

Epistemology and Mixed-Method Designs

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What Is Multi-Method Research?

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Definition

Multi-method research is research that uses techniques drawn from more than one methodological family in the course of answering a single integrated research question or testing a single overarching hypothesis.

Examples

- Cross-national regression plus national-level case studies

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- Survey plus in-depth interviews

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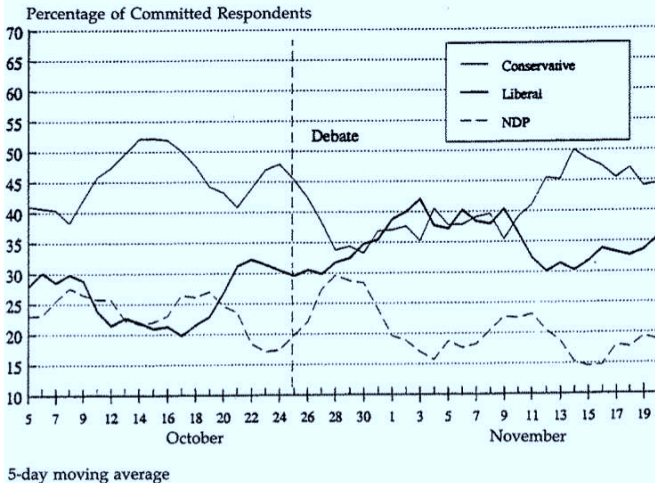
- Cross-national regression plus national-level case studies
- Survey plus in-depth interviews
- Experiment plus focus groups
- Comparative-historical analysis plus within-case regression

Letting the People Decide

- Johnston et al. (1992)
- In the 1988 Canadian elections, why did the Liberal party surge in late October and early November, and why did the Conservative party fall over the same time period?

Letting the People Decide

Figure 1-4
Party Shares



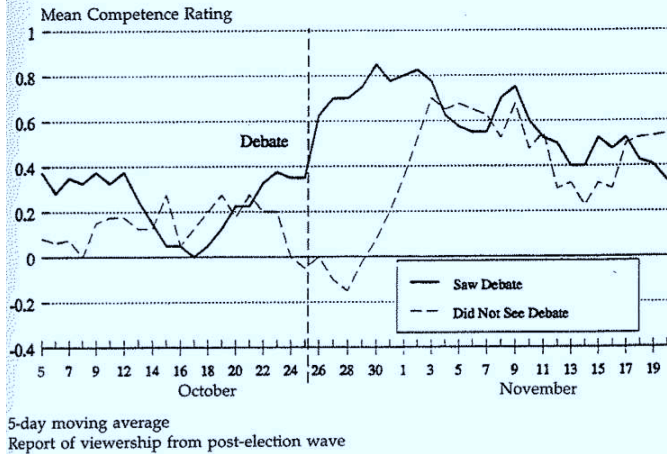
Letting the People Decide

“The critical moment seems to have been a riveting Turner-Mulroney exchange over the FTA; at one point the two were shouting at each other. The theme of the exchange was precisely the one that the Liberal campaign had been trying to implant in voters’ minds — Brian Mulroney’s trustworthiness. Mr. Turner got off a phrase that summarized the Liberal message: ‘I happen to believe that you have sold us out.’ ” (pg. 27)

Letting the People Decide

Figure 6-12

Debate Viewership and Perceptions of Turner's Competence



Florida, 2000

- Brady (2004)

Florida, 2000

- John Lott (2000) uses regression to estimate that early media calls in the Florida panhandle cost George W. Bush at least 10,000 votes.

Florida, 2000

$$303,000 * \frac{1}{72} \approx 4,200$$

- Census data from 1996 suggest that about 1/12 of voters go to the polls during the last hour.
- The call was made with 10 minutes to go, so perhaps 1/72 of voters who would have voted had not yet arrived at the polls.

