FIGURE 8.7
A follow-up letter

A B C University
Address

Date

Dear [person's name],

We are all very busy these days, and sometimes we have trouble staying on top of our many commitments. Despite our best intentions, we may sometimes overlook something we have said we would do.

Three weeks ago I sent you a questionnaire asking for your input regarding your program at A B C University. To date I have not yet received your completed questionnaire. Perhaps you have simply mislaid it, or perhaps it has been lost in the mail—any one of several reasons might account for its delay in reaching me.

In any event, I am enclosing another copy of the questionnaire, along with another self-addressed, stamped envelope. I am hoping you can find fifteen minutes somewhere in your busy schedule to complete and return the questionnaire. I would really appreciate your personal insights and suggestions regarding your experiences in our program.

Thank you once again for your assistance and generosity in helping us enhance our program. And remember that if you have any questions, you can easily reach me at [telephone number] or [e-mail address].

Respectfully yours,

Your Signature

Your Name

The faculty member's follow-up letter brought results. She was being firm and persuasive, but with considerable skill and tact. Courtesy, understanding, and respect for others pay large dividends in a situation in which a researcher needs others' cooperation. This is especially true in questionnaire studies.

PRACTICAL APPLICATION Using the Internet to Collect Data for a Descriptive Study

In recent years, some researchers have collected descriptive-study data directly on the Internet. For instance, they may put a questionnaire on a website and ask people who visit the site to respond. One site providing links to a wide variety of online research projects is "Psychological Research on the Net."[5] As we write this tenth edition of the book, the site is hosting descriptive research projects on such diverse topics as television commercial effectiveness, gender roles in marriage, cigarette smoking, eating disorders, attitudes and behaviors in the workplace, the psychological impact of automobile commuting, and coping strategies for dealing with stressful life circumstances. The website is maintained by John Krantz, Professor of Psychology at Hanover College, who checks to be sure that each project has been approved by the appropriate internal review board and incorporates informed consent procedures. There is no fee for using the site (J. Krantz, personal communication, May 2003).

Commercial websites for data collection are available as well. Two widely used websites for online surveys are SurveyMonkey (www.surveymonkey.com) and Zoomerang (zoomerang.com).

[5] You can reach the site by going to the website of the Association for Psychological Science (www.psychologicalscience.org); click on "Psychology links," scroll down to "Other Sites of Interest," and then click on "Online Psychology Experiments." Alternatively, you can go directly to the site, which, as this book goes to press, is located at psych.hanover.edu/research/exponnet.html.

Both websites provide templates that make questionnaire design easy and enable a researcher to present a variety of item types (e.g., multiple-choice items, rating scales). They also include features for communicating with a preselected sample of participants (e.g., through e-mail invitations), as well as features through which the researcher can tabulate, statistically analyze, and download the results. For most research projects these websites charge a modest monthly fee.

Conducting a survey online has several advantages (Kraut et al., 2004). When the desired sample size is quite large, an online questionnaire is far more cost-effective than a mailed questionnaire. Often a questionnaire can be adapted based on a participant's previous responses; for instance, if a person responds *no* to the question "Do you smoke cigarettes?" the questionnaire software will subsequently skip questions related to smoking habits. Furthermore, some evidence indicates that online surveys yield data comparable to those obtained through face-to-face contact (Gosling, Vazire, Srivastava, & John, 2004).

If you choose to collect data on the Internet, keep in mind that your ethical standards must be just as rigorous as they would be if you were collecting data through face-to-face contacts or the postal service. Participants must be informed about and agree to the general nature of a study, perhaps by means of a website page that serves as an informed consent letter and a virtual "click to accept" button with which participants can indicate consent (Kraut et al., 2004). Also, participants' responses must remain as confidential as they would in any study. The *protection from harm* ethical standard can be especially troublesome in an online study, as it may be virtually impossible to determine that a participant has found a task or question extremely stressful or upsetting and needs some sort of follow-up intervention. Your research advisor and university's internal review board can help you work through ethical issues and develop appropriate precautions for any study that might potentially cause even minor harm or distress to participants.

Sampling, too, must be a source of concern in an online study. SurveyMonkey and Zoomerang enable a researcher to zero in on a defined set of participants—for example, by uploading a list of e-mail addresses to which the participation request will be sent. Other online research projects, such as those on the "Psychological Research on the Net" website mentioned earlier, are open to anyone who wants to participate. But in virtually any online study, the people who participate will not be representative either of a particular group of people or of the overall population of human beings (Gosling et al., 2004; McGraw, Tew, & Williams, 2000). After all, participants will be limited to people who (a) are comfortable with computers, (b) spend a fair amount of time on the Internet, (c) enjoy partaking in research studies, and (d) have been sufficiently enticed by your research topic to do what you ask of them. In cases where a questionnaire can be completed by anyone who has access to the Internet, many responders are apt to be college students who are earning course credit for their participation. In short, *your sample will be biased to some degree.*

Sampling is a concern for any researcher, but it is especially so for the researcher who wants to draw inferences about a large population. In the following section, we look at strategies for selecting an appropriate sample and consider how bias in sampling procedures can distort the data obtained.

Choosing a Sample in a Descriptive Study

The researcher who conducts a descriptive study wants to determine *the nature of how things are.* Especially when conducting survey research, the researcher may want to describe one or more characteristics of a fairly large population—perhaps the television viewing habits of 10-year-olds, the teaching philosophies of elementary school teachers, or the attitudes that visitors to Rocky Mountain National Park have about a shuttle bus system. Whether the population is 10-year-olds, elementary school teachers, or park visitors, we are talking about *very large* groups of people; for instance, more than 3 million people visit Rocky Mountain National Park every year.

In such situations, the researcher will, of course, usually not study the entire population of interest. Instead, he or she will select a subset, or **sample**, of the population. But the researcher can use the results obtained from the sample to make generalizations about the entire population

only if the sample is truly representative of the population. Here we are talking about a research study's *external validity*, a concept introduced in Chapter 4.

When phrasing their research problems, many novice researchers forget that they will be studying a sample rather than a population. They announce, for example, that their goal is

> to survey the legal philosophies of the attorneys of the United States and to analyze the relationship of these several philosophical positions with respect to the recent decisions of the Supreme Court of the United States.

Someone who words a problem in this way has simply not thought through the meaning of the words themselves: "The attorneys of the United States"! The American Bar Association consists of approximately 400,000 attorneys distributed over more than 3.5 million square miles in the 50 states. As we look at the problem more closely, we begin to discern other, more serious difficulties. What are "legal philosophies"? How does one isolate these philosophies to study them? How can one show a "relationship of philosophical positions" to "recent decisions of the Supreme Court"? How will this relationship be expressed? Will it be expressed statistically? If so, how would one quantify "philosophical positions" and "decisions"? If not, then how will the relationship be shown?

The difficulty in the stated research problem basically arises out of the way the problem is worded. If, on the one hand, the researcher has said what he or she means, he or she proposes to survey "the attorneys"—all of them! If, on the other hand, the researcher intends to survey only a subset of the nation's attorneys, the statement of the problem should have said so with such qualifying words as *selected, representative, typical, certain, a random sample of*, and so on. Careful researchers say precisely what they mean. Notice the difference in the meaning between "The purpose of this research is to survey the representative legal philosophies of a random sample of attorneys . . ." and the original wording, "The purpose of this research is to survey the legal philosophies of the attorneys of the United States. . . ."

The specific sampling procedure used depends on the purpose of the sampling and a careful consideration of the parameters of the population. But in general, *the sample should be so carefully chosen that, through it, the researcher is able to see characteristics of the total population in the same proportions and relationships that they would be seen if the researcher were, in fact, to examine the total population*.

When you look through the wrong end of a set of binoculars, you see the world in miniature. If the lenses aren't precision-made and accurately ground, you get a distorted view of what you are looking at. In the same way, a sample should, ideally, be a population microcosm. If the sampling procedure isn't carefully planned, any conclusions the researcher draws from the data are likely to be distorted. Such distortion is known as *bias*. We discuss various sources of bias a bit later in the chapter. For the moment, however, we concern ourselves with various sampling designs.

Sampling Designs

Different sampling designs may be more or less appropriate in different situations. Here we consider eight approaches to sampling, which fall into two major categories: probability sampling and nonprobability sampling.

Probability Sampling

In **probability sampling**, every part of the population has the potential to be represented in the sample. The sample is chosen from the overall population by **random selection**—that is, it is chosen in such a way that each member of the population has an equal chance of being selected. When such a *random sample* is selected, the researcher can assume that the characteristics of the sample approximate the characteristics of the total population.

An analogy might help. Suppose we have a beaker containing 100 ml of water. Another beaker holds 10 ml of a concentrated acid. We combine the water and acid in proportions

of 10:1. After thoroughly mixing the water and acid, we should be able to extract 1 ml from any part of the solution and find that the sample contains 10 parts water for every 1 part acid. In the same way, if we have a population with considerable variability in race, wealth, education level, social standing, and other factors, and if we have a perfectly selected random sample—a situation usually more theoretical than logistically feasible—we will find in the sample those same characteristics that exist in the larger population, and we will find them in roughly the same proportions.

