

Comment Period until April 30, 2006

AERA Draft Standards for Reporting on Research Methods

Prepared by the Task Force on Reporting of Research Methods
in AERA Publications

Note: The Task Force was appointed in March of 2005 to prepare draft Standards for Reporting on Research Methods for consideration by AERA Council. Please submit comments via the AERA website at www.aera.net no later than April 30, 2006. The Task Force will then prepare a revised draft for Council review at its June 2006 meeting.

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AERA Standards for Reporting on Research Methods¹
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The American Educational Research Association (AERA) is pleased to provide guidelines for reporting on research methods in empirical articles published in AERA journals. Central to AERA's mission is the advancement of education research. As a scholarly publisher, the Association disseminates wide ranging scholarship including empirical research; historical analyses; measurement and methodological pieces; reviews of research; and theoretical, philosophical, or conceptual essays. In each of these arenas, expert peer reviewers provide independent appraisals that are relied on by editors to assess quality and make publishing decisions.

In this document, the Association seeks to foster excellence in empirical study grounded in the social sciences and to provide guidance on the standards for reporting on such work in AERA journals. Other forms of inquiry, equally important to education research, are beyond the scope of this document. The aim of specifying reporting standards for social science research methods is to assist researchers in the preparation of publications, editors and reviewers in the consideration of empirical work, and readers in learning from and building upon such study.

Standards for reporting in any field or discipline ought to be as comprehensive as the approaches used to undertake research in that domain. As an interdisciplinary field of inquiry, education research does not rely on any one tradition of empirical research methods; rather, it uses the full spectrum of social science methods and modes of analysis. Thus, these standards aim to reflect that breadth and to provide guidance for excellence in reporting across the range of empirical research methods in the social sciences.

In adopting these standards, the Association emphasizes that the articulation of standards is intended to provide a framework of expectations about what a report of empirical work should address. The standards are not intended to define or determine the format for writing empirical work: reports of different kinds of empirical research can take different forms and authors working in different methodological or intellectual traditions may vary in the modes, order, or form of presentation. In addition, these standards are not intended to be exhaustive of the issues that authors may choose to address in making their work accessible to other researchers and to those who turn to research in their work.

While these standards are directed to authors, editors, reviewers, and readers of AERA journals, the substance of these standards and the breadth of methodological coverage are not particular to education research. Thus, in publishing these standards, the Association seeks to offer an educational document that might be useful to other research societies and journal publishers that disseminate empirical work using these same social science methods. Also, as part of the AERA's broader educational mission to advance high quality research in education and to foster

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excellence in reporting on empirical research, the Association commends use of these standards in the training and preparation of researchers in publishing research.

PREAMBLE TO STANDARDS

Two overarching principles underlie the development of these reporting standards: the sufficiency of the warrants and the transparency of the report. First, reports of empirical research should be *warranted*; that is, adequate evidence should be provided to justify the outcomes and conclusions. Second, reports of empirical research should be *transparent*; that is, reporting should make explicit the logic of inquiry and activities that led from the development of the initial interest, topic, problem, or research question; through the gathering and analysis of data or empirical evidence; to the articulated outcomes of the study. Reporting that takes these principles into account permits scholars to understand one another's work, prepares that work for public scrutiny, and enables building upon that work and other potential uses. These standards are therefore intended to promote empirical research reporting that is warranted and transparent.

The reporting standards are divided into eight general areas: problem formulation, design and logic of the study, sources of evidence, measurement and classification, analysis and interpretation, extrapolation, ethics in reporting, and title, abstract and heading. Each of these areas is considered in detail in the sections that follow. Each section starts with a general discussion of that area followed by specific numbered standards that pertain to that domain.

REPORTING STANDARDS

1. PROBLEM FORMULATION

A research problem is the issue, topic or question that motivates the study. Empirical studies are typically motivated by larger considerations that provide a rationale for pursuing that investigation. Such considerations may be theoretical or practical. They answer the question of why the results of the investigation would be of interest to a broader research community and how the investigation is linked to prior knowledge and research. In many cases, the motivation for the study may be a combination of theoretical and practical concerns.

