Behavior Observations and Sampling

Their roles in ethnographic research
Outline

- Why make observations?
- Problems with interviews
- Pros and cons of each
- How the question asked determines the behavior sampling method used
- Avoiding bias in sampling & observation
Why Observe and Record Behavior?

- What people do and what they say they do are not always the same
  - (even if they are honest, self reports may lack precision, detail or be unconsciously or consciously biased or partial)

- Systematic observation provides one with an enhanced ethnographic appreciation of those you study
  - It gets you out in the community and allows you to meet and get to know many more people than you otherwise would
  - It may also allow you to see things that you would have never seen before

- Many hypotheses require the collection of behavioral data – but this must be done in a systematic and unbiased way.

- Behavior is a fundamental dimension of cultural diversity
Data collection methods in anthropology

- Interviews (can include self reports on behavior)
- Surveys (can include self reports on behavior)
- Participant observation (combines interview and observation)
- Direct systematic observation
  - Naturalistic
    - Qualitative (see Angrosino)
    - Quantitative (behavior observations)
  - Experimental or natural (e.g., economic games, pile sorts, stone & steel ax comparisons).
Problems with interviews

- Queries regarding events that have occurred historically or in the recent past suffer from recall error
- Questions about behavior may be biased towards perceived self-interest and cultural expectations (e.g., sexual behavior)
- Queries in interviews focus on
  - Meaning, interpretation, and subjective experience (values, conceptions, knowledge, rules, standards, and attitudes)
  - Observational methods are poorly equipped to uncover the above
Sackett’s Textbook Findings*

- No consistent correlation between time allocated to a behavior and amount of space allotted to its descriptions in anthropological writings (probably a good thing since we are sleeping 1/3 of the time).

- Men’s activities are 8 times more likely to be described than women’s activities even though in terms of time allocation they are done about equally frequently.

A observation on the Sackett’s findings

- Just because a behavior is rare does not mean
  - It is unimportant
  - Ethnographers need not pay it much attention

- And just because a behavior is common does not mean
  - It is important (e.g., sleeping)
  - Ethnographers need pay much attention to it

- Furthermore, TA researchers pay little attention to quantitatively common activities such as conversation and/or grossly code such behaviors.
The child care statement ("childcare is predominantly women’s work") is an excellent example of generalized ethnographic characterization that is deeply problematic, or is it?

- What does it include?
- What is the quantitative basis for the statement and
- how was it determined?
- (actually it is quite true)
Criticisms of Observational approaches

- It is reductionistic or dehumanizing (a common epithet that says more about the one who said it than the research).
  - So what?
  - The “calorific obsession” issue in cultural ecology in the 60’s.

- It is incomplete
  - Depends on the question asked
  - Can be integrated with traditional forms of data collection to develop a more complete explanation or description
Part 2

- Behavior observation considerations
Before you get going consider these issues

- Is observation the most effective way to answer the question?
- It may be quite expensive of a researcher’s time.
- Can it be done ethically (this is true of any protocol)?
- How to classify behavior
- Observation does not replace interviewing or participant observation
Don’t Forget

- Behavior observations are seldom an end in themselves.
- Behavior observations are either uninteresting or uninterruptible without at least some of the following:
  - Basic demographic, personal, cultural, and socioeconomic characteristics of those being observed.
Basic Elements for Behavioral Observations

- Each record should contain the minimum:
  - Person
  - Behavior
  - Setting (location)
  - Date and Time
  - Constants to be added later
    - Age
    - Sex
    - Household
    - Marital status

- Potential additional items used in various studies:
  - Object used
  - Alters or interactors
  - Subjective feelings of the observed (Chick’s experience sampling)
  - If eating, who gave and produced the food (e.g., Aché food exchange research)
An instantaneous record will look like this

<table>
<thead>
<tr>
<th>Record #</th>
<th>Person</th>
<th>Behavior</th>
<th>Location</th>
<th>Date</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mae</td>
<td>pray</td>
<td>church</td>
<td>20050108</td>
<td>0800</td>
</tr>
<tr>
<td>2</td>
<td>Joe</td>
<td>sleep</td>
<td>church</td>
<td>20050108</td>
<td>0800</td>
</tr>
</tbody>
</table>
Continuous records are more complex

