

## LECTURE 1 (TOPICS 1-2)

### Topic 1: SCIENTIFIC STUDY IN PSYCHOLOGY

#### Psychology

- The basis of Psychology is (simplistically) to determine **reasons** behind human behaviour
- psychology has observed the methods used by more traditional sciences (e.g., physics) to understand the world
- Early psychologists appreciated these methods, and attempted to copy them Hence the ‘science of psychology’
- “Science” involves establishing relationships between an event and a set of preceding circumstances

#### Four important aspects of the experimental method

- Objectivity
- Confirmation of findings eg replications
- Self-correction eg ability to alter conclusions
- Control

#### The experimental/scientific method

- Understanding cause and effect
- When we suspect a relationship between events, we often examine it in more detail by manipulating the preceding circumstances, and observing the change in the final event
- **Distinguishing feature:** Systematically examining all preceding circumstances influencing a variable
- It is simply a method of understanding reality which everyone indulges in, to some extent, throughout life
- Often there are too many possible preceding circumstances, so in the scientific method we take one or a few and concentrate on them

#### Conducting an experiment

- Control one variable/circumstance (IV) and watch how it effects an outcome (DV)
- This relationship (if it is shown) is often considered CAUSAL – one thing causes the other
- cause and effect relationship
- quantitative data is most used in psych because it is more conclusive and easier to analyse – but you lose value
- the basis of an experiment is that we are only testing the relationships between the IV and the DV. All other circumstances are controlled
- **controlled:** hold all other possible IV’s constant

#### Variables

- A variable is a quality which can take on many different values
  - temperature (direct)
  - weight (direct)
  - grade (indirect)
  - health
  - occupation
  - background

- **Direct measure** = true physical examples
- **Extraneous variables:** variables that get in the way and affect results
- **Independent variables**
  - These are the presumed “circumstances” manipulated to observe the effect on behaviour
  - They are “independent” of the behaviour (exists independent of)
- **Dependent variables**
  - The behaviours of the participant
  - It is “dependent” on the state of the independent variable

### **hypothesis**

- A hypothesis is a statement of the relationship between the dependent and independent variable
- Specifically a statement of the predicted cause of the IV on the DV

### **What makes psychology a difficult science to practice?**

1. the many possible circumstances concurrent to, or preceding a behaviour
2. The differences inherent in an individual (preceding circumstances)
  - A form of ‘preceding circumstance’ which mean no two people act in the same way

### **Sampling error**

- **Sampling error:** You can’t simply just measure one person – you wouldn’t be able to trust the findings
- We must test many people to avoid sampling error
- More will be understood about the preceding circumstances on behaviour in humans as a whole, and not just in a unique individual

## **Topic 2: Research hypotheses**

### **The prototypical experiment must be of a form that is**

- **Repeatable**
  - ESP is not easily repeatable
- **Observable**
  - Measuring whether animals have self awareness is not
- **Testable**
  - Moral questions are not testable

### **Forming the research hypothesis**

- Consequently, formulating the research hypothesis verbally is important to take this into account
- **Vicarious observation:** hypotheses usually thought of after reading other research

### **Statements can be**

- **Synthetic (true/false).**
  - Expressed in **general implication form:** If x then y.
  - A statement that can be falsified or supported
  - IDEAL
- **Analytic**
  - always true
  - e.g. I am or am not going to attend this lecture
  - NOT GOOD

- **Contradictory**
  - always false
  - e.g. I am and am not going to attend this lecture
  - NOT GOOD

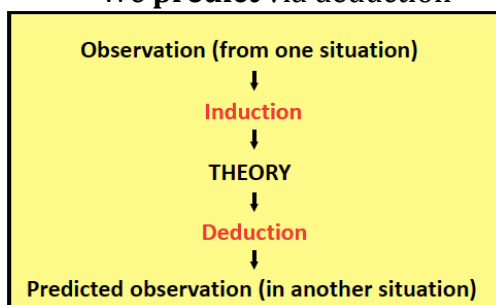
### Induction vs deduction

#### Induction

- The taking of particular examples and creating a general, theoretical statement is induction
- The conclusion contains more information that has been determined from observation
- Going from a particular finding and generalizing to others
- **PIG**: Particular > General
- We **observe** and **theorize** via induction

#### Deduction

- To test a hypothesis=deduction
- **GIP**: General > Particular
- If the theory is valid, specific conclusions can be made in different circumstances
- We **predict** via deduction



### Add headings from lecture

#### Theory

- The underlying belief behind a hypothesis
- The more experiments performed in different circumstances using different designs, the more evidence there is for the theory
- A theory is never proven it is either accepted or rejected
- If the experiment does not support the hypothesis/prediction, then the theory must be rejected
- If one particular case of a relationship is not shown, then there can be no general rule for that relationship
  - Ie no relationship is found between glucose consumption and memory thus no relationship can exist
- However, an adverse finding from a single experiment is seldom considered to have disproved a theory
- Some psychologists like to run experiments just to see what happens which is useful when a **theory is in its infancy**
  - Also counteracts theory bogged research

#### Types of theories

- **Descriptive theories**
  - Name/describes events