

Participant  
Observation

Ethnography

Case  
study

Inferential  
Statistics

Phenomenology

Grounded  
Theory

Narrative

Predictive  
Validity

Variance

Multiple  
Regression

Descriptive  
Statistics

Probability

Significance

Focus  
groups

# Quantitative & Qualitative Research Traditions:

Different but complementary

# ∞ Section 1 ∞

**Sub-heading**

**Slide #**

Introduction

3

Literature Review: Why is  
it important?

4

A Good Literature Review

5

# Introduction

- o Two main traditions<sup>1</sup> in research: Quantitative and Qualitative
- o Quantitative research = inferential research
- o Qualitative research = interpretive research
- o Both **different** in terms of goals, applications, sampling procedures, types of data, data analysis, etc.
- o Although different, they can be complementary of one another i.e., in mixed methods<sup>2</sup>



# Literature Review



## Why is it so important?

- o No matter the tradition you choose, you must critically review all scholarly literature relevant to your topic.
- o Start with *How to Read a Scientific Article*
- o It is imperative to know what's been written on your topic AND where your study will fit into the current literature base.
- o A good literature review "is a synthesis of available research which arises from the analysis of the sources accessed to produce a summary of the knowledge on your topic."<sup>3</sup>
- o "...**focus on discussion of method and results rather than an author's interpretations of their results.** Knowledge is advanced through critical examination of methods and results as a way of resolving disparate interpretations."<sup>4</sup>

# A Good Literature Review<sup>3</sup>...

## ...is/has/does...

- ✓ Synthesis of available research
- ✓ Critical evaluation
- ✓ Breadth/Depth
- ✓ Clarity/Conciseness
- ✓ Rigorous/Consistent/Comprehensive search strategy
- ✓ Includes various viewpoints
- ✓ Critical in positive & negative ways
- ✓ Presents an argument based on literature only
- ✓ Focused on the research question
- ✓ Produces a basis for your research AND one or more researchable question(s)

## ...is/does NOT...

- ✓ An annotated bibliography
- ✓ Confined to description
- ✓ Narrow/Shallow
- ✓ Confusing/Long-winded
- ✓ Constructed in an arbitrary way
- ✓ Presentation of only your viewpoint
- ✓ Opinionated, uncritical, over-generalized, unfocused
- ✓ Unsupportive of the research question

# ∞ Section 2 ∞

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# Overview of Differences

The qualitative and quantitative research traditions are different in many ways. This presentation will address some of them:

- Basic characteristics
- Purpose
- Types of questions asked
- Sample traits
- Sampling procedures
- Data types
- Data analysis
- Establishing reliability
- Establishing validity
- Generalizability of findings

See the following links for some good comparison charts:

- [http://www.xavier.edu/library/students/documents/qualitative\\_quantitative.pdf](http://www.xavier.edu/library/students/documents/qualitative_quantitative.pdf)
- <https://www.utexas.edu/academic/ctl/assessment/iar/research/plan/types-compare.pdf>
- <http://web20kmg.pbworks.com/w/file/fetch/82037432/QualitativeandQuantitativeEvaluationResearch.pdf>

# ☑ Basic characteristics of... ☑

## Quantitative research

1. Objectivity
2. Deductive reasoning
3. Investigate research question(s)
4. Make inferences
5. Find relationships among variables
6. Make predictions
7. Find causation
8. Test theory
9. Generalize results

## Qualitative research

1. Subjectivity
2. Inductive reasoning
3. Explore a topic
4. Gain an understanding of what/who is being studied
5. Explain phenomena
6. Build theory



# Purpose



## Quantitative

**The main objective in quantitative research is to test theory. Researchers do this by:**

- Conducting experiments
- Testing hypotheses
- Determining association (relationships between variables)
  - Finding correlation OR
  - Causation

## Qualitative

**The main objectives in qualitative (action) research are to build theory and essentially solve problems. Researchers do this by:**

