
Mixed-Methods Research Methodologies

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Abstract and Key Words

Mixed-Method studies have emerged from the paradigm wars between qualitative and quantitative research approaches to become a widely used mode of inquiry. Depending on choices made across four dimensions, mixed-methods can provide an investigator with many design choices which involve a range of sequential and concurrent strategies. Defining features of these designs are reported along with quality control methods, and ethical concerns. Useful resources and exemplary study references are shared.

Key Words: Mixed-Methods Studies, Quantitative Research, Qualitative Research, Concurrent Strategies, and Sequential Strategies.

Mixed-Methods Studies

Studies that are products of the pragmatist paradigm and that combine the qualitative and quantitative approaches within different phases of the research process. (Tashakkori & Teddlie, 2008, p.22).

The Origins of Mixed-Methods Lie in the Two Major Research Paradigms

- Quantitative research (i.e., a positivist paradigm) has historically been the cornerstone of social-science research. Purists call for researchers to “eliminate their biases, remain emotionally detached and uninvolved with the objects of study and test or empirically justify their stated hypotheses” (Johnson & Onwuegbuzie, 2004, p.14).
- Qualitative purists support a constructivist or interpretivist paradigm and “contend that multiple-constructed realities abound, that time- and context-free generalizations are neither desirable nor possible, that research is value-bound, that it is impossible to differentiate fully causes and effects, that logic flows from specific to general and that knower and known cannot be separated because the subjective knower is the only source of reality” (Johnson & Onwuegbuzie, 2004, p. 14).

The End of the “Paradigm Wars” and the Emergence of Mixed Methods

- Calls in the 80’s and 90’s for “a truce” between the two major paradigms.
 - Many major authors and researchers felt that quantitative and qualitative research methodologies are compatible.
 - Paradigm relativism – “the use of whatever philosophical and/or methodological approach (that) works for the particular research problem under study” (Tashakkori & Teddlie, 2008, p. 9).
 - Many social-scientists now believe there is no major problem area that should be studied exclusively with one research method.
 - Quantitative tells us “If”; qualitative tells us “How or why”.
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The Applications of Mixed-Methods Research are Far Ranging

- Nursing
- Psychology
- Education
- Sociology
- Library and Information Science
- Information Systems
- Political Science

The Type of Multi-Method Approach Depends Upon Four Factors

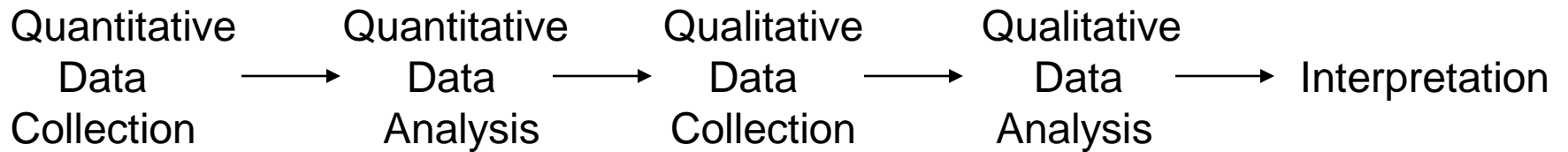
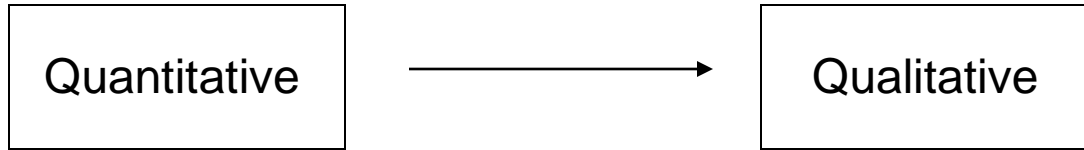
- Theoretical perspective
 - Explicit – based firmly on a theory
 - Implicit – based indirectly on a theory

- Priority of strategy
 - Equal
 - Qualitative
 - Quantitative

- Sequence of data collection implementation
 - Qualitative first
 - Quantitative first
 - No sequence

