PYSC 224
Introduction to Experimental Psychology

Session 2 – Sources of acquiring knowledge

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Session Overview

- There are many sources from which we obtain information about a given phenomenon, or situation
- We acquire a great deal of information from the events we experience as we go through life, experts also provide us with much information
- Thus, knowledge about behaviour can be acquired by several methods but only one of these methods is acceptable to psychologist, which is the scientific method

Session Goals and Objectives

At the end of the session, you should be able to

- Outlined the various sources by which knowledge is acquired
- Distinguish the scientific source from the non-scientific sources
- Explain why science is the acceptable method for acquiring knowledge
- Define a theory and hypothesis
- Distinguishing between basic and applied research

Session Outline

The key topics to be covered in the session are as follows:

- Sources of acquiring knowledge
- Theory and hypothesis
- Distinguishing basic and applied research

Reading List

- Kantowitz, B. H., Roediger III, H. L., Elmes, D. G. (2015). *Experimental Psychology*. Stamford: Cengage Learning (p. 6-10)
- Christensen, B.L. (2007). *Experimental Methodology* (10th ed.). Boston: Allyn & Bacon. (p. 5-10)

Topic One

SOURCES OF ACQUIRING KNOWLEDGE

Sources of acquiring knowledge

- As we go through life we acquire a great deal of information through experience
- Charles Sanders Peirce (1877) an American psychologist compared the scientific way of knowing to other methods of knowing
- These are authority, tenacity and a priori methods

1. Authority

- This method of ‘fixing belief’ (Peirce,1877) represents an acceptance of information or facts stated by a highly respected source, or someone in authority
- A trusted authority tells you what is true and what is false
- Example- a child will believe what his/her parent tells him because the child’s parent is an authority to him

1. Authority

- Religious, political and social beliefs are formed by the method of authority
- For example Catholics may believe that the Pope is infallible and therefore will believe everything he says
- However, the source that one consults may not be truly authoritative
- Provided nothing happens to raise doubts about the competence of an authority, this method offers the greatest advantage of minimum effort

2. Tenacity

- Tenacity is the acceptance of a belief (Peirce, 1877) based on the idea that “we have always known it to be this way” (Ray 1997)
- Thus, an individual refuses to change acquired knowledge
- Tenacity is based on
  a) superstition or
  b) habits

2. Tenacity

- Tenacity based on superstition:
- It is the *"acquisition and persistence of superstitions"* because superstitions represent beliefs that people respond to as if they were truths (Christensen, 2007, p.5)
- Example- People holding on to some funeral rites show tenacity at work

2. Tenacity

- Tenacity based on habits:
- Habits lead people to continue believing something they have always believed
- *"This is how it is done because we have always done it this way"* (Christensen, 2007)
- Tenacity is often seen in racial bigots who hold on to a stereotype even when there is good counterexample (Peirce 1877)

3. A priori method

- The word ‘a priori’ means knowledge that comes before experience
- *“Something that is believed without prior study or examination”* (Kantowitz et al., 2015. p.7)
- It is an extension of the method of authority, but here no particular authority is involved
- E.g. people once believed that the world was flat

4. Intuition

- Intuition is an approach to acquiring knowledge that is not based on reasoning or inferring
- We form impressions about strangers within a few seconds of meeting them by intuition (McBurney, 2001)
- Example- when you think someone is not trustworthy the instant you meet them

4. Intuition

- Predictions and descriptions that psychics make are not based on any facts, inferences or known reasoning, but on intuition (Christensen, 2007)
- Such knowledge may be desirable but not scientific

5. Rational method

- This method depends on logical reasoning rather than an authority or the evidence of ones sense
- Knowledge is obtained through reasoning
- Thus, it is assumed that if the correct reasoning process is used, valid knowledge can be acquired
- Also known as rationalism

5. Rational method

- However, rationalism does not necessarily reflect reality and often does not provide accurate information
- Reasoning is a vital element in the scientific process
- However, reasoning is used to arrive at hypotheses which are tested for validity using scientific method

6. Commonsense

- Based on our own experiences and perceptions of the world
- We develop explanations of the events that occur around us mostly based on
  - ❑ limited information available from observed events and
  - ❑ from what our previous experience told us is true

6. Commonsense

- Science also offers explanations to occurrences, but it is subjected to rigorous scrutiny
- Commonsense makes us believe that
  - ❑"birds of the same feather flock together", "absence makes the heart grow fonder" etc.
- Research has shown that the real world is more complicated than our commonsense ideas would have it to be

