POPULATION-BASED RESEARCH

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   d. Data Analysis - check data, patterns, relationships, cause
   e. Interpretations
   f. Reporting
4. Principles in Scientific Research
   Grounded scientific research is based on control of biases
   Biases: Conceptual, methodological, situational, personal
   Recognition: Reactions - positive or negative, us or them
   Maximize chances of best predictive understandings
   Asking valid questions is essential for valid answers
   Separate facts from the interpretation of facts
   Professional and ethical standards

Appendix 1: Participant-Observation Methods
Appendix 2: Survey Methods
Appendix 3: Ethnosemantic Methods
1. Science

a. Science

Science: The study of natural phenomena
Purpose: Discovery of natural laws and principles
   Causal relationships
   Predictive laws/relationships

b. Scientific Research

Science is a method of inquiry
   To validate ideas and explanations
Basic scientific method: Controlled Comparison

eg: Smoking and cancer
   Dominant mothers and homosexuality
   Psychosis and illness of the spirit
   Testing significant causal relationships

c. Basic Research Issues

Experimental/observational research:
   Experimental research - precise control of influences
   Observational research - analysis of natural phenomena
      Astronomy, paleontology, epidemiology, ethnology

Deductive/inductive research:
   Deductive research - theory testing
   Inductive research - discovery

Quantitative/qualitative research:
   Quantitative research - precise patterns/relationships
   Qualitative research - depth of explanation
   Both

Prevalence/incidence research
   Prevalence - proportion distributed across a population
   Incidence - NEW occurrences

Retrospective/prospective research
   Retrospective - reconstruction, relationships, can infer cause
   Prospective - incidence across time, causal relationships
Objective/subjective research:
"Objective" a myth?

**Biases** in all research:
- Conceptual - pre-existing ideas about behavior, theory investment
- Methodological - how/when/where data collected
- Situational - restrictive circumstances/activities/events
- Personal - personality, likes/dislikes, assumptions
- Chance - random occurrences

Grounded scientific research is based on the control of biases
...rather than the absence of biases

Awareness of biases
Maximize chances of best predictive understandings
  - In the research design
  - In the analysis and grounding of conclusions
2. Concepts (http://www.iupui.edu/~anthkb/concepts.htm)

a. SYSTEMS

One of the most important conceptual perspectives in understanding natural phenomena is *systems*, the integrated nature of all phenomena. Systems can overlap with other systems, and there are levels of systems within systems. For example, biology, behavior, and ecology are mutually integrated with the health of both individuals and populations. And atomic particles and energy systems exist within our molecules, which exist within our bodies, which exist within our society, which exist within our global environment, which exists within our solar system and universe.

Every phenomenon is therefore inter-related with all other phenomena in various ways, and all phenomena mutually influence each other directly or indirectly. No phenomenon can be considered separately from other phenomena, but rather must be considered in terms of how it functions within the systems of which they are a part.

b. CULTURE

*Culture*: The whole, learned, and shared behavioral system of a group of people

Guidelines for interacting and experiencing life
eg: American patient role - vs. Navajo patient

*Meanings* - underlying needs and motivations
eg: American "freedom" - vs. Japanese amae

*Functions* - facilitate effective interactions/experiences
eg: American "freedom" re socioeconomic status

Cree reticence and H-trapping

Culture can be defined as the whole, learned, and shared behavioral system of a group of people. Though the focus is on the organization and integration of group patterns of behavior, there are many subgroup and individual variations. Ethnicity generally refers to cultural heritages.

Culture is deeply internalized, and most often not conscious. The system of behavior within which people live life is provides guidelines for experiencing life by framing what is "reality." Culture defines what is "normal" and "real" and "preferred" in people's life views and expectations, though the ideal and real are rarely consistent. The cultural context is thus very important in molding and eliciting behavior in different settings.

Humans have a phenomenal capacity for learned behavior, compared to other life forms on earth, as we observe the broad range of behaviors observed among human around the world over time. Each culture selects, molds, and integrates its own distinct package of behaviors selected from all those possible, and offers a unique alternative for adaptation to Life.

Like other natural phenomena, culture is an integrated system. Every trait interacts with, influences, and is influenced by every other trait directly or indirectly, and all parts works together with each other as an integrated behavioral package. Therefore, any changes in one part affect other parts and the balance of the whole.