Florida, 2000

$$303,000 * \frac{1}{72} * \frac{1}{5} \approx 840$$

- Research on media exposure suggests that 20% or fewer of people in the panhandle would have heard the media call during the 10 minutes before the polls closed.

Florida, 2000

$$303,000 * \frac{1}{72} * \frac{1}{5} * \frac{2}{3} \approx 560$$

- Bush was supported by about 2/3 of panhandle voters.

Florida, 2000

$$303,000 * \frac{1}{72} * \frac{1}{5} * \frac{2}{3} * \frac{1}{10} \approx 56$$

- Prior quantitative research suggests that about 10% of intended voters who hear an early call before they arrive at the polls may be dissuaded from voting.

Rights and Liberties

- Survey research on tolerance, civil liberties, individual rights

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- In-depth analysis of 30 think-aloud transcripts from a survey pretest

Rights and Liberties

- Do citizens anchor their opinions to what they understand of current law?

Rights and Liberties

Q. Do you think that a person who is caught red-handed deserves a full blown trial?

A. Yeah, I think that's one of our rights. I think that's in the Bill of Rights that, uhh, you have the right to a trial. Uhh how, what defense the attorney would take I don't know. I mean it — but again it's a matter of making the punishment fit the crime which I think a trial, that's one purpose of a trial. I mean I don't think a man that's stealing a loaf of bread should be executed. And I think a trial would bring out, uh, how serious the crime was and maybe there were some mitigating circumstances. And I think all that's part of a trial. So I think anyone deserves a trial.

Rights and Liberties

Q. What if the police stop someone for weaving dangerously in traffic. Do they have the right to search the glove compartment or trunk of the car if they suspect that he's on drugs?

A. I think the courts have said that they haven't, isn't that what the courts have said? Well, you hear verdicts where it's on and off but it, it seems to me that they, they probably shouldn't.

Why Multi-Method Research

- Assumptions

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- Assumptions
- Characteristic Strengths

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- Assumptions
- Characteristic Strengths
- Multiple Audiences

Regression Assumptions

In-Depth Interview Assumptions

CHA Assumptions

Assumptions for an Experiment

Sensitivity to Assumptions

Assumptions = Epistemologies?

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“Appreciation of the social construction of knowledge however, should not close off techniques of inquiry, only objectivist, value-neutral epistemological positions.” (Lawson 1995, 452)

Characteristic Strengths

Multiple Audiences

Critiques of Multi-Method Research

Epistemologies

Critiques of Multi-Method Research

Epistemologies

Presumed infallibility of one method?

Critiques of Multi-Method Research

Epistemologies

Presumed infallibility of one method?

Critiques of rigid research sequences

Critiques of Multi-Method Research

Epistemologies

Presumed infallibility of one method?

Critiques of rigid research sequences

Narrow assumptions regarding goals and strengths of methods

Ahmed and Sil

What is different about the more recent movement toward MMR is the extent to which the use of multiple methods is undertaken self-consciously by a single scholar in a single work in relation to a single research question, predicated on the assumption that the use of different methods will yield better results in addressing the question. (pg. 2)

Multi-method research in a study vs. a research program

Multi-method research in a study vs. a research program

Untested (untestable?) assumptions

The claim that MMR is inherently better than SMR is built on the faulty premise that one method can offer external validity for the findings of another. (pg. 3)

External validity vs. internal validity

Ahmed and Sil

We do not know more or know better as a result of triangulating different methods because different methods rest upon incommensurable epistemological foundations that even the most heroic attempts at translation cannot overcome. (pg. 3)

Methods vis-a-vis epistemologies

Methods vis-a-vis epistemologies

Untested assumptions, again

Combining case studies and statistical analysis?

Ahmed and Sil

Case studies are basically for causal mechanisms; statistical analysis is “limited in its ability to identify a causal mechanism.”

Elaboration method, mediation tests

Elaboration method, mediation tests

The goals of case studies

Ahmed and Sil

Only “empiricist” case studies, and not “deductive” or “hermeneutic” case studies can be combined with statistics.