A thorough formulation of the problem typically includes a clear statement of the topic, issue, or question, a review of what others have written that bears directly on the problem, a rationale for the conceptual, methodological, and theoretical choices made in addressing the problem, and an argument for how the study contributes to knowledge or understanding about the problem.

1.1. The **problem formulation** should provide a clear statement of the purpose and scope of the study. It should describe the question, problem, or issue the study addresses, situate it in context, describe the approach taken to addressing it, and explain why it is important to address.

1.2. Reporting should make clear how the study is a **contribution to knowledge**.

1.2.a. If the study is a contribution to an established line of theory and empirical findings, it should make clear what the contributions are and how the study contributes to testing, elaborating, or enriching that theoretical perspective.

1.2.b. If a study is intended to establish a new line of theory, it should make clear what that new theory is, how it relates to existing theories and evidence, why the new theory is needed, and the intended scope of its application.

1.2.c. If the study is motivated by practical concerns, it should make clear what those concerns are, why they are important, and how this investigation can make a contribution to knowledge.

1.2.d. If the study is motivated by lack of information about a problem or issue, the problem formulation should make clear what information is lacking, why it is important, and how this investigation will address the need for information.

1.3. Reporting should include a **review of relevant scholarship** that bears directly on the topic of the report. It should include a clear statement of criteria used to define, delimit, identify and select the relevant scholarship in which the study is grounded. A review should provide the intellectual history for the study and make clear how the study contributes to, challenges, and/or extends theory, practice, methodology, knowledge and/or understandings within an arena of inquiry.

1.4. The rationale for the **conceptual, methodological, or theoretical orientation** of the study, including the intellectual tradition(s) on which it draws, should be described and explained with relevant citations to what others have written about it.

2. DESIGN AND LOGIC

The design and logic of a study flows directly from the problem formulation. It is shaped by the intellectual tradition(s) in which the authors are working and the ways in which they view the phenomenon under study. This in turn influences the identification of questions, the choice of methods of data collection, the approach to analysis and interpretation, and the format of reporting. These decisions constitute the logic of inquiry that researchers report.

Many different study designs are used in education research and different designs are appropriate for different problems. Some studies are concerned with drawing causal inferences regarding intended treatments such as estimating the effects of reducing class size on student achievement. Other studies are concerned with describing particular occurrences and the meanings people give them in a single setting, such as how early literacy is taught and understood in a particular preschool. Some studies describe how a given phenomenon changes over time, such as how the number of women enrolled in Ph.D. programs in the physical sciences changes across several decades. Still other studies examine the subjective experience of a particular group of research participants, such as what it is like, on a daily basis, to be a student in a "last chance" algebra class in a comprehensive high school. These examples illustrate only some of the range of empirical research problems in education research.

Designs for studies with such differing aims require very different approaches to data collection and analysis, from the construction of large-scale experiments or sample surveys to in-depth interviewing of a small number of subjects or the preparation of detailed transcripts of naturally occurring classroom talk. In some situations and in some forms of research, designs can be well specified in advance; in other circumstances, designs necessarily evolve, and the initial research questions become more elaborate or focused, as researchers become more familiar with the contexts in which they are working. Moreover, research designs must often take account of circumstantial constraints: some designs are more feasible or practical in certain research situations than others, independent of their suitability in the abstract.

Whatever the study's central purpose and circumstances might be, specific description of its design needs to make clear its logic of inquiry, showing how and why the methods and procedures that were used were appropriate for the problem as formulated. It is important, as well, that any evolution or changes in the initial design be clearly described, the reasons provided, and any substantial implications for interpretation of the outcomes discussed.

