WORKSHOP SESSION:
USING QUALITATIVE RESEARCH EMBEDDED IN BEHAVIOURAL TRIALS

Montreal, May 25th 2018

Sandra Peláez, Ph.D.
WELCOMING AGENDA

- Introductions and expectations
- Positioning myself
- Topics to be discussed
- Expected interaction during the workshop
PURPOSE AND OBJECTIVES

Purpose
- To encourage reflective thinking about good practices regarding qualitative (QL) research embedded in behavioural trials

Objectives
- Discuss the strengths and weaknesses of both quantitative and QL research designs
- Consider key decisions and major steps in bringing together quantitative and QL research
- Identify the key components of a QL study embedded in a trial
WHAT IS RESEARCH ABOUT?
### Quantitative Research

**Key strengths**

- It is useful for studying large populations
- Allows testing hypothesis and validating already theories
- Data collection is relatively quick
- Provides precise, manageable, numerical data
- Data analysis is less time consuming
- Facilitates the generalisation of findings
- May have higher credibility among people in decisional-making positions
- Finding are helpful to support informed decisions
- Avoids biases related to confounding factors, selection bias, and interpretation bias
- Administrated treatments can be compared

(Creswell, 2009)
### QUANTITATIVE RESEARCH

<table>
<thead>
<tr>
<th>Major weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Selected theories may not reflect local understandings</td>
</tr>
<tr>
<td>• Power calculation might demand vast samples sizes</td>
</tr>
<tr>
<td>• Validity requires multiple sites</td>
</tr>
<tr>
<td>• Long trial run time may result in the loss of relevance as practice may have moved on by the time the trial is published</td>
</tr>
<tr>
<td>• Allocation of participants may be predictable and result in selection bias when the study groups are unmasked</td>
</tr>
<tr>
<td>• Trials which test for efficacy may not be widely applicable; trials which test for effectiveness are larger and more expensive</td>
</tr>
<tr>
<td>• Results may not always mimic real life treatment situation</td>
</tr>
<tr>
<td>• Ethically, patients have to receive equal treatment support in the clinical community</td>
</tr>
</tbody>
</table>

(Creswell, 2009)
QL RESEARCH IS...

“Quality is the essential character or nature of something; quantity is its amount. Qualitative refers to the meaning...while quantitative assumes meaning and refers to the measure of it.” (Dabs, 1982)

“The ultimate outcome of qualitative research is to describe the sense of meaning that researchers have made of what has been investigated.... “QR is a description of what has been observed plus something special in the nature of the interpretative emphasis.” (Walcott, 1985, 1992)

“Ethnography is the description and understanding of a culture from a native or insiders point of view (emic).” (Spradley, 1980).
Qualitative research is naturalistic inquiry, because the data collection strategies used are interactive to discover the natural flow of the events and processes.

Most qualitative research deals with people's individual and collective social actions, beliefs, thoughts, and perceptions.
### QL Research

#### Key strengths

- Small populations studied in-depth
- Participants’ meaning are at stake
- Data is inductively generated
- Collects data in naturalistic settings
- Description is rich
- Provides the grounds to generate a new interpretation
- Useful for describing a phenomenon
- Allows to better understand the individual experience
- A sense of ‘story’ can be (re)created
- Takes interpretation into account
- Offers room for reflective thinking
- Responds to local challenges

(Creswell, 2009)
# QL Research

## Major weaknesses

- Knowledge is local and may not be generalised
- It is difficult to make predictions
- Theories and hypothesis cannot be tested
- It is time consuming
- Might have lower credibility among decision makers