The goals of statistical research

Ahmed and Sil

In moving from large-N statistical analysis to case study analysis, the case study will by its very nature introduce variables that are not present in the statistical analysis (for example, variables that are not quantifiable but whose effects can be observed within a given context). (pg. 3)

Testing or refining?

Statistical analysis can validate the relationship between hypothesized causal effects and generalize it across cases, but it cannot show that the causal mechanism found in the original case study analysis operates in the same manner and produces the same effect across different spatial and temporal contexts. (pg. 3)

Mechanisms and effects

Ahmed and Sil

The combination of methods in a single study does not resolve the problem of epistemological incommensurability, and thus cannot eliminate the tradeoffs built into each of the methods employed at various stages of a multi-method project. Thus it cannot be said that we know more or know better when multiple methods are deployed. (pg. 4)

Ahram

Simply because qualitative and quantitative findings point in the same direction — statistical significance and coefficient signs match the outcome of a case study — does not make them any more likely to be true, since the concepts applied in one methodological component are not equivalent to those applied in the other. It is impossible for qualitative and quantitative methods to say the same thing because they are talking about different things. (pg. 6)

Coordination — asking the same question

Coordination — asking the same question
Untested assumptions, yet again

Ahram

Because of their definitional intricacy and high intension, qualitative concepts are designed to apply to only a small number of cases. (pg. 6)

Ahram

*...the simpler definitions and low intension involved in quantitative concepts are amenable to incorporating [a] much wider universe of cases for interrogation via statistical analysis.
(pg. 7)*

Qualitative and quantitative concepts?

Qualitative and quantitative concepts? Definitional intricacy vis-a-vis universality

The specific argument is that since inferential statistics allows for generalization (while case studies normally do not), and case studies are better at tracing what are called “causal mechanisms,” combining the two affords us the best of both worlds. (pg. 11)

Statistics as tools for conditioning and quantification

Statistics as tools for conditioning and quantification

Statistical tests of causal paths

Statistics as tools for conditioning and
quantification

Statistical tests of causal paths

Case studies and measurement

Statistics as tools for conditioning and
quantification

Statistical tests of causal paths

Case studies and measurement

Case studies and inductive discovery

Arguments conceding the usual weaknesses of case studies — but nonetheless attempting to justify them — imply a metaphysics that makes it impossible to portray case studies as either necessary or sufficient in causal analysis, which in turn also precludes any justification of multi-method research. (pg. 11)

Necessity or sufficiency of methods?

“Reductionist” and “regularist” causal ontology.

Potential outcomes framework

*Case studies and inferential statistics cannot logically mix if the definition of causality is reductionist and regularist.
(pg. 11)*

Again, many goals of case studies

Again, many goals of case studies
How many people hold a strictly reductionist
and regularist definition of causality?

What part of the study does the causal work, the case studies or the statistical analysis? If it is the case study then the statistical analysis should not convince us, and if it is the statistical analysis then the case study should not convince us. (pg. 11)

Incompleteness, fallibility, and inference

Cartwright (1999) and causal capacities.

The peculiar methodological effect of an ontological mistake is that it travels through the design and undermines causal inference in the quantitative and the qualitative part, rendering its identification and elimination arduous. In this instance, nothing is gained from a nested analysis. (pg. 2)

Design research to test, not maintain,
assumptions

Nonsystematic variables are important in explaining the outcome in a particular case, but they are irrelevant to the development of a cross-case model. A model is overfitted if it contains a nonsystematic variable and underfitted when it excludes a systematic variable. (pg. 5)

“Nonsystematic” is problematic

It seems paradoxical to use the residuals for case selection when the model fit is considered unsatisfactory. Implicitly, Lieberman acknowledges that the use of a deficient regression model for case selection is questionable. (pg. 6)

Testing, refining, or taking for granted?

