

ized standards for particular quantitative (see Sections 3.9–3.12) and qualitative methodologies (see Section 3.17), such as meta-analysis.

Given this diversity, the terms used in this chapter may be unfamiliar to some readers. See the JARS website (<https://apastyle.apa.org/jars/glossary>) for a glossary of related terms, including “approaches to inquiry,” “data-analytic strategies,” “data-collection strategies,” “methodological integrity,” “research design,” and “trustworthiness.” Because researchers do not always agree on terminology, we encourage authors to translate these terms to reflect their own preferred approaches, taking care to define terms for readers. We recognize that our language inevitably carries philosophical implications (e.g., do researchers “discover,” “understand,” or “co-construct” findings?). We also encourage reviewers and editors to view our terms as placeholders that may be usefully varied by authors to reflect the values of their research traditions.

START HERE

Common Reporting Standards Across Research Designs

Many aspects of the scientific process are common across quantitative, qualitative, and mixed methods approaches. This section reviews reporting standards that have considerable overlap for the two initial elements of journal articles—the abstract and the introduction. We present the common reporting standards for the abstract and introduction as well as some distinctive features for each approach. For descriptions of and formatting guidelines for the title, byline and institutional affiliation, author note, running head, abstract, keywords, text (the body of a paper), reference list, footnotes, appendices, and supplemental materials, see Chapter 2 (Sections 2.4–2.15).

3.3 Abstract Standards

An *abstract* is a brief, comprehensive summary of the contents of the paper. A well-prepared abstract can be the most important paragraph in an article. Many people have their first contact with an article by reading the title and abstract, usually in comparison with several others, as they conduct a literature search. Readers frequently decide on the basis of the abstract whether to read the entire article. The abstract needs to be dense with information. By embedding essential terms in your abstract, you enhance readers' ability to find the article. This section addresses the qualities of a good abstract and standards for what to include in abstracts for different paper types (see Sections 1.1–1.10). Requirements for abstract length and instructions on formatting the abstract are presented in Section 2.9.

Qualities of a Good Abstract. A good abstract is

- **accurate:** Ensure that the abstract correctly reflects the purpose and content of the paper. Do not include information that does not appear in the paper body. If the study extends or replicates previous research, cite the relevant work with an author–date citation.
- **nonevaluative:** Report rather than evaluate; do not add to or comment on what is in the body of the paper.
- **coherent and readable:** Write in clear and deliberate language. Use verbs rather than their noun equivalents and the active rather than the passive voice (e.g., “investigated” instead of “an investigation of”; “we present results”

instead of “results are presented”; see Section 4.13). Use the present tense to describe conclusions drawn or results with continuing applicability; use the past tense to describe specific variables manipulated or outcomes measured. If presenting statistical or mathematical information, see Sections 6.40 to 6.48 for the appropriate formats.

- **concise:** Be brief, and make each sentence maximally informative, especially the lead sentence. Begin the abstract with the most important points. Do not waste space by repeating the title. Include only the four or five most important concepts, findings, or implications. Use the specific words in your abstract that you think your audience will use in their searches.

Empirical Articles. The abstract for an empirical article (quantitative, qualitative, or mixed methods; see Sections 1.1–1.3) should describe the following:

- the problem under investigation, in one sentence, if possible; when presenting quantitative analyses, include the main hypotheses, questions, or theories under investigation
- participants or data sources, specifying pertinent characteristics (e.g., for nonhuman animal research, include the genus and species); participants will be described in greater detail in the body of the paper
- essential features of the study method, including
 - research design (e.g., experimental, observational, qualitative, mixed methods)
 - analytic strategy (e.g., ethnography, factor analysis)
 - data-gathering procedures
 - sample size (typically for quantitative analyses) or description of the volume of observations or number of participants (typically for qualitative analyses)
 - materials or central measures used
 - a statement about whether the study is a secondary data analysis
- basic findings, including
 - for quantitative analyses, effect sizes and confidence intervals in addition to statistical significance levels when possible
 - for qualitative methods, main findings in relation to central contextual features
- conclusions and implications or applications of the research findings

Replication Articles. The abstract for a replication article (see Section 1.4) should describe the following:

- type of replication being reported (e.g., direct [exact, literal], approximate, conceptual [construct])
- scope of the replication in detail
- original study or studies that are being replicated
- general conclusions reached in the replication

Quantitative or Qualitative Meta-Analyses. The abstract for a quantitative or qualitative meta-analysis (see Section 1.5) should describe the following:

- research problems, questions, or hypotheses under investigation

- characteristics for the inclusion of studies, including
 - for quantitative meta-analyses, independent variables, dependent variables, and eligible study designs
 - for qualitative meta-analyses, criteria for eligibility in terms of study topic and research design
- methods of synthesis, including statistical or qualitative metamethods used to summarize or compare studies and specific methods used to integrate studies
- main results, including
 - for all studies, the number of studies; the number of participants, observations, or data sources; and their important characteristics
 - for quantitative analyses, the most important effect sizes and any important moderators of these effect sizes
 - for qualitative analyses, the most important findings in their context
- conclusions (including limitations)
- implications for theory, policy, and/or practice

Literature Review Articles. The abstract for a literature review article (also called a *narrative literature review article*; see Section 1.6) should describe the substantive content being reviewed, including the following:

- scope of the literature examined in the review (e.g., journals, books, unpublished abstracts) and the number of items included in the review
- period of time covered in the review (e.g., range of years)
- general conclusions reached in the review

Theoretical Articles. The abstract for a theoretical article (see Section 1.7) should describe the following:

- how the theory or model works and/or the principles on which it is based
- what phenomena the theory or model accounts for and linkages to empirical results

Methodological Articles. The abstract for a methodological article (see Section 1.8) should describe the following:

- general class, essential features, and range of applications of the methods, methodologies, or epistemological beliefs being discussed
- essential features of the approaches being reported, such as robustness or power efficiency in the case of statistical procedures or methodological integrity and trustworthiness in the case of qualitative methods

3.4 Introduction Standards

The body of a paper always opens with an introduction. The *introduction* contains a succinct description of the issues being reported, their historical antecedents, and the study objectives.

Frame the Importance of the Problem. The introduction of an article frames the issues being studied. Consider the various concerns on which your issue touches and its effects on other outcomes (e.g., the effects of shared storybook reading on word learning in children). This framing may be in terms of fundamental psychological theory, potential application including therapeutic uses,

input for public policy, and so forth. Proper framing helps set readers' expectations for what the report will and will not include.