A sample is no more representative of the total population than the degree to which it has been randomly selected. There are, of course, many methods of random selection. For example, we could assign each person in the population a different number and then use an arbitrary method of picking certain numbers, perhaps by using a roulette wheel (if the entire population consists of 36 or fewer members) or drawing numbers out of a hat. Many computer spreadsheet programs (e.g., Excel) also provide a means of generating random numbers.

A widely used paper-and-pencil method of selecting a random sample is to use a **table of random numbers**, such as that presented in Table 8.2. The researcher typically does not start at the beginning of the table; instead, he or she identifies a starting point randomly. One fundamental principle must be kept in mind: *The purpose of randomness is to let blind chance determine the outcomes of the selection process to as great a degree as possible.* Hence, in determining a starting point for the selection of random numbers, *pure chance* must always initiate the process.

Consider the table of random numbers presented in Table 8.2. It includes 100 blocks of numbers, arranged in 10 rows and 10 columns. The rows and columns are numbered only to assist us in choosing a starting point for using the table. Any block within the table will be at the intersection of two of these "guide" numbers. To enter the table, we need an entry number of two digits; one digit will be used to designate the row, and the other the column, for the block at which we will begin.

But how do we find an entry number? Pull a dollar bill from your wallet. The one we have just pulled as we write this book has the serial number C 45 391827A. We choose the first two digits of the serial number, which makes the entry number 45. But which is the row and which is the column? We flip a coin. If it comes down heads, the first digit will designate the row; otherwise, the digit will designate the column. The coin comes down tails. This means that we will begin in the fourth column and the fifth row. The block where the two intersect is the block where we begin within the table (see Figure 8.8).

We don't have to use a dollar bill to determine the entry point, of course. We could use any source of numbers, such as a telephone directory, a license plate, a friend's social security number, or the stock quotations page in a newspaper. Only one rule governs the final determination of an entry point: *Pure chance dictates the choice.*[6]

Having determined the starting block, we must now consider the size of the proposed sample. If it is to be fewer than 100 individuals, we will need only two-digit numbers. If it is to be more than 99 but fewer than 1,000, we will need three digits to accommodate the sample size.

At this point, let's go back to the total population to consider the group from which the sample is to be drawn. It will be necessary to designate individuals in some manner. A reasonable approach is to arrange the members of the population in a logical order—for instance, alphabetically by surname—and assign each member a serial number for identification purposes.

We are now ready for the random selection. We start with the upper left-hand digits in the designated starting block and work downward through the two-digit column in the rest of the table. If we need additional numbers, we proceed to the top of the next column, work our way down, and so on, until we have selected the sample we need. For purposes of illustration, we will assume that the total population consists of 90 individuals from which we will select a sample of 40. We will need random numbers of two digits each. Beginning in the upper left-hand corner of the designated block and remembering that only 90 individuals are in the total population,

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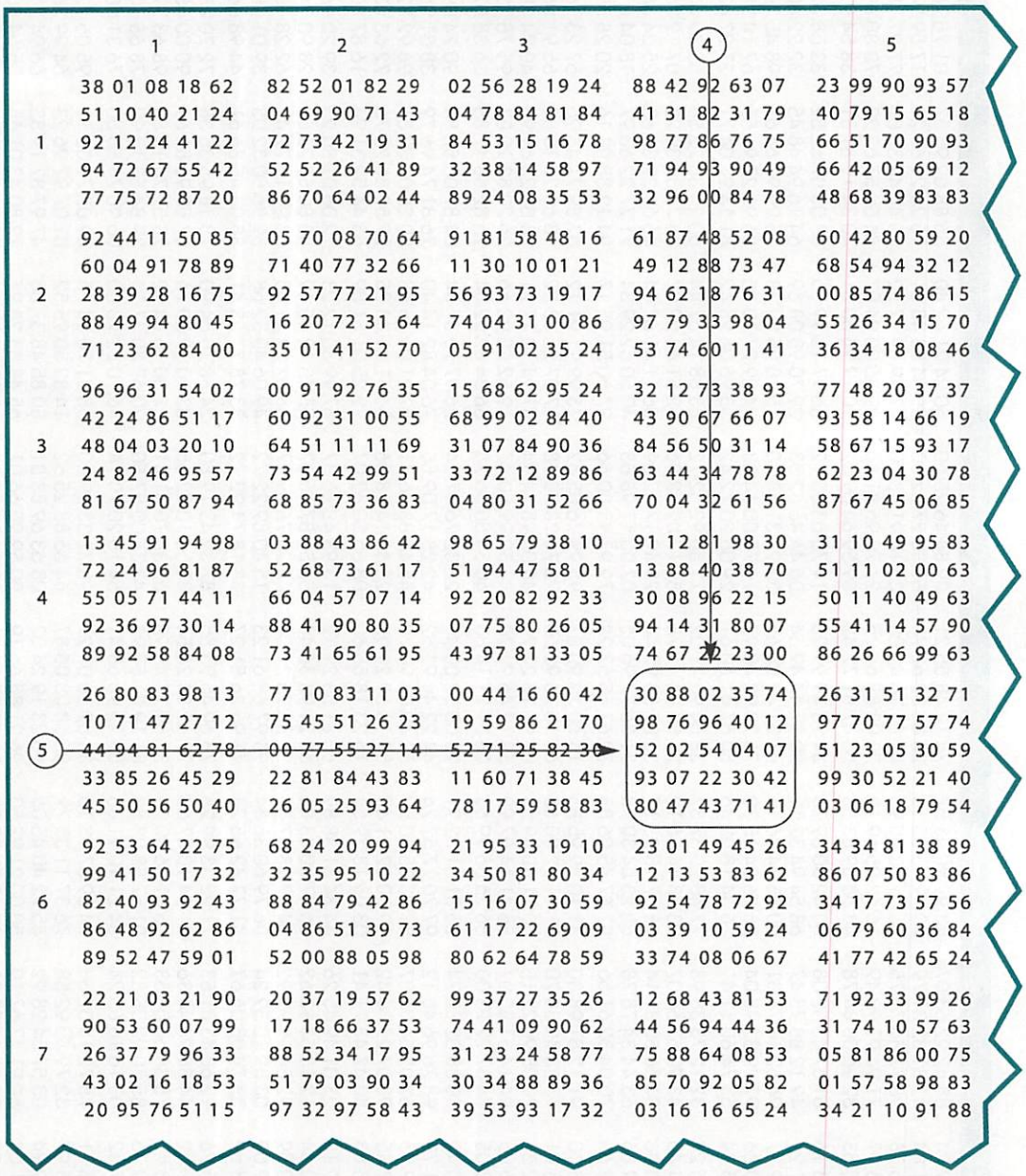
[6]One of our readers has correctly pointed out that not all of the sources just suggested reflect strictly random numbers; rather, they may show a predictable pattern, with some numbers appearing more frequently than others. Nevertheless, using such a source ensures that the entry point into the table is chosen *arbitrarily*, eliminating any chance that the researcher might, either intentionally or unintentionally, tilt the sample selection in one direction or another.

