An Introduction to Mixed Methods Research

Timothy C. Guetterman, PhD
University of Michigan
Department of Family Medicine
tguetter@umich.edu
A Mixed Methods Intervention Study

Support Care Cancer
DOI 10.1007/s00520-014-2478-7

ORIGINAL ARTICLE

The impact of music therapy versus music medicine on psychological outcomes and pain in cancer patients: a mixed methods study

Joke Bradt · Noah Potvin · Amy Kesslick · Minjung Shim · Donna Radl · Emily Schriver · Edward J. Gracely · Lydia T. Komarnicky-Kocher

Received: 2 August 2014 / Accepted: 6 October 2014 © Springer-Verlag Berlin Heidelberg 2014

Abstract

Purpose The purpose of this study was to compare the impact of music therapy (MT) versus music medicine (MM) interventions on psychological outcomes and pain in cancer patients and to enhance understanding of patients’ experiences of these two types of music interventions.

Methods This study employed a mixed methods intervention design in which qualitative data were embedded within a randomized cross-over trial. Thirty-one adult cancer patients participated in two sessions that involved interactive music making with a music therapist (MT) and two sessions in which MT sessions. The qualitative data indicate that music improves symptom management, embodies hope for survival, and helps connect to a pre-illness self, but may also access memories of loss and trauma. MT sessions helped participants tap into inner resources such as playfulness and creativity. Interactive music making also allowed for emotional expression. Some participants preferred the familiarity and predictability of listening to pre-recorded music.

Conclusions The findings of this study advocate for the use of music in cancer care. Treatment benefits may depend on patient characteristics such as outlook on life and readiness.
Summary of Music Therapy-Music Medicine Trial (Bradt, 2015)

- **Purpose:** Mixed methods cross-over trial comparing music therapy with music medicine for cancer patients in academic hospital in US
- **Data collection:** quantitative measures of pain; qualitative semi-structured interview collection
- **Mixed methods analysis:** integrating report of treatment preference (quantitative) with reasons why liked one or the other (qualitative)
Example of Embedding Qualitative Data into a Trial to Understand Patient Experiences

Table 4 Joint display of patient experiences per treatment benefits

<table>
<thead>
<tr>
<th>Treatment benefits</th>
<th>Change in music therapy</th>
<th>Change in music medicine</th>
<th>Patient experiences</th>
</tr>
</thead>
<tbody>
<tr>
<td>↑MT, ↓MM</td>
<td>0.65 to 1.88</td>
<td>−0.11 to 0.38</td>
<td>• Emphasize the importance of therapeutic relationship and support by therapist&lt;br&gt;• Enjoy the creative aspect of music making&lt;br&gt;• Are hopeful for the future</td>
</tr>
<tr>
<td>↑MM, ↓MT</td>
<td>−0.46 to 0.59</td>
<td>0.33 to 1.63</td>
<td>• Apprehensive about active music making&lt;br&gt;• Prefer familiarity of pre-recorded music&lt;br&gt;• Hesitant about exploring feelings related to cancer</td>
</tr>
<tr>
<td>↑MT, ↑MM</td>
<td>0.61 to 1.07</td>
<td>0.73 to 1.37</td>
<td>• Strong conviction about the power of music to support and give hope&lt;br&gt;• Use music for mental escape&lt;br&gt;• Use music for emotional exploration and value processing of emotions with therapist</td>
</tr>
<tr>
<td>↓MT, ↓MM</td>
<td>−0.67 to −1.03</td>
<td>−0.52 to −1.06</td>
<td>• Hold little hope for the future&lt;br&gt;• Music evokes sad and traumatic memories&lt;br&gt;• Feel inadequate regarding music making and singing&lt;br&gt;• Prefer aesthetics of original recordings</td>
</tr>
</tbody>
</table>

↑ great improvement, ↓ less improvement or worsening

*Range of overall z-scores (average of z-scores for mood, anxiety, relaxation, and pain)

Source: Bradt et al. (2014)
Outcomes for the Session

- Know some colleagues in mixed methods research
- Develop a shared understanding about qualitative, quantitative, and mixed methods approaches
- Clarify why you would consider using a mixed methods design
Fields Using Mixed Methods

- Mix of fields represented among mixed methods researchers
  - Business
  - Education
  - Evaluation
  - Health sciences
  - Psychology
  - Sociology
  - Social work
What is this Approach Called?

