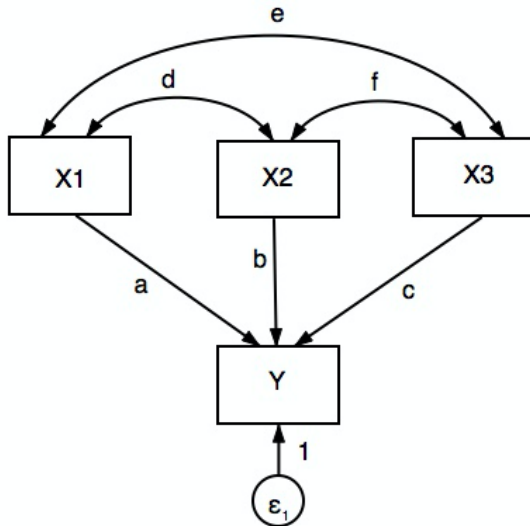


# Path Analysis

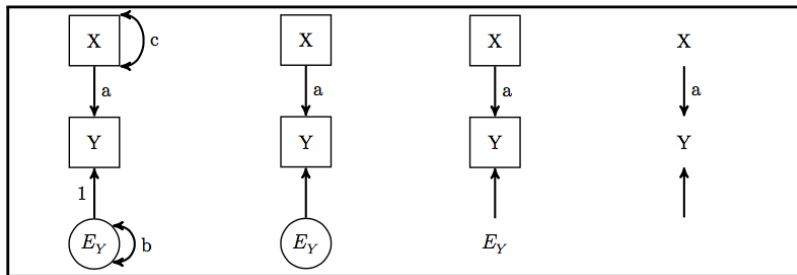
Todd K. Hartman  
Lecturer in Quantitative Methods  
Sheffield Methods Institute