- The point at which the data are integrated
 - At data collection
 - At data analysis
 - At data interpretation
 - With some combination

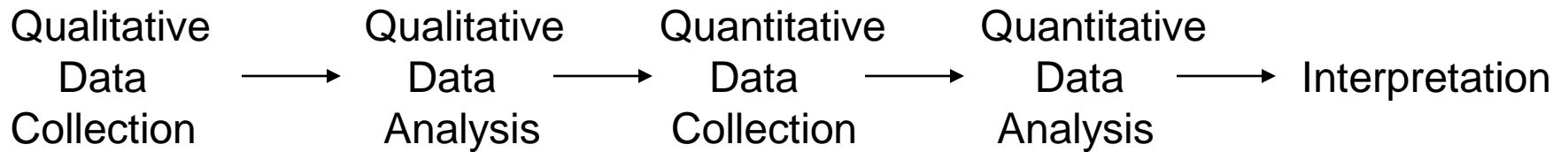
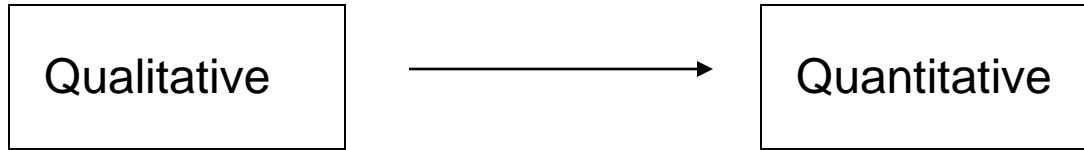
Sequential Explanatory Strategy



Sequential Explanatory Strategy

- The collection and analysis of quantitative data followed by the collection and analysis of qualitative data.
- Equal priority is given to the two phases.
- Data are integrated during interpretation.
- Primary focus is to explain quantitative results by exploring certain results in more detail or helping explain unexpected results (e.g., using follow-up interviews to better understand the results of a quantitative study).
- Strengths: relatively straight forward due to clear, distinct stages and easier to describe than concurrent strategies.
- Weakness: very time consuming especially when both phases are given equal consideration and priority.

Sequential Exploratory Strategy



Sequential Exploratory Strategy

- The collection and analysis of qualitative data followed by the collection and analysis of quantitative data.
- Equal priority is given to the two phases but priority can be given to either.
- Data are integrated during interpretation.
- Used primarily to explore a phenomenon by:
 - Testing elements of a theory
 - Generalizing qualitative findings to different samples
 - Development of instrumentation (e.g., using a small group to create instrumentation and then collecting quantitative data based on the instrumentation).
- Strength: relatively straight forward due to clear, distinct stages and easier to describe than concurrent strategies.
- Weakness: very time consuming especially when both phases are given equal consideration and priority.