- Multi-method
- Integrated
- Combined
- Quantitative and qualitative methods
- Multi-methodology
- Mixed methodology
- Mixed-method
- Mixed methods
Journals Publishing Mixed Methods Methodology
Mixed Methods Research Association

www.mmira.org

- International conference every two years
- Regional conferences in off years
What is Mixed Methods?
Mixed Methods

- A natural approach to decisions, inquiry, and research
- Qualitative and quantitative data are part of our every day lives
dim sum Hong Kong
Browse Category: Dim Sum

1. Tim Ho Wan, the Dim-Sum Specialists
   添好運點心專門店
   ★★★★☆
   17 reviews
   $ · Cantonese, Dim Sum
   Central, Hong Kong Island
   International Finance Centre Mail & Airport Express Hong Kong Station, 1 Harbour View Street Hong Kong
   +852 2332 3078

   From the dining room puts you elbow-to-elbow with whoever happens to be sitting next to you, to the smells that waft from the kitchen window, to the conversations in at least a half dozen...

2. Lin Heung Tea House
   蓮香樓
   ★★★★☆
   10 reviews
   $$ · Cantonese, Dim Sum
   Central, Hong Kong Island
   G/F, 160-164, Wellington Street, Central, Hong Kong
   +852 2544 4556

   Who would have thought that in the middle of central food market area, there is one world acclaimed restaurant that looks like it is decades old. It is Lin Heung Tea House, Lun Heung literally...

3. Tim Ho Wan, the Dim-Sum Specialists
   添好運點心專門店
   ★★★★☆
   8 reviews
   Dim Sum
   Kowloon, Mong Kok, Olympic
   Olympian City, 18 Hoi Ting Road Hong Kong
   +852 2332 2896

Insta Dim™ Buy 4, Get 4
Easy To Use Dimming Solution. Dim Bright Lights on Electronics, $10!
Brandon N.
Redwood City, CA

112 friends
144 reviews

10/1/2014

This review is only for the BBQ pork buns aka chasiu bao. These are excellent, life-changing buns. I do not give 5 stars too often, but when I place 4 orders to go, for myself, I'm satisfied. Gripping the outside crust, tender and juicy inside...
Principles of Language Learning and Teaching (5th Edition)

Paperback – June 1, 2006
by H. Douglas Brown (Author)

4.0 out of 5 stars

“This book is excellent for developing a solid foundation as a language teaching professional.”
Jossilyn M. Montano | 8 reviewers made a similar statement

“Absolutely, if this type of book is your cup of tea and you enjoy reading this cure for insomnia.”
Tom English | 1 reviewer made a similar statement

“There seems to be something wrong with academics in Linguistics and I think this book might exhibit some of what it is.”
C R

Principles of Language Learning and Teaching, Fifth Edition, by H. Douglas Brown, is the classic second language acquisition text used by teacher education programs worldwide. Principles introduces key concepts through definitions of terms, thought-provoking questions, charts, and
What is mixed methods?

1. Collect and analyze qualitative and quantitative data
2. Use a mixed methods design
3. Use rigorous qualitative and quantitative methods
4. Integration

Frame the design with a philosophy or theory
Collect and Analyze Quantitative and Qualitative Data

**QUANTITATIVE (CLOSE-ENDED)**
- Surveys
- Instruments
- Tests
- Observational checklists
- Reports with numbers

**QUALITATIVE (OPEN-ENDED)**
- Open-ended interviews
- Open-ended observations
- Documents
- Audio-visual materials (e.g. photos, videos)
Use Rigorous Qualitative and Quantitative Methods: The Intent of the Research

Qualitative
- Understand meaning that individuals give to a phenomenon inductively
- Learn participants views of a phenomenon

Quantitative
- Test a theory deductively to support or refute it
- Measure a phenomenon, construct or variable

What is qualitative research?