14 February 2017

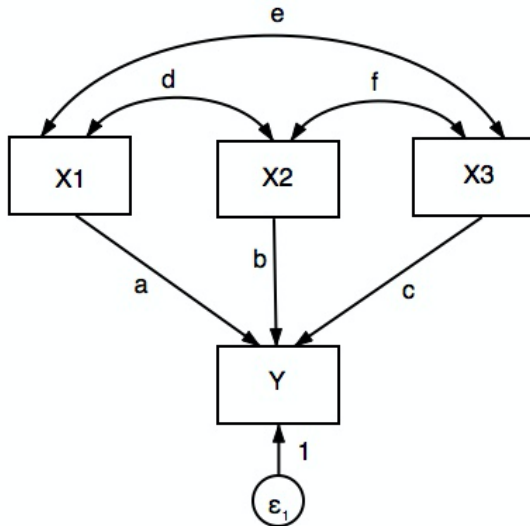
# Path Model



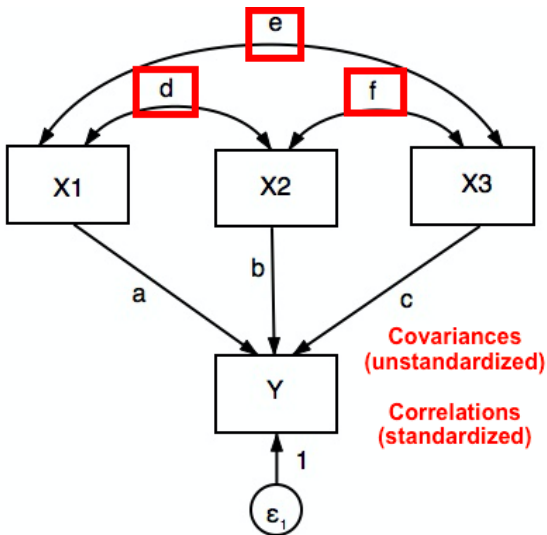
# Path Model Variations



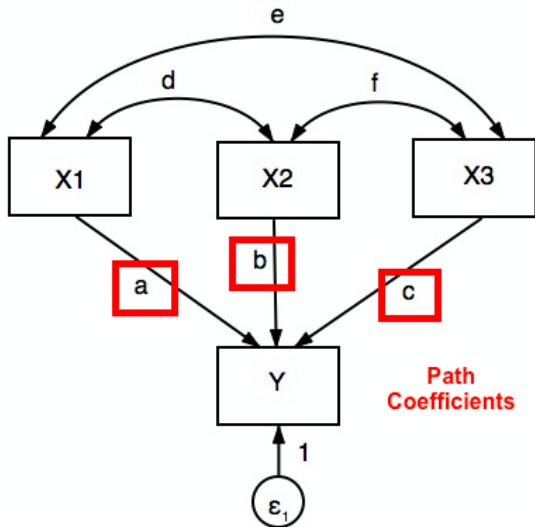
# Path Model: Example



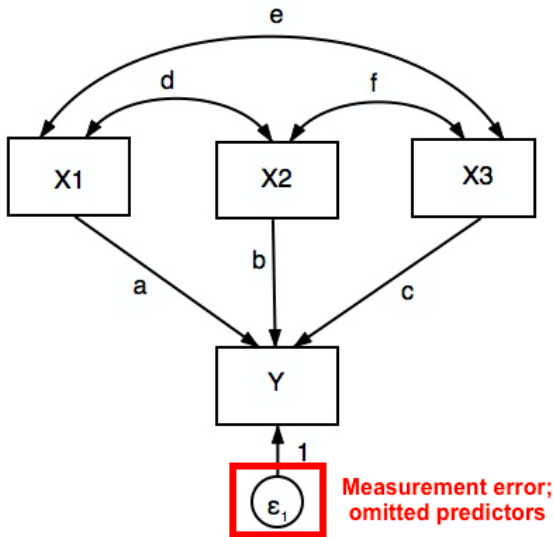
# Path Model: Covariances / Correlations



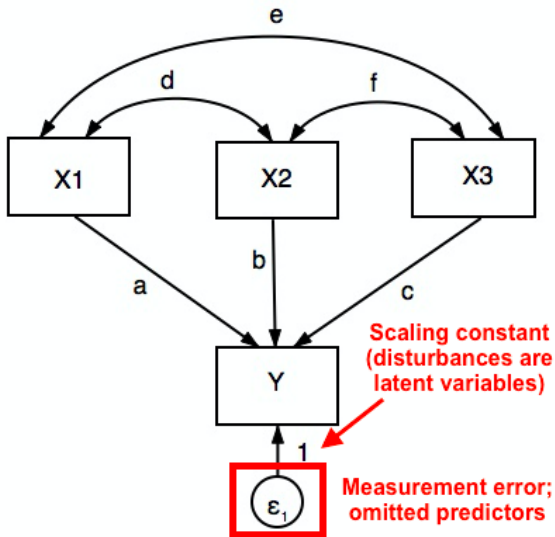
# Path Model: Partial Regression Coefficients



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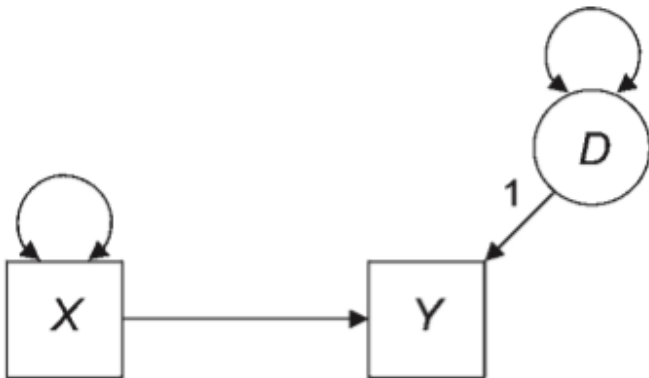
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## Regression Estimate