TABLE 8.2 Random numbers table

	1	2	3	4	5	6	7	8	9	0
	38 01 08 18 62	82 52 01 82 29	02 56 28 19 24	88 42 92 63 07	23 99 90 93 57	78 10 48 55 21	29 84 46 25 60	50 24 21 62 40	56 88 09 95 57	01 78 78 86 35
	51 10 40 21 24	04 69 90 71 43	04 78 84 81 84	41 31 82 31 79	40 79 15 65 18	28 86 32 62 70	55 33 27 42 50	35 64 53 48 31	15 24 21 63 23	17 59 94 69 95
1	92 12 24 41 22	72 73 42 19 31	84 53 15 16 78	98 77 86 76 75	66 51 70 90 93	87 83 76 49 08	32 14 91 93 50	47 49 89 17 52	05 46 40 33 05	77 27 15 16 31
	94 72 67 55 42	52 52 26 41 89	32 38 14 58 97	71 94 93 90 49	66 42 05 69 12	28 08 82 64 25	27 79 96 81 66	29 86 00 94 07	84 54 57 62 22	70 80 69 62 87
	77 75 72 87 20	86 70 64 02 44	89 24 08 35 53	32 96 00 84 78	48 68 39 83 83	56 47 81 77 42	39 59 64 69 02	10 19 94 50 51	40 34 19 81 31	38 54 97 22 17
	92 44 11 50 85	05 70 08 70 64	91 81 58 48 16	61 87 43 52 08	60 42 80 59 20	34 28 49 91 25	19 73 63 65 72	86 97 13 99 06	08 03 07 62 52	33 68 42 59 38
	60 04 91 78 89	71 40 77 32 66	11 30 10 01 21	49 12 88 73 47	68 54 94 32 12	20 77 44 49 64	06 44 46 32 33	29 70 98 08 59	64 16 94 48 45	32 22 40 94 41
2	28 39 28 16 75	92 57 77 21 95	56 93 73 19 17	94 62 18 76 31	00 85 74 86 15	67 31 42 98 65	39 93 31 64 30	75 28 25 82 38	25 99 97 68 63	98 45 70 95 46
	88 49 94 80 45	16 20 72 31 64	74 04 31 00 86	97 79 33 98 04	55 26 34 15 70	76 70 92 40 97	79 70 00 64 33	24 29 27 30 25	86 96 27 96 51	67 14 98 05 49
	71 23 62 84 00	35 01 41 52 70	05 91 02 35 24	53 74 60 11 41	36 34 18 08 46	80 67 41 60 61	29 06 20 72 42	53 96 06 98 42	81 13 97 04 71	27 27 63 85 31
	96 96 31 54 02	00 91 92 76 35	15 68 62 95 24	32 12 73 38 93	77 48 20 37 37	38 54 96 41 02	71 55 92 52 72	83 88 14 67 44	60 20 86 72 56	55 39 83 52 20
	42 24 86 51 17	60 92 31 00 55	68 99 02 84 40	43 90 67 66 07	93 58 14 66 19	24 57 83 41 75	81 17 09 22 06	62 51 63 29 07	48 78 30 39 28	07 12 36 20 41
3	48 04 03 20 10	64 51 11 11 69	31 07 84 90 36	84 56 50 31 14	58 67 15 93 17	36 07 58 97 44	23 49 17 02 59	56 11 41 67 04	46 66 29 36 60	25 24 38 04 18
	24 82 46 95 57	73 54 42 99 51	33 72 12 89 86	63 44 34 78 78	62 23 04 30 78	31 36 77 96 03	07 00 17 98 53	40 50 52 29 34	71 77 22 68 97	18 04 81 99 29
	81 67 50 87 94	68 85 73 36 83	04 80 31 52 66	70 04 32 61 56	87 67 45 06 85	39 67 65 57 22	79 93 95 80 66	97 60 51 95 17	94 12 85 08 16	20 28 59 36 47
	13 45 91 94 98	03 88 43 86 42	98 65 79 38 10	91 12 81 98 30	31 10 49 95 83	14 60 19 90 87	95 99 76 05 42	73 99 91 91 12	62 89 71 43 96	57 23 16 02 17
	72 24 96 81 87	52 68 73 61 17	51 94 47 58 01	13 88 40 38 70	51 11 02 00 63	66 16 46 92 60	98 74 78 50 78	17 07 25 83 52	18 65 27 13 89	55 91 08 06 12
4	55 05 71 44 11	66 04 57 07 14	92 20 82 92 33	30 08 96 22 15	50 11 40 49 53	07 91 17 27 71	46 03 95 14 94	47 94 10 17 21	23 03 23 69 95	40 24 39 29 92
	92 36 97 30 14	88 41 90 80 35	07 75 80 26 05	94 14 31 80 07	55 41 14 57 90	52 12 46 94 70	44 39 99 50 47	19 52 92 92 66	26 20 82 10 07	95 75 73 66 54
	89 92 58 84 08	73 41 65 61 95	43 97 81 33 05	74 67 22 23 00	86 26 66 99 63	08 89 21 14 83	40 34 50 36 28	86 84 82 22 34	25 82 86 47 85	06 38 07 97 44
	26 80 83 98 13	77 10 83 11 03	00 44 16 60 42	30 88 02 35 74	26 31 51 32 71	73 00 22 00 49	22 32 76 37 24	26 97 70 87 34	04 87 06 52 84	90 74 09 74 06
	10 71 47 27 12	75 45 51 26 23	19 59 86 21 70	98 76 96 40 12	97 70 77 57 74	44 22 44 97 62	42 28 17 09 55	76 04 82 14 40	76 81 74 96 79	38 81 96 85 99
5	41 04 81 62 78	06 77 53 27 14	52 71 25 82 93	52 02 54 04 07	51 23 05 30 59	52 40 03 90 79	48 44 83 66 71	57 21 01 45 68	50 25 03 32 31	96 92 82 16 62
	33 85 26 45 29	22 81 84 43 83	11 60 71 38 45	93 07 22 30 42	99 30 52 21 40	89 18 59 29 95	23 43 14 58 06	56 71 31 48 25	27 57 85 25 76	72 63 83 95 00
	45 50 56 50 40	26 05 25 93 64	78 17 59 58 83	80 47 43 71 41	03 06 18 79 54	16 23 18 55 60	08 65 50 82 07	72 25 01 31 09	53 44 59 31 94	16 87 80 32 14
	92 53 64 22 75	68 24 20 99 94	21 95 33 19 10	23 01 49 45 26	34 34 81 38 89	60 81 53 29 72	13 93 48 56 37	67 99 80 12 23	12 06 07 80 23	39 20 96 85 52
	99 41 50 17 32	32 35 95 10 22	34 50 81 80 34	12 13 53 83 62	86 07 50 83 86	82 21 93 36 48	56 58 87 36 67	55 45 12 45 69	88 80 59 76 58	28 90 74 84 74
6	82 40 93 92 43	88 84 79 42 86	15 16 07 30 59	92 54 78 72 92	34 17 73 57 56	31 46 75 31 06	65 20 76 65 17	68 67 24 41 65	83 90 16 72 41	62 28 75 63 34
	86 48 92 62 86	04 86 51 39 73	61 17 22 69 09	03 39 10 59 24	06 79 60 36 84	93 97 68 61 23	15 40 89 22 72	49 06 40 32 58	59 56 50 32 05	39 01 75 86 33
	89 52 47 59 01	52 00 88 05 98	80 62 64 78 59	33 74 08 06 67	41 77 42 65 24	77 95 26 51 27	38 18 74 92 72	33 78 77 53 41	88 04 45 86 61	44 98 66 68 80
	22 21 03 21 90	20 37 19 57 62	99 37 27 35 26	12 68 43 81 53	71 92 33 99 26	78 69 45 98 85	87 39 43 19 80	24 88 10 64 90	78 18 95 35 38	72 70 45 72 58
	90 53 60 07 99	17 18 66 37 53	74 41 09 90 62	44 56 94 44 36	31 74 10 57 63	79 62 84 26 54	88 56 10 22 55	03 90 19 50 76	07 50 95 86 69	90 00 55 69 31
7	26 37 79 96 33	88 52 34 17 95	31 23 24 58 77	75 88 64 08 53	05 81 86 00 75	87 59 13 45 98	63 38 70 31 41	52 50 16 84 22	73 57 74 10 88	98 63 77 24 70
	43 02 16 18 53	51 79 03 90 34	30 34 88 89 36	85 70 92 05 82	01 57 58 98 83	81 19 21 57 98	43 34 00 57 50	20 67 30 37 14	39 84 53 12 90	78 65 10 23 09
	20 95 76 51 15	97 32 97 58 43	39 53 93 17 32	03 16 16 65 24	34 21 10 91 88	58 22 98 68 41	54 15 20 20 14	46 70 52 78 60	06 90 74 56 50	76 31 58 65 83
	37 42 58 13 23	44 82 67 97 98	54 38 79 75 11	75 72 16 32 68	74 59 37 13 10	34 52 36 07 27	98 37 33 09 60	58 31 70 14 75	49 07 71 35 11	95 06 72 41 00
	31 51 93 66 48	35 56 04 55 20	29 19 24 55 97	32 79 45 92 58	76 37 11 35 79	05 68 08 06 87	64 66 88 25 52	14 82 30 95 52	01 07 97 96 23	64 99 36 57 51
8	26 19 62 67 67	70 61 22 01 70	18 84 36 99 94	00 57 54 28 92	45 72 40 45 06	60 23 19 24 02	03 63 69 83 81	80 85 48 37 86	47 97 87 19 83	66 94 71 49 11
	42 55 29 27 78	76 81 16 63 13	04 93 73 21 04	84 91 77 67 10	50 00 21 92 50	96 91 83 66 19	00 59 90 66 01	65 48 83 28 97	72 80 43 01 65	55 64 58 40 56
	90 27 74 26 17	61 75 82 44 09	42 16 28 32 77	98 36 41 39 73	97 45 85 85 08	15 25 93 29 16	19 84 12 57 24	61 33 44 76 24	54 70 39 17 47	08 99 19 55 89
	91 78 11 76 19	19 09 29 73 14	94 09 50 52 42	00 57 41 82 55	34 52 10 83 68	17 58 82 71 68	72 43 90 64 99	10 49 51 53 27	52 04 26 28 62	10 70 98 42 50
	53 42 75 49 95	48 74 48 88 94	52 58 34 96 85	31 34 96 82 31	47 55 84 13 48	86 83 54 45 38	32 46 69 85 86	24 47 32 60 28	29 45 36 58 21	30 84 54 36 35
9	09 48 74 77 55	89 30 05 25 52	93 01 06 07 66	98 09 08 65 43	51 91 90 05 91	79 45 73 93 80	89 71 17 57 63	79 51 34 10 11	12 97 06 05 00	96 77 28 11 35
	23 43 73 69 25	89 55 18 26 26	87 69 88 38 12	40 83 94 06 23	96 55 93 14 80	49 89 86 62 40	81 15 86 62 40	81 15 69 78 10	18 40 92 93 88	13 01 90 70 82
	59 47 86 32 53	50 76 46 09 82	07 81 75 38 35	53 87 71 45 94	64 24 70 27 23	45 39 48 71 66	76 34 85 81 21	04 93 90 43 54	92 77 48 04 07	70 52 35 99 32
	80 73 71 10 81	52 63 88 33 59	35 11 58 95 64	10 50 63 30 30	07 31 89 22 05	92 53 64 22 75	68 24 20 99 94	21 95 33 19 10	23 01 49 45 26	34 34 81 38 89
	67 44 30 85 08	18 69 78 50 15	88 24 02 62 46	36 89 70 02 89	78 50 98 86 01	99 41 50 17 32	32 35 95 10 22	34 50 81 80 34	12 13 53 83 62	86 07 50 83 86
0	35 15 98 11 06	18 64 51 44 49	37 38 41 40 68	14 65 00 37 23	87 63 85 50 66	87 40 93 92 43	88 84 79 42 86	15 16 07 30 59	92 54 78 72 92	34 17 73 57 56
	66 17 63 96 90	44 57 17 04 05	85 84 64 44 05	34 06 31 13 81	92 30 29 21 61	86 48 92 62 86	04 86 51 39 73	61 17 22 69 09	03 39 10 59 24	06 79 60 36 84
	53 52 48 13 33	85 33 38 32 53	77 67 16 86 82	50 81 83 25 84	53 65 33 12 88	89 52 47 59 61	52 00 88 05 98	80 62 64 78 59	33 74 08 06 67	41 77 42 65 24

FIGURE 8.8
Choosing the starting point in a random numbers table



we see that the first number in the leftmost column is 30, so we choose individual number 30 in the population. The next number (98) does not apply because only 90 persons are in the population. Our next choice is 52, we ignore 93, and then we choose 80. Proceeding to the next block down, we choose 23 and 12, ignore 92, choose 3 and 33. We continue down the column and proceed to any additional columns we need, ignoring the numbers 91–99 and 00 and any numbers we have already selected, until we get a sample of 40.

