Developing Hypothesis

Beginning well motivated and conceived research

Developing Hypotheses

I. Motivations for Research
II. Sources of Ideas
III. Research as Problem Solving
IV. Evaluating your hypothesis

I. Motivations for Research

A. Uninteresting Research:
   research with an obvious outcome
   “No kidding!”

Exceptions: counter-intuitive findings
Example: (Craik & Watkins, 1973)
Exp. group: 30 sec of rehearsal, then recall test
Control group: immediate test
Both groups: final test later (approx. 1 hr.)
I. Motivations for Research

B. Unimportant Research
Research in isolation
No current set of knowledge to which it is related
“What good is it?”
“Who cares?”
Example: School achievement and hair color

C. Golden Fleece Award (William Proxmire)
Award given to federal grants that appeared to be the most conspicuous waste of tax dollars.

Purdue: Hitchhiking and women’s dress.

II. Sources of Ideas

A. Your Journal

B. Theories: (John Platt’s Method of Strong Inference)
1. Devise alternative hypotheses
2. Devise a crucial experiment
3. Carry out the experiment so as to get valid results
4. Refine your hypotheses and return to step 1.
II. Sources of Ideas

C. Everyday life
Observation of people’s behavior lead to questions of causes.
“Why do people ...?”
Examples:
Kitty Genovese case (Darley & Latane’s research on the unresponsive bystander)
“The girls get prettier at closing time”

D. Practical Issues (Applied Research)
Motivation is an attempt to solve a problem
Examples:
How can we get people to buckle their seat belts (Scott Geller)?
How can we improve reading scores?

E. Past research:
Refine or extend the methods of previous research.
Increase generality
Control previously uncontrolled variables
Remove confounded variables
Example: Flashbulb memory research
How does strong emotion change the nature of memory for an event?
III. Research as Problem Solving

A. Parallel between the process of research and the processes of solving problems

B. Steps in the Problem Solving process (Wallas, 1922)
- preparation, incubation, illumination, verification
- (example: buying a new bike)

B. Steps in the Problem Solving process

1. Preparation:
   a) Has this research (or something like it) already been conducted?
   b) What related ideas have been tested?
   c) What are the implications of the major hypothesis? Have they been tested?
B. Steps in the Problem Solving process

2. Incubation:
   Get away from the problem for a period of time (this frees you from a set way of thinking about the problem)

3. Illumination:
   Some inkling of a solution, or approach to the problem comes to mind.
   Sit down, and formulate the hypothesis.
   Write out an operational definition
   Draw a research design.

4. Verification
   Test your ideas with an experiment.
   Compare your experiment to other research.
   Test your ideas on other people.
C. Steps in Developing Hypotheses

1. State the hypothesis in general terms

2. Operationalize the hypothesis:
   What will be measured/observed?
   (Dependent variables)
   What will be manipulated?
   (Independent variables)
   How are these tied to the hypothesis?

3. What methods will be employed?
   How will you test your hypothesis?
   How will the relation between your independent and dependent variables be examined?

4. What results do you anticipate?
   How will the results provide evidence for your hypothesis?
IV. Evaluating your Ideas

A. Your sounding board:
Try to explain your ideas to a friend. Do they understand your idea? Do they agree with your logic? Do they agree that your findings, if you were to get them would support your hypothesis. (Universal Assent)

B. Is your proposed research interesting and important?
1) Is the outcome obvious?
2) What other research is related to your idea?

3. Are you interested your topic enough to spend many hours reading and thinking about this idea?