5 Selecting Variables and Concepts

Chapter Summary

Concepts are categories into which ideas, impressions, and observations of the world can be placed. Concepts are used in both qualitative and quantitative research. Empirical research requires that abstract concepts be made observable and measureable. The conventional means by which to do this is to create variables from abstract concepts. A **variable** is a concept that can be measured; a variable is a component of a concept that varies in amount or quality. The primary function of any variable is to enable measurement of changes in its corresponding abstract concept. Characteristics of variables include the following: first, variables must validly represent an abstract concept being studied; second, variables must have at least one range of possible states (therefore, it can change, and these changes can be taken to indicate change in the absurd concept represented by the variable); and third, variables have must states that are observable and measurable. You can detect changes in a variable only if you can observe and measure it.

The activity of finding measurable variables for concepts is referred to as **operationalization**, whereby a concept comes to be defined in empirical or measureable terms. An operational definition of a concept goes beyond a usual dictionary definition. Any hypothesis can be stated at both a conceptual (abstract or theoretical, which states relationships between concepts) level and the operational (empirical or measurable, which states relationships between variables) level. The basic question that guides this activity is "How can I measure that?" It is also necessary to operationalize concepts in studies that take a descriptive focus. There are no set ways for finding variables that are appropriate measures for concepts. This takes creativity, experimentation, inventiveness, and a willingness to think in new ways. When deciding variables for hypotheses, the independent and dependent variables will need to be identified, as well as the type of relationship between the variables (positive or negative).

In qualitative research, instead of variables, we talk about concepts because qualitative research aims to let participants "speak for themselves," defining and operationalizing a variable would reduce the power of their voice in the study. Conceptualization usually leads to data collection and the operationalization of the concept is done *after* the data has been collected so that participants' words can be used to determine the definition.

The most important requirement in choosing variables is to ensure they are valid. **Validity** has to do with whether a variable adequately represents a concept. A problem encountered by questions of valid-

ity is that concepts are often multidimensional and impossible to represent with a single variable. Validity is met when there is a close fit between a concept and its corresponding variable. Validity can be questioned in a variety of ways, including external, internal, construct, and content.

An important point to remember regarding hypotheses is that since hypotheses are not used in qualitative research, we don't have a predefined expectation of the outcome. When we are undertaking a qualitative study, we do not want to prejudice the results, so we use research objectives. When developing research to meet our objectives, it is still necessary to clarify our concepts and to select indicators appropriate to theses concepts. Research objectives are used to guide the research that seeks to *describe* rather than *explain* what is happening. There is no independent or dependent variables, but it is still necessary to operationalize concepts in the research objectives.

This chapter concludes with a discussion of independent, dependent, and control variables, as well as a review of the research process from previous chapters.

Key Terms

Negative relationship How two variables are connected to one another. In this case, when one variable increases, the other decreases, or vice versa. This is otherwise known as a negative indicator. (p. 75)

Operationalization Turning a concept into a variable and developing concrete definitions of concepts in order to make a concept measureable. In quantitative research, operationalization takes place prior to the collection of data. In qualitative research, operationalization takes place during and after the collection of data. (p. 71)

Positive relationship How two variables are connected to one another. In this case, when one variable increases, the other increases. This is otherwise known as a *positive indicator*. (p. 75)

Validity Refers to whether or not the variable accurately represents or measures the concept being investigated. There are several types of validity: external validity, internal validity, construct validity, and content validity. (p. 79)

Variable A variable is an extension of a concept. A variable is something that varies in amount or quality. Variables can take on more than one value. (p. 70)

Study Questions

Scroll down for answers.

1. What are the basic characteristics of a variable?

2. Construct a hypothesis and state it in two forms: at the conceptual level and at the operational or empirical level.

3. What are the four different types of validity? Briefly describe each.

4. What is the difference between a conceptual hypothesis and an operational hypothesis?

5. With regard to validity, why is it important that variables correspond to their concept?

6. Why doesn't qualitative methodology use hypotheses?

7. What is the difference between a hypothesis and a research objective? Why must variables be selected for both?

8. Why does operationalization occur after data collection in qualitative research?

9. What is the difference between an independent variable and dependent variable?

10. What is a control variable?

Video Resource

The London Free Press. 2014. Are Precarious Jobs the Future? [2:51]

In this short news clip, London, Ontario sociologist Joe Michalski discusses his plan to "replicate" the PEPSO study in his city, and reflects on the rise of precarious work with some helpful examples and historical perspective.

https://www.youtube.com/watch?v=EYFJ4BSTlfw

Answers to Study Questions

1. These are the basic characteristics of a variable:
   - Variables must validly represent an abstract concept being measured.
   - Variables must have at least one range of possible states. This requirement means that variables change.
   - Variables have states that are observable and measureable. (pp. 70–71)

2. A hypothesis can be stated in the following forms:
   - Conceptual level: study (independent concept) is positively related to academic performance (dependent concept).
   - Operational/empirical level: amount of time spent studying (independent variable, and a measure of the concept *study*) is positively related to final grades (dependent variable, and a measure of the concept *academic performance*). (p. 72)

3. The four different types of validity are as follows:
   - External validity: Are the scores produced by the variable consistent with what we observe in real life?
   - Internal validity: Are there errors in the in the research process as a result of inconsistent measures?
   - Construct validity: Does the variable adequately correspond to the theory?
   - Content validity: Does the variable match its definition, where the definition is made explicit in the values that make up the variable (pp. 80-81)

4. A conceptual hypothesis describes the relationship between two concepts: the independent and dependent concepts. The relationship can be positive or negative. An operational hypothesis describes the relationship between two variables: the independent and dependent variables. The relationship can be positive or negative. (p. 72)

5. Variables must correspond to their concepts, otherwise the problem of validity arises, especially internal validity. (pp. 70–71, 79–81)

6. An important point to remember regarding hypotheses is that since hypotheses are not used in qualitative research, we don't have a predefined expectation of the outcome. When we are undertaking a qualitative study, we do not want to prejudice the results, so we use research objectives. (p. 77)

7. A hypothesis identifies a relationship between variables and predicts how those variables are related to one another both in influence and direction. A research objective lists information that we want to know or achieve by the end of the study. It does not make any predictions about the outcome and does not identify the direction of the relationship between the variables or concepts. (pp. 72-73, 77-78)

8. Conceptualization usually leads to data collection and the operationalization of the concept is done **after** the data has been collected so that participants' words can be used to determine the definition. (p. 77)

9. The independent variable is the concept that affects the dependent variable or causes a change in the problem. The dependent variable is the problem part of the research question—the concept we want to know how it is affected. (pp. 81, 83)

10. A control variable is a way to "control" some aspects of their demographic characteristics and social and economic situations to examine cause and effect. Most often researchers want to control many things like sex, age, socioeconomic status, place of birth, etc. in order to examine the effects of one or two independent variables on the dependent variable. (p. 82)