Historical Antecedents. Review the literature succinctly to convey to readers the scope of the problem, its context, and its theoretical or practical implications. Clarify which elements of your paper have been subject to prior investigation and how your work differs from earlier reports. In this process, describe any key issues, debates, and theoretical frameworks and clarify barriers, knowledge gaps, or practical needs. Including these descriptions will show how your work builds usefully on what has already been accomplished in the field.

Articulate Study Goals. Clearly state and delimit the aims, objectives, and/or goals of your study. Make explicit the rationale for the fit of your design in relation to your aims and goals. Describe the goals in a way that clarifies the appropriateness of the methods you used.

Quantitative Goals. In a quantitative article, the introduction should identify the primary and secondary hypotheses as well as any exploratory hypotheses, specifying how the hypotheses derive from ideas discussed in previous research and whether exploratory hypotheses were derived as a result of planned or unplanned analyses.

Qualitative Goals. In a qualitative article, the introduction may contain case examples, personal narratives, vignettes, or other illustrative materials. It should describe your research goal(s) and approach to inquiry. Examples of qualitative research goals include developing theory, hypotheses, and deep understandings (e.g., Hill, 2012; Stiles, 1993); examining the development of a social construct (e.g., Neimeyer et al., 2008); addressing societal injustices (e.g., Fine, 2013); and illuminating social discursive practices—that is, the way interpersonal and public communications are enacted (e.g., Parker, 2015). The term *approaches to inquiry* refers to the philosophical assumptions that underlie research traditions or strategies—for example, the researchers' epistemological beliefs, worldview, paradigm, strategies, or research traditions (Creswell & Poth, 2018; Morrow, 2005; Ponterotto, 2005). For instance, you might indicate that your approach or approaches to inquiry are constructivist, critical, descriptive, feminist, interpretive, postmodern, postpositivist, pragmatic, or psychoanalytic. Note that researchers may define these philosophies differently, and some qualitative research is more question driven and pragmatic than theoretical. You might also address your approach to inquiry in the Method section (see Section 3.14).

Mixed Methods Goals. In a mixed methods or multimethod article, the introduction should describe the objectives for all study components presented, the rationale for their being presented in one study, and the rationale for the order in which they are presented within the paper (see Section 3.18). In all cases, clarify how the questions or hypotheses under examination led to the research design to meet the study aims.

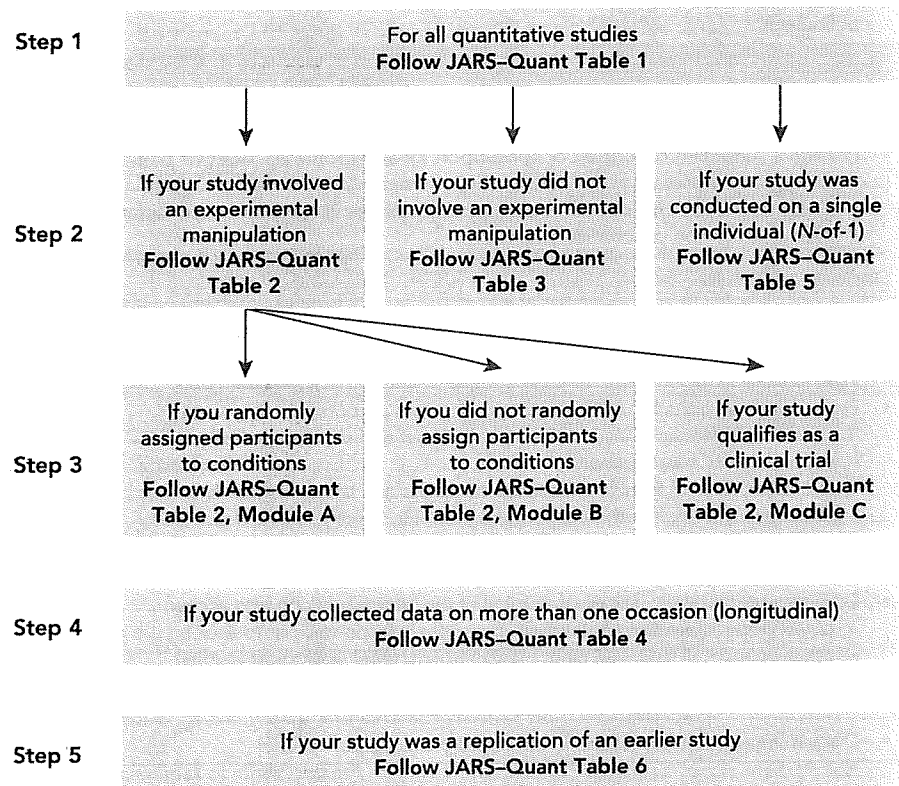
Goals for Other Types of Papers. Introductions for other types of papers follow similar principles and articulate the specific motivation for the study. For instance, a replication study conducted as a quantitative study would have an introduction that follows the principles for the introduction of a quantitative study but that emphasizes the need to replicate a certain study or set of studies as well as the methods used to accomplish the desired replication.

3.6 Quantitative Method Standards

The Method section of a paper provides most of the information that readers need to fully comprehend what was done in the execution of an empirical study. This section provides information that allows readers to understand the research being reported and that is essential for replication of the study, although the concept of replication may depend on the nature of the study. The basic information needed to understand the results should (as a rule) appear in the main article, whereas other methodological information (e.g., detailed descriptions of procedures) may appear in supplemental materials. Readability of the resulting paper must be part of the decision about where material is ultimately located. Details of what content needs to be presented in the Method section of a quantitative article are presented in Table 3.1 and must be used in conjunction with JARS-Quant Tables 2 to 9 on the JARS website (<https://apastyle.apa.org/jars/quantitative>).

Participant (Subject) Characteristics. Appropriate identification of research participants is critical to the science and practice of psychology, particularly for generalizing the findings, making comparisons across replications, and using the evidence in research syntheses and secondary data analyses.

Figure 3.1 Flowchart of Quantitative Reporting Standards to Follow Depending on Research Design



Note. JARS-Quant = quantitative journal article reporting standards. For more information, see the APA Style JARS website (<https://apastyle.apa.org/jars>).

Detail the major demographic characteristics of the sample, such as age; sex; ethnic and/or racial group; level of education; socioeconomic, generational, or immigrant status; disability status; sexual orientation; gender identity; and language preference, as well as important topic-specific characteristics (e.g., achievement level in studies of educational interventions). As a rule, describe the groups as specifically as possible, emphasizing characteristics that may have bearing on the interpretation of results. Participant characteristics can be important for understanding the nature of the sample and the degree to which results can be generalized. For example, the following is a useful characterization of a sample:

The second group included 40 cisgender women between the ages of 20 and 30 years ($M = 24.2$, $SD = 2.1$, $Mdn = 25.1$), all of whom had emigrated from El Salvador; had at least 12 years of education; had been permanent residents of the United States for at least 10 years; and lived in Washington, DC.

