Non-experimental research: observational, archival, case-study research
Randomized experiments

- Experimenter randomly assigns Ss to conditions.
- Results can only be explained by
  - chance
  - the experimental manipulation
Limitations of randomized experiments

- Randomization can be
  - impractical
  - unethical
  - expensive

- Examples:
Limitations of randomized experiments

- Randomization can be
  - impractical
  - unethical
  - expensive

- Examples:
  - Does marijuana use cause depression?
  - How does growing up in a single-parent home affect personality?
A choice

- Well-controlled experiments
- Grapple with the human condition

- Visual psychophysics
- Motor control
- Personality
- Social psychology
Are non-experimental approaches scientific?

- Randomized experiments are rare in
  - Geology
  - Paleontology
  - Astronomy
  - Field biology
Outline

• Observational studies
  - Everyday behavior
  - Fringe groups: cognitive dissonance
  - “The Love Lab”

• Archival studies
  - Prejudice and the Weakest Link

• Case studies
Observational studies

• Discoveries can be made just by watching people's behavior (no interventions or experimental manipulations!)
Everyday behavior: slips of the tongue

- Speech errors provide insight into speech production

  unanimity → unamity (syllable deletion)
easily enough → easy enoughly (suffix move)
tend to turn out → turn to tend out (word exchange)
my sister went to the Grand Canyon →
  the Grand Canyon went to my sister (phrase exchange)

  (Fromkin)

- Errors like these suggest that sentences are built from units at many scales (syllables, words, phrases)
Everyday behavior: slips of the tongue

- Speech errors provide insight into semantics

| 1) contrasting coordinates | apple -> pear  
|                           | red -> blue  
|                           | Monday -> Tuesday |
| 2) opposites               | up -> down  
|                           | fat -> thin  
|                           | man -> woman |
| 3) semantic cousins        | Saturday -> January |

(Johnston)
Everyday behavior: slips of the tongue

- Speech errors provide evidence of unconscious motivations?

- President of the Lower House of the Austrian parliament:
  - “Gentlemen, I take notice that a full quorum of members is present and herewith declare the sitting closed.

(Freud)
Everyday behavior: Personal Space

- Taking the T
Everyday behavior: Personal Space

- Taking the T

| 1 | 2 |
Everyday behavior: Personal Space

- Taking the T
Everyday behavior: Personal Space

• Taking the T

• Individual seats “allow” people to sit closer to each other
Edward T Hall

• Proxemics: “the study of man's transactions as he perceives and uses intimate, personal, social and public space “
Seating positions

Intimate, Cooperative

Competitive
People in high status seats
  - Talk more (even if seats are randomly assigned!)
  - Are more likely to become jury foremen.
Territorial behavior in parking lots

- "A study of more than 400 drivers at an Atlanta-area mall parking lot found that motorists defend their spots instinctively" (AP, May 13, 1997)
- Drivers took 7 seconds longer on average if someone was waiting
- When honked, drivers took an extra 10 seconds longer to leave.
- Men were faster to leave for a high status car. Women were not.
John Trinkaus, of the Zicklin School of Business, New York City, for meticulously collecting data and publishing more than 80 detailed academic reports about things that annoyed him (such as:

− What percentage of young people wear baseball caps with the peak facing to the rear rather than to the front;
− What percentage of pedestrians wear sport shoes that are white rather than some other color;
− What percentage of swimmers swim laps in the shallow end of a pool rather than the deep end;
− What percentage of automobile drivers almost, but not completely, come to a stop at one particular stop-sign;
Everyday behavior: Trinkaus

- 1994: Wearing Baseball-Type Caps: An Informal Look

Observed 407 people wearing baseball-type caps with the peak in back in the downtown area and on 2 college campuses (1 in an inner borough and 1 in an outer borough) of a large city. About 40% of Ss in the downtown area and at the inner-borough college wore the cap with the peak to the rear, while about 10% of the outer-borough college Ss had the peak to the rear.
Everyday behavior: Trinkaus

- 1982: Stop Sign Compliance: An Informal Look
- 1983: Stop-Light Compliance -- Another Look
- 1993: Stop Sign Compliance: A Follow-Up Look
- 1997: Stop Sign Compliance: A Final Look
Everyday behavior

• There are revealing observations that any of us could have made if only we'd thought to look.
• Presumably there are many others left!
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Participant-Observer research

- Researchers join the group they want to study (sometimes hiding their true motive)

- Example: “When prophecy fails”
  - Festinger, Riecken and Schachter study Marion Keech and the seekers, who predict that the world will be destroyed in a flood on December 21, 1954
Cognitive Dissonance (Festinger)

- Cognitive dissonance:
  - Holding dissonant (inconsistent) beliefs is uncomfortable.
  - Prediction: people act to reduce dissonance whenever it is experienced
Example: The Fox and the Grapes

Image removed due to copyright reasons.
Cognitive Dissonance (Festinger)

• Experiment:
  - Ss were given a boring task.
  - Ss were asked to tell an incoming subject that the task was really quite interesting.
  - Half were offered $1 for the lie – the rest were given $20
  - Question: when asked to express how they really felt about the task, which group rated it as more enjoyable?
Belief disconfirmation (Festinger)

- When
  - A person is deeply committed to a belief
  - The belief is disconfirmed
  - The believer has social support

  the believer often *increases* his efforts to convince others that he is correct
Participant-Observer study

