Rutgers Linguistics Workshop on Mixed Effects Models
— Overview —

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Acknowledgments

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Maureen Gillespie
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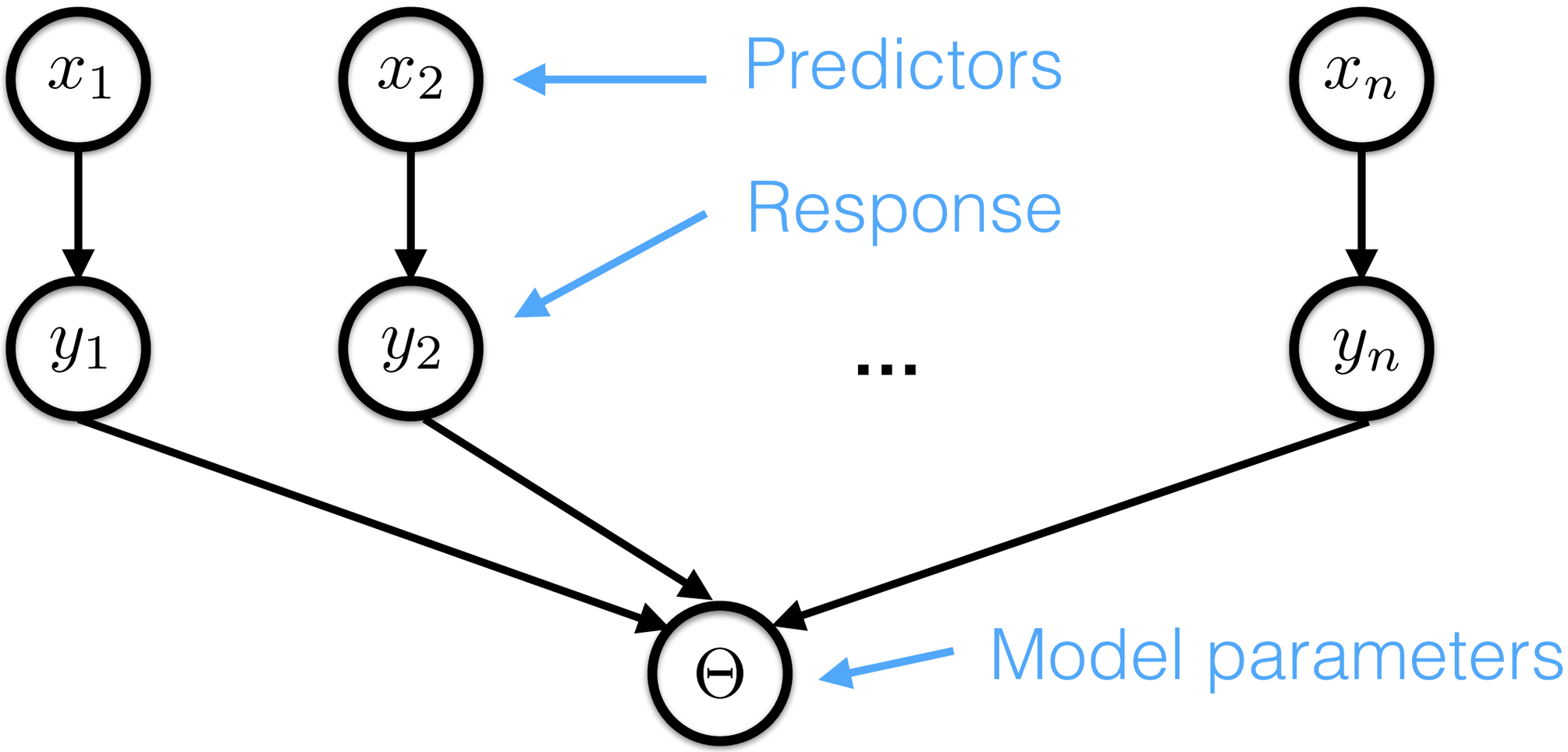
… with Florian's permission

Generalized Linear Models

Goal: model effects of predictors (independent variables) X on a response (dependent variable) Y



Reviewing GLMs

Assumptions of the generalized linear model:

1. Predictors X_i influence Y through the mediation of a linear predictor η
2. η is a linear combination of the X_i

$$\eta = \alpha + \beta_1 X_1 + \cdots + \beta_N$$

3. η determines the predicted mean μ of Y

$$\eta = g(\mu) \qquad \text{(link function)}$$

4. There is some noise distribution P around the predicted mean μ of Y:

$$P(Y = y; \mu)$$

What kind of data can you analyze with GLMs?

- continuous (nominal)
  response/reading times, slider ratings, speech onset times,…
- categorical (binary)
  truth value judgments, any binary choice prediction…
- ordered discrete (ordinal)
  Likert scale ratings…
- unordered discrete
  any choice between more than two options

……linear regression

……logistic regression

……ordinal regression

…..multinomial regression

Overview

Today

10:30 - 12	**R basics & linear regression**
12 - 1	Lunch
1 - 3	**Mixed effects linear regression**
3 - 5:30	Individual meetings / bring your own data!
5:30 - 8	Dinner

Tomorrow

9:30 - 10	Breakfast
10 - 11	**Coding schemes and model comparison**
11 - 12	**Mixed effects logistic regression**
12 - 1	Lunch
1 - 2	**Visualizing your data with ggplot2**
2 - 3	**Mixed effects ordinal regression**