

Factorial Designs

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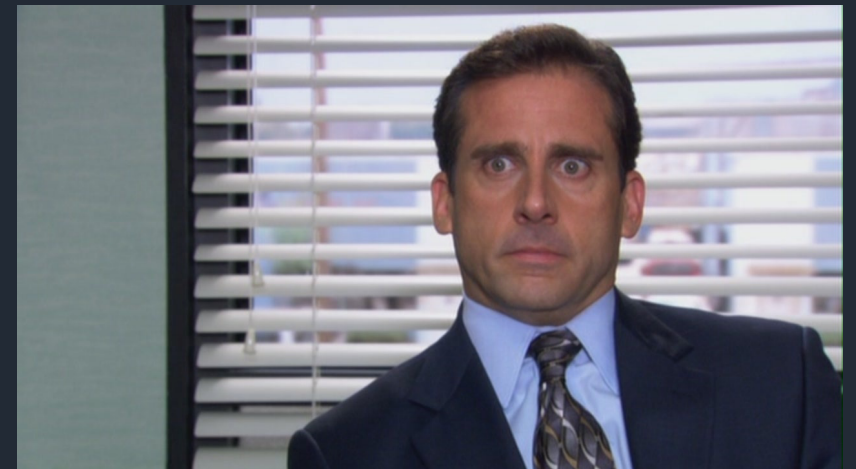
PSY 3500

Experiments

Manipulating a factor (some attribute of a participant) to discover a causal relationship

How do we know our manipulation of the independent variable worked?

If we were studying how fear affects individuals ratings of various things, how could we do a manipulation check here?



Multiple Dependent Variables

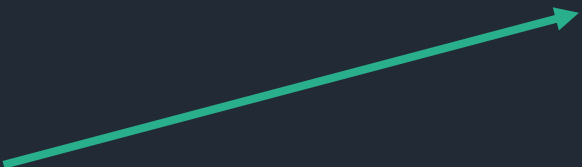
Sometimes there's one IV and many DVs

Carryover Effects

There can be an affect of measuring dependent variables

Same Construct

Several DVs can measure different aspects of the same construct



Can combine multiple measures from the same construct into one (latent variable)

Cool statistical techniques can help with this

Factorial Designs

2 or more independent variables are tested simultaneously on one or more DVs

2 x 2 Factorial Design

Treatment and Low Dose	Treatment and High Dose
Control and Low Dose	Control and High Dose

2 x 3 Factorial Design

Treatment 1 and Morning	Treatment 1 and Evening
Treatment 2 and Morning	Treatment 2 and Evening
Control and Morning	Control and Evening

Factorial Designs

2 or more independent variables are tested simultaneously on one or more DVs

The independent variable can be quasi-experimental (i.e., not manipulated)

We are interested in **interactions** and **main effects**

When the effect of one IV depends on the level of another IV

The effect of one IV does not depend on the level of another IV

Interactions

When the effect of one IV depends on the level of another IV

The effect of X_1 depends on whether the person has a 0 or a 1 in X_2

In this case, X_1 has no effect when X_2 is zero but has a big effect when X_2 is one



Main Effects

The effect of one IV does not depend on the level of another IV

These are the effect of the variable regardless of other variables

- Essentially the opposite of the interaction effects

There can be both an interaction effect and a main effect within the same factorial design

Which is which?

Which is:

- Effect of X_1 ?
- Effect of X_2 ?
- Both have an effect?
- Interaction effect?