Cultures are also relative. Each culture is its own behavioral system, and, though there may be many overlaps with other cultures, its patterns are unique in their combinations and overall balance. We therefore cannot understand other cultures in terms of our own "realities," but rather have to consider them terms of their own systems.
There are two levels of cultural experience:

- One is the meanings of behaviors ("emic" experience), how people think (conceptual) and feel (emotional) about "reality."
- The other is the functions of behaviors ("etic" experience), how the behaviors contribute to people meeting life challenges. There are different kinds of functions, such as biological contributions to health and fitness, subsistence/economic contributions to basic needs like food and shelter, social contributions to group cohesion and collective effectiveness, psychological contributions to people's identity and sense of purpose, and ecological contributions to maintaining a productive balance with people's physical and biological environmental systems. Functions can exist in very different areas of culture than the meanings, such as religious beliefs and practices having important economic, social, and psychological functions. In understanding other cultures, it is most often the functions that are not considered.
c. SOCIETY

Society is an organized group of people, who are bound together by shared social structures and relationships. This is usually not the same as culture. A society may include many different cultures. For example, American society includes diverse cultures, such as Anglo, Mexican, and Navajo heritages. Also, the same cultural heritage may appear in different societies, such as French in France and Belgium.

All nations today are pluralistic societies with different ethnic groups

d. ETHNOCENTRISM (http://www.iupui.edu/~anthkb/ethnocen.htm)

Ethnocentrism: Making false assumptions about others' behavior based on our own limited experience

Assumptions (don't know that we don't know)

eg: Values - win/lose vs. relativism
Colors - blue/green vs. tungortuk/tunguyortuk
Diseases - susto, colic

Signs of misunderstandings?

REACTIONS (us, them) - "realities" not working

Recognition and control of ethnocentric biases is the BASIC ETHNOGRAPHIC METHOD

Ethnocentrism can be defined as making false assumptions about others' behavior based on our own limited experience. Because our own life experience is all we know, we assume that it is "reality", or at least should be. For us, this is fine, since our cultural experience provides us with important meanings and functions for meeting life challenges. But we are not even aware of other bases for experiencing the meanings and functions of life. For example, Western culture assumes there is "blue" and "green", but this what we impose on "reality," groupings of wavelengths of light. In Inuititut (Eskimo), much of these wavelengths are grouped together into tungortuk, which can only be translated as "bluegreen." Which is really "reality"? In truth, if we cannot even assume that there are such things as certain colors, how can we assume that all the rest of life experience is absolute?

So what is the problem? Ethnocentrism leads us to misunderstand others, to falsely distort their ways through our own cultural glasses. It also distorts our understanding of our own ways and potentials, because we cannot see ourselves out of our own context. But it's the natural course to be ethnocentric. How can we not be, if all we know is our own ways, which are meaningful and functional to us.

Controlling for Ethnocentrism: So we have a paradox. Because we are assuming we don't even know we are assuming; we misunderstand because we don't know we are misunderstanding. Is it possible to validly understand another culture? It has been done continually by immigrants, anthropologists, and many others enough to be able to function adequately in other cultural settings. In terms of grounded science, it is the control of biases, rather than the absence of biases, that leads to grounded understandings of natural phenomena. So how can we control for biases in understanding others and ourselves?

The process of controlling for ethnocentrism involves two steps:

(1) Recognize biases when they occur. Since it is impossible not to be biased, it is first important to know when we are biased. One of the best signs of biases is reactions, particularly in emotions and descriptive adjectives. This can include negative feelings (such as being offended, thinking something is "weird," and seeing others as "lazy" or "primitive"), and also positive feelings (like being impressed by others' "family values" or "being in tune with nature," and thinking others are "free of the worries of modern life"). Reactions first tell us about ourselves. Why do we think something is "disgusting" or "wonderful"? This tells us about our own realities. Their reactions to us are also important clues. We may be assuming that life is progressing normally, but they may be shocked or awed at what we are doing (in our ignorance). This also tells us about our own realities. Reactions, then, are based on false assumptions. Once we recognize we are not understanding, we can hold these assumptions aside and seek better understandings.
(2) Ask **valid questions**. There are several sets of questions that can help us examine others’ behavior in ways that can lead to better understandings:

- **What are the meanings** of the behavior to them? How do they see and feel about it? What is their “reality”? There can be many meanings for every behavior.