Sequential Transformative Strategy

Qualitative → Quantitative

Vision, Advocacy, Ideology, Framework

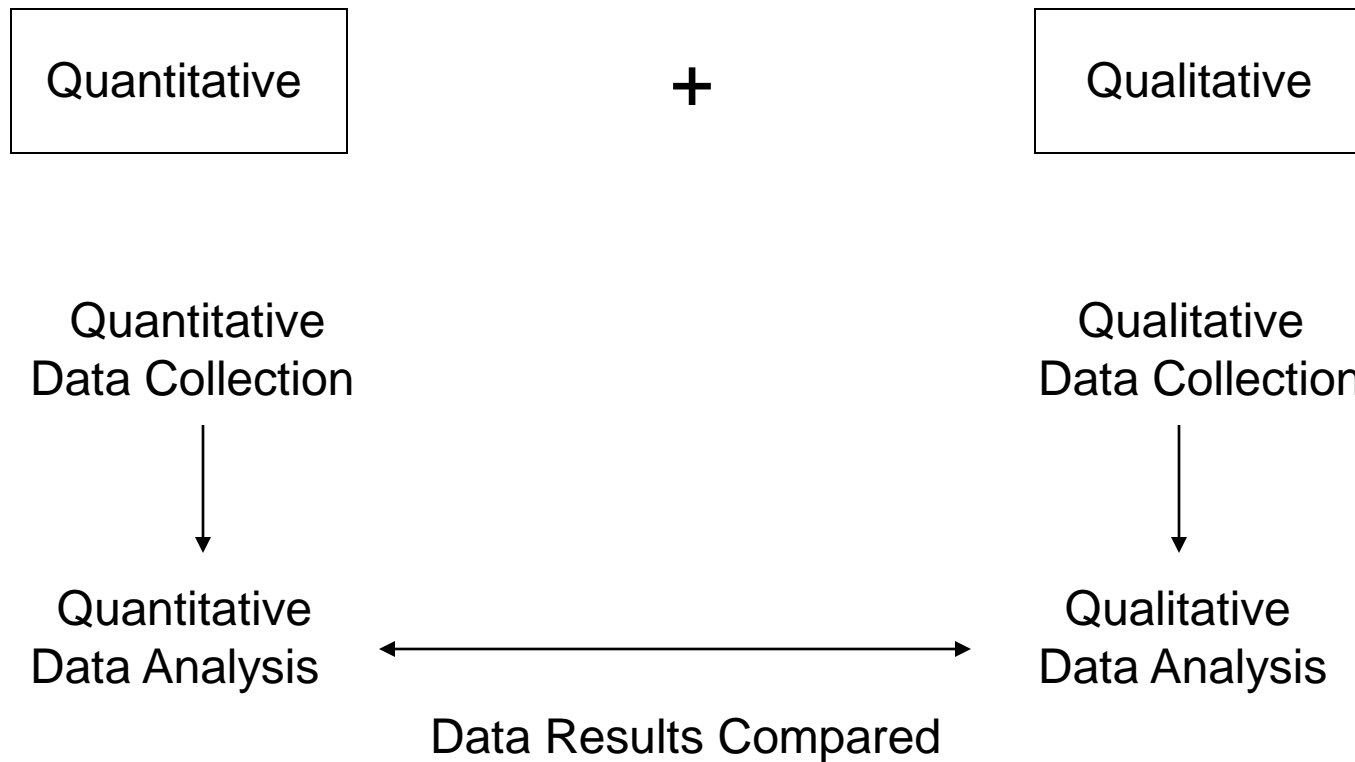
Quantitative → Qualitative

Vision, Advocacy, Ideology, Framework

Sequential Transformative Strategy

- There are two distinct data collection phases and either type can be collected first.
- Priority can be given to either or both data types.
- Data are integrated during interpretation.
- A theoretical perspective such as advocacy, a specific ideology or a conceptual framework guides the study. The perspective is more important in guiding the study than the two types of data collection.
- Primary purpose is to “employ the methods that will best serve the theoretical perspective of the researcher... (it) maybe be able to give voice to diverse perspectives, to better advocate for participants or to better understand a phenomenon or process that is changing as a result of being studied” (Creswell, 2003, p. 216).
- Strength: very straight-forward in terms of implementation and reporting.
- Weakness: time consuming. Little guidance due to the relative lack of literature on the transformative nature of moving from the first phase of data collection to the second.

