Equation of a line

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Table of contents

Learning Objectives

Today we will learn…

- the equation of a line
- about intercepts, slopes, and residuals

Resources

- relevant readings:
  - @winter_linear_2013
  - @winter_statistics_2019 (Ch. 3)

Statistical tests versus models

- you're probably familiar with statistical tests like the *t*-test or Chi-squared test
- however, common statistical tests are simplified linear models (see also Statistical tests vs. linear regression)

  - but without the added power of linear models (e.g., multiple predictors, crossed random effects)

- statistical tests tell us something about our data
- statistical *models* can generalise beyond our data

(Linear) Regression

- we need to fit a model to our data to make predictions about hypothetical observations
  - i.e., to *predict* values of our outcome/response variable based on one (or more) predictor variables
- this model can then *predict* values of our DV based on one (or more) IV(s), i.e., *predicting* an outcome variable - because we're making predictions, we need to take into account the variability (i.e., *error*) in our data
- but how do we fit these models, and what does that even mean?