Labor & Workplace Studies 188-3
and Chicano Studies 191-5
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#### Principles of Survey Methodology

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#### Outline

- What is a survey?
- What is survey methodology?
- Survey design
- Survey quality
- Ethical issues in using survey methodology

#### What is a survey?

- A systematic method for gathering information from (a sample of) individuals for the purposes of describing the attributes of the larger population of which the individuals are members.
- The attributes attempt to describe basic characteristics or experiences of large and small populations in our world.

(Enanoria, 2005)

#### Features of a survey

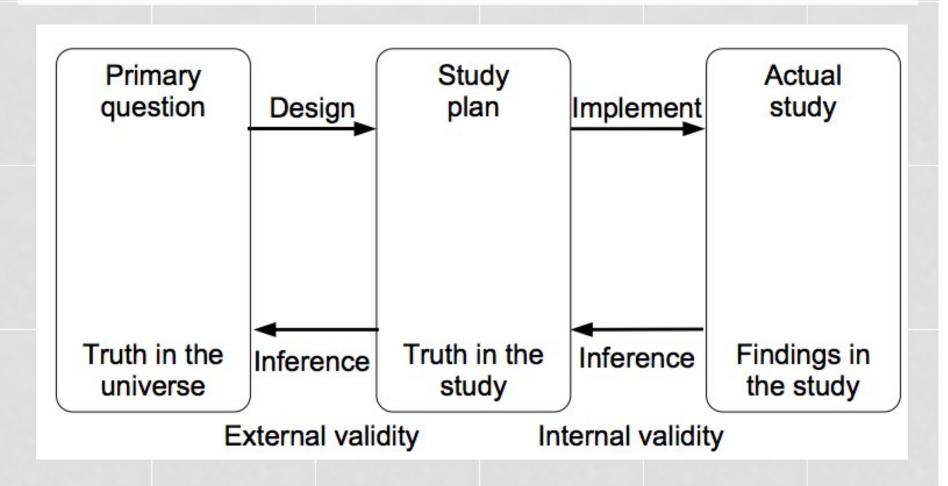
- Information is gathered by asking people questions
- Information is collected either by having interviewers ask questions and record answers or by having people read or hear questions and record their answers
- Information is collected from only a subset of the population to be described (a sample) rather than from all members

(Groves, et al., 2009)

# First questions to ask about a new survey

- What is the target population (whom is it studying?)
- What is the sampling frame (how do they identify the people who have a chance to be included in the survey)?
- What is the sample design (how do they select the respondents)?
- What is the mode of data collection (how do they collect data)?
- Is it an ongoing survey or a one-time survey?

#### The survey process



#### Elements of survey research

Element	Purpose
Research questions	What questions will the study address?
Background and significance	Why are these questions important?
Design Time frame Approach	
Subjects Selection criteria Sampling design	Who are the subjects and how will they be selected?
Variables Predictor variables Confounding variables Outcome variables	What measurements will be made?
Statistical issues Hypothesis Sample size Analytic approach	How large is the study and how will it be analyzed?  (Hulley et al., 2007)

#### Research question

Research question = the objective of the study, the uncertainty the researcher wants to resolve. It often begins with a genera question and then is narrowed down to become a specific, concrete, researchable issue.

#### Example research question:

Does publication pressure have an impact on the practice of science?

#### Breaking down the question:

How do scholars perceive the publish-or-perish culture?

What are the perceived intended and unintended consequences?

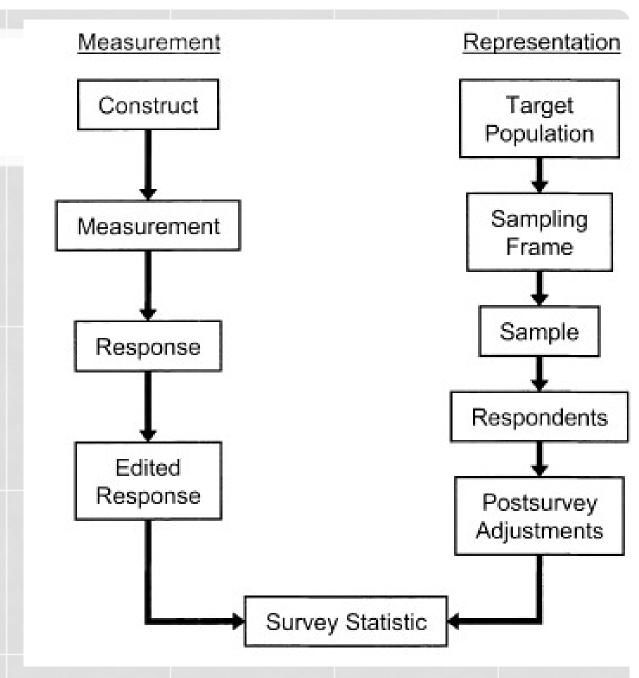
How do scholars perceive academic success?

