This topic describes the structure of a typical research report. The first element is the Title. A typical title is concise, consisting of about 10 to 15 words, and should name the major variable(s). Populations of special interest may also be mentioned in a title. In Example 1, the variables are "political activism" and "socioeconomic status," and the population consists of Asian American voters.

Example 1
Title of a research report: The Relationship Between Political Activism and Socioeconomic Status Among Asian American Voters

Notice that the title in Example 1 does not describe the results of the research. In most cases, this is appropriate because the results of research are usually too complex to summarize within a short title.

The typical parts of a research report that follow the title are shown here:

Title
[Put author's name and affiliation here.]
Abstract
[Put introduction/literature review here.]
Method
Participants
Instrumentation
Procedure (optional)
Data Analysis (optional)
Results
Discussion
References

As indicated above, the title is usually followed by an Abstract, which is a brief summary, typically containing 100 to 150 words. A straightforward abstract starts with a statement of the research purpose, followed by: (1) a very brief description of methods (e.g., a national survey of Asian American voters), (2) any highly distinctive characteristics of the study (e.g., the first survey on the topic to distinguish among various Asian nationalities), and (3) a summary of the general nature of the results. Sometimes an abstract concludes with a statement of the practical implications of the results.

Appendix G shows four effective abstracts. Note that they differ somewhat from the recommendations made here, which is permissible. Also note that the authors of the third abstract used subheadings (in bold and italics) within their abstract, which is also permissible. Note that subheadings are required by some journals that publish research. The longer the abstract, the more desirable it is to use subheadings.

The abstract is followed by an Introduction. In short reports such as journal articles and term projects, the introduction contains a Literature Review. (See Part B of this book on reviewing literature.) Preparing introductions and literature reviews for research reports is covered in the next topic in this book. Notice that there is no main heading for this part of the report. In other words, it begins immediately below the abstract.

Following the introduction/literature review is the Method section, which usually has its own major heading of Method (bold and centered). Immediately under this heading is the subheading Participants (in italics and flush left). Under this subheading, researchers state the number of participants, how they were selected, and selected demographics such as age and gender. Writing the description of the participants is described in more detail in Topic 73.

The next subsection under Method is Instrumentation (with its own flush-left subheading), in which the measurement tools used in the research are described. Quantitative researchers usually use highly structured instruments that can be objectively scored. Qualitative researchers use less-structured instruments, often semistructured interviews. Describing instrumentation in quantitative and qualitative research reports is covered in Topic 74.

An optional subsection under the main heading of Method is Procedure. This subsection should follow Instrumentation and be used to describe any physical steps taken by the researcher to conduct the research. For instance, if treatments were given in an experiment, the treatments could be described in detail in this subsection.

An additional subsection under the main heading of Method is Data Analysis, in which the method used to analyze the data is described. This subsection is optional in quantitative research when standard statistical techniques are used, but is usually

---

1 In a traditional thesis or dissertation, Chapter 1 is an introduction to the research problem (with a limited number of citations to literature), while Chapter 2 is a literature review.
needed for describing the type of qualitative research used (e.g., describing how grounded theory or consensual qualitative research was implemented to analyze the data; see Topics 69 and 70).

The next major heading is Results (bold and centered). Considerations in presenting the results of research are described in Topic 75.

The final major heading is Discussion (bold and centered). In this section, researchers present their interpretations of the outcomes of their research. See Topic 76 for guidelines on writing the discussion.

The References conclude a research report. (See Topic 19 for information on citing references.)

EXERCISE ON TOPIC 71

1. Should a Title describe the results of the research?

2. The Title is usually followed by what?

3. An Abstract typically contains how many words?

4. Is Participants a “major heading” or a “subheading”?

5. The measurement tools are described in which subsection?

6. Is Procedure an optional subheading?

7. Researchers present their interpretations of the outcomes of their research under which major subheading?

Question for Discussion

8. Examine the abstracts in Appendix G. Note that the third one has subheadings within its text. In your opinion, are the subheadings helpful? Would the abstract be as effective without the subheadings? Explain.