2.1. Research reporting should follow a **clear logic of inquiry** that allows readers to trace the path from the initial statement of the problem, issue, or interest; to the review of the intellectual history/background of the study; to the research questions initiated and/or developed in the study; to the description of the site, group and/or participants (demographic information); to the methodology guiding collection and analysis of evidence; to the interpretation and presentation of outcomes and understandings gained from the research process. There should be a coherent presentation of these aspects of the study, and it should be clear how the different parts of the study are related to each other.

2.2. There should be a specific and unambiguous **description of the design**—the way the data collection activities were organized in the investigation.

2.3. The **history of the investigation**, including any evolution in the research question or design, should be described and a rationale for the changes presented.

3. SOURCES OF EVIDENCE

Sources of evidence refer both to the phenomena under study and to the data or empirical materials that were gathered to provide evidence relevant to the research questions or problem. Thus, reporting on sources of evidence includes describing relevant characteristics of the site, group, participants or other phenomenon studied; the processes and judgments through which they were selected; and a rationale for these choices. It also includes specification of the data or empirical materials that were gathered, the processes and judgments through which they were gathered, and a rationale for these choices. Data gathered using qualitative methods typically includes participant or non-participant observations, unstructured or semi-structured interviews, documents and other artifacts, and may also include audio or video recordings. Since the role of the researcher and the relationship between the researcher and the participants can influence the data collected, they are often included in descriptions of sources of evidence. Data gathered

using quantitative methods include standardized instruments like surveys or tests, structured interview protocols, and categorical demographic information that permit aggregation of data across cases or units of analysis. These data can be newly collected for a study or based on secondary sources of evidence.

3.1. The **phenomena studied** (sites, groups, participants, or other phenomena) **and the means through which they were selected** should be adequately described:

3.1.a. Descriptions should include relevant characteristics of the site, group, participants, or other phenomena that bear directly on reporting and interpreting outcomes. The social, historical, or cultural context of the phenomena studied should also be described. The number of participants or other units of analysis (e.g., classrooms, schools) should be described unless circumstances make that impossible (e.g., some forms of observation in public places), and where relevant their relation to the more general population or field of instances from which they were selected should be provided.

3.1.b. The means of selection of the sites, groups, participants, or other phenomena should be described and a rationale provided. This includes the processes and judgments through which the phenomena were sampled or selected, the agreements made with participants, and a rationale for these choices. Descriptions should include how access, selection, and consent of participants were handled; what levels of rapport were established with participants; what roles were taken by the researcher (e.g., interviewer, observer) and participants (e.g., respondent, informant) in the data collection; and any changes in relationships and roles of researcher and participants over time. If in order to use certain forms of data or information consonant with guarantees of confidentiality, disclosure limitations techniques have been used to mask or perturb the data or generate synthetic data from the original data, these processes should be noted.

3.1.c. Reporting on studies that compare groups as a central feature of their design (e.g., student participants in different community organizations, teacher turnover rates in rural, urban, and suburban schools) should describe those individuals, groups, or entities in sufficient detail to make the salient attributes, choices, and conceptual rationale clear. In laboratory or field studies, if the researcher has recruited participants and made any assignments to groups, the process, rationale, and outcome of assignment should be described.

3.1.d. When an intervention or treatment is implemented, the intervention or treatment should be described in enough detail so that key features can be identified, understood in terms of outcomes, and compared to related interventions or treatments. Similarly features of control or comparison groups should be described so that they can be understood and examined in relation to interventions or treatments.

3.2. The **collection of data or empirical evidence** should be clearly described, including how and when they were gathered, by whom, and for what purposes. Description should also address salient processes and judgments that went into specification of data collection and a rationale for these choices. The description should be precise and sufficiently complete to enable another researcher to understand what was done and to replicate or reproduce the methods of data collection under the same or altered research circumstances, where appropriate. The relevance of evidence to the research problem, topic, or question should be clear. The sources and schedules of evidence may be specified in tables or diagrams.

3.2.a. Descriptions should include information on such issues as the time and duration of data collection; the schedule, context, and focus of data collection and how it was done (e.g., structured inventory, fieldnotes, audio- or video recording); the protocol for the administration of any instruments; the documents, records, or artifacts gathered and the ways in which they were identified. Where secondary data sources were used, reference to where the original description can be found may be sufficient.

