

Agenda for Monday, September 12th

- Review Quiz #1 questions
- Chapter 2 “The Research Problem”
- Literature Review draft overview
- Good Cross-Pollination Tips
- Chapter Reflections discussion



Quiz 1 Questions

- What are the advantages and disadvantages of the scientific method in comparison with *other ways of knowing*?
- Many people seem to be uneasy about the idea of research. How do you explain this?
- What are the main differences between descriptive, associational, and intervention research?
- How do the specific types of research (i.e., experimental, correlational, causal-comparative, survey, ethnographic, historical, and action) fit under the general types of research (i.e., descriptive, associational, and intervention)? Which of the specific types are generally quantitative, and which are generally qualitative?
- Compare and contrast the similarities and differences between quantitative and qualitative research.

Research Questions

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Research Question

▪ **Research Question:** a question that can be answered by **collecting and analyzing data.**

▪ Must be **Unique & Useful**

▪ Feasible & Ethical

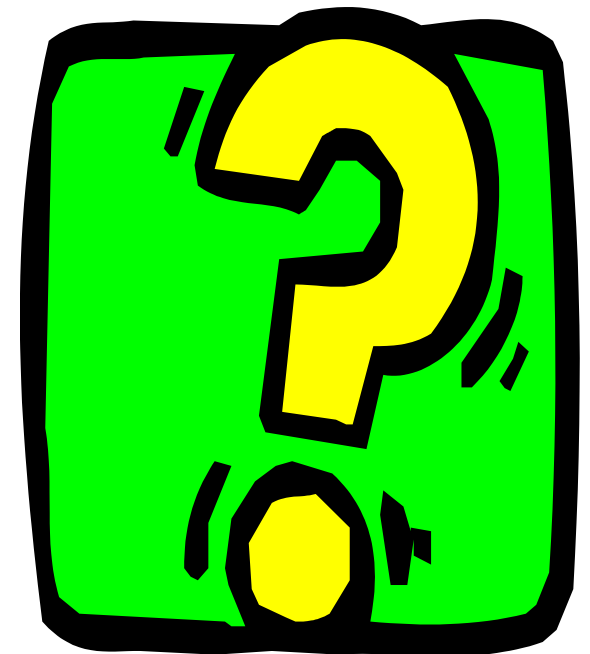
▪ Specific

▪ Based on some theory



Four Main Sources of Research Questions

1. Theory
 - Provides conceptually rich topics
 - Provides confirmation of some aspects of theory
2. Personal experience
3. Replication
4. Library immersion



Narrowing & Focusing Topics

–Read secondary sources that provide overviews of your topic

- **Literature Review Articles**
- **Meta-analysis Studies**
- Handbooks
- Encyclopedias

Researchable vs. Non-researchable Topics

Researchable Topics

- can be investigated through data collection & analysis
- have theoretical/practical significance
- can be researched given the expertise, resources, & time constraints of the researcher

Non-researchable topics

- address philosophical or ethical (“should”) issues.
 - Cannot be resolved through the collection & analysis of data
- E.g., How should we respect innovators?

Primary vs. Secondary Sources

Primary Sources

- reports of a research study written **by the researcher who conducted the study**
- **directly** connects the specific study to the literature base

Secondary Sources

- summaries or syntheses of the research of others **by someone who did not conduct** the research.
- a great starting point for a review
- can provide an overview of the topic but reflect the **interpretation** of the reviewer.
 - Possible misinformation

Research Questions Include:

1. Variables of interest (observable/measurable)
2. Specific relationship between the variables
3. Nature of the participants

Questions must be:

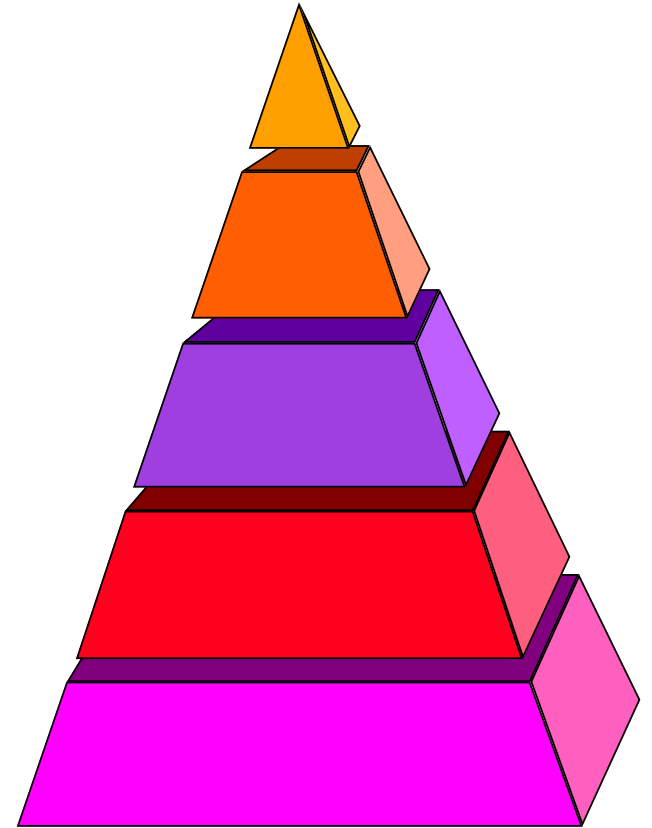
- Unique/useful
- Based on **current research**
 - To know where to add to the knowledge base



Don't re-invent the wheel!

Hypothesis

- A researcher's tentative **prediction** of the results of the research
- Formulated on the basis of knowledge of the underlying theory or implications from **the literature review**



A Good Hypothesis

- Testable
- The expected relationships between variables clearly & concisely stated
- Reasonable explanation for the predicted outcome stated

Testing Hypotheses

- Based on analysis of data
- Results support or fail to support hypotheses
- Results important regardless of the outcome

Types of Hypotheses

- Based on the expected relationship/difference between two variables
 - **Non-directional** – A relationship/difference exists
 - **Directional** – the expected direction of the relationship/difference is stated
 - **Null** – *No statistically significant relationship or difference exists*

Types of Hypotheses --- Examples

Non-Directional	Directional	Null
There is a relationship between creativity & intelligence	There is a strong positive relationship between creative attitudes & innovation	H_0 : n relationship
There is a difference in creative thinking skills between students with and without subject knowledge.	Students with subject knowledge will have higher levels of creative thinking skills than students without subject knowledge.	H_0 : no difference

Defining Terms

- **Constitutive Definition**

- uses additional terms **to clarify meaning**
- Dictionary-type
- Example: Creativity is something “unique and useful”

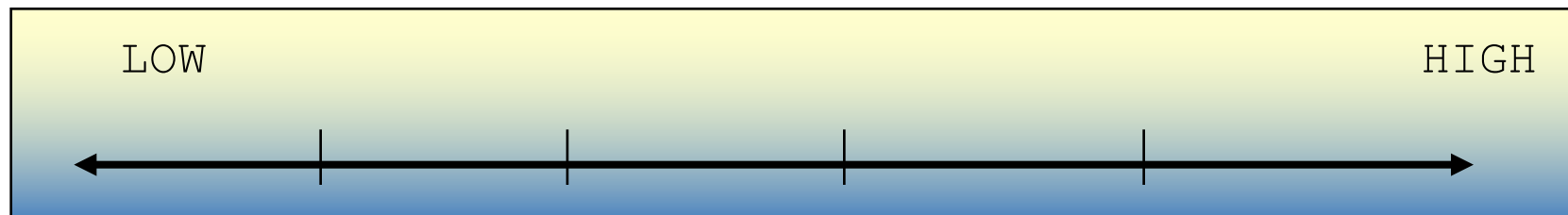
- **Operational Definition**

- is a **description of the procedures** used to determine how examples of a term are **to be measured** or identified
- Example: Creative thinking skills
 - Number of patents filed
 - Scores on a creative-thinking skill test

Quantitative/Categorical Variables

- **Quantitative**

- amount, quantity, or degree of some variable
- underlying continuum or at least an ordering



- **Categorical (Qualitative)**

- Type or kind
 - Notions of “more” or “less” do not work
 - Presence or absence of a condition or attribute

Independent Variable vs. Dependent Variable

Independent Variable (IV)

- Variables the researcher chooses to study to assess their possible effect(s) on one or more variables
- CAUSE

Dependent Variable (DV)

- The variable the IV is presumed to affect
- RESULT

Example: How do family creative climates affect children's creative thinking skills?