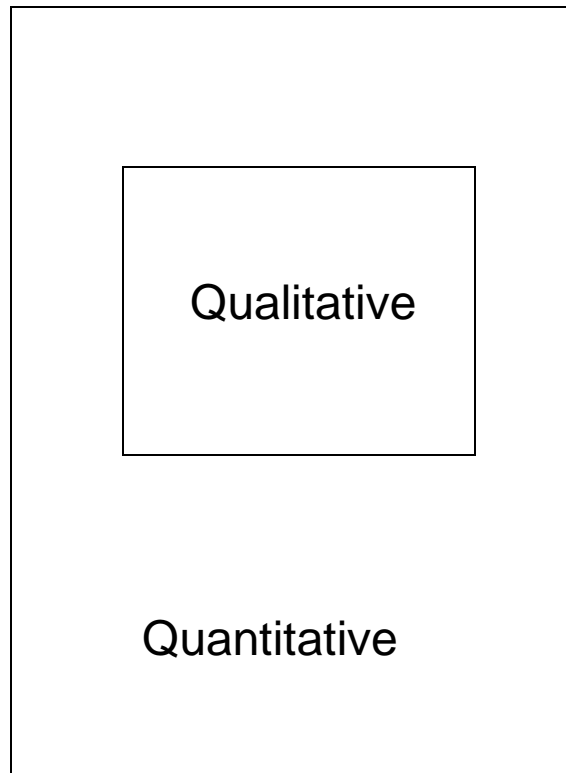
Concurrent Triangulation Strategy



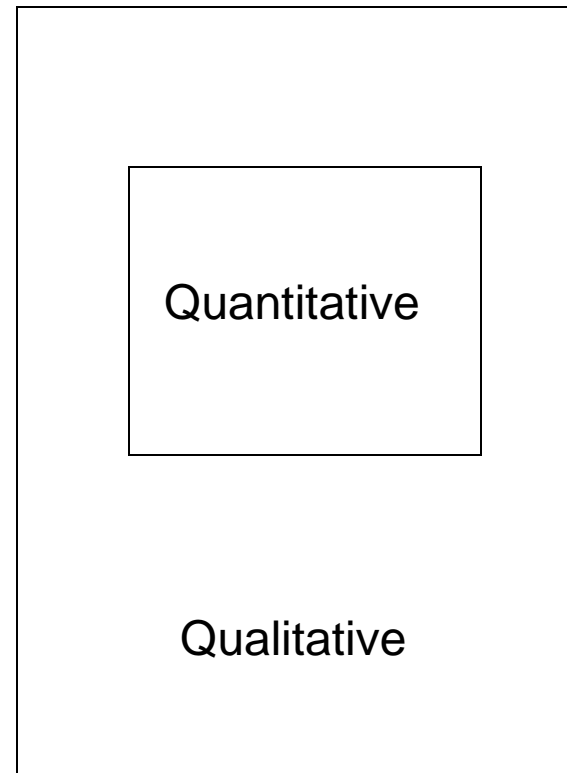
Concurrent Triangulation Strategy

- There are two concurrent data collection phases.
- Priority should be equal but can be given to either approach.
- Data are integrated during interpretation phase. The interpretation notes either a lack of convergence or convergence that strengthens knowledge claims. Data integration can also occur during analysis.
- Primarily purpose for confirmation, corroboration or cross-validation within a single study.
- Strengths: Familiar to many researchers. Shorter data collection time when compared to sequential methods. Offsets weaknesses inherent to one design by using both.
- Weaknesses: Requires a great deal of expertise and effort to study the phenomenon under consideration using two different methods. It may be difficult to compare two types of data as well as resolve discrepancies if they arise.

Concurrent Nested Strategy



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Analysis of Findings

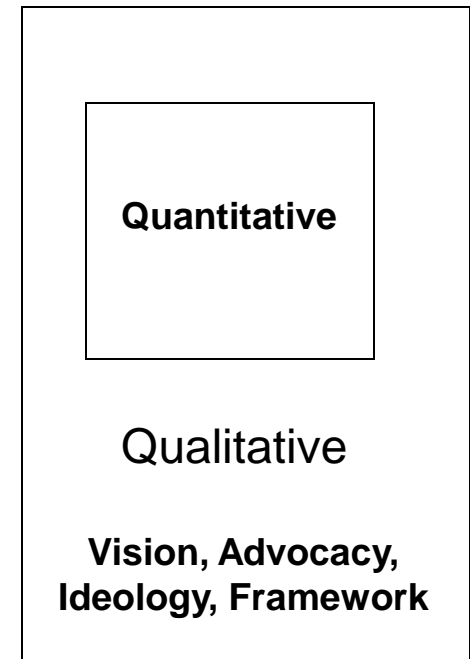
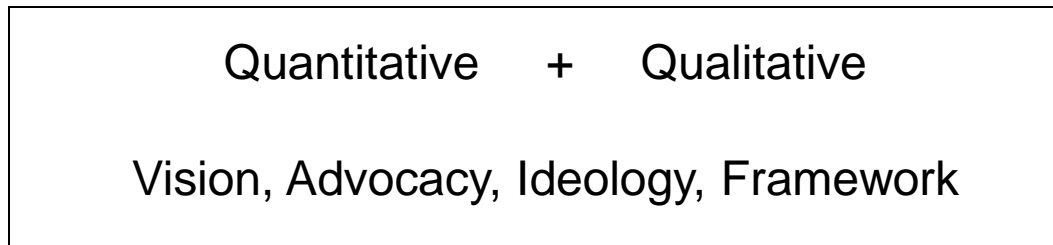


