores anyway. Likewise, extreme outliers on individual scores are more likely to be captured in one instance of testing but will likely evolve into a more normal distribution with repeated testing. Survivorship bias This error occurs if inferences are made on the basis of only those participants that have participated from the start to the end. However, participants may have dropped out of the study before completion, and maybe even due to the study or programme or experiment itself. For example, the percentage of group members having quit smoking at post-test was found much higher in a group having received a quit-smoking training program than in the control group. If this attrition is systematically related to any feature of the study, the administration of the independent variable, the instrumentation, or if dropping out leads to relevant bias between groups, a whole class of alternative explanations is possible that account for the observed differences. Selection-maturation interaction[edit] This occurs when the subject-related variables, color of hair, skin color, etc. If a discrepancy between the two groups occurs between the testing, the discrepancy may be due to the age differences in the age categories. Diffusion[edit] If treatment effects spread from treatment groups to control groups, a lack of differences between experimental and control groups may be observed. This does not mean, however, that the independent variable has no effect or that there is no relationship between dependent and independent variable. For example, control group members may work extra hard to see that expected superiority of the experimental group is not demonstrated. Again, this does not mean that the independent variable produced no effect or that there is no relationship between dependent and independent variable. Vice versa, changes in the dependent variable may only be affected due to a demoralized control group, working less hard or motivated, not due to the independent variable. Experimenter bias[edit] Experimenter bias occurs when the individuals who are conducting an experiment inadvertently affect the outcome by non-consciously behaving in different ways to members of control and experimental groups. It is possible to eliminate the possibility of experimenter bias through the use of double blind study designs, in which the experimenter is not aware of the condition to which a participant belongs.

Chapter 4 : Internal Validity - The Confidence in the Cause-Effect Relationship

Construct validity: If a research study has strong construct validity, both the independent and the dependent variables of the study, or the events that occur in the study, should correspond to/reflect the intended theoretical constructs.

Dear Kevin, I am not suggesting that you are only superficially acquainted with my works. You are showing me what other readers with your perspective would think about the Book, and what they would find unsubstantiated or difficult to swallow. So let us go straight to these two points i. You say that I have provided no evidence for my claim: This was, as you rightly noticed, a polite way of saying: You find this statement hard to swallow, because: This distinction appears vividly in the debate that took place in on the pages of The American Statistician, which you and I cite. In other words, none of the other participants presented a method for deciding whether the aggregated data or the segregated data give the correct answer to the question: Please read their paper carefully and judge for yourself whether it would help you decide whether treatment is helpful or not, in any of the examples presented in the debate. And how do I know? I am listening to their conclusions: They disavow any connection to causality p. I dont blame Liu and Meng for erring on this point, it is not entirely their fault Rosenbaum and Rubin made the same error. And DAGs, as you are probably aware, are forbidden from entering a 5 mile no-fly zone around Harvard [North side, where the statistics department is located]. So, here we are. One thing I do agree with you â€” your warning about the implausibility of the Causal Revolution. It is truly not plausible that someone, especially a semi-outsider, has found a Silver Bullet. It is hard to swallow. That is why I am so excited about the Causal Revolution and that is why I wrote the book. The Book does not offer a Silver Bullet to every causal problem in existence, but it offers a solution to a class of problems that centuries of statisticians and Philosophers tried and could not crack. It is implausible, I agree, but it happened. It took quite a risk on my part to sound pretentious and call this development a Causal Revolution. I thought it was necessary. Now I am asking you to take a few minutes and judge for yourself whether the evidence does not justify such a risky characterization. You were right to express doubt and disbelief in the need for a paradigm shift, as would any responsible scientist in your place. The next step is to let the community explore: I believe The Book of Why has already doubled that number, which is some progress.

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Chapter 5 : Quantitative Research Design | Nurse Key

A large study has compared the outcomes of children who've attended private schools to those who've attended public schools. A journalist summarized the report in the Washington Post.