How do publication pressure affect the intrinsic rewards of the job?

#### Background and significance

- Sets the proposed study in context and gives its rationale:
  - What is known about the topic at hand?
  - Why is the research question important?
  - What kind of answers will the study provide?
- This section should:
  - Cite previous research that is relevant
  - Indicate the problems with the prior research and what uncertainties remain
  - Specify how the findings of the proposed study will help resolve these uncertainties and lead to new scientific knowledge

#### Design



(Groves et al., 2009)

#### Design: constructs

- Constructs: the elements of information that are sought by the researcher.
  - In some sense, constructs are ideas
  - Can be abstract

#### • Example:

Perceived consequences of publication pressure Perception of determinants of academic success

#### Design: measurement

- Measurements are more concrete than constructs
  - Ways to gather information about constructs
  - Often the questions posed to a respondent, using words
- Critical task for measurement:
  - Design questions that produce answers reflecting perfectly the constructs you are trying to measure

#### Example of constructs and measurements

#### Construct:

**Perceived Authoritative Advantage** (The extent to which a biomedical scientist believes that publishing in an open access journal would enhance his or her authority)

Publishing in an open access journal makes me more **prestigious**.

Publishing in an open access journal makes me more well-known.

Publishing in an open access journal makes me more concept-marker.

Publishing in an open access journal makes me nobler.

Publishing in an open access journal improves my priority.

Publishing in an open access journal makes me more trustworthy.

Publishing in an open access journal makes me more credible.

Publishing in an open access journal makes me more reliable.

Publishing in an open access journal makes me more scholarly.

Publishing in an open access journal makes me more authoritative by copyright

# Example of constructs and measurements

Measurements:

Publishing in an open access journal makes me more **prestigious**.

Strongly agree	agree	neutral	disagree	Strongly disagree	No opinion
5	4	3	2	1	N/A

#### Design: response

 The data produced in a survey come from information provided through the survey measurements

#### Design: representation dimension

- The target population
  - E.g., children and teenagers aged 6-18, households in China, persons with disabilities
- The frame population:
  - The set of target population members that has a chance to be selected into the survey sample
  - E.g., using 户籍文档 to sample children and teenagers, using telephone directory to select households
- The sample
  - A sample is selected from a sampling frame.
- The respondents

#### Design: sampling

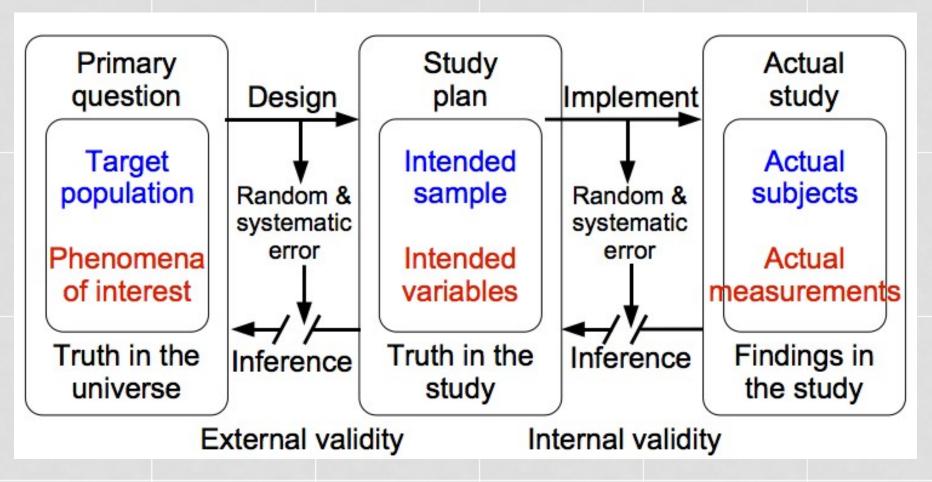
- Sampling plan
  - How an adequate sample size will be determined
  - The choice of media through which the survey will be administered
    - Telephone interviews
    - F-to-F interviews
    - Mailed questionnaire
    - Online questionnaire