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Analysis of Findings

Concurrent Nested Strategy

- There are two data collection methods; one is embedded (i.e., nested) within the other.
- Priority is given to the primary data collection approach with less emphasis placed on the nested approach.
- Data are mixed during the analysis phase.
- A theoretical perspective may or may not guide the design.
- Primary purpose is for gaining a broader perspective than could be gained from using only the predominant data collection method.
- Secondary purpose is use of embedded method to address different research questions or garner information from different groups or levels within an organization.
- Strengths: able to collect two types of data simultaneously; can collect both quantitative and qualitative data allowing for perspectives from each; provides advantages of both methods.
- Weaknesses: data need to be transformed to allow integration during analysis, this may lead to issues in resolving discrepancies that occur between different data types; there is little literature in this area; results may be bias by differing priorities assigned to research design results.

Concurrent Transformative Strategy



Concurrent Transformative Strategy

- There are two concurrent data collection phases.
- Priority may be given to either phase or there may be equal priority.
- Data are integrated during analysis or possibly during interpretation phase.
- Is guided by a specific theoretical perspective (e.g., critical theory, advocacy, participatory research or theoretical framework).
- Like the sequential model, the purpose is to allow the researcher to employ methods that will best serve their theoretical perspectives.
- Strengths: can collect both quantitative and qualitative data simultaneously allowing for perspectives from each; provides advantages of both methods. Familiar to many researchers. Shorter data collection time when compared to sequential methods. Offsets weaknesses inherent to one design by using both.
- Weaknesses: data need to be transformed to allow integration during analysis, this may lead to issues in resolving discrepancies that occur between different data types. Requires a great deal of expertise and effort to study the phenomenon under consideration using two different methods.

Defining Features

- Employs pragmatic knowledge claims.
- Uses sequential, concurrent and transformative inquiry strategies. These combine into six commonly accepted mixed-methods designs.
- Combines both quantitative and qualitative methods (e.g., open- and closed-ended questions, quantitative and qualitative data, etc).
- Data can be collected simultaneously or sequentially; depending upon design. Priority can be given to either data type or they can be considered equally.
- Allows researchers to expand an understanding from one method to another or converge or confirm findings.
- Researcher is draw on breadth of generalization offered by quantitative research with depth of detailed understanding offered by qualitative research.
- The designs may or may not be driven by a theoretical perspective.

Commonly Used Means of Quality Control

“Mixed methods are inherently neither more nor less valid than specific approaches to research. As with any research, validity stems more from the appropriateness, thoroughness and effectiveness with which those methods are applied and the care given to thoughtful weighing of the evidence than from the application of a particular set of rules or adherence to an established tradition.” (Bazely, 2004)

In short, there are established rules for controlling validity in standard quantitative and qualitative research. These same rules must be followed when the methods are combined.

Required Researcher Skills*

- Knowledge of various research methods used.
- Understanding of assumptions underlying each research method.
- Working knowledge of analytic procedures and tools related to both quantitative and qualitative research.
- Ability to understand and interpret results from the different methods.
- Willingness to accept and forego methodological prejudices from training from prior discipline.
- Understanding of different disciplines, audiences and appropriate studies where mixed methods are acceptable.