We have probably said enough about the use of a random numbers table. We turn now to specific probability sampling techniques.

Simple random sampling. Simple random sampling is exactly the process just described: Every member of the population has an equal chance of being selected. Such an approach is easy when the population is small and all of its members are known. For example, one of us authors once used it in a study to evaluate the quality of certain teacher training institutes during the summer of 1992 (Cole & Ormrod, 1995). Fewer than 300 people had attended the institutes,

and we knew who and where they all were. But for very large populations—for instance, all 10-year-olds or all lawyers—simple random sampling is neither practical nor, in many cases, possible.

Stratified random sampling. Think of grades 4, 5, and 6 in a public school. This is a *stratified population*. It has three different layers (*strata*) of distinctly different types of individuals. In stratified random sampling, the researcher samples equally from each one of the layers in the overall population.

If we were to sample a population of fourth-, fifth-, and sixth-grade children in a particular school, we would assume that the three strata are roughly equal in size (i.e., there are similar numbers of children at each grade level), and so we would take equal samples from each of the three grades. Our sampling method would look like that in Figure 8.9.

Stratified random sampling has the advantage of guaranteeing equal representation of each of the identified strata. It is, of course, most appropriate when those strata are roughly equal in size in the overall population as well.

Proportional stratified sampling. In the simple stratified random sampling design just described, all strata of the population are essentially equal in size. But now we come to a different situation. Consider a community that has, for example, 1,000 Jewish people, 2,000 Catholics, and 3,000 Protestants. Let's imagine a survey situation. A local newspaper publishes a section dealing with interfaith church news, religious events, and syndicated articles of interest to the religious community in general. The editor wants to obtain certain information and opinions from the paper's readers and so decides to conduct a survey.

In this situation, the editor chooses his sample in accordance with the proportions of each religious group in the paper's readership. For every Jewish person, there should be two Catholics and three Protestants. In this situation, the people are not obviously segregated into the different strata, so the first step is to identify the members of each stratum and then select a random sample from each one. Figure 8.10 schematically represents this type of sampling.

Cluster sampling. Sometimes the population of interest is spread out over a large area. It may not be feasible to make up a list of every person living within the area and, from the list,

FIGURE 8.9
Stratified random sampling design

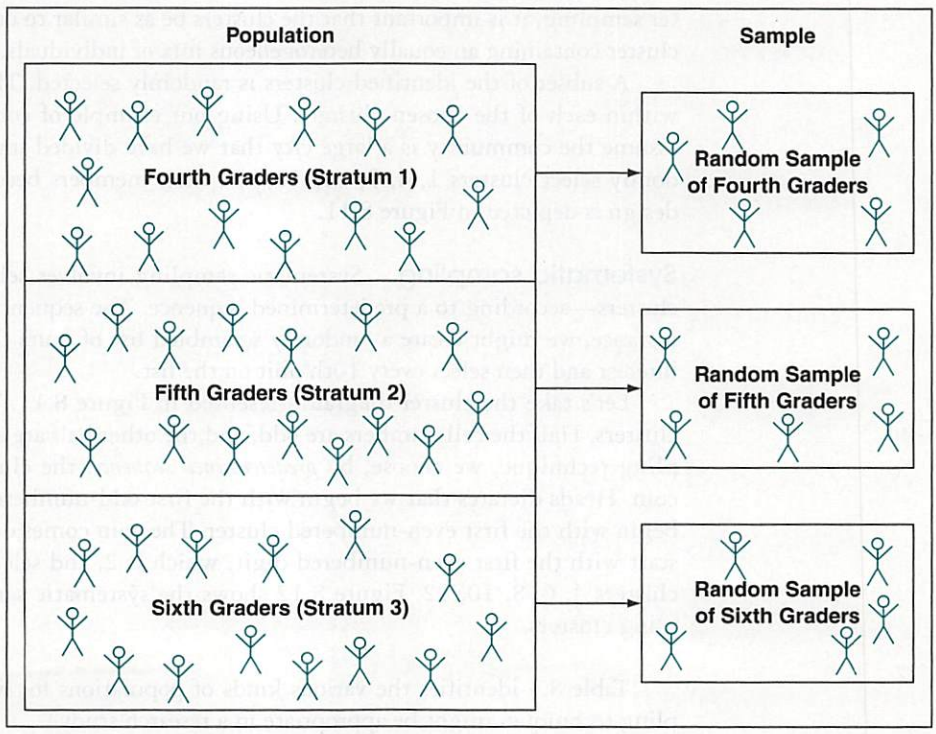
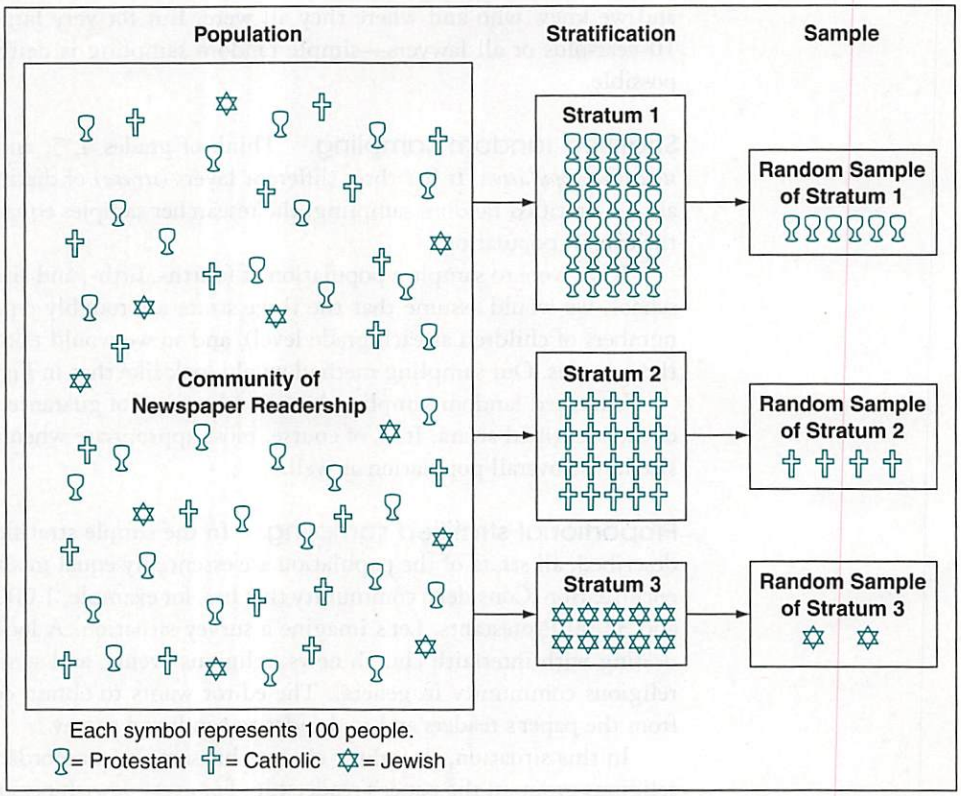


FIGURE 8.10
Proportional stratified sampling design



select a sample for study through normal randomization procedures. Instead, we might obtain a map of the area showing political boundaries or other subdivisions. We can then subdivide an expansive area into smaller *units*. For example, a city can be subdivided into precincts, clusters of city blocks, or school boundary areas; a state can be divided into counties or townships. In cluster sampling, it is important that the clusters be as similar to one another as possible, with each cluster containing an equally heterogeneous mix of individuals.

A subset of the identified clusters is randomly selected. The sample consists of the people within each of the chosen clusters. Using our example of community religious groups, let's assume the community is a large city that we have divided into 12 areas, or clusters. We randomly select clusters 1, 4, 9, and 10, and their members become our sample. This sampling design is depicted in Figure 8.11.

Systematic sampling. Systematic sampling involves selecting individuals—or perhaps clusters—according to a predetermined sequence. The sequence must originate by chance. For instance, we might create a randomly scrambled list of units that lie within the population of interest and then select every 10th unit on the list.