To help readers determine how far the data can be generalized, you may find it useful to identify subgroups.

The Asian participants included 30 Chinese and 45 Vietnamese persons.

Among the Latino and Hispanic American men, 20 were Mexican American and 20 were Puerto Rican.

Even when a characteristic is not used in analysis of the data, reporting it may give readers a more complete understanding of the sample and the generalizability of results and may prove useful in meta-analytic studies that incorporate the article's results. The descriptions of participant characteristics should be sensitive to the ways the participants understand and express their identities, statuses, histories, and so forth. Chapter 5 contains further guidance on writing without bias.

When nonhuman animal subjects are used, report the genus, species, and strain number or other specific identifier, such as the name and location of the supplier and the stock designation. Give the number of nonhuman animal subjects and their sex, age, weight, and physiological condition.

Sampling Procedures. Describe the procedures for selecting participants, including (a) the sampling method, if a systematic plan was implemented; (b) the percentage of the sample approached that participated; and (c) whether self-selection into the study occurred (either by individuals or by units such as schools or clinics) and the number of participants who selected themselves into the sample. Report inclusion and exclusion criteria, including any restriction based on demographic characteristics.

Describe the settings and locations in which the data were collected and provide the dates of data collection as a general range of dates, including dates for repeated measurements and follow-ups. Describe any agreements with and payments made to participants. Note institutional review board approvals, data safety board arrangements, and other indications of compliance with ethical standards.

Sample Size, Power, and Precision. Provide the intended size of the sample and number of individuals meant to be in each condition if separate conditions were used. State whether the achieved sample differed in known ways from the intended sample. Conclusions and interpretations should not go beyond what

the achieved sample warrants. State how the intended sample size was determined (e.g., analysis of power or precision). If interim analysis and stopping rules were used to modify the desired sample size, describe the methodology and results of applying that methodology.

Measures and Covariates. Include in the Method section definitions of all primary and secondary outcome measures and covariates, including measures collected but not included in the current report. Provide information on instruments used, including their psychometric and biometric properties and evidence of cultural validity (Section 10.10 for how to cite hardware and apparatuses; see Section 10.11 for how to cite tests, scales, and inventories).

Data Collection. Describe the methods used to collect data (e.g., written questionnaires, interviews, observations). Provide information on any masking of participants in the research (i.e., whether participants, those administering the manipulations, and/or those assessing the outcomes were unaware of participants' assignment to conditions), how masking was accomplished, and how the masking was assessed. Describe the instrumentation used in the study, including standardized assessments, physical equipment, and imaging protocols, in sufficient detail to allow exact replication of the study.

Quality of Measurements. Describe methods used to enhance the quality of measurements, including training and reliability of data collectors, use of multiple observers, translation of research materials, and pretesting of materials on populations who were not included in the initial development of the instrumentation. Pay attention to the psychometric properties of the measurement in the context of contemporary testing standards and the sample being investigated; report the psychometric characteristics of the instruments used following the principles articulated in the *Standards for Educational and Psychological Testing* (American Educational Research Association et al., 2014). In addition to psychometric characteristics for paper-and-pencil measures, provide interrater reliabilities for subjectively scored measures and ratings. Internal consistency coefficients can be useful for understanding composite scales.

Research Design. Specify the research design in the Method section. For example, were participants placed into conditions that were manipulated, or were they observed in their natural setting? If multiple conditions were created, how were participants assigned to conditions—through random assignment or some other selection mechanism? Was the study conducted as a between-subjects or a within-subjects design? Reporting standards vary on the basis of the research design (e.g., experimental manipulation with randomization, clinical trial without randomization, longitudinal design). Consult Figure 3.1 to determine which tables on the JARS website to use for your research design. See Sections 3.9 and 3.10 for a summary of design-specific reporting standards. See Section 3.11 for standards for particular analytic methods and Section 3.12 for quantitative meta-analysis standards.

Studies can be mixtures of various types; for instance, a study may involve an experimental manipulation with randomization with some factors repeated in a longitudinal fashion. For studies not currently covered by JARS, provide the commonly used name for that design. For more on mixed methods designs, see Section 3.18.

Experimental Manipulations or Interventions. If experimental manipulations or interventions were used in the study, describe their specific content. Include details of the interventions or manipulations intended for each study condition, including control groups (if any), and describe how and when interventions or experimental manipulations were administered. Describe the essential features of "treatment as usual" if that is included as a study or control condition.

Carefully describe the content of the specific interventions or experimental manipulations used. Often, this involves presenting a brief summary of instructions given to participants. If the instructions are unusual, or if the instructions themselves constitute the experimental manipulation, present them verbatim in an appendix or supplemental materials. If the text is brief, present it in the body of the paper if it does not interfere with the readability of the report.

Describe the methods of manipulation and data acquisition. If a mechanical apparatus was used to present stimulus materials or to collect data, include in the description of procedures the apparatus model number and manufacturer (when important, as in neuroimaging studies), its key settings or parameters (e.g., pulse settings), and its resolution (e.g., stimulus delivery, recording precision). As with the description of the experimental manipulation or intervention, this material may be presented in the body of the paper, in an appendix, or in supplemental materials, as appropriate.

When relevant—such as in the delivery of clinical and educational interventions—the procedures should also contain a description of who delivered the intervention, including their level of professional training and their level of training in the specific intervention. Present the number of deliverers along with the mean, standard deviation, and range of number of individuals or units treated by each deliverer.

Provide information about (a) the setting in which the manipulation or intervention was delivered, (b) the intended quantity and duration of exposure to the manipulation or intervention (i.e., how many sessions, episodes, or events were intended to be delivered and how long they were intended to last), (c) the time span for the delivery of the manipulation or intervention of each unit (e.g., whether the manipulation delivery was completed in one session, or, if participants returned for multiple sessions, how much time passed between the first and last session), and (d) activities or incentives used to increase compliance.

When an instrument is translated into a language other than the language in which it was developed, describe the specific method of translation (e.g., *back-translation*, in which a text is translated into another language and then back into the first language to ensure that it is equivalent enough that results can be compared).

Describe how participants were grouped during data acquisition (i.e., was the manipulation or intervention administered individual by individual, in small groups, or in intact groupings such as classrooms?). Identify the smallest unit (e.g., individuals, work groups, classes) that was analyzed to assess effects. If the unit used for statistical analysis differed from the unit used to deliver the intervention or manipulation (i.e., from the unit of randomization), describe the analytic method used to account for this (e.g., adjusting the standard error estimates, using multilevel analysis).