3.2.b. With structured or semi-structured interviews, open-ended surveys, or observational inventories, there should be sufficient description of these guides or protocols to convey their properties; with open-ended or informal interviews, there should be sufficient information to place participants' responses in the context of what was asked or what preceded it. Structured surveys; data collection protocols; or standardized tests, measures, or instruments should similarly be described in sufficient detail to convey the development process and provide evidence of their technical quality. Information on access to these surveys, instruments, protocols, inventories, and guides should be specified. References should be included for instruments previously developed.

4. MEASUREMENT AND CLASSIFICATION

Empirical studies typically entail some process of data selection, reduction, or translation to enable analysis and reporting of outcomes. Measurement is the process by which behavior or observation is converted into quantities, which may, in turn, then be subjected to some kind of quantitative analysis. Classification refers to processes of segmenting data into units of analysis and categorizing or coding them. With qualitative methods in particular, classification is often considered integral to the data analysis. Thus, it is addressed here and referred to again under data analysis standards. The validity of empirical studies depends, in part, on the claim that classifications and measurements preserve important characteristics of the phenomena they represent. The practices of classification and the development of measurement instruments are typically iterative, as researchers seek to provide representations or translations of the data that are most meaningful in light of the phenomena studied and the research questions addressed. Descriptions of the development of classifications and measurements and evidence of their meaningfulness and appropriateness to the groups or participants studied are important elements of research reporting.

Empirical investigations often involve a large number of data elements, some of which are more important to the logic of inquiry and interpretation of the investigation than others. It is important to distinguish key data elements that are crucial to the logic and interpretation of the outcomes. Such elements will typically include those that are directly involved in the quantitative or qualitative analyses on which interpretations are based. They will also include those that are crucial to any intended extrapolations or generalizations of the results beyond the social phenomena studied.

4.1. The **development** of measurements and classifications should be clearly described, showing how the measurement or classification preserves important characteristics of the phenomena under study. When a previously developed measurement instrument or classification scheme is used, reference to a publication where these descriptions are provided may be sufficient.

4.2. Any **classification** scheme should be comprehensively described and illustrated with concrete examples that represent the range of phenomena classified.

4.2a. When the classification involves only parts of the data, the means through which those parts were selected should be described and a rationale provided.

4.2b. When exhaustive analysis of the relevant data is desirable and appropriate, especially when such analysis is necessary to support the main conclusions that are drawn (e.g., about the “typicality” of an event or the pervasiveness of a pattern), the classification scheme and frequencies of items in each classification should be presented in a table, chart, or appendix, or the information on their availability should be otherwise provided by the author.

4.2c. If coding processes are used, the description should include, as relevant, information on the backgrounds and training of the coders; inter-coder reliability or outcomes of reviews or audits by other analysts; or, where relevant, indications of the extent to which those studied (participants) agree with the classifications.

4.3. When **measurement** is entailed, reporting should describe data elements and organization in a specific and unambiguous way.

4.3a. Relevant descriptive statistics (such as means and standard deviations for continuous variables, frequencies for discrete variables with few categories, and correlation matrices) may be provided in tables if the analyses depend on having this information accessible; otherwise they should be available from the author upon request.

4.3b. Key data elements that are derived from others, such as scales and composites, should be presented in a specific and unambiguous way. If these derived data elements are conventional (such as a well-known scale or a score on an established test), then a citation to an external reference is sufficient.

4.3c. Sufficient detail should be provided to make clear that measures are being used appropriately, have suitable dependability (reliability) properties, and are interpreted properly for the groups studied. If the data were reduced or scales, scores, or measures were developed through data reduction techniques or statistical methods, they should be fully described. Evidence of appropriate use, dependability, or valid interpretation of measures (particularly key measures) should be provided in circumstances where a knowledgeable scholar might reasonably have questions.