High model fit, which generally is welcomed in quantitative analysis, constitutes a problem in nested analysis [because it prevents the researcher from seeking omitted variables in a case study]. (pg. 7)

Rohlfing

Within-case analysis is undermined by bias and inconsistency inasmuch as the status of a case is deduced from its residual. When one believes that the case under scrutiny is typical on the basis of its residual, then one also believes that the observed causal processes are exemplary for a typical case. (pg. 8)

Rohlfing

[T]he potential of within-case analysis to detect model misspecification is larger than its current role in nested analysis might lead one to believe. Nonetheless, I also show that qualitative analysis has several limitations that require the application of graphical and quantitative instruments with which one can search for misspecification. (pg. 11)

Kuehn and Rohlfing

[T]he ability of case studies to effectively enhance the inferential quality of the large-N method is significantly limited due to the very problems that they are supposed to solve: measurement error and omitted variables. (pg. 18)

Kuehn and Rohlfing

First, the case study suffers from a variant of the classic small-N problem because the quality of a concept and measurement must be assessed in a larger set of cases. (pg. 19)

Assume X , therefore conclude X

Second, within-case analysis is similarly prone to measurement error as large-N analysis, which undermines its utility for cross-validation. (pg. 19)

$$X_{quant}^* = X + \gamma W + \epsilon_{quant}$$

$$X_{qual}^* = X + \omega k + \epsilon_{qual}$$

Suppose, to begin, that $cov(w, k) = 0$, $cov(x, w) = 0$, $cov(x, k) = 0$, and all covariances involving the ϵ 's are 0.

Then:

$$cov(x_{quant}^*, x_{qual}^*) = var(x) + \omega cov(x, k) + \gamma cov(x, w) + \omega\gamma cov(w, k)$$

$$cov(x_{quant}^*, x_{qual}^*) = var(x)$$

Shared sources vs. shared fact of measurement error

Reframing Multi-Method Research

Methods are fallible

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Each methodological family can have many goals

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Each methodological family can have many goals

Different methods are not fallible in exactly the same ways

Reframing Multi-Method Research

Methods are fallible

Each methodological family can have many goals

Different methods are not fallible in exactly the same ways

With careful design, multi-method research can reduce some sources of fallibility

Concepts of Causation

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Potential Outcomes Framework

Concepts of Causation

Potential Outcomes Framework

$T_i, Y_{i,t}$

Concepts of Causation

Necessary Causation

Concepts of Causation

Necessary Causation

$Y_{i,0} = 0$ for all i .

Concepts of Causation

Sufficient Causation

Concepts of Causation

Sufficient Causation

$Y_{i,1} = 1$ for all i .

Concepts of Causation

INUS Causation

Concepts of Causation

INUS Causation

$T_{i,1}$, $T_{i,2}$, $T_{i,3}$, etc

$Y_{i,1,1,1} = 1$ for all i . $Y_{i,0,1,1}$, $Y_{i,1,0,1}$, $Y_{i,1,1,0}$,
 $Y_{i,1,0,0}$, etc. are indeterminate.

Concepts of Causation

Substitutability

Concepts of Causation

Substitutability

$T_{i,1}$, $T_{i,2}$, $T_{i,3}$, etc

$Y_{i,1,0,0} = Y_{i,0,1,0} = Y_{i,0,0,1} = 1$ for all i .

Concepts of Causation

Causal Pathways

Concepts of Causation

Causal Pathways

T_i

$M_{i,t,1}$, $M_{i,t,m1,2}$, $M_{i,t,m1,m2,3}$, etc

$Y_{i,t,m1,m2,m3}$

Concepts of Causation

Additive, Linear Causation

Concepts of Causation

Additive, Linear Causation

$T_{i,1}$, $T_{i,2}$, $T_{i,3}$, etc

$$Y_{i,t1,t2,t3} = \alpha + \beta_1 T_{i,1} + \beta_2 T_{i,2} + \beta_3 T_{i,3} + \epsilon_i$$

Snow on Cholera

<http://www.ph.ucla.edu/epi/snow/snowbook.html>