- **What are the functions** of the behavior in their adaptation? How does it help them meet life challenges? We should remember that important functions may be in other areas of cultural experience than the meanings. There can also be many functions for every behavior. This is the question that is generally not asked, yet is the one that can give us the greatest insights into cultural behavior.

There are many valid ways of experiencing life, each meaningful and functional to its participants. We do not have to necessarily agree with others' ways, but we should try to understand them if we are to have a more valid comprehension of the human experience, including our own. Interethnic encounters can be an opportunity for understanding the human potentials. Developing our abilities in recognizing and controlling for ethnocentric and other biases is one of the greatest skills in grounded scientific understandings.

For those who will be involved in an intensive emersion in another culture in their quest to understand the human potentials, ethnocentrism merges into a more extreme and traumatic process of culture shock. These people are strongly advised to understand this process, and to discuss recognition and means of coping in preparing for this traumatic but in the long-term growing experience.

e. **ADAPTATION**

Adaptation is the **systems process** in how a group interacts with its environment which enhances its survival and continuation. The emphasis is on the systems process, how and why changes occur in populations over time. This includes the interaction of biological, sociocultural, and ecological factors, and how these influence the well-being and continuation of the group. For humans, sociocultural behavior is a major means of adaptation, so this and the biological basis for behavior are particularly important considerations in understanding populations.

A bio-cultural model of adaptation can help us to ask more valid questions and to devise more valid means for understanding population-based phenomena. As a systems process, this involves the interaction between a population and its environmental conditions, each involving a set of forces in the adaptive process:
(1) Bio-Cultural potentials: One set of forces consists of the internal bio-cultural potentials of the population, that a group brings to a particular setting. These potentials consist of both needs (those things necessary for the group’s existence, such as nourishment and social/emotional bonds), and resources (those things that can be used to enhance the group’s existence, like grasping hands, capacity for learning, and social organization). As noted, for humans, a major resource for adaptation is culture, which is a rapid and flexible means of adaptation, compared to evolving biological traits over many generations to meet environmental conditions.

Ultimately, all morphological and behavioral potentials are based in a group’s genetic heritage, so potentials can range from genetically fixed or innate (like blood type and certain facial expressions) to genetically highly plastic or developed/learned (like the ability to build resistance to certain infectious agents and learning a particular social role). The ultimate criterion for assessing whether a trait is more innate or more developed is how much can be changed in interaction with environment. In many cases, an interim criterion might be the degree of variation across populations, which can indicate the probability of how much a trait is more innate or more developed.

It should be remembered that diversity is adaptive, because the more different types of traits in a group the more likely the group will have the necessary resources to meet environmental challenges (particularly new and unforeseen ones). Diversity provides more alternatives to fall back on when meeting particular situations. This is an important reason for understanding the broad potentials of human.

(2) Environmental challenges: Another set of forces in the adaption process is the external environmental challenges, those conditions imposed by the setting in which a group exists. For humans, "environment" includes both ecological and sociocultural contexts. Challenges consist of both constraints (those things required for a group to exist in the setting, such as ability to obtain oxygen from water and an ability to cooperate in dense population settings) and opportunities (those things which can enhance life if utilized, like insect grubs as a food source and iron ore as a material for tools). Environmental challenges select among all those potentials which a population brings to a situation; those traits which contribute to the best balance are more likely to become more dominant.

The basic process of adaptation is reorganization of system. It is important to remember that it is the system that changes, not just traits. In the interaction between group’s potentials and its environmental challenges, the challenges have a selective impact on the range of potentials and shape the expression of particular traits from among all the possibilities. Reorganization can include adding new traits, dropping former traits, or usually in the immediate circumstances emphasize one trait more and another trait less. In cultural adaptation, people can change their behavioral traits, often change their environmental conditions, or, usually, both. Also, not changing a trait can be adaptive. Adaptation is a continual process, and is always going on at many different levels, since a system is never in perfect balance and is in a constant phase of readjustments. A changes in one area stimulates changes in other areas, and adaptation is always going on at many points in the system. Change, then, is the rule, the normal phenomenon. (The focus here is on sociocultural adaptation of groups, but the same processes occur at other levels of systems, from cells to the global ecosystem. At the individual level, this process can be termed “adjustment” to distinguish it from population-level events. Adaptation is an evolutionary process; it is populations that evolve, rather than individuals.)

