


What is the purpose of research?



Quality Indicators for Single-case Research Studies: Description of Participants, Setting(s), & Selection Process

- ▶ Operational descriptions
 - Specific, precise language
 - Allow for replication
- ▶ Precise descriptions of criteria used to select participants

Quality Indicators: Dependent Variables (DV)

- ▶ DV is an important target for the participants
- ▶ Have operational definitions of each DV
- ▶ The measures used allow direct observation and empirical summary
- ▶ Measurement procedures are specifically and clearly defined
- ▶ DV(s) are measured repeatedly
- ▶ Assessed IOA for each DV; IOA meets minimum standards

Example of operationalizing a DV

Name: On-task behavior

Definition: Orientation of the student toward the appropriate object or person

Examples include: following directions given by the teacher, paying attention to the speaker (peer or adult), and working on assigned tasks.

Non-examples include: playing Free Cell during independent reading activity on computer; talking about girlfriend during science cooperative learning group; staring out of window during independent seat work

Quality Indicators: Independent Variables (IV)

- ▶ Operational definitions of the intervention components
- ▶ Explicit descriptions of materials and procedures
- ▶ Systematic manipulation of IV
- ▶ Measurement of treatment fidelity (aka, procedural implementation or procedural fidelity)

Quality Indicators: Baseline

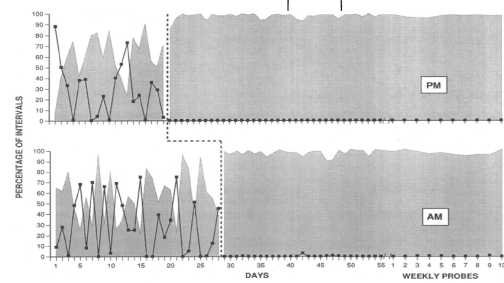


Figure 2. Results of the multiple baseline analysis for on-task responding (shaded) and disruptive behavior (lines) across baseline, revised curriculum, and follow-up phases.

Quality Indicators: Internal Validity

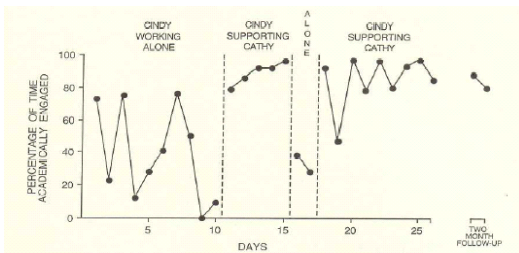


Figure 1. Percentage of observations in which Cindy was academically engaged. Data are presented across conditions when Cindy worked alone compared to when she worked as a peer support for Cathy.

Quality Indicators: External Validity

- ▶ Utilizes multiple participants, settings, materials, and/or targets (behaviors)
- ▶ Replication occurs across multiple studies and researchers
- ▶ Uses operational descriptions

Quality Indicators: Social Validity

- ▶ Target behaviors (DVs) are socially important
- ▶ Degree of change in DV after intervention is socially significant
- ▶ Intervention is acceptable to participants and practitioners
- ▶ Implementation of the intervention is practical and can be used by “typical” practitioners/parents

WWC Design Standards: Nine Defining Features of SCD

- 1 Experimental Control
- 2 Individual is unit of analysis
- 3 IV is actively manipulated
- 4 DV is measured repeatedly
- 5 Baseline
- 6 Design controls for threats to internal validity
- 7 Use of visual analysis (statistical analysis is emerging)
- 8 Systematic replication
- 9 Experimental flexibility

Evidence-Based and SCD (Horner et al., 2005, pp. 175–176)

- ▶ Minimum of 5 SCD studies that meet minimal criteria for quality,
- ▶ document experimental control,
- ▶ published in peer reviewed journals,
- ▶ Are conducted by minimum of 3 different researchers across minimum of 3 geographical locations, and
- ▶ the 5 studies include a minimum of 20 participants

“The selection of any research methodology should be guided, in part, by the research question(s) under consideration. No research approach is appropriate for all research questions, and it is important to clarify the types of research questions that any research method is organized to address” (Horner et al., 2005, p. 172).

Experimental Questions



Experimental Process

1. Clear experimental question is asked
2. Plan developed for measuring events of interest
3. Data are collected
4. Results are analyzed
5. Results publicly reported
6. Findings replicated

One of the differences between ordinary and really valuable research is the research question asked.

What influences the kinds of research questions that get asked?

- ▶ Where the researcher received graduate training
- ▶ Resources available
- ▶ Experimental and extra-experimental contingencies
- ▶ Researcher's personal history

How do research questions guide a research study?

- ▶ Question guides selection of the design, measures, procedures, and data analysis.
 - Participant selection
 - Selection of dependent variable
 - Selection of independent variable
 - Data analysis

"the experimental procedures [should] yield data that answer the question."

Elements of a Research Question

- ▶ Participant population
- ▶ Intervention (IV)
- ▶ Measures (DV)
- ▶ Hypothesized outcome – maybe!

"The purpose of the current case study was to examine the use of an antecedent-based intervention implemented in a general education classroom on the occurrence of stereotypic behavior and engagement of a student with ASD. In addition, this case study examined the replication of this intervention with the classroom teacher's assistant in the general education classroom."

Experimental Questions can be of several types:

1. Demonstration (or replication)
2. Comparison
3. Parametric
4. Component



Demonstration Analyses: Two ways of phrasing a question

- ▶ **Will** level of integration influence social interaction between students with severe disabilities and their general education peers?
- ▶ **How** does level of integration influence social interaction between students with severe disabilities and their general education peers?

Asking Good Questions... Establishing "Educational Validity"

- ▶ Begin with the issues of greatest concern: Is it socially important?
 - Form partnerships with persons with disabilities and their families
 - Talk to practitioners
- ▶ Know the research literature: Has it been done? If so, what were the findings? Where might the next step be in this line of research? [Look for gaps, conflicts, weaknesses]
- ▶ Be leery of only asking questions that can be answered empirically
- ▶ Is it doable: Time/ Resources/ Skills?
- ▶ Is it interesting to you?
- ▶ Is it the current "hot topic"?

Where to look for good questions...

- ▶ Our own experiences
- ▶ Observations
- ▶ Conversations with others
- ▶ Literature (NOTE: this is a necessary but not sufficient step in developing a research question.)
- ▶ Conferences, talks, classes
- ▶ Ongoing projects
- ▶ ???

Week 4

Measurement & Evaluation

Threats to Internal Validity

Replication

- Read:
 - Gast, Chapters 5 & 6 (see pp. # in syllabus).
 - Kratochwill et al. , pp. 5-11

- Bring a draft research question that you would like to examine using a single case research design to class. Incorporate the elements or writing a good question that we discussed. (You will turn these in.)