For Students Planning Research

9. Examine a research article related to the topic of your research. Does it follow the exact structure described in this topic? Explain. (Note: This topic describes common practices frequently followed by researchers; variations in structure are often permitted by journal editors as well as professors supervising research conducted as term projects.)

---

2 In journal articles, some researchers use headings such as “Discussion and Conclusions” and “Summary, Discussion, and Implications.”
The body of a typical research report begins immediately below the abstract, without a main heading. The introductory comments are usually integrated with the literature review. In fact, most researchers cite literature in their first paragraph.\(^1\)

The first purpose of an integrated introduction and literature review is to identify the research problem area. The second purpose is to establish its importance. See Appendix C near the end of this book for sample first paragraphs of research reports. Each one introduces the problem and seeks to establish its importance.

The first paragraphs of an introduction, even if they are supported by citations to literature, should be reasonably specific to the research problem. For instance, if the research problem is childhood obesity in the United States, the first sentence in Example 1 is too global. An improved version is shown in Example 2.

**Example 1**

*Beginning of a research report (too broad for the topic):* Obesity is a major public health concern in all industrial nations and is an important threat to the well-being of millions. Worldwide, rates of obesity range from....

**Example 2**

*Beginning of a research report (improved; more specific):* Childhood obesity is a major public health concern in the United States, where rates of obesity for children 6 to 12 years of age have been estimated to range from....

One way to establish the importance of a problem is to cite statistics indicating its prevalence. For instance, for the topic of binge drinking among college students, statistics on how many college students engage in this behavior might be cited.

Another way to establish the importance of a problem is to describe the severity of its impact on individuals. For instance, a rare mental disease may affect relatively few individuals (low prevalence), yet have a devastating impact on those individuals. The severity of the impact can justify researching a problem, even if the problem is not widespread.

As indicated in Topic 16, a literature review should not consist of a series of summaries of previously published studies. Instead, generalizations about findings (i.e., the trends found in the research) should be stated, with references supporting them grouped together. Example 3 illustrates how this might be done.

**Example 3**

*Grouping references for a generalization: Several studies have indicated the weak effects of the Doe Drug Reduction Intervention Program when it is used with adolescents (Smith, 2006; Jones, 2007; Black, 2008).*

To provide depth of information, it is acceptable to discuss selected studies in detail. For instance, Example 3 could continue with a statement such as, “Of these, Smith (2006) used the largest, most representative sample. She reported an average level of decrease in marijuana use from pretest to posttest of only 2.2% when averaged over....”

Note that specific statistics should be cited sparingly. Cite only those that are most relevant and can be easily understood out of the context of the original research reports. Readers can consult the original sources for additional statistical details.

Most research is designed to fill gaps in knowledge of a particular topic. When this is the case, it is important to explicitly point out those gaps in the literature review. This is illustrated in Example 4.

**Example 4**

*Pointing out a gap in the literature (after citing literature to establish that Latino adolescents are subject to stress due to discrimination, the authors state):* “However, few studies have examined how Latino adolescents cope with discrimination, whether coping strategies might protect against the negative effects of perceived discrimination, and factors that promote the use of effective coping strategies.”\(^2\)

A combined introduction/literature review should end with a statement of the specific research hypotheses, purposes, and/or questions. (See Topic 7.) When there are several of them, they should be numbered or lettered, as in Example 5. Note that they should flow logically from the introductory material.

---

\(^1\) In a typical thesis or dissertation, Chapter 1 is an introduction, with few literature citations, while Chapter 2 is a comprehensive literature review.

EXAMPLE 5

Numbered hypotheses at the conclusion of the introduction/literature review: In light of the research findings described above, these hypotheses were formulated to be tested in the current research: (1) College students who are more involved in extracurricular activities consume less alcohol, (2) have fewer friends who binge drink, (3) have....

EXERCISE ON TOPIC 72

1. Does a typical research report have the main heading Introduction?

2. What is the first function of an integrated introduction and literature review?

3. In this topic, two ways to establish the importance of a problem are mentioned. What is the second way?

4. Should a literature review consist of a series of summaries of previously published studies?

5. Should statistics in the literature be cited sparingly?

6. A combined introduction/literature review should end with what?

Question for Discussion

7. Examine a research article to determine whether the introduction/literature review is consistent with the recommendations in this topic. Describe any consistencies and inconsistencies.