4.4. When **transcriptions of audio- or video-recordings** are provided, the conventions and symbols used to represent the discourse or characterize the actions or interactions should be clearly described and a rationale provided.

4.5. A rationale should be provided for the **relevance of a measurement or classification to the group studied** (especially with respect to relevant features of the linguistic, social and cultural background of the group) where questions about appropriateness might readily arise.

5. ANALYSIS AND INTERPRETATION

An important aspect of reporting is to provide evidence that the outcomes and conclusions are warranted and that disconfirming evidence, counter examples, or viable alternative interpretations have been appropriately considered. This entails a clear statement of the process and outcomes of data analysis and a discussion of how they address the research questions or problem. Because the processes of analysis tend to follow somewhat different paths in quantitative and qualitative methods, specific standards are discussed for each, after discussion of the general standards.

In general:

5.1. The **procedures used for analysis** should be precisely and transparently described so that decisions can be traced from the beginning of the study through presentation of the outcomes. Reporting should make clear how the analysis procedures address the research question or problem and lead to the outcomes reported. The relevance of the analysis procedures to the problem formulation should be made clear.

5.2. **Analytic techniques** should be described in sufficient detail to permit understanding of how the data were analyzed and the processes and assumptions underlying any specific techniques (e.g., techniques used to undertake content analysis, discourse or text analysis, deliberation analysis, time use analysis, network analysis, or event history analysis). The description should allow readers to trace the path through which the outcomes were developed from the data or to reproduce the analysis using the same data.

5.3. The analysis and presentation of the outcomes of the analysis should make clear how

they **support claims or conclusions** drawn in the research.

5.4. Analysis and interpretation should include information about any **intended or unintended circumstances** that may have implications for interpretation of the outcomes, limit their applicability, or compromise their validity.

5.5. The **presentation of conclusions** should (a) provide a clear statement of how the set of claims and interpretations address the research problem, question, or issue underlying the research, (b) show how the conclusions connect to (support, elaborate, or challenge) conclusions in earlier scholarship, and (c) emphasize the theoretical, practical or methodological implications of the study.

With quantitative methods:

With quantitative methods, statistical analyses are typically undertaken and reported and then discussions of the results developed. The results of statistical analysis typically involve both a quantitative index of relation between variables or a magnitude and an index of its uncertainty. While statistical significance testing has a long history and a useful place in education research, statisticians have long warned against over reliance on significance testing to the exclusion of other methods of interpreting statistical analyses. Statistical significance tests combine both magnitude of relations (or estimates) and their uncertainty into the same quantity. Interpretation of statistical analyses can be improved by reporting magnitude of relations (effect size) and its uncertainty separately.

While many statistical analyses may be carried out in a study, typically only a subset is critical to the eventual results and interpretations. It is important to report the results of analyses that are critical for interpretation of findings in ways that capture the magnitude as well as the statistical significance of those results. Quantitative indices of effect magnitude (effect size indices) are a useful way to do this.

5.6. Reporting should clearly state **what statistical analyses were conducted**, linking them to the logic of design and analysis and describing them in enough detail that they could be replicated by a competent data analyst.

5.7. Descriptive and inferential statistics should be provided for each of the statistical analyses that are essential to the interpretation of the results.

5.8. Any **considerations** that arose in the **data collection and processing** (e.g., attrition, missing data, ceiling or floor effects, deviations from standard administration of instruments, suspected cheating) that might compromise the validity of the statistical analysis or inferences from them should be reported.

5.9. Any **considerations** that are identified during the **data analysis** (e.g., violations of assumptions of statistical procedures, failure of iterative statistical procedures to converge, changes in data analysis models necessitated by unexpected data patterns) that

might compromise the validity of the statistical analysis or inferences from them should be reported.