 Procedures for obtaining population estimates from the sample data and for estimating the reliability of those population estimates

#### Design: sample selection

- Sample size is determined by:
  - Desired degree of precision
  - Statistical power required
  - Ability of the researcher to gain access to the study subjects
  - Degree to which the population can be stratified
  - Selection of the relevant units of analysis

#### Study design sets up inferences



(Hulley et al., 2007)

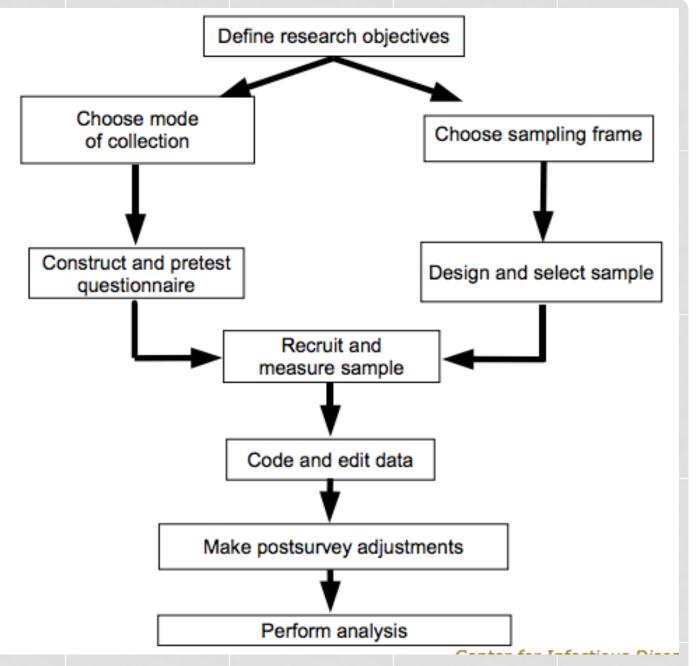
#### Design: survey instrument

- Standards for good survey questions
  - Question wording
  - Feasible and ethical
  - Biased wording
  - Biased context

#### Types of survey questions

- Open-ended questions
- Closed-ended questions
  - Questions that describe and evaluate people, places, and events
    - Evaluative scales: usually 5-7 response options
    - Agreement scales
    - Other rating scales: importance (1st, 2nd, 3rd,...)
  - Questions that measure responses to ideas, analyses or proposals
  - Questions that measure knowledge: familiarity with something

Survey process



(Groves et al., 2009)

#### Example: ARL Annual Salary Survey

- http://www.arl.org/stats/annualsurveys/ salary/salform11.shtml
- Cover letter to directors
- Instructions about data input
- Survey form
- Data template
- ARL library codes
- Standard for race and ethnicity

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#### A few important terms

- Interviews: verbal surveys
- Questionnaire: written surveys
- Reliability: the consistency of survey responses over time
- Item consistency: whether the responses for each question are consistent across constructs
- Test administration and scoring consistency: the probability of errors caused by carelessness in administration or scoring

#### Important terms (cont'd)

- Validity: the extent to which the measurements of the survey provide the information needed to meet the study's purpose
  - Content validity considers whether the questions measure the content they were intended to measure.
  - Predictive validity examines whether the responses are able to predict a criterion measure.
  - Concurrent validity addresses the correlation of survey results with results from other sources.
  - Construct validity asks whether the survey questions capably measure hypothetical constructs.

#### What is survey methodology

- Survey methodology is the study of survey methods and the sources of error in surveys.
  - "Error" describes deviations from the desired outcome
  - Survey methodology studies ways to minimize such errors.

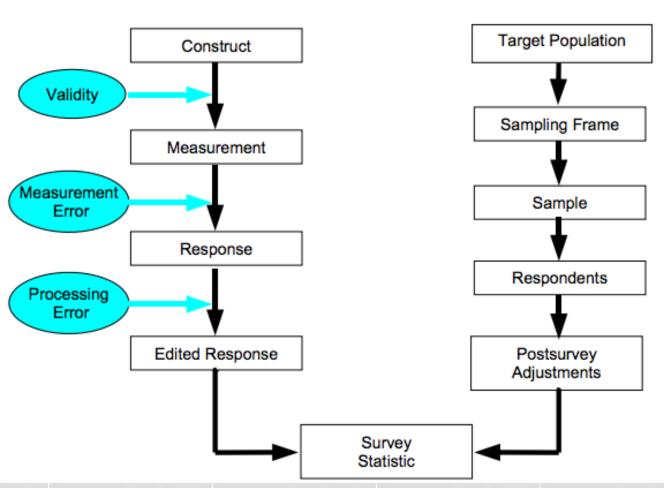
### Survey quality perspective (1)

