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7

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THE OFFICIAL GUIDE TO APA STYLE

7

TABLES AND FIGURES

Tables and figures enable authors to present a large amount of information efficiently and to make their data more comprehensible. Tables usually show numerical values (e.g., means and standard deviations) or textual information (e.g., lists of stimulus words, responses from participants) arranged in an orderly display of columns and rows. A figure may be a chart, graph, photograph, drawing, or any other illustration or nontextual depiction. At times, the boundary between tables and figures may be unclear; in general, tables are characterized by a row–column structure, and any type of illustration or image other than a table is considered a figure. In this chapter, we discuss the purpose of tables and figures; principles for designing, preparing, placing, and reproducing them; and guidelines for creating and formatting tables and figures in APA Style, with examples of various types.

General Guidelines for Tables and Figures

7.1 Purpose of Tables and Figures

The primary purpose of any table or figure is to facilitate readers' understanding of the work. For example, tables and figures can be used to summarize information (e.g., a theoretical model, qualities of studies included in a meta-analysis), to present the results of exploratory data analysis or data mining techniques (e.g., a factor analysis), to estimate some statistic or function (e.g., a nomograph), or to share full trial-level data (for more on data sharing, see Section 1.14). Although tables and figures attract attention, they should not be used for mere decoration in an academic paper. Instead, every table and figure should serve a purpose.

7.2 Design and Preparation of Tables and Figures

When preparing a table or figure, first determine the purpose of the display and the relative importance of that purpose (see Section 7.1); then, select a format that supports that purpose (see Sections 7.21 and 7.36 for sample tables and figures, respectively). For example, if the purpose is to illustrate a theoretical model, a chart is most likely the best option. Sometimes, multiple approaches are possible; for example, if your goal is to present group scores, a table would allow readers to see each group's exact scores, whereas a figure would emphasize similarities or differences between groups. When possible, use a standard, or canonical, form for a table or figure (examples are shown in Sections 7.21 and 7.36).

Design tables and figures with readers in mind. Communicate findings clearly while also creating attractive visual displays. Prepare tables and figures with the same care as the text of the paper; changes in text often demand changes in tables and figures, and a mismatch between data presented in the text versus in tables and figures may result in the need for a correction notice for published articles or in a lower grade for student assignments if the error is not corrected before publication or submission, respectively. Use the following principles when designing tables and figures:

- Label all columns in tables.
- Label all elements in figure images (e.g., label the axes of a graph).
- Place items that are to be compared next to each other.
- Place labels next to the elements they are labeling.
- In figure images, use sans serif fonts that are large enough to be read without magnification.
- Design the table or figure so it can be understood on its own (meaning readers do not have to refer to the text to understand it). Define abbreviations used in the table or figure even if they are also defined in the text (see Section 7.15 for some exceptions).
- Tables or figures designated as supplemental materials should also contain enough information to be understood on their own.
- Avoid decorative flourishes, which are distracting and can interfere with readers' comprehension; instead, ensure that every element supports the goal of effective communication.

7.3 Graphical Versus Textual Presentation

Be selective in choosing how many tables and figures to include in your paper. Readers may lose track of your message if there are a large number of tables and figures; for example, if many tables and figures accompany a small amount of text, it can cause problems with page layout for published articles. Moreover, graphical presentation is not always optimal for effective communication. For example, the results of a single statistical significance test or a few group means and standard deviations can be presented in text.

> The one-way ANOVA, $F(1, 136) = 4.86$, $MSE = 3.97$, $p = .029$, $\eta^2 = .03$, demonstrated . . .
> Scores on the insomnia measure ($M = 4.08$, $SD = 0.22$) were . . .

A table or figure is an effective choice to present the results of multiple statistical tests or many descriptive statistics (e.g., when reporting the results of numerous analyses of variance [ANOVAs] or summarizing participant demographic data). It may also be possible to combine several smaller tables or figures with similar content into one larger table or figure. Consider how the table or figure augments or supplements the text. For example, when the

components of a theoretical model are discussed in the text, a figure may help summarize the model; the value of the figure is the visual summary. However, tables or figures that are redundant with the text may be unnecessary.

7.4 Formatting Tables and Figures

Tables and figures follow the same structure: They have a table or figure number, a table or figure title, a body (for tables) or an image (for figures), and table or figure notes as needed. Tables and figures may be produced in many different file formats; publishers or instructors may limit the formats they accept.

Use the tables function of your word-processing program to create tables. If you copy and paste tables from another program (e.g., SPSS, Excel) into your word-processing program, you may need to adjust the formatting to comply with APA Style guidelines. Do not use the tab key or space bar to manually create the look of a table; this approach is prone to alignment errors and is especially problematic if the table will be typeset for publication.

Figures can be created in a variety of ways using many programs, such as Excel, PowerPoint, Photoshop, Illustrator, MATLAB, and Inkscape. Regardless of the program used to create the figure, the output should be of sufficient resolution to produce high-quality images. TIFF and EPS files are recommended for figures that are to be submitted for publication; file formats such as JPG or PNG are also acceptable for other works produced in APA Style (e.g., classroom assignments). Some types of figures require higher resolution than others; for example, line art requires finer detail than a photograph. Ensure that the format used supports the resolution needed for clear presentation of the image. Check the author guidelines for the journal or publisher to which you are submitting your work for specifications (for APA journals, see the Journal Manuscript Preparation Guidelines at http://on.apa.org/WDtxdW).

7.5 Referring to Tables and Figures in the Text

In the text, refer to every table and figure by its number—known as a callout (see Sections 7.10 and 7.24, respectively, for how to assign numbers for

tables and figures that accompany the main text; see Section 2.14 for how to assign numbers for tables and figures that appear in appendices). When you call out a table or figure, also tell readers what to look for in that table or figure.

> As shown in Table 1, the demographic characteristics . . .
> Figure 2 shows the event-related potentials . . .
> . . . of the results of the testing (see Table 3).
> . . . of the comparisons (see Figures 4 and 7).

Do not write "the table above" (or "below") or "the figure on page 32." Page numbers often shift during the writing process, which can lead to errors. For published work, final page numbers and the placement of tables and figures on the page are determined during typesetting. Referring to tables and figures by number rather than by location on the page also helps readers who access a work using assistive technologies such as screen readers. Authors seeking publication also should not write "place Table 1 here" or "put Figure 2 here"; the typesetter will determine the position of tables and figures in relation to the callouts.

7.6 Placement of Tables and Figures

There are two options for the placement of tables and figures in a paper. The first option is to place all tables and figures on separate pages after the reference list (with each table on a separate page followed by each figure on a separate page). The second option is to embed each table and figure within the text after its first callout. Follow the specifications of the journal publisher or of the classroom assignment for the placement of tables and figures. Placing all tables and figures on separate pages after the reference list may be preferable for manuscripts being submitted for publication to facilitate copyediting; either approach is appropriate for student assignments or when the placement for tables and figures has not been specified. Dissertations and theses may have different specifications for the placement of tables and figures; for example, in some university guidelines, multiple tables or figures may be placed on the same page at the end of the document as long as they fit. When formatting your dissertation or thesis, abide by the guidelines specified by your advisor and/or university. Authors seeking publication may need to submit figures as high-resolution files separate from

the manuscript regardless of where the figures are located within the manuscript.

Align all tables and figures with the left margin regardless of where they appear in the paper. When embedding a table or figure within the text, position it after a full paragraph, ideally the paragraph where it is first called out. Place the table or figure so that it fits on one page if possible (see Section 7.18 for tables longer or wider than a page). If text appears on the same page as a table or figure, add a double-spaced blank line between the text and the table or figure so that the separation between the text and table or figure is easier to see. Put a short table or small figure at the beginning or end of a page rather than in the middle.

Tables and figures that support but are not essential to the text may be placed in one or more appendices. Tables and figures may appear within an appendix that also contains text, or a table or figure may constitute a whole appendix by itself (see Section 2.14). Tables and figures can also be placed in supplemental materials when they would enrich understanding of the material presented in the article but are not essential to a basic understanding or cannot be fully displayed in print (see Section 2.15). If tables or figures are included as supplemental materials, call them out in the text but describe them only briefly (e.g., write "see Table 1 in the supplemental materials for the list of stimuli").

7.7 Reprinting or Adapting Tables and Figures

If you reprint or adapt a table or figure from another source in your paper (e.g., a table from your own published work, an image you found on the internet), you must include a copyright attribution in the table note or figure note indicating the origin of the reprinted or adapted material in addition to a reference list entry for the work. You may also need to obtain permission from the copyright holder to reprint or adapt the table or figure. Table 7.14 in Section 7.21 and Figures 7.3, 7.14, and 7.21 in Section 7.36 show copyright attributions for an adapted table when permission is not necessary, a reprinted figure when permission is not necessary, a reprinted figure in the public domain, and a figure reprinted with permission, respectively. See Sections 12.14 to 12.18 for further information on copyright and permission and for more copyright attribution formats and examples.

Tables

7.8 Principles of Table Construction

Tables should be integral to the text but designed so that they are concise and can be understood in isolation. The principle of conciseness is relevant not only for tables included with the main text but also for tables to be placed in appendices and supplemental materials. Although supplemental tables may be longer and more detailed than tables that accompany the main text, they must be directly and clearly related to the content of the article (see Section 2.15).

All tables are meant to show something specific; for example, tables that communicate quantitative data are effective only when the data are arranged so that their meaning is obvious at a glance (Wainer, 1997). Often, the same data can be arranged in different ways to emphasize different features of the data, and which arrangement is better depends on your purpose. Above all, table layout should be logical and easily grasped by readers. Table entries that are to be compared should be next to one another. In general, different indices (e.g., means, sample sizes) should be presented in different rows or columns. Place variable and condition labels close to their values to facilitate comparison. See the sample tables (Section 7.21) for examples of effective layouts.

7.9 Table Components

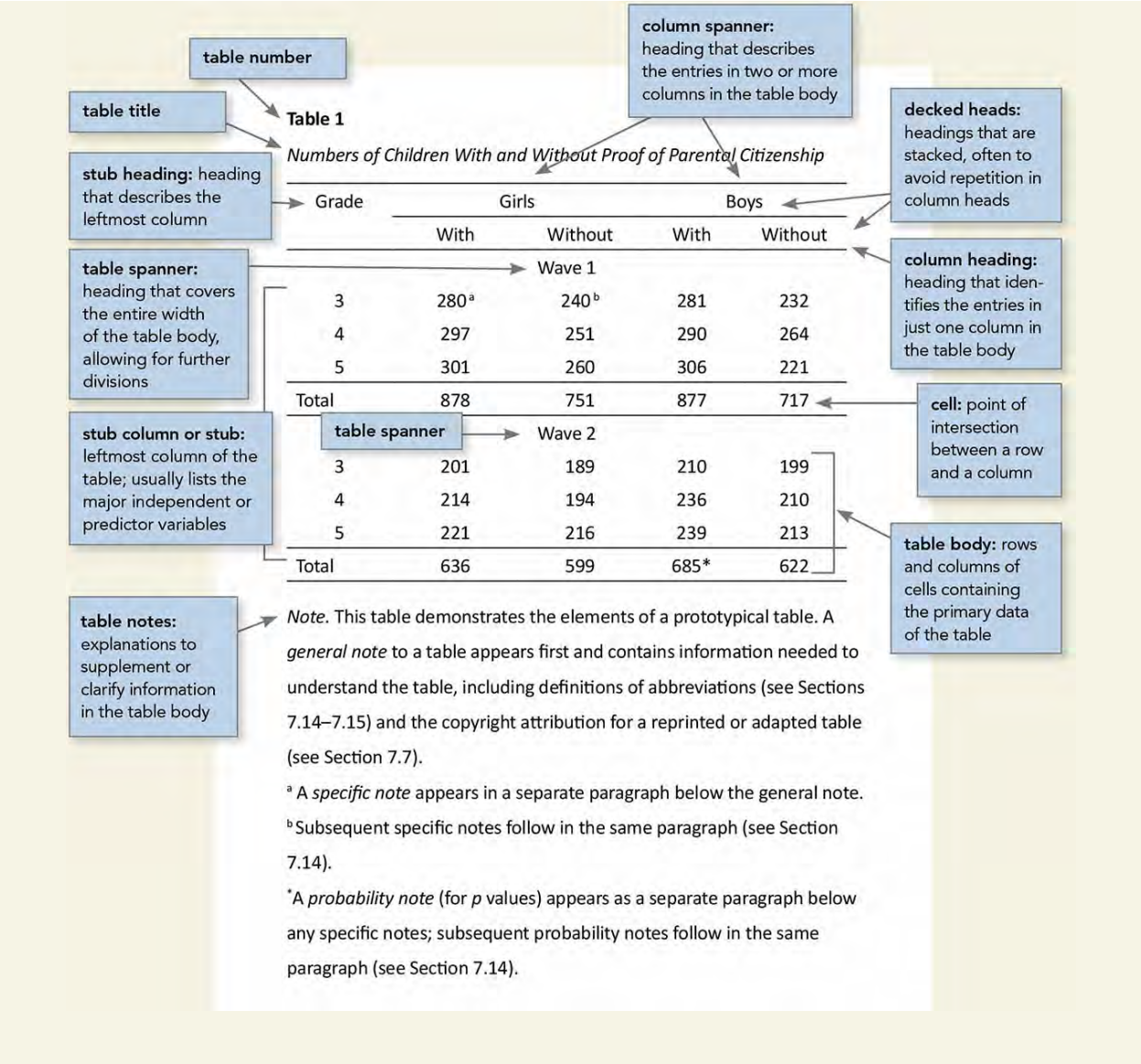
The basic components of a prototypical table are shown in Table 7.1 and are summarized as follows.

- **number:** The table number (e.g., Table 1) appears above the table in bold font (see Section 7.10).
- **title:** The table title appears one double-spaced line below the table number in italic title case (see Sections 6.17 and 7.11).
- **headings:** Tables may include a variety of headings depending on the nature and arrangement of the data. All tables should include column headings, including a stub heading (heading for the leftmost column).

Some tables also include column spanners, decked heads, and table spanners (see Section 7.12).

- **body:** The table body includes all the rows and columns of a table (see Section 7.13). A cell is the point of intersection between a row and a column. The body may be single-spaced, one-and-a-half-spaced, or double-spaced.
- **notes:** Three types of notes (general, specific, and probability) appear below the table as needed to describe contents of the table that cannot be understood from the table title or body alone (e.g., definitions of abbreviations, copyright attribution). Not all tables include table notes (see Section 7.14).

Table 7.1 Basic Components of a Table



See Section 7.21 for sample tables.

7.10 Table Numbers

Number all tables that are part of the main text (i.e., not part of an appendix or supplemental materials) using Arabic numerals—for example, Table 1, Table 2, and Table 3. Assign the numbers in the order in which each table is first mentioned in the text, regardless of whether a more detailed discussion of the table occurs elsewhere in the paper. Write the word “Table” and the

number in bold and flush left (i.e., not indented or centered). Tables that appear in appendices follow a different numbering scheme (see Section 2.14).

7.11 Table Titles

Give every table a brief but clear and explanatory title; the basic content of the table should be easily inferred from the title. Write the table title in italic title case below the table number and double-space the table number and title. Avoid overly general and overly detailed table titles.

Title quality	Example table title	Rationale
Too general	Relation Between College Majors and Performance	It is unclear what data are presented in the table.
Too detailed	Mean Performance Scores on Test A, Test B, and Test C of Students With Psychology, Physics, English, and Engineering Majors	The title duplicates information in the headings of the table.
Effective	Mean Performance Scores of Students With Different College Majors	The title is specific but not redundant with headings.

Abbreviations that appear in the headings or the body of a table may be parenthetically explained in the table title.

Hit and False-Alarm (FA) Proportions in Experiment 2

Abbreviations may also be defined in a general note to the table (see Section 7.14). Do not use a specific note to clarify an element of the title.

7.12 Table Headings

Headings establish the organization of information in the table and identify what is in each column. Column headings describe the entries below them. Table headings should be brief; if possible, the heading should be not much wider than the information in the column below it. Provide a heading for every column in a table, including the stub column or stub, which is the leftmost column of the table (see Table 7.1 for an illustration).

The stub column usually lists the major independent or predictor variables. In Table 7.1, for instance, the stub column lists the grades. For the stub column, the heading "Variable" is often used when no other heading is

suitable. Write the entries in the stub column in parallel form (see Section 4.24 for guidance on parallel construction). Number entries in the stub column only in a correlation matrix (see Tables 7.10–7.11 in Section 7.21) or when they are referred to by number in the text. To show subordination within the stub column, use indentation rather than creating an additional column (see, e.g., Table 7.2, in which "Single," "Married/Partnered," etc. are indented under the heading "Marital Status").[1] Set indentation using the paragraph-formatting feature of your word-processing program rather than by using the tab key. In typeset articles, the indentation is equal to one em space; this can be approximated in draft manuscripts by setting the paragraph indentation to 0.15 in. or inserting an em space from the special characters menu of your word-processing program.

The headings above the columns to the right of the stub column identify what is in each column. A column heading applies to just one column; a column spanner is a heading that covers two or more columns, each with its own column heading. Headings stacked in this way are called decked heads. Often, decked heads can be used to avoid repetition of words in column headings (see Table 7.1). If possible, do not use more than two levels of decked heads. More complex tables may require table spanners, which are headings within the body of the table that cover the entire width of the table, allowing for further divisions within the table when the column headings remain the same (see Table 7.1). Table spanners can also be used to combine two tables, provided they have identical column headings.