The ultimate measure of successful adaptation is built into the above definition: continuation of the group (not a trait or tradition). Since this may involve long time periods, intermediate measures are often used, such as health. Adaptation is usually a relative process, however, and the basic issue is how optimally a group is functioning and balanced both internally and in interaction with its environment. If a trait or a change in a trait contributes to the ongoing existence of the group, then it can be considered more adaptive. If it hinders the functioning of a group in interaction with its environment, then it can be considered more maladaptive.
Time frames are an important consideration in adaptation. (This is actually the third dimension of the bio-cultural model.) Adaptiveness can change over time. A group’s potentials may change which affect adaptation, or environmental challenges may alter the adaptive process, particularly new unforeseen challenges. What is adaptive at one point may not be at another time, such as reliance on fossil fuels; and what is not adaptive at one point may turn out to be as asset at another time, like a neutral gene that provides resistance to a new disease.

In summary, adaptation is a systems process, involving the interaction of two sets of forces: the potentials a population brings to a setting, and the challenges in that setting over time. The basic process of adaptation is reorganization of the system, both at the level of the internal system of the group and at the level of how that group interacts with its environment. If the interaction contributes to the continuation of the group, it can be considered adaptive. But we must remember that there are always limits to adaptation, since a group’s potentials may not be sufficient and/or the challenges may be too great.

Understanding the process of adaptation can help us better understand issues by providing a perspective for more insightful and valid questions. Asking poor questions can lead to misunderstanding, like "Nature or Nurture?" (which assumes natural phenomena are isolated and oppositional) rather than the more valid question of "Nature and Nurture - how much of each?" (which considers how fixed-developed potentials are and how the capacity for expression is selected and shaped by the environment).
3. The Research Process

The research process is an extended series of overlapping activities:
- Formulate the research issue - asking a valid questions
- Research plan - organizing data collection/analysis efforts
- Data collection - collecting information relevant to the issue
- Data analysis - findings
- Interpretations - abstraction of findings in terms of the issue
- Reporting - contributing to scientific knowledge

To many academics/others "research" = data collection... a narrow and shortsighted perspective.

a. Formulate the Research Issue (http://www.iupui.edu/~anthkb/learning.htm)

Asking a valid question
- Getting a valid answer - underemphasized in education system
- Posing a specific relationship between specific factors
- How one factor influences another factor

Levels of questions:
- Theory - statement of large-scale/abstract phenomenon
  eg: Life-style behavior (LS) can affect health (HE)
- Hypothesis - statement of a specific phenomenon
  eg: Social supports (SS) mitigates against hypertension (HT)
- Proposition - statement of a measurable phenomenon
  eg: Perceived marital closeness (MC) reduces blood pressure(BP)

Multiple measures are usually more valid and balanced

In academics, "theory" usually means Hypothesis or Proposition

Alternative influences
- Control factors
  Biases
  Characteristics - age, experience, etc.
  Settings - seasons, unusual events, etc.
- Need to rule out or identify alternative explanations
  Or determine relative influences

Review of the literature
- Existing ideas and information
- Demonstration of the need for the research

Significance of the research project?
- Contributions to knowledge and to resolving human issues?
- Use of the findings?

Clarifying at beginning helps guide the whole research process
b. Research Plan

(1) Research Goals

Issue: Asking a valid question about the relationship between factors
How one set of factors influences another set of factors

Clear goals guide decisions through the whole research process
NOTE: Will refine questions as go through research process

(2) Research Variables

Specific events/behaviors to be investigated

Variable definition:
- Dependent - outcome factors being influenced (BP)
- Independent - influencing factors (MC)
- Control - other factors that may influence events
  Directly or indirectly
  eg: Smoking, salt in diet, age

Measures - exact information to be collected that will empirically demonstrate relationships
Reflect variables
eg: BP = diastolic pressure (vs. systolic, both)
    MC = answer to interview question, ranked 1-5
    Salt = daily dietary log (with conversion factor)

Instruments - means for collecting information
eg: Medical record, interview questionnaire

Pretest of instruments/measures
eg: Revise daily dietary log to weekly log
Research Population

Definition:
- Characteristics
  Demographic, behavior, location/access, time periods, etc.
  Variations
  eg: Male, adult > 18, married, Indianapolis
- Size (N)
  eg: N=400,000
- Units - scale of measurement
  eg: Individual (vs. family, organization, etc.)