(Creswell, 2009)
## Quantitative vs Qualitative Research

<table>
<thead>
<tr>
<th>Quantitative Research</th>
<th>Qualitative Research</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prediction</td>
<td>Understanding</td>
</tr>
<tr>
<td>Starts with hypotheses</td>
<td>Starts with foreshadowed / tentative question</td>
</tr>
<tr>
<td>- Deductive</td>
<td>- Inductive</td>
</tr>
<tr>
<td>- Contrived context</td>
<td>- Naturalistic context</td>
</tr>
<tr>
<td>- Positivist</td>
<td>- Constructivist: post positivist</td>
</tr>
<tr>
<td>- Often based on a priori theories,</td>
<td>- Often based on experience</td>
</tr>
<tr>
<td>empirical results</td>
<td></td>
</tr>
<tr>
<td>Hypotheses</td>
<td>Research question about a phenomenon</td>
</tr>
<tr>
<td>- Narrow focus</td>
<td>- Broad focus</td>
</tr>
</tbody>
</table>

(Tashakkori & Teddlie, 2010)
# Quantitative vs QL Research

<table>
<thead>
<tr>
<th>Statistical analyses</th>
<th>Analysis of words and actions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- Thick description based on words of observer and participants</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Sample of cases (bounded)</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Random / Stratified</td>
<td>- Purposive sampling</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Procedures and measures fixed in advance of study</th>
<th>Unit of analysis relevant to the phenomenon of study</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Language</td>
<td>- Language</td>
</tr>
<tr>
<td>- Activities or Events</td>
<td>- Activities or Events</td>
</tr>
<tr>
<td>- Processes</td>
<td>- Processes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Interpretation based on</th>
<th>Interpretation based on</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Numbers: normal distribution of scores</td>
<td>- Words, Patterns</td>
</tr>
<tr>
<td>- Statistical significance</td>
<td>- Participants’ actions / views / memories / inferences / feelings</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reliability of measures</th>
<th>Reliability of observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Validity of measures</td>
<td>Trustworthiness of data</td>
</tr>
<tr>
<td>Generalizability</td>
<td>Triangulation of multiple data sources</td>
</tr>
<tr>
<td></td>
<td>Naturalistic generalization</td>
</tr>
</tbody>
</table>

(Tashakkori & Teddlie, 2010)
Is it possible to mix data?

Yes, well, I think that is a possible option, but you know, it’s hard to say when you don’t really tried other options… Do you know what I mean? Do you follow me? I am not sure, I don’t know. I think it is possible, but it’s hard to be 100% sure.
MIXING DATA

Three main arguments

- Compatibility thesis
- Pragmatist philosophy*
- Fundamental principles of mixed methods research

(Tashakkori & Teddlie, 2010)
RATIONALE FOR MIXING

Practical reasons
- Generating evidence of effectiveness
- Approach the research problem
- Dynamic between mechanism of action and implementation
- Considers the context
- Save time and money
- Provides responses regarding the relevance of a given implementation
- Provides the users’ perspective, key to decision-making and policy implementation

(Tashakkori & Teddlie, 2010)
RATIONALE FOR MIXING

In addition, mixing research methods seeks to achieve…

- Triangulation
- Complementarity
- Development of a new position statement
- Initiation of new perspectives
- Expansion of breath and range of inquiry by using different components

(Tashakkori & Teddlie, 2010)
Do we have a couple?
THE RESEARCH CONTINUUM

Mono-method → Partially mixed → Fully mixed

Mixed model → Mixed methods

(Tashakkori & Teddlie, 2010)
### COMMON NOTATION AND MEANING

<table>
<thead>
<tr>
<th>Notation</th>
<th>Meaning</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper and lower cases</td>
<td>Emphasis given to a method</td>
<td>qual Qual Qual QUAL</td>
</tr>
<tr>
<td>+</td>
<td>Concurrent methods</td>
<td>QUAN + QUAL</td>
</tr>
<tr>
<td>→</td>
<td>Sequential methods</td>
<td>QUAL → quan</td>
</tr>
<tr>
<td>( )</td>
<td>Embedded study</td>
<td>QUAN (qual)</td>
</tr>
<tr>
<td>← →</td>
<td>Recursive</td>
<td>Quan ←→ Qual</td>
</tr>
<tr>
<td>[ ]</td>
<td>Study within a series</td>
<td>QUAL → [QUAN + qual]</td>
</tr>
</tbody>
</table>

