WEEK 1

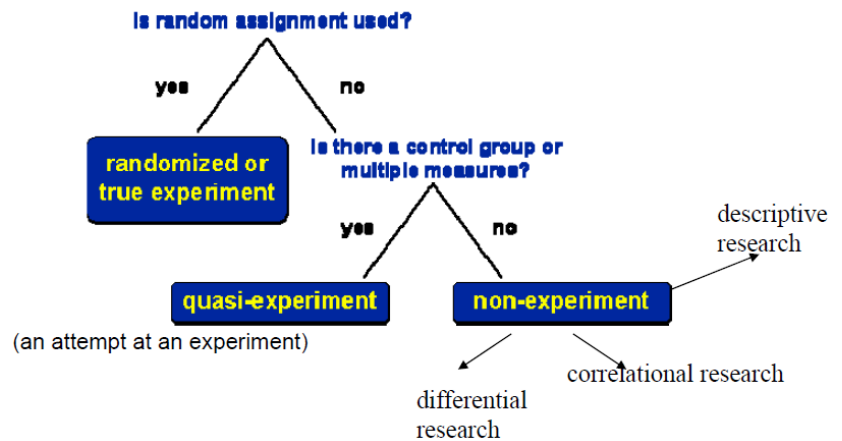**Research Designs**

Types of Research

- Experimental
  - Manipulates IV
  - Random assignment
  - Between vs. within
  - High internal
- Quasi-experimental
  - Can't randomise i.e. M vs. F
  - Example: school based interventions
- Non-experimental
  - Pre-existing groups
  - Doesn't manipulate variables
  - High external, low internal
- Correlational
  - Looks at relationships
  - High external, low internal
- Descriptive
  - Observational, case studies
- Qualitative

Is random assignment used?

yes — no

randomized or true experiment

Is there a control group or multiple measures?

yes — no

quasi-experiment
(an attempt at an experiment)

non-experiment

descriptive research

correlational research

differential research

Third Variable Problem

Depression can cause both of these and can be their connection

| Body Dissatisfaction | → r =.50 | Binge Eating |
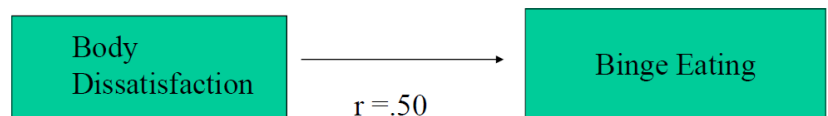
Directionality Problem

Which causes which?

| Body Dissatisfaction | ⇄ r = .60 | Depression |

Internal Validity – Are the findings valid?

- Threats:
  - Third variables - confounding variables
  - Extraneous variables (environmental, participant, time related)
  - History (events that happen during study)
  - Maturation (participant changes i.e. height, weight)
  - Instrumentation (technical issues, i.e. changing testing materials part way through)
  - Testing effects (practice, fatigue)
  - Regression towards the mean (first test generates extreme scores, subsequent testing has less extreme – closer to the mean)
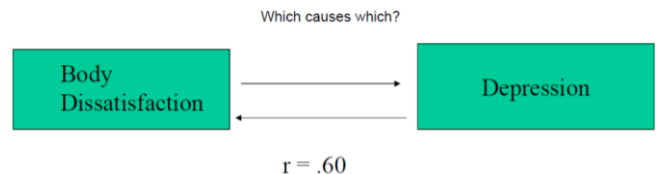
External Validity – Generalisation

- Threats:
  - Volunteer bias (only those interested in the subject volunteer)
  - Representation of the population
  - Using different measures (i.e. repeated measures)
  - Novelty effect (acting differently in a new situation)

- o Reactivity (acting differently when being observed)
- o Multiple treatment interference (effects of previous treatments)
- o Experimenter characteristics
- o Timing of measurements

Subject Designs

- Between – Independent
- Within – Repeated-measures
- Time related effects:
    - o Long term: history, maturation
    - o Short term: order effects
        - Carryover – long lasting effects, resolved by using between subjects
        - Progressive error – fatigue, practice, resolved with counterbalancing

Counterbalancing

- Administering treatments in different orders
- Complete counterbalancing and partial counterbalancing (enough groups that each condition is occurs in each ordinal position)
- Example: to find all the possible combinations of a counterbalance within subject design with 1 to 5 conditions
    - o 5 conditions = 5 x 4 x 3 x 2 x 1 = 120
    - o To find the number of participants, that's multiplied by the number of participants per group (i.e. 10)
    - o 120 x 10 = 1200 total participants
- Possible orders:
    - o 2 groups – 2 orders
    - o 3 groups – 6 orders
    - o 4 groups – 24 orders
    - o 5 groups – 120 orders
- Latin Square:
    - o Each condition is in each order but always proceeds the same condition
    - o i.e. 1234, 2341, 3412,4123

Types of Non-Experimental and Quasi-Experiments

- Non-equivalent group designs (two+ "intact" groups)
    - o Differential research: like correlation research but pre-existing groups i.e. M vs. F
    - o Posttest-only: treatment group measured after intervention and control group measured at same time with no intervention (no baseline assessment)
    - o Pretest-posttest: treatment group measured before and after intervention, control group measured at the same times with no intervention (has baseline, can be influenced by differential effects)
- Pre-post designs (same group repeatedly)
    - o Like repeated measures, observed before and after treatment, main threat to validity is time

- One-group: observed before and after treatment, doesn't account for threats to validity
- Time-series: multiple observations before and after treatment, accounts for some other factors (practice, fatigue, maturation), shows how long treatment lasts
- Interrupted time-series: like time series but no treatment – instead an event that hasn't been manipulated by the researcher
- Equivalent time-samples: treatment is repeatedly administered and removed (effect can't be permanent), rules out coincidental events
- Multiple time-series: time series with additional comparison group with no intervention

Developmental Research Designs: Change in behaviour according to age

- Cross-sectional – comparing different cohorts at same time
- Longitudinal – same group over time
- Cross-sectional longitudinal – change over time in cohorts, i.e. prep 2012 and prep 2016
- Longitudinal-sequential – multiple samples, longitudinal and cross-sectional