5.10. For each of the **statistical results** that are critical to the logic of the design and analysis, there should be included:

- an index of the quantitative relation between variables (an effect size of some kind, such as a treatment effect, a regression coefficient, or an odds ratio) or, for studies that principally describe variables, an index of effect that describes the magnitude of the measured variable.
- an indication of the uncertainty of that index of effect (such as a standard error or a confidence interval).
- a qualitative interpretation of the index of the effect that describes its meaningfulness in terms of the questions the study was intended to answer. This interpretation should include any qualifications that may be appropriate because of the uncertainty of the findings (e.g., the estimated effect is large enough to be educationally important but these data do not rule out the possibility that the true effect is actually quite small).

With qualitative methods:

With qualitative methods, analyses typically occur during as well as after data collection. Early analyses can help inform subsequent data collection by, for instance, identifying categories of events, actions, or people for further analysis within the ongoing study or for further study. As indicated in the section on Measurement and Classification above, during the initial stages of analysis, researchers may develop ways of segmenting the data (e.g., by person; by action, activity, event, or narrative; by time period) and sets of substantive categories or codes into which segments of data can be organized. These classifications help the researcher identify patterns within the data. Patterns refer to configurations of events or other observations that occur repeatedly or consistently in a characteristic arrangement. Sometimes discourse analysis is intended to provide comprehensive in-depth interpretations of a particular text rather than pattern descriptions of extended or multi-component empirical materials. Whatever the approach to initial data analysis, it is important that researchers fully characterize the processes they used so that others can trace their logic of inquiry.

Once initial classifications and pattern descriptions or in-depth interpretations are developed, researchers review the corpus of available data to locate all relevant instances, to search for confirming and disconfirming evidence, and to try out alternative interpretations. They may also return to data collection if additional evidence is needed to confirm or disconfirm a pattern. This process results in an initial set of claims or interpretations which represent the preliminary conclusions or learnings from the research. Then, the available sources of evidence may be re-reviewed, and alternative interpretations may be tried out, in the process of developing the final conclusions or learnings that will be reported.

This iterative process of developing claims or interpretations, seeking confirming and disconfirming evidence in the data, sometimes gathering additional evidence, and trying out alternative claims or interpretations, is typical of the data analysis process. Data analysis ceases

when researchers are satisfied and can provide evidence that their interpretations meaningfully and comprehensively characterize the data analyzed in light of the problem formulation.

It is the researcher's responsibility to show the reader that the report can be trusted. This begins with the description of evidence and analysis supporting each claim described above. The warrant for the claims can be further established through a variety of procedures including member checks (asking participants to evaluate pattern descriptions and claims), triangulation or comparison of evidence from different sources, having different analysts analyze the same data (independently, collaboratively, or through an audit), representation of different and/or evolving perspectives among participants and researchers, and searches for disconfirming evidence and counter interpretations. Critical examination of the pre-existing perspective, point of view, or standpoint of the researcher(s), of how these might have influenced the collection and analysis of evidence, and of how they were challenged during the course of data collection and analysis, is an important element in enhancing the warrant for each claim.

The following standards are intended to make the process of analysis transparent for reviewers and readers.

5.11. With qualitative methods, the **process of developing the descriptions, claims, and interpretations** should be clearly described and illustrated. The description should make it possible to follow the course of decisions about the pattern descriptions, claims, and interpretations from the beginning to the end of the analysis process. Sufficient detail should be included to make the process transparent and engender confidence that the results are warranted.

5.12. The **evidence that serves as a warrant for each claim** should be presented. The sources of evidence and the strength and variety of evidence supporting each claim should be described. Qualifications and conditions should be specified; significant counter examples should be reported. Claims should be illustrated with concrete examples (e.g., fieldnote excerpts, interview quotes, or narrative vignettes) and descriptions of the social context in which they occurred should be provided. If a warranted claim entails a generalizing statement (e.g., of typicality), it should be supported with evidence of its relative frequency. Any speculation that goes beyond the available evidence should be clearly represented as such.

5.13. **Practices used to develop and enhance the warrant for the claims** should be described, including the search for disconfirming evidence and alternative interpretations of the same evidence. Significant limitations due, for instance, to insufficient or conflicting evidence, should be described.