Any item within a column should be syntactically as well as conceptually comparable with the other items in that column, and all items should be described by the column heading. For example, a column with the heading "%" would contain only percentages; numbers in that column would not be followed by the percent symbol because the symbol is already in the heading (see Table 7.2 in Section 7.21).

Use sentence case for all headings in a table (see Section 6.17). Center all table headings above their column(s). Stub headings, column headings, and column spanners should be singular (e.g., Measure, Item) unless they refer to a group (e.g., Children, Women), but table spanners may be singular or plural.

7.13 Table Body

The main part of the table, the table body, contains information organized in cells. Information in a table body may be in the form of numbers, words, or a mixture of both. The body of the table (including table headings) may be single-spaced, one-and-a-half-spaced, or double-spaced, depending on which presentation most effectively conveys information to readers (e.g., single spacing may allow a table to fit on one page). If entries are longer than one line, use a hanging indent of 0.15 in. or one em space. In the stub column of the table, center the stub heading and align the entries flush left beneath it. If entries in this column are significantly shorter than the stub heading, it is permissible to center them beneath the stub heading (e.g., single-digit numbers in the stub column; see the partial table later in this section for an example). The entries in all other cells of the table should be centered (however, aligning them flush left is acceptable if doing so improves the readability of longer entries). Use sentence case for all word entries in the table body (see Section 6.17). Numbers that appear in the table body should be written as words or numerals according to the guidelines in Sections 6.32 to 6.39; however, it is permissible to use numerals for all numbers in tables if this would be clearer or save space.

Decimal Values. Express numerical values to the number of decimal places that the precision of measurement justifies (see Section 6.36). If possible, carry all comparable values to the same number of decimal places. Numerical values should be centered in the column and may also be aligned on the decimal if desired (for the published version, the typesetter will typically center values and align on the decimal).

Empty Cells. If a cell cannot be filled because data are not applicable, leave the cell blank. Use a general or specific table note if you need to explain why the cell is blank or the element is inapplicable (see Section 7.14). If a cell cannot be filled because data were not obtained or are not reported, insert a dash in that cell and explain the use of the dash in the general note to the table (see Section 7.14). By convention, a dash in the main diagonal position of a correlation matrix (see Tables 7.10–7.11 in Section 7.21) indicates the correlation of an item with itself, which must be 1.00, and is simply replaced by the dash with no explanation needed.

Conciseness. Be selective in your presentation. Do not include columns of data that can be calculated easily from other columns. For example, the following partial table is redundant because it shows both the number of responses per trial and the total number of responses; instead, show only whichever is more important to the discussion.

Participant	No. of responses		Total responses
	First trial	Second trial	
1	5	7	12
2	6	4	10

Citations in Tables. If a table contains citations to other works, follow the formats described in Section 8.11. Use an ampersand (&) for the word "and" in all citations in tables to conserve space. Table 7.4 in Section 7.21 shows an example of a table containing citations to studies included in a meta-analysis.

7.14 Table Notes

Tables may have three kinds of notes, which are placed below the body of the table: general notes, specific notes, and probability notes. Table notes apply only to a specific table and not to any other table. If information in one table note is true for another table, repeat the information in the notes for both tables so that the tables can be understood on their own. Some tables do not require table notes at all.

General Note. A general note qualifies, explains, or provides information relating to the table as a whole and explains any abbreviations; symbols; special use of italics, bold, or parentheses; and the like. The general note also includes any acknowledgments that a table is reprinted or adapted from another source (see Section 7.7). General notes are designated by the word "Note" (italicized) followed by a period (see Table 7.1 and the sample tables in Section 7.21 for examples). Explanations of abbreviations and copyright attributions for reprinted or adapted tables appear at the end of the general note, in that order.

Note. Factor loadings greater than .45 are shown in bold. M = match process; N = nonmatch process.

Specific Note. A specific note refers to a particular column, row, or cell. Specific notes are indicated by superscript lowercase letters (e.g., [a], [b], [c]). Do not add specific notes to a table title; instead, use a general note. Within each table that has specific notes, order the superscripts from left to right and from top to bottom, starting at the top left and beginning with the letter "a" (see, e.g., Tables 7.2, 7.10, and 7.15 in Section 7.21). The corresponding specific note below the table begins with the same superscript letter. Place a superscript space before the superscript letter in the table body (e.g., Group [a]). Place a superscript space after the superscript letter in the specific note. This space prevents specific notes from getting caught by spell-check and improves readability.

[a] n = 25. [b] This participant did not complete the trials.

Probability Note. A probability note describes how asterisks and other symbols are used in a table to indicate p values and thus the significance of the results of statistical hypothesis testing. To report the results of significance testing, it is best to provide the exact probabilities to two or three decimal places (e.g., $p = .023$; see, e.g., Tables 7.8–7.9 in Section 7.21; see also Section 3.7 and Section 6.36). However, when p values are less than .001, it is acceptable to write the value as "<.001."

It may sometimes be difficult to report exact p values in a table because doing so would make the table difficult to read. An alternative to reporting exact p values in a table is to use the "p <" notation. Use this notation only in tables and figures (see Section 7.28 for more on figure notes), not in the text. In the "p <" notation, asterisks or daggers appear after table entries to indicate that the entries have reached the established threshold for significance; definitions of the asterisks and/or daggers appear in a corresponding probability note. Use the same number of asterisks to indicate the same p values across tables (or figures) within your paper, such as $^{*}p < .05$, $^{**}p < .01$, and $^{***}p < .001$ (see, e.g., Tables 7.10–7.11 in Section 7.21). In general, do not use any p value smaller than .001. Daggers are sometimes used to indicate nonsignificant trends based on the threshold established for

your study (e.g., $^{\dagger}p < .10$) or to distinguish between one-tailed and two-tailed tests. Use superscript formatting for asterisks and daggers. In a table body (or a figure), position asterisks and daggers immediately after the entries they belong to, with no space in between (e.g., $.02^{*}$). In the probability note, place asterisks and daggers immediately before the p, with no space in between (e.g., $^{*}p < .002$).

One-Tailed Versus Two-Tailed Tests. If you need to distinguish between one-tailed and two-tailed tests in the same table, use an asterisk for the two-tailed p values and an alternate symbol (e.g., dagger) for the one-tailed p values, and specify the convention in the probability note.

> $^{*}p < .05$, two-tailed. $^{**}p < .01$, two-tailed. $^{\dagger}p < .05$, one-tailed. $^{\dagger\dagger}p < .01$, one-tailed.

Indicating Significant Differences Between Values. To indicate statistically significant differences between two or more table values—for example, when comparing values with post hoc tests such as Tukey's honestly significant difference (HSD) test, Bonferroni procedure, Scheffé method, Fisher's least significant difference, or Duncan's new multiple range test—use lowercase subscript letters (see Table 7.9 in Section 7.21 for an example). Explain the use of the subscripts in the table's general note, as in the following example:

> Note. Means sharing a common subscript are not significantly different at $\alpha = .01$ according to Tukey's honestly significant difference procedure.

Formatting of Notes. Begin each kind of note on a new line below the table body. A general note appears first. A specific note begins on a new line under a general note; subsequent specific notes begin on the same line. A probability note begins on a new line under any general or specific notes; subsequent probability notes begin on the same line. Multiple specific or probability notes are separated from each other by a period and a space. Lengthy specific notes may be presented on separate lines if this improves readability. Double-space all table notes, and align all notes flush left (i.e., with no paragraph indentation).

> Note. The responses were gathered in the laboratory.
> ^{a} n = 25. ^{b} n = 42.

*p < .05. **p < .01. ***p < .001.

Use of Notes to Eliminate Repetition. Table notes can be useful for eliminating repetition from the body of a table. Certain types of information are appropriate either in the table body or in a note. To determine the placement of such material, remember that clearly and efficiently organized data enable readers to focus on those data. Thus, if probability values or subsample sizes are numerous, use a column rather than many notes. Conversely, if a row or column contains few entries (or the same entry), eliminate the column by adding a note to the table, as shown in the following partial tables.

Repetitive

Group	n
Anxious	15
Depressed	15
Control	15

Concise

Group[a]
Anxious
Depressed
Control

[a] n = 15 for each group.

7.15 Standard Abbreviations in Tables and Figures

Use standard abbreviations and symbols for all statistics (e.g., M, SD, SE, F, df, n, p), Greek letters (e.g., α, β, χ^2), and units of measurement (see Tables 6.4–6.5) used in tables without defining them in a note. This guidance also applies to statistics, Greek letters, and units of measurement appearing in figures (see Section 7.28 for more on figure notes). The abbreviation "no." (for "number") and the symbol "%" (for "percent") may also be used without providing a definition. Other abbreviations used in a table or figure should be defined in the table or figure title, body, or note, even if the abbreviations are also defined in the paper (see Sections 6.25 and 6.44). Except where it makes sense to group similar abbreviations, define the abbreviations in the order that they appear in the table, starting at the top left and moving left to right, top to bottom.

7.16 Confidence Intervals in Tables

When a table includes point estimates—for example, means, correlations, or regression slopes—it should also, when possible, include confidence intervals. Report confidence intervals in tables either by using square brackets, as in the text (see Section 6.9) and in Table 7.16 in Section 7.21, or by giving lower and upper limits in separate columns, as in Table 7.17 in Section 7.21. In every table that includes confidence intervals, state the confidence level (e.g., 95% or 99%). It is usually best to use the same confidence level throughout a paper.

7.17 Table Borders and Shading

Limit the use of borders or lines in a table to those needed for clarity. In general, use a border at the top and bottom of the table, beneath column headings (including decked heads), and above column spanners. You may also use a border to separate a row containing totals or other summary information from other rows in the table (see Table 7.1 for an example). Do not use vertical borders to separate data, and do not use borders around every cell in a table. Use spacing between columns and rows and strict alignment to clarify relations among the elements in a table.

Avoid the use of shading in tables. Do not use shading for mere decoration. To emphasize the content of a particular cell or cells, use a specific or probability note; italics or bold may also be used with explanation in the table's general note. Instead of using shading, add white space or borders between rows and columns to help readers distinguish them. If shading is necessary, explain its purpose in the table's general note.

7.18 Long or Wide Tables

If a table is longer than one page, repeat the heading row on each subsequent page of the table. It is best to use the automated table-formatting tools of your word-processing program rather than manually retyping the headings. Table 7.4 in Section 7.21 shows an example of a multipage table—in this case, a table summarizing the studies included in a meta-analysis.

Wide tables may be presented in landscape orientation (it is not important if landscape orientation impacts the position of the page header). If a table in landscape format is still too wide to fit on one page, the stub column (left

column) should repeat on each subsequent page. If a table is too wide and too long to fit on one page, create separate tables.

7.19 Relation Between Tables

Consider combining tables that repeat data. Ordinarily, identical columns or rows of data should not appear in two or more tables. Be consistent in the presentation of all tables within a paper to facilitate comparisons. Use similar formats, titles, and headings and the same terminology across tables whenever possible (e.g., do not use "response time" in one table and "reaction time" in another table to refer to the same concept). If multiple tables contain similar data but cannot be combined, number these tables separately (e.g., Table 1 and Table 2); do not use letters to indicate subtables (i.e., do not label two tables Table 1A and Table 1B).

7.20 Table Checklist

The table checklist may help ensure that the data in your table are effectively presented and conform to the style guidelines presented in this chapter.

7.21 Sample Tables

Some tables have certain standard, or canonical, forms (e.g., a correlation table). When possible, use a standard form rather than designing your own form. The advantage of using the canonical form is that readers generally already know where to look in the table for certain kinds of information. In some situations, you may want to use a form other than the canonical table form to make a specific point or to stress certain relationships. The judicious use of nonstandard forms can be effective but must always be motivated by the special circumstances of the data array. When using nonstandard forms, make certain that labeling is clear.

Sample tables are presented next; follow these samples to design basic tables. The exact contents and structure of your table will vary from the sample tables depending on the nature of the information being presented. For variations not addressed in this chapter, consult similar published articles to see examples of current standards and practices.

Table Checklist

- Is the table necessary?
- Does the table belong in the print and electronic versions of the article, or can it be placed in supplemental materials?
- Are all comparable tables in the paper consistent in presentation?
- Are all tables numbered consecutively with Arabic numerals in the order in which they are first mentioned in the text? Is the table number bold and flush left?
- Are all tables called out or referred to in the text?
- Is the table title brief but explanatory? Is it written in italic title case and flush left?
- Does every column have a column heading, including the leftmost (stub) column? Are all column headings centered?
- Are all abbreviations explained (with exceptions as noted in Section 7.15), as well as the special use of italics, bold, parentheses, dashes, and symbols?
- Are the table notes, if needed, in the order of general note, specific note, and probability note? Are the notes double-spaced and flush left and in the same font as the text of the paper?
- Are table borders correctly applied (at the top and bottom of the table, beneath column headings, above table spanners)?
- Is the line spacing of the table correctly applied (double-spacing for the table number, title, and notes; single-spacing, one-and-a-half-spacing, or double-spacing for the table body)?
- Are entries in the left column flush left beneath the centered stub heading? Are all other column headings and cell entries centered (except when aligning entries to the left would improve readability)?
- Are confidence intervals reported for all major point estimates? Is the confidence level—for example, 95%—stated, and is the same level of confidence used for all tables and throughout the paper?
- If the results of statistical significance testing are included in the table, are all p values correctly identified? Are exact p values provided? Is the "p <" notation used only when needed? When the "p <" notation is used, are asterisks or daggers attached to the appropriate table entries and defined? Are asterisks or daggers used consistently to

indicate the same p value in all tables in the same paper?

- If all or part of a table is reprinted or adapted, is there a copyright attribution? If permission was necessary to reproduce the table, have you received written permission for its reuse (in print and electronic forms) from the copyright holder and sent a copy of that written permission with the final version of your paper?

- **demographic characteristics of study participants** (Table 7.2): Demographic data can help readers understand the generalizability of the results. The demographic data you report will depend on the nature of the study.
- **properties of study variables** (Table 7.3): Describe the properties of study variables (e.g., means, standard deviations). If reporting psychometric information, clearly state the index of reliability (or other psychometric property) being used and the sample on which the reliability was based (if different from the study sample).
- **meta-analysis summary** (Table 7.4): The qualities of the studies included in a meta-analysis can be reported in a table as a summary for readers (what information is relevant to report will depend on the nature of the study).
- **summary of complex experimental design** (Table 7.5): Complex designs can be summarized in a table, making the entire structure of the experiment(s) clear without the need for lengthy textual description.
- **descriptive statistics for study measures** (Table 7.6): Descriptive statistics include means and standard deviations. The exact statistics you should provide will depend on the nature and purpose of the analyses.
- **chi-square results** (Table 7.7): The results of individual chi-square tests are usually reported in the text only (see Section 6.43). The results of multiple chi-square tests may be summarized in a table, which typically also includes frequencies, p values, and any other relevant statistics such as effect sizes.
- **t-test results** (Table 7.8): When there is only one t test to report, the results should be incorporated into the text (see Section 6.43). Use a table

to report the results of multiple t tests.

- **a priori or post hoc comparisons** (Table 7.9): A priori and post hoc tests (e.g., Tukey's HSD test, Bonferroni procedure, Scheffé method, Fisher's least significant difference, Duncan's new multiple range test) are used to compare specific group means in studies in which the independent variables have more than two levels. Although these results are often presented in the text rather than in a table, a table can be used to summarize comparisons. This table is similar to the table for presenting descriptive statistics (Table 7.6) with the addition of subscripts to note significantly different means.
- **correlations** (Tables 7.10–7.11): A correlation table presents correlations between study variables and may also incorporate descriptive statistics, alpha values, or other relevant statistics (Table 7.10). The perfect correlation along the diagonal is indicated by an em dash. Intercorrelations for two different groups can be presented in the same table, with correlations for one group above the diagonal and for the other group below the diagonal (Table 7.11). The variables in a correlation table should be numbered and named in the stub column, with corresponding numbers alone in the column headings to avoid repeating the variable names in the column headings.
- **analysis of variance** (Tables 7.12–7.13): The results of a single one-way ANOVA are typically reported in the text only. The results of multiple ANOVAs can be reported in a table; various presentations are possible. For example, degrees of freedom may be presented in the column heading when they are the same for all tests (Table 7.12) or in their own column when they differ (Table 7.13). Sums of squares and mean squares are not typically included in tables intended for publication.
- **factor analysis** (Table 7.14): Factor coefficients or loadings (rotated or unrotated) can be presented in a variety of ways and may be accompanied by other indices such as the percentage of variance and eigenvalues. If a rotation is used, specify the type (e.g., varimax, oblimin). Factor coefficients or loadings above a prescribed threshold are typically indicated by the use of bold; the purpose of any bolding should be explained in the table note.