NOTE: Ecological fallacy: assuming large unit measures smaller units
  eg: Durkheim’s analysis of suicide and religion in European countries

Sample (n) - an accurate representation of larger unit

Theory: Findings can be generalized to whole population

Confidence Interval - degree to which can generalize to whole research population
  The larger the n, the greater the Confidence Interval
  Small N requires an n with greater proportion
  Others measures - margin of error, etc.

Formulas (where p=.5 for maximum estimated CI, q=1-p):

\[
95\% \ CI = + \frac{1.96}{\sqrt{\frac{pq}{n-1}}} \times \frac{N-n}{n-1} \quad n=100 \quad 95\% CI=\pm 9.8\%
\]

\[
95\% \ CI = + \frac{1.96}{\sqrt{\frac{pq}{n-1}}} \times \frac{N-n}{n-1} \quad n=1000 \quad 95\% CI=\pm 3.1\%
\]

\[
99\% \ CI = + \frac{2.58}{\sqrt{\frac{pq}{n-1}}} \times \frac{N-n}{n-1} \quad n=100 \quad 99\% CI=\pm 13.0\%
\]

\[
99\% \ CI = + \frac{2.58}{\sqrt{\frac{pq}{n-1}}} \times \frac{N-n}{n-1} \quad n=1000 \quad 99\% CI=\pm 4.1\%
\]

Sampling procedures:
- Nonprobability sample - cannot prove is representative (census/GIS comparisons)
  Accidental/incidental - whoever can get to be subjects
  Quota - % characteristics in whatever combination
  Purposive - a "typical" group
- Probability sample - everyone has equal chance of being included
  Simple random sample - list, random selection of n
  When don’t know much about population, easiest
  Stratified random sample - sample strata, sample units
  Need to know basic characteristics of population (census)
  Cluster sample - sample areas, include everyone
  Stage sample - sample strata, sample cluster

Other sampling considerations:
  Activities, times, etc.

NOTE: When have almost all the population, sampling is irrelevant (small scale societies, etc.)
(4) Research Designs

Comprehensive strategies to collect and analyze information

Three basic models:

**Case-Control** model: Retrospectively test suspected causes
- Rule out selected variables by matching for them
- Test for influence of suspected causal variables

The usual clinical/laboratory research model

**NOTE**: Actually not a population-based design

**Method:**

**CASE-CONTROL RESEARCH MODEL**

**Assets:**
- Can investigate rare cases
- Can identify the range of factors involved (but not distributions)
- Can support causal hypotheses
- Can estimate risk rates

**Limitations:**
- Recall bias
- Findings are not representative of the larger population
  - Selection bias (controls) - cannot generalize
- Cannot determine prevalence or incidence rates

**Cross-Sectional** study: Identify the *distribution* of traits, and significant noncausal *relationships*

**Method:**

**CROSS-SECTIONAL RESEARCH MODEL**

**Assets:**
- Findings are representative of research population
- Can determine prevalence rates
- Can determine associations
- Relatively economical

**Limitations:**
- Cannot determine cause
- Not appropriate for rare cases
**Cohort study**: Determine *causal* relationships

Also called a Longitudinal or Prospective study.

**Method:**

**Assets:**
- Findings are representative of research population
- Can determine prevalence rates (in first stage)
- Can determine incidence/risk rates (over time)
- Can determine causal associations

**Limitations:**
- Costs, logistics, time
- Often involves lost cases with time (attrition)

There are a number of variations and overlaps of these three basic models.
(5) Data Collection Techniques

**QUANTITATIVE** techniques: survey interviews, structured observations, etc.

*Assets*: Distributions, significance/strength of associations

*Limitations*: Meanings, validity/acquiescence/ideal

**QUALITATIVE** techniques

Participant-observation, key informant, life history, etc.

*Assets*: Meanings, real

*Limitations*: Representative, significance/strength

Eclectic set of techniques

Select the combination of tools to best address the research issue

(6) Data Analysis

Data checks

Biases, errors, accuracy

Limitations?

Strengths?

Relevance?

Findings

Patterns, variations

Relationships, causes

Interpretations

Outcomes

Influences, causal influences

(7) Reporting

Contribution to scientific knowledge

Making results available (including negative findings)

Applied reports - implications for social issues

Organizational, policy, public

Research not completed until reported

Authorship considerations

(8) Logistics (usually underestimated)

Coordinations and collaborations - organizations/agencies, sites, schedules, etc.

