Mixed-Methods in Implementation Research: A Brief Overview and Field Study Example

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Acknowledgements

• Support
  – NIMH R01MH072961 (PI: Aarons) Mixed-Methods Study of a Statewide EBP Implementation
  – NIMH R01MH065667 (PI: Chaffin) Effectiveness Trial Project SafeCare for Child Neglect
  – NIMH P30MH074678: (PI: Landsverk) Advanced Center to Improve Pediatric Mental Health Care

• Agency and Program Partners
  – Oklahoma Department of Human Services - Office of Children’s Services
  – Community Based Organizations
    • Eastern Oklahoma Youth Services
    • Family & Children’s Services
    • North Care Center

• Collaborators
  – Lawrence Palinkas, Ph.D. USC
  – Danielle Fettes Ph.D. UCSD
  – David Sommerfeld, Ph.D. UCSD
  – Mark Chaffin, Ph.D. OUHSC
  – Debra Hecht, Ph.D. OUHSC
  – Jane Silovsky, Ph.D. OUHSC
Different philosophical bases

Qualitative

Who would’ve thought that a structure of steel could be so beautiful... strong and delicate at the same time

Quantitative

It shortens my commute to work by 12.7 mile
What is Mixed-Methods Research?

• **Pragmatic** – problem centered using best combination and sequencing of methods to answer the research question

• **Combines** qualitative and quantitative approaches, pluralistic

• **Collaboration** between quantitative and qualitative researchers during the study design, analysis, and interpretation, phases

• **Acknowledges** the philosophical approaches brought to the study by various team members

• **Shared responsibility** and willingness to negotiate emerging problems and contradictory perspectives are honored

• **Mixing** of design, data collection, analysis, and results

Source: Aarons, Fettes, Sommerfeld, & Palinkas (2012); Creswell & Clark (2007); Greene & Caracelli (2003); Tashakkori & Teddlie (2003); Willging et al. (2007)
Data Collection Techniques

• Qualitative
  – Observation
  – Focus group
  – Interview
  – Textual analysis
    • Document analysis, (e.g., legislation, contracts, MOA’s, MOU’s)

• Quantitative
  – Survey
  – Interview
  – Biomarkers
  – Imaging
  – Sorting
  – Technology utilization

Source: Sandelowski, 2000
Mixed-Methods Structure

- **QUAL → quan**
  - Sequential collection and analysis of quantitative and qualitative data, beginning with qualitative data, for primary purpose of exploration/hypothesis generation

- **qual → QUAN**
  - Sequential collection and analysis of quantitative and qualitative data, beginning with qualitative data, for primary purpose of confirmation/hypothesis testing

- **Quan → QUAL**
  - Sequential collection and analysis of quantitative and qualitative data, beginning with quantitative data, for primary purpose of exploration/hypothesis generation

- **QUAN → qual**
  - Sequential collection and analysis of quantitative and qualitative data, beginning with quantitative data, for primary purpose of confirmation/hypothesis testing

- **Qual + QUAN**
  - Simultaneous collection and analysis of quantitative and qualitative data for primary purpose of confirmation/hypothesis testing

- **QUAL + quan**
  - Simultaneous collection and analysis of quantitative and qualitative data for primary purpose of exploration/hypothesis generation

- **QUAN + QUAL**
  - Simultaneous collection and analysis of quantitative and qualitative data, giving equal weight to both types of data

Source: Palinkas, Aarons, Horwitz, Chamberlain, Hurlburt, & Landsverk, 2011
Mixed Methods Design Typology

Concurrent

QUAL data → Results → QUANT data

Sequential

QUAL data → Quant data → Results

Or

QUANT data → Qual data → Results

Embedded-Sequential

QUANT data

Qual data

Results

Source: Creswell & Plano Clark, 2007
<table>
<thead>
<tr>
<th>Design Type</th>
<th>Purpose</th>
<th>Data Collection Timing</th>
<th>Integration Timing or “Mixing”</th>
<th>Implementation Order</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triangulation/Convergence</td>
<td>Corroboration: analyze data from different sources regarding the same phenomenon</td>
<td>Concurrent</td>
<td>Interpretation</td>
<td>QUAL + QUAN</td>
</tr>
<tr>
<td>Explanatory/Complementary</td>
<td>Understand a phenomenon more completely</td>
<td>Sequential</td>
<td>Analysis and Interpretation</td>
<td>QUAN → qual</td>
</tr>
<tr>
<td>Exploratory/Development</td>
<td>Instrument or taxonomy/typology development</td>
<td>Sequential</td>
<td>Analysis and Interpretation</td>
<td>QUAL → quan</td>
</tr>
<tr>
<td>Embedded/Expansion</td>
<td>Assess different phenomenon using different methods</td>
<td>Embedded- Sequential</td>
<td>Analysis and Interpretation</td>
<td>QUAN(qual) or QUAL(quan)</td>
</tr>
<tr>
<td>Initiation/Transformative</td>
<td>Discovery of new ideas and meanings regarding a particular phenomenon</td>
<td>Concurrent</td>
<td>Throughout</td>
<td>QUAL + QUAN</td>
</tr>
</tbody>
</table>