For Students Planning Research

8. To what extent has the material in this topic helped to prepare you for writing an introduction/literature review? Explain.
In research reports, the subheading Participants appears immediately under the main heading of Method. (See the outline in Topic 71.)

Obviously, the number of participants should be stated. This statement may contain information on selected demographics (i.e., background characteristics such as age and gender), as illustrated in Example 1.

Example 1
Brief description of participants: A sample of 120 adolescents (12–16 years old, \( m = 14.55 \)) participated in the study. There were 70 males and 50 females.

A wide variety of demographics may be reported. As indicated in Topic 24, some demographics are more relevant to a particular research project. For instance, in a study of mathematics instruction, students' grade-level and GPA are more relevant than their religious affiliation.

It is usually desirable to indicate the method of recruitment (e.g., classified ads in a college newspaper or an offer of extra credit to students enrolled in a sociology course).

The response rate, if known, should be indicated. This is important because those who respond (known as volunteers) may be quite different from those who do not respond (see Topic 20).

When a sample of convenience (also called a convenience sample) is used, this should be mentioned (see Topic 20).

If informed consent was obtained, this should also be mentioned.

Example 2 shows an expanded version of Example 1 based on the above information.

Example 2
Expanded description of participants (bold added for emphasis): All 250 students in a local middle school were recruited through letters mailed to their parents. Attached to the letters were informed consent forms for parents to sign if they agreed to allow their children to participate. Of the 250 parents, 120 returned the consent forms (a 48% response rate), which resulted in a convenience sample of 120 adolescents (12–16 years old, \( m = 14.55 \)), consisting of 70 males and 50 females.

When a large number of demographics are to be reported, researchers should consider reporting them in a statistical table. Such a table is especially important if two or more distinct groups were compared in a study. For instance, in a study comparing the academic achievement of girls attending a charter school with that of girls attending a traditional school, the demographics might be presented in a table such as the one in Example 3, where “free lunch” is an indicator of socioeconomic status because family income determines its availability. Such tables are efficient for the presentation of such information, and they help readers to spot important differences. For instance, the “free lunch” difference (20% vs. 42%) stands out in the tabular presentation in Example 3.

Example 3
Table of Demographics

<table>
<thead>
<tr>
<th></th>
<th>Charter</th>
<th>Traditional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>( m = 8.2 )</td>
<td>( m = 8.8 )</td>
</tr>
<tr>
<td>Age range</td>
<td>7–10</td>
<td>7–11</td>
</tr>
<tr>
<td>Free lunch (yes)</td>
<td>20%</td>
<td>42%</td>
</tr>
<tr>
<td>Intact family (yes)</td>
<td>78%</td>
<td>73%</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>75%</td>
<td>70%</td>
</tr>
<tr>
<td>African American</td>
<td>15%</td>
<td>20%</td>
</tr>
<tr>
<td>Asian</td>
<td>6%</td>
<td>5%</td>
</tr>
<tr>
<td>Other</td>
<td>4%</td>
<td>5%</td>
</tr>
</tbody>
</table>

Quantitative researchers emphasize random selection of participants from populations. (See Topics 21 and 22.) Thus, if random selection has been used in a quantitative study, it is important to mention it.

Qualitative researchers often employ purposive samples. As indicated in Topic 64, researchers who use this type of sample deliberately select individuals who they think might be rich sources of information on a particular research topic. Researchers who employ purposive sampling should explain their reasoning and the steps they took to implement it (see Topic 65). Without information of this type, readers are likely to assume that a sample of convenience (not a purposive sample) was used.

If saturation was used to determine sample size in a qualitative study, this should be indicated. (See Topic 65 for information on saturation.)

While limitations of a study due to poor sampling might be mentioned under Participants, researchers usually discuss this matter in the Discussion section of their research reports.

---

1 Note that some researchers present detailed information on demographics in the Results section.
Quantitative researchers usually use objective instruments (i.e., measurement tools) such as multiple-choice tests and attitude scales (e.g., “Strongly agree” to “Strongly disagree”).