<table>
<thead>
<tr>
<th>Record #</th>
<th>Person</th>
<th>Behavior</th>
<th>Location</th>
<th>Date</th>
<th>T-Start</th>
<th>T-End</th>
<th>T-Elap.</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Mae</td>
<td>pray</td>
<td>church</td>
<td>50108</td>
<td>0800</td>
<td>0803</td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td>Mae</td>
<td>sing</td>
<td>church</td>
<td>50108</td>
<td>0804</td>
<td>0809</td>
<td>5</td>
</tr>
</tbody>
</table>
Points on classification development

- Make the system exhaustive and discrete (a behavior cannot belong to more than one class).
- Operationalize all codes: each behavior should be sufficiently described in terms of actions, purpose of actions and contexts. By sufficiently I mean that another could read your descriptions and replicate your research.
- Make sure it employs logical principles but don’t get too caught up in this issue (e.g., is “x” a kind of leisure or work activity?). Utility and consistency our your goals. See above.
- Be able to explain the logic of your system and how it relates to your research problem.
- It is better to err on the side of an overly explicit coding system than on an overly general coding system - in recoding one can always go from specific to general but not from general to specific.
Can behavior measurements do it all? Designing a research project on parental investment (very simplified)

- Parental investment is typically defined as things parents do for their children that enhances their chances of survival, reproduction, and cultural success
  - Cultural theory might predict that boys will be favored over girls and older children over younger children
  - Evolutionary theory (e.g., Trivers-Willard) suggest that one sex will receive more investment than the other depending on the condition of the mother.
- PI includes such readily observable things as holding, feeding, nursing, comforting, teaching, medical care (inheritance)
- However, observations may not capture everything. For example, among the Yanomamö parents also:
  - Provide emotional and social support
  - Help sons find a bride
  - Defend their sons and daughters from attacks
  - Give their children hard to observe or measure gifts
  - In modern society we have inheritance or loans which cannot be observed
In addition, alloparental care may be important

- That is, care, support, and investment may be provided by non-parents
- It is important to document their contributions and
- determine whether their contributions differ in kind or amount from what parents do
- Following slide show amount of care given to children by non-parents
Ye’kwana and Embu Childcare by Caretaker’s Relation to Child

Sources
1 Hames (1988)
2 Baksh and Paolisso (1989)
Research design (very simplified)

- We have defined measures of investment and we need to collect data on them. Note that some can be gained through observation while others (inheritance) will be gained through interviews.
- More complexly, we may also predict that high investment may lead to outcome measures of cultural success (income, status, employment, or other locally defined measures of cultural success) or biodemographic variables such as growth, health, development, survival, and fertility.
- We design our behavior sampling and coding to collect information on PI which in this case is a complex set of independent variables.
- We also need to collect information on factors (independent variables) we predict (on theoretical grounds) that will determine variation in PI by sex. In one model it is the condition of mother (indexed by mother’s status), in the other it is the cultural factors that place different valuations on males and females.
Additional admonition: Don’t reinvent the wheel

- You are not the first one to study PI
- Consequently, there are numerous studies using different coding schemes, measures, etc that you may find useful even though they may not have been precisely designed to deal with your particular question.
- In addition, you can compare your results with those of other researchers if you collect the same data
Established codes are useful for the following reasons

- You may wish to use the codes to replicate (or fail to do so) and/or extend previous findings in your arena
- The codes may alert you to nuances or distinctions that may not have occurred to you or
- They may alert you to special kinds of difficulties in collecting rare but crucial behaviors
Section 3: Preparing to do behavioral observations:

continuous & instantaneous observations
The instantaneous/continuous divide

- If we observe behavior continuously we can compute all of the below but if we record instantaneously we can only compute the first:
  - Frequency (instances per unit time)
  - Duration (length of single occurrence)
  - Intensity (pace, useful for energetic expenditure studies)
  - Sequence of behaviors (behavior flow) to complete a task (steps in food preparation)
  - Latency: the time between the end and start of a behavior
Basic divide in recording:

- Events: behaviors have no duration (dimensionless). E.g., what the individual was doing the moment encountered.