5.14. **Interpretive commentary** should provide a deeper understanding of the claims—how and why the patterns described may have occurred; the social, cultural, or historical contexts in which they occurred; how they relate to one another; how they relate to (support or challenge) theory and findings from previous research; and what alternative or counter claims were considered.

6. EXTRAPOLATION

All investigations involve specific participants, take place in specific contexts, and involve specific activities, data collections, or manipulations. However some investigations are intended to have implications beyond most, if not all, of the specifics occurring in the investigation itself. Situations and individuals to whom the findings are believed to have implications are referred to here as the author's intended scope or domain of extrapolation. Where this is an intent to extrapolate beyond the specifics studied, it is incumbent on the author to provide a justification. To justify such extrapolations, it is necessary to articulate both the details of the investigation itself and the logic by which the findings of the investigation should apply to the domain of extrapolation.

The following arguments are typically used to justify extrapolations. One form of such an argument is embodied in the sampling theory of generalization. The intended domain of extrapolation is the sampling frame (the population or universe) from which a sample is drawn. The investigation is carried out on a probability sample drawn from this population and statistical theory provides guidelines about the uncertainty attached to extrapolations to the population. Note that, because of very strong assumptions about the way in which the sample (the object of the investigation) is chosen, the validity of the logic of the generalization depends very little on knowing the specific characteristics of the individuals in the investigation or in the population.

Often an argument that is much like the sampling argument is used in the absence of probability sampling. This argument usually involves claims that the sample is "representative," a non-technical term that usually means that the sample supports the same kind of generalization as a probability sample. Such claims of representativeness are typically bolstered by evidence that the sample is similar to the population in all important respects. Note, however, that this logic requires more evidence about both the population and sample to be persuasive than is necessary to support claims of generalization from probability samples to populations.

Another form of extrapolation is to argue that the claims or results of a particular study are likely to be applicable in other contexts, because the claims refer to a widespread phenomenon, such as the reproduction of social class divisions or gender relations that has been previously documented in the literature. This logic requires the researcher to draw explicit comparisons to published research that focuses on similar phenomena.

In some studies, a domain of extrapolation is not specified by the author; rather generalization or extrapolation to a new context is considered to be an empirical matter whose determination is made by the reader. With such studies, it is the obligation of the researcher to describe the phenomena in sufficiently specific detail that readers of the article can draw appropriate comparisons to their own contexts of interest; in other words, it is the specificity of descriptive reporting that allows the reader to decide whether the processes identified in the reported case may also be found in an analogous situation known firsthand by the reader.

Whenever a claim of generalization or extrapolation beyond the reported case is specified or implied, it is the obligation of the researcher to build an explicit argument for that claim,

presenting evidence about the ways in which the reported case resembles or differs from other known cases.

6.1. Whether extrapolation is intended by the author or not, it is crucial to make clear the **specifics of the participants, contexts, activities, data collections, and manipulations** involved in the study. This includes all of the specifics that are relevant either to the logic by which the study should apply to the extrapolations or to permit readers to draw the necessary comparisons to their own contexts of interest.

6.2. Extrapolation that is intended by the author should make clear the **intended scope of extrapolation** of the findings of the study. It may be helpful to delineate the situations (or domains) in which the findings of the investigation do *not* apply to identify the scope of intended extrapolation. If the primary extrapolation is to theory, reporting should make clear specifically how the findings falsify, support, extend, or elaborate the relevant line(s) of existing theory. If the primary extrapolation is to identifiable problems or practical issues, reporting should make clear the situations in which the findings have applications, implications, or practical consequences and why this is plausible.

6.3. Extrapolation that is intended by the author should make clear the **logic by which the findings of the study should apply within the intended scope of extrapolation**. The logic should provide a clear and persuasive rationale supporting the generalization from the study to the domain of application. The logic should also identify and present evidence that may be necessary to support the validity of the claims of generalizability (such as evidence that the individuals in the study resemble those in the domain of extrapolation in relevant respects).

