the Definitive Difference

between experiments and correlational studies

- Experiment (strict)
  *must have at least one **manipulated** variable (IV)*
- Correlational Study
  *all of the variables are **measured***
  - one is treated as the "predicted" variable
  - the others are treated as the "predictor" variables
- the difference is important for two reasons
  - different methods of analysis
  - different issues for interpretation

the Middle Ground

between Experiments and Correlational Studies

- Quasi-Experiment (aka "differential design") – *a correlational study with one labile "data" variable and (at least) one very stable "subject" variable that is treated as if it had been manipulated*

  - technically, it's a correlation study

  - but it's analyzed like a strict experiment…

    …because most of the difficulties with interpreting a correlation are unlikely

Sampling for Quasi-Expts

- Two ways to run a quasi-experiment:

  1) take one sample and split the data into groups *after the fact* in terms of the subject variable

  - label: *ex-post-facto quasi-experiment*

  2) take separate (and usually equal-sized) samples, one for level of the subject variable

  - label: *planned quasi-experiment*

Analyzing the results from Quasi-Expts

- these are correlational studies (by strict definition) because no variable is being manipulated

  so, the relationship should probably be analyzed and expressed as a point-biserial correlation

  but it's more typical to use a ***t***-test and discuss the mean difference between the two groups

  why?

  1. it doesn't make a difference, statistically
  2. people can think about mean diffs more easily

Interpreting the results from Quasi-Expts

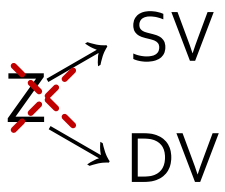
- back to correlations, but this time a quasi-expt with X = a subject var (SV) and Y = data var (DV)

  example: SV = first-born (yes/no), DV = current anxiety

  do quasi-experiments have these problems?

- 1. reversed causation isn't plausible: i.e., DV $\not\rightarrow$ SV because
  - (a) current vars can't cause previous vars
  - (b) if a var has a labile cause, it can't be stable
  - (c) most subject vars are random & permanent

Interpreting the results from Quasi-Expts

- 2. spurious isn't really an alternative: i.e., 

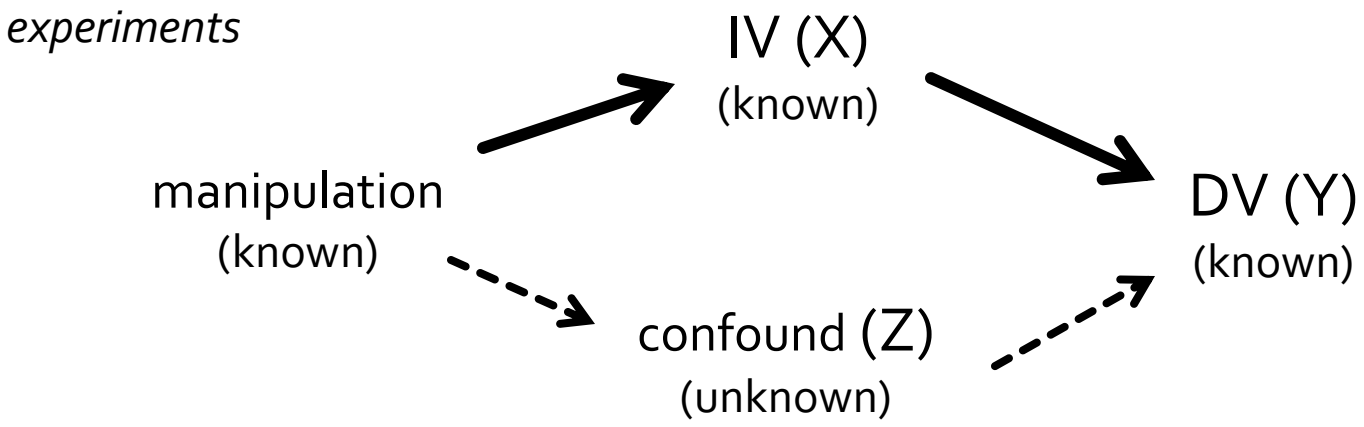
  because

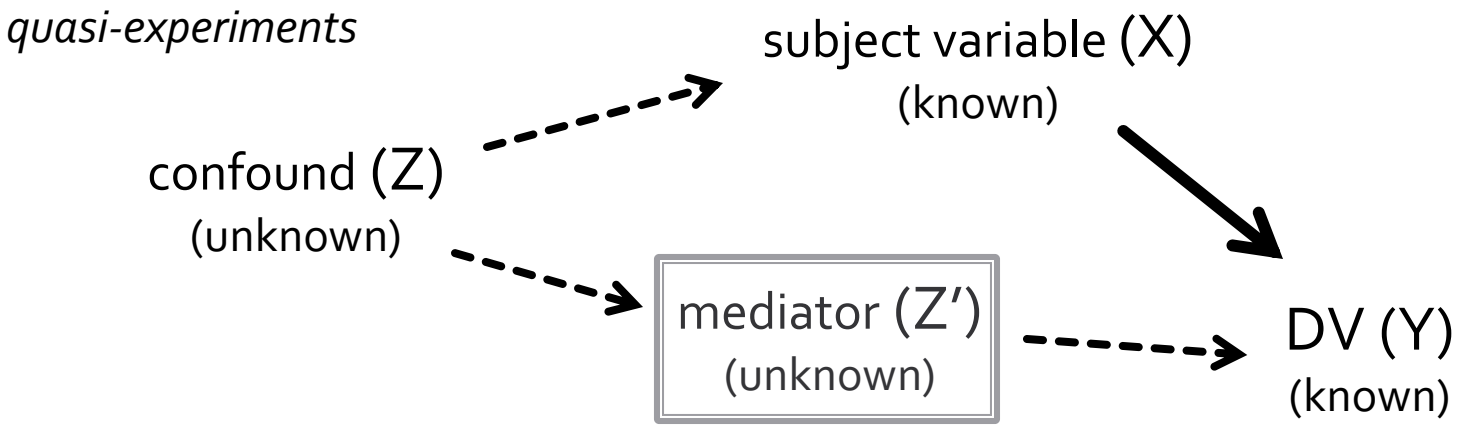
  (a) most confounds of SVs are aspects of the SV

  (b) most causes of SVs are not theoretically different from the SV, itself

(but there are exceptions to watch out for)

Interpreting the results from Quasi-Expts





Interpreting the results from Quasi-Expts

- things to check before treating a correlational study as a quasi-experiment:
  1. is the SV much more stable than the DV?
  2. are all of the non-random causes of the SV (effectively) the same as the SV, itself?
- more examples of (OK and not-OK) quasi-experiments

  right vs left handed → simple response time

  first-born status → anxiety

  first-born status → relationship quality w/parents

  high vs low anxiety → need-for-control

  male vs female → need-for-control