

Data Collection & Research Integrity

• Data Collection

- Observational -- Self-report -- Trace Data Collection
- Primary vs. Archival Data
- Data Collection Settings

• Data Integrity

- Experimenter expectancy effects
- Participant Expectancy Effects
- Single- and Double-blind designs
- Effects of attrition on initial equivalence

All data are collected using one of three major methods...

Behavioral Observation Data

- Studies actual behavior of participants
- Can require elaborate data collection & coding techniques
- Quality of data can depend upon secrecy (naturalistic, disguised participant) or rapport (habituation or desensitization)

Self-Report Data

- Allows us to learn about non-public “behavior” – thoughts, feelings, intentions, personality, etc.
- Added structure/completeness of prepared set of ?s
- Participation & data quality/honesty dependent upon rapport

Trace Data

- Limited to studying behaviors that do leave a “trace”
- Least susceptible to participant dishonesty
- Can require elaborate data collection & coding techniques

Behavioral Observation Data Collection

It is useful to discriminate among different types of observation ...

Naturalistic Observation

- Participants don't know that they are being observed
 - requires “camouflage” or “distance”
 - researchers can be VERY creative & committed !!!!

Participant Observation (which has two types)

- Participants know “someone” is there – researcher is a participant in the situation
 - Undisguised
 - the “someone” is an observer who is in plain view
 - Maybe the participant knows they're collecting data...
 - Disguised
 - the observer looks like “someone who belongs there”

Observational data collection can be part of Experiments (w/ RA & IV manip) or of Non-experiments !!!!!

Self-Report Data Collection

We need to discriminate among various self-report data collection procedures...

- Mail Questionnaire
- Computerized Questionnaire
- Group-administered Questionnaire
- Personal Interview
- Phone Interview
- Group Interview (focus group)
- Journal/Diary

In each of these participants respond to a series of questions prepared by the researcher.

Self-report data collection can be part of Experiments (w/ RA & IV manip) or of Non-experiments !!!!!

Trace data are data collected from the “marks & remains left behind” by the behavior we are trying to measure.

There are two major types of trace data...

Accretion – when behavior “adds something” to the environment

- trash, noseprints, graffiti

Deletion – when behaviors “wears away” the environment

- wear of steps or walkways, “shiny places”

Garbageology – the scientific study of society based on what it discards -- its garbage !!!

- Researchers looking at family eating habits collected data from several thousand families about eating take-out food
- Self-reports were that people ate take-out food about 1.3 times per week
- These data seemed “at odds” with economic data obtained from fast food restaurants, suggesting 3.2 times per week
- The Solution – they dug through the trash of several hundred families’ garbage cans before pick-up for 3 weeks – estimated about 2.8 take-out meals eaten each week

Data collection Methods – identify each as Observation, Self-report or Trace...

Gave 3rd grade students an arithmetic test and...

- | | |
|---|-------------|
| • Watched them to see if they used counted on their fingers | Observation |
| • Use the test % score as my DV | Self-report |
| • Counted the number of erasures they made | Trace |

Did a interview with each lab manager candidate in my office, and ...

- | | |
|--|-------------|
| • Had a series of 6 questions each was asked | Self-report |
| • I counted the copies of the “What we do in this lab” flyer that was available in the waiting room before and after each candidate waited there | Trace |
| • I recorded whether or not they took notes during the interview | Observation |



Data collection Settings

Same thing we discussed as an element of external validity...

Any time we collect data, we have to collect it somewhere – there are three general categories of settings

Field

- Usually defined as “where the participants naturally behave”
- Helps external validity, but can make control (internal validity) more difficult (RA and Manip possible with some creativity)

Laboratory

- Helps with control (internal validity) but can make external validity more difficult (remember ecological validity?)

Structured Setting

- A “natural appearing” setting that promotes “natural behavior” while increasing opportunity for “control”
- An attempt to blend the best attributes of Field and Laboratory settings !!!

Data collection Settings identify each as laboratory, field or structured...

- | | |
|---|------------|
| • Study of turtle food preference conducted in Salt Creek. | Field |
| • Study of turtle food preference conducted with turtles in 10 gallon tanks. | Laboratory |
| • Study of turtle food preference conducted in a 13,000 gallon “cement pond” with natural plants, soil, rocks, etc. | Structured |
| • Study of jury decision making conducted in 74 Burnett. | Laboratory |
| • Study of jury decision conducted in the mock trial room at the Law College. | Structured |
| • Study of jury decision making conducted at the Court Building. | Field |



Data Sources ...

It is useful to discriminate between two kinds of data sources...

Primary Data Sources

- Sampling, questions and data collection completed for the purpose of this specific research
- Researcher has maximal control of planning and completion of the study – substantial time and costs

Archival Data Sources (AKA secondary analysis)

- Sampling, questions and data collection completed for some previous research, or as standard practice
- Data that are later made available to the researcher for secondary analysis
- Often quicker and less expensive, but not always the data you would have collected if you had greater control.

Is each primary or archival data?