7. Empiricism

- This is the acquisition of knowledge through experience
- This approach says *"if I have experienced something, then it is valid and true"*
- Frequently we hear people saying *"I won't believe it until I see it"*

7. Empiricism

- Such statements illustrate the empirical approach and indicate that we tend to believe the information acquired through our senses
- Empiricism is a vital element in science,
- However, in science it refers to the collection of data through the use of the scientific method

8. Science

- The best method of acquiring knowledge is the scientific method because information yielded is based as much as possible on reality
- This approach differs from the others in terms of its characteristics of
  - ❑control,
  - ❑operational definition and
  - ❑replication

8. Science

- Investigators attempt to acquire information void of personal beliefs, perceptions, biases, values, attitudes and emotions
- Empirically testing ideas and beliefs according to a specific testing procedure that is opened to public scrutiny
- Knowledge attained is dependable as it is ultimately based on objectively observed evidence

Topic Two

THEORY AND HYPOTHESIS

Theory

- A theory is *"a set of related statements that explain a variety of occurrences"* (Kantowitz, et al., 2015 p. 8-10)
- Or a set of assumptions about a behaviour or phenomenon
- It is a way of binding together a multiple of facts such that one will understand these facts together at once

Theory

- Thus, a theory plays two important roles (Kantowitz et al., 2015)
  - ❑First, it organises data into a systematic framework
  - ❑Second, it allows researchers to make predictions to investigate new phenomena (Kantowitz et al., 2015)

Theory

- Examples of theories in psychology- Piaget's cognitive theory, Freud's psychosexual theory, Bandura's observational learning etc.
- Note- theories are not created just to summarise and integrate existing data
- A good theory must suggests new hypotheses that are capable of being tested empirically

Hypothesis

- A prediction or tentative solution to a problem
- It is derived from a problem and it must be stated so that it is capable of being either refuted or confirmed
- A hypothesis is tested by obtaining and analysing empirical data

Hypothesis

- Example- investigating the effects of alcohol on recall of words learned
- Our hypothesis will represent predictions of the relationship between alcohol and recall
- Tested by recording the rate of recall of individuals who are administered alcohol and those who are not, and the data is analysed

Hypothesis

- There are two forms of hypothesis –
  - ❑Scientific hypothesis (alternate/ working/ researcher's hypotheses
  - ❑Null hypothesis

Hypothesis

- Scientific hypothesis represents the predicted relationship among variables being investigated
- Null hypothesis represents a statement of no relationship among variables being investigated

Topic Three

DISTINGUISHING BASIC AND APPLIED RESEARCH

Basic and Applied research

- Research in psychology are carefully planned by
  - ❑clearly defining the phenomenon to be investigated and
  - ❑variables to be manipulated, controlled and measured

Basic and Applied research

- The aims of researches may vary depending on the phenomena under study (Bordens & Abbot, 2002)
- Some psychologist aim to discover general laws that explain behaviours (e.g. human development)
- Others aim at investigating practical problems (e.g. developing therapy to treat eating disorder)

Basic and Applied research

1. Basic research

- In psychology, basic research is conducted to confirm or disconfirm theoretical positions
- Psychologists conduct basic research in order to obtain information about a phenomenon or behaviour

Basic and Applied research

- Very little emphasis on the application of the phenomenon to the real world
- E.g.- gaining understanding into human growth and development
- The aim of basic research is to build basic knowledge about a phenomenon (Bordens & Abbot, 2002)
- Example- Researching effective ways of learning

Basic and Applied research

2. Applied research

- Psychologists investigate a phenomena or behaviour in the real world and apply findings to real world problems
- It is problem focused because it seeks to answer questions in the real world
- Example- motivation and productivity at workplace, dietary self-care in diabetes etc.

Basic and Applied research

- The difference between basic and applied research is what they will be used for
- Whether to:
  - ❑help us understand a real world problem and solve it or
  - ❑further our knowledge and information
- Sometimes there is an overlap of basic and applied research
- Example- The REBT theory and its application in clinical practice

END OF SESSION 2

References

- Bordens K. S. Abbot B. B. (2002). *Research Design and Method: A Process Approach* (5th ed.) Boston: McGraw Hill
- Christensen, B.L. (2007). *Experimental Methodology* (10th ed.). Boston: Allyn & Bacon.
- Peirce, C,. S. (1877). The Fixation of Belief. *Popular Science Monthly 12*, 1-15
- Kantowitz, B. H., Roediger III, H. L., Elmes, D. G. (2015). *Experimental Psychology*. Stamford: Cengage Learning