- States: continuous recording of behaviors, typically have a beginning and end. Duration and frequency can be measured.
In addition

If one uses instantaneous measures one will likely miss

- rare events
- discrete events of short duration
### Basic Observational Methods

#### Sampling methods

<table>
<thead>
<tr>
<th>Recording methods</th>
<th>Group</th>
<th>Individual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instantaneous (event)</td>
<td>Instantaneous scan</td>
<td>Instantaneous focal</td>
</tr>
<tr>
<td>Continuous (state)</td>
<td>Continuous scan</td>
<td>Continuous Focal</td>
</tr>
</tbody>
</table>

After Hames (1992) p. 211, fig. 7.3
Martin & Bateson’s typology: Sampling and Recording Rules

Or, who or what gets recorded

Sampling rule

(Ad libitum sampling)  |  Focal sampling  |  Scan sampling  |  (Behaviour sampling)

Recording rule

Continuous recording (CR)  |  Time sampling  |

Instantaneous sampling (IS)  |  One-zero sampling (1/0)

Or, timing of recording (photo or movie)
Sampling and Recording

- Sampling decisions have to do with who or, less commonly, what one is going to record.
- Recording decisions have to do with whether one is going to record events (short duration observations) or states (long duration observations).
Behavior sampling

- Used by primatologists and psychologist to gain detailed information on critical behavior. During surveillance behavior is recorded whenever it occurs.
  - Grooming
  - Fights
  - Sex
## Possibilities (from Bateson & Martin schematic)

<table>
<thead>
<tr>
<th>Sampling Rules</th>
<th>Continuous</th>
<th>Instantaneous</th>
<th>One-zero</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focal</td>
<td>C-F</td>
<td>I-F</td>
<td>O-F</td>
</tr>
<tr>
<td>Scan</td>
<td>C-S</td>
<td>I-S</td>
<td>O-S</td>
</tr>
<tr>
<td>Behavior</td>
<td>C-B</td>
<td>I-B</td>
<td>O-B</td>
</tr>
</tbody>
</table>

### Recording Rules
Descriptive Resolution

- Structural descriptions (physical description pace Borgerhoff Mulder & Caro)
  
  A problem with structural descriptions is that it is hard to know where to stop.

- Functional descriptions (or “by consequence” pace Borgerhoff Mulder)

- If one uses functional descriptions it is important that the recorder have a clear definition and knows a great deal about local patterns of behavior and their goals and consequences
The following readings guide what follows (see behavioral bibliography):

- Borgerhoff Mulder & Caro (1985)
- Johnson & Sackett (1998)
- Hames (1989)
- Turke & Betzig (1986)
Sampling Issues (1)

- Establishing limits of study:
  - Social,
  - geographic,
  - and temporal boundaries

- Units of observation
  - People
  - Activities or settings
  - Scans or focals
Sampling Issues (2)

- Scheduling observations
  - Randomize
  - Sampling strategies
    - Continuous (motion picture):
      - Pros: detailed, with duration and sequence
      - Cons: time consuming, subject reactivity, small sample
    - Instantaneous (snap-shot)
      - Pros: economical, large sample, less subject reactivity
      - Cons: unavailability of subjects & informant recall, observation window, nighttime activities
    - One-zero or activity presence
      - Pros: economical, no reactivity
      - Difficult to interpret
Recording Strategies

- Qualitative narratives (ad libitum)
- Use a tape recorder to capture a qualitative narrative and code after the fact
- Code directly upon observation on paper or computer
Coding Problems 1

- Simultaneity
  - Nursing, cooking, and conversing
    - 6 possible solutions (in Johnson and Sackett)
    - See Stinson’s paper for additional discussion (p. 18)
- Reliability: intra and inter-coder reliability
  - Be specific about how codes are applied (coding rules)
  - Practice before using
- Context problem
  - Provide as much detail as reasonably possible (date, time, location, weather, technology, and social interaction) insofar as they relate to your research question
A coding divide:

- Structural codes: a physical description of what someone actually is doing
- Functional codes: the intent or purpose of the activity.

An example: what if the person is wiping her brow or standing while in a field she was hoeing before you observed her. Do you record her as:

- Standing
- Engaged in personal maintenance, or
- Hoeing her garden? (assumes that hoeing means travel to and from the garden, rest in garden, and hoeing in garden)

In the above example if we code “hoeing” we may overestimate work while if we code “standing” we may underestimate work
Betzig and Turke make a distinction between coding the actual physical activity (or structure, observed column) and coding the inferred intent (or function, intended column). In the field they coded both simultaneously. Here are their results for % time labor:

<table>
<thead>
<tr>
<th></th>
<th>Observed</th>
<th>Intended</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women</td>
<td>59</td>
<td>66</td>
</tr>
<tr>
<td>Men</td>
<td>51</td>
<td>63</td>
</tr>
<tr>
<td>Children</td>
<td>12</td>
<td>27</td>
</tr>
</tbody>
</table>
Coding problems 4

- Some codes can incorporate complex information such as:
  - Hunting with a shotgun (incorporates an implement)
  - Hunting pursuit or stalking (general and specific modes in hunting)
  - Alternatively, coding system can be hierarchical (Michael presents his scheme, and see next)
Hierarchical Classification

- Behavior
  - Work
    - Job (paid)
    - Home (unpaid)
  - Leisure
    - Alone
    - Social
      - Family
      - Friends
      - Acquaintances
Tips for gaining unbiased observations (1 of 5)

- Choice of subjects
  - Don’t select because they are cooperative
  - Random selection of individuals in a community or the entire community

- Time of day
  - Randomize sampling time, place started, and route taken (so they don’t anticipate your visits).
  - Time block sampling when community is too large to visit in a single day or observation period.
Rules for gaining unbiased observations (2 of 5)

- Seasonal variation:
  - Not only does economic behavior vary seasonally but other behaviors (rituals) of interest may also vary.

- Make sure all social categories are included (men, women, married, children, etc)
Rules for gaining unbiased observations (3 of 5)

☐ Spatial effects:

- Visible behaviors (in village) can be overrepresented compared to invisible behaviors (outside village). Some solutions:
  - Ask where the missing individual is and either code the behavior based on the report and/or interview the missing later in the day and code
  - Seek out the person immediately
  - Don’t sample out of sequence just because an individual is easily visible
  - Always note whether the behavior was observed or reported
Observer effects

- Subjects may change behavior when they see the ethnographer approach. Some solutions:
  - Record whether the subject saw you first or vice-versa
  - Acclimate subjects to your presence so their behavior becomes more candid through habituation
Rules for gaining unbiased observations (5 of 5)

- Interobserver reliability, no clear solution
  - Compare to a second observer for consistency and use the Kappa statistic
  - Analyze for consistency of recording through time
  - Pre-fieldwork training
Readings Discussion Points (Johnson and Sackett)

□ What problems are inherent in behavior observations? How can they be addressed?
  ■ Observer effects
  ■ Private acts
  ■ Overly broad codes (behavior classification)
  ■ Doing more than one thing at a time
Methods employed in Machiguenga research

- Johnson (1975) spot checks
  - Focus on time allocated to work
  - Small sample size per individual (33 observations per individual – 3495/105)
  - 11 general behavior categories
Johnson (condt.)

- Rules of randomization
  - The population
  - Time of day
  - Days of year (miss no days even if weather is bad)

- General
  - All activities should be recorded
  - All behaviors should be unambiguously coded
Continuous observations

- Has the following advantages over scans in that one gains information on:
  - Duration of events
  - Frequency of events during time blocks (i.e., how often it occurs per hour)
  - Duration between events (length of time a particular behavior is not done)
  - Transition to other behaviors (e.g., what does the child do after nursing) or
  - Latency how quickly does a mother respond to a fretful child?)
!Kung Nursing

- nursing
- nursing <30 seconds
- F fretting or crying
- sleep
Kung Nursing

a

b

F fretting or crying
H held
S sleep
n nursing
n nursing <30 seconds
Kung Caption on nursing

Fig. 1. Four dawn-to-dusk (13 hours) continuous nursing observations of !Kung infants. (a and b) Newborn boy at 3 and 14 days, respectively; (c) 52-week-old girl; (d) 79-week-old boy. Open bars and tall vertical lines, nursing; closed bars, sleep; F, fretting or crying. Slashed lines represent the time held by mother, recorded for newborn only, with arrows for picking up and setting down. All variables except fretting were recorded to the nearest 30 seconds. Tall vertical lines indicate nursing bouts of less than 30 seconds duration. The longest observation period without a nursing bout was 98 minutes, in the 3-day-old, during sleep. Sleep is frequently interrupted by half-awake nursing bouts. The same observation protocol was used for the three 2-hour observations of 17 mother-infant pairs. For 16 of the mothers, hormone levels were available for analysis in relation to nursing pattern.
In the !Kung nursing example

- Nursing bouts per hour: 4.06
- Nursing time per hour: 7.83 minutes
- Nursing bout duration: 1.92
- Minutes between nursing bouts: 13.19
- Maximum interval between nursing bouts: 55.16
Behavior typologies or coding schemes