An inquiry approach in which researcher:

- Explores one key concept – central phenomenon
- Asks participants broad, general questions
- Collects detailed participant views in the form of words or images
- Collects data with reciprocity and respect in mind
- Analyzes and codes the data for description and themes
- Interprets the meaning of the information drawing on personal reflections and past research
- Writes a report that includes personal reflexivity and a flexible structure
- Emphasizes ideas such as the social construction of meaning, advocacy, and collaboration

A research approach that involves:
- Posing variable-oriented research questions/hypotheses
- Using close-ended questions on instruments with scores that are reliable and valid
- Employing statistical analysis – descriptive/inferential
- Having scientific rigor through generalizability, replicability, validity, control, and lack of bias

Qualitative and Quantitative Research: How intent is focused?

Qualitative
- Ask open-ended questions
- Understand the complexity of a single idea or phenomenon
- Develop a theory to explain a phenomenon

Quantitative
- Ask closed-ended questions
- Test for specific variables that form hypotheses or questions

Investigators gather evidence based on nature of question and theoretical orientation

Quantitative methods ideal for measuring pervasiveness of “known” phenomena and patterns of association including inferences of causality

Qualitative methods allow for identification of previously unknown processes, explanations of why and how phenomena occur, and the range of their effects
Mixed methods research intentionally collects both quantitative and qualitative data and combines the strengths of each to answer research questions.
## Levels of Integration in MMR

<table>
<thead>
<tr>
<th>Integration Level</th>
<th>Approaches</th>
</tr>
</thead>
</table>
| **Design**                     | 3 Core Designs  
• Explanatory Sequential  
• Exploratory Sequential  
• Convergent  
5 Advanced Frameworks  
• Multistage  
• Intervention  
• Case Study  
• Participatory – Community-Based Participatory Research, Transformative  
• Instrument development |
| **Methods**                    | • Connecting  
• Building  
• Merging  
• Embedding |
| **Interpretation and Reporting** | • Narrative – Weaving, Contiguous and Staged  
• Data Transformation  
• Joint Display |

Use a Mixed Methods Design

Part 2
Mixed Methods Designs

3 Core Designs
- Explanatory Sequential
- Exploratory Sequential
- Convergent

5 Advanced Applications
- Multistage
- Intervention
- Case study
- Participatory
- Instrument development
Explanatory Sequential Mixed Methods Design

- Quantitative Data and Results
- Qualitative Data and Results
- Interpretation
Explanatory Sequential Design

- **Characteristics**
  - Two-phase project
  - Collecting **quantitative** data first followed by collecting **qualitative** data second

- **Applications**
  - To explain the quantitative results in more depth with qualitative data (e.g., statistical differences among groups, individuals who scored at extreme levels “outliers”)
  - To identify appropriate participants to study in more depth qualitatively
Exploratory Sequential Mixed Methods Design

Qualitative Data and Results → Quantitative Data and Results → Interpretation
Exploratory Sequential Design

- Characteristics
  - Two-phase project
    - Collecting qualitative data first followed by collecting quantitative data second

- Applications
  - To develop a classification or typology to test quantitatively
  - To explore and identify variables to study quantitatively when these variables are not known at first
  - To cognitively test instruments prior to a study
  - To develop a theory or model first, then test it later
Convergent Mixed Methods Design