- Marian Keech and the seekers
  - Predicted a flood on December 21
  - Expected to be picked up by flying saucers
- Press release on December 22
  - “... the cataclysm was stayed by the hand of the God of Earth”

(Festinger, Riecken, Schachter: When Prophecy Fails)
Keech and the Seekers

• Only 2 out of 11 abandoned their belief
• After December 21, the group
  – Sought the media coverage they had previously avoided
  – Welcomed outsiders to the group
  – Released tapes that had previously been considered secret
Other apocalyptic predictions

- 1844: Millerites
- 1891: Mormons
- 1878, 1910, 1914: Jehovah's Witnesses
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Observational work in the lab

- Bring people into the lab and scrutinize their behavior

- No manipulation of independent variables!
Gottman's “Love Lab”

- What makes a relationship work?
- Method:
  - film couples interacting in the lab
  - Sensors measure heart rate, how much each person is sweating

Image removed due to copyright reasons.
Coding interactions

• SPAFF (Specific Affect Coding system)
  - 1. Disgust
  - 2. Contempt
  - 11. Whining
  - 13. Stonewalling

• Coders assign one number per person per second
  - Husband: 7, 7, 2, 2, 2, 2, 13, 14, ...
  - Wife : 6, 6, 6, 6, 6, 8, 12, 12, ...
Analysis

• Goals:
  – 1) Explain and understand the coded data
  – 2) Predict whether the relationship is likely to last
  – 3) Identify interventions that may help the relationship
Early qualitative approaches

• What destroys a relationship?
  – The “Four horseman of the apocalypse”
    • Criticism
    • Contempt
    • Defensiveness
    • Stonewalling
Mathematical Model (Murray)

Wife at time $t + 1$

$W_{t+1} = a + r_1 W_t + I_{HW}(H_t)$

Husband at time $t + 1$

$H_{t+1} = b + r_2 H_t + I_{WH}(W_t)$

Emotional Inertia: $r_1$ and $r_2$ constants, $|r| \leq 1$
Conflict-Avoiding Marriage

Both have little effect on each other in the negative range.
Basic Marriage Types

Characteristics (stable and unstable types):

**Volatile (S)** – romantic, passionate, have heated arguments with cycles of fights and sex

**Validating (S)** – calmer, intimate, value companionate marriage, shared experience rather than individuality

**Avoiders (S)** – avoid confrontation and conflict, interact only in positive range of their emotions

**Hostile (U)** – (mixed) conflict-avoiding wife, validating husband

**Hostile-Detached (U)** – (mixed) volatile wife, validating husband
Relationship (H,W) Phase Space

Figure by MIT OCW.
Predicting marriage success

• Based on a fifteen minute conversation, Gottman can predict with 90% accuracy whether a couple will still be together in 15 years.

• Therapy: changing interaction functions
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Archival studies

• Analyse existing datasets
  (eg census data, voting records)

• These data have sometimes been collected at great cost, and on a scale that far exceeds what a single researcher could manage.
Discrimination

An employer is looking to fill several jobs. Given a man (M) and a woman (W) with identical resumes, suppose that he always chooses M.

- **Taste-based discrimination:**
  - The employer prefers not to interact with women, and will incur a financial cost to avoid such interactions.

- **Information-based discrimination:**
  - The employer has no animus towards women, but suspects that W is actually less able than M.
Studying discrimination

- Measuring discrimination is hard.
- Distinguishing between taste-based and information-based discrimination is hard.
- Levitt (2004) attempts to do both using data from “The Weakest Link”
The Weakest Link

• Rules:
  – Contestants take turns to answer questions – correct answers add to the prize pool
  – One player is voted off after every round
  – At the end of the show, the two remaining contestants compete head to head for the prize pool.

• Incentives:
  – Early: vote for weak players
  – Later: vote for strong players
Predictions:

Suppose that Bob discriminates against women:

• Taste-based:
  − Bob votes disproportionately for women in both early and late rounds

• Information-based:
  − Bob votes disproportionately for women, but only in the early rounds
Results

No evidence of discrimination against women or blacks.

Some evidence of

- Taste-based discrimination against older players
- Information-based discrimination against Hispanics

(NB: Levitt controls for within-game performance)
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Case studies

- Examine individual instances of some phenomenon.
  - eg HM

Image removed due to copyright reasons.
Project Prakash (Sinha et al)

- Study people who were born blind, but have had their sight restored by cataract surgery

Image removed due to copyright reasons.
Conclusions

- Experiment design is not always like choosing a recipe from a cookbook. Try to find creative ways to study the questions you care about.

- There is interesting work to be done using
  - data that are easily collected (seating patterns in subways)
  - publicly available data (The Weakest Link)
Four Bodily distances (Hall)

1) intimate (0 to 18 inches)
2) personal-casual (1.5 to 4 feet)
3) social-consultive (4 to 10 feet)
4) public (10 feet and beyond)

Personal space varies across cultures. Europeans tend to stand closer than Americans.
Everyday behavior: Trinkaus

- 1993: Compliance With the Item Limit of the Food Supermarket Express Checkout Lane: An Informal Look

75 15-min observations of customers' behavior at a food supermarket showed that only about 15% of shoppers observed the item limit of the express lane.... Results indicate a tendency not to play by the rules in the absence of meaningful real or imagined constraints.