#### **Measurement**

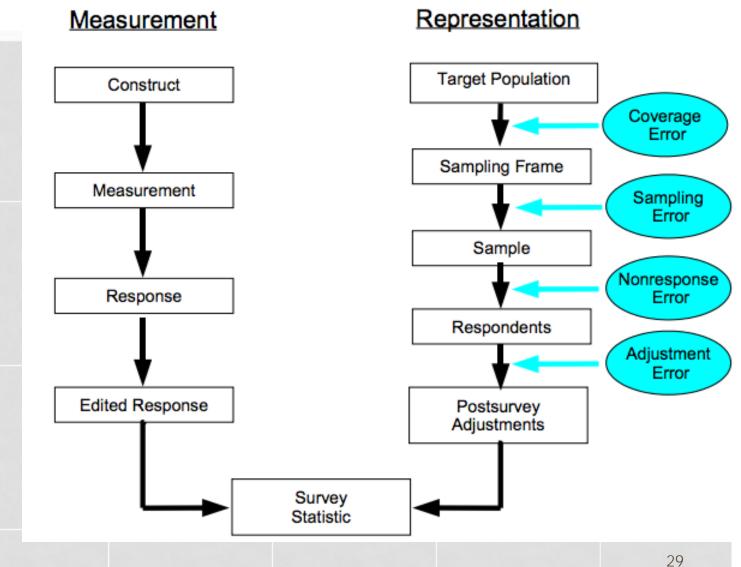
#### Representation

#### Issues of measurement:

- Formulating questions
- Response order effects
- Bias in questionnaires
- Formatting the questionnaire
- Evaluating survey questions



## Survey quality perspective (2)



#### Implementing the study

- Modes of administration
- Pilot studies
- Quality control
  - Procedures
  - Data
- Post-collection of response data

# Ethical issues 31

# Ethical issues in research involving human subjects

- The Belmont Report Basic Ethical Principles:
- 1. Respect for persons
- Beneficence (1) do not harm and (2) maximize possible benefits and minimize possible harms
- 3. Justice fair procedures and outcomes in the selection of research subjects

# U.S. federal policy for the protection of human subjects

- Regulations for:
  - The definition of research
  - IRB membership
  - IRB functions and operations
  - IRB review of research
  - Criteria for IRB approval of research
  - IRB's authority to suspend or terminate approval of research
  - IRB records
  - General requirements for informed consent
  - Documentation of informed consent

# Definition of human subjects research as defined by federal policy

- Research means a systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge.
- Human subject means a living individual about whom an investigator (whether professional or student) conducting research obtains
  - (1) Data through intervention or interaction with the individual, or
  - (2) Identifiable private information.

#### IRB application content

- Purpose of Research (Rationale or research question)
- Approach/Method –What are you going to do and what is going to happen to the subject?
- Qualifications of the Researchers
- Characteristics of the Subject population to be Recruited
- Special Groups Involved in Research
- Type of Informed Consent to Be Obtained
- Precautions to Ensure Privacy and Confidentiality
- Risks to Subjects (physical, psychological, financial, etc.) and how the risks will be managed.
  - Benefits to Subjects and Society at Large How Do the Benefits Outweigh the Risks?
- All applications should be completed under the guidance of the student's faculty advisor and reviewed by the faculty advisor prior to submission.
- The application must be signed by the faculty advisor and the student.

#### Informed consent

- Required elements include (are not limited to):
  - Statement that the study involves "research"
  - Purpose of Research
  - Procedures involved in the Research
  - Duration of Involvement in the Research
  - Participation is Voluntary-Right to withdraw at anytime without Penalty
  - Right to confidentiality
  - Risks and Benefits
  - Who to Contact for More Information or Questions
  - Who to Contact if a Participant is Harmed or Has Concerns

#### Informed consent (cont'd)

- Use everyday language appropriate to potential participant (readable and clear)
- On institution's Letterhead
- Title of Research
- Signature lines

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