- Studying everyday life
- Exploring lived experiences
- Taking on participants' points of view
- Discovering patterns in behavior/ phenomena

# ? Research Questions ?

## Quantitative

- o Narrow
- o Seeks explanation
- o Includes 2 or more variables
- o Indicates perceived relationship
- o Hypotheses based on data from previous research

## Qualitative

- o Broad
- o Seeks to explore
- o Variables not necessarily included
- o Relationships emerge throughout the research process
- o No hypotheses necessary

*Note: There are always exceptions!*

# ? Research Questions cont'd ?

! Please read [\*What makes a good research question\*](#)

## Bad

- a) Broad
  - a) Ex: "Are females smarter than males?"<sup>5</sup>
- b) Vague
  - a) Ex: "Why did the chicken cross the road?"<sup>5</sup>
- c) Compound
  - a) Ex: Q1- Are people who do yoga generally happier than those who don't and are those who do yoga weekly happier than those who do it less?
- d) Already answered
- e) Irrelevant
- f) Immeasurable

## Good

- a) Narrow
  - a) Ex: "Do females age 18-35 score higher than adult males age 18-35 on the WAIS-III?"<sup>5</sup>
- b) Precise
  - a) Ex: "What are some of the environmental factors that occurred in Durham, NC between January and February 2014 that would cause chickens to cross Broad Street?"<sup>5</sup>
- c) Non-compound
  - a) Ex: Q1-Are people who do yoga generally happier than those who don't? Q2-Does frequency of yoga attendance impact happiness scores?
- d) New/fresh
- e) Relevant
- f) Measurable

# Section 3

## Sub-heading

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# Sample Traits



## Quantitative

- Sample size very important for statistical analysis
- Typically larger
- 60+ participants (at least 30 per group)
- $N$  should be appropriate for the statistical tests/methods of analysis and research question(s)
- Must be representative of the population being studied

## Qualitative

- $N$  is not as important
- Usually smaller
  - Phenomenology: 1-50
  - Ethnography: 30-50
  - Grounded theory: 30-50
  - Ethological studies: 100-200<sup>6</sup>
- Researchers strive for saturation
- Not necessarily representative of the population



# Sampling Procedures



## Quantitative

- Sometimes randomly selected (i.e., probability sampling)
- Often purposefully selected (convenience)
- Frequently randomly assigned to groups
- Most often anonymous

<http://www.socialresearchmethods.net/kb/sampling.php>

## Qualitative

- Most often purposeful
- Purposive sampling
  - Convenience
  - Snowball
  - Criterion
  - Deviant case
  - Opportunistic, etc.
- Identified, not anonymous

<http://www.socialresearchmethods.net/kb/sampon.php>

# Data Types

## Quantitative<sup>7</sup>

- o Must be measurable and quantifiable
    - o Nominal
    - o Ordinal
    - o Dichotomous } Categorical
  - o Interval
  - o Ratio
- } Continuous
- o Numeric form
- o Surveys
  - o Closed-ended questions
- o Tests/Inventories
- o Questionnaires

## Qualitative<sup>8</sup>

- o Observations (non-participant, partial participant, participant)
- o Interviews (individual, focus groups, etc.)
- o Documents
- o Audiovisual materials (photos, CDs, videos, etc.)

*Note: Many more examples exist. This is not an exhaustive list.*

$$s = \sqrt{\frac{\sum(x - \bar{x})^2}{n - 1}}$$

# Data Analysis

$$s = \sqrt{\frac{\sum(x - \bar{x})^2}{n - 1}}$$

## Quantitative<sup>9</sup>

### ○ Descriptive statistics

- Measures of central tendency -- mean, median, mode
- Measures of spread -- range, variance, deviation

### ○ Inferential statistics

- Estimation of parameter
- Testing of hypotheses
- Run tests using statistical software packages (SPSS, SAS, Stata, etc.)
- Appropriate tests depend on variable types & research questions!