$$\beta = \beta^* \frac{\sigma_Y}{\sigma_X}$$

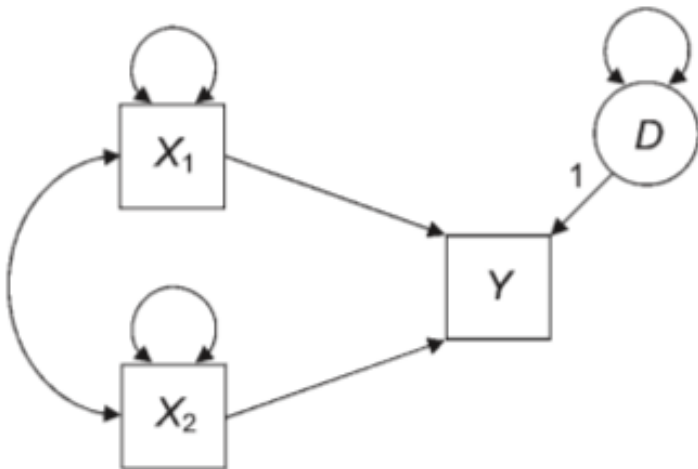
$$\beta^* = \beta \frac{\sigma_X}{\sigma_Y}$$

# Path Model: Single Cause

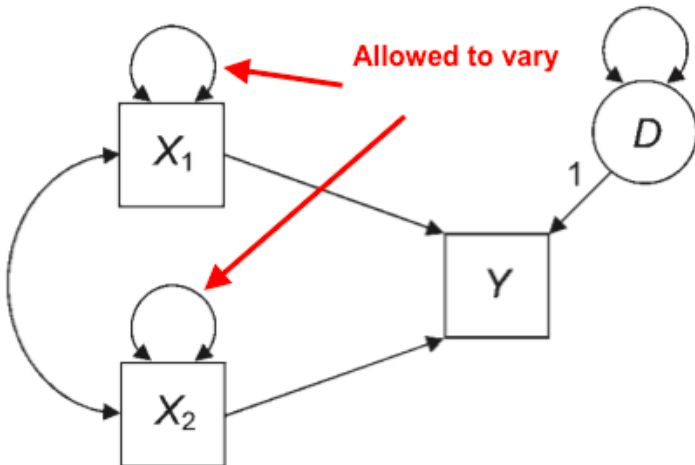




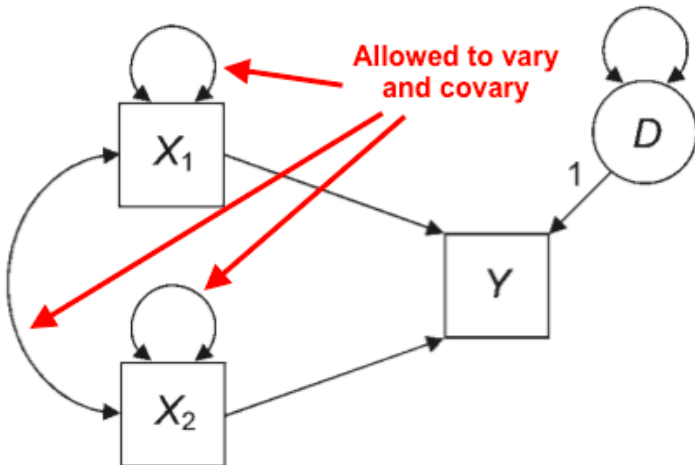
# Path Model: Correlated Causes



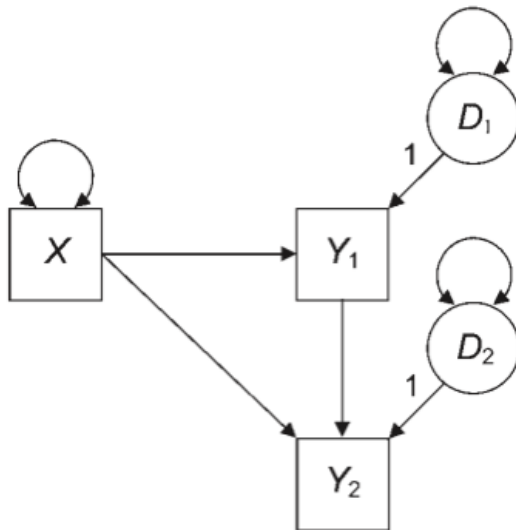
# Path Model: Correlated Causes



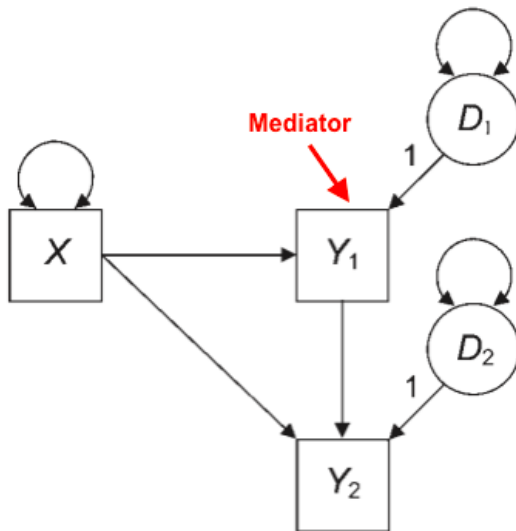
# Path Model: Correlated Causes



# Path Model: Indirect Effects



# Path Model: Indirect Effects



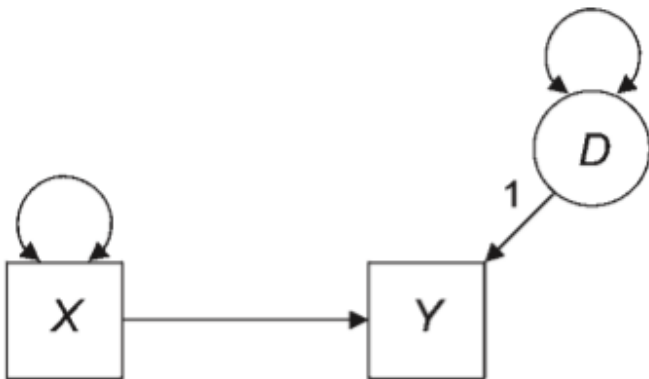
