The General Linear Model: "The Parent of Many Children"

(Note: DV=dependent variable; IV=independent, control, or covariate variable; quant=quantitative variable cat=categorical variable; RM=repeated measures variable)

Bivariate Form of the GLM: $Y = \beta_0 \pm \beta_1 X_1 \pm \varepsilon$

In the bivariate form of the GLM, you have one DV and one IV.

DV	IV(s)	Child
Quantitative	1 Categorical	One-way analysis of variance (ANOVA) or a t-test if there are only two categories
Quantitative	1 Quantitative	Simple regression or Pearson's correlation coefficient

Simple Multivariate Form of the GLM: $Y = \beta_0 \pm \beta_1 X_1 \pm \beta_2 X_2 \; ... \pm \beta_k X_k \pm \varepsilon$

In the simple multivariate form of the GLM you have one DV and two or more IVs.

DV	IV(s)	Child
Quantitative	2 categorical	Two-way ANOVA
Quantitative	3 categorical	Three-way ANOVA
Quantitative	1 RM	One-way repeated measures ANOVA
Quantitative	2 RM	Two-way repeated measures ANOVA
Quantitative	3 RM	Three-way repeated measures ANOVA
Quantitative	1 RM and 1 regular between groups	Two factor mixed model ANOVA (If you have more IVs then just title it three factor or four factor and so on). One notation used is to put the RM variable in parentheses such as in this three factor design AxBx(C) where variable C is the RM variable
Quantitative	2 or more quantitative	Multiple regression
Quantitative	1 or more categorical and 1 or more quantitative	Analysis of Covariance (in traditional ANCOVA the researcher is interested in the main effect of the categorical IV; the quantitative IVs are called covariates and are used to increase statistical power or as control variables)

<u>**Full Multivariate Form of the GLM:**</u>   **Don't worry about symbolizing this one in general equation form. The key is that in the full multivariate form of the GLM you have 2 or more DVs. You will have more than two equations if you have three or more DVs.**

2 or more quantitative	1 Categorical	Multivariate analysis of variance (MANOVA)
2 or more quantitative	2 categorical	"Two-way MANOVA"
2 or more quantitative	1 or more categorical and 1 or more quantitative	Multiple analysis of covariance (MANCOVA)