- **multiple regression** (Tables 7.15–7.18): The results of multiple regression, including mediation and moderation analyses, can be presented in a variety of ways depending on the purpose of the table and need for detail. Clearly label the regression type (e.g., hierarchical) and the type of regression coefficients (raw or standardized) being reported. For hierarchical and other sequential regressions, be sure to provide the increments of change (see Section 6.43). Four options are shown in the sample tables: regression coefficients without confidence intervals (Table 7.15), regression coefficients and bracketed confidence intervals (Table 7.16), moderator analysis with confidence intervals in separate columns (Table 7.17), and hierarchical multiple regression (Table 7.18).
- **model comparisons** (Tables 7.19–7.21): Model comparison tables are used to compare different models of data (Table 7.19), including multilevel models (Table 7.20), and to report the results of confirmatory factor analyses (Table 7.21). Ensure that the competing models are clearly identified and that the comparisons are clearly specified. Comparative fit indices can be useful for readers.
- **qualitative tables** (Tables 7.22–7.23): Qualitative data can be presented in tabular form in an innumerable variety of ways depending on the purpose of the table. Qualitative tables might include descriptions of variables (as in Table 7.22), referenced studies, test items, or quotations from research participants. Quantitative data may be incorporated alongside the qualitative data (e.g., quotations might be presented alongside response frequencies, as in Table 7.23).
- **mixed methods tables** (Table 7.24): The procedures or findings of mixed methods research can be presented in tabular form in various ways depending on the purpose of the table.

Sample Tables

Table 7.2 **Sample Demographic Characteristics Table**

Table 1

Sociodemographic Characteristics of Participants at Baseline

Baseline characteristic	Guided self-help		Unguided self-help		Wait-list control		Full sample	
	n	%	*n*	%	*n*	%	*n*	%
Gender								
Female	25	50	20	40	23	46	68	45.3
Male	25	50	30	60	27	54	82	54.7
Marital status								
Single	13	26	11	22	17	34	41	27.3
Married/partnered	35	70	38	76	28	56	101	67.3
Divorced/widowed	1	2	1	2	4	8	6	4.0
Other	1	1	0	0	1	2	2	1.3
Children[a]	26	52	26	52	22	44	74	49.3
Cohabitating	37	74	36	72	26	52	99	66.0
Highest educational level								
Middle school	0	0	1	2	1	2	2	1.3
High school/some college	22	44	17	34	13	26	52	34.7
University or post-graduate degree	27	54	30	60	32	64	89	59.3
Employment								
Unemployed	3	6	5	10	2	4	10	6.7
Student	8	16	7	14	3	6	18	12.0
Employed	30	60	29	58	40	80	99	66.0
Self-employed	9	18	7	14	5	10	21	14.0
Retired	0	0	2	4	0	0	2	1.3
Previous psychological treatment[a]	17	34	18	36	24	48	59	39.3
Previous psychotropic medication[a]	6	12	13	26	11	22	30	20.0

use of specific note

Note. $N = 150$ ($n = 50$ for each condition). Participants were on average 39.5 years old ($SD = 10.1$), and participant age did not differ by condition.

[a] Reflects the number and percentage of participants answering "yes" to this question.

Table 7.3 Sample Properties of Study Variables Table

Table 1

Psychometric Properties for DLOPFQ Scales and Subscales

Scale	M	SD	Range	Cronbach's α
Identity total score	86.6	28.0	28–155	.94
Work Identity	41.6	13.3	16–76	.88
Social Identity	45.0	15.7	14–84	.91
Self-Directedness total score	91.2	26.5	34–151	.92
Work Self-Directedness	44.9	13.5	16–76	.85
Social Self-Directedness	46.3	14.3	17–80	.86
Empathy total score	101.8	15.8	48–139	.84
Work Empathy	49.9	8.2	20–72	.72
Social Empathy	51.9	8.6	28–76	.77
Intimacy total score	122.9	28.6	56–189	.91
Work Intimacy	61.7	14.3	28–94	.82
Social Intimacy	61.2	15.4	24–96	.86

Note. The Diagnostic and Statistical Manual of Mental Disorders (5th ed.) Levels of Personality Functioning Questionnaire (DLOPFQ) we developed had four scales (Identity, Self-Directedness, Empathy, and Intimacy), each with subscales for the work and social domains.

Table 7.4 Sample Meta-Analysis Summary Table

Table 1

Sample and Task Information for Studies Included in the Meta-Analysis

Study	Sample	Task
Barch et al. (2001)	14 with first-episode schizophrenia 12 healthy control participants	AX-CPT
Barch et al. (2008)	57 with chronic schizophrenia 37 healthy control participants	AX-CPT
Becker (2012)	49 with chronic schizophrenia 28 healthy control participants	AX-CPT
Braver et al. (1999)	16 with first-episode schizophrenia 16 healthy control participants	AX-CPT
Chung et al. (2011)	41 with chronic schizophrenia 27 healthy control participants	AX-CPT
Cohen et al. (1999)	53 with chronic schizophrenia	AX-CPT
Delawalla		
Edwards e		
Gold et al.		
Holmes et		
Jones et al		

headings repeat on second page of table

Study	Sample	Task
MacDonald & Carter (2003)	17 with chronic schizophrenia 17 healthy control participants	AX-CPT
Poppe et al. (2016)	47 with chronic schizophrenia 56 healthy control participants	DPX
Reilly et al. (2017)	402 with chronic schizophrenia 304 bipolar with psychotic features 210 healthy control participants	DPX
Sheffield et al. (2014)	104 with chronic schizophrenia 132 healthy control participants	AX-CPT, DPX
Todd et al. (2014)	33 with chronic schizophrenia 58 healthy control participants	AX-CPT
Zhang et al. (2015)	339 with chronic schizophrenia 665 healthy control participants	DPX

Note. AX-CPT = AX–continuous performance task; DPX = dot–pattern expectancy task.

Table 7.5 Sample Summary of Complex Experimental Design Table

Table 1

Summary of Designs of Experiments 1–4

Group	Preexposure 1	Preexposure 2	Conditioning	Test
Experiment 1				
Compound	A– X– Y–	AX– BY–	X+	X–
Compound novel	A– X– Y–	AX– BY–	Y+	Y–
Experiment 2				
Compound A	A– X– Y–	AX– BY–	A+	A–
Compound X	A– X– Y–	AX– BY–	X+	X–
Compound novel	A– X– Y–	AX– BY–	Y+	Y–
Experiment 3				
Compound	A– X– Y–	AX– Y–	X+	X–
Element	A– X– Y–	AX– Y–	Y+	Y–
Experiment 4				
Control			A+/Y+	A–/Y–
Element A	A– X– Y–	A– X– Y–	A+	A–
Element Y	A– X– Y–	A– X– Y–	Y+	Y–

Note. A, X, Y, and B = tone, clicker, steady light, and flashing light, respectively (counterbalanced), with the constraint that A and B are drawn from one modality and X and Y from another (counterbalanced); plus sign (+) = shock to floor of rat chamber; minus sign (–) = absence of shock.

Table 7.6 Sample Descriptive Statistics for Study Measures Table

Table 1

Means and Standard Deviations of Scores on Baseline Measures

Scale	High BAS group	Moderate BAS group	*p*
BAS-T	46.17 (2.87)	37.99 (1.32)	<.001
SR	17.94 (1.88)	11.52 (1.84)	<.001
BDI	7.11 (6.50)	6.18 (6.09)	.254
ASRM	6.46 (4.01)	5.63 (3.69)	.109
M-SRM	11.05 (3.36)	11.76 (2.75)	.078

Parenthetical values in a short table are easily read. In most tables, different indices should be presented in different rows or columns.

Note. Standard deviations are presented in parentheses. BAS = Behavioral Activation System; BAS-T = Behavioral Activation System–Total scores from the Behavioral Inhibition System/ Behavioral Activation System Scales; SR = Sensitivity to Reward scores from the Sensitivity to Punishment and Sensitivity to Reward Questionnaire; BDI = Beck Depression Inventory scores; ASRM = Altman Self-Rating Mania Scale scores; M-SRM = Modified Social Rhythm Metric Regularity scores.

Table 7.7 Sample Chi-Square Analysis Table

Table 1

Frequencies and Chi-Square Results for Belief Perseverance in Attitudes Toward Celebrities (N = 201)

Source	Do not believe		Unsure		Believe		$\chi^2(2)$
	n	%	n	%	n	%	
Media reports	17	8.46	140	69.65	44	21.89	124.75*
Family reports	47	23.38	106	52.74	48	23.88	34.06*
Friends' reports	42	20.90	112	55.72	47	23.38	45.52*
Caught by media	19	9.45	82	40.80	100	49.75	54.00*
Celebrity display of behavior	12	5.97	61	30.35	128	63.68	101.22*

*$p < .001$.

Table 7.8 Sample Results of Several t Tests Table

Table 2

Results of Curve-Fitting Analysis Examining the Time Course of Fixations to the Target

exact *p* values

Logistic parameter	9-year-olds		16-year-olds		*t*(40)	*p*	Cohen's *d*
	M	*SD*	*M*	*SD*			
Maximum asymptote, proportion	.843	.135	.877	.082	0.951	.347	0.302
Crossover, in ms	759	87	694	42	2.877	.006	0.840
Slope, as change in proportion per ms	.001	.0002	.002	.0002	2.635	.012	2.078

Note. For each participant, the logistic function was fit to target fixations separately. The maximum asymptote is the asymptotic degree of looking at the end of the time course of fixations. The crossover is the point in time when the function crosses the midway point between peak and baseline. The slope represents the rate of change in the function measured at the crossover. Mean parameter values for each of the analyses are shown for the 9-year-olds (n = 24) and the 16-year-olds (n = 18), as well as the results of t tests (assuming unequal variance) comparing the parameter estimates between the two ages.

Table 7.9 Sample a Priori or Post Hoc Comparisons Table

Table 3

Analyses for the Interaction of Professor Type and Timing of Response on Perceptions of Professor Traits

Professor trait	End of semester professor type		Start of semester professor type		*F* ratio	*p*	η^2
	Typical	Effective	Typical	Effective			
Dedicated	4.706_b	4.789_b	4.154_c	5.000_a	19.26	.001	.15
Easy to understand	3.059_c	4.895_a	3.231_c	4.429_b	5.01	.028	.03
Fair	4.000_b	4.263_b	3.731_c	4.667_a	5.75	.019	.06
Manipulative	1.471_a	1.632_a	1.731_a	1.238_a	3.92	.051	.05
Insensitive	2.059_b	1.526_c	2.538_a	1.143_c	8.12	.006	.06

exact *p* values

Note. Means with different subscripts differ at the p = .05 level by Duncan's new multiple range test.

Table 7.10 Sample Correlation Table for One Sample

Table 1

Descriptive Statistics and Correlations for Study Variables

Variable	*n*	*M*	*SD*	1	2	3	4	5	6	7
1. Internal–external status[a]	3,697	0.43	0.49	—						
2. Manager job performance	2,134	3.14	0.62	−.08**	—					
3. Starting salary[b]	3,697	1.01	0.27	.45**	−.01	—				
4. Subsequent promotion	3,697	0.33	0.47	.08**	−.07**	.04*	—			
5. Organizational tenure	3,697	6.45	6.62	−.29**	.09**	.01	.09**	—		
6. Unit service performance[c]	3,505	85.00	6.98	−.25**	−.39**	.24**	.08**	.01	—	
7. Unit financial performance[c]	694	42.61	5.86	.00	−.03	.12*	−.07	−.02	.16**	—

[a] 0 = internal hires and 1 = external hires. [b] A linear transformation was performed on the starting salary values to maintain pay practice confidentiality. The standard deviation (0.27) can be interpreted as 27% of the average starting salary for all managers. Thus, ±1 *SD* includes a range of starting salaries from 73% (i.e., 1.00 − 0.27) to 127% (i.e., 1.00 + 0.27) of the average starting salaries for all managers. [c] Values reflect the average across 3 years of data.

*$p < .05$. **$p < .01$.

use of specific note

asterisks for *p* values

Table 7.11 Sample Correlation Table for Two Samples

Table 1

Intercorrelations for Study Variables Disaggregated by Gender

Variable	1	2	3	4
1. Grade point average	—	49**	.35**	−.05
2. Academic self-concept	.35**	—	.36**	.02
3. Teacher trust	.49**	.35**	—	.20**
4. Age	.10	.21*	−.15	—

Note. The results for the female sample (n = 199) are shown above the diagonal. The results for the male sample (n = 120) are shown below the diagonal.

*p < .05. **p < .01.

asterisks for p values

Table 7.12 Sample Analysis of Variance Table (Option 1)

Table 1

Means, Standard Deviations, and One-Way Analyses of Variance in Psychological and Social Resources and Cognitive Appraisals

Measure	Urban		Rural		$F(1, 294)$	η^2
	M	SD	M	SD		
Self-esteem	2.91	0.49	3.35	0.35	68.87^{***}	.19
Social support	4.22	1.50	5.56	1.20	62.60^{***}	.17
Cognitive appraisals						
Threat	2.78	0.87	1.99	0.88	56.35^{***}	.20
Challenge	2.48	0.88	2.83	1.20	7.87^{***}	.03
Self-efficacy	2.65	0.79	3.53	0.92	56.35^{***}	.16

$^{***}p < .001$.

Table 7.13 Sample Analysis of Variance Table (Option 2)

Table 2

Means, Standard Deviations, and Two-Way ANOVA Statistics for Study Variables

Variable	SMT		Control		ANOVA			
	M	SD	M	SD	Effect	F ratio	df	η^2
Psychological strain								
Time 1	0.24	0.30	0.22	0.29	G	2.82	1,151	.02
Time 2	0.16	0.27	0.27	0.32	T	0.38	2,302	.00
Time 3	0.16	0.26	0.26	0.31	G × T	4.64**	2,302	.03
Emotional exhaustion								
Time 1	2.82	1.47	2.50	1.25	G	0.32	1,151	.00
Time 2	2.55	1.31	2.47	1.28	T	6.59**	2,302	.04
Time 3	2.36	1.39	2.43	1.16	G × T	3.89*	2,302	.03
Depersonalization								
Time 1	1.20	1.09	1.12	1.05	G	0.07	1,149	.00
Time 2	1.13	1.07	1.25	1.16	T	0.67	2,302	.00
Time 3	1.00	0.93	1.24	0.93	G × T	3.04*	2,302	.02

Note. N = 153. ANOVA = analysis of variance; SMT = stress management training group; Control = wait-list control group; G = group; T = time.

*$p < .05$. **$p < .01$.

Table 7.14 Sample Factor Analysis Table

Table 1

Results From a Factor Analysis of the Parental Care and Tenderness (PCAT) Questionnaire

PCAT item	Factor loading		
	1	2	3
Factor 1: Tenderness—Positive			
20. You make a baby laugh over and over again by making silly faces.	**.86**	.04	.01
22. A child blows you kisses to say goodbye.	**.85**	−.02	−.01
16. A newborn baby curls its hand around your finger.	**.84**	−.06	.00
19. You watch as a toddler takes their first step and tumbles gently back down.	**.77**	.05	−.07
25. You see a father tossing his giggling baby up into the air as a game.	**.70**	.10	−.03
Factor 2: Liking			
5. I think that kids are annoying. (R)	−.01	**.95**	.06
8. I can't stand how children whine all the time. (R)	−.12	**.83**	−.03
2. When I hear a child crying, my first thought is "shut up!" (R)	.04	**.72**	.01
11. I don't like to be around babies. (R)	.11	**.70**	−.01
14. If I could, I would hire a nanny to take care of my children. (R)	.08	**.58**	−.02
Factor 3: Protection			
7. I would hurt anyone who was a threat to a child.	−.13	−.02	**.95**
12. I would show no mercy to someone who was a danger to a child.	.00	−.05	**.74**
15. I would use any means necessary to protect a child, even if I had to hurt others.	.06	.08	**.72**
4. I would feel compelled to punish anyone who tried to harm a child.	.07	.03	**.68**
9. I would sooner go to bed hungry than let a child go without food.	.46	−.03	**.36**

Note. N = 307. The extraction method was principal axis factoring with an oblique (promax with Kaiser normalization) rotation. Factor loadings above .30 are in bold. Reverse-scored items are denoted with (R). Adapted from "Individual Differences in Activation of the Parental Care Motivational System: Assessment, Prediction, and Implications," by E. E. Buckels, A. T. Beall, M. K. Hofer, E. Y. Lin, Z. Zhou, and M. Schaller, 2015, *Journal of Personality and Social Psychology*, *108*(3), p. 501 (https://doi.org/10.1037/pspp0000023). Copyright 2015 by the American Psychological Association.

use of bold on factor loadings

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Table 7.15 Sample Regression Table, Without Confidence Intervals

Table 2

Regression Coefficients of Leader Sleep on Charismatic Leadership

Variable	Model 1			Model 2		
	B	β	*SE*	*B*	β	*SE*
Constant	2.65**		.31	2.76		
Leader gender[a]	−.11	−.07	.16	−.09	−.06	.15
Leader sleep condition[b]				−.36**	−.24	.15
R^2	.09				.14	
ΔR^2					.05*	

use of specific notes

Note. $N = 88$. We examined the impact of leader sleep condition (control vs. sleep deprived) on ratings of charismatic leadership. In Model 1, we entered the control variables of gender and video length to predict leader charisma. In Model 2, we entered sleep condition as a predictor.

[a] Male = 1, female = 2. [b] Control condition = 0, sleep-deprived condition = 1.

*$p < .05$. **$p < .01$.