## Qualitative<sup>10</sup>

1. Prepare and organize data
  - a) Transcribe verbal data to written data
  - b) Organize data for manageability
2. Read & take notes/memo
3. Describe, classify, interpret
  - a) Coding
    - i. In vivo codes
    - ii. Preexisting codes
  - b) Themes
4. Represent and visualize
  - a) Comparison table
  - b) Hierarchical tree, etc.

# Qualitative Data Analysis (QDA)

Researchers conducting qualitative research often choose to use Computer Assisted Qualitative Data Analysis tools/software rather than coding manually, by hand. These tools can aid researchers in completing the meticulous task of organizing and coding often extensive amounts of data. Many of the available programs also offer visualization tools (graphs, charts, etc.) for presentation. Some of the QDA programs available online include:

WordStat

HyperRESEARCH

Open Code

NVivo

Dedoose

Atlas.ti

MAXQDA

QDA Miner



# Reliability, Validity, and/or Trustworthiness



The purpose of establishing reliability, validity, and/or *trustworthiness* in research is essentially to ensure data are sound and replicable and that studies are accurate.

Techniques used to establish reliability and validity in quantitative research are clear and well-established. There are particular steps to take when attempting internal validity, test-retest reliability, etc. Many of these steps can be completed by a couple clicks of a mouse.

On the other hand, the steps to obtaining trustworthiness in qualitative research are more ambiguous and less established. Relevant literature even lacks a consensus on what to call this process. Some of the most common terms used to describe this process include trustworthiness, authenticity, goodness, and credibility.<sup>8</sup>



# Establishing Reliability



Would your study/instrument yield the same results if repeated?

## Quantitative “Reliability”

- Test-retest ...
- Inter-rater...
- Parallel forms...
- Internal consistency...<sup>9</sup>

## Qualitative “Trustworthiness”

- Saturation
- Triangulation
- Member checking
- Collaboration
- Thick, rich description
- Peer debriefing<sup>8</sup>

*Note: this is not an exhaustive list*

# ✓ Establishing Validity ✓

## Quantitative “Validity”

- Internal validity
  - No confounding variables!
- External validity
- Face validity
- Construct validity
- Criterion-related...
- Formative validity
- Sampling validity<sup>9</sup>

## “Trustworthiness” cont’d

- **Reflexivity.** “...the writer is conscious of the biases, values, and experiences that he or she brings to a qualitative research study.”<sup>10</sup>  
*“It is not possible to view without viewing from somewhere.”<sup>11</sup>*
- **Bracketing.** “...an investigator’s identification of vested interest, personal experience, cultural factors, assumptions, and hunches that could influence how he or she views the study’s data.”<sup>11</sup>
  1. “identification and temporary setting aside of the researcher’s assumptions.”<sup>11</sup>
  2. “hermeneutic revisiting of data and one’s evolving comprehension of it in light of a revised understanding...”<sup>11</sup>

# ! Importance of Bracketing !

In most qualitative studies, you will need to employ reflexivity and bracketing. There are no set rules or guidelines for how to do so.

It is important to understand that it is NOT a “there, that’s done” kind of concept NOR “...a simplistic claim that bias has now been ruled out.”<sup>11</sup>

“The goals are to check whether one is imposing meanings on the data and to re-look to see what other meanings might appear”;  
“...to encourage reflexivity and reflection throughout a study.”<sup>11</sup>

Please refer to the following sources for help with bracketing:  
([Ahern, 1999](#); [Fischer, 2009](#); [Tufford & Newman, 2010](#))

# ∞ Conclusion ∞

Although the quantitative and qualitative approaches to research are different, they can be complementary when used together<sup>2</sup>; e.g., a researcher may conduct a focus group first to aid in the development of an instrument such as a survey. On the other hand, a researcher who completes a quantitative analysis may choose to look more in depth at a particular trend or phenomenon that was discovered during the data analysis and/or interpretation phases.