Source: Creswell & Plano Clark, 2007
Mixed-Methods Study of Statewide EBP Implementation
(NIMH R01MH072961 PI: Aarons)

• Implementation of SafeCare® in Oklahoma’s Statewide Public Sector Children’s Services System

• Integrates Organizational and Clinical Theories and Hypotheses

• Combines exploratory and confirmatory approaches

• Longitudinal at organization/team level

• Examines reciprocal effects of EBP implementation on service system and organizations and service system and organization impacts on EBP implementation

• Requires collaboration and ongoing relationship building and maintenance
The Evidence-Based Intervention: SafeCare®

- **Core components within all training modules:**
  - Communication
  - Problem Solving

- **Three parent training modules**
  - Parent-Child/Parent-Infant Interactions
  - Home Safety
  - Infant and Child Health Care

- All SafeCare® services are provided *in the home*
  - SafeCare® services have never been provided in a clinic

- Studies support SafeCare® effectiveness
  - Single Case
  - Observational/Quasi-Experimental
  - Statewide trial (Chaffin et al., 2012)
<table>
<thead>
<tr>
<th></th>
<th>Monitored</th>
<th>Non-Monitored</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SafeCare</strong></td>
<td>SafeCare + Coach Monitors EBP</td>
<td>SafeCare</td>
</tr>
<tr>
<td><strong>Usual Care</strong></td>
<td>Usual Care + Coach monitors</td>
<td>Usual Care</td>
</tr>
</tbody>
</table>
Figure 1. Integrative Model for Study of Implementation of EBP in Human Service Organizations. (Adapted from Aarons, Hurlburt, & Horwitz, 2011; Aarons, Woodbridge, & Carmazzi, 2003; Frambach & Schillewaert, 2002; Knudsen, Johnson, & Roman, 2002)
In this Implementation Study

Qual and Quant Methods are Integrated

- Quantitative data used for sampling (Wave 1)

- Quantitative analysis informed by qualitative data (QUAN $\rightarrow$ qual)

- Qualitative data informed by quantitative measurements (QUAL $\rightarrow$ quan)

- Process - Engages Stakeholders
  - Annual meeting with multiple stakeholders to review both quantitative and qualitative data (quan + qual)

Source: Aarons, Fettes, Sommerfeld, & Palinkas (2012)
Methods

- Participants = service providers, supervisors, agency directors and executive directors

- Quant:
  - Longitudinal Web-based organizational surveys completed by service providers and supervisors

- Qual:
  - Annual interviews, focus groups
  - Service providers, supervisors, agency directors

- Inherent quantitative data problems at system/organizational level
  - The “small n” problem
  - Level 2 missing data problem (cross classified)

- Response rates
  - Quantitative: >95% over 12 waves
  - Qualitative: >95%
Data Collection

• Quantitative
  – Bi-annual web-survey of all service providers and supervisors
    • Organizational culture/climate
    • Job autonomy
    • Turnover intentions
    • Work attitudes

• Qualitative
  – Wave 1: Service Providers
    • Semi-structured interviews (n=15)
      – Knowledge, attitudes and behavior (use) of the SC model
      – Impact of implementation of day to day work/operations
      – Fidelity to or adaptation of the SC model in practice
      – Factors that facilitated or impeded use of SC
      – Likelihood of using SC at completion of study

  – Wave 2: Upper and Mid-managers
    • Semi-structured interviews (n=12)
      – Experience with SC, UC, and Academic collaborators
      – Impact of SC on agency and staff
      – Requirements for sustainment of SC and other EBPs after conclusion of trial, perceived

  – Wave 3: Supervisors and providers
    • One-on-One Interviews (n=21) and Focus Groups (n=95)
      – Agency changes since SC implementation
      – EBP adaptation
      – Experiences with using SC or UC and fidelity monitoring
      – Team and organization climate
Mixed-Methods EBP Implementation Study

NIMH 5R01MH072961 (PI: Aarons) Implementation
NIMH 5R01MH065667 (PI: Chaffin) Effectiveness