# Types of Structural Models

- ① Recursive models
  - Uncorrelated disturbances
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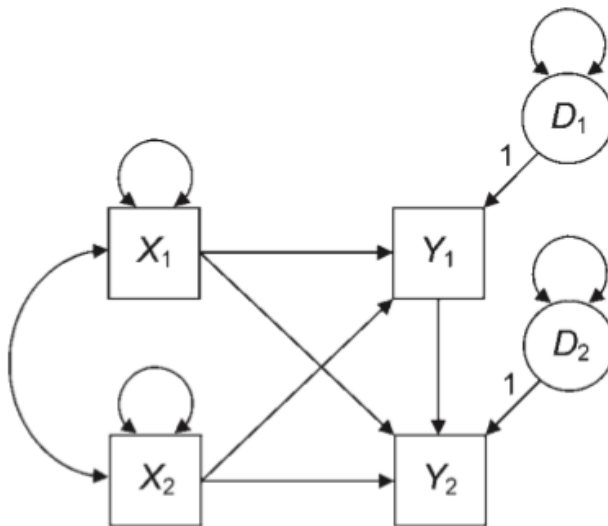
- ① Recursive models
  - Uncorrelated disturbances
  - Unidirectional causal effects
- ② Nonrecursive models
  - Correlated disturbances
  - Feedback loops

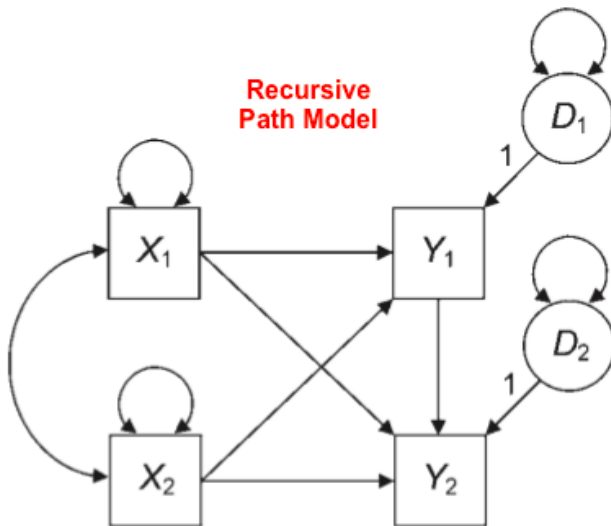
# Recursive or Nonrecursive?