Table 7.16 **Sample Regression Table, With Confidence Intervals in Brackets**

Table 4

Regressions of Associations Between Marital Satisfaction and Average Levels of Marital Behavior

Variable	*B*	*SE*	*t*	*p*	95% CI
			Angry behavior		
Actor					
H → H	−98.90	40.20	−2.46	.016	[− 179.1, −18.7]
W → W	−.87.11	30.87	−2.82	.006	[−148.7, −25.6]
Partner					
W → H	−76.18	39.43	−1.93	.057	[−154.8, 2.4]
H → W	−91.80	38.16	−2.41	.019	[−167.9, −15.7]
			Disregard		
Actor					
H → H	−38.62	27.86	−1.39	.170	[−94.2, 16.9]
W → W	−47.54	26.99	−1.76	.082	[−101.4, 6.3]
Partner					
W → H	−82.81	32.01	−2.59	.012	[−146.6, −19.0]
H → W	−79.36	27.16	−2.92	.005	[−133.5, −25.2]
			Distancing		
Actor					
H → H	−47.42	24.72	−1.92	.059	[−96.7, 1.9]
W → W	3.04	23.48	0.13	.897	[−43.8, 49.8]
Partner					
W → H	−0.05	23.91	0.00	.998	[−47.7, 47.6]
H → W	−53.50	24.47	−2.19	.032	[−102.3, −4.7]

Note. CI = confidence interval; H → H = husband-as-actor effect on the husband's own marital satisfaction; W → W = wife-as-actor effect on the wife's own marital satisfaction; W → H = wife-as-partner effect on the husband's satisfaction; H → W = husband-as-partner effect on the wife's satisfaction.

square brackets around confidence intervals

Table 7.17 **Sample Regression Table, With Confidence Intervals in Separate Columns**

confidence intervals in separate columns

Table 3

Moderator Analysis: Types of Measurement and Study Year

Effect	Estimate	*SE*	95% CI		*p*
			LL	*UL*	
Fixed effects					
Intercept	.119	.040	.041	.198	.003
Creativity measurement[a]	.097	.028	.042	.153	.001
Academic achievement measurement[b]	−.039	.018	−.074	−.004	.03
Study year[c]	.0002	.001	−.001	.002	.76
Goal[d]	−.003	.029	−.060	.054	.91
Published[e]	.054	.030	−.005	.114	.07
Random effects					
Within-study variance	.009	.001	.008	.011	<.001
Between-study variance	.018	.003	.012	.023	<.001

Note. Number of studies = 120, number of effects = 782, total *N* = 52,578. CI = confidence interval; *LL* = lower limit; *UL* = upper limit.

[a]0 = self-report, 1 = test. [b]0 = test, 1 = grade point average. [c]Study year was grand centered.

[d]0 = other, 1 = yes. [e]0 = no, 1 = yes.

Table 7.18 Sample Hierarchical Multiple Regression Table

Table 2

Hierarchical Regression Results for Well-Being

Variable	B	95% CI for B		SE B	β	R^2	ΔR^2
		LL	UL				
Step 1						.11	.11***
Constant	4.37***	3.72	5.03	0.33			
Perceived social class	0.43***	0.19	0.68	0.12	.30***		
Generation level	−0.11	−0.27	0.04	0.08	−.12		
Step 2						.23	.13***
Constant	1.78	−0.39	3.95	1.10			
Perceived social class	0.40***	0.16	0.64	0.12	.28***		
Generation level	−0.02	−0.23	0.19	0.11	−.02		
Familismo	0.33**	0.07	0.60	0.14	.21**		
Acculturation	0.09	−0.31	0.48	0.20	.04		
Enculturation	0.29	−0.04	0.61	0.17	.19		
Mex Am margin	−0.23**	−0.45	−0.01	0.11	−.17**		
Step 3						.26	.03**
Constant	2.27**	0.08	4.45	1.11			
Perceived social class	0.45***	0.21	0.69	0.12	.31***		
Generation level	−0.01	−0.21	0.20	0.10	−.01		
Familismo	0.37*	0.10	0.63	0.13	.23*		
Acculturation	0.11	−0.28	0.50	0.20	.05		
Enculturation	0.35**	0.02	0.68	0.17	.24**		
Mex Am margin				0.11	−.17**		

	–0.23**	–0.45	–0.02		
Masculinity ideology	–0.05**	–0.10	–0.01	0.20	–.18**

Note. CI = confidence interval; LL = lower limit; UL = upper limit; familismo = the collective importance of family unity that emphasizes interdependence and solidarity; Mex Am margin = Mexican American marginalization.

*p < .05. **p < .01. ***p < .001.

Table 7.19 Sample Model Comparison Table

Table 1

Comparison of Fit Indices in Models Fitted to Simulated Data Across Longitudinal Mediation Model Types

Model	χ^2			RMSEA			AIC	BIC	ΔAIC	ΔBIC
	Value	df	p	Value	95% CI	p				
Simplex lagged	63.3	28	<.001	.044	[.030, .059]	.72	13,479	13,658	—	—
Simplex contemporaneous	58.0	29	.001	.040	[.024, .054]	.87	13,472	13,646	–7	–12
Latent growth	65.0	33	<.001	.039	[.025, .053]	.90	13,471	13,627	–8	–31
Modified latent change	26.2	33	.79	.000	[.000, .020]	>.99	13,432	13,588	–47	–70

Note. AIC and BIC differences are relative to the simplex lagged model.

RMSEA = root-mean-square error of approximation; CI = confidence interval;

AIC = Akaike information criterion; BIC = Bayesian information criterion.

Table 7.20 Sample Multilevel Model Comparison Table

Table 2

Model Parameters and Goodness of Fit for Linear and Quadratic Changes in Emotions by Behavior Type

Effect	Parameter	Positive emotions		Negative emotions	
		Model 1	Model 2	Model 1	Model 2
		Fixed effects			
Status at posttest, π_{0i}					
Intercept	γ_{00}	3.60*** (0.06)	3.34*** (0.12)	1.59*** (0.05)	1.82*** (0.11)
Prosocial behavior	γ_{02}		0.39** (0.14)		−0.36** (0.13)
Self-focused behavior	γ_{03}		0.26 (0.17)		−0.16 (0.15)
Linear rate of change, π_{1i}					
Time	γ_{10}	−0.03 (.02)	−0.002 (0.05)	0.01 (0.02)	0.01 (0.04)
Prosocial behavior	γ_{11}		−0.06 (0.06)		0.02 (0.05)
Self-focused behavior	γ_{12}		0.001 (0.07)		−0.04 (0.06)
Quadratic rate of change, π_{2i}					
Time^2	γ_{20}	−0.02*** (0.01)	−0.001 (0.01)	0.02*** (0.01)	0.02 (0.01)
Prosocial behavior	γ_{21}		−0.03* (0.02)		0.01 (0.02)
Self-focused behavior	γ_{22}		−0.01 (0.02)		−0.01 (0.02)
		Random effects			
Variance components					
Level 1	σ^2_R	0.52	0.52	0.51	0.51
Level 2	σ^2_0	1.34	1.31	1.02	1.00
	σ^2_1	0.040	0.040	.002	0.001
	σ^2_2	0.004	0.003	0.001	0.001
		Goodness of fit			
Deviance		6,703.18	6,692.50	6,424.12	6,413.91
$\Delta\chi^2$			10.68†		10.21
Δdf			6		6

Note. Standard errors are in parentheses. All *p* values in this table are two-tailed. In Model 1 (unconditional quadratic growth), the intercept parameter estimate (γ_{00}) represents the average positive or negative emotions score at posttest across the sample. In Model 2 (prosocial and self-focused behavior vs. control), the intercept parameter estimate (γ_{00}) represents the average positive or negative emotions score in the control condition at posttest, γ_{02} represents the difference at posttest between the prosocial behavior conditions and the control condition, and γ_{03} represents the difference at posttest between the self-focused behavior condition and the control condition. γ_{10} represents the average linear rate of change in the control condition, γ_{11} represents additional effects of prosocial behavior on linear rate of change, and γ_{12} represents additional effects of self-focused behavior on linear rate of change. Finally, γ_{20} represents the average quadratic rate of change in the control condition, γ_{21} represents additional effects of prosocial behavior on quadratic rate of change, and γ_{22} represents additional effects of self-focused behavior on quadratic rate of change. In all models, the intercept, linear slope (time), and quadratic slope (time^2) were free to vary.

†$p \leq .10$. *$p < .05$. **$p < .10$. ***$p < .001$.

Displaying values in parentheses sometimes saves space when they are not applicable to all portions of the table. In most tables, different indices should be presented in different rows or columns.

Table 7.21 Sample Confirmatory Factor Analysis Model Comparison Table

Table 2

Results of Confirmatory Factor Analysis for the Relationships Among Three Types of Intelligence

Model	χ^2	df	NFI	CFI	RMSEA
A: One-intelligence model [a]	10,994.664***	1539	.296	.326	.115
B: Two-intelligences model [b]	10,091.236***	1538	.354	.390	.109
C: Three-intelligences model [c]	8,640.066***	1536	.447	.494	.100

Note. Structural equation modeling was used for the analysis. NFI = normed fit index; CFI = comparative fit index; RMSEA = root-mean-square error of approximation.

[a] In Model A, all 57 items of social intelligence, emotional intelligence, and cultural intelligence were loaded onto one factor. [b] In Model B, the 21 items of social intelligence were loaded onto one factor, and the 16 items of emotional intelligence and the 20 items of cultural intelligence were loaded onto another factor. [c] In Model C, the 21 items of social intelligence were loaded onto one factor, the 16 items of emotional intelligence were loaded onto a second factor, and the 20 items of cultural intelligence were loaded onto a third factor. ***$p < .001$.

Table 7.22 Sample Qualitative Table With Variable Descriptions

Table 2

Master Narrative Voices: Struggle and Success and Emancipation

Discourse and dimension	Example quote
Struggle and success	
Self-actualization as a member of a larger gay community is the end goal of healthy sexual identity development, or "coming out"	"My path of gayness . . . going from denial to saying, 'well, this is it,' and then the process of coming out, and the process of just sort of looking around and seeing, well where do I stand in the world? And sort of having, uh, political feelings." (Carl, age 50)
Maintaining healthy sexual identity entails vigilance against internalization of societal discrimination	"When I'm, like, thinking of criticisms of more mainstream gay culture, I try to . . . make sure it's coming from an appropriate place and not, like, a place of self-loathing." (Patrick, age 20)
Emancipation	
Open exploration of an individually fluid sexual self is the goal of healthy sexual identity development	"[For heterosexuals] the man penetrates the woman, whereas with gay people, I feel like there is this potential for really playing around with that model a lot, you know, and just experimenting and exploring." (Orion, age 31)
Questioning discrete, monolithic categories of sexual identity	"LGBTQI, you know, and added on so many letters. It does start to raise the question about what the terms mean and whether . . . any term can adequately be descriptive." (Bill, age 50)

Table 7.23 Sample Qualitative Table Incorporating Quantitative Data

Table 1

Reasons Why Individuals Chose to Watch the Royal Wedding (N = 45)

Reason for interest	Example quote	Frequency, n (%)
Royal family and its history	"I love all things British. I studied abroad in the U.K. I also watched the weddings of Charles & Diana and Andrew & Fergie. I watched Diana's funeral. Watching William & Kate get married seemed like the natural thing to do."	16 (35.6)
	"I find the royal family and their practices and traditions fascinating. I am a big fan of tradition in any capacity (graduation ceremonies, weddings, etc.) and enjoy watching traditions older than our own country (the U.S.)."	
Fashion and pop culture	"When big pop culture things happen, I tend to want to watch so I'm 'in on it.' Also, when I was little my mom made us get up to watch Princess Diana get married, so it felt a little like tradition."	13 (28.9)
	"I was curious. Wanted to see her dress and how the other people who attended dressed. Like pomp and ceremony."	
Fairy tales and love stories	"I watched his mom and dad get married, watched him grow up. Plus I love a fairy tale that comes true. I believe in love and romance."	11 (24.4)
	"I am a romantic and think this is a great love story."	
To pass time/it was on TV	"I was at the airport and it was broadcasting on TV while I was waiting for my flight."	5 (11.1)
	"It was on CNN when I got up."	

Table 7.24 Sample Mixed Methods Table

Table 3

Integrated Results Matrix for the Effect of Topic Familiarity on Reliance on Author Expertise

Quantitative result	Qualitative result	Example quote
When the topic was more familiar (climate change) and cards were more relevant, participants placed less value on author expertise.	When an assertion was considered to be more familiar and to be general knowledge, participants perceived less need to rely on author expertise.	Participant 144: "I feel that I know more about climate, and there are several things on the climate cards that are obvious, and that if I sort of know it already, then the source is not so critical . . . whereas with nuclear energy, I don't know so much, so then I'm maybe more interested in who says what."
When the topic was less familiar (nuclear power) and cards were more relevant, participants placed more value on author expertise.	When an assertion was considered to be less familiar and not general knowledge, participants perceived more need to rely on author expertise.	Participant 3: "[Nuclear power], which I know much, much less about, I would back up my arguments more with what I trust from the professors."

Note. We integrated quantitative data (whether students selected a card about nuclear power or about climate change) and qualitative data (interviews with students) to provide a more comprehensive description of students' card selections between the two topics.

Figures

7.22 Principles of Figure Construction

All types of graphical displays other than tables are considered figures in APA Style. Ensure that all figures add substantively to readers' understanding and do not duplicate other elements of the paper. Also consider whether a figure is the best way to communicate the information. In some cases (particularly when quantitative information is being conveyed), a table may offer more precision than, say, a graph. If you focus on the principle of enhancing readers' understanding, other questions—for example, use of color, use of photographic images, or magnitude of cropping of a picture—should be relatively easy to resolve.

The standards for good figures are simplicity, clarity, continuity, and (of course) information value. A good figure

- augments rather than duplicates the text,
- conveys only essential information,
- omits visually distracting detail,
- is easy to read—its elements (e.g., type, lines, labels, symbols) are large enough to be seen and interpreted with ease,
- is easy to understand—its purpose is readily apparent,
- is carefully planned and prepared, and
- is consistent with and in the same style as similar figures in the same article.

For figures of all types, check that

- images are clear,
- lines are smooth and sharp,
- font is simple and legible,
- units of measurement are provided,
- axes are clearly labeled, and
- elements within the figure are labeled or explained.

Be certain, for instance, to distinguish between error bars and confidence intervals. When using confidence intervals, clearly specify the size of the interval (e.g., 95%); when using error bars, provide the label for the error (e.g., standard error of the mean) in the figure image or note. In addition, check all figures to ensure that

- sufficient information is given in the legend and/or note to make the figure understandable on its own (i.e., apart from the text),
- symbols are easy to differentiate, and
- the graphic is large enough for its elements to be discernible.

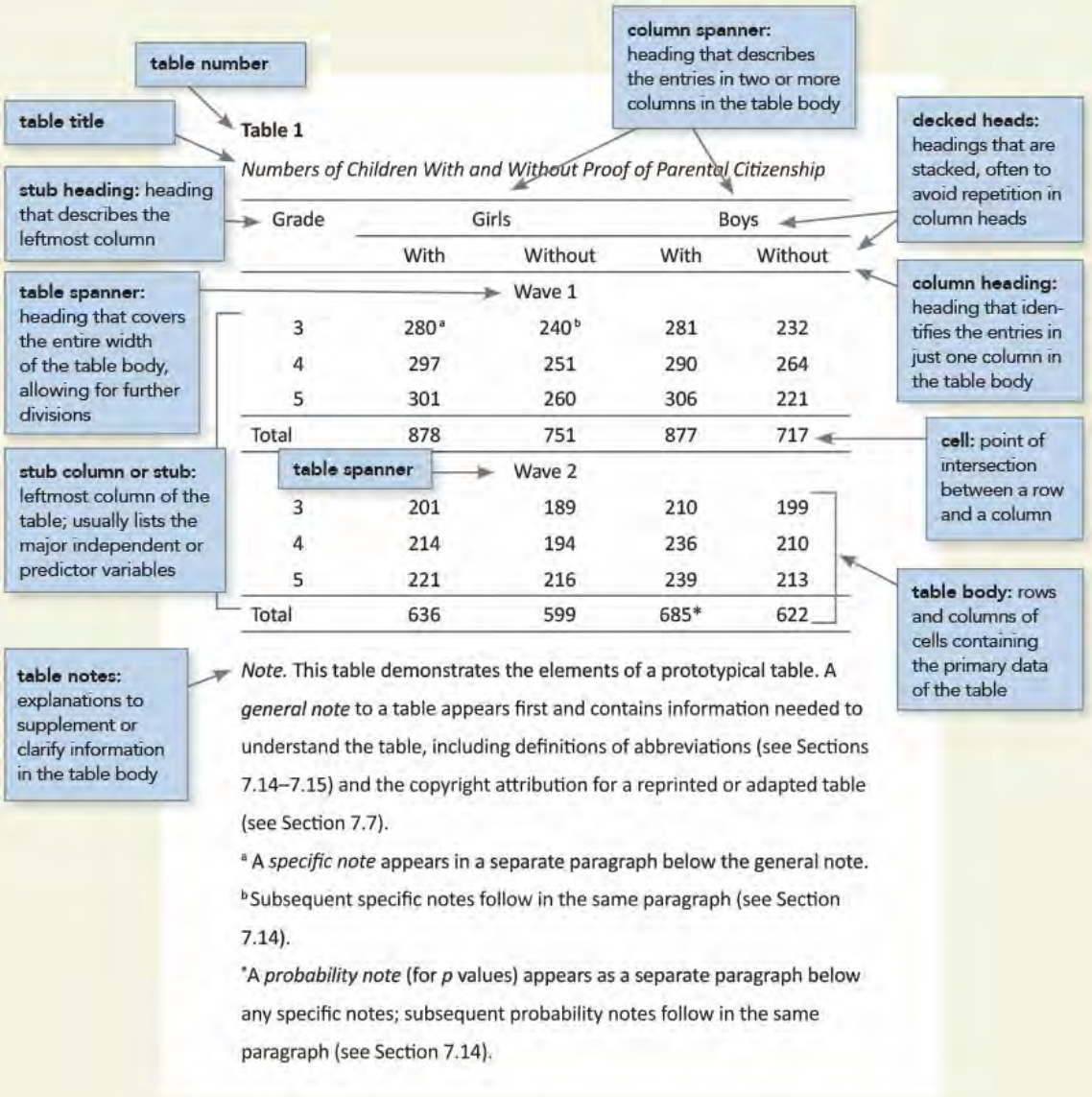
Even when using high-quality graphics software to construct figures, examine figures carefully and make any necessary adjustments to follow these guidelines.