Data Diagnosis. Describe how data were inspected after collection and, if relevant, any modifications of those data. These procedures may include outlier

detection and processing, data transformations based on empirical data distributions, and treatment of missing data or imputation of missing values.

Analytic Strategies. Describe the quantitative analytic strategies (usually statistical) used in analysis of the data, being careful to describe error-rate considerations (e.g., experiment-wise, false discovery rate). The analytic strategies should be described for primary, secondary, and exploratory hypotheses. Exploratory hypotheses are ones that were suggested by the data collected in the study being reported, as opposed to ones generated by theoretical considerations or previously reported empirical studies.

When applying inferential statistics, take seriously the statistical power considerations associated with the tests of hypotheses. Such considerations relate to the likelihood of correctly rejecting the tested hypotheses given a particular alpha level, effect size, and sample size. In that regard, provide evidence that the study has sufficient power to detect effects of substantive interest. Be careful in discussing the role played by sample size in cases in which not rejecting the null hypothesis is desirable (i.e., when one wishes to argue that there are no differences), when testing various assumptions underlying the statistical model adopted (e.g., normality, homogeneity of variance, homogeneity of regression), and in model fitting. Alternatively, use calculations based on a chosen target precision (confidence interval width) to determine sample sizes. Use the resulting confidence intervals to justify conclusions reached concerning effect sizes.

3.7 Quantitative Results Standards

In the Results section of a quantitative paper, summarize the collected data and the results of any analyses performed on those data relevant to the discourse that is to follow. Report the data in sufficient detail to justify your conclusions. Mention all relevant results, regardless of whether your hypotheses were supported, including results that run counter to expectation; include small effect sizes (or statistically nonsignificant findings) when theory predicts large (or statistically significant) ones. Do not hide uncomfortable results by omission. In the spirit of data sharing (encouraged by APA and other professional associations and sometimes required by funding agencies; see Section 1.14), raw data, including study characteristics and individual effect sizes used in a meta-analysis, can be made available as supplemental materials (see Section 2.15) or archived online (see Section 10.9). However, raw data (and individual scores) generally are not presented in the body of the article because of length considerations. The implications of the results should be discussed in the Discussion section.

Participant Flow. For experimental and quasi-experimental designs, provide a description of the flow of participants (humans, nonhuman animals, or units such as classrooms or hospital wards) through the study. Present the total number of participants recruited into the study and the number of participants assigned to each group. Provide the number of participants who did not complete the experiment or who crossed over to other conditions and explain why. Note the number of participants used in the primary analyses. (This number might differ from the number who completed the study because participants might not show up for or complete the final measurement.) See Figure 7.5 in Section 7.36 for an example flowchart that displays the flow of participants through each stage of a study.

Recruitment. Provide dates defining the periods of recruitment and follow-up and the primary sources of participants, when appropriate. If recruitment and follow-up dates differ by group, provide the dates for each group.

Statistics and Data Analysis. Analyses of the data and reporting of the results of those analyses are fundamental aspects of the conduct of research. Accurate, unbiased, complete, and insightful reporting of the analytic treatment of data (be it quantitative or qualitative) must be a component of all research reports. Researchers in the field of psychology use numerous approaches to the analysis of data, and no one approach is uniformly preferred as long as the method is appropriate to the research questions being asked and the nature of the data collected. The methods used must support their analytic burdens, including robustness to violations of the assumptions that underlie them, and must provide clear, unequivocal insights into the data. In reporting your statistical and data analyses, adhere to the organizational structure suggested in the Method section (see Section 3.6): primary hypotheses, secondary hypotheses, and exploratory hypotheses. Ensure that you have reported the results of data diagnoses (see Section 3.6) in the Method section before you report the results linked to hypothesis confirmation or disconfirmation. Discuss any exclusions, transformations, or imputation decisions that resulted from the data diagnosis.

Historically, researchers in psychology have relied heavily on null hypothesis significance testing (NHST) as a starting point for many of their analytic approaches. Different fields and publishers have different policies; APA, for example, stresses that NHST is but a starting point and that additional reporting elements such as effect sizes, confidence intervals, and extensive description are needed to convey the most complete meaning of the results (Wilkinson & the Task Force on Statistical Inference, 1999; see also APA, n.d.-b). The degree to which any journal emphasizes NHST is a decision of the individual editor. However, complete reporting of all tested hypotheses and estimates of appropriate effect sizes and confidence intervals are the minimum expectations for all APA journals. Researchers are always responsible for the accurate and responsible reporting of the results of their research study.

Assume that readers have a professional knowledge of statistical methods. Do not review basic concepts and procedures or provide citations for the most commonly used statistical procedures. If, however, there is any question about the appropriateness of a particular statistical procedure, justify its use by clearly stating the evidence that exists for the robustness of the procedure as applied.

Missing Data. Missing data can have a detrimental effect on the legitimacy of the inferences drawn by statistical tests. It is critical that the frequency or percentages of missing data be reported along with any empirical evidence and/or theoretical arguments for the causes of data that are missing. Data might be described as *missing completely at random* (as when values of the missing variable are not related to the probability that they are missing or to the value of any other variable in the data set), *missing at random* (as when the probability of missing a value on a variable is not related to the missing value itself but may be related to other completely observed variables in the data set), or *not missing at random* (as when the probability of observing a given value for a variable is related to the missing value itself). It is also important to describe the methods for addressing missing data, if any were used (e.g., multiple imputation).

Reporting Results of Inferential Statistical Tests. When reporting the results of inferential statistical tests or when providing estimates of parameters or effect sizes, include sufficient information to help readers fully understand the analyses conducted and possible alternative explanations for the outcomes of those analyses. Because each analytic technique depends on different aspects of the data and assumptions, it is impossible to specify what constitutes a "sufficient set of statistics" in general terms. However, such a set usually includes at least the following: per-cell sample sizes, observed cell means (or frequencies of cases in each category for a categorical variable), and cell standard deviations or pooled within-cell variance. In the case of multivariable analytic systems, such as multivariate analyses of variance, regression analyses, structural equation modeling, and hierarchical linear modeling, the associated means, sample sizes, and variance-covariance (or correlation) matrix or matrices often represent a sufficient set of statistics. At times, the amount of information that constitutes a sufficient set of statistics is extensive; when this is the case, the information could be supplied in a supplementary data set or an appendix (see Sections 2.14–2.15). For analyses based on small samples (including *N*-of-1 investigations; see Section 3.10), consider providing the complete set of raw data in a table or figure, provided that confidentiality can be maintained. Your work will more easily become a part of the cumulative knowledge of the field if you include enough statistical information to allow its inclusion in future meta-analyses.