QUAN data collection and analysis

QUAL data collection and analysis

Compare or relate

Integration
Convergent Mixed Methods Design

Characteristics
- Collecting both quantitative and qualitative data in similar timeframe
  - 1) data collection and analysis occurs in parallel with merging after respective analyses
  - 2) data collection and analysis is interactive with analytics typically of one, eg, qualitative, informing data collection and analysis of the other, eg quantitative

Applications
- To acquire quantitative (trends, large numbers, generalization) with qualitative (detail, small numbers, in-depth)
- To validate or explain quantitative findings with qualitative data collected contemporaneously
- When you want to expand your quantitative findings with some open-ended qualitative data (e.g., survey with closed- and open-ended data)
Mixed Methods Integration through Design 5 Advanced Applications

- Multistage
- Case study
- Participatory
- Instrument development
- Intervention
Multistage Framework

- Use multiple stages of data collection that may include various combinations of exploratory sequential, explanatory sequential and convergent approaches.
- By definition, these investigations have three or more stages.
- Distinguishes from the core mixed methods designs that have only two stages.
- May be used in longitudinal studies focused on evaluating the design, implementation, and assessment of a program or intervention.
Case Study Mixed Methods Framework

- Case is the focus of the study
- Both qualitative and quantitative data are collected to build a comprehensive understanding of the case
- Case study involves intensive and detailed qualitative and quantitative data collection about the case
- Types of qualitative and quantitative data collected are chosen based on:
  - Nature of the case
  - Feasibility issues
  - Research question(s)
- Comparative case studies are an extension of this framework
Participatory Advanced Frameworks

- Involves the voices of population targeted in the research to inform the research direction
- Often addresses inequity, health disparities or a social injustice through empowering marginalized or underrepresented populations
- Uses mixed methods data collection through:
  - Combinations of basic mixed methods designs
  - Could be another advanced design, e.g., an intervention framework such as RCT
- Community-based participatory research
- Transformative design
Instrument Development Framework

- Involves three phases of research
- Collect qualitative data first, followed by collecting quantitative and qualitative data second, followed by collecting quantitative data to test the instrument
- Used to develop an instrument when one is not available
- First explore qualitatively, then develop an instrument (piloting, cognitive testing), then quantitatively deploy
- Combines qualitative inquiry, quantitative inquiry and measurement/psychometrics
Focus is on conducting a mixed methods intervention

QUAN is Central

Qualitative data are collected primarily to:

- Support the development of the intervention
- Understand contextual factors and/or processes during the intervention that could affect the outcome
- Explain results after the intervention is completed
- May involve any combination of the above
Purpose to develop and test a computer-based system to teach advanced communications system using virtual human characters

Phase I. Built and tested the system with “Breaking bad news” scenario

Phase II. Built 2 new modules on intercultural and inter-professional communication, and tested for effectiveness in a RCT with M2 students

NCI 3R03LM010052-0151, Kron FW & Fetters, Co-PIs
NCATS SBIR R44 CA141987-02A1, Kron FW & Fetters, Co-PIs
Figure of MPathic VR II RCT

**Pre-Trial**

**Quantitative**
- Pilot testing scoring of VH modules, Pilot testing of ratings for SPI

**Qualitative**
- Written and verbal feedback on Scripts for VH modules, and for OSCE

**During-Trial**

**Quantitative**
- RCT of students taking VH communication modules vs Controls taking CBM

**Qualitative**
- Proctor observations of student interactions
- Video-recordings of interactions

**Post-Trial**

**Quantitative**
- Scores on OSCE for both Groups
- Scores on attitudinal Likert Scale ratings

**Qualitative**
- Student reports of their experiences taking the VH modules

**Primary study findings**
How can mixed methods enhance your research?
Reasons to Conduct Mixed Methods Research

- Assumption: the combination quantitative and qualitative approaches proves a better understanding of research problems than either approach alone.
Justification for Mixed Methods

