

CHAPTER 1:

RESEARCH DESIGN IN PSYCHOLOGY:

OBJECTIVES:

- Describe in detail the various methods by which human beings acquire knowledge including the scientific method
- Compare the scientific method with other means of acquiring knowledge
- Describe and contrast inductive or probabilistic reasoning, and deductive reasoning
- Discuss reductionism in social science research

DEFINITIONS:

- **Research:** to look again
- **Social:** people/human beings
- **Sciences:** process of systematic inquiry (gain knowledge) which makes sense (**logical**), has a reference (**observed evidence**) and gives an explanation (**theory**).

KNOWLEDGE:

- How does society progress?
 - by constantly generating new knowledge
 - formulating specific questions and finding answers to them
 - Understanding ourselves and our environment
- **Epistemology** = The study of ways of knowing about the world (i.e., the question: ‘what is knowledge?’)
 - Non-scientific methods
 - Scientific methods

NON-SCIENTIFIC METHODS:

1. METHOD OF AUTHORITY:

- relying on the knowledge and “wisdom” of prominent people,
- e.g. religious leaders, politicians, elderly people, kings in feudal societies, technocrats, etc.
- **Critique:** allows individuals to hide the superficiality of their knowledge, its underlying ideologies, and weaknesses in judgment

2. MYSTICAL METHOD:

- Based on texts or supernatural source

3. INTUITIVE METHOD:

- Ordinary reasoning through instinct/intuition

4. CONVENTIONAL WISDOM:

- accepted knowledge of the world

GENERAL CRITIQUE:

- No systematic way of determining which of these statements is accurate
- Mainly based on faith/worldview

IN CONTRAST:

- The **rationalistic** and **empirical** method:
 - Do not attribute special aptitudes to particular persons
 - Differ only in importance given to reasoning and observation

RATIONALISTIC METHOD:

- based on human reason and logic - the basis of knowledge is correct reasoning
- discovers laws through purely intellectual processes
- enables us to know what is true by principle, e.g. pure mathematics
- used to develop theories about the world

EMPIRICAL METHOD:

- the opposite of the rationalistic method
- facts objectively observed in nature are the foundation of knowledge
- knowledge is based on only what is observable / perceived by our senses
- used to test theories about the world

SCIENTIFIC METHOD:

- Synthesis of: (1) rationalistic method (2) empirical methods
- Uses rationalism to develop theories
- Uses empiricism to test theories
- Science – continuous interplay of rational thought and empirical observation
- The scientific method – the process of knowing

A PRIORI VS. A POSTERIORI KNOWLEDGE:

A PRIORI KNOWLEDGE:

- "from the earlier"
 1. *A priori* knowledge is knowledge that we can have "prior to experience".
 2. *A priori* knowledge or justification is independent of experience.

A POSTERIORI KNOWLEDGE:

- "from the latter"
- 1. *A posteriori* knowledge is knowledge that we can have only after we have certain experiences.
- 2. *A posteriori* knowledge or justification is dependent on experience or empirical evidence.

SCIENTIFIC METHOD: the process of knowing

- **Quantitative Research:**

- Step 1: A **description** of the object, relationship or situation (empirical) is required.
- Step 2: An **explanation** or statement of the relationship between the described facts should be expressed (rationalistic)
- Step 3: A **prediction** of future events under well-defined conditions should be permitted by the stated explanation.
- Step 4: Intelligent **intervention**, based on correct explanations leading to the ability to predict events.

