March, 2012

Understanding Qualitative and Quantitative Research Paradigms in Academic Medicine

Laura Castillo-Page
Sue Bodilly
Sarah Bunton, Portland State University

Available at: https://works.bepress.com/sarah_bunton/22/
Qualitative research is becoming more prominent in academic medicine and health care fields, and an increasing number of publications using qualitative methods are featured in prominent journals. Thus, recognizing the different available approaches can benefit researchers of all types. While a debate may wage between proponents of qualitative versus quantitative research, both sets of methods—and often a blend of the two—offer important insights into the problems the academic medicine community faces.

### Qualitative paradigm vs. Quantitative paradigm

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<th>Qualitative paradigm</th>
<th>Nature of the research question</th>
<th>Quantitative paradigm</th>
<th>Nature of the research question</th>
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<td>How and why events or behaviors occur in complex settings where context is important to understanding: Examples: How do a diverse student body and faculty affect teaching and learning? How does a resident make the transition to attending physician? What characterizes the phenomenon of a mentor–mentee relationship?</td>
<td>How many, how often, what level, and what direction of relationships between defined variables in settings that can be decontextualized: Examples: What is the relationship between student grades and graduation rates? What type and amount of monetary incentive or financial reward affects a medical student’s specialty choice?</td>
<td>Deductive by statistics (e.g., data and patterns analyzed through statistical means)</td>
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#### Thematic analysis
- Case study: An in-depth study of a particular case, which can be descriptive, explanatory, or exploratory
- Ethnography: Research intended to provide descriptions of systems, processes, or phenomena within their specific context; stems from anthropology
- Grounded theory: A theory developed based on the examination of data (rather than applying a predetermined theory)
- Historiography: Research directed at the study of a past event, issue, or problem that uses information from the past
- Phenomenology: The study of individuals’ perspectives on particular phenomena
- Action research: A reflective and team-based approach led by those involved in solving a particular problem
- Mixed methods: A combination of quantitative and qualitative approaches including triangulation design, embedded design, explanatory design, and exploratory design

#### Data sources
- Ordinal or cardinal data from surveys, financial reporting, census reports, test scores, demographics, and/or observations

#### Analytic techniques
- Descriptive statistics
- Regression
- Regression discontinuity
- Hierarchical linear modeling

#### Assessment of rigor
- Internal validity (e.g., through study design and procedures)
- External validity (e.g., through criterion measurement)
- Reliability (e.g., through test–retest, internal consistency)

#### Strengths
- Delineates relationships among variables
- Provides generalizable research findings when the data are built on sufficiently sized random samples
- Provides generalizable results when research has been replicated in different populations/subpopulations
- Is useful for large populations

#### Weaknesses
- Narrow variables might not be valid
- Knowledge produced might be too general for direct application to specific contexts or individuals
- Phenomena may be missed if analysis focuses on hypothesis testing rather than hypothesis generation

### References