7. ETHICS IN REPORTING

AERA has developed and issued a set of ethical standards for the conduct of research to which its members and those who participate in all AERA programs, including publishing, are expected to adhere (see Ethical Standards of AERA at <http://www.aera.net/aboutaera/?id=222>). It is assumed that authors seeking publication in AERA journals are familiar with and adhere to these ethical standards. This section describes only those ethical issues that are directly relevant to reporting research. Authors need to consider these and any other issues they consider germane to the transparency and ethics of reporting.

In reporting research, authors have an opportunity and responsibility to address ethical decisions that shaped how the inquiry was designed or undertaken or how the data or empirical evidence were organized, maintained, or analyzed. These include, for example, key considerations with respect to consent (or a waiver of consent) or confidentiality agreements (including any agreement with participants to reveal their identities). Discussion of any compensation that was provided and how it was handled would typically also be reported. Research reporting needs to be undertaken consonant with confidentiality guarantees and data protection plans. In cases where researchers may have eliminated or altered descriptions or used other disclosure limitations techniques to mask or perturb the data, these processes need to be noted. If a condition of access or other criteria led to decisions to mask the identity of locations, institutions,

or other sites in data files and in data dissemination, these decisions would typically also be described.

Reporting of research is expected to reflect the highest standards of ethical practice both with respect to human participants and the execution of professional conduct and judgment in research. Reporting must be accurate and without any distortions, falsification, or fabrication of data or results; reflect the work of the authors with appropriate attribution to others; be free of any plagiarism or misappropriation of the writing or ideas of others; and be sufficiently accessible to be subject to verification, replication, or further analysis. Any prior review of the manuscript by research participants, those providing access to sites, or those funding the research that could have limited the author's autonomy to publish the research or how it was reported would typically also be described.

7.1. Ethical considerations involved in **data collection, analysis, and reporting** should be explicitly addressed. Not all ethical issues in the conduct of the study or about human research protection need to be addressed in an article, but those relevant to understanding the study, analyses, and results should be set forth.

7.2. Reporting on research and findings should be presented in a way that honors consent **agreements** with human participants and any other agreements with respect to gaining access to research sites or data. Reporting includes all writing (e.g., text of the article, quotes, excerpts of interactions), pictures, maps, or graphical displays that could inadvertently compromise guarantees of anonymity of human participants and the confidentiality of information about them or conflict with other promises made as a condition of access (e.g., masking the identity of school districts). Even when direct identifying information is not used, inadvertent disclosure of research participants can happen indirectly.

7.3. Reporting should include a description of any potential **conflicts of interest or biases** of the researcher that may have influenced or could have the appearance of influencing the research along with a description of how they were managed in the conduct of the study.

7.4 Reporting of research should be **accurately stated** and attention should be given to ensure that there are no omissions or inclusions of information that are false, fabricate, mislead, or misrepresent how the research or analyses were done.

7.5. The **data or empirical materials relevant to the conclusions** should be maintained in a way that a qualified researcher with a copy of the relevant data and description of the analysis procedures could reproduce the analysis or trace (audit) the trail of evidence leading to the author's conclusions.

8. TITLE, ABSTRACT, AND HEADINGS

A well constructed title and abstract helps readers in locating articles relevant to their interest. Since concepts in the title and abstract are typically indexed and searched, it is important that the words be carefully chosen to convey the contents of the article. Well constructed headings help readers follow the logic of inquiry in an article.

8.1. The **title** should convey, in as few words as possible, what the article is about.

8.2. The **abstract** should provide a summary of the article that is self-contained, concise, and accurate. It should set forth the research question or problem; descriptions of the research sites, objects, or participants; the conceptual orientation of the study; the methods used for collecting sources of evidence or data; procedures used for analyzing the evidence; and the main conclusions and implications. Preparation of the abstract should be in accordance with the format and structure required for AERA journals generally or the specific AERA journal to which the article is submitted.

8.3. **Headings** and subheadings should make clear the logic of inquiry underlying the report.