- A qualitative component to generate hypotheses
- Comprehensive understanding of magnitude AND nature of phenomenon
- Describe outcomes AND process
- Increasing confidence in findings
- Develop outcomes or an instrument when one is not available or needs adaptation
- Gather patient experiences to inform an intervention or implementation
What if I want to know more about mixed methods?
Best Practices for Mixed Methods Research in the Health Sciences

Commissioned by the

Office of Behavioral and Social Sciences Research (OBSSR)
Helen I. Meissner, Ph.D., Office of Behavioral and Social Sciences Research

By

John W. Creswell, Ph.D., University of Nebraska-Lincoln
Ann Carroll Klassen, Ph.D., Drexel University
Vicki L. Plano Clark, Ph.D., University of Nebraska-Lincoln
Katherine Clegg Smith, Ph.D., Johns Hopkins University

With the Assistance of a Specially Appointed Working Group
CALL FOR PAPERS

Journal of MIXED METHODS RESEARCH

Impact Factor: 1.927
Ranking: 8/93 in Social Sciences, Interdisciplinary
Source: 2016 Release of Journal Citations Reports, 2015 Web of Science

Editors
Michael D. Fetters, University of Michigan
José F. Molina Azorin, University of Alicante, Spain

The Journal of Mixed Methods Research (JMMR) is an innovative, quarterly, interdisciplinary, and international publication that focuses on empirical, methodological, and theoretical articles about mixed methods research across the social, behavioral, health, and human sciences. The journal's scope includes delineating where mixed methods research may be used most effectively, illuminating design and procedure issues, and determining the logistics of conducting mixed methods research.

JMMR uses a double-blind review process and manuscripts are generally reviewed by three scholars, at least one of which serves on the JMMR editorial board. The journal aims to have each manuscript go through its initial review within 4 months of receipt.

For more information on manuscript submission, please visit http://jmmr.sagepub.com.

Submit your manuscript to http://mc.manuscriptcentral.com/jmmr

http://jmmr.sagepub.com

Frequency: Quarterly
January, April, July, October
ISSN: 1559-6888

If you have any questions about the submission process, please contact:
MANUSCRIPT SUBMISSION GUIDELINES AVAILABLE AT http://jmmr.sagepub.com

Satoko Motohara
Managing Editor, Journal of Mixed Methods Research, University of Michigan
Email: jmmr-managingeditor@umich.edu

SAGE
The content of this presentation was developed in collaboration with the University of Michigan Mixed Methods Research and Scholarship Executive Committee.

Co-Directors
John W. Creswell
Michael D. Fetters

Executive Committee
Jane Forman
Timothy Guetterman
Arden Morris
Sara Warber

Program Coordinator
Satoko Motohara

www.mixedmethods.org
New collaborative effort
Colleagues across the campus
An alignment of sponsors
Goal of training researchers and academicians to use MMR to solve the compelling problems of our time
Scholarship “World Think Tank of MMR”

www.mixedmethods.org
Mixed Methods Research Workshops

Designing and Conducting a Mixed Methods Dissertation or Thesis
July 13 & 14, 2017
University of Michigan, Ann Arbor

Space is limited – Register today!

Keynote speaker:
Vicki Pino Clark, Ph.D.,
University of Cincinnati

Designing a Mixed Methods Research Project: Interactive Workshop
November 1 - 3, 2017
University of Michigan, Ann Arbor

Mixed Methods Research & Intervention Designs
February 28 - March 2, 2018
University of Michigan, Ann Arbor

Presented by Michigan Mixed Methods Research & Scholarship Program members including:
John Creswell, Ph.D.; Michael Fetters, M.D., M.P.H., M.A.;
Sara Warber, M.D.; Melissa DeJonckheere, Ph.D.

Find out more & register at: www.mixedmethods.org
Follow us on Twitter @M3RSP

Questions? Contact Satoko Motohara (734) 998-7120 ext. 328 or smotohara@umich.edu
References


An Introduction to Mixed Methods Research

Timothy C. Guetterman, PhD
University of Michigan
Department of Family Medicine
tguetter@umich.edu