Personnel

Responsibilities/functions, training

Salary/wages, benefits, released time

Equipment - computers, field, lab, photo, etc.

Supplies - office, forms, literature, film, computer, software, etc.

Services - duplication, photo, mainframe time, utilities, etc.

Facilities/space

Travel and living expenses - mileage/fores, meals, lodging, etc.

Costs - direct, indirect

Emergency/crisis procedures - contingency plans (will happen)
(9) Schedule (usually underplanned)

Preparations
Initial start-up period
Data collection
Close up
Analysis
Reports

In general, effort and time are proportional:
¼ Preparations
¼ Data collection
¼ Analysis
¼ Reports

(10) Project Management (usually underplanned)

Overall coordination and administration
Individual roles/responsibilities
Deadlines
Accounts
Emergency/crisis procedures

(11) Project Evaluation (usually not done)

Strengths and limitations:
Achievement of research goals?
Unanticipated events?
Obstacles, vested interests, positive, etc.
Logistics?
Project management?

(12) Human Subjects

Issues:
● Risks
● Confidentiality of identity
● Possible adverse impacts (including unforeseen impacts)

Institutional review

(13) Funding

Budget
Sources - interests, amounts

(14) Research Proposals

Audiences (views and emphases)
Deadlines
Contents
c. Data Collection

Keep goals clear - will guide data-collection decisions
Systematic
Comprehensive

Factors in field research:

(1) Roles

Researcher: Learner (an attitude)
Subjects: Experts - we are asking them to help us learn
Learn what is there - not what we think is there (or should research ourselves)

Applied roles - purposefully trying to make changes
Not value-free - involves value positions and vested interests
Need to assess values involved
Need to examine all possible positive and adverse outcomes
Accountability - responsibility for outcomes (including adverse impacts)

(2) Rights of Participants and Communities

Informed Consent:
- All risks must be clearly explained
- Confidentiality - identity will not be revealed or used
- Not to participate or not to answer questions
- Can ask about study, questions, uses, etc.
Specific consent must be obtained
Human subjects review process
Sensitive factors - invasive experiments, minors, illegal behavior

(3) Biases

Conceptual, methodological, situational, personal, chance
Ethnocentrism - assumptions

No such thing as "objective" research - biases always involved
Control for biases is the key to sound scientific research
Recognition of biases is the key to controlling them
Dilemma: Biased because we don't know are being biased
Look for the primary sign of biases: reactions - us, them
(4) Field work is an *intensive experience*

   Heavy work - time, energy, social interactions, etc.
   Exhausting
   Schedule in rest, relaxation, and breaks

Culture shock
   • Initial bliss (ignorance)
   • Shock - learn enough to know don't know what's happening
     Disorientation - without guidelines to understand meanings
     "Crazy" - what is "normal" is not functional with others
     *Recognize*: Extreme reactions (depression, anger, etc.)
   • Coping strategies: Taking breaks, discussing, etc.
   • Reorientation - re-socialization to local norms, etc.

**NOTES:**

   • *We change who we are*
     Reorganize our outlooks, social orientations, personality
     A traumatic process
     But we learn the human potentials in ourselves
     Hopefully we will be able to *develop* and grow as a person from the challenge
   • *We will also face reverse culture shock when we return to our original cultural setting*
     We are not the same person... and cannot go back
     Hopefully we will be able to *go on* in another stage of growth

Conflicts *will* occur - emergencies, crises at different levels (people, financial, natural, etc.)
   Plan ahead - structure means for handling problems

Communications back home are also important
(5) Field Techniques

**Qualitative** Techniques: Participant-Observation (Appendix 1)
Learn by systematic observation and experience
Depth of meanings - direct and intense understandings
Techniques:
- **Assume nothing** - control for biases, everything is data
- Field notes - key words with memory aids
  Memory - write (if appropriate), mental outline of chronological key words
- Journal - permanent record
  Date, time, context
  Description: chronological, detailed (as if describing to someone), comprehensive
  Separate facts from interpretation of facts
  Questions: Possible interpretations - to verify
  Notes: Follow-ups, etc.
Personal:
  Mood/feelings, reactions, etc. (affects what see/do)
  Learning about self, biases, own culture, ethnocentrism, research process, etc.
Other techniques: Key informant, life histories, etc... less representative of population
  Ethnolinguistics (Appendix 3)... great depth in conceptual fields
  (Also called ethnomethodology, etc.)
**Assets**: Depth of meanings, real behavior
**Limitations**: Representativeness, biases (self-selection, ethnocentrism)