For inferential statistical tests (e.g., *t*, *F*, and chi-square tests), include the obtained magnitude or value of the test statistic, the degrees of freedom, the probability of obtaining a value as extreme as or more extreme than the one obtained (exact *p* value), and the size and direction of the effect. When point estimates (e.g., sample means, regression coefficients) are provided, always include an associated measure of variability (precision), with an indication of the specific measure used (e.g., standard error).

Inclusion of Confidence Intervals. It can be extremely effective to include confidence intervals (for estimates of parameters; functions of parameters, such as differences in means; and effect sizes) when reporting results. Because confidence intervals combine information on location and precision and can be directly used to infer significance levels, they are generally the best reporting strategy. As a rule, it is best to use a single confidence level, specified on an a priori basis (e.g., a 95% or 99% confidence interval), throughout the article. Wherever possible, base discussion and interpretation of results on point and interval estimates.

When using complex data-analytic techniques—such as structural equation modeling, Bayesian techniques, hierarchical linear modeling, factor analysis, multivariate analysis, and similar approaches—provide details of the models estimated (see Section 3.11). Also provide (usually in supplemental materials) the associated variance-covariance (or correlation) matrices. Identify the software used to run the analysis (e.g., SAS PROC GLM or a particular R package) and any parametric settings used in running the analyses (references are not necessary for these software programs). Report any estimation problems (e.g., failure to converge), regression diagnosis issues, or analytic anomalies. Report any problems with statistical assumptions or data issues that might affect the validity of the findings.

Effect Sizes. For readers to appreciate the magnitude or importance of a study's findings, it is recommended to include some measure of effect size in the Results section. Effect sizes are statistical estimates; therefore, whenever possible, provide a confidence interval for each effect size reported to indicate the precision of estimation of the effect size. Effect sizes may be expressed in the original units (e.g., mean number of questions answered correctly, kilograms per month for a regression slope) and are most easily understood when reported as such. It is valuable to also report an effect size in some standardized or units-free or scale-free unit (e.g., Cohen's d value) or a standardized regression weight. Multiple degree-of-freedom effect-size indicators are less useful than effect-size indicators that decompose multiple degree-of-freedom tests into meaningful one degree-of-freedom effects, particularly when the latter are the results that inform the discussion. The general principle to follow is to provide readers with enough information to assess the magnitude of the observed effect.

Studies With Experimental Manipulations or Interventions. In studies reporting the results of experimental manipulations or interventions, clarify whether the analysis was by intent to treat. That is, were all participants assigned to conditions included in the data analysis regardless of whether they actually received the intervention, or were only participants who completed the intervention satisfactorily included? Give a rationale for the choice.

Ancillary Analyses. Report any other analyses performed, including subgroup analyses and adjusted analyses, indicating those that were prespecified and those that were exploratory (although not necessarily in the level of detail of primary analyses). Consider putting the detailed results of ancillary analyses in supplemental materials. Discuss the implications, if any, of the ancillary analyses for statistical error rates.

Baseline Data. Be sure to provide baseline demographic and/or clinical characteristics of each group.

Adverse Events. If interventions were studied, detail all important adverse events (i.e., events with serious consequences) and/or side effects in each intervention group. If none occurred, note this as well.

3.8 Quantitative Discussion Standards

After presenting the results, you are in a position to evaluate and interpret their implications, especially with respect to your original hypotheses. In the Discussion section of a quantitative paper, examine, interpret, and qualify the results of your research and draw inferences and conclusions from them. In the case of empirical studies, there should be a tight relationship between the results that are reported and their discussion. Emphasize any theoretical or practical consequences of the results. When the discussion is relatively brief and straightforward, you can combine it with the Results section, creating a section called "Results and Discussion." If a manuscript presents multiple studies, discuss the findings in the order that the studies were presented within the article.

Open the Discussion section with a clear statement of support or nonsupport for all hypotheses, distinguished by primary and secondary hypotheses. In the case of ambiguous outcomes, explain why the results are judged as such.

Discuss the implications of exploratory analyses in terms of both substantive findings and error rates that may be uncontrolled.

Similarities and differences between your results and the work of others (where they exist) should be used to contextualize, confirm, and clarify your conclusions. Do not simply reformulate and repeat points already made; each new statement should contribute to your interpretation and to readers' understanding of the problem.

Limitations and Strengths. Your interpretation of the results should take into account (a) sources of potential bias and other threats to internal validity, (b) the imprecision of measures, (c) the overall number of tests and/or overlap among tests, (d) the adequacy of sample sizes and sampling validity, and (e) other limitations or weaknesses of the study. If an intervention or manipulation is involved, discuss whether it was successfully implemented, and note the mechanism by which it was intended to work (i.e., its causal pathways and/or alternative mechanisms). Discuss the fidelity with which the intervention or manipulation was implemented, and describe the barriers that were responsible for any lack of fidelity. Acknowledge the limitations of your research, and address alternative explanations of the results. Discuss the generalizability, or external validity, of the findings. This critical analysis should take into account differences between the target population and the accessed sample. For interventions, discuss characteristics that make them more or less applicable to circumstances not included in the study, what outcomes were measured and how (relative to other measures that might have been used), the length of time to measurement (between the end of the intervention and the measurement of outcomes), incentives, compliance rates, and specific settings involved in the study as well as other contextual issues.

Study Implications. End the Discussion section with a reasoned and justifiable commentary on the importance of your findings. This concluding section may be brief, or it may be extensive if it is tightly reasoned, self-contained, and not overstated. In the conclusion, consider returning to a discussion of why the problem is important (as stated in the introduction); what larger issues, meaning those that transcend the particulars of the subfield, might hinge on the findings; and what propositions are confirmed or disconfirmed by the extrapolation of these findings to such overarching issues.

Also consider the following issues:

- What is the theoretical, clinical, or practical significance of the outcomes, and what is the basis for these interpretations?
- If the findings are valid and replicable, what real-life psychological phenomena might be explained or modeled by the results?
- Are applications warranted on the basis of this research?
- What problems remain unresolved or arise anew because of these findings?

The responses to these questions are the core of the contribution of your study and justify why readers both inside and outside your specialty should attend to the findings. Readers should receive clear, unambiguous, and direct answers.

Don't need to read
unless you want to

are specific reporting standards for qualitative research articles, including the Method (Section 3.14), Findings or Results (Section 3.15), and Discussion (Section 3.16) sections. Standards specific to quantitative and mixed methods research are presented in Sections 3.5 to 3.12 and 3.18, respectively.

