Qualitative and Quantitative research: a comparison and combination

Hennie Boeije

375th Anniversary of Utrecht University
It’s alive: current debates in methods and statistics
6th June 2011, Utrecht

Contents
- Comparison qualitative and quantitative research
  - Differences and similarities
  - Examples of both types of research
- Combining qualitative and quantitative research
  - Philosophical and methodological challenges
  - Examining mixed methods research
- Current views on education
  - Adjustments in education
- Conclusion

Prototype quantitative and qualitative ‘life’

- Quantitative research
  - Positivistic
  - Variable oriented
  - Probabilistic relationships
  - Causality, prediction
  - Detached
  - Large, random samples
  - Pre-structured
  - Cognitive competences

- Qualitative research
  - Interpretive
  - Case oriented
  - Themes and subthemes
  - Meaning of behaviour
  - Naturalistic
  - Small, purposive samples
  - Emergent
  - Creative competences

“It’s life, Jim, but not as we know it”
<table>
<thead>
<tr>
<th>Shades of grey I</th>
<th>Shades of grey II</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Research design</strong></td>
<td><strong>Sampling and data collection</strong></td>
</tr>
<tr>
<td>- Research objectives</td>
<td>- Qualitative research</td>
</tr>
<tr>
<td>- Sampling</td>
<td>- Purposive (a-priori, theory driven), relatively small</td>
</tr>
<tr>
<td>- Data collection</td>
<td>- Semi-structured, open</td>
</tr>
<tr>
<td>- Data analysis</td>
<td>- Textual, audio-visual data</td>
</tr>
<tr>
<td>- Results</td>
<td>- Quantitative research</td>
</tr>
<tr>
<td>- Conclusion and discussion</td>
<td>- Random sampling, relatively large</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Shades of grey III</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data analysis</strong></td>
<td></td>
</tr>
<tr>
<td>- Systematic and transparent</td>
<td></td>
</tr>
<tr>
<td>- Aimed at data reduction</td>
<td></td>
</tr>
<tr>
<td>- Computer-assisted</td>
<td></td>
</tr>
<tr>
<td>- Qualitative research</td>
<td></td>
</tr>
<tr>
<td>- Building a frame of analysis</td>
<td></td>
</tr>
<tr>
<td>- Cyclical process: data collection ↔ data analysis</td>
<td></td>
</tr>
<tr>
<td>- Quantitative research</td>
<td></td>
</tr>
<tr>
<td>- Using an a-priori determined frame of analysis</td>
<td></td>
</tr>
<tr>
<td>- Linear process: data collection → data analysis</td>
<td></td>
</tr>
</tbody>
</table>
Results and conclusion

Answering research questions
- Quality criteria: validity and reliability

Qualitative research
- Results = data and interpretations
- Textual

Quantitative research
- Results = analysed data
- Numerical

Quality criteria: validity and reliability

Results = data and interpretations

Textual

Quantitative research
Results = analysed data
Numerical

Shades of grey IV

So, the types of research are not that different after all.

They share many characteristics, but differ in the knowledge that can be gained with the methods and in the methods that are used.

So let's discuss some examples.

Example 1: Development of measuring instrument
Lack of understanding in patients with fibromyalgia


Example 2: Triangulation
Measuring study motivation in psychology students

• Students had a clear image of what studying means and what has their interest.
• They had a clearer image of their future plans (in their studying and professionally).
• Students took part in activities geared towards their study objectives.
• The concept of study motivation had changed over the year. The factor pattern had become clearer, while factor loadings had generally become higher.
• Specific internal motivations (fun and interesting) and external motivations (because I want to be seen as a good student) had become more important as indicators of study motivation and factor loadings than in wave 1.

End of first year (wave 2)

• Everything was new, and students were uncertain about their choice to study psychology and to go to university.
• Here and now is most important; feelings about the relevance of studying psychology and expectations about their professional future lure in the background.
• Students had a multitude of motivations to study, which could not be captured clearly in two dimensions.
• Factor loadings for study motivation were low, the factor model did not fit the data well.
• Items that asked students about their opinion about studying psychology performed relatively poorly.

Start of studies (wave 1)

Interview findings
Survey findings

End of first year (wave 2)

Interview findings
Survey findings

Changes had a clear impact on the students' behaviour, which factor loadings had generally increased over the year.

Specific external motivations (fun and interesting) and internal motivations (because I want to be seen as a good student) had become more important as indicators of study motivation and factor loadings than in wave 1.