When a quantitative researcher uses a previously published instrument, he or she should cite it and include a reference for it. For instance, a published achievement test would be cited and included in the reference list as a book, where the title of the book is equivalent to the title of the test. (See Topic 19 on citing references.)

Many specialized instruments are published only in the sense that they were included in journal articles. When one of these has been used, the original source should be cited, which is done in Example 1.

Example 1

Brief description of a quantitative instrument with citations: The Trait Forgivingness Scale (TFS; Berry, Worthington, O’Connor, Parrott, & Wade, 2005) assesses disposition to forgive. A sample item is, “There are some things for which I could never forgive even a loved one.” Previous alphas range from .71 to .81, and construct validity has been established with constructs such as avoidance following a hurtful event.¹

Notice in Example 1, the authors (1) name the trait the instrument is designed to measure (i.e., disposition to forgive), (2) provide a sample item, and (3) indicate that reliability (i.e., alphas) and validity have been established. All three elements are desirable in the description of an instrument used in quantitative research. When space permits, more detailed descriptions of these three elements might be provided.

When an instrument has been widely used, this should be noted (e.g., “the instrument has been widely used by other researchers in a variety of settings”). This suggests that other researchers have found the instrument useful.

Sometimes quantitative researchers construct new instruments for a particular research project. Because information on them is not available elsewhere, it is especially important for researchers to provide detailed information on them in their research reports.

Qualitative researchers usually use less-structured instruments than quantitative researchers do. Despite the lack of high levels of structure, qualitative researchers should explicitly provide specific information on their instrumentation.

Perhaps the most widely used type of instrument employed in qualitative research is the semi-structured interview. (See Topic 66.) Example 2 shows how researchers briefly described the interview process they used.

Example 2

Brief description of a semistructured interview: The in-depth audio-recorded interviews were carried out at participants’ homes and only the mother was invited. An open and accepting interview style based on phenomenology principles was used. The interview questions focused on how these mothers assisted their children’s life adjustment at school, specifically with respect to T1DM [Type 1 diabetes mellitus]. Each interview began with the question: “What is your experience when assisting your child’s life adjustment at school?” Facilitative techniques (e.g., “Hmm” and “Could you describe it more?”) were used to obtain the most complete description possible. On average, interviews lasted approximately one hour.²

Notice in Example 2, the authors (1) state where the interviews were conducted and who was present, (2) name the focus of the questions, (3) provide a sample question as well as sample prompts (e.g., “Hmm”), and (4) indicate how long the interviews lasted. All of these are desirable elements.

When space permits, a description of a semistructured interview might also include background information on the interviewer, such as whether the interviewer in Example 2 was, herself, a mother with a child with Type 1 diabetes.

Qualitative interviewers also frequently use focus groups to gather their data. (See Topic 67.) The description of focus group sessions should cover the same points as in Example 2. In addition, they should indicate how many focus groups were used and how many participants were included in each group.


As indicated in Topic 71, the Results section should have the main heading Results (bold and centered).

For research that has more than one hypothesis, purpose, or question, it is usually best to report the results for each separately in the order in which they were first presented in the research report. For instance, if there were two hypotheses, restate the first one and present the data for it. Then, restate the second hypothesis and present the data for that one.

In reports of quantitative research, researchers typically do not indicate how the statistical results were computed (e.g., they do not name the statistical computer program used), and they do not provide a reference for standard statistical formulas. For instance, a researcher would simply report the means and standard deviations relating to a hypothesis without discussing computational details. In these reports, descriptive statistics (e.g., mean, standard deviation, and percentage) should be reported first, followed by the results of tests of statistical significance (e.g., chi-square, t test, and ANOVA). This is illustrated in Example 1. Note that when there are hypotheses, the research should explicitly state whether the hypothesis was supported by the data.

**Example 1**

*Beginning of the Results section in a quantitative research report:* The first hypothesis was that participants who attended the extended training sessions would report more satisfaction with the program than those who attended the abbreviated sessions. The mean satisfaction score for the extended group was higher \((m = 24.00, sd = 1.50)\) than the mean for the abbreviated group \((m = 22.00, sd = 1.40)\). The difference between the two means is statistically significant at the .05 level \((t = 3.30, df = 21)\). Thus, the first hypothesis was supported.

