

Hierarchical models

Exercise 1: Coin flips

File *Hierarchical coins.R* contains code for Bayesian Hierarchical analysis of coin flips. As in simple Bayesian inference, The posterior distribution is a standardized product of prior and likelihood. In Hierarchical models, we also encounter shrinkage. To better understand shrinkage we will experiment with parameters:

a.omega and b.omega determining the prior on hyper parameter ω

Kappa determining how strongly parameters Θ describing the probability of heads of an individual coin can deviate from ω .

The parameters describing the coin flips (n1,h1,n2,h2).

For instance set $n1 = n2$ but define $h1 = 0.25n2$ and $h2 = 0.75n2$