- Stinson’s paper, under “coding schemes” provides a discussion of different typologies
- Johnson’s HRAF project developed a classification to permit comparative work
- Chick’s experience codes adds subjective information
  - At time of spot asked subject how they felt (see below)
- Dunbar’s conversational typology
Szalai’s Multinational Typology

- Personal care
- Employment related
- Educational
- Domestic
- Child care
- Purchasing goods and service
- Voluntary work and care
- Social and community activities
- Recreation and leisure
- Travel time
Chick’s experiential categories

- What I was doing was
  - Enjoyable
  - Interesting
  - Complex/technical
  - Fun
  - Under my control
  - Monotonous
  - Machine paced
  - Tricky
  - Held my attention
Chick’s continued: At the time I was signaled (asked to record behavior) I was:

- Pressed for time
- Working on my own
- Thinking about things other than work
- Doing something that I felt was important
- Doing something that required a lot of skill
From Pianata et al.
Dunbar’s Conversational Typology

<table>
<thead>
<tr>
<th>Topic</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal relationships</td>
<td>Personal experiences rising from social events, social relationships and actual behavior in social situations and the emotional experiences involved</td>
</tr>
<tr>
<td>Personal experiences</td>
<td>Factual experiences, events and circumstances as experienced by the speaker or a third party, including emotional responses to these experiences</td>
</tr>
<tr>
<td>Future social activity</td>
<td>Arrangements for meetings that will involve social interaction (e.g., dates, dances)</td>
</tr>
<tr>
<td>Future nonsocial activity</td>
<td>Arrangements for meetings/events where social interaction is not the principal consideration (e.g., sports events, visits to museums or business locations)</td>
</tr>
<tr>
<td>Sport/leisure</td>
<td>Comments on sports or leisure/hobby that relate to the activity rather than the social/emotional life of the personalities/individuals involved culture/art/music. Any comments or value judgments on the arts in the widest sense</td>
</tr>
<tr>
<td>Politics</td>
<td>Comments on current or past political events but not personal lives of individuals concerned</td>
</tr>
<tr>
<td>Religion/morals/ethics</td>
<td>Impersonal or judgmental comments on any aspect of religion or morality in the abstract or on religious/moral practice</td>
</tr>
<tr>
<td>Work/academic</td>
<td>All topics related to technical aspects of work (e.g., attempts to explain concepts and arguments)</td>
</tr>
<tr>
<td>Technical/instructional</td>
<td>Attempts to explain how things work or how to locate particular places</td>
</tr>
</tbody>
</table>
HRAF Typology (Johnson)

- F Food production
- C Commercial activities
- M Manufacture
- P Food preparation
- H Housework
- E Eating
- S Social
- I Individual
- U Away from community unobserved
- X Other

SOURCE: Based on Standard Activity Codes. UCLA Time Allocation Project (see Johnson and Johnson 1988).
National Studies*

- Non-free time
  - Paid work
  - Household work
  - Child care
  - Obtaining goods & services
  - Personal needs & care

- Free time
  - Educational
  - Organizational
  - Entertainment/Social
  - Recreation
  - Communications

* Based on Szalai et al. 1972
Experience Sampling Method

Subjects are asked to carry a beeper device that signals on a time-based protocol determined by the researcher. Each time the beeper activates, subjects fill out a survey (or use a PIM) that typically includes questions asking what the subject was doing and how the subject was feeling at the time of the alarm. With a sufficient number of subjects and samples, a statistical model of activities can be generated. ESM is less susceptible to subject recall errors than other self-report feedback elicitation methods. Traditional ESM/EMA methods have four characteristics

1. Assess phenomena at the moment they occur
2. Usually involve a substantial number of repeated observations
3. Made in the environments that subjects typically inhabit
4. Dependent upon careful timing of assessments

Context aware ESM

- The trigger to record information can be sensor based using heart rate or positional data (i.e. GPS-determined location) may be used both as a measurement stored for future analysis and as a signal that is processed in real-time to detect if the subject is engaged in an activity of interest.
Sample Screen from iPAQ or other PDA brand

The machine’s alarm goes off at random times and people are asked to record what they are doing, how they feel, and the like.

Source: http://web.media.mit.edu/~intille/caes/index.htm
How do you observationally measure this form of paternal investment?: Uuwä gives his son a puppy from a distant village