

Type I vs. II vs. III Sums of Squares

- Type I Sum of Squares is calculated sequentially - e.g., first for Factor A main effect, then for Factor B main effect, then for the interaction. The order in which they are calculated matters and can be misleading for unbalanced design or cases where predictors are correlated. Total SS is the sum of the individual effect SS.
- Type II Sum of Squares assumes no interaction(s) when testing main effects or higher order interaction(s) when testing lower order interaction(s).
- Type III Sum of Squares tests for effects adjusted for the presence of the other effects (so does not depend on the order of terms).
- Much debate about which one is 'correct' - each has their own purpose - for factorial designs where you're interested in testing an interaction (or when your predictors correlate), Type III is most commonly used.

AN(C)OVA as a special case of regression...

- Let's return to the example we looked at for ANCOVA - and let's forget the co-variate for a moment...
- We looked at how double espresso vs. single espresso vs. water drinking (our IV) might influence people's gaming ability (our DV).