Describe the four basic types of validity we want our research conclusions to have. Distinguish among the components of external validity, the types of variables associated with each, and tell how we provide evidence for each 8. Describe the different approaches to "defending" the external validity of a study. Why is it important to distinguish between "generalizability" and "applicability" as possible synonyms of external validity? What does it mean to say, "External validity is in the eye of the applier. Do you agree with this statement? Why or why not? What is "sampling" and what are the choices a researcher makes when designing a sampling methodology? How does sampling influence the validity of the study? What is required to have a truly random sample? Is this often accomplished? When you are told that a sample is "random," what is usually meant by this? How does sample size relate to internal and external validity? What must we consider when selecting the sample size for our study? Differentiate between the "selection" and "assignment" of subjects and describe the purpose and procedures used for each. What is the moral of this distinction? Distinguish among the components of internal validity, the types of variables associated with each, and tell how we provide evidence for each. Describe the "non-random" procedures for participant assignment. Be sure to identify which provide for initial equivalence and which do not and why. Describe the different uses of random assignment and tell what aspects of internal and external validity are enhanced by each. Distinguish the different characterizations of the relationship between internal and external validity. Describe the key components of a true experiment and how each contributes to the internal and the external validity of a study. Distinguish between the different meanings of "IV" and describe why we have to be careful when applying the term. Can all causal research hypotheses be studied? Be sure to give examples to support your answer! Distinguish among the major types of research designs - focusing on the procedural differences among them. What are the relative advantages of these different designs to support internal and external validity claims for our research? How should you respond to this statement? Describe the relative advantages of observational and self-report data. Describe the relative advantages of laboratory, structured and field settings to promote the validity of the research be sure to refer to both internal and external validity Briefly describe the six key steps in the research process, telling the information or evidence provided by each. Be sure to identify those steps which are only necessary for testing causal research hypotheses. What would you look for if handed an empirical research article and asked if the research it reports is valid? Distinguish between the attributes of a research study that directly influence the causal interpretability of the results and which do not influence the causal interpretability. What are the attributes of a research study that make it difficult to ensure ongoing equivalence and for what part of internal validity are they a problem?

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Chapter 6 : Internal validity - Wikipedia

In research, internal validity is the extent to which you are able to say that no other variables except the one you're studying caused the result. For example, if we are studying the variable of.

This chapter has information about how you can draw conclusions about key aspects of evidence quality in a quantitative study. This section describes some basic design issues. Key Research Design Features Table 9. Design decisions that researchers must make include the following: Will there be an intervention? A basic design issue is whether or not researchers will introduce an intervention and test its effectsâ€"the distinction between experimental and nonexperimental research. What types of comparisons will be made? Quantitative researchers often make comparisons to provide an interpretive context. Sometimes, the same people are compared at different points in time e. How will confounding variables be controlled? In quantitative research, efforts are often made to control factors extraneous to the research question. This chapter discusses techniques for controlling confounding variables. Will blinding be used? Researchers must decide if information about the study e. How often will data be collected? Data sometimes are collected from participants at a single point in time cross-sectionally , but other studies involve multiple points of data collection longitudinally. Some studies collect information about outcomes and then look back retrospectively for potential causes. Other studies begin with a potential cause and then see what outcomes ensue, in a prospective fashion. Where will the study take place? Another decision concerns how many different sites will be involved in the studyâ€"a decision that could affect the generalizability of the results. Many design decisions are independent of the others. For example, both experimental and nonexperimental studies can compare different people or the same people at different times. TIP Information about the research design usually appears early in the method section of a research article. Causality Many research questions are about causes and effects. For example, does turning patients cause reductions in pressure ulcers? Does exercise cause improvements in heart function? Causality is a hotly debated issue, but we all understand the general concept of a cause. For example, we understand that failure to sleep causes fatigue and that high caloric intake causes weight gain. Most phenomena are multiply determined. Weight gain, for example, can reflect high caloric intake or other factors. Causes are seldom deterministic; they only increase the likelihood that an effect will occur. For example, smoking is a cause of lung cancer, but not everyone who smokes develops lung cancer, and not everyone with lung cancer smoked. While it might be easy to grasp what researchers mean when they talk about a cause, what exactly is an effect? One way to understand an effect is by conceptualizing a counterfactual Shadish et al. A counterfactual is what would happen to people if they were exposed to a causal influence and were simultaneously not exposed to it. An effect represents the difference between what actually did happen with the exposure and what would have happened without it. A counterfactual clearly can never be realized, but it is a good model to keep in mind in thinking about research design. Three criteria for establishing causal relationships are attributed to John Stuart Mill. A cause must precede an effect in time. If we test the hypothesis that smoking causes lung cancer, we need to show that cancer occurred after smoking began. There must be an association between the presumed cause and the effect. In our example, we have to demonstrate an association between smoking and cancerâ€"that is, that a higher percentage of smokers than nonsmokers get lung cancer. The relationship cannot be explained as being caused by a third variable. Suppose that smokers tended to live predominantly in urban environments. There would then be a possibility that the relationship between smoking and lung cancer reflects an underlying causal connection between the environment and lung cancer. Other criteria for causality have been proposed. One important criterion in health research is biologic plausibilityâ€"evidence from basic physiologic studies that a causal pathway is credible. Researchers investigating causal relationships must provide persuasive evidence regarding these criteria through their research design. Research Questions and Research Design Quantitative research is used to address different types of research questions, and different designs are appropriate for different questions.