Let's take the cluster diagram presented in Figure 8.11. The population has 12 cells, or clusters. Half the cell numbers are odd, and the other half are even. Using the systematic sampling technique, we choose, by *predetermined sequence*, the clusters for sampling. Let's toss a coin. Heads dictates that we begin with the first odd-numbered cluster; tails dictates that we begin with the first even-numbered cluster. The coin comes down tails, which means that we start with the first even-numbered digit, which is 2, and select the systematically sequential clusters 4, 6, 8, 10, 12. Figure 8.12 shows the systematic sampling design as used for sampling clusters.

Table 8.3 identifies the various kinds of populations for which different probability sampling techniques might be appropriate in a research study.

FIGURE 8.11
Cluster sampling design

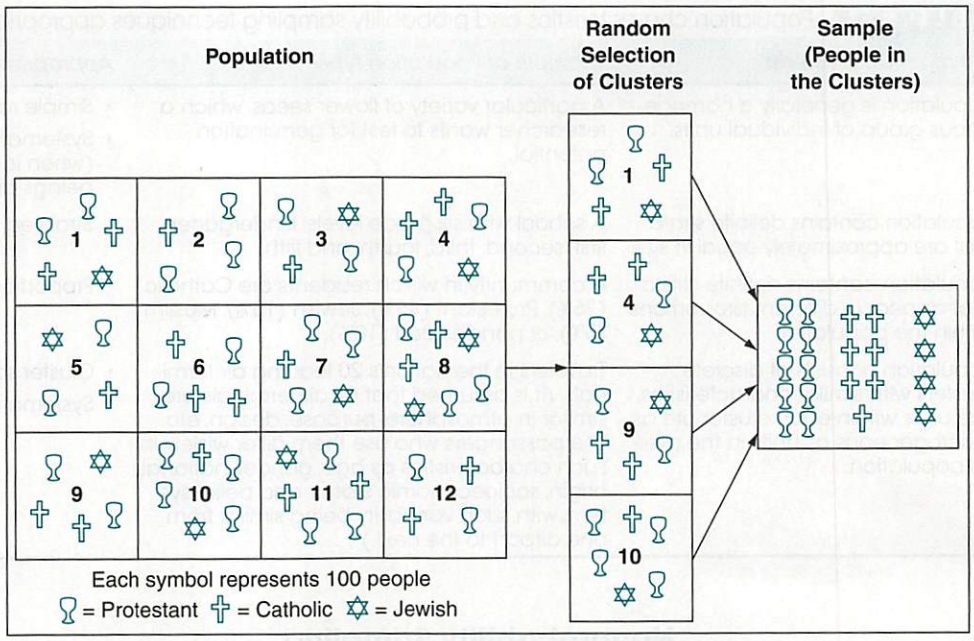
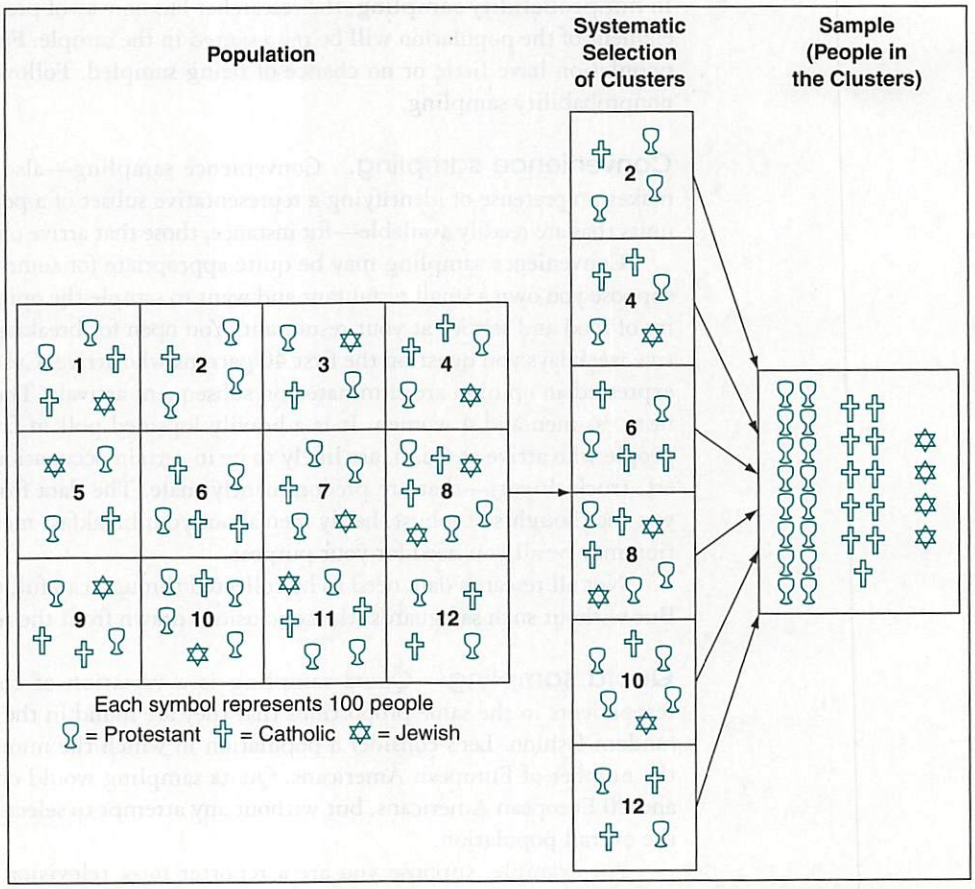


FIGURE 8.12
Systematic sampling design



A sampling design should not be chosen blindly or willy-nilly. Each of the designs just described is uniquely suited to a particular kind of population, and you should therefore consider the nature of your population when selecting your sampling technique. The design diagrams in Figures 8.9 through 8.12 can assist you in your choice.

TABLE 8.3 Population characteristics and probability sampling techniques appropriate for each population type

Population Characteristic	*Example of Population Type*	*Appropriate Sampling Technique(s)*
1. Population is generally a homogeneous group of individual units.	A particular variety of flower seeds, which a researcher wants to test for germination potential.	• Simple random sampling • Systematic sampling of individual units (when large populations of human beings are involved)
2. Population contains definite strata that are approximately equal in size.	A school with six grade levels: kindergarten, first, second, third, fourth, and fifth.	• Stratified random sampling
3. Population contains definite strata that appear in different proportions within the population.	A community in which residents are Catholic (25%), Protestant (45%), Jewish (15%), Muslim (5%), or nonaffiliated (10%).	• Proportional stratified sampling
4. Population consists of discrete clusters with similar characteristics. The units within each cluster are as heterogeneous as units in the overall population.	Travelers in the nation's 20 leading air terminals. (It is assumed that all air terminals are similar in atmosphere, purpose, design, etc. The passengers who use them differ widely in such characteristics as age, gender, national origin, socioeconomic status, and belief system, with such variability being similar from one airport to the next.)	• Cluster sampling • Systematic sampling (of clusters)

Nonprobability Sampling

In **nonprobability sampling**, the researcher has no way of predicting or guaranteeing that each element of the population will be represented in the sample. Furthermore, some members of the population have little or no chance of being sampled. Following are three common forms of nonprobability sampling.

Convenience sampling. Convenience sampling—also known as *accidental sampling*—makes no pretense of identifying a representative subset of a population. It takes people or other units that are readily available—for instance, those that arrive on the scene by mere happenstance.

Convenience sampling may be quite appropriate for some research problems. For example, suppose you own a small restaurant and want to sample the opinions of your patrons on the quality of food and service at your restaurant. You open for breakfast at 6 a.m., and on five consecutive weekdays you question the first 40 patrons who arrive. Customers who have on one occasion expressed an opinion are eliminated on subsequent arrivals. The opinions you eventually get are from 36 men and 4 women. It is a heavily lopsided poll in favor of men, perhaps because the people who arrive at 6 a.m. are likely to be in certain occupations—laborers, construction workers, truck drivers—that are predominantly male. The data from this convenience sample give you the thoughts of robust, hardy men about your breakfast menu—that's all. Yet such information may be all you need for your purpose.

Not all research data need to be collected through careful, thoughtful sampling procedures. But without such safeguards, the conclusions drawn from the research may not be trustworthy.

Quota sampling. Quota sampling is a variation of convenience sampling. It selects respondents in the same proportions that they are found in the general population, but not in a random fashion. Let's consider a population in which the number of African Americans equals the number of European Americans. Quota sampling would choose, say, 20 African Americans and 20 European Americans, but without any attempt to select these individuals randomly from the overall population.

For example, suppose you are a reporter for a television station. At noon, you position yourself with microphone and television camera beside Main Street in the center of a particular city. As people pass, you interview them. The fact that people in the two categories may come in clusters of two, three, or four is no problem. All you need are the opinions of 20 people from each category. This type of sampling regulates only the size of each category within the sample; in every other respect, the selection of the sample is nonrandom and, in most cases, convenient.

Purposive sampling. In purposive sampling, people or other units are chosen, as the name implies, for a particular *purpose*. For instance, we might choose people who we have decided are "typical" of a group or those who represent diverse perspectives on an issue.

Pollsters who forecast elections frequently use purposive sampling: They may choose a combination of voting districts that, in past elections, has been quite useful in predicting the final outcomes.

