Developing Hypothesis

Beginning well motivated and conceived research

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Developing Hypotheses

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

I. Motivations for Research

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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.)

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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

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I. Motivations for Research

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.

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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 of the experiment so as to get valid results
4. Refine your hypotheses and return to step 1.

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II. Sources of Ideas

C. Everyday life

Observation of people 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"

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II. Sources of Ideas

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?

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II. Sources of Ideas

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?

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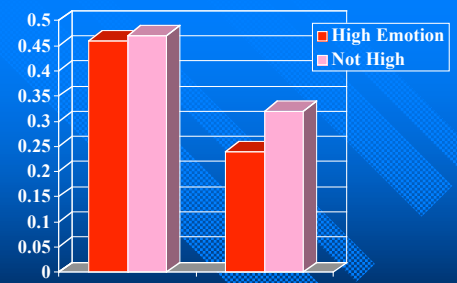

Central	Peripheral
who	breakfast
when	lunch
what	weather
where	clothing

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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)

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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

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2. Incubation:

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

B. Steps in the Problem Solving process

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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.

B. Steps in the Problem Solving process

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4. Verification

Test your ideas with an experiment.

Compare your experiment to other research.

Test your ideas on other people.

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C. Steps in Developing Hypotheses

1. State the hypothesis in general terms

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

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C. Steps in Developing Hypotheses

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

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C. Steps in Developing Hypotheses

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

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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)

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IV. Evaluating your Ideas

B. Is your proposed research interesting and important?

1) Is the outcome obvious?

2) What other research is related to your idea?

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IV. Evaluating your Ideas

3. Are you interested your topic enough to spend many hours over the course of this semester reading and thinking about this idea?