* Adapted from Bazely (2004).

Ethical Concerns

- Participants must participate voluntarily.
- Participants must understand purpose and procedures of the study.
- Participants must understand that they have the right to a copy of the results.
- Participants must understand the potential benefits of the study and that their privacy will be respected.
- Researchers must understand the impact of their presence at research sites and ensure that these sites are left undisturbed at the end of the study.
- Care must be taken to identify and nullify any actual or perceived issues where power between the researcher and participant could be abused.
- Anonymity must be maintained during data analysis and data kept for a reasonable period of time.
- Ensure that writing is free of bias towards any group (e.g., age, ethnicity, sexual orientation, race, gender, etc.)
- The details of the study must be carefully explained within the actual report so as to allow readers the opportunity to judge the ethical quality of the study for themselves.

Key Resources

- Bazely, P. (2004). Issues in mixing qualitative and quantitative approaches to research. In R. Buber, J. Gadner, & L. Richards (Eds.) *Applying qualitative methods to marketing management research*. UK: Palgrave Macmillan, (pp. 141-156).
- Clark, V. & Creswell, J. (2008). *The mixed methods reader*. Los Angeles: SAGE.
- Creswell, J. (2003). *Research design: qualitative, quantitative, and mixed methods approaches* (2nd ed.). Thousand Oaks, CA: Sage.
- Gay, L., Mills, G. & Airasian, P. (2008). *Educational research: competencies for analysis and application* (9th ed.). Upper Saddle River, NJ: Merrill.
- Johnson, R. B. & Onwuegbuzie, A. J. (2004). Mixed-methods research: a research paradigm whose time has come. *Educational Researcher*, 33(7), 14-26.
- Tashakkori, A., & Teddlie, C. (2008). Introduction to mixed method and mixed model studies in the social and behavioral science. In V.L. Plano-Clark & J. W. Creswell (Eds.), *The mixed methods reader*, (pp. 7-26).

Exemplary Studies

- Donovan, J., Mills, N., Smith, M., Brindle, L., Jacoby, A., Peters, T., Frankel, S., Neal, D., & Hamdy, F. (2002). Improving design and conduct of randomized trials by embedding them in qualitative research: ProtecT (prostate testing for cancer and treatment) study. *British Medical Journal*, 325, 766-769.
- Idler, E. L., Hudson, S.V., & Leventhal, H. (1999). The meanings of self-ratings of health: A qualitative and quantitative approach. *Research on Aging*, 21(3), 458-476.
- Luzzo, D.A. (1995). Gender differences in college students' career maturity and perceived barriers in career development. *Journal of Counseling and Development*, 73, 319-322.
- Messer, L., Steckler, A., & Dignan, M. (1999). Early detection of cervical cancer among Native American women: A qualitative supplement to a quantitative study. *Health Education & Behavior*, 8(26), 547-562.
- Milton, J., Watkins, K.E., Studdard, S.S., & Burch, M. (2003). The ever widening gyre: Factors affecting change in adult education graduate programs in the United States. *Adult Education Quarterly*, 54(1), 23-41.
- Richter, K. (1997). Child care choice in urban Thailand: Qualitative and quantitative evidence of the decision-making process. *Journal of Family Issues*, 18(2), 174-204.
- Thøersen-Ntoumani, C., & Fox, K.R. (2005). Physical activity and mental well-being typologies in corporate employees: A mixed methods approach. *Work & Stress*, 19(1), 50-67.
- Victor, C. R., Ross, F., & Axford, J.(2004). Capturing lay perspectives in a randomized control trial of a health promotion intervention for people with osteoarthritis of the knee. *Journal of Evaluation in Clinical Practice*, 10(1), 63-70.
- Way, N., Stauber, H.&., Nakkula, M.J., & London, P. (1994). Depression and substance use of two divergent high school cultures: A quantitative and qualitative analysis. *Journal of Youth and Adolescence*, 23(3), 331-357.

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