The second hypothesis was that participants....

When there are a number of related statistics to be reported, it is usually best to present them in a table (instead of reporting them in sentences). Example 2 shows a table with a number of descriptive statistics. Highlights of the contents of statistical tables should be described in the Results section with statements such as, “The means in Table 2 show that the supervised practice group outperformed the unsupervised practice and control groups.”

**Example 2**

*Table 2: Posttest Statistics for Three Groups*

<table>
<thead>
<tr>
<th>Group</th>
<th>n</th>
<th>(m)</th>
<th>(sd)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supervised practice</td>
<td>21</td>
<td>55.78</td>
<td>8.27</td>
</tr>
<tr>
<td>Unsupervised practice</td>
<td>20</td>
<td>49.02</td>
<td>7.66</td>
</tr>
<tr>
<td>Control group</td>
<td>22</td>
<td>46.35</td>
<td>9.36</td>
</tr>
</tbody>
</table>

The Results sections for qualitative research differ in a number of respects. First, in reports on qualitative research, there is usually a discussion of the steps taken to analyze the data (such as the results of semistructured interviews), usually under the subheading Data Analysis (see the outline in the first column of Topic 71). Here, the method of analysis (such as grounded theory or consensual qualitative research) should be named and the steps taken to implement the method described (e.g., how many coders were used and how a consensus was reached). See Appendix H for an example of how the data analysis method is described in a qualitative research report.

In the Results section of reports on qualitative research, there are usually few, if any, statistics reported. Instead, qualitative researchers discuss the primary themes that emerged from the data as well as any theories developed during the analysis. Example 3 shows the beginning of the Results section of a qualitative research report. Note that each of the themes mentioned in the example was used as a subheading within the Results section. Under each subheading, the researchers described the theme and illustrated it with verbatim quotations from participants to illustrate the meaning of the theme.

**Example 3**

*Beginning of the Results section in a qualitative research report:* In this study we investigated the questions: What is collaborative health care? What occurs? and How is it experienced? Qualitative data analysis produced six cultural themes: (a) characteristics of the environment, (b) characteristics of therapists, (c) the referral process, (d) characteristics of collaboration, (e) the psychotherapy process, and (f) social considerations. Taken together, they describe, at least in part, how collaborative health care is practiced at this site. The content and meaning of each

---

1 This subsection is placed under “Method,” just above the Results section. It is seldom included in reports on qualitative research when standard statistical methods have been used.
Because statistics can be used to very concisely summarize quantitative data, the Results sections of reports of quantitative research tend to be much shorter than the Results sections of qualitative research reports.

**EXERCISE ON TOPIC 75**

1. For research that has more than one hypothesis, purpose, or question, is it usually best to report the results for each one separately? If so, in what order?

2. In reports on *quantitative research*, do researchers typically indicate how the statistical results were computed (e.g., do they name the statistical computer program used)?

3. Should “descriptive statistics” or “results of tests of statistical significance” be reported first?

4. When statistical tables are included in a Results section, which of the following is true?
   - A. The tables should be presented without commentary.
   - B. Highlights of the contents of statistical tables should be mentioned.

5. Is a subsection titled Data Analysis more likely to appear in reports of “quantitative research” or “qualitative research”?

6. Are verbatim quotations more likely to appear in reports of “quantitative research” or “qualitative research”?

7. Do reports of “quantitative research” or “qualitative research” tend to have shorter results sections?

**Questions for Discussion**

8. If you have access to a published report of quantitative research, examine it to answer these questions:
   - Are statistics reported in tables? If yes, does the researcher describe the highlights of the results in the tables? Does the researcher discuss how he or she computed the statistics (e.g., by giving formulas and citations for them)?

9. If you have access to a published report of qualitative research, examine it to answer these questions: Is the Results section organized around themes? Does the Results section contain verbatim quotations from participants? If yes, are there many quotations?