Researchers may also use techniques from both traditions simultaneously. For example, a researcher might decide to conduct a content analysis of an online forum AND quantitatively analyze data obtained from a survey instrument. Using mixed methods is a good way of employing triangulation, particularly “methodological triangulation.”<sup>2</sup>

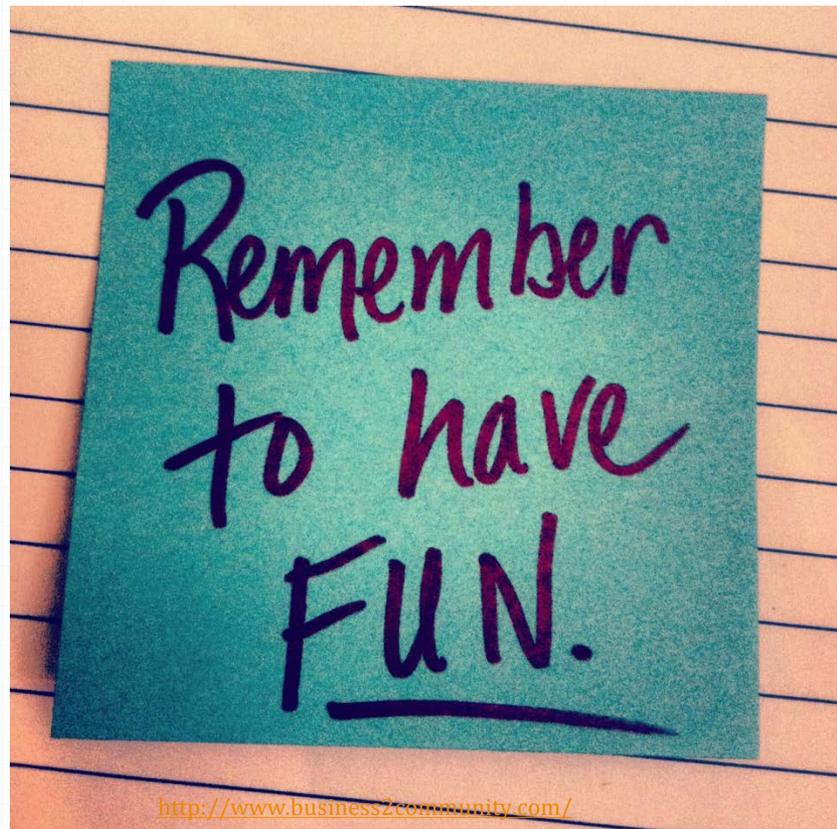
**It will be up to you, the researcher, and your advisor to decide which methods will work best for your research questions and goals.** It is important that you understand that you are not locked into using one tradition or the other when writing your thesis or dissertation, and both are valuable.

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# Other Resources Mentioned

- **Inferential statistics:** <http://www.socialresearchmethods.net/kb/statinf.php>
- **Interpretive research:** <http://www.ipia.utah.edu/imps/html/research.html>
- **Comparison charts:**  
[http://www.xavier.edu/library/students/documents/qualitative\\_quantitative.pdf](http://www.xavier.edu/library/students/documents/qualitative_quantitative.pdf)  
<https://www.utexas.edu/academic/ctl/assessment/iar/research/plan/types-compare.pdf>  
<http://web20kmg.pbworks.com/w/file/fetch/82037432/QualitativeandQuantitativeEvaluationResearch.pdf>
- **Confounding variables:** *Experimental Research Design* section in <http://www.tamuc.edu/academics/graduateSchool/documents/thesis--dissertation-services/DevelopingaDoableResearchTopic.pdf>  
And for how to match to control for these variables:  
<http://www.tamuc.edu/academics/graduateSchool/Thesis%20and%20Dissertation%20Services/research-tools.aspx>
- **Bracketing:**  
Ahern, K. J. (1999). Ten tips for reflexive bracketing. *Qualitative Health Research*, 9(3), 407-411. doi: 10.1177/104973239900900309  
Tufford, L. & Newman, P. (2010). Bracketing in qualitative research. *Qualitative Social Work*, 11(1), 80-96. doi: 10.1177/1473325010368316



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