Legend
- EBP SafeCare
- Usual Care
Focus on Staff Turnover

• A significant problem for human service organizations

• One goal of this study is to:
  – Examine the relationship between implementation of an evidence-based practice and impact on job autonomy and employee turnover

• Hypotheses
  – Implementing EBP will be associated with a greater likelihood of leaving the agency
  – Receiving ongoing monitoring will be associated with a greater likelihood of leaving the agency
  – Implementing the EBP AND receiving ongoing monitoring will be associated with the greatest likelihood of leaving the agency
Data Analyses

• Quantitative
  – Survival analysis
  – Controlled for demographics (race, sex, education)
  – Incorporated time-varying covariates (e.g., job autonomy, turnover intentions, work attitudes)
  – Experimental condition
  – Shared frailty term to account for nested data structure

• Qualitative
  – All recordings of interviews transcribed
  – Set of randomly selected transcripts independently coded
  – Grounded theory approach (Glaser & Strauss, 1967)
  – Coding consensus, co-occurrence, comparison (Wilms et al. 1992)
  – Codes assigned based on a-priori (interview guide) and emergent themes
  – Disagreements in description or assignment of codes resolved through discussion
  – Final set of codes used by trained coders under supervision of investigators

Data Analyses Integration

- Investigative team considers data and results from both sets of analyses

- Annual meeting of stakeholders to review qualitative and quantitative findings
  - Academic researchers (including trainers, coaches)
  - State service system leaders and administrators
  - Community based provider organizations
    - Executive directors
    - Regional directors
    - Area directors and team leaders

- Feedback meetings with all provider teams and supervisors

- Consider hypotheses, conceptual framework, emergent issues in integrating results

- Utilize three mixed method functions
  - Convergence
  - Complementarity
  - Expansion
Figure 1. Kaplan-Meier Survival Function Estimates (Retention Probability) by Study Condition.

- Lowest turnover in EBP+Fidelity Monitoring Condition (p<.05)
- Lower perceived job autonomy associated with higher turnover (p<.05)
- Higher turnover intentions associated with higher turnover (p<.05)