The basic expectations for reporting qualitative research are presented in Table 3.2. An additional table on the JARS website describes the reporting standards for qualitative meta-analyses (see Section 3.17). There are many qualitative procedures and methods as well as many designs and approaches to inquiry in which they can be embedded; because of this variation, all the elements described in Table 3.2 and the guidelines in Sections 3.14 to 3.16 may not be appropriate for all qualitative studies.

Authors must decide how sections should be organized within the context of their specific study. For example, qualitative researchers may combine the Results and Discussion sections because they may not find it possible to separate a given finding from its interpreted meaning within a broader context. Qualitative researchers may also use headings that reflect the values in their tradition (such as "Findings" instead of "Results") and omit ones that do not. As long as the necessary information is present, the paper does not need to be segmented into the same sections and subsections as a quantitative paper.

Qualitative papers may appear different from quantitative papers because they tend to be longer. This added length is due to the following central features of qualitative reporting: (a) In place of referencing statistical analyses, researchers must include detailed rationales and procedural descriptions to explain how an analytic method was selected, applied, and adapted to fit each specific question or context; (b) researchers must include a discussion of their own backgrounds and beliefs and how they managed them throughout the study; and (c) researchers must show how they moved from their raw data to develop findings by adding quoted materials or other demonstrative evidence into their presentation of results. Because qualitative articles need to be lengthier to provide the information necessary to support an adequate review, limitations on length should be more flexible than they are for quantitative articles, which may not need to include this information. When journal page limits conflict with the length of a qualitative paper, qualitative researchers should work with journal editors to reach a solution that enables an adequate review of the paper in question.

Start Here

3.14 Qualitative Method Standards

QUALITATIVE REPORTING

The Method section of a qualitative article includes the following types of information (see also Table 3.2).

Research Design Overview. The Method section of a qualitative article begins with a paragraph that summarizes the research design. It might mention the data-collection strategies, data-analytic strategies, and approaches to inquiry and provide a brief rationale for the design selected if this was not described in the objectives section of the introduction (see Section 3.4).

Researcher Description. To situate the investigation within the expectations, identities, and positions of the researchers (e.g., interviewers, analysts, research team), describe the researchers' backgrounds in approaching the study, emphasizing their prior understandings of the phenomena under study. Descriptions of researchers relevant to the analysis could include (but are not limited to) their

Table 3.2 Qualitative Design Reporting Standards (JARS-Qual) (continued)

Findings/Results**Findings/Results Subsections**

- Present research findings in a way that is compatible with the study design.
- Present synthesizing illustrations (e.g., diagrams, tables, models), if useful in organizing and conveying findings. Photographs or links to videos can be used.

Guidance for Authors

- Findings presented in an artistic manner (e.g., a link to a dramatic presentation of findings) should also include information in the reporting standards to support the research presentation.
- Use quotes or excerpts to augment data description (e.g., thick, evocative description, field notes, text excerpts), but these should not replace the description of the findings of the analysis.

Guidance for Reviewers

- The Findings section tends to be longer than in quantitative papers because of the demonstrative rhetoric needed to permit the evaluation of the analytic procedure.
- Depending on the approach to inquiry, findings and discussion may be combined or a personalized discursive style might be used to portray the researchers' involvement in the analysis.
- Findings may or may not include quantified information, depending upon the study's goals, approach to inquiry, and study characteristics.

Discussion**Discussion Subsections**

- Describe the central contributions and their significance in advancing disciplinary understandings.
- Describe the types of contributions made by findings (e.g., challenging, elaborating on, and supporting prior research or theory in the literature describing the relevance) and how findings can be best utilized.
- Identify similarities and differences from prior theories and research findings.
- Reflect on any alternative explanations of the findings.
- Identify the study's strengths and limitations (e.g., consider how the quality, source, or types of the data or the analytic processes might support or weaken its methodological integrity).
- Describe the limits of the scope of transferability (e.g., what readers should bear in mind when using findings across contexts).
- Revisit any ethical dilemmas or challenges that were encountered, and provide related suggestions for future researchers.
- Consider the implications for future research, policy, or practice.

Guidance for Reviewers

- Accounts could lead to multiple solutions rather than a single one. Many qualitative approaches hold that there may be more than one valid and useful set of findings from a given data set.

demographic, cultural, and/or identity characteristics; credentials; experience with the phenomena under study; training; values; or decisions in selecting archives or material to analyze. Describe how prior understandings of the phenomena under study were managed and/or how they influenced the research (e.g., by enhancing, limiting, or structuring data collection and analysis).

Participants or Other Data Sources. When describing participants or data sources, the following information should be reported: number of participants, documents, or events that were analyzed; demographic or cultural information relevant to the research topic; and perspectives of participants and characteristics of data sources relevant to the research topic. As applicable, data sources should be described (e.g., newspapers, internet, archive). Information about data repositories used for openly shared data should be reported if used. The processes entailed in performing archival searches or locating data for analysis should be described as well.

Qualitative researchers should report participant characteristics (listed in Section 3.6) and personal history factors (e.g., age, trauma exposure, abuse history, substance abuse history, family history, geographic history) that are relevant to the specific contexts and topics of their research (see Morse, 2008). Certain characteristics hold influence across many spheres of participants' lives within a given context and would be expected in most research reports; in the United States, these typically include age, gender, race, ethnicity, and socioeconomic status, but other features may be highly relevant as well to a given research question and context (e.g., sexual orientation, immigration status, disability). The descriptions of participant characteristics should be sensitive to the participants and the ways in which they understand and express their identities, statuses, histories, and so forth. Chapter 5 contains further guidance on writing about participant characteristics without bias.

In addition to participant characteristics and personal history factors, other features within a study may influence the experience of a given phenomenon (e.g., psychotherapy orientation in research on psychotherapists, political party membership in a study on economic beliefs) and therefore are important to report. The decision of which participant characteristics and features to report can be driven by a review of prior research, the researchers' experience with a phenomenon, pilot interviews, study goals, contextual dynamics, and empirical data that are analyzed as the data collection proceeds. In this way, reporting considerations may be experientially, theoretically, and empirically driven.

Researcher-Participant Relationships. To increase transparency, describe the relationships and interactions between researchers and participants that are relevant to the research process and any impact on the research process (e.g., any relationships prior to the study, any ethical considerations relevant to prior relationships). Existing relationships may be helpful (e.g., by increasing trust and facilitating disclosure) or harmful (e.g., by decreasing trust and inhibiting disclosure), so the specific dynamics of the relationships should be considered and reported.