- Collect data to compare the outcome of those patients I've treated using Behavior vs. using Cognitive interventions primary
- Go through past patient records to compare Behavior vs. Cognitive interventions archival
- Purchase copies of sales receipts from a store to explore shopping patterns archival
- Ask shoppers what they bought to explore shopping patterns primary
- Using the data from some else's research to conduct a pilot study for your own research archival
- Using a database available from the web to perform your own research analyses archival
- Collecting new survey data using the web primary



Experimenter Expectancy Effects

A kind of “self-fulfilling prophecy” during which researchers unintentionally “produce the results they want”. Two kinds...

Modifying Participants' Behavior

- Subtle differences in treatment of participants in different conditions can change their behavior...
- Inadvertently conveying response expectancies/research hypotheses
- Difference in performance due to differential quality of instruction or friendliness of the interaction

Data Collection Bias (much like observer bias)

- Many types of observational and self-report data need to be “coded” or “interpreted” before they can be analyzed
- Subjectivity and error can creep into these interpretations – usually leading to data that are biased toward expectations

Data Collection Bias: Observer Bias & Interviewer Bias

Both of these are versions of “seeing what you want to see”

Observer Bias is the term commonly used when talking about observational data collection

- Both observational data collection and data coding need to be done objectively and accurately
- Automation & instrumentation help – so does using multiple observers/coders and looking for consistency

Interviewer Bias is the term commonly used when talking about self-report data collection

- How questions are asked by interviewers or the interviewers' reactions to answers can drive response bias
- More of a challenge with face-to-face interviews
- Computerized and paper-based procedures help limit this

Participant Expectancy Effects

A kind of “demand characteristic” during which participants modify their behavior to respond/conform to “how they should act”.

Social Desirability

- When participants intentionally or unintentionally modify their behavior to match “how they are expected to behave”
- Well-known social psychological phenomenon that usually happens between individual’s and their “peer group”
- Can also happen between researcher and participants

Acquiescence/Rejection Response

- If participant thinks they know the research hypothesis or know the behavior that is expected of them they can “try to play along” (acquiescence) or “try to mess things up” (rejection response)
- Particularly important during within-groups designs – if participants think study is “trying to change their behavior”

Participant Expectancy Effects: Reactivity & Response Bias

Both of these refer to getting “less than accurate” data from the participants

Reactivity is the term commonly used when talking about observational data collection

- the participant may behave “not naturally” if they know they are being observed or are part of a study
- Naturalistic & disguised participant observation methods are intended to avoid this
- Habituation and desensitization help when using undisguised participant observation

Response Bias is the term commonly used when talking about self-report data collection and describes a situation in which the participant responds how they think they “should”

- The response might be a reaction to cues the researcher provides
- Social Desirability is when participants describe their character, opinions or behavior as they think they “should” or to present a certain impression of themselves
- Protecting participants’ anonymity and participant-researcher rapport are intended to increase the honesty of participant responses

Data collection biases & inaccuracies -- summary

		Type of Data Collection	
		Observational	Self-report
Participant Expectancy	Researcher Expectancy	Observer Bias “inaccurate data recording/coding”	Interviewer Bias “coaching” or “inaccurate recording/coding”
	Participant Expectancy	Reactivity “reacting” to being observed	Response Bias “dishonest” responding



Single & Double-blind Procedures

One way to limit or minimize the various biasing effects we've discussed is to limit the information everybody involved has

In **Single Blind Procedures** the participant doesn't know the hypotheses, the other conditions in the study, and ideally, the particular condition they are in (i.e., we don't tell how the task or manipulation is designed to change their behavior)

In **Double-blind Procedures** neither the participant nor the data collector/data coder knows the hypotheses or other information that could bias the interaction/reporting/coding of the researcher or the responses of the participants

Sometimes this simply can't be done (especially the researcher-blind part) because of the nature of the variables or the hypotheses involved (e.g., hard to hide the gender of a participant from the researcher who is coding the video tape)



Attrition – also known as drop-out, data loss, response refusal, & experimental mortality

Attrition endangers initial equivalence of subject variables

- random assignment is intended to produce initial equivalence of subject variables – so that the groups (IV conditions) have equivalent means on all subject variables (e.g., age, gender, motivation, prior experience, intelligence, topical knowledge, etc.)
- attrition can disrupt the initial equivalence – producing inequalities
- “differential attrition” – related to IV condition differences – is particularly likely to produce inequalities
 - e.g., If one condition is “harder” and so more participants drop out of that condition, there is likely to be a “motivation” difference between the participants remaining in the two conditions (i.e., those remaining in the harder condition are more motivated).

So, “attrition” works much like “self assignment” to trash initial equivalence

Both involve a non-random determination of who provides data for what condition of the study!

Imagine a study that involves a “standard treatment” and an “experimental treatment”...

- random assignment would be used to ensure that the participants in the two groups are equivalent
- self-assignment is likely to produce non-equivalence (different “kinds” of folks likely to elect the different treatments)
- attrition (i.e., rejecting the randomly assigned condition) is similarly likely to produce non-equivalence (different “kinds” of folks likely to remain in the different treatments)