DV

IV



Moderating Variables & Confounding Variables

- **Confounding (extraneous) variable (CV):**
 - Uncontrolled: annoying, so we want to control (=filter out)
 - Do not study
 - E.g., Gender on the relationship between creative climates and creative attitudes
- **Moderating variable (MV):**
 - Controlled: has a contingent effect on the IV - DV relationship.
 - The relationship between IV and DV can change because of the MV
 - E.g., Gender on the relationship between creative climates and creative attitudes

Quiz 2 – Research Questions

1. Write your own unique research questions. Identify the IV, DV, CV, and MV.

2. State (an) appropriate research question(s) for the following situation:

Your graduate school advisor asks you to draft a proposal for a large grant to study the effectiveness of reading intervention programs on creative thinking skills. The program is aimed at improving creative thinking skills of middle school students by using different reading programs. She has already developed the materials for the programs and conducted pilot studies. Now she wants to show that the programs improve creative thinking skills of middle school students with diverse ethnicities.

3. Provide a possible operational definition for each of the important terms in research question #2.

Quiz 2 – Research Questions

4. An elementary school decides to study the differences between three different teaching styles (controlling, permissive, and guiding) and students' creative thinking skills (outbox and inbox thinking). The school will measure creative thinking with a standardized creativity thinking skill test. Approximately $\frac{1}{3}$ of the students are placed in a controlling teaching style classroom, $\frac{1}{3}$ are placed in a permissive teaching style classroom; and $\frac{1}{3}$ are placed in a guiding teaching style classroom. Identify the IV and DV in this study. Which variables are quantitative and which are categorical? Write an appropriate hypothesis for this study and identify if it is directional or non-directional.

Quiz 2 – Research Questions

5. A school counselor implements an after school arts program in hopes of providing an outlet for students identified as troublemakers. She trains 25 teachers in the program at her middle school. She compares the total number of discipline referrals before the program was implemented to the total number of referrals after it was implemented. As a follow-up to the study, she decides to include student gender and ethnicity as variables in her re-analysis of the data. Identify the IV and DV in this study. Which variables are quantitative and which are categorical? Write (an) appropriate hypothesi(e)s for this study and identify if it is directional or non-directional. Why would the counselor decide to include gender and ethnicity in her re-analysis?

Literature Review Draft

- [General Requirements](#)

Good Cross-Pollination?

What percentage of teenagers *admit* being addicted to their phones?

