

Chapter 4

Variables in the EZDATA File: The Sex Roles, Work Motives & Leadership Project

4.1 Before we create the data file...

By now you should have a basic understanding of SPSS, and know how to create a data file and how to generate simple frequency tables. We are now ready to describe a set of data that will provide the basis for statistical analyses using SPSS for the remainder of this book. We will devote this entire chapter to describing this data file obtained from a hypothetical study of sex roles and leadership effectiveness.

In creating a data file, a researcher must 1) decide which variables to include, 2) have measurements of these variables (i.e., scores) from participants, 3) organize these scores for input to the file, and 4) enter the scores into a data file to be saved for later use. Were we to carry out an actual research project, these steps could be both involved and time consuming (especially steps 1 and 2, which require reviewing the literature, designing the research project, and carrying it out).

We plan to save time by describing a hypothetical research project for which we have already generated data. We created the results to reflect those that might be expected if the study had actually been conducted. Thus, in this chapter we will present you with a set of variables and how they were measured to be entered as data from this hypothetical project. In Chapter 5 we will provide the actual scores for this data file and show you how to enter this data file into SPSS.

You will then use this data file to conduct a variety of statistical analyses using SPSS. These procedures will be introduced in the remaining chapters of this book, and you will be asked to apply them to this data file to analyze and interpret of the results of the hypothetical project.

4.2 A Hypothetical Project on Leadership Effectiveness

In the following sections, we first discuss the rationale behind this project and explain the variables to be included. We will hint at how the results of this study might turn out, but we stop short of a full explanation. Thus, even after reading the variable descriptions and creating the data file, you may be uncertain about the way in which the data relate to the purpose of this project.

But that's alright, as many researchers feel the same way after actually having completed a study! That's what statistical analyses are for – helping the researcher

understand the data – and part of the excitement of research comes from the gradual unfolding of the results of the study through data analyses. You will find that SPSS is a very powerful tool which can assist you in this discovery process.

The data from this hypothetical project have been fabricated to reflect some of the actual research in this area. The results have been created to be meaningful, and many may confirm your intuitions. So while you may find the study confusing at first, you should gradually develop a good understanding of the project as you progress through the exercises in this book.

Suppose that you are a social scientist who has been hired by a large corporation (EZ Manufacturing, Inc.) to conduct a study of leadership effectiveness. EZ is a high tech electronics manufacturing company which employs several thousand men and women on the assembly line, and is directed by several hundred people, mostly men, at various levels of management.

The upper-level management of this organization is interested in obtaining information relevant to their planned affirmative action program of promoting qualified women to management positions. While they are enthusiastic about this program, there is some apprehension due to the fact that these positions have traditionally been occupied almost exclusively by men.

4.3 Overview of Major Variables

EZ Manufacturing execs have asked you to draw upon research in this area to conduct your study in their organization, hoping that your research will help them determine what types of individuals (both men and women) are most likely to be effective leaders. You identify two areas of research that have been related to leadership effectiveness:

- **Gender and Sex Role Stereotypes**
- **Leadership Style and Work Motives**

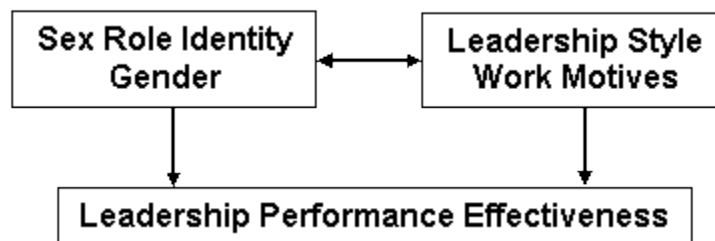
In a general sense we can think of these as ***predictor variables***. That is, we may want to see if these variables predict some criterion, or ***outcome variable***. The outcome variable we want to predict is **Leader Performance Effectiveness**., so we are interested in discovering how these variables might be related to effective leader behavior.

The first area, **Gender and Sex Roles**, *concerns the extent to which men and women internalize societal stereotypes about masculinity and femininity in their self-concepts*. This research is relevant to your planned project in leadership positions have traditionally been traditionally occupied by men and have been associated with masculine personality characteristics.

The second topic, **Leadership Style** concerns the extent to which a person exhibits task skills and/or social skills in leadership situations. The third area, **Work Motives**, concerns the extent to which a person strives to fill needs for affiliation, achievement and dominance in the work setting. Both leadership style and motivation are directly relevant to how well a leader performs.