**Quantitative** Techniques: Public Survey (Appendix 2)
- Learn by assessing representative behavior
- Breadth of understandings
- Distribution and relationships
- Techniques:
  Sampling design
  Questionnaire construction - order, phrasing, open/closed, etc
  Codebook
  Interviewing - trained interviewers, standardized stimuli
  Data coding and entry - quantitative records
Other techniques: Structured observation, standardized tests, etc.
- **Assets**: Distributions, significance/strength of relationships
- **Limitations**: Depth of meanings, validity (acquiescence/ideals)

*Everything* is data - even people's reactions to us/research
  Controls, standards

Know what do *not* know

*Multiple methods* provide more balanced and comprehensive information

There are a number of variations and combinations of techniques
d. Data Analysis

Keep goals clear - will guide analysis decisions
But also be open to new and revised ideas

Check Dataset - where good/not, how can use results/not
- Errors
- Reliability - reproducible with same results
- Validity - exactness with which the data actually measure the phenomena
  Conceptual
  Accuracy
  Truthfulness
- Interdependence (factor analysis)

*Patterns* - dependent/independent/control variables (qual./quant.)
- Description of behavior/events
- Distribution of behavior/events across the study population
- Meanings of behavior/events
- Also variations - individuals, groups, time, location, etc.
  Can also build scales of related variables

*Relationships* - independent/control variables
- Nonsignificant factors - can eliminate
- Influence of independent variables on dependent variable(s) in an integrated system
  Binary relationships - significance, direction, strength
  Multivariate relationships - combined and relative influences
    Comparative influences of control variables
    Control for other possible influences
- Cause - influences over time

PROCESS
Prove that hypothesis cannot be disproved
- Rule out alternate explanations
  Or at least determine relative influences
- Qualify where cannot support
- Document - empirical basis
- Demonstrate influences of proposed variables

INTERPRETATIONS
- *Best* explanations of phenomena being investigated
  Based on grounded empirical evidence
- Rule out alternative explanations
  Where hypotheses proven
  And where need to modify ideas
- Generalizations
  Populations, patterns, relationships
  Keep in perspective, qualify
  Where cannot absolutely support, qualify
- Validate - how *much* can be proven?
- Continuing issues
  What still needs to be proven?
  What new issues are raised?
  Even new hypotheses
e. Reporting

A professional responsibility

Contributing to scientific knowledge
Findings and ideas accessible for others

Types of reports:
- Summary reports - informal general statement of findings
- Published reports (status):
  - Conceptual issue book (academic press)
  - Peer-reviewed journal - conceptual issue (American Ethnologist)
  - Peer-reviewed journal - report of findings (Science, American Anthropologist)
  - Edited volume (academic press)
  - Paper in edited volume (academic press)
  - Paper delivered at academic meetings
- Applied reports
  - Reports to organizations and agencies, with recommendations
  - Summary reports in non-edited news organs (professional, other)
  - Online, web, and other reports accessible to the public

Models - use professional articles/books for models of reports

Authorship considerations
- Primary - analysis and preparation of draft
- Coauthors - relative contributions to project

Organization of reports:
- Title - inform the reader of the main issue
- Introduction - direct the focus and explain the issue
- Content sections - provide basic information regarding the issue
- Conclusions - bring the findings together in a final argument
- Notes (comments and other materials not directly related to the main issue)
- Bibliography (references cited)
- Figures, tables, pictures
Process of Report Writing:

- Considerations in the development of research reports
  - Clarify research/conceptual issue
  - Logical organization of ideas/information - effective argument
  - Support for all interpretations/conclusions
  - Clear communication
  - Audiences
- Outline - major sections, details of each point
- Draft - basic information, references/evidence, NOTES
- Descriptive sections
  - Population/community
  - Patterns
  - Relationships
- Introduction
  - Lead-in
  - Conceptual focus/issue - general, literature, specific issue
  - Methods - population/sampling, design, strengths/limitations
  - Preview
- Conclusions
  - Summary review of major findings
  - Major interpretations of findings RE issue
  - Final argument/implications
  - Lead-out
- Revisions
  - Introduction descriptions conclusions
  - Consistent focus
  - Continuity and flow
  - Evidence/logic
- Technical editing
  - Headings, citations, tables, references
  - Spelling, typos, grammar
  - Professional appearance
- Read aloud for accuracy and clarity
- Reviewers - critique/feedback

