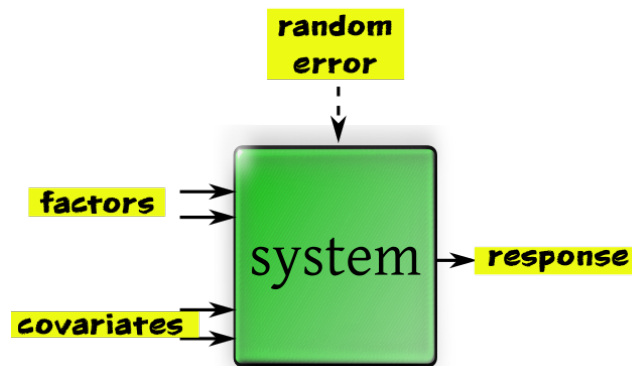# Statistical Assumptions

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"From error to error, one discovers the entire truth"

-Sigmund Freud

1 Introduction

We have seen that a linear model can be depicted by a black box diagram as follows :

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This linear model is incomplete without specifying assumptions about the random error, which helps in comparing the predicted and actual response values. For ex - $\epsilon \sim N(0, \sigma^2)$

But, we want to come up with something natural and obvious to begin with. For ex in OLS method we assume that $\sum_{i=1}^{n} \epsilon_i{}^2$ is minimum among all other linear models (i.e for different values of coefficients).
That seems more intuitive as we try to minimize the error part with our model.