Participant Recruitment. There is no minimum number of participants for a qualitative study (see Levitt et al., 2017, for a discussion on adequacy of data in qualitative research). Authors should provide a rationale for the number of participants chosen, often in light of the method or approach to inquiry that is used. Some studies begin with researchers recruiting participants to the study and then selecting participants from the pool that responds. Other studies begin with researchers selecting a type of participant pool and then recruiting from within that pool. The content of Method sections should be ordered to reflect the study's process. Specifically, participant selection might follow participant recruitment or vice versa; thus, discussion of the number of participants is likely to be placed in reference to whichever process came second.

Recruitment Process. Report the method of recruitment (e.g., face-to-face, telephone, mail, email) and any recruitment protocols, and describe how you conveyed the study purpose to participants, especially if it was different from the purpose stated in the study objectives (see Section 3.4). For instance, researchers might describe a broader study aim to participants (e.g., to explore participants' experience of being on parole) but then focus their analysis in a specific manuscript on one aspect of that aim (e.g., the relationships between partici-

pants and parole officers). Provide details on any incentives or compensation given to participants, and state relevant ethical processes of data collection and consent, potentially describing institutional review board approval, any adaptations for vulnerable populations, or safety monitoring practices. Present the process for determining the number of participants in relation to the study design (e.g., approaches to inquiry, data-collection strategies, data-analytic strategies). Any changes in this number through attrition (e.g., refusal rates, reasons for dropout) and the final number of participants or sources should be conveyed, as should the rationale for decisions to halt data collection (e.g., saturation).

Participant Selection. To describe how participants were selected from within an identified group, explain any inclusion and/or exclusion criteria as well as the participant and/or data source selection process that was used. This selection process can consist of purposive sampling methods, such as maximum variation; convenience sampling methods, such as snowball selection; theoretical sampling; or diversity sampling. Provide the general context for your study (e.g., when data were collected, sites of data collection). If you selected participants from an archived data set, describe the recruitment and selection process for that data set and any decisions affecting the selection of participants from that data set.

Data Collection. Researchers may use terms for data collection that are coherent with their research approach and process, such as “data identification,” “collection,” or “selection.” Descriptions should be provided, however, in terms that are accessible to readers.

Data-Collection or Identification Procedures. In addition to describing the form of data collected (e.g., interviews, questionnaires, media, observation), convey any alterations to the data-collection strategy (e.g., in response to evolving findings or the study rationale). It may not be useful to reproduce all of the questions asked in an interview, especially in the case of unstructured or semi-structured interviews in which questions are adapted to the content of each interview. The content of central or guiding questions should be communicated, however, and the format of the questions can be described (e.g., open questions, nonleading paraphrases, written prompts). Describe the process of data selection or data collection (e.g., whether others were present when data were collected, number of times data were collected, duration of collection, context). Convey the extensiveness of the researchers’ engagement (e.g., depth of engagement, time intensiveness of data collection). Describe the management or use of reflexivity in the data-collection process when it illuminates the study.

Recording and Data Transformation. Identify how data were recorded for analysis and explain whether and how data were transformed. This might include a statement regarding audio or visual recording methods, field notes, or transcription.

Analysis. The two primary topics to report in the description of qualitative analyses are the data analysis and the establishment of methodological integrity. Researchers may use terms for data analysis that are coherent within their research approach and process (e.g., “interpretation,” “unitization,” “eidetic analysis,” “coding”). Descriptions should be provided, however, in terms that are accessible to readers.

Data-Analytic Strategies. Describe the methods and procedures of data analysis and the purpose or goal for which they were used. Explain in detail the process of analysis. Describe the process of arriving at an analytic approach (e.g., whether a set of categories of coding was developed before or during the analysis, whether findings emerged from an inductively driven process of analysis; see the glossary on the JARS website at <https://apastyle.apa.org/jars/glossary>). Also include a discussion of analytic procedures (e.g., coding, thematic analysis) and a description of coders or analysts and their training if not already described in the researcher description section. In this description, identify units of analysis (e.g., entire transcript, unit, text) and how units were formed, if applicable. Indicate whether any categories or codes emerged from the analyses or were developed a priori, and outline the process used in each case. Provide illustrations and descriptions of their development, if relevant. Indicate software, if used.

Methodological Integrity. Highlight procedures that support methodological integrity throughout the paper or summarize central points in a separate section of the Method section when elaboration or emphasis would be helpful (for more on methodological integrity, see Levitt et al., 2017, and the glossary on the JARS website at <https://apastyle.apa.org/jars/glossary>). Demonstrate that the claims made from the analysis are warranted. Highlight key features of methodological integrity, as follows:

- **adequacy:** Assess the adequacy of the data in terms of their ability to capture forms of diversity most relevant to the research questions, research goals, and inquiry approach.
- **researchers' perspectives:** Describe how the researchers' perspectives were managed in both the data collection and the analysis (e.g., to limit their effect on the data collection, to structure the analysis).
- **groundedness:** Demonstrate that findings are grounded in the evidence (e.g., using quotes, excerpts, or descriptions of researchers' engagement in data collection).
- **meaningfulness:** Demonstrate that the contributions are insightful and meaningful (e.g., in relation to the current literature and the study goals).
- **context:** Provide relevant contextual information for findings (e.g., setting of the study, information about participants; present the interview question asked before an excerpt as needed).
- **coherence:** Present findings in a coherent manner that makes sense of contradictions or disconfirming evidence in the data (e.g., reconcile discrepancies, describe why a conflict might exist in the findings).
- **consistency:** As relevant, comment on consistency with regard to the analytic processes, especially in the face of changing conditions or contexts (e.g., use demonstrations of analyses to support consistency or to describe the development of a stable perspective, such as through the use of interrater reliability or consensus), or describe responses to inconsistencies (e.g., coders switching in the middle of analysis, an interruption in the analytic process).

Support for claims of methodological integrity may be supplemented by any checks added to the qualitative analysis. Approaches to inquiry have different traditions in terms of using checks, and researchers do not need to use all or any of the checks, but their use can augment a study's methodological integ-

rity. The following are examples of supplemental checks that can strengthen the research:

- transcripts or data returned to participants for feedback;
- triangulation across multiple sources of information, findings, or investigators;
- checks on interview thoroughness or interviewer demands;
- consensus or auditing processes;
- member checks or participant feedback on findings;
- data displays or matrices;
- in-depth thick description, case examples, and illustrations;
- structured methods of researcher reflexivity (e.g., memos, field notes, log-books, diaries, journals, bracketing); and
- checks on the utility of findings in responding to the study problem (e.g., evaluation of whether a solution worked).

3.15 Qualitative Findings or Results Standards

In qualitative research papers, findings may or may not include quantified information, depending on the study's goals, approach to inquiry, and study characteristics. Note that the heading "Findings" may be used rather than "Results."