Communication principles
- Guide the reader's focus and understandings
- Help reader follow and understand the evidence
- Interest reader in the issue and information
Academic review process:
• "Publish or perish" has some validity
  Test standards of scholarship before professional peers
  Findings/ideas accessible for further research/understandings
  Sometimes blindly applied rule
• Peer review generally upholds standards of scholarship
  Publication in peer-reviewed professional journals
  Ranking of professional journals
• But can also suppresses creative new thinking
  Very few people in a profession are truly creative thinkers
  Most research involves testing/extending others' theories
  At level of hypotheses
  Most academics not productive - concepts or data
  Outdated/incomplete concepts - when in grad school
Who are the reviewers?
  Testers/expanders and nonproductive academics

How can you tell if ideas empirically grounded?
• Publication in peer-reviewed (refereed) professional journal
  Pros: Meets basic scholastic standards
  Cons: Can stifles creative new ideas
  Most reviewers not creative
• Other forums - edited volumes, books

Research process not completed until reported
• Several reports can come from one project (vs. one project = one report)
• Also, an integrative report can come from a series of projects
4. Principles in Scientific Research

The ultimate purpose of science is to explain the most phenomena with the simplest predictive statement (pose the best explanation possible).

The research process includes comprehensive planning and reporting. The greater the planning the more comprehensive the results. Changes always occur... so build in flexibility.

(1) Scientific research is based on the **control of biases**

Not the absence of biases
- "Objectivity" a myth - impossible
- Judgement is always present in scientific research

Recognition and control of biases is essential in grounded scientific research

Kinds of biases:
- Conceptual
  - Ethnocentrism is a critical conceptual bias in ethnographic research
- Methodological
- Situational
- Personal
- Chance

**Recognition**: REACTIONS (ours and theirs, positive and negative)
Learning to recognize reactions comes with training and practice

Controlling for biases maximizes the chances of developing best predictive understandings

(2) Asking **valid questions** is essential for valid answers

In ethnographic research, this includes:
- What are their meanings?
- What are the functions?

(3) Separate the **facts** from the **interpretation** of facts

(4) Scientific standards are maintained in the peer-review process

How can we know if ideas/information meet scientific standards?

Peer review generally upholds standards of scholarship
  - Particularly peer-reviewed articles in professional journals

Though this process can also stifle creativity
- Most reviewers not creative
- Conceptual academic books often are the most common forums for posing comprehensive creative models
High **standards** in concepts and methods are an **ethical** issue

Ethical responsibilities (**AAA/SfAA** statements):
- Group being researched - informed consent
  - Purpose, risks, confidentiality, nonparticipation
- Students - grounded concepts, guidance, recognition
- Profession - valid data and results
- Public - contribute to general well-being

Though science is *not* democratic

Believing or wanting phenomena to be a certain way does not make it so

**eg:** The world is flat

Smoking should not cause cancer

Professional standards are essential in applied research

We impact on people’s lives - so we do not have luxury of abstraction

This makes it an ethical issue... whether we want it to be so or not

**Applied** research can also be empirical test of concepts/methods in real life

But the ethical issues are even more critical because *we intend* to impact on people’s lives
SUMMARY: Population-Based Research

Science
  - Basic method
  - Research issues
  - Objectivity - controls

Research process
  - Formulate the research issue (asking a valid questions)
  - Research plan
    - Goals - research question
    - Variables/measures
    - Population/unit/sample
    - Research design
      - Cohort/longitudinal
      - Cross-sectional
      - Case-control
  - Data collection
  - Data analysis
  - Reporting
    - Logistics, schedule, management, evaluation, human subjects, proposals

Data collection
  - Roles, participant rights, biases, intensity
  - Qualitative techniques
    - Participant-observation
  - Quantitative techniques
    - Public survey
  - Everything is data
  - Controls

Data analysis
  - Dataset
  - Patterns - distributions, meanings
  - Relationships - binary, multivariate influences, functions, cause
  - Process
    - Interpretations - best explanation based on empirical evidence, qualify

Reporting
  - Responsibility
  - Types, organization
  - Process
  - Communication
  - Peer-review process

Principles
  - Control of biases
    - Asking valid questions is essential for valid answers
    - Separate facts from the interpretation of facts
  - Standards
  - Ethics
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