Purposive sampling may be very appropriate for certain research problems. However, the researcher should always provide a rationale explaining why he or she selected the particular sample of participants.

Sampling in Surveys of Very Large Populations

Nowhere is sampling more critical than in survey research. Frequently the researcher reports that x percent of people believe such-and-such, that y percent do so-and-so, or that z percent are in favor of a particular political candidate. *Such percentages are meaningless unless the sample is representative of the population about which inferences are to be drawn.*

A basic rule governs survey research: Nothing emerges from a long, involved study that is any better than the care, precision, and thought that went into the basic planning of the research design and the selection of the population. The results of a survey are no more trustworthy than the representativeness of the sample. Population parameters and sampling procedures are of paramount importance and become critical factors in the success of the study.

But now imagine that a researcher wants to conduct a survey of the country's *entire adult population*. How can the researcher possibly hope to get a random, representative sample of such a large group of people? The Survey Research Center of the University of Michigan's Institute for Social Research (1976) has used what it calls a *multistage sampling of areas:*

1. *Primary area selection.* The country is divided into small "primary areas," each consisting of a specific county, a small group of counties, or a large metropolitan area. A predetermined number of these areas are randomly selected.
2. *Sample location selection.* Each of the selected primary areas is divided into smaller sections ("sample locations"), such as specific towns. A small number of these locations is randomly selected.
3. *Chunk selection.* The sample locations are divided into even smaller "chunks" that have identifiable boundaries such as roads, streams, or the edges of a city block. Most chunks have 16 to 50 dwellings, although the number may be larger in large cities. Once again, a random sample is selected.
4. *Segment selection.* Chunks are subdivided into areas containing a relatively small number of dwellings, and some of these "segments" are, again, chosen randomly.
5. *Housing unit selection.* Approximately four dwellings are selected (randomly, of course) from each segment, and the residents of those dwellings are asked to participate in the survey. If a doorbell is unanswered, the researcher returns at a later date and tries again.

As you may have deduced, the approach just described is a multistage version of cluster sampling (see Figure 8.13). At each stage of the game, units are selected randomly. "Randomly" does *not* mean haphazardly or capriciously. Instead, a mathematical procedure is employed to ensure that selection is entirely random and the result of blind chance. This process should yield a sample that is, in all important respects, representative of the country's population.

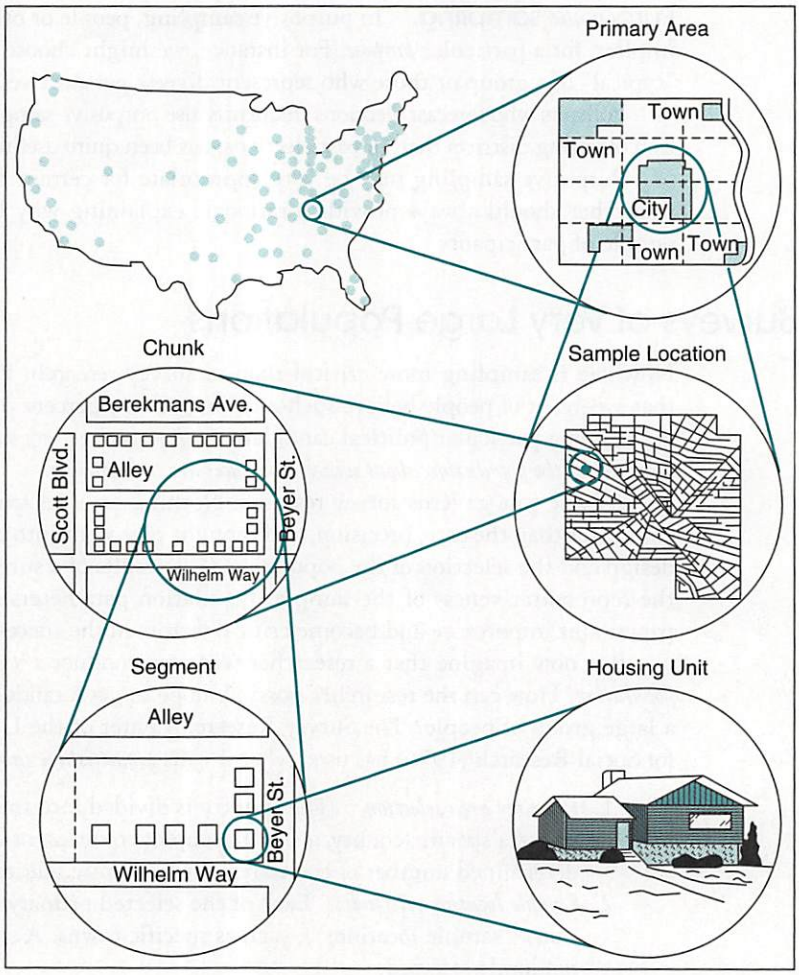
Identifying a Sufficient Sample Size

A basic rule in sampling is: *The larger the sample, the better.* But such a generalized rule is not very helpful to a researcher who must make a practical decision about a specific research situation. Obviously, we need to provide more guidance here. Gay, Mills, and Airasian (2009, p. 133) have offered the following guidelines for selecting a sample size, which we'll refer to by the symbol N:

- For smaller populations, say, $N = 100$ or fewer, there is little point in sampling; survey the entire population.

FIGURE 8.13
Multistage sampling

From the *Interviewer's Manual* (Rev. ed., p. 36) by the Survey Research Center, Institute for Social Research, 1976, Ann Arbor: University of Michigan. Reprinted with permission.



- If the population size is around 500 (give or take 100), 50% should be sampled.
- If the population size is around 1,500, 20% should be sampled.
- Beyond a certain point (about $N = 5{,}000$), the population size is almost irrelevant and a sample size of 400 will be adequate.

Generally speaking, then, the larger the population, the smaller the percentage—but *not* the smaller the number!—one needs to get a representative sample.

To some extent, the size of an adequate sample depends on how homogeneous or heterogeneous the population is—how alike or different its members are with respect to the characteristics of research interest. If the population is markedly heterogeneous, a larger sample will be necessary than if the population is fairly homogeneous. Important, too, is the degree of precision with which the researcher wishes to draw conclusions or make predictions about the population under study.

Statisticians have developed formulas for determining the desired sample size for a given population. Such formulas are beyond the scope of this book, but you can find them in many introductory statistics books (e.g., Lind, 2006; Triola, 2008) and on many Internet websites (e.g., search "calculating sample size").

Bias in Research Sampling

Look once again at the five steps in the University of Michigan's Survey Research Center procedure for obtaining a sample in a national survey. Notice the last sentence in the fifth step: "If a doorbell is unanswered, the researcher returns at a later date and tries again." The researcher does *not* substitute one housing unit for another; doing so would introduce *bias* into the sampling design. The center's *Interviewer's Manual* describes such bias well:

> The house on the muddy back road, the apartment at the top of a long flight of stairs, the house with the growling dog outside must each have an opportunity to be included in the sample. People who live on back roads can be very different from people who live on well paved streets, and people who stay at home are not the same as those who tend to be away from home. If you make substitutions, such important groups as young men, people with small families, employed women, farmers who regularly trade in town, and so on, may not have proportionate representation in the sample. (Survey Research Center, 1976, p. 37)

In research, **bias** is any influence, condition, or set of conditions that singly or in combination distort the data. Data are, in many respects, delicate and sensitive to unintended influences. We talk about the hard facts, the solid truth, and yet every researcher soon learns that data are neither so hard nor so solid as the phrases might suggest. Data are highly susceptible to distortion.

Bias can creep into a research project in a variety of subtle and undetected ways. It can be easily overlooked by even the most careful and conscientious researcher. For instance, when conducting an interview, the researcher's personality may affect the interviewee's responses. In asking questions, the researcher's tone of voice or emphasis within a sentence may influence how a respondent replies.

Bias attacks the integrity of the facts. It is especially vicious when it enters surreptitiously into the research system and goes undetected. It can render suspect even the most carefully planned research effort.

Among the conditions that lead to bias is any influence that may have disturbed the randomness with which a sample population has been selected. Here we are talking about **sampling bias**.

The best way to appreciate sampling bias is to see it at work. Suppose that a researcher wants to conduct a survey of a certain city's population and decides to use the city telephone book as a source for selecting a random sample. She opens to a page at random, closes her eyes, puts her pencil down on the page, and selects the name that comes closest to the pencil point. You can't get much more random than that, she reasons. But the demon of bias is there. Her possible selections are limited to people who are listed in the phone book. People with very low income levels won't be adequately represented because some of them cannot afford telephone service. Nor will wealthy individuals be proportionally represented because many of them have unlisted numbers. And, of course, people who use only cell phones—people who, on average, are fairly young—aren't included in the phone book. Hence, the sample will consist of a greater percentage of people at middle-income levels and in older age-groups than exists in the city's overall population (e.g., Keeter, Dimock, Christian, & Kennedy, 2008).

As noted earlier in the chapter, studies involving Internet-based questionnaires are apt to be biased in favor of computer-literate individuals with easy access to the Internet. Studies involving mailed questionnaires frequently fall victim to bias as well, often without the researcher's awareness. Let's take a simple situation. Suppose a questionnaire is sent to 100 citizens, asking, "Have you ever been audited by the Internal Revenue Service (IRS) to justify your income tax return?" Of the 70 questionnaires returned, 35 are from people who indicate they have been audited, whereas 35 are from people who indicate they have never been audited. The researcher might therefore conclude that 50% of American citizens are likely to be audited by the IRS at one time or another.