(Creswell & Plano Clark, 2011)
**CONCURRENT DESIGNS**

(a) Concurrent triangulation design

- Quantitative
- Qualitative

Mixing and combining → Interpretation

(b) Concurrent embedded design

qual QUAN + quan QUAL

(c) Concurrent transformative design

QUAL + quan OR quan QUAL

(Creswell, 2009)
SEQUENTIAL DESIGNS

(d) Sequential explanatory design

Quantitative → Mixing and combining → Qualitative → Interpretation

(e) Sequential explanatory design

Quantitative → Mixing and combining → Qualitative → Interpretation

(f) Embedded design

qual → Mixing and combining → Interpretation

QUAN

(g) Transformative design

QUAL + quan  OR  QUAN + qual

(Creswell, 2009)
THE RESEARCH PROCESS

Key steps

- Determine the appropriateness of an embedded study
- Determine the rationale for using such a design
- Select the type of research design that will combine quantitative and QL methods
- Collect data
- Analyse data
- Validate data
- Interpret data
- Write the research report
COMMON QL DESIGNS

<table>
<thead>
<tr>
<th>Approach</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phenomenology</td>
<td>Lived experience</td>
</tr>
<tr>
<td>Case Study</td>
<td>Detailed account of one or more cases</td>
</tr>
<tr>
<td>Ethnography</td>
<td>Culture of a group</td>
</tr>
<tr>
<td>Narrative</td>
<td>Narration of a series of events</td>
</tr>
<tr>
<td>Grounded Theory</td>
<td>Understanding of a process &amp; generation of a theory from collected data</td>
</tr>
</tbody>
</table>

Qualitative description Framework approach

(Creswell, 2013; Neergaard et al., 2009; Ritchie & Spencer, 2002)
FOCUSING THE STUDY

Purpose

Aim

Goal

Objective

- Main study vs. embedded study
- Examples: understand, explore, comprehend, investigate, describe

Research (open-ended) questions

- What? How? Why?
TOWARDS A MANAGEABLE QL DESIGN

QL description

Small sample

Easy to integrate

Interviews

Transparent data analyses

(Neergaard et al., 2009)
DATA COLLECTION AND ANALYSES
SAMPLE / PARTICIPANTS

Characteristics
- Purposeful/criterion-based → purposive sample

Size
- Redundancy and consistency & theoretical saturation
- A different view on a certain subject
- Emergent concepts

(Neergaard et al., 2009)
DATA COLLECTION

Instruments

- **Interviews**: in-depth open-ended, non/semi-structured, informal conversation, **guided approach**
- **Focus groups interviews**
- Observation
- Analyses of documents

(Neergaard et al., 2009)
DATA ANALYSES

Labelling

Comparing

Grouping

Theory

Trial

(Neergaard et al., 2009)
Using Software

(Neergaard et al., 2009)
REDUCTION OF DATA

Validation and interpretation
# Validity

- Trustworthiness
- Coherence and cohesiveness

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Definition</th>
<th>Techniques</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credibility</td>
<td>Confidence in the ‘truth’ of the findings</td>
<td>Prolonged engagement</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Persistent observation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Triangulation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Peer debriefing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Negative case study</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Referential adequacy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Member-checking</td>
</tr>
<tr>
<td>Transferability</td>
<td>Applicability in other contexts</td>
<td>Thick description</td>
</tr>
<tr>
<td>Dependability</td>
<td>Repetition in other context</td>
<td>Inquiry audit</td>
</tr>
<tr>
<td>Confirmability</td>
<td>Neutrality</td>
<td>Confirmability audit</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Audit trail</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Triangulation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reflexivity</td>
</tr>
</tbody>
</table>

(Lincoln & Guba, 1985; Sparkes & Smith, 2009)
INTERNAL COHERENCE

1. Research project frame
   1.1. (Philosophical assumptions)
   1.2. Theoretical framework
   1.3. Methodological assumptions