7.23 Figure Components

The basic components of a prototypical figure are shown in Figure 7.1 and are summarized as follows:

- **number:** The figure number (e.g., Figure 1) appears above the figure in bold (see Section 7.24).
- **title:** The figure title appears one double-spaced line below the figure number in italic title case (see Sections 6.17 and 7.25).
- **image:** The image portion of the figure is the chart, graph, photograph, drawing, or other illustration itself (see Section 7.26).
- **legend:** A figure legend, or key, if present, should be positioned within the borders of the figure and explains any symbols used in the figure image (see Section 7.27).
- **note:** Three types of notes (general, specific, and probability) can appear below the figure to describe contents of the figure that cannot be understood from the figure title, image, and/or legend alone (e.g., definitions of abbreviations, copyright attribution). Not all figures include figure notes (see Section 7.28).

Figure 7.1 Basic Components of a Figure



See Section 7.36 for sample figures.

7.24 Figure Numbers

Number all figures that are part of the main text (i.e., not part of an appendix or supplemental materials) using Arabic numerals—for example, Figure 1, Figure 2, and Figure 3. Assign the numbers in the order in which each figure

is first mentioned in the text, regardless of whether a more detailed discussion of the figure occurs elsewhere in the paper. Write the word "Figure" and the number in bold and flush left (i.e., not indented or centered). Figures that appear in appendices follow a different numbering scheme (see Section 2.14).

7.25 Figure Titles

Give every figure a brief but clear and explanatory title; the basic content of the figure should be easily inferred from the title. Write the figure title in italic title case below the figure number and double-space the figure number and title. Avoid overly general and overly detailed figure titles (see Section 7.11).

7.26 Figure Images

The image part of the figure (e.g., graph, chart, diagram) should be saved in a resolution sufficient to allow for clear printing or viewing (see Section 7.4). Attend to the following considerations when creating images.

Size and Proportion of Elements. Each element in a figure must be large enough and sharp enough to be legible. Use a simple sans serif font (e.g., Arial, Calibri, Lucida Sans Unicode; see Section 2.19) within the image portion of the figure with enough space between letters to avoid crowding. Letters should be clear, sharp, and uniformly dark and should be sized consistently throughout the figure; the font size should be no smaller than 8 points and no larger than 14 points. As a general guideline, plot symbols should be about the size of lowercase letters that appear in a label within the figure. Also consider the weight (i.e., size, density) of each element in a figure in relation to that of every other element, and make the most important elements the most prominent. For example, curves on line graphs and outlines of bars on bar graphs should be bolder than axis labels, which should be bolder than the axes and tick marks.

Spelling, Capitalization, and Numbers Within Figure Images. Use title case for axis labels. Abbreviate the words "number" to "no." and "percentage" to "%." Words within figure images other than those on the axis labels or in the figure legend may be written in either title case or sentence

case (see Section 6.17), depending on the contents of the figure. In general, labels, phrases, or words that serve as headings would be better set in title case, whereas other descriptive phrases, sentences, or paragraphs within a figure would be better set in sentence case. Numbers that appear in the image portion of a figure should be written as words or numerals according to the guidelines in Sections 6.32 to 6.39; however, it is permissible to use numerals for all numbers in a figure if this would be clearer or save space. Statistics, Greek letters, and units of measurement do not need to be defined in a figure note (see Section 7.15).

Shading. Limit the number of different shadings used in a single graphic. If different shadings are used to distinguish bars or segments of a graph, choose shadings that are distinct; for example, the best option to distinguish two sets of bars is no shading ("open") and black or gray ("solid"). If more than two shadings are needed, use patterns, again making sure that the patterns are distinct—for example, use no (open) shading, solid black or gray, and stripes for three shadings. If error bars or other information overlaps with shaded areas (e.g., double-sided error bars in a bar graph), ensure that the overlapping information can be clearly distinguished from the shading.

Color. Color can serve both communicative and decorative purposes in figures. Authors seeking publication should avoid the use of color except when it is necessary for understanding the material because of the relatively high cost of color reproduction for printed materials (authors may bear some of this cost; for APA journals guidelines, see http://on.apa.org/WDtxdW). For example, photographs, fMRI images, and gene staining results often use color. If color representation is not crucial for understanding and the article is to be published both in print and online, convert the figure to grayscale or consider placing the figure online as supplemental material. Some journals offer the option to publish a figure in color online and in grayscale in print at no cost; when using this option, ensure that the figure can still be understood even when it is printed in grayscale. It is the author's responsibility to ensure that the final representation is accurate. However, authors submitting a manuscript to an online-only journal may use color more liberally (e.g., colored bars rather than gray and white bars in a bar graph). Likewise,

students preparing a figure for a course assignment may use color provided that the assignment will be delivered in a format that supports it.

When selecting colors for a figure, ensure that there is plenty of contrast so that people living with a color-vision deficiency (often referred to as "color blindness") or people who do not see color in a typical way can understand the information and tell the colors apart. Best practice is to use a contrast checker such as the free Colour Contrast Analyser (https://developer.paciellogroup.com/resources/contrastanalyser) to evaluate the contrast ratio and confirm that your content passes the standards for WCAG 2.0 AA or later.[2] Adequate contrast ratios ensure that the figure is not only accessible to readers with color-deficient vision but also understandable by all readers if the figure is printed or photocopied in grayscale. Another strategy to achieve adequate contrast is to use a pattern in combination with color so that the differentiation of elements does not rely on color alone (e.g., in a line graph, different lines may be in different colors and also of different styles, such as solid, dashed, and dotted). When many colors must be used and it is not possible to achieve high contrast among all of them, label colored areas directly in the image or use lines to connect the object to its label rather than placing the label in a legend, if possible, so that readers do not have to match colors in the figure to colors in the legend. See the APA Style website (https://apastyle.apa.org) for an example of how people with certain color-vision deficiencies see color and how the colors used in figures can be adjusted to accommodate them.

Gridlines and 3-D Effects. Avoid the use of gridlines in figures unless the gridlines will substantially aid readers in understanding the content, such as when many data points need to be compared across the x-axis. Likewise, avoid including 3-D effects for mere decoration (e.g., 3-D bar graphs) because they may make the figure more difficult to read. However, 3-D effects can be used to convey essential information (e.g., 3-D representations of stimuli).

Panels. The decision of whether to divide a figure into panels or create a separate figure for each panel will depend on the nature of the information being presented. Although panels help readers directly compare information, they also increase the density of the information being presented on the page;

as always, prioritize clear communication when constructing any figure. If the figure includes multiple panels, it is optional to label them. If panels are unlabeled, refer to panels by their position (e.g., the top panel, the left panel, the middle panel). To label panels, assign each one a capital letter (e.g., A, B) and place the label at the top left of the panel. Refer to the panels as "Panel A," "Panel B," and so forth. In the main text, refer to a panel as "Figure 5A" or "Panel A of Figure 5." In the figure general note, explain each panel. See Figures 7.18 and 7.19 in Section 7.36 for examples of figures with labeled panels.

Citations in Figures. If a figure contains citations to other works, follow the formats described in Section 8.11. Use an ampersand (&) for the word "and" in all citations in figures to conserve space.

7.27 Figure Legends

A legend (also called a key) explains any symbols, line styles, or shading or pattern variants used in the image portion of the figure (see Figures 7.2–7.3 in Section 7.36 for examples). The legend is an integral part of the figure; therefore, its lettering should be of the same kind and proportion as that appearing in the rest of the figure. Capitalize words in the legend using title case (see Section 6.17). Only figures that have symbols, line styles, or shadings needing definition should include legends. When possible, place legends within or below the image instead of to the side to avoid having empty space around the legend.

7.28 Figure Notes

Figure notes contain information needed to clarify the contents of the figure for readers. As with tables, figures may have three kinds of notes: general, specific, and probability.

A general note should explain units of measurement, symbols, and abbreviations that are not included in the legend or defined elsewhere in the figure (see Section 7.15 for information on abbreviations and symbols that do not require definitions). Make certain that the symbols, abbreviations, and terminology in the note and legend match the symbols, abbreviations, and terminology in the figure, in other figures in the paper, and in the text.

Explain the use of shading, color, and any other design element that carries meaning. Provide individual descriptions of panels for multipanel figures. If a graph includes error bars, explain in the image or general note whether they represent standard deviations, standard errors, confidence limits, or ranges; it is also helpful to provide sample sizes. Also include within the general note any acknowledgment that a figure is reprinted or adapted from another source (see Section 7.7). Place explanations of abbreviations and copyright attributions for reproduced figures last in the general note.

Position any superscripts for specific notes near the element being identified. It is preferable to report exact p values; however, if statistically significant values are marked with asterisks or daggers in the figure, explain them in a probability note (see Section 7.14). For guidelines on formatting figure notes, see Section 7.14.

7.29 Relation Between Figures

Similar figures or figures of equal importance should be of equal size and scale. Combine figures that are alike to facilitate comparisons between their content. For example, two line graphs with identical axes might be combined horizontally into a single figure, or multiple figures might be combined into one figure with multiple panels (see Section 7.26).

7.30 Photographs

Photographs are a type of figure with special considerations. Authors seeking publication must check publisher guidelines to ensure the photograph is submitted in the correct file type. Photographs may be printed in grayscale or in color, depending on the contents of the photograph and the venue of publication. Color photographs should include enough contrast to ensure that contents will be understandable if reproduced in grayscale. Photographs in most student papers can be in color and saved in any widely available photo format (see Section 7.26 for more information on the use of color in figures).

It is essential that photographic images be submitted at appropriate levels of resolution (as specified by the publisher). Because reproduction softens contrast and detail in photographs, starting with rich contrast and sharp detail will improve the final version of the image. The camera view and the lighting

should highlight the subject and provide high contrast; a light or dark background can provide even more contrast. Photographs usually benefit from cropping to, for example, eliminate extraneous detail or center the image. However, when a photographic image has been altered in a manner beyond simple cropping and/or adjustment for light levels, clearly indicate in a general note how the image has been altered. Ethical principles of publication forbid any intentional misrepresentation of images, just as fraudulent data manipulation is forbidden. See Figure 7.17 in Section 7.36 for an example of a photograph as a figure.

If you photograph an identifiable person, obtain a signed release from that person to use the photograph in your paper (see Section 12.17); if the person is not identifiable, a release is not needed. If you took a photograph yourself, no citation or copyright attribution is required in the figure note. If you want to reprint or adapt a photograph from another source, you may need to obtain permission to use it in your paper because professional photographs are usually the property of the photographer. See Sections 12.14 to 12.18 for further information on reprinting or adapting photographs from other sources.

7.31 Considerations for Electrophysiological, Radiological, Genetic, and Other Biological Data

The presentation of electrophysiological, radiological, genetic, and other biological data presents special challenges because of the complexity of the data. Focus first on making sure your image accurately represents the data. It is essential that you identify in the general note how images were processed or enhanced and that you clearly label the images. Next, consider principles of clarity of representation, necessity for inclusion, and consistency among representations. If your figure contains more than one panel or your paper contains more than one figure, keep style and formatting elements as consistent as possible throughout (although specific features such as axis labels and scale units may vary). Biological and genetic data often must be presented in color for the information to be interpretable (see Section 7.26).

Carefully consider whether to include complex graphs and images in the main text or as supplemental materials. Use supplemental materials to present content that is better displayed online than in print or that can only be viewed

online. For example, the dynamic spread of brain activation may be able to be displayed only through color video clips.

7.32 Electrophysiological Data

When presenting electrophysiological data, clear labeling of the image is essential; for example, in the presentation of event-related brain potential data, it is essential that the direction of negativity (i.e., negative up or down) be indicated as well as the scale of the response. Information that is necessary for proper interpretation of the image, such as number or placement of electrodes, should accompany the figure. See Figure 7.19 in Section 7.36 for an example of a figure presenting event-related brain potential data.

7.33 Radiological (Imaging) Data

When presenting brain images, clearly label each image and provide details needed to interpret the image in the figure note. When axial or coronal sections are being displayed, clearly label which hemisphere is the left and which is the right. When sagittal slices are displayed, clearly indicate whether each slice is of the right or the left hemisphere. When slices are shown, also present an image that indicates where in the brain the slices were taken to help orient readers. Specify the coordinate space in which the images have been normalized (e.g., Talairach, MNI).

Cutaway views of the brain that show activations interior to it can be useful if the cutaways clearly depict the tissue that has been excised. When activations are superimposed on a surface-rendered image of a brain, clear explanation of what activations are being shown should accompany the figure, particularly with regard to the depth of the activation that has been brought to the surface; the use of flattened surface images may help make the data clearer. When using color, use it consistently in all representations within the paper and clearly specify the color–scale mapping. Neuroimaging data almost always require extensive postacquisition processing, and details of the processing methods should accompany their display. Photomicrographs are often used in cell-staining and other types of imaging studies. When preparing photomicrographs, include a scale bar and staining

materials information. See Figure 7.20 in Section 7.36 for an example of fMRI data in a figure.

7.34 Genetic Data

As with other displays of biological material, clear labeling of images enhances displays of genetic information (e.g., deletion patterns), be they of the physical map variety or the photographic stain variety. Present information concerning locations, distances, markers, and identification methods with the figure. Genetic data displays often contain much information; careful and circumscribed editing of the image and its legend can improve the communicative value of the figure. See Figure 7.21 in Section 7.36 for an example of a physical map of genetic material in a figure.

7.35 Figure Checklist

The figure checklist may be helpful to ensure that your figure communicates effectively and conforms to the style guidelines presented in this chapter.

Figure Checklist

- Is the figure necessary?
- Does the figure belong in the print and electronic versions of the article, or can it be placed in supplemental materials?
- Is the figure being submitted in a file format acceptable to the publisher?
- Has the file been produced at a sufficiently high resolution to allow for accurate reproduction?
- Are figures of equally important concepts prepared according to the same size and scale?
- Are all figures numbered consecutively with Arabic numerals in the order in which they are first mentioned in the text? Is the figure number bold and flush left?
- Are all figures called out or referred to in the text?
- Is the figure title brief but explanatory? Is it written in italic title case and flush left?

- Is the figure image simple, clear, and free of extraneous detail?
- Are all elements of the image clearly labeled?
- Are the magnitude, scale, and direction of grid elements clearly labeled?
- Has the figure been formatted properly? Is the font sans serif within the image portion of the figure and between 8 and 14 points in size?
- Are all abbreviations explained (with exceptions as noted in Section 7.15), as well as the use of special symbols?
- If the figure includes a legend to define symbols, line styles, or shading variants, does the legend appear within or below the image? Are words in the legend written in title case?
- Have all substantive modifications to photographic images been disclosed?
- Are the figure notes, if needed, in the order of general note, specific note, and probability note? Are the notes double-spaced and flush left and in the same font as the text of the paper?
- If all or part of a figure is reprinted or adapted, is there a copyright attribution? If permission was necessary to reproduce the figure, have you received written permission for reuse (in print and electronic forms) from the copyright holder and sent a copy of that written permission with the final version of your paper?

7.36 Sample Figures

Many types of figures can be used to present data to readers. The more common types of figures used in qualitative, quantitative, and mixed methods research are presented next. There are many variations and versions of each, and the distinctions among many of them are not clear. For situations not addressed here, consult similar published articles to see examples of current standards and practices and follow those examples.

- **graphs** (Figures 7.2–7.3): Graphs typically display the relationship between two quantitative indices or between a continuous quantitative variable (usually displayed on the y-axis) and groups of participants or subjects (usually displayed on the x-axis). Bar graphs (Figure 7.2) and line

graphs (Figure 7.3) are two examples of graphs.

- **charts** (Figures 7.4–7.11): Charts generally display nonquantitative information with the use of enclosed boxes, squares, or circles connected with straight or curved lines or arrows. They are used to
  - show the flow of participants or subjects, such as through a study process (Figure 7.4) or in a randomized clinical trial (Figure 7.5; this is referred to as a CONSORT flow diagram; for a downloadable template, see the CONSORT website at http://www.consort-statement.org/consort-statement/flow-diagram);
  - illustrate models—for example, conceptual or theoretical models (Figure 7.6), structural equation models (Figure 7.7), confirmatory factor analysis models (Figure 7.8), and path models (Figure 7.9); and
  - illustrate qualitative (Figure 7.10) and mixed methods (Figure 7.11) research designs or frameworks.
- **drawings** (Figures 7.12–7.13): Drawings show information pictorially and can be used to illustrate, for example,
  - experimental setups (Figure 7.12) and
  - experimental stimuli (Figure 7.13).
- **maps** (Figure 7.14): Maps generally display spatial information—for example, geographic census information. This information often comes from government sources (e.g., the U.S. Census Bureau or the Centers for Disease Control and Prevention); to reprint or adapt tables or figures from these sources, see Section 12.16.
- **plots** (Figures 7.15–7.16): Plots present individual data points as a function of axis variables. Common types of plots include
  - the scatterplot (Figure 7.15), which is used to explore the relationship between two variables (e.g., a linear relationship may be indicated if the data points are clustered along the diagonal), and
  - multidimensional scaling (Figure 7.16), in which similar points or stimuli are presented close together in a multidimensional space and those that are dissimilar appear farther apart.
- **photographs (**Figure 7.17): Photographs (see Section 7.30) contain direct visual representations of information. They are often used to present information that would be difficult to portray effectively with drawings,

such as facial expressions or precise placement of stimuli in an environment.