Descriptions of Both the Development of Findings and the Findings Themselves. Describe research findings (e.g., themes, categories, narratives) and the meaning and understandings that the researchers derived from the data analysis in relation to the purpose of the study. Descriptions of results often include quotes, evidence, or excerpts that demonstrate the process of data analysis and of reaching findings (e.g., thick, evocative description; field notes; text excerpts). These should not replace the description of the findings of the analysis, however. Instead, balance these illustrations with text descriptions that make clear the meanings drawn from individual quotes or excerpts and how they answer the study question.

Compatibility With Study Design. Findings should be presented in a manner that is compatible with the study design. For instance, findings of a grounded theory study might be described using categories organized in a hierarchical form and marked by discrete divisions, whereas findings of an ethnographic study might be written in a chronological narrative format. Also, findings should be written in a style that is coherent with the approach to inquiry used.

Depictions of Findings. Qualitative findings can be presented in various ways. Illustrations (e.g., diagrams, tables, models; see Chapter 7) may be used to organize and convey findings. Photographs or links to videos can be used as well (see Sections 2.15 and 7.30). Findings presented in an artistic manner (e.g., link to a dramatic presentation), however, should also include the information called for in the reporting standards to support the research presentation and a description that clarifies the analytic process and meanings drawn from the findings.

3.16 Qualitative Discussion Standards

The purpose of a qualitative Discussion section is to communicate the contributions of the study in relation to the prior literature and the study goals. In this process, the interpretations of the findings are described in a way that

takes into account the limitations of the study as well as plausible alternative explanations. The Discussion section conveys applications of your findings and provides directions for future investigators. If you present multiple studies, discuss the findings in the order in which they are presented within the paper.

Interpreting the Meaning of Your Findings. Instead of simply restating results, a good Discussion section develops readers' understanding of the issues at hand. To do this, describe the central contributions of your research and their significance in advancing disciplinary understandings. Identifying similarities and differences from prior theories and research findings will help in this process. Describe the contributions the findings make (e.g., elaborating on, challenging, or supporting prior research or theory) and how findings can be best utilized. Reflect on any alternative explanations of the findings to clarify the strengths and weaknesses of the explanation that you selected. More than one valid or useful set of findings may emerge from a given data set. It is not considered a drawback for there to be more than one possible interpretation because researchers may centralize different processes or perspectives; however, findings should remain grounded in the empirical analysis of the data.

Limitations and Strengths. Include a subsection to identify the strengths and limitations of the study (e.g., consider how the quality, source, or types of data or the analytic processes might support or weaken the study's methodological integrity, reliability, or validity). Within this subsection, describe the limits of the scope of generalizability or transferability (e.g., issues readers should consider when using findings across contexts).

Study Implications. Convey to readers how your findings might be used and their implications. In this process, you might outline emerging research questions, theoretical insights, new understandings, or methodological designs that advantage the conceptualization, implementation, review, or reporting of future studies. In addition, implications for policy, clinical practice, and advocacy can be communicated to assist readers in implementing your findings.

3.17 Qualitative Meta-Analysis Standards

Qualitative meta-analyses (see Section 1.5) have unique reporting standards that are available in full on the JARS website (<https://apastyle.apa.org/jars/qual-table-2.pdf>). Two features of qualitative meta-analysis reporting highlighted in this section are reporting on the aggregative process and reporting situatedness.

Reporting on the Aggregative Process. The methodological integrity of the results of meta-analyses rests largely on the extent to which those carrying out the analysis can detail and defend the choices they made of studies to review and the process they undertook to weigh and integrate the findings of the studies. Authors of meta-analyses often aggregate qualitative studies from multiple methodological or theoretical approaches, and they must communicate the approaches of the studies they reviewed as well as their own approach to secondary data analysis. Qualitative meta-analysis involves the interpretive aggregation of thematic findings rather than reanalysis of primary data. Forms of qualitative meta-analysis range on a continuum from assessing the ways findings do or do not replicate each other to arranging interpreted findings into narrative accounts that relate the studies to one another. Authors of meta-analyses

enhance their fidelity to the findings by considering the contradictions and ambiguities within and across studies.

Reporting Situatedness. Another factor that distinguishes qualitative meta-analyses from primary qualitative analyses is that they often include an examination of the situatedness of the authors of the primary studies reviewed (e.g., the perspectives of the primary researchers as well as their social positions and contexts and their studies' reflection of these perspectives). Situatedness can be considered in the Findings/Results or Discussion section and may be presented narratively or in tables when simplifying the presentation of trends. See the online table for complete information on reporting qualitative meta-analyses.

Reporting Standards for Mixed Methods Research

3.18 Basic Expectations for Mixed Methods Research Reporting

Whereas standards for reporting information in the abstract and introduction of a paper are common to all kinds of research (see Sections 3.3–3.4), there are specific reporting standards for mixed methods research articles. The basic expectations for reporting mixed methods research are presented in Table 3.3. Standards specific to quantitative and qualitative research are presented in Sections 3.5 to 3.12 and 3.13 to 3.17, respectively.

The inherent assumption of mixed methods research is that the combined qualitative findings and quantitative results lead to additional insights not gleaned from the qualitative or quantitative findings alone (Creswell, 2015; Greene, 2007; Tashakkori & Teddlie, 2010). In mixed methods research, the thoughtful integration of qualitative findings and quantitative results leads to a deeper understanding of the data and enhanced insights. In addition, authors can publish multiple papers from a single mixed methods study, such as a qualitative study paper, a quantitative study paper, and a mixed methods overview paper.

Incorporating Both Quantitative and Qualitative Standards. The thoughtful and robust use of mixed methods requires researchers to meet the standards of both quantitative and qualitative research methodology in the design, implementation, and reporting stages. To this end, various mixed methods designs have emerged in the literature (Creswell & Plano Clark, 2017), and they help inform the procedures used in reporting studies (e.g., convergent design, exploratory sequential design, explanatory sequential design). Typically, additional mixed methods standards also need to be met along with quantitative and qualitative standards. Authors may use their discretion in presenting the sequence of studies but are encouraged to present them in a way that shows a logical progression of narrative as well as an audit trail (Merriam & Tisdell, 2016).

Reflecting on the Gains From Integration. The standards for mixed methods designs emphasize the need to not only present both qualitative and quantitative aspects of the research but also describe their integration throughout the sections of the paper. The mixed methods guidelines assist authors in describing the combination of qualitative and quantitative methods. Authors should convey not only how the qualitative and quantitative methods contribute to the study goals but also how they enhance one another to provide a greater depth of understanding or further the research aims.