Lecture 1: Introduction

The Scientific Method

Hypothetico-deductive spiral: observation > theory > testable hypothesis > theory modification

Falsificationism: theories can never be empirically confirmed, just falsified.

Empiricism: evidence collected on observations – respect for evidence and replication. Reliability and bias.

Internal Validity: the causal validity of the IV-DV relationship.

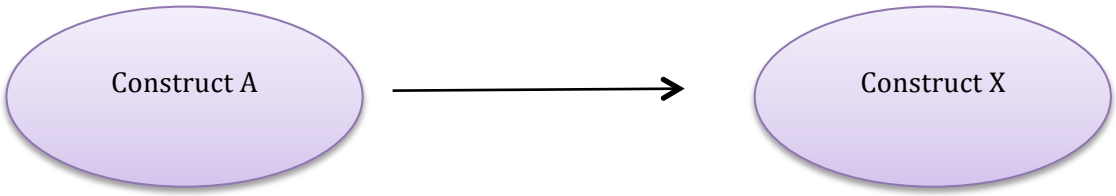
Variables & Designs

Most psychological research can be reduced to TWO main elements:

1. Some aspect of behaviour or cognition [**dependent construct**]
2. One+ factors the researcher suspects to have a causal influence on the behaviour/cognition **[independent construct]**.

In the simplest case, the researcher hypothesises that there is a unidirectional relationship between two constructs.

Theory



E.g. HEAD INJURY → WORKING MEMORY; TRAINING → COGNITIVE PERFORMANCE

OPERATIONS

Operations are the procedures used to make variables. This can involve either:

1. Manipulation

   OR

2. Measurement

Operations need to be FEASIBLE, PRECISE, RELIABLE and ETHICAL.

Need to make sure they don't introduce alternative explanation.

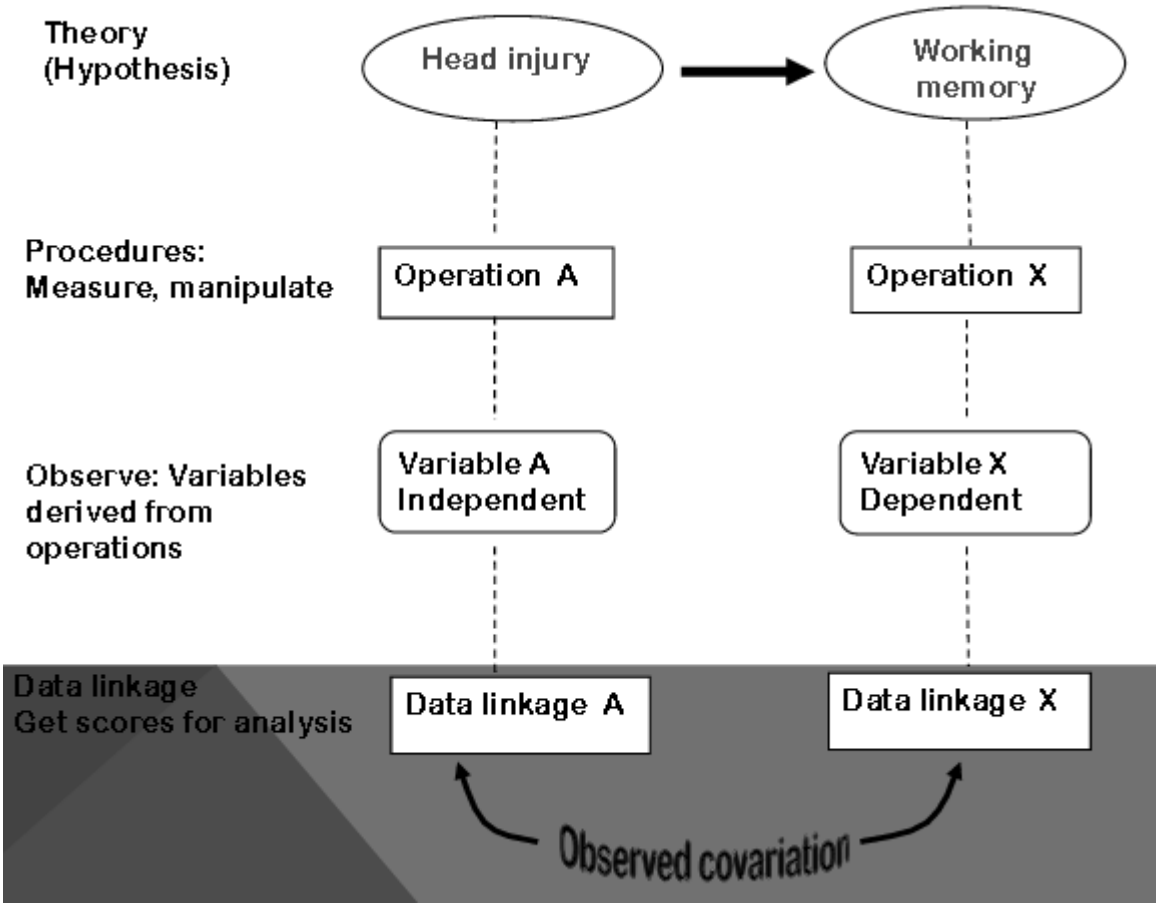
Sometimes operations only tap a construct indirectly – e.g. eye gaze as cue expectancy.

VARIABLES

The implementation of constructs within a study. They are used to assess the hypothesised relationship between INDEPENDENT and DEPENDENT constructs.

Variables must vary – e.g. two values, quantitatively or qualitatively.

- Manipulated variables are ALWAYS independent.


Theory
(Hypothesis)
Head injury
Working
memory
Procedures:
Measure, manipulate
Operation A
Operation X
Observe: Variables
derived from
operations
Variable A
Independent
Variable X
Dependent
Data linkage
Get scores for analysis
Data linkage A
Data linkage X
Observed covariation