Multipanel Figures. A multipanel figure may combine bar graphs, line graphs, histograms, and other figure types into one figure (see Figure 7.18 for an example; see also Section 7.26). Whether it is advisable to combine panels into one figure or to present panels as separate figures will depend on the size of the figures and the nature of the information being presented.

Figures for Electrophysiological, Radiological, Genetic, and Other Biological Data. A variety of figures are used to present biological data. These data include

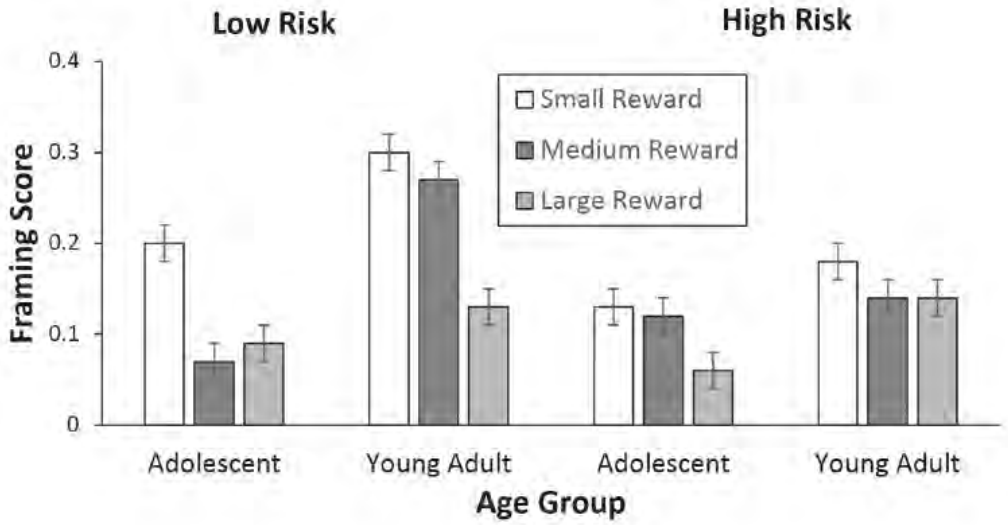
- event-related potentials (Figure 7.19),
- fMRI data (Figure 7.20), and
- genetic maps (Figure 7.21).

Sample Figures

Figure 7.2 Sample Bar Graph

Figure 1

Framing Scores for Different Reward Sizes

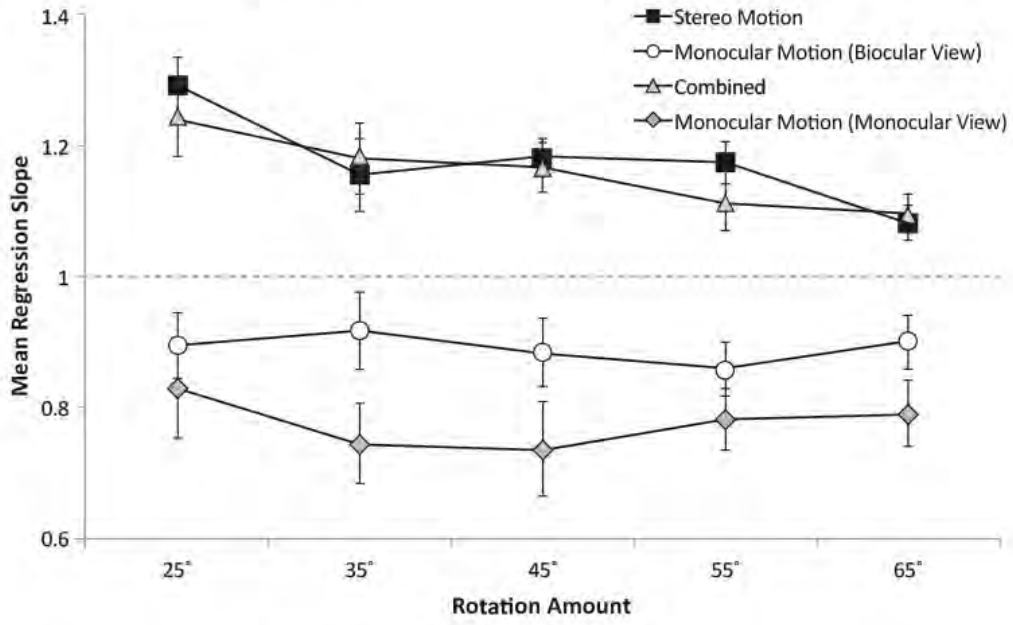


Note. Framing scores of adolescents and young adults are shown for low and high risks and for small, medium, and large rewards. Framing scores were calculated as the proportion of risky choices in the gain frame from the proportion of risky choices in the loss frame. Error bars show standard errors.

Figure 7.3 Sample Line Graph

Figure 3

Mean Regression Slopes in Experiment 1



Note. Mean regression slopes in Experiment 1 are shown for the stereo motion, biocularly viewed monocular motion, combined, and monocularly viewed monocular motion conditions, plotted by rotation amount. Error bars represent standard errors. From "Large Continuous Perspective Change With Noncoplanar Points Enables Accurate Slant Perception," by X. M. Wang, M. Lind, and G. P. Bingham, 2018, *Journal of Experimental Psychology: Human Perception and Performance, 44*(10), p. 1513 (https://doi.org/10.1037/xhp0000553). Copyright 2018 by the American Psychological Association.

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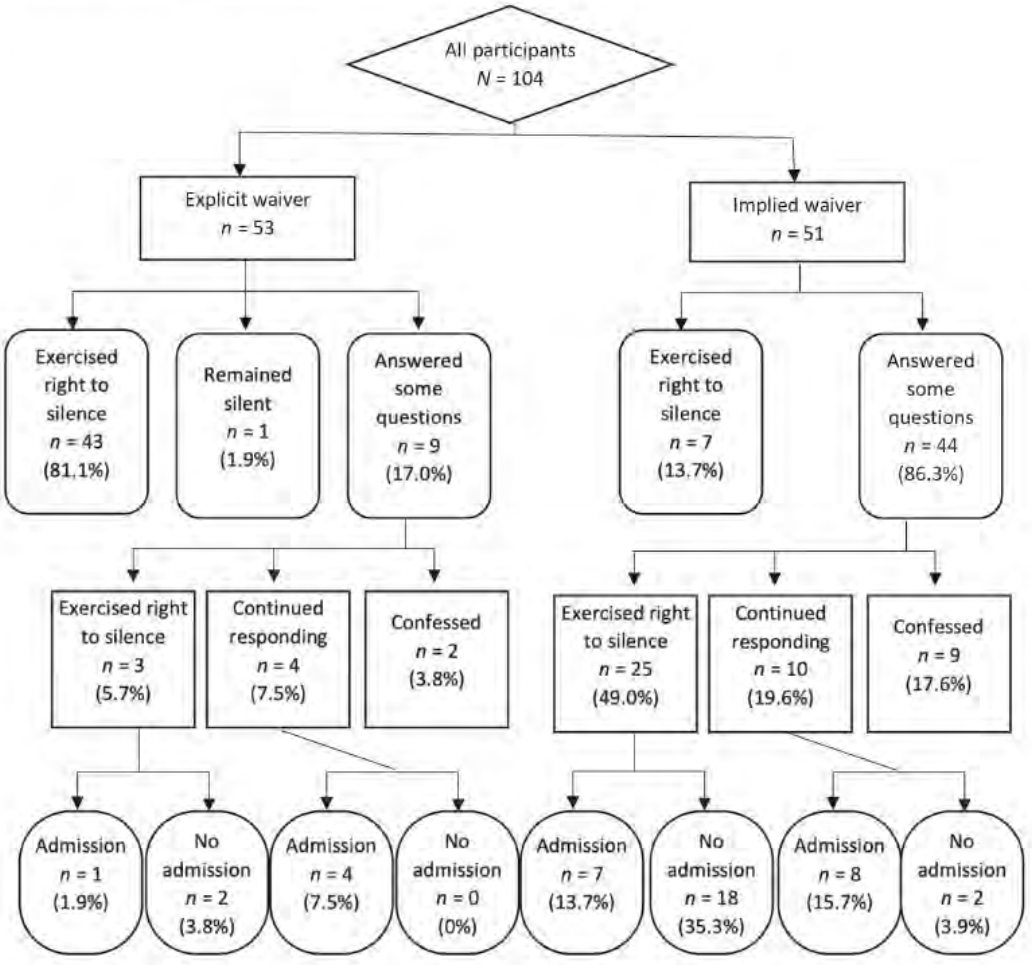
Figure 7.4 Sample Figure Showing the Flow of Participants Through a Study Process

Figure 1

Flowchart of Participant Decisions



Note. Participant decisions regarding the right to silence, confessions, and admissions of incriminatory information are shown.

Figure 7.5 Sample CONSORT Flow Diagram

Figure 7.5

CONSORT Flowchart of Participants

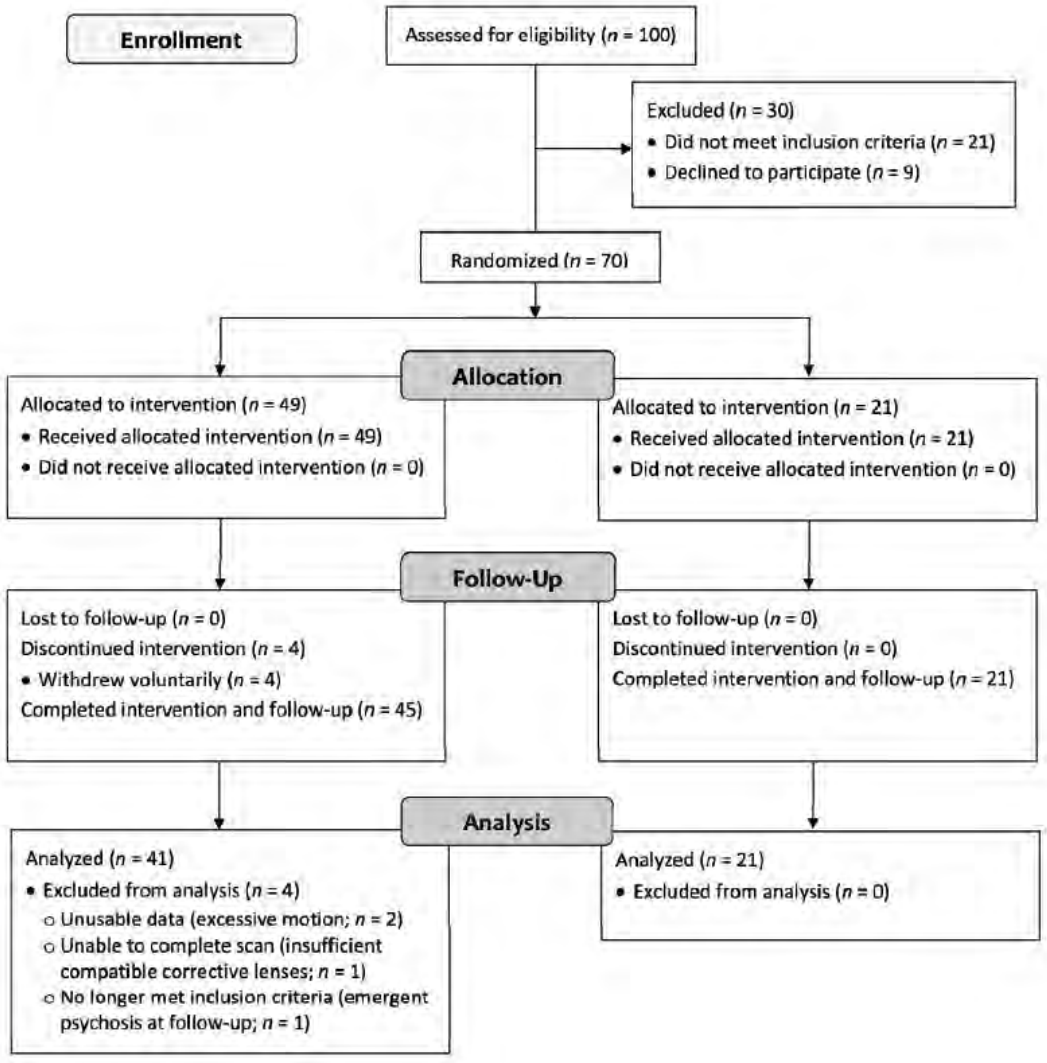
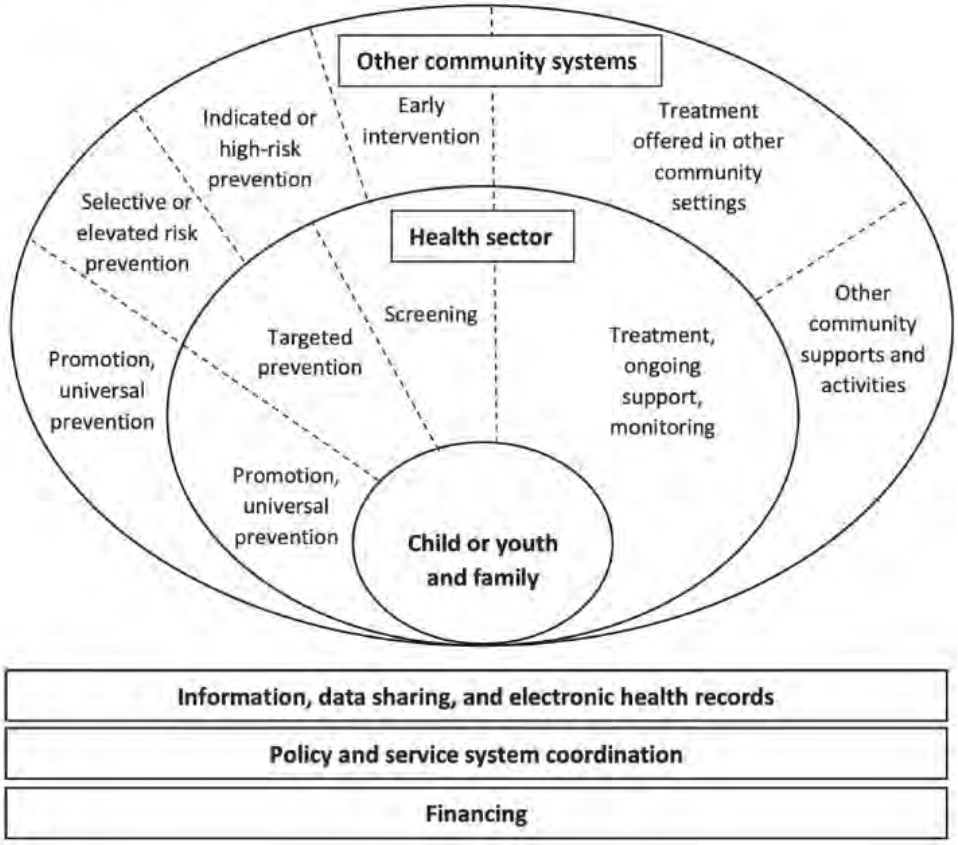


Figure 7.6 Sample Conceptual Model

Figure 2

Integrated Child and Youth Behavioral Health System

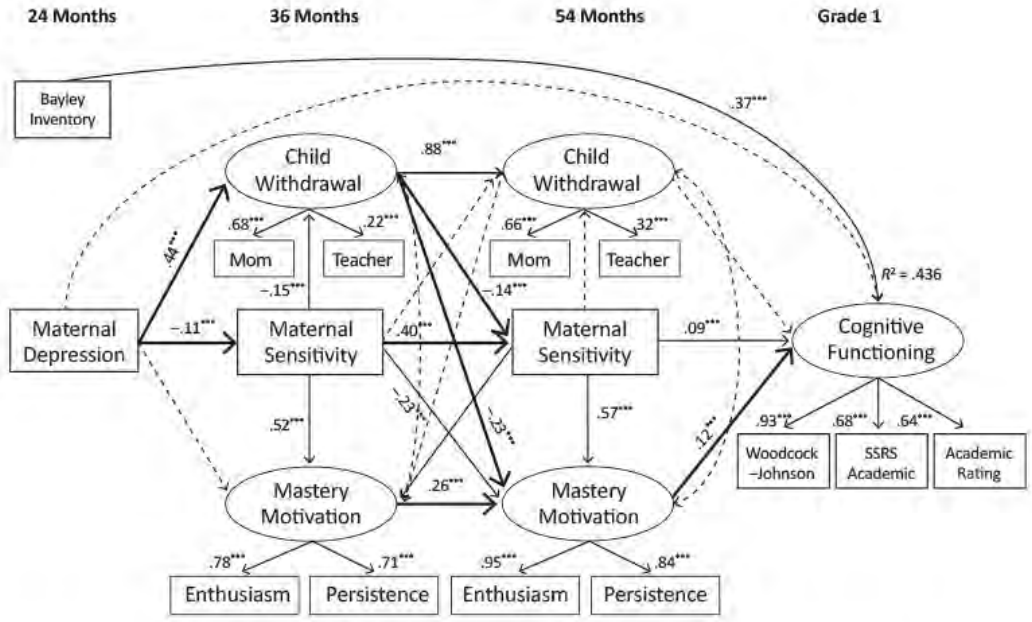


Note. This model shows that the integrated child and youth behavioral health system is centered on the child or youth and family and includes promotion; prevention; screening; and treatment, ongoing support, and monitoring both in the health sector and in other community systems. This structure is supported by information systems, policy and service system coordination, and financing, which are shown in rectangles beneath the ovals to illustrate this support.