50%



True or False. In surveys, college students have reported texting

_____ while showering

_____ while eating

_____ at church, mosque, synagogue,
or other place of worship

_____ during a funeral

_____ to break up with someone

_____ during sex

Good Cross-Pollination Tips

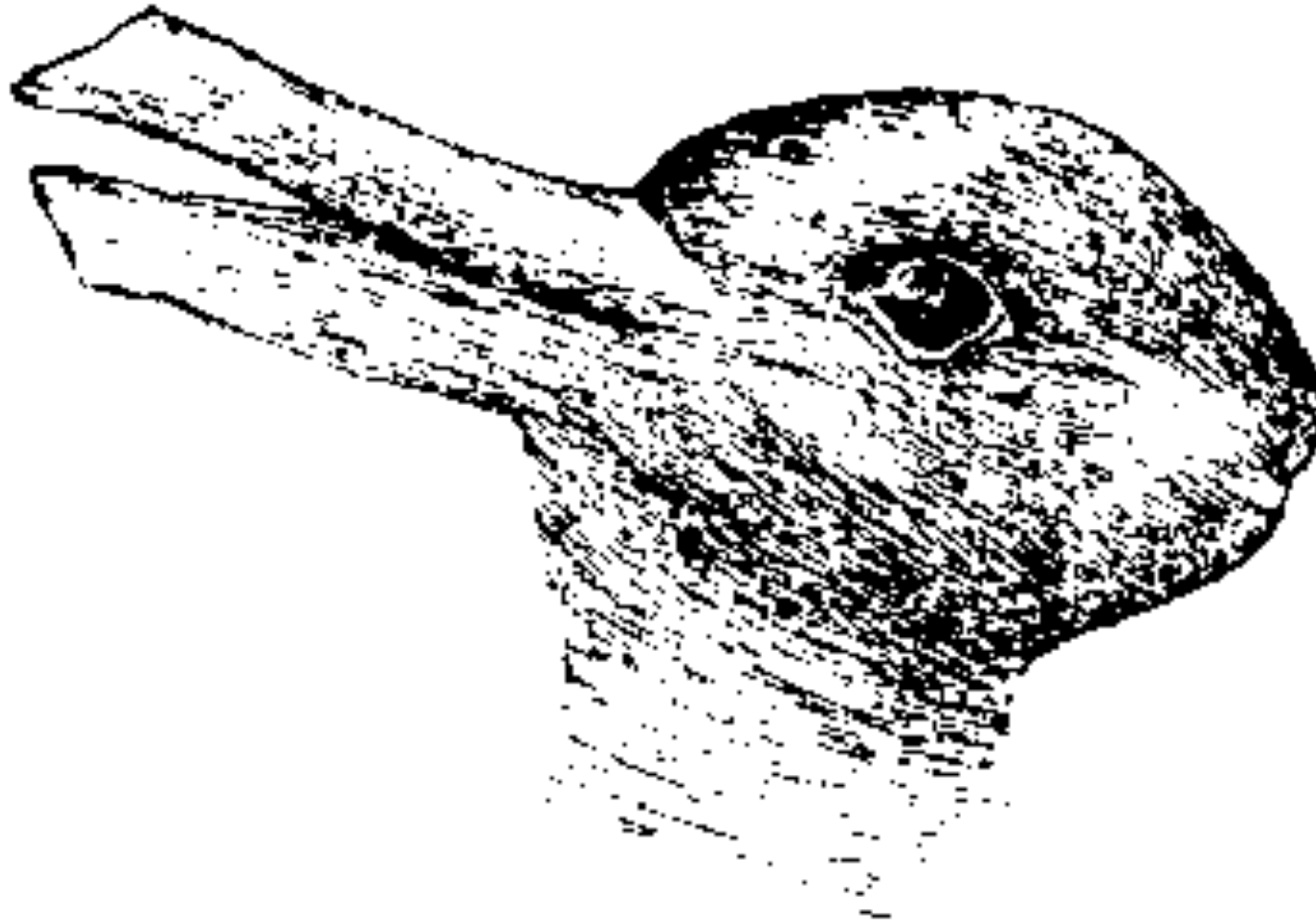
- Plan your day & be on time
- Get healthy
- Use deodorant
- Brush your teeth
- Sit with different people
- Talk with them
- Remember names
- If someone is alone, reach out to them
- Listen & look at people when they're talking
- Don't interrupt
- Don't make noise
- **Put your phone away**
- Participate
- Take responsibility
- Pull your weight
- Share credit
- Respond to emails always & immediately
- Double-check your email responses
- Smile & check your body language
- Don't swear
- Know the "love languages"
- Pick up small pieces of trash
- Think win-win
- Keep an open mind
- Stay positive & assume the best
- Show sincere appreciation
- Default to "yes" & say "no"
- Be honest but tactful
- Be politely critical of other people's work
- Don't quit
- Hang out
- Laugh

Reflections



THE
CREATIVITY
HOW WE CAN RECAPTURE
AMERICAN INNOVATION
CHALLENGE

KH KIM



If you do not know rabbit, you will only see duck.
If you do not know duck, you will only see rabbit
If you knew neither, who knows what you would see!

EVERYTHING COVERED BUT HER EYES, WHAT A CRUEL MALE-DOMINATED CULTURE!



NOTHING COVERED BUT HER EYES, WHAT A CRUEL MALE-DOMINATED CULTURE!



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8