The researcher's generalization may not be accurate. We need to consider how the nonrespondents—30% of the original sample—might be different from those who responded to the questionnaire. Many people consider an IRS audit to be a reflection of their integrity. Perhaps for this reason, some individuals in the researcher's sample may not have wanted to admit that they had been audited and so tossed the questionnaire into the wastebasket. If previously audited people were less likely to return the questionnaire than nonaudited people, the sample was biased, and thus the results didn't accurately represent the truth of the matter. Perhaps, instead of a 50-50 split, an estimate of 65% (people audited) versus 35% (people not audited) is more accurate. The data the researcher obtained do not enable the researcher to make such an estimate, however.

The examples just presented illustrate two different ways in which bias may creep into the research sample. In the case of the telephone survey, *sample selection* itself was biased because not

everyone in the population had an equal chance of being selected. In fact, people not listed in the telephone directory had *zero* chance of being selected. Here we see the primary disadvantage of nonprobability sampling, and especially of convenience sampling: People who happen to be readily available for a research project—those who are in the right place at the right time—are almost certainly *not* a random sample of the overall population.

In the example concerning IRS audits, *response rate*—and, in particular, potential differences between respondents and nonrespondents—was the source of bias. In that situation, the researcher's return rate of 70% was quite high. More often, however, the return rate in a questionnaire study is 50% or less, and the more nonrespondents there are, the greater the likelihood of bias. Likewise, in telephone surveys, a researcher won't necessarily reach certain people even with 10 or more attempts, and those who *are* eventually reached won't all agree to an interview (Witt & Best, 2008).

Nonrespondents to *mailed questionnaires* may be different from respondents in one or more ways (Rogelberg & Luong, 1998). They may have less interest in the topic being studied. They may have illnesses, disabilities, or language barriers that prevent them from responding. And on average, they have lower educational levels. In contrast, people who are hard to reach *by telephone* are apt to be young working adults who are *more* educated than the average individual (Witt & Best, 2008). To the extent that such characteristics affect how people respond to a survey, bias will exist in the data the survey yields.

Acknowledging the Probable Presence of Bias

It is almost impossible for people to live in this world without coming into contact with disease-bearing germs and other microorganisms. Likewise, in the research environment, the researcher cannot avoid having data contaminated by bias of one sort or another. What is unprofessional, however, is for the researcher to fail either to recognize or to acknowledge the likelihood of biased data in the study. When formulating conclusions about the data, a researcher must be sure to consider the effect that bias may have had in distorting the data.

In survey research, you should *always* report the percentages of people who have and have not consented to participate, such as those who have agreed and refused to be interviewed or those who have and have not returned questionnaires. Furthermore, you should be candid about possible sources of bias that result from differences between participants and nonparticipants. Rogelberg and Luong (1998) have suggested several strategies for identifying possible bias in questionnaire research; we list three especially useful ones here:

1. Carefully scrutinize the questionnaire for items that might be influenced by one's education level, interest in the topic, or other factors that frequently distinguish respondents from nonrespondents.
2. Compare the responses on questionnaires that were returned quickly with responses on those that were returned later, perhaps after a second reminder letter or after the deadline you imposed. The late ones may, to some extent, reflect the kinds of responses that nonrespondents would have given. Significant differences between the early and late questionnaires probably indicate bias in your results.
3. Randomly select a small number of nonrespondents and try to contact them by mail or telephone. Present an abridged version of your survey, and, if some people reply, match their answers against those in your original set of respondents.

One of us authors once used a variation on the third strategy in the study of summer training institutes mentioned earlier in the chapter (Cole & Ormrod, 1995). A research assistant had sent questionnaires to all attendees at one summer's institutes so that the institutes' leaders could improve the training sessions the following year, and she had gotten a return rate of 50%. She placed telephone calls to small random samples of both respondents and nonrespondents and asked a few of the questions that had been on the questionnaire. She obtained similar responses from both groups, leading the research team to conclude that the responses to the questionnaire were probably fairly representative of the entire population of institute participants.

Good researchers demonstrate their integrity by admitting, without reservation, that bias is omnipresent and may well have influenced their findings. Ideally, they point out precisely how bias may have infiltrated the research design. With this knowledge, other scholars can realistically appraise the research and judge its merits.

PRACTICAL APPLICATION Population Analysis for a Descriptive Study

Select a particular population and conduct an analysis of its structure and characteristics. Analyze the population you have chosen by completing the following checklist.

✔ CHECKLIST

Analyzing a Population

_____ 1. On the following line, identify the particular population you have chosen:

_____

_____ 2. Now answer the following questions with respect to the *structure of the population:*

	Yes	No
a. Is the population a relatively homogeneous group of individuals or other units?	_____	_____
b. Could the population be considered to consist generally of equal "layers," each of which is fairly homogeneous in composition?	_____	_____
c. Could the population be considered to be composed of separate homogeneous layers differing in size and number of units comprising them?	_____	_____
d. Could the population be envisioned as isolated islands or clusters of individual units, with the clusters being similar to one another in composition?	_____	_____

_____ 3. Through what means would you extract a representative sample from the total population? Describe your procedure on the following lines:

_____

_____

_____

_____ 4. Refer to Table 8.3. Is your sampling procedure appropriate for the characteristics of the population? _____ Yes _____ No

_____ 5. Have you guaranteed that your sample will be chosen by chance and yet will be representative of the population? _____ Yes _____ No

_____ 6. If the preceding answer is yes, explain how this will be done.

_____

_____

_____

_____ 7. Indicate what means will be employed to obtain the information you need from the sample.

_____

_____

_____ 8. What are the weaknesses inherent in this method of obtaining the data?

_____

_____

_____ 9. What safeguards have you established to counteract any potential bias in your approach to data collection? Be specific.

_____

_____

_____

Interpreting Data in Descriptive Research

Data are of little or no value merely as data. In our discussion of descriptive research methods, we have primarily discussed the acquisition of data: how to obtain the data from the general population with appropriate techniques (observations, interviews, questionnaires, sampling) and how to protect those data against distortion of bias. We have been thinking of the process of data collection only.

At this juncture, we remind you of two basic principles of research:

1. The purpose of research is to seek the answer to a problem in the light of the data that relate to the problem.
2. Although collecting data for study and organizing it for inspection require care and precision, extracting meaning from the data—the interpretation of the data—is all-important.

A descriptive study is often a very "busy" research method: The researcher must decide on a population; choose a technique for sampling it; develop a valid means of collecting the desired information; minimize the potential entrance of bias into the study; and then actually collect, record, organize, and analyze all of the necessary data. The activities connected with descriptive research are complex, time-consuming, and occasionally distracting. Therein lies an element of danger. With all this action going on, it would not be surprising if the researcher lost sight of the problem and subproblems. But the problem and its subproblems are precisely the reason for the entire endeavor.

All research activity is subordinate to the research problem itself. Sooner or later, the entire effort must result in an interpretation of the data and a setting forth of conclusions, drawn from the data, to resolve the problem under investigation. Inexperienced researchers sometimes forget this fact. Activity for activity's sake is seductive. Amassing great quantities of data can provide a sense of well-being. Like Midas looking at his hoard of gold, researchers might lose sight of the ultimate demands that the problem itself makes on those data. Presenting the data in displays and summaries—graphs, charts, tables—does nothing more than demonstrate the researcher's acquisitive skills and consummate ability to present the same data in various ways. Descriptive research ultimately aims to solve problems through the *interpretation* of the data that have been gathered.

Some Final Suggestions

As we approach the end of the chapter, it is important to reflect on several issues related to descriptive research. Consider each of the following questions within the context of the research project you have in mind:

- Why is a description of this population and/or phenomenon valuable?
- What specific data will I need to solve my research problem and its subproblems?

- What procedures should I follow to obtain the necessary information? How should I implement those procedures?
- How do I get a sample that will truly be reflective of the entire population about which I am concerned?
- How can I collect my data in a way that minimizes misrepresentations and misunderstandings?
- How can I control for possible bias in the collection and description of the data?
- What do I do with the data once I have collected them? How do I organize and prepare them for analysis?
- Above all, in what ways might I reasonably interpret the data? What conclusions might I reach from my investigation?

A Sample Dissertation

We conclude the chapter by illustrating how questionnaires might be used in a correlational study to address the topic of violence in intimate relationships (e.g., husband and wife, boyfriend and girlfriend) in American society. The excerpts we present are from Luis Ramirez's doctoral dissertation in sociology completed at the University of New Hampshire (Ramirez, 2001).

Ramirez hypothesizes that violence between intimate partners—in particular, assault by one partner on the other—is, in part, a function of ethnicity, acculturation (e.g., adoption of mainstream American behaviors and values), criminal history, and social integration (e.g., feelings of connectedness with family and friends). He further hypothesizes that as a result of such factors, differences in intimate partner violence might be observed in Mexican Americans and non-Mexican Americans.

Ramirez begins Chapter 1 by discussing the prevalence of violence (especially assault) in intimate relationships. We pick up Chapter 1 at the point where he identifies his research questions and hypotheses. We then move into Chapter 2, where he describes his methodology. As has been true for earlier proposal and dissertation samples, the research report appears on the left-hand side, and our commentary appears on the right.