**For Students Planning Research**

10. Examine a research article related to the topic of your research. Is the organization of the Results section in the article similar to the organization you plan to use? Explain.

---

As indicated in Topic 71, the last part of the body of a research report is the Discussion,\(^1\) which has a main heading centered and in bold.

While there are many ways in which a Discussion section may be organized, the following information should usually be included.

Begin by referring to the original purposes of the research, which may have been stated as research questions, purposes, or hypotheses.

Second, indicate the extent to which the purposes were achieved as represented by the research results. Example 1 shows how the first two elements in a discussion might be presented. Note that specific statistics usually do not need to be presented here because a reader can refer to the Results section for them.

**Example 1**

*Beginning of a Discussion section:* The purpose of this study was to test three hypotheses regarding the relationship between X and Z. The first hypothesis was that X would be directly related to Z in a sample of homeless children. This hypothesis was strongly supported by the data. The second hypothesis was....

Notice that the researcher who wrote Example 1 indicated that the hypothesis was "strongly supported." If a researcher knows of serious methodological weaknesses in the execution of the study or if the effect size is small (see Topics 58–60), more tentative language should be used such as, "The data offer limited support for the first hypothesis."

At this point, it is appropriate to briefly compare and contrast the results of the current research with the results reported in the literature review (e.g., "The support for this hypothesis is consistent with the results in a prior survey by Doe [2008]"). If any results of the current study are surprising in light of the information in the literature review, this should also be pointed out. For instance, a researcher might state, "The failure of the data to support the hypothesis for young children is surprising in light of the strong support for the hypothesis in the earlier experiment by Jones (2008) in which adolescents participated. A possible explanation for this inconsistency is...."

When the results have practical implications, these should be explicitly stated, and the researcher should indicate what actions a particular person, group, or organization should perform. In Example 2, the organization is “public health agencies,” and the action is “providing bilingual diabetes outreach programs.”

**Example 2**

*Practical implications in a Discussion section:* The low rate of compliance by the Hispanic adults, most of whom were born in Mexico, may be due to language interference. Because many of these participants might not be fluent in English, public health agencies should consider providing bilingual diabetes outreach programs....

The Discussion section is an appropriate place to describe limitations (i.e., methodological weaknesses) and to indicate how the limitations might affect interpretations of the results. Although typical limitations are in sampling and instrumentation, a variety of other methodological problems may have affected the results, which should be considered in their interpretation. Example 3 indicates the nature of the limitation in sampling and its potential impact on the results.

**Example 3**

*Sampling limitation in a Discussion section:* The volunteer sample for this survey consisted of disproportionately high middle- and high-socioeconomic-status individuals. Thus, the need for assistance in acquiring healthy food resources (e.g., fruits and vegetables) may have been underestimated in this study.

In the Discussion section, it is also appropriate to suggest directions for future research. Such suggestions should be specific because it is of little value to consumers of research to simply state that "more research is needed." Example 4 shows a discussion of future research. Notice that the suggestion is specific (i.e., use of a more limited vocabulary).

**Example 4**

*Directions for future research in a Discussion section:* Because participant feedback indicates that some participants found the questionnaire difficult to comprehend, researchers should consider using a more limited vocabulary when constructing questionnaires during future research on this topic.

If a Discussion section is long, researchers sometimes include subheadings (in italics, flush left) to guide readers. On the basis of the above ma-
terial, here are subheadings that might be used in the Discussion section:

- Research purposes and results
- Implications
- Limitations
- Directions for future research

EXERCISE ON TOPIC 76

1. Should the heading “Discussion” be centered in bold?

2. The Discussion should begin with a reference to what?

3. Is it usually important to cite specific statistics when discussing research results in the Discussion section?

4. What should a statement of implication indicate?

5. When discussing limitations, it is appropriate to indicate how the limitations might affect what?

6. If a Discussion section is long, researchers sometimes include what?

Question for Discussion

7. Suppose a researcher only stated “More research is needed” in a discussion of future directions for research. Is this statement sufficient? Explain.

For Students Planning Research

8. In the Discussion section of your research report, do you plan to include all the elements discussed in this topic? Explain.