Thus, you determine that it might be useful to investigate all of these variables and their interrelationships as predictors of leadership performance at EZ Manufacturing. Figure 4.1 graphically depicts the interrelationships among these variables.

Figure 4.1



The two-way arrow between the sets of predictor variables indicates that we will be examining interrelationships among them. The one-way arrows indicate that we will be investigating how leader performance varies as a function of the two sets of predictor variables. In the next section we discuss the operational definitions of these variables, and explain how they were measured.

4.4 The First Set of Predictor Variables: Sex Role Identity and Gender

As is often the case in research projects, we will obtain more than a single measurement related to sex role identity (how masculine or feminine a person perceives him/herself). In fact, we shall rely on 10 items on a questionnaire to assess this concept.

Further, one's sex role identity is often related to one's gender - you might suppose, for example, that men are more likely to be masculine types, and women feminine types. As you will soon see, however, one's gender and sex role identity, though related, are not one and the same. Thus, we will need to measure gender as well as sex role identity.

4.4a Sex Role Stereotypes & Self Identity

Sandra Bem (1972) and others (e.g., Eagly, 1990) have conducted numerous investigations indicating that male and female traits, roles and behaviors in our culture are typically perceived in rather different and stereotypic ways. For example, men are generally thought to be assertive, independent, aggressive, decisive and unemotional,

while women are seen as sympathetic, compassionate, understanding, nurturing, and emotional.

Of course, these are stereotypes of men and women, and it is possible for a woman to be assertive and a man to be compassionate. However, studies have shown that most men and women perceive themselves in stereotypic ways. That is, a **Sex-typed** man would have a self-concept consisting of primarily masculine traits, and a sex-typed woman would perceive primarily feminine traits in herself.

Despite the fact that most people think of themselves (and others) in stereotyped ways, Bem identified another category of men and women that she termed **Androgynous** in their sex role identity. Androgynous men and women are individuals who perceive themselves to have **both** masculine and feminine characteristics. Thus, for example, an androgynous man would see himself as *both* assertive and sympathetic, and an androgynous woman would see herself as *both* independent and compassionate.

4.4b Measuring Sex Role Identity & Gender

A variety of methods have been used to assess the degree to which an individual is sex-typed vs. androgynous in her/his self- concept. Bem (1972) devised the Bem Sex Role Inventory (BSRI), consisting of twenty masculine and twenty feminine personality traits. Respondents indicate the extent to which these traits describe themselves. Rather than use the entire BSRI instrument, we will include measures of employees' self-ratings for only five of the masculine and feminine traits from the BSRI (see Table 4.1).

Masculine Traits	Assertive; Decisive; Independent; Self-reliant; Aggressive
Feminine Traits	Compassionate; Nurturing; Sympathetic; Understanding; Emotional

Since it is best to use short, simple variable names in SPSS, we will simply call these trait self-ratings **masc1** through **masc5** and **fem1** through **fem5**. Thus, the first ten variables in our data file will be employees' self-ratings on these five masculine and five feminine traits. These trait scores can range between 1 and 7, where

- **1 = Not at all Descriptive of Me** (meaning low femininity or low masculinity)
- **7 = Completely Descriptive of Me** (meaning high femininity or high masculinity)

As we will see later, **Sex Role Identity** will be assessed by a composite of scores on these ten traits. Specifically, a person's sex role identity will be determined by the extent to which employees score low or high on the masculinity and femininity scales.

It may have occurred to you that the employees' **gender** is an important variable to consider in recording the employee feminine/masculine trait scores. For example, we cannot assume that a high femininity score necessarily means that the individual is a woman.

Indeed, as we have seen, it is possible for both men and women to score high on the femininity. By the same token, both men and women can score high on masculinity (recall that androgynous individuals score high on both masculinity and femininity).

Thus, in addition to recording a given employee's femininity/masculinity scores, it is important to record that person's gender. This is accomplished easily enough by asking each employee to circle a 1 at the top of the assessment questionnaire if he is a man, and a 2 if she is a woman. Thus, assume that the 11th variable you measure is **Gender**, where:

- **1 = Male employees**
- **2 = Female employees**

You might begin thinking ahead to how the variables of sex role identity and gender are related to leadership style, work motives and performance effectiveness. Of course, the remainder of this text will explore some of these relationships.

4.5 The Second Set of Predictor Variables: Leadership Style & Work Motives

Below we discuss the research relating to the second predictor, **Leadership Style**, and describe the measures used to assess leadership style. Then we will turn our attention to **Work Motives**.