<table>
<thead>
<tr>
<th>Method</th>
<th>Quantitative</th>
<th>Qualitative</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Question</strong></td>
<td><em>Does SC implementation increase risk of turnover?</em></td>
<td><em>Does SC implementation increase risk of turnover?</em></td>
</tr>
<tr>
<td><strong>Answer</strong></td>
<td>No: Home based providers in the SC/M condition had a greater likelihood of</td>
<td>No: Many of the providers reported satisfaction with the structure provided</td>
</tr>
<tr>
<td></td>
<td>staying with their agencies for a longer period of time.</td>
<td>by the EBP.</td>
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<td></td>
<td>(See figure at right)</td>
<td>No: None of the providers interviewed reported leaving primarily because of</td>
</tr>
<tr>
<td></td>
<td></td>
<td>their involvement in the EBP effectiveness trial.</td>
</tr>
<tr>
<td><strong>Question</strong></td>
<td><em>Does fidelity monitoring increase risk of turnover?</em></td>
<td></td>
</tr>
<tr>
<td><strong>Answer</strong></td>
<td>No: Home based providers in the SC/M condition and UC/M condition had a</td>
<td>No: Many of the providers reported satisfaction with the support they</td>
</tr>
<tr>
<td></td>
<td>greater likelihood of staying with their agencies for a longer period of time.</td>
<td>received from monitors.</td>
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<td>(See figure at right)</td>
<td></td>
</tr>
<tr>
<td><strong>Question</strong></td>
<td><em>Is SC implementation + fidelity monitoring associated with greatest risk of</em></td>
<td><em>Is SC implementation + fidelity monitoring associated with greatest risk of</em></td>
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<tr>
<td><strong>Answer</strong></td>
<td>turnover?</td>
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<td>staying with their agencies for a longer period of time.</td>
<td>received from monitors/consultants.</td>
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<tr>
<td><strong>Question</strong></td>
<td><em>Does lower perceived job autonomy increase risk of turnover?</em></td>
<td></td>
</tr>
<tr>
<td><strong>Answer</strong></td>
<td>Yes: Lower perceived job autonomy was associated with turnover.</td>
<td>Yes: Some providers reported intentions to leave due to supervisor microman</td>
</tr>
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<td></td>
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<td>agement but this was unrelated to the EBP.</td>
</tr>
<tr>
<td><strong>Question</strong></td>
<td><em>Does higher turnover intention increase risk of turnover?</em></td>
<td></td>
</tr>
<tr>
<td><strong>Answer</strong></td>
<td>Yes: Higher turnover intention was associated with turnover.</td>
<td>Yes: Some providers who reported intentions to leave during focus groups</td>
</tr>
<tr>
<td></td>
<td></td>
<td>resigned from their positions within the following year because they felt</td>
</tr>
<tr>
<td></td>
<td></td>
<td>unsupported by their supervisor.</td>
</tr>
<tr>
<td>Method</td>
<td>Quantitative</td>
<td>Qualitative</td>
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<tr>
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<tr>
<td>Question</td>
<td>Does SC implementation lead to increased turnover?</td>
<td>Does low rate of turnover signify satisfaction with SC?</td>
</tr>
<tr>
<td>Answer</td>
<td>Home based providers in the SC/M condition had a greater likelihood of staying with their agencies for a longer period of time.</td>
<td>Yes: Some providers loved the structure provided by the EBP. Yes: Many providers felt that there was some value to the EBP and some felt it benefited their families. No: Some providers disliked having to implement some of the EBP modules. No: Many providers felt that the EBP was not appropriate for all families. No: Some providers felt the EBP detracted from dealing with more immediate issues (e.g., crises).</td>
</tr>
<tr>
<td>Question</td>
<td>Does monitoring lead to increased turnover?</td>
<td>Does low rate of turnover signify satisfaction with monitoring?</td>
</tr>
<tr>
<td>Answer</td>
<td>Home based providers in the SC/M condition and the UC/M condition had a greater likelihood of staying with their agencies for a longer period of time.</td>
<td>Yes: Some providers loved the supervision that came with monitoring. No: Some providers resented being monitored. According to administrator interviews, some of those providers subsequently left the agency. No: Some providers disliked their ongoing consultants.</td>
</tr>
<tr>
<td>Question</td>
<td>Does lower perceived job autonomy lead to increased turnover?</td>
<td>Did SC increase or decrease autonomy?</td>
</tr>
<tr>
<td>Answer</td>
<td>Yes: Lower perceived autonomy predicted greater turnover.</td>
<td>Decrease: Some providers reported use of the EBP reduced their ability to respond to more immediate demands like substance abuse or unemployment. Increase: Most providers reported that the EBP gave them more structure to do what they were already doing, making them feel more competent at their jobs (thus increasing perceived autonomy).</td>
</tr>
<tr>
<td>Question</td>
<td>Do higher turnover intentions lead to increased turnover?</td>
<td>Did SC increase or decrease turnover intention?</td>
</tr>
<tr>
<td>Answer</td>
<td>Yes: Higher turnover intention predicted greater turnover.</td>
<td>No: Most newer providers came in with the EBP as part of the work milieu and the service model so it did not impact turnover intentions. Yes: Some experienced staff felt that they already had the knowledge and tools to provide effective services.</td>
</tr>
<tr>
<td>Method</td>
<td><strong>Quantitative</strong></td>
<td><strong>Qualitative</strong></td>
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</tr>
<tr>
<td><strong>Question</strong></td>
<td>Does SC Implementation and/or monitoring lead to increased turnover?</td>
<td>Why are they more likely to stay?</td>
</tr>
<tr>
<td><strong>Answer</strong></td>
<td>Home based providers in the SC/M condition had a greater likelihood of staying with their agencies for a longer period of time.</td>
<td>Providers like the structure that SC provides to services. Providers like the support they receive from monitors. They view it as “free” supervision. EBP providers supported one another in application of the EBP and developed a distinct identity. SAU providers reported decline in morale due to factors unrelated to the EBP (e.g., conflicts with supervisor, change in leadership, few opportunities for promotion or pay raise, lack of distinct team identity).</td>
</tr>
<tr>
<td><strong>Question</strong></td>
<td>Does lower perceived job autonomy increase risk of turnover?</td>
<td>Is job autonomy threatened by SC or other work conditions?</td>
</tr>
<tr>
<td><strong>Answer</strong></td>
<td>Yes: Lower perceived job autonomy was associated with turnover.</td>
<td>Yes: Some providers reported intentions to leave due to supervisor micromanagement however this may be more related to work activities rather than the EBP.</td>
</tr>
</tbody>
</table>
Conclusions

- Mixed method research as applied in this study is multifaceted
  - Used in multiple ways
    - Sequential → Sampling
    - Convergence
    - Complementarity
    - Expansion
      - Qual used to illuminate and expand quant results
      - Quant can also illuminate and expand qual results

- Mixed method research can answer questions incorporating multiple stakeholders and multiple system and organizational levels

- Mixed methods can provide depth of insight into the meaning of results not possible with either method alone
Contact

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