Figure 7.7 Sample Structural Equation Model

Figure 2

Structural Equation Model Predicting Children's Cognitive Functioning



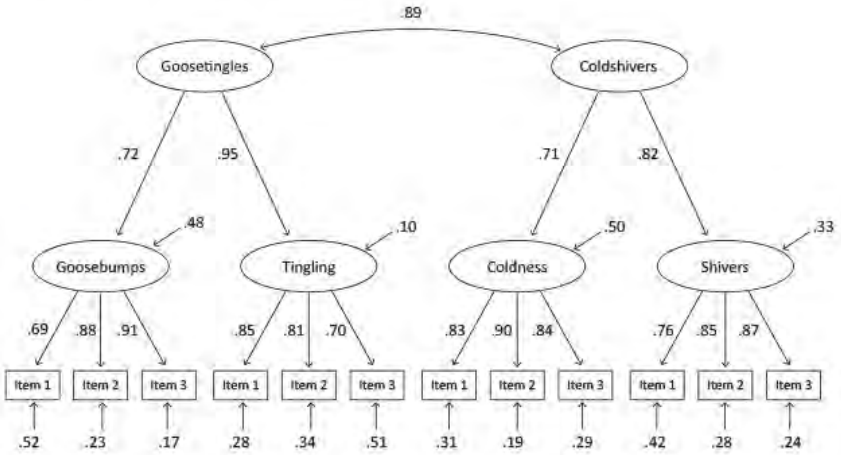
Note. This structural equation model predicts children's cognitive functioning from mothers' early depressive symptoms, with mediating effects of child withdrawal and mastery motivation. Statistics are standardized regression coefficients. Maternal depression is averaged across 6, 15, and 24 months. Dotted lines represent nonsignificant relations; bold lines represent significant indirect paths. SSRS = Social Skills Rating System.

$^{**}p < .01$. $^{***}p < .001$.

Figure 7.8 Sample Confirmatory Factor Analysis Results Figure

Figure 2

Second-Order Confirmatory Factor Analysis for Study 2

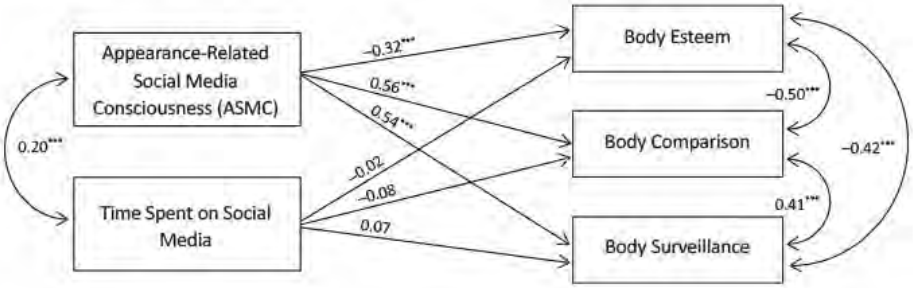


Note. Items are numbered in the order presented in the text. All modeled correlations and path coefficients are significant ($p < .05$).

Figure 7.9 Sample Path Model

Figure 1

Path Analysis Model of Associations Between ASMC and Body-Related Constructs



Note. The path analysis shows associations between ASMC and endogenous body-related variables (body esteem, body comparison, and body surveillance), controlling for time spent on social media. Coefficients presented are standardized linear regression coefficients.

***$p < .001$.

Figure 7.10 Sample Qualitative Research Figure

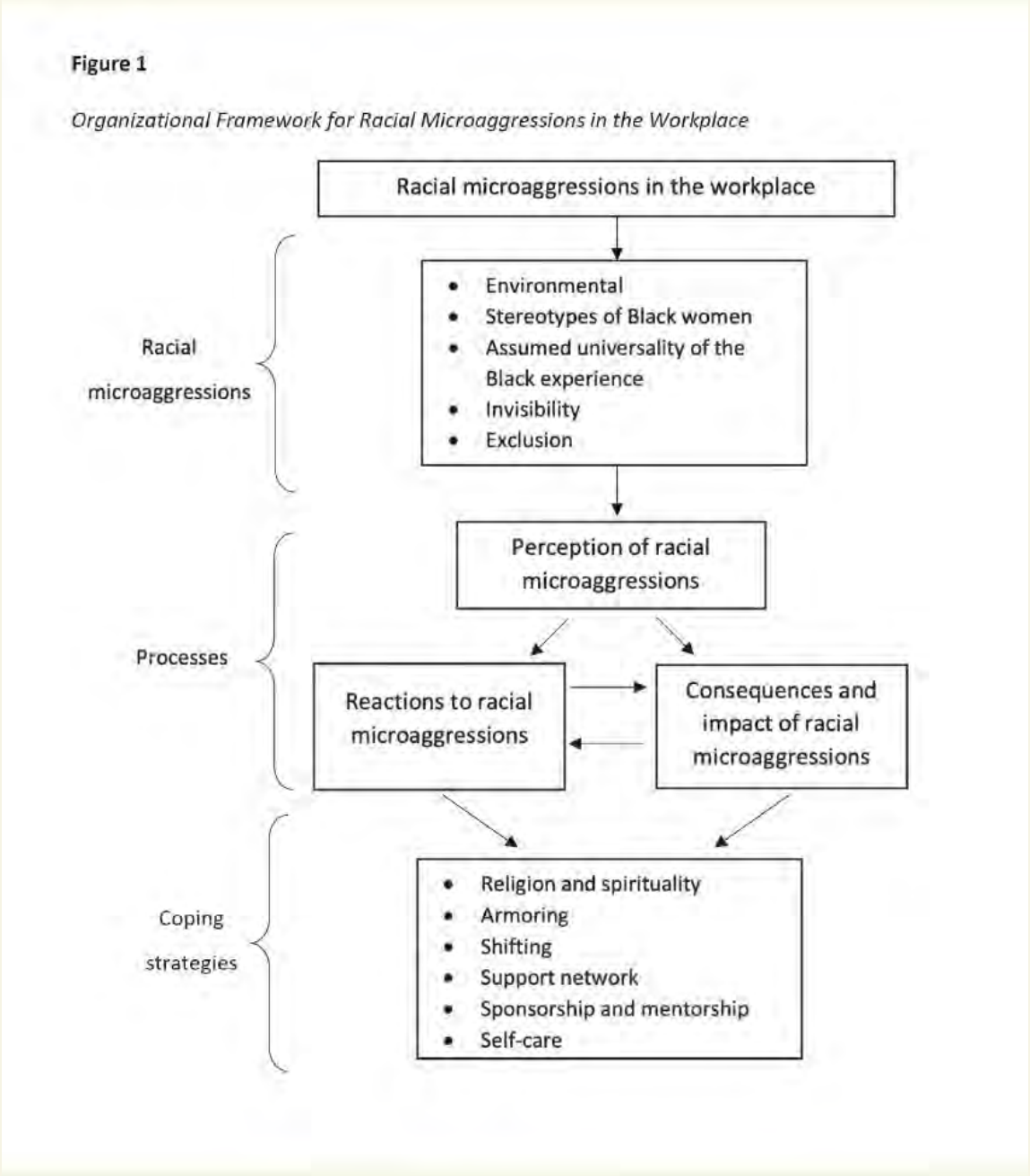
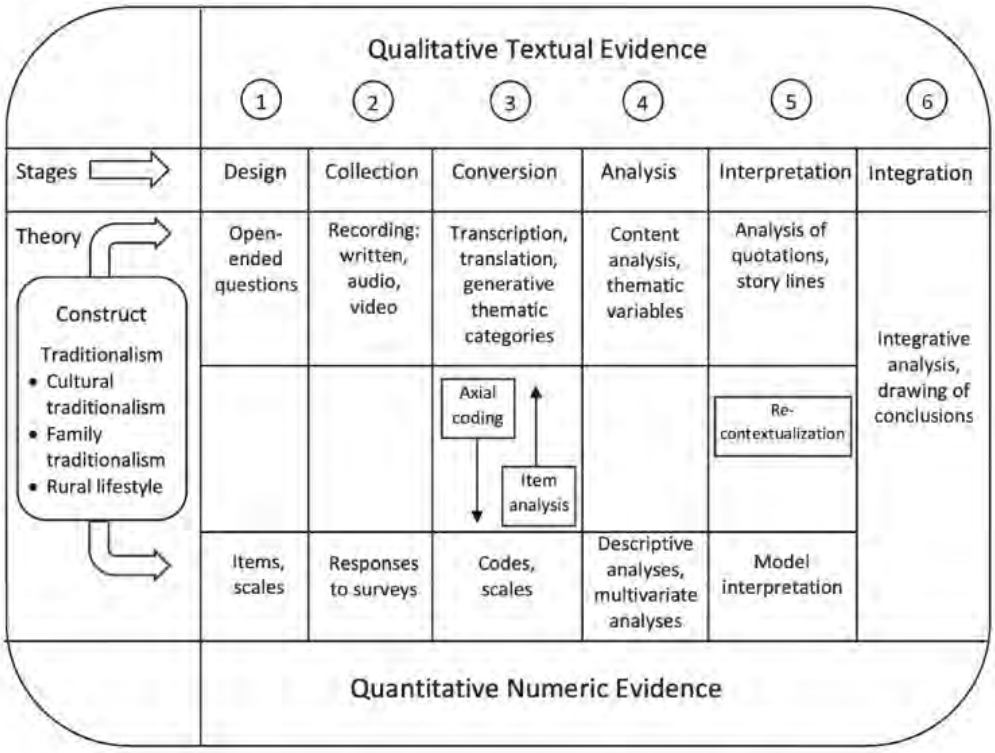


Figure 7.11 Sample Mixed Methods Research Figure

Figure 1

A Multistage Paradigm for Integrative Mixed Methods Research

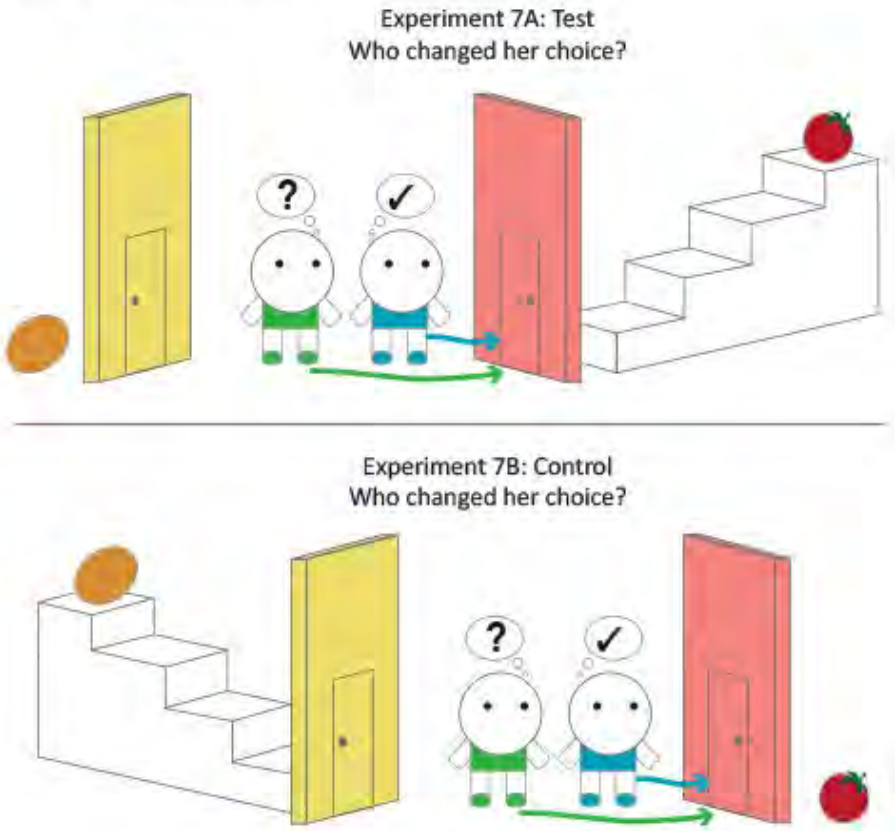


Note. Items are numbered in the order presented in the text. All modeled correlations and path coefficients are significant ($p < .05$).

Figure 7.12 Sample Illustration of Experimental Setup

Figure 7

Design of Experiment 7

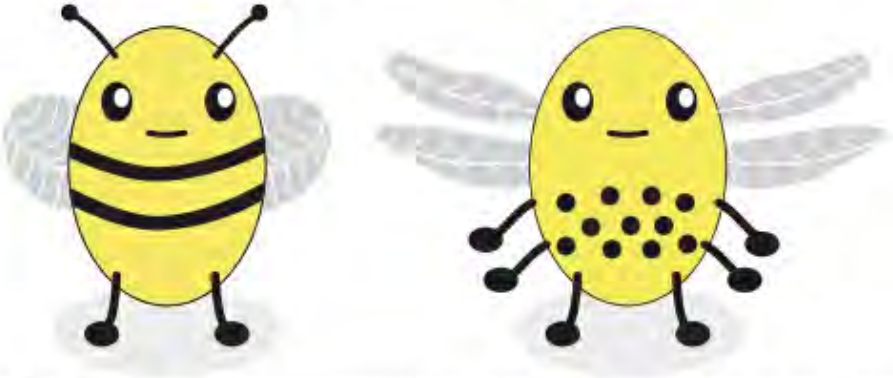


Note. Children watched two puppets–one who knew about the unobservable set of stairs and one who did not—choose the tomato over the corn (high-cost choice in Experiment 7A and low-cost choice in Experiment 7B). Children then learned that one puppet changed her choice after opening the door and were asked to infer who that was.

Figure 7.13 Sample Illustration of Experimental Stimuli

Figure 4

Examples of Stimuli Used in Experiment 1

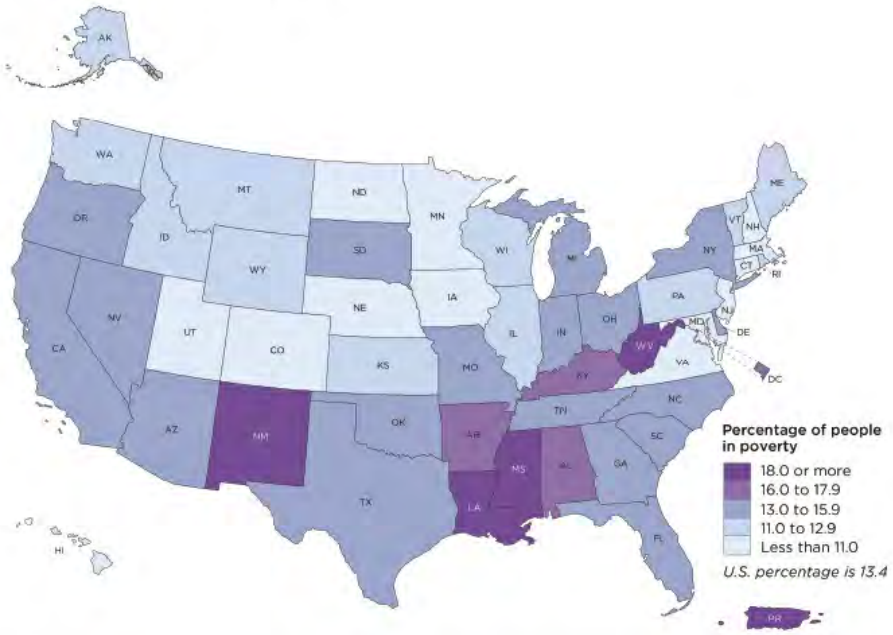


Note. Stimuli were computer-generated cartoon bees that varied on four binary dimensions, for a total of 16 unique stimuli. They had two or six legs, a striped or spotted body, single or double wings, and antennae or no antennae. The two stimuli shown here demonstrate the use of opposite values on all four binary dimensions.

Figure 7.14 Sample Map

Figure 1

Poverty Rate in the United States, 2017



Note. The U.S. percentage does not include data for Puerto Rico. Adapted from 2017 *Poverty Rate in the United States*, by U.S. Census Bureau, 2017 (https://www.census.gov/library/visualizations/2018/comm/acs-poverty-map.html). In the public domain.