- **Qualitative Research:**

- Researcher concentrates on observation and recording of events
- No a priori explanations are given
- No expectations or predictions can be tested
- A posteriori *explanations (at the end)*

SCIENTIFIC METHOD: assumes

1. The existence of natural and social laws
2. Laws can be discovered by human beings
3. Natural phenomena have natural causes
 - scientific understanding is based on **parsimony of ideas:** explanations for phenomena are based on as few assumptions as possible, they are to be as simple as possible
4. New knowledge is accumulated gradually and sequentially
5. Knowledge and truth are founded on evidence
6. Scientific statements must be distinguished from common-sense statements
7. Scientific observation is objective
8. Scientific observation is systematic

NOTE:

- Often some characteristics are unknown
- Can only predict an event when **ALL** conditions and circumstances are known
- In social sciences:
 - rare to possess all information

- Probability statement:
 - if some conditions are satisfied the event will occur more often than if some of these conditions were not met
- Probabilistic explanation:
 - Explanations that concede some uncertainty

CHARACTERISTICS OF SCIENTIFIC RESEARCH:

- **Scientific research is:**
 1. **Empirical** – each step is based on observation
 2. **Systematic and logical** – observation must be done systematically and a logical order followed
 3. **Replicable and transmittable** – any one placed in exactly the same circumstances can observe the same event and by reasoning, arrive at the same explanation and prediction

THE RELATIONSHIP BETWEEN THEORY AND RESEARCH:

- Deduction:
 - Going from the general to the specific
 - Using general principles to suggest specific outcomes
- Induction:
 - Going from the specific to the general
 - Using a number of specific observations to formulate general principles

KEY POINTS OF TEXTBOOK CHAPTER:

1. The rationalistic method of acquiring knowledge is based on the reasoning power of the human mind
2. The empirical method is based on ‘facts’ obtained through the five senses
3. Scientific research is a process that combines the principles of rationalism with the process of empiricism
4. A quantitative research process develops from the description of the object under study, to the explanation of the relationship between the described facts, to the inferred prediction and finally to the identification of intelligent intervention
5. Science is based on the following assumptions: natural and social laws exist and can be discovered on evidence; the advance of knowledge increases gradually and sequentially; and scientific observation is systematic and does not depend on the observer
6. Distinctions have to be made between situations where a prediction can be made with certainty and situations where only a probabilistic explanation is possible
7. The essential properties of scientific research are that it be empirical, systematic, replicable and transmittable

QUESTIONS AT END OF TEXTBOOK CHAPTER:

1. Identify the various ways of knowing and discuss the advantages and disadvantages of each one.
2. What is meant by ‘replication of scientific research’? What is required for replication and why is it important?
3. Explain the difference between probabilistic and deductive explanations. Give examples of each.
4. Analyze, using your own example, the positive and negative aspects of research being reductive.
5. Identify a social science research project that illustrates the four steps of research: description, explanation, prediction, and intervention.
6. Is it possible to observe an event objectively? Discuss the role of the subjectivity of the observer.

CHAPTER 2:

THE SCIENTIFIC METHOD APPLIED TO SOCIAL REALITY:

OBJECTIVES:

- Compare and contrast social- and natural sciences
- Analyze the relationship between fact, theory and observation
- Compare and contrast quantitative, qualitative and mixed-methods research
- Developing theory from fact
- Describe the process of scientific research (quantitative, qualitative and mixed-methods)

NATURAL vs. SOCIAL SCIENCES:

NATURAL SCIENCES:

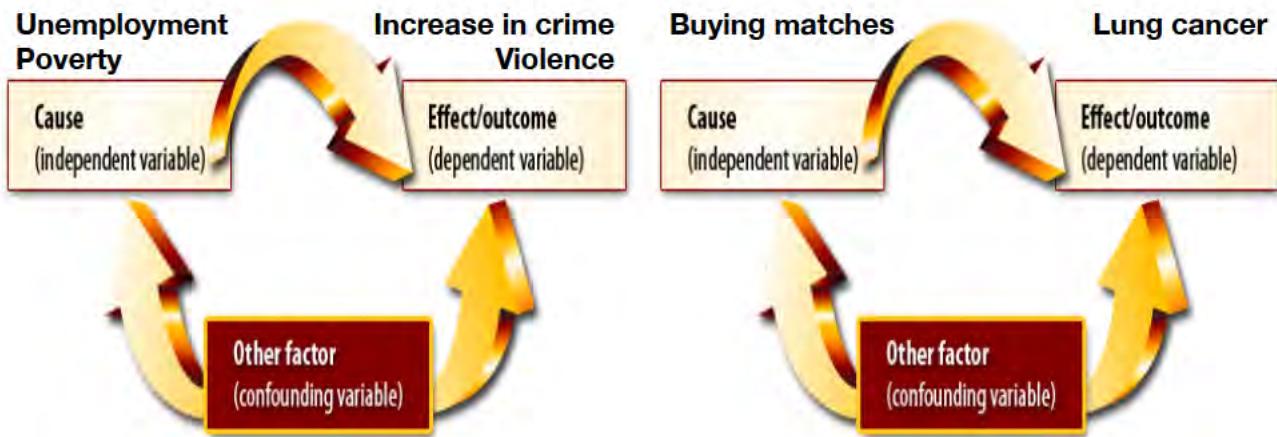
- investigate the properties and laws of natural phenomena
- E.g. astronomy, geometry, mechanics
- Development at time determined by the needs of production, commerce and industry

SOCIAL SCIENCES:

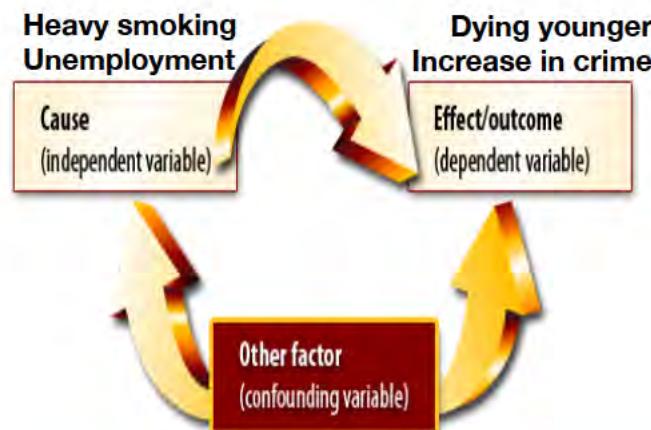
- Investigate the properties and laws of social phenomena
- E.g. psychology, sociology
- Has its roots in the need for general understanding, management and manipulation of social affairs
- Introduces methodological challenges:
 1. Ethical reasons some experiments cannot be done on humans
 2. Some variables cannot be controlled
 3. Most results expressed as probability statements

Some variables cannot be controlled:

- There are so many uncontrolled factors due to the complexity of social reality that exact laws can rarely be found
- A physicist can express the laws of electricity with a formula and predict with certainty when a light bulb will glow
- BUT: A sociologist can only predict that, under certain circumstances, unemployment leads to crime

**NOTE:**

- Often some characteristics are unknown
- Can only predict an event when ALL conditions and circumstances are known
- In social sciences it is rare to possess all information
- Probability statement:
 - if some conditions are satisfied the event will occur more often than if some of these conditions were not met
- Probabilistic explanation:
 - Explanations that concede some uncertainty

**FACTS vs THEORY:**

- **Perceptual knowledge:**
 - Information about the world perceived through our senses
- **Rational knowledge:**
 - Based on judgment and logical thought
 - Provides explanations or reasons for the relationships between observations
- **Fundamental relationship between:**
 1. Facts about the world – verifiable observations
 2. Theory – explanatory framework

FACT:

- indisputable set of statements about reality
- e.g. sun rises in the East and sets in the West
- Facts give rise to theory since they raise the need for explanations of observed phenomena – should be both selective and meaningful
- Facts allow a researcher to find support for, improve, disprove or formulate a theory

THEORY:

- a set of ideas or statements that explain a particular social phenomenon
- e.g. learning theory may be used to explain anti-social and maladaptive behavior at school
- Theory serves as the basis for the gathering of facts since it specifies the facts to be systematically observed