Dissertation ANALYSIS 5

RESEARCH QUESTIONS

[T]he following questions will be addressed: What role does acculturation into American society have on intimate partner violence for Mexican Americans? What are the effects of a person's criminal history on intimate partner violence? What is the extent and the relation of criminal history to intimate partner violence, and is criminal history restricted to one type of crime or is it a more general tendency (violent versus property crimes)? Are crimes that are committed early in life more indicative of a pattern of crime as compared to crimes that begin later in life? Do people who assault their partners possess weak social bonds with the society they live in? Finally, this study will ask the question, "Are there differences between criminal history and bond to society for Mexican Americans and Non-Mexican Whites, and how do these factors affect intimate partner violence?"

Comments

To understand factors underlying violence in intimate partner relationships—his main research problem—the author identifies a number of subproblems, which he expresses here as research questions.

If relations are found between these characteristics, it suggests that social agencies that deal with intimate partner violence need to adjust their policies and intervention procedures to better meet the characteristics of their clients. The focus of primary prevention could be put on the social bonding process, the criminal history of the individual, or the acculturation process in order to help solve future problems. Furthermore, a comparative study of intimate partner assault among ethnic groups could provide further clarification to a body of literature and research that has produced mixed results.

Here the author addresses the importance of the study, both pragmatic (results have potential implications for social policy and practice) and theoretical (results may shed light on inconsistencies in previous research studies).

[The author briefly reviews theoretical frameworks related to ethnicity and acculturation, criminal history, and control theory, which he then uses as a basis for his hypotheses.]

HYPOTHESES

The hypotheses are organized by the theoretical frameworks from which they have been derived, helping the reader connect them to rationales the author has previously provided.

The theoretical frameworks reviewed led to the following hypotheses:

Ethnicity and Acculturation

1. The rate of intimate partner violence is lower for Mexican Americans than Non-Mexicans.
2. The higher the acculturation into American Society, the higher the probability of assaulting a partner for Mexican Americans.

Notice how the hypotheses are single-spaced. Single-spaced hypotheses often appear in theses and dissertations, but check the guidelines at your own institution to see whether such formatting is desired.

Criminal History

3. Criminal history is more prevalent for Mexican Americans than for Non-Mexicans.
4. The more crimes committed in the past, the higher the probability of physically assaulting a partner.
5. Criminal history is more associated with an increased risk of intimate partner violence for Mexican Americans than Non-Mexicans.
6. Early onset crime is more associated with an increased risk of intimate partner violence than criminal behavior beginning later in life.
7. Previous violent crime is more associated with an increased risk of intimate partner violence than property crime.

Social Integration

8. Mexican Americans are more socially integrated than Non-Mexican Whites.
9. The more socially integrated an individual is, the lower the probability of physically assaulting a partner.
10. Social integration is more associated with a decreased risk of intimate partner violence for Mexican Americans than Non-Mexicans.

A more detailed review of the literature will be presented in . . . following chapters. Literature for all hypotheses will be reviewed in their respective chapters.

An in-depth review of the literature is postponed until Chapters 3 through 5, where the author also relates his own results to previous research findings. Although this is an unusual organizational structure, it works well in this situation, allowing the reader to connect results relative to each hypothesis to the appropriate body of literature.

ure 1.1 is a diagramed representation of what I believe is the causal process
ould affect intimate partner violence. It includes demographic and control varia-
he main independent variables (acculturation, criminal history, social integra-
and intimate partner violence. These variables will be described in detail in the
hapter.

Note the transition to the next chapter, which immediately follows.

1.1 Model of Intimate Partner Violence

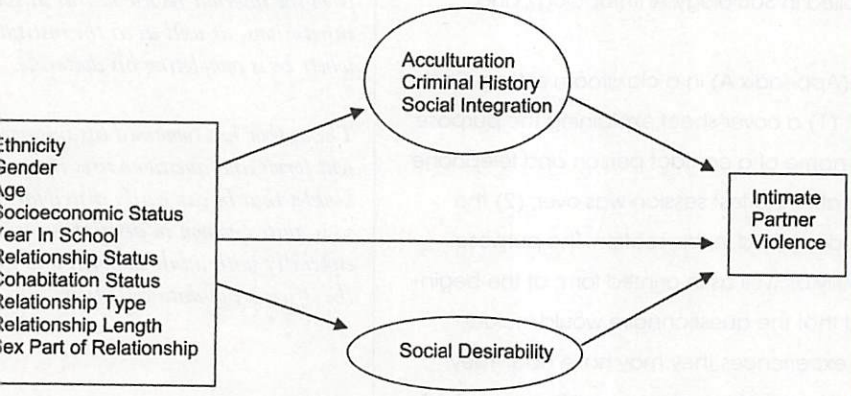


Figure 1.1 effectively condenses and summarizes the researcher's hypotheses. Also, it graphically demonstrates that four variables—acculturation, criminal history, social integration, and social desirability—are hypothesized to be mediating variables *in the relationship between demographics and violence.*

CHAPTER 2

Methods

e

issues discussed in the previous chapter will be investigated using data from a
e of college students who have been or are currently in a dating or married relation-
sample of college students is appropriate for this study for the following reasons: (1)
tional Crime Victimization Survey found that the rates of non-lethal intimate partner
ce was greatest for the 20 to 24 year age group, followed by the 16 to 19 age group,
en the 25 to 34 age group (Renison & Welchans, 2000). The majority of college stu-
all into the high-risk age categories. Sugarman and Hotaling (1989) identified
studies that provided rates for physical assault of dating partners and concluded
es of assaulting a partner range from 20% to 59%. (2) College students make up
a third of the 18 to 22 year old population. College students are a sizable popula-
reference to the general population (about 15 million). (3) College students are in
ative period of their lives in relation to the habits that they develop with an intimate
r. These habits could surface in other intimate relations (O'Leary, Malone, & Tyree,
an, Neidig, & O'Leary, 1994).

Some style manuals suggest that an author include at least a small amount of text between two headings of different levels. For example, before beginning the "Sample" section, the author might provide an advance organizer, describing the topics he will discuss in the chapter and in what order.

It is important to mention that a sample of college students is not a representative sample of the general population in the United States. This group generally has lower levels of criminal behavior, substance abuse, and marriage rates. Additionally, college students may be more socially integrated into society and are engaged in education as a tool for upward mobility. In short, this is a segment of society that plays by the rules.

The author clearly realizes that his sample (college students) is not representative of the entire U.S. population. He presents a good case that the sample is quite appropriate for his research questions. At the same time, he acknowledges that his sample has some shortcomings.

Data Collection

Six hundred and fifty questionnaires were passed out to students at The University of Texas at El Paso and Texas Tech University during the fall 1999, spring 2000, and summer 2000 semesters. Students who were enrolled in Sociology, Anthropology, and History classes [were] the respondents.

The author, whose home town is El Paso, has numerous acquaintances at both institutions and so can easily gain access to these students. He must, of course, seek approval from the internal review boards at the two institutions, as well as at the institution where he is completing his doctorate.

Respondents filled out the questionnaire (Appendix A) in a classroom setting. Each respondent received a booklet consisting of: (1) a cover sheet explaining the purpose of the study, the participant's rights, and the name of a contact person and telephone number for those who might have questions after the test session was over; (2) the demographic questions; (3) the instruments described in this section. The purpose, task demands, and rights were explained orally as well as in printed form at the beginning of each session. Respondents were told that the questionnaire would include questions concerning attitudes, beliefs, and experiences they may have had. They were guaranteed anonymity and confidentiality of their responses and they were told that the session would take an hour or slightly more. In actuality, the range of time that it took students to finish was between 30 minutes to 1 hour. All students were asked to sign a written consent form before completing their questionnaires. Students were also given instructions on how to properly fill out three scantron sheets before they were left to fill out the questionnaire at their own pace.

The author has combined his informed consent forms and questionnaires into a single booklet that he can easily distribute. Doing so is quite common in descriptive research, especially with adult samples, and increases the efficiency of data collection.

The author is using computer technology (scantron sheets) in his data collection. Given the nature of his sample (college students) and his sample size (576), this approach is reasonable.

A debriefing form was given to each participant as they turned in their questionnaire. It explained the study in more detail and provided names and telephone numbers of local mental health services and community resources, such as services for battered women. Students that voluntarily participated in the study were offered extra credit points by their professors.

Given the sensitive nature of some questionnaire items, the debriefing that follows data collection appropriately includes information about community resources for individuals who have been victims of partner violence.

The initial sample consisted of 650 respondents of which 576 chose to complete the questionnaire. Of these, 33 questionnaires were omitted because they were illegible or partially completed. Finally, of the 543 remaining questionnaires, 348 were selected for this study because they met the criteria of having no missing data for any specific question, were either Mexican American/Mexican National or Non-Mexican White, and had been in a heterosexual romantic relationship for a month or longer during the previous 12 months.

Here the author describes his criteria for including completed questionnaires in his data set. In essence, he is addressing the issue of admissibility of the data *(see Chapter 4).*

NOTE: Excerpt is from *The Relation of Acculturation, Criminal History, and Social Integration of Mexican American and Non-Mexican Students to Assaults on Intimate Partners* (pp. 3–4, 14–20) by I. L. Ramirez, 2001, unpublished doctoral dissertation, University of New Hampshire, Durham. Reprinted with permission.

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