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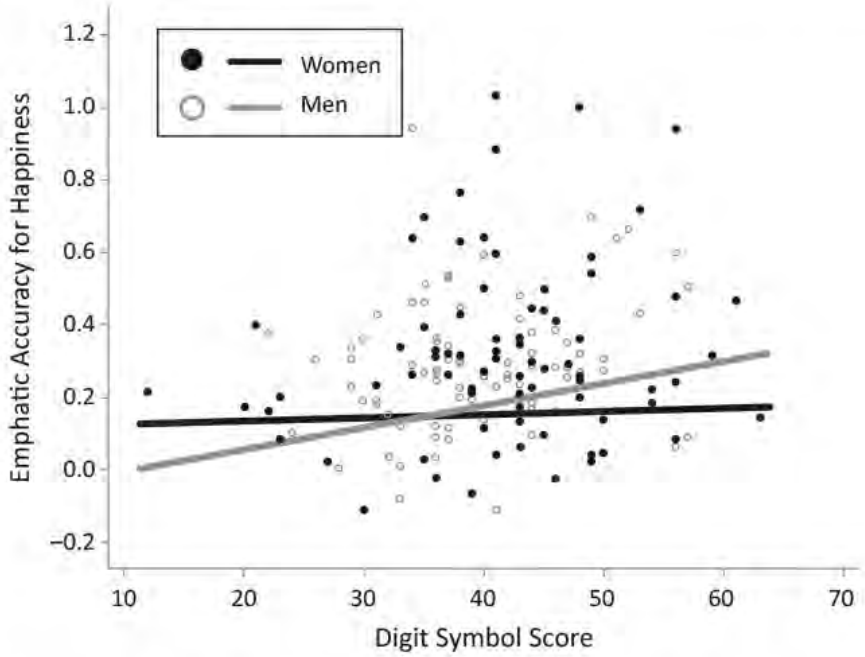
Figure 7.15 Sample Scatterplot

Figure 2

Association Between Perceptual Speed and Empathic Pattern Accuracy for Happiness

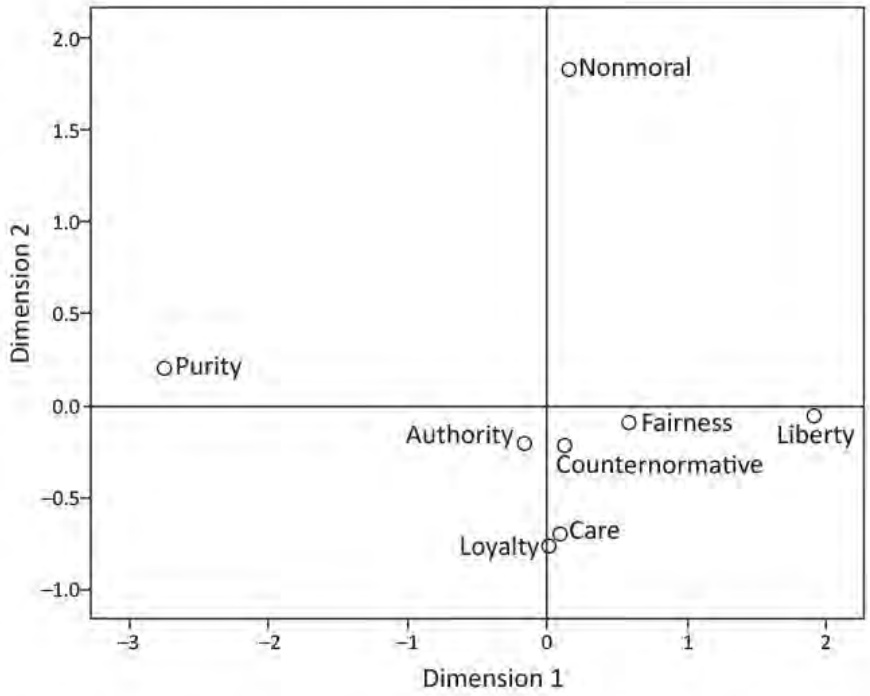


Note. Each dot represents an individual participant. Scores for empathic pattern accuracy for happiness were obtained in a zero-order multilevel model in which a target's self-reported happiness was the only predictor of a rater's perceptions (the estimate plotted on the *y*-axis is equivalent to β_{1i} in Equation 4). Among men, higher levels of digit symbol performance were associated with higher empathic pattern accuracy for happiness in daily life (gray line). Among women, the association was not significant (black line).

Figure 7.16 Sample Multidimensional Scaling Figure

Figure 3

Two-Dimensional Solution Derived From Multidimensional Scaling of Relatedness Scores



Note. Relatedness scores were defined as the mean likelihood judgment within category pairs. Violations of care, authority, fairness, and loyalty and counternormative actions are quite close to one another in the resultant two-dimensional space, whereas liberty violations, and especially purity violations and nonmoral actions, are more distant. Model stress was .08.

Figure 7.17 **Sample Photograph**

Figure 1

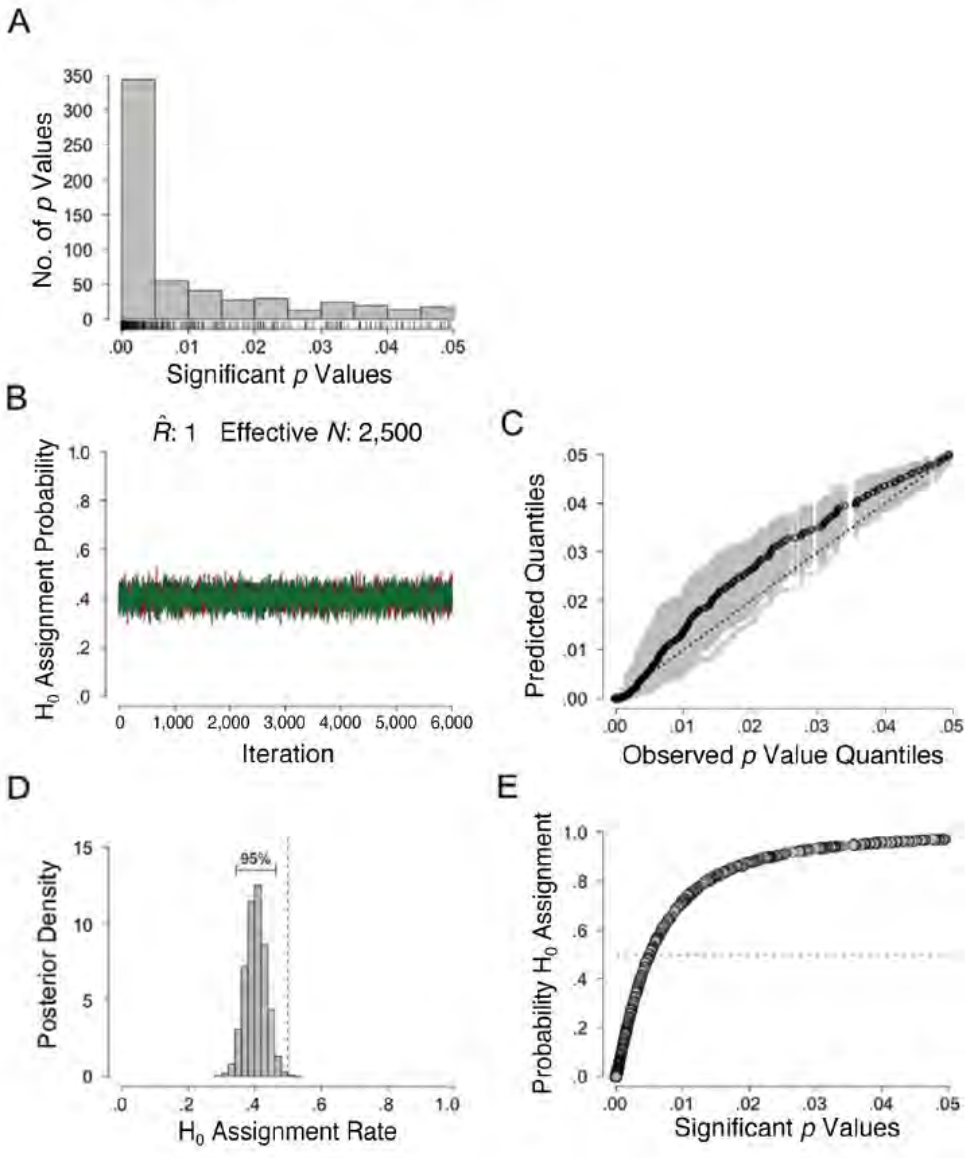
Example Scenes of Participant Response to Locations of Schema-Irrelevant Objects

Note. Top panel: A version of the kitchen scene using schema-irrelevant objects (walking boots, bath towel, and teapot) in unexpected locations (right side of the floor, rail beneath table, and stool, respectively). Middle panel: One of the possible test images (out of two) associated with the study image depicted in the top panel used in Study 1 (shift-to-expected condition). Bottom panel: Example participant response when the participant originally studied the image in the top panel in the recall task of Study 2. Schema-relevant objects in expected places at study are the metal pot and toaster; those in unexpected places are the microwave and teapot; those not present are the fruit bowl and paper towel roll.

Figure 7.18 Sample Complex Multipanel Figure

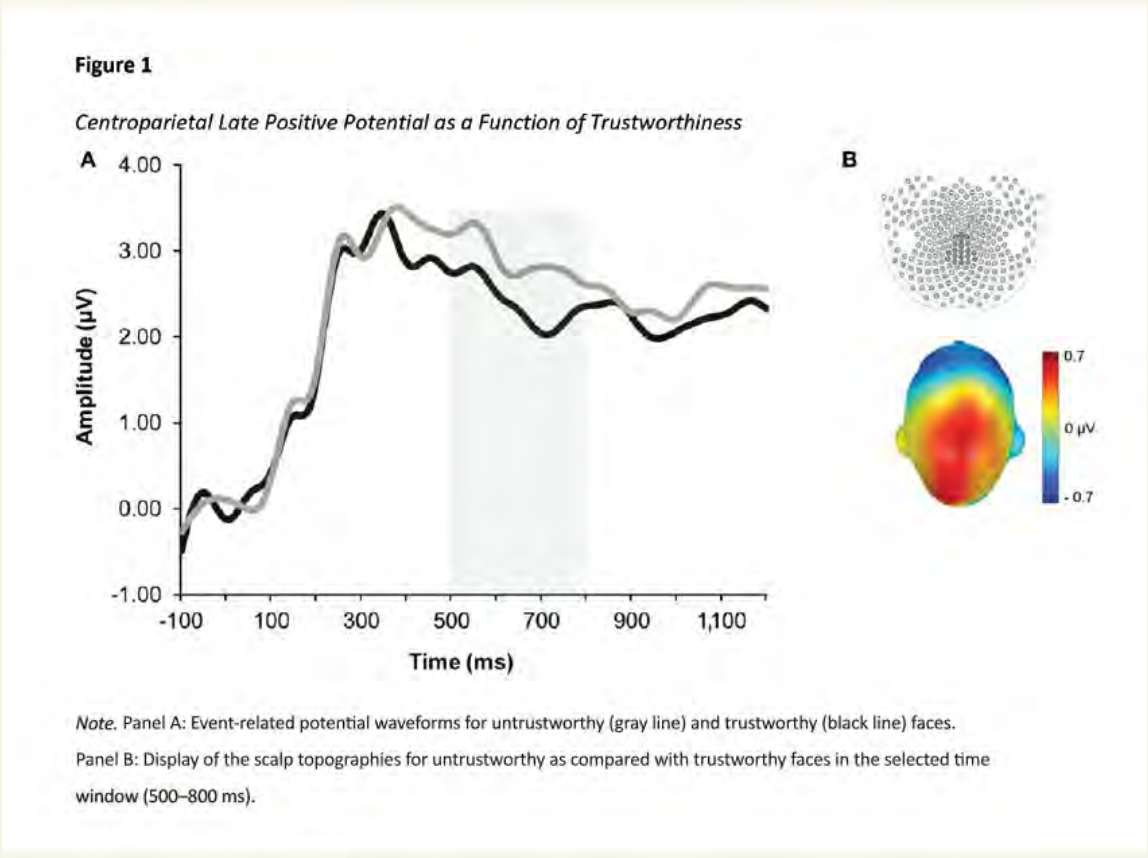
Figure 2

Application of the Bayesian Mixture Model to Example 1



Note. Example 1 contained 587 *t*-test *p* values. Panel A: Distribution of observed *p* values. Panel B: Trace plot of the Markov chain Monte Carlo chains for the H_0 assignment rate. Panel C: Q-Q plot for comparing the observed *p* value distribution with the posterior predictive distribution. Panel D: Posterior distribution of the H_0 assignment rate. Panel E: Individual H_0 assignment probabilities.

Figure 7.19 Sample Event-Related Potential Figure



Note. Panel A: Event-related potential waveforms for untrustworthy (gray line) and trustworthy (black line) faces. Panel B: Display of the scalp topographies for untrustworthy as compared with trustworthy faces in the selected time window (500–800 ms).

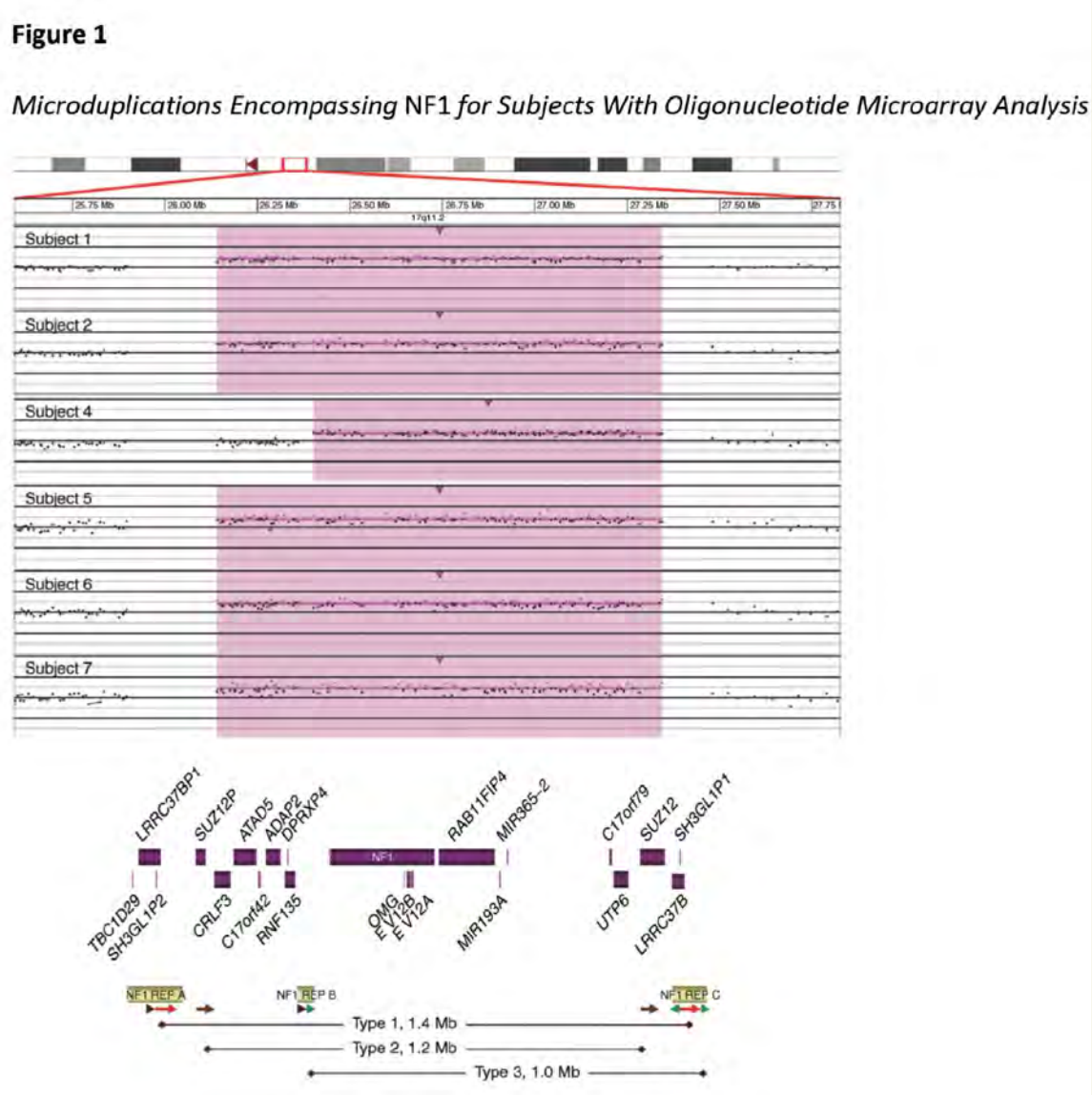
Figure 7.20 Sample fMRI Figure

Figure 3

Brain Regions Sensitive to Ratings of Dehumanization, Liking, and Similarity to the Self

Note. Brain regions where activity is sensitive to parametric ratings of dehumanization (blue), liking (red), and similarity to the self (green) are shown. Dehumanization and liking are thresholded at $p < .05$, corrected; similarity is thresholded at $p < .001$, uncorrected. IFC = inferior frontal cortex; IPC = inferior parietal cortex; PC = precuneus; PCC = posterior cingulate cortex; MPFC = medial prefrontal cortex.

Figure 7.21 Sample Display of Genetic Material (Physical Map)



[1]Table entries and column headings are written in sentence case in a table but in title case if they are referred to in the text.

[2]WCAG 2.0 refers to the Web Content Accessibility Guidelines, Version 2.0 (Web Accessibility Initiative, 2018).