Ecology of Research

The Social Context of “Truth”

I. The Ecological System
II. Participant Factors
III. Researcher Factors
IV. Participant X Researcher Interaction
V. Cultural Bias

I. The Ecological System
II. Participant Factors

A. Reactivity: changes in the behavior of research participants as a result of their knowledge that they are part of a research project.

B. Hawthorne Effect
- Hawthorne plant of Western Electric (circa 1930)
- Studied the effect of work condition on production rate
- Changes that led to increased productivity included:
  - Raise illumination
  - Rest periods
  - Longer days
  - Lower illumination
  - Shorter days

B. Hawthorne Effect (cont)
Any change lead to increased productivity!

Definition: when performance in an experiment is affected by knowledge by participants that they are in an experiment
B. Hawthorne Effect

How to avoid the Hawthorne Effect
- Do not inform participants they are in an experiment
- Use a control group
- Deception as to the true nature of the experiment.

C. Demand Characteristics

Definition: cues available to participants than enable them to detect the purpose of the research, or what is expected of them by the researcher.
- setting
- instructions
- expression on the researcher’s face

Subject Roles:
- good subjects: do what they think the researcher wants
- negativistic subjects: do exactly the opposite of what they think the researcher wants
- apprehensive subject: behaves in what they think is a socially desirable manner
- faithful subject: honest behavior
Orne & Evans (1965)
Hypnosis and Behavior

<table>
<thead>
<tr>
<th>Group</th>
<th>Grasp venomous snake</th>
<th>Take Coin from acid</th>
<th>Throw Acid at Exp.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypnosis</td>
<td>83%</td>
<td>83%</td>
<td>83%</td>
</tr>
<tr>
<td>Simulated Hypnosis</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Waking Control</td>
<td>no pressure</td>
<td>50%</td>
<td>83%</td>
</tr>
<tr>
<td></td>
<td>pressure</td>
<td>50%</td>
<td>17%</td>
</tr>
</tbody>
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Avoiding Demand Characteristics

1. Do not communicate expected outcomes
2. Make the nature of the treatment obscure
3. Deceive the subjects
4. Find out the role of demand characteristics
5. Simulated Experiment (e.g., simulated hypnosis)

D. Placebo Effects

Definition:
- Placebo comes from the Latin verb placere “to please”
- People will show physiological changes from the suggestion that such changes take place
D. Placebo Effects

Example: (Hass, Fink, & Hartfelder, 1963)
Tension headaches show a 60% improvement with a pill containing nothing but inert ingredients.

Avoiding Placebo Effects

1. Placebo control group
2. Double-blind experiment with a placebo control

E. Response Sets

Definition: predisposition to respond in a given way, independent of the content of the question.
- “yes” bias
- frequency bias
III. Researcher Bias

A. Deliberate Researcher Effects
   - bias questions
   - bias selection of tasks
   - experimenter fraud

Example:
Police released on 2/6/91 concerning the Gulf War
Veterans of Foreign Wars (opposed the war)
Which of the following do you favor:
   Continue the war: 25%
   Seek a diplomatic solution: 65%
ABC News poll
Do you support the war in the Gulf?
   Yes: 76%  No: 16%

Avoiding Deliberate Research Bias

Replication!
Replication!
Replication!
III. Researcher Bias

B. Inadvertent Researcher Effects

1) lack of uniform treatment: researchers allow their wishes to influence the behavior of participants by failing to treat all conditions identically

Example: Rosenthal Effect (Pygmalion Effect)

Rosenthal & Jacobson (1968)

Selected Elementary Children were randomly assigned to High and Low I.Q. groups. Teacher were told groups assignment was based on an I.Q. test. Group differences in grades and test scores developed and increased with time

Rosenthal & Jacobson (1968)

Results: I.Q. gain over 20 months

<table>
<thead>
<tr>
<th></th>
<th>High I.Q.</th>
<th>No Expectation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Graders</td>
<td>27</td>
<td>13</td>
</tr>
<tr>
<td>2nd Graders</td>
<td>16</td>
<td>7</td>
</tr>
</tbody>
</table>
B. Inadvertent Researcher Effects

2. Observations and coding of data:
   - unconscious errors or bias in judgment that favor the researcher’s hypothesis

Example: Pons & Fleishmann (1989) discovery of Cold Fusion
Pons & Fleishmann’s Apparatus

Solution:
1) Replication
2) multiple observers, multiple scores

\[
\text{Inter-rater reliability} = \frac{\text{agreements}}{\text{agreements} + \text{disagreements}}
\]

IV. Participant X Researcher Interaction

A. Definition: When the social interaction between the participant and the researcher influences the responses of the participant

- similar to demand characteristics
- stresses the social demands of the interaction
IV. Participant X Researcher Interaction

B. Examples
- Milgram's Research on compliance
  compliance was much lower outside of the University research setting

- Wilder's 1989 Election as the first African American Governor of VA

Wilder's 1989 Election to the Governor of VA

Pre-polls: Wilder in the lead by 15% points
Election results: he won by less than 1%.
Why were the pollsters so far off?
Whites questioned by white pollsters favored opponent Coleman by 16%
Whites questioned by African-American pollsters favored Wilder by 10%
The majority of pollsters were African-American.

V. Cultural Bias

Definition: research is conducted in a culture with a set of beliefs. It is easier to collect and publish data that affirms to the cultural "truth" than that challenges the culture.
A. Social Desirability Influence
-participants respond in a way that they think is socially appropriate.

Answer the following question:
“*I occasionally masturbate. Yes/ No*”

Minimizing the influence of Social Desirability

**Force choice inventory** between equally undesirable responses
e.g. Choose one of the following:
a) I occasionally masturbate
b) I feel that I am inferior to other in most respects

Minimizing the influence of Social Desirability

**Probability Responding:**

Instructions: For each of the following questions, flip a coin. If the coin is heads, answer the question truthfully. If it is tails, say yes.

Analysis of results: divide the number of “yes” responses by 2 to determine the correct proportion of yes answers.
B. Cultural Influence on Choice of Topic

1) taboo topics are not studied
2) “hot” topics get researched and published

Example: Sex differences in mental functioning
- assumed that such differences exist.
- Researchers find and publish small differences. Similarities are ignored.

C. Cultural Influence on Research Reporting

3) Research that supports the cultural norm is easier to publish. When it is published, it gets reported in other news outlets.


Kimura (1989) study

Compared abilities of women in two conditions:
High Hormone Phase: 7-10 days before menstruation when estrogen & progesterone levels were high
Low Hormone Phase: 3-5 days after menstruation when these hormones are low.
(1/2 tested low/high, 1/2 tested high/low)
### Kimura (1989) results

**Tasks done better in high phase:**
- speeded articulation
- manual dexterity
- verbal fluency
- perceptual speed
(all things thought to be traditionally better in females)

### Kimura (1989) results

**Tasks done better in low phase:**
- rod and frame test
- test of spatial ability
(traditionally thought to be better in men)

### C. Cultural Influence on Research Reporting

Kimura Conclusion: proves the role of hormones in sex differences in intellectual ability

Reported in newspapers (*New York Times*):
- women as a group did not perform as well as men on spatial tasks
- men as a group did not perform as well on verbal tasks
Conclusion:
What is “truth” in social science?

Social & Cultural Context

Researcher

Participants