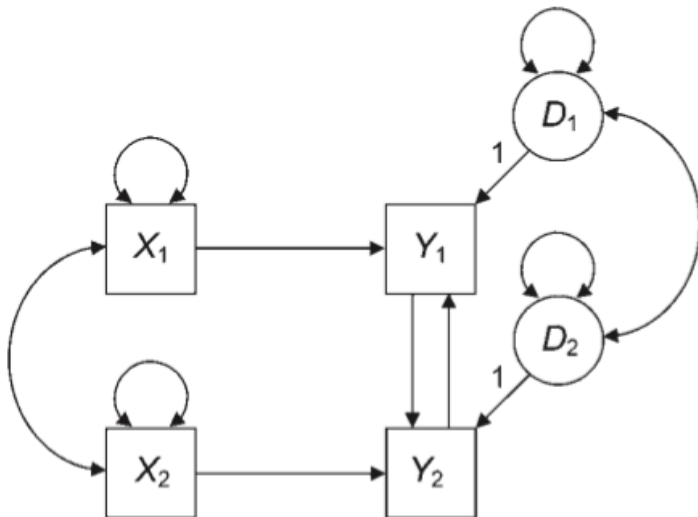


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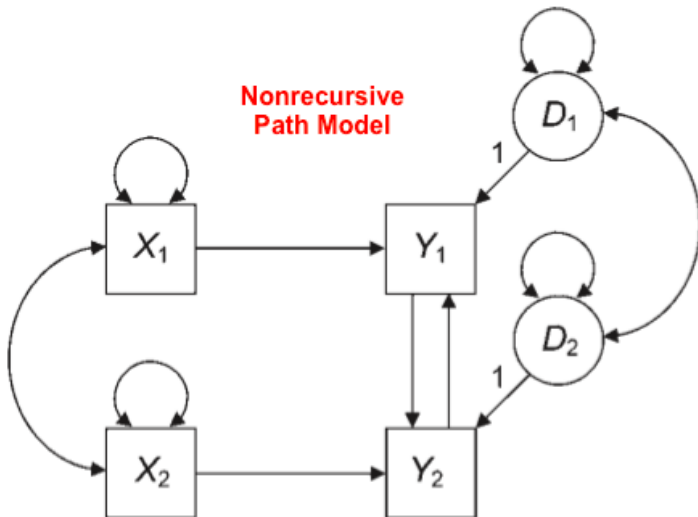




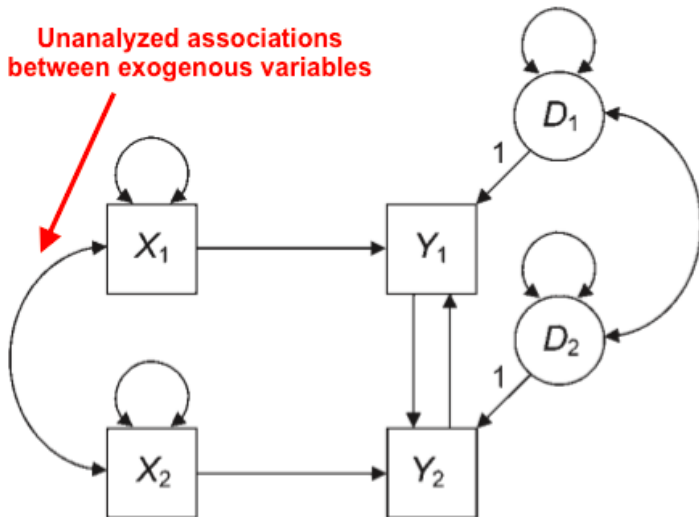
# Recursive or Nonrecursive?



# Nonrecursive



# Nonrecursive



# Nonrecursive