4.5a Defining & Measuring Leadership Style

Research on leadership effectiveness has indicated that people differ in their preferred **Leadership Style**. The two main categories of leadership style are **Relations** orientation and **Task** orientation (Fiedler, Chemers, & Mahar, 1976). **Relations-oriented** leaders gain satisfaction from interpersonal relationships, while **task-oriented** leaders gain satisfaction from task accomplishment.

Relations-oriented leaders attempt to maintain high productivity by promoting good interpersonal relationships among subordinates, whereas task-oriented leaders attempt to maintain productivity by arranging working conditions such that the human element interferes to a minimal degree. Thus, relations-oriented leaders have strong **social skills**, while task-oriented leaders have strong **task skills**. Examples of the types of behaviors representing these skills are shown in Table 4.2.

Table 4.2	
Social Skills	Effective listening; resolving conflicts; focus on worker needs
Task Skills	Effective decision making; meeting deadlines; focus on quality

Research shows that each of these leadership styles is likely to be effective in some situations, but ineffective in others. However, just as we saw with masculinity/femininity, even though many managers are either primarily relations or task oriented in their leadership styles, Blake & Mouton (1980) suggested that it is possible for a person to exhibit high levels of *both* social skills and task skills in her/his leadership style.

Blake and Mouton (1980) developed a questionnaire that yields separate scores for a person's social skills and task skills. To simplify, we will assume that EZ employees completed this instrument, and each employee received a score from 1 to 9 indicating his/her degree of social and task skills. Thus, the next two variables in our data file will be **Social Skills** and **Task Skills** (which we will name **soc** and **task** in the file).

The range of scores on the **soc** variable is as follows:

- **1 = Low Social Skills**
- **9 = High Social Skills.**

The same scoring system will be used to measure **task**:

- **1 = Low Task Skills**
- **9 = High Task Skills**

If you have been thinking about the possible connections among the variables described above, good for you - you are showing the curiosity that makes for a good researcher! For example, you may have considered the possibility that masculine sex-typed employees might score high on task skills and low on social skills, while feminine sex-typed individuals might score low on task skills and high on social skills.

Further, you may have anticipated that the male employees at EZ Manufacturing are likely to perceive themselves as task-oriented, while female employees are likely to see themselves as relations-oriented. These intuitive predictions follow from cultural stereotypes regarding the personality and behavior of men and women.

However, you might also think about how androgynous men and women score on the task and relations dimensions of leadership style. Only the data from your study can suggest the accuracy of your predictions, and we will test such hypotheses in subsequent chapters of this book.

4.5b Defining & Measuring Work Motives

Research in organizations indicates that productivity (and leadership potential) can also be understood in terms of the relative importance of various needs people strive to satisfy on the job. Examples of work motives include **achievement** needs (the desire to accomplish goals and be recognized for accomplishments), **affiliation** needs (the desire for rewarding interactions with co-workers) **dominance** needs (the desire to exert power and influence on others).

Steers and Braunstein (1976) developed a measure of these work motives. Respondents indicate how frequently each of several behaviors relevant to satisfying the above needs applies to their behavior on the job. See Table 4.3 for examples of work behaviors reflecting these needs.

Achievement	I try very hard to improve my past performance at work.
Affiliation	I find myself talking to others about nonbusiness-related matters.
Dominance	I strive to be in command when I am working in a group.

Participants rate themselves on each behavior using a scale from 1 (never true) to 7 (always true). Assume that you have obtained self-ratings from EZ employees on five behaviors relevant to each of the above three areas of work motivation. We will simply name these variables **ach1** through **ach5** (achievement needs), **aff1** through **aff5** (affiliation needs) and **dom1** through **dom5** (dominance needs).

Scores on each of these 15 work behaviors are as follows:

- **1 = Never True of Me** (meaning a low level of that need)
- **7 = Always True of Me** (meaning a high level of that need)

You might take a moment to think about the possible relationships between these work motivation dimensions and the previous variables. For example, it might be that task-oriented leaders tend to score high on achievement needs, while relations-oriented leaders score high on affiliation needs.

Cultural stereotypes exist regarding differences between men and women in the above needs, so you might think about what the results will show regarding gender and sex-role identity differences in needs. Again, these issues will be addressed in later chapters via the various statistical procedures you will learn to conduct using SPSS.