2. Need for the study
   2.1. Purpose
   2.2. Research question
   2.3. Research aims

3. Methods
   3.1. Overall design
   3.2. Sampling
   3.3. Data collection
   3.4. Data reduction/analysis
   3.5. Data interpretation and warranting conclusions

4. Representing research
   4.1. Writing
THE WRITTEN REPORT
# An Example

<table>
<thead>
<tr>
<th>Quantitative</th>
<th>QL</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 in 10 Canadians are not active enough</td>
<td></td>
</tr>
<tr>
<td>8 in 10 Canadians think physical inactivity is a serious health issue</td>
<td></td>
</tr>
<tr>
<td>56% of Canadians think they should not change much to be active</td>
<td></td>
</tr>
<tr>
<td>82% of Canadians think that the only way to be active is to turn it into a habit</td>
<td></td>
</tr>
</tbody>
</table>

https://www.participaction.com/en-ca/pulsereport
**Potential value of mixing data**

<table>
<thead>
<tr>
<th>Category</th>
<th>Potential value</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bias</td>
<td>Avoids measurement bias</td>
<td>Helps test face and content validity of instruments in the relevant patient group</td>
</tr>
<tr>
<td>Efficiency</td>
<td>Ensures faster recruitment</td>
<td>Uses observation and interviews to identify problems with recruitment in a specific trial</td>
</tr>
<tr>
<td></td>
<td>Saves money</td>
<td>Stops attempts at full trials of poor or unacceptable interventions, or unacceptable trials designs</td>
</tr>
<tr>
<td>Ethics</td>
<td>Ensures sensitivity of trials to human beings in trials</td>
<td>Ensures that recruitment and communication strategies can pay attention to health professionals and patients so that the experience is positive for them</td>
</tr>
<tr>
<td></td>
<td>Improves informed consent</td>
<td>Challenges current assumptions about gold standard informed consent, or value of information vs. value of communication</td>
</tr>
<tr>
<td>Implementation</td>
<td>Facilitates replicability of intervention in the real world</td>
<td>Describes components of the intervention so that others can make use of the full intervention in the real world</td>
</tr>
<tr>
<td></td>
<td>Facilitates transferability of findings in the real world</td>
<td>Identifies contextual issues important for success</td>
</tr>
<tr>
<td>Interpretation</td>
<td>Explains trial findings</td>
<td>Explains why trials were null; this may prevent another trial of a similar intervention. Contextualises results of successful trial to support dissemination and transferability in real world</td>
</tr>
<tr>
<td>Relevance</td>
<td>Ensures interventions meet the needs of health professionals and patients</td>
<td>Identifies value of intervention to important stakeholders. Ensures intervention is culturally appropriate</td>
</tr>
<tr>
<td>Success</td>
<td>Makes a trial successful, feasible, viable</td>
<td>Engenders stakeholder support for the trial. Makes a trial locally appropriate to cultural needs</td>
</tr>
<tr>
<td>Validity</td>
<td>Improves internal validity</td>
<td>Ensures the correct measures are used to measure the correct outcomes</td>
</tr>
<tr>
<td></td>
<td>Improves external validity</td>
<td>Helps to understand how to broaden recruitment to include hard-to-reach groups</td>
</tr>
</tbody>
</table>

(O’Cathain et al., 2014)
ATTENTION: MAJOR CHALLENGE

Move: http://vimeo.com/27246366
FANCY A HANDS-ON EXERCISE?
‘Mixing’ is possible
USEFUL RESOURCES

 QuinteT Recruitment Intervention
   (https://www.bristol.ac.uk/population-health-sciences/research/groups/social-sciences-health/quintet/interventions/)

 Health Research Board – Trials Methodology Research Network
   (https://www.hrb-tmrn.ie/)
REFERENCES


Vincent, J.L. (2010). We should abandon randomized controlled trials in the intensive care unit. *Critical Care Medicine, 38*, S534-S538.