Except for Description, questions that call for a quantitative approach usually concern causal relationships: Does a telephone counseling intervention for patients with prostate cancer cause improvements in their psychological distress? Therapy question Do birth weights under 1, g cause developmental delays in children? Prognosis question Does salt cause high blood pressure? In particular, experimental designs randomized controlled trials or RCTs are the best possible designs for illuminating causal relationshipsâ€”but it is not always possible to use such designs. Randomized Controlled Trials Early scientists learned that complexities occurring in nature can make it difficult to understand relationships through pure observation. This problem was addressed by isolating phenomena and controlling the conditions under which they occurred. These experimental procedures have been adopted by researchers interested in human physiology and behavior. Interventionâ€”The experimenter does something to some participants by manipulating the independent variable. Controlâ€”The experimenter introduces controls into the study, including devising an approximation of a counterfactualâ€—usually a control group that does not receive the intervention. Randomizationâ€—The experimenter assigns participants to a control or experimental condition on a random basis. By introducing an intervention, experimenters consciously vary the independent variable and then observe its effect on the outcome. To illustrate, suppose we were investigating the effect of gentle massage I , compared to no massage C , on pain O in nursing home residents P. One experimental design for this question is a pretestâ€”posttest design, which involves observing the outcome pain levels before and after the intervention. Participants in the experimental group receive a gentle massage, whereas those in the control group do not. This design permits us to see if changes in pain were caused by the massage because only some people received it, providing an important comparison. In this example, we met the first criterion of a true experiment by varying massage receipt, the independent variable. This example also meets the second requirement for experiments, use of a control group. Inferences about causality require a comparison, but not all comparisons yield equally persuasive evidence. At a minimum, we would need to compare posttreatment weight with pretreatment weight to see if weight had increased. But suppose we find an average weight gain of 1 pound. Does this finding support an inference of a causal connection between the nutritional intervention the independent variable and weight gain the outcome? No, because infants normally gain weight as they mature. Without a control groupâ€—a group that does not receive the supplements C â€—it is impossible to separate the effects of maturation from those of the treatment. The term control group refers to a group of participants whose performance on an outcome is used to evaluate the performance of the experimental group the group getting the intervention on the same outcome. Experimental designs also involve placing participants in groups at random. Through randomization also called random assignment , every participant has an equal chance of being included in any group. If people are randomly assigned, there is no systematic bias in the groups with regard to attributes that may affect the dependent variable. Randomly assigned groups are expected to be comparable, on average, with respect to an infinite number of biologic, psychological, and social traits at the outset of the study. Group differences on outcomes observed after randomization can therefore be inferred as being caused by the intervention. Random assignment can be accomplished by flipping a coin or pulling names from a hat. Researchers typically either use computers to perform the randomization. TIP There is a lot of confusion about random assignment versus random sampling. Random assignment is a signature of an experimental design RCT. If subjects are not randomly assigned to intervention groups, then the design is not a true experiment. Random sampling, by contrast, refers to a method of selecting people for a study, as we discuss in Chapter Random sampling is not a signature of an experimental design. In fact, most RCTs do not involve random sampling. Experimental Designs The most basic experimental design involves randomizing people to different groups and then measuring outcomes. This design is sometimes called a posttest-only design. A more widely used design, discussed earlier, is the pretestâ€—posttest design, which involves collecting pretest data often called baseline data on the outcome before the intervention and posttest outcome data after it. Example of a pretestâ€—posttest design Berry and coresearchers tested the effectiveness of a postpartum weight management intervention for low-income women. The women were randomly assigned to be in the intervention group or in a control group. Data on weight, adiposity, and health behaviors were gathered at baseline and at the end of the intervention. TIP Experimental designs can be depicted graphically using symbols to represent features of the design. Space does not permit us to present these diagrams here, but many are shown in the Supplement to this chapter on. The people who are randomly assigned to different conditions usually are different people. For example, if we were testing the effect of music on agitation O in patients with dementia P , we could give some patients music I and others no music C. A crossover design, by contrast, involves exposing people to more than one treatment. Such studies are true experiments only if people are randomly assigned to different orderings of treatment.

Chapter 7 : Social Research Methods - Knowledge Base - Introduction to Validity

Soci research method. repetitions of the same study using the same research methods and to answer the same research question. Causal validity (internal validity).

Chapter 8 : What is Causal Validity

The answer to this question is more internal validity of the research design (Finger & focus of interest of the research study. This may involve growth (e.g.