4.6 The Major Outcome Variable: Performance Effectiveness

In most instances, we can think of the previous variables discussed as the predictor or independent variables in our study. And, in general, we are interested in how these predictor variables impact or relate to a particular outcome variable, leadership effectiveness. However, as you will see, in some instances it may be beneficial to investigate relationships among various predictor variables themselves.

But for now, our task is to consider the major outcome or dependent variable in our project. We are interested in observing differences in this variable as a function of the many predictor variables mentioned above, so that we can implement the policy of promoting individuals within the company who are likely to become effective leaders.

We would need to begin by obtaining measures of **Performance Effectiveness** for each employee in leadership situations. This could be a rather complicated process, but to simplify things, let's assume that you have asked each employee's supervisor to examine this person's performance within a variety of leadership situations during a six month period. The supervisors are asked to give an overall rating (from 1 to 9) of the employee's performance during these six months, yielding your outcome variable, which we will name **perform** in our data file.

Scores on the leadership **perform** variable range from:

- **1 = Not at All Effective**
- **9 = Extremely Effective**

Many of the SPSS analyses which we will conduct throughout this text will use this variable as the outcome variable to be related to differences along the predictor variables described above. However, we will sometimes treat the other variables as dependent variables themselves when examining their interrelationships.

4.7 Repeated Measures Variables: Social Skills, Task Skills & Performance

Assume that in addition to examining interrelationships among the variables measured to identify employees with leadership potential, EZ execs also have asked you to develop a management training program to improve the leadership skills and performance of the employees in your study. Here also we will simplify and follow Blake and Mouton's (1980) suggestion that it is possible for all people to develop both social and task skills related to effective leadership. So the focus on your week-long training program is on improving employees' skills in both of these areas of leader behavior.

Since it is always important to assess the effectiveness of programs such as this implemented in an organization, you decide to rely on variables you have already measured to evaluate this management training program. Specifically, since both task

and social skills are important in leadership, if your program is successful, we should see an increase in both sets of skills after participation in the program. Further, we would also expect to see increases in actual leader performance after the program.

Since you already obtained scores from employees on **soc**, **task**, and **perform** at the beginning of your study, you can assess your program's effectiveness by re-measuring employees on these variables after completing the workshop. The same scales and scoring procedures for these three variables will be used at the second measurement, but we will need to give these new scores different variable names. We will name them **soc2**, **task2**, and **perform2** in the data file.

Another typical procedure in program evaluation is to obtain immediate and delayed assessments to see if any improvements are long-lasting. Thus, in addition to re-measuring **soc**, **task**, and **perform** immediately after participation, assume that you re-administer these scales three months later. Here also, we will need to give these new scores different variable names, which will be **soc3**, **task3**, and **perform3**.

Researchers refer to these as **repeated measures variables**, because we are obtaining more than one measurement of the same variable at three different times (e.g., **perform1**, **perform2** and **perform3**). These types of variables must be treated differently than single-measurement variables when conducting statistical analyses. We will explain this in greater detail in a later chapter.

4.8 Summary of Variables in the Data File

Table 4.5 summarizes the measured variables and score ranges that will comprise your data file.

Variable	Scores
GENDER	1 = Men; 2 = Women
MASC1-MASC5	1 = Low Masculinity; 7 = High Masculinity
FEM1-FEM5	1 = Low Femininity; 7 = High Femininity
SOC1-SOC3	1 = Low Social Skills; 9 = High Social Skills
TASK1-TASK3	1 = Low Task Skills; 9 = High Task Skills
ACH1-ACH5	1 = Low Achievement Needs; 7 = High Achievement Needs
AFF1-AFF5	1 = Low Affiliation Needs; 7 = High Affiliation Needs
DOM1-DOM5	1 = Low Dominance Needs; 7 = High Dominance

	Needs
PERFORM1- PERFORM3	1 = Not at All Effective; 9 = Extremely Effective

The data file itself will consist of the scores each employee received on each variable. **Note:** familiarize yourself with these variables so you will understand the file to be described in Chapter 5. More importantly, beginning with Chapter 6 you will be asked to write interpretations of the data analyses you perform. If you do not understand these variables, you will not be able to write interpretations of your analyses!

For example, you will be asked to describe the distribution of scores on the **soc** variable at EZ. If you do not know that a score of 1 on the **soc** variable means low social skills in leadership style and a 9 indicates high social skills, you will be unable to write a meaningful interpretation. So we recommend that you do yourself a favor and spend some time now studying the variables in Table 4.5.