End of first year (wave 2)

Redraw the diagram.
Example 4: Intervention evaluation

Health promotion in children

- Qualitative studies provide insights in children’s views
  - Health is considered the parents’ responsibility
  - Taste is more important than health
  - Fruit and vegetables are not the same type of food

Example of thematic analysis

Mixed methods research: combining quantitative and qualitative methods

- Quantitative studies determine effectiveness of interventions
  - Meta-analysis
  - Distinguish interventions follow implications or not

- Combining qualitative and quantitative studies
  - Interventions that follow recommendations more effective
  - Gaps in research: recommendations yet to test
Mixed Methods: definition

Research in which the investigator collects and analyzes data, integrates the findings, and draws inferences using both qualitative and quantitative approaches or methods in a single study or a program of inquiry. (Tashakkori & Creswell, 2007)

Issues in Mixed Methods

- Philosophical issues
  - Paradigm-method fit
  - Best paradigm
  - What paradigm for mixed methods

- Methodological issues
  - When to use mixed methods research?
  - Which research questions fit which design?
  - When to integrate qn and qf?
  - What evaluation criteria should be used?

Mixed methods: concurrent design

- Quantitative
  - Aim and research questions
  - Data collection
  - Data analysis
  - Findings
  - Integration?
  - Final Outcomes

- Qualitative
  - Aim and research questions
  - Data collection
  - Data analysis
  - Findings
  - Integration?
  - Final Outcomes

Mixed methods: Sequential design

- Quantitative
  - Aim and research questions
  - Data collection
  - Data analysis
  - Findings
  - Integration?
  - Final Outcomes

- Qualitative
  - Aim and research questions
  - Data collection
  - Data analysis
  - Findings
  - Integration?
  - Final Outcomes
Research programme
Qualitative synthesis and mixed methods research

Objectives
To examine qualitative, quantitative and mixed methods studies in order to compare them, appraise their quality and to explore the possibilities for integrating them.

Project
Children and trauma

Project team
- Hennie Boeije
- Floryt van Wesel
- Eva Alisic
- Meike Slagt
- Silvia Rietdijk
- Sarah Drost

Synthesis project children and trauma

Meta-analysis: protective and risk factors, longitudinal

Mixed methods research: yield

Selection criteria:
- Trauma among children < 18
- Outcomes include children’s experience of traumatic event, processing of traumatic event, or factors influencing recovery process
- Focus on children’s perspective
- Mixed methods article
- Peer-reviewed journal article
- Published January 1980-April 2010

10 studies included
- War and refugees (4), parental loss or illness (3), traumatic injury (2), natural disaster (2)

Yield then is the surplus value that originates from the integration of the quantitative and qualitative components, since this is what sets a mixed method study apart from a set of single method studies undertaken independently.
Mixed methods research: yield

<table>
<thead>
<tr>
<th>Study</th>
<th>Research objectives</th>
<th>QUAN/QUAL</th>
<th>Methods</th>
<th>Integration achieved</th>
<th>Triangulation objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Yes</td>
<td>QUAN</td>
<td>Qual</td>
<td>Yes</td>
<td>None</td>
</tr>
<tr>
<td>2</td>
<td>No</td>
<td>QUAN</td>
<td>Qual</td>
<td>Yes</td>
<td>None</td>
</tr>
<tr>
<td>3</td>
<td>No</td>
<td>QUAN</td>
<td>Qual</td>
<td>Yes</td>
<td>None</td>
</tr>
<tr>
<td>4</td>
<td>No</td>
<td>QUAN</td>
<td>Qual</td>
<td>Yes</td>
<td>None</td>
</tr>
<tr>
<td>5</td>
<td>Yes</td>
<td>QUAN</td>
<td>Qual</td>
<td>Yes</td>
<td>None</td>
</tr>
<tr>
<td>6</td>
<td>No</td>
<td>QUAN</td>
<td>Qual</td>
<td>Yes</td>
<td>None</td>
</tr>
<tr>
<td>7</td>
<td>No</td>
<td>QUAN</td>
<td>Qual</td>
<td>Yes</td>
<td>None</td>
</tr>
<tr>
<td>8</td>
<td>No</td>
<td>QUAN</td>
<td>Qual</td>
<td>Yes</td>
<td>None</td>
</tr>
<tr>
<td>9</td>
<td>Yes</td>
<td>QUAN</td>
<td>Qual</td>
<td>Yes</td>
<td>None</td>
</tr>
<tr>
<td>10</td>
<td>No</td>
<td>QUAN</td>
<td>Qual</td>
<td>Yes</td>
<td>None</td>
</tr>
</tbody>
</table>

Recommendation: Clarifying the research objectives and the rationale for using mixed methods contributes to achieving its added value.

Qualitative synthesis, meta-analysis and mixed methods studies

With mixed methods different areas are explored:
- Comparison qualitative synthesis
- Comparison quantitative synthesis
- Large difference; hardly any overlap in variables studied

Identity of mixed methods:
- Definition (what is mixed methods and quality of components)
- Yield (more than sum of its components)

Recommendation: Mixed methods studies should be included in systematic reviews to prevent omission of valuable information.

References


More information can be found on www.hennieboeije.nl

Thank you for your attention