Assignment 5

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Exercise 1

We focus on the effect of cognitive load on pupil size, looking at all the subjects:

```
library(brms)
```

```
load("df_pupil_complete.rda")
df_pupil_complete
```

```
## # A tibble: 2,228 x 4
##     subj trial  load p_size
##    <int> <int> <int>  <dbl>
##  1   701     1     2  1021.
##  2   701     2     1   951.
##  3   701     3     5  1064.
##  4   701     4     4   913.
##  5   701     5     0   603.
##  6   701     6     3   826.
##  7   701     7     0   464.
##  8   701     8     4   758.
##  9   701     9     2   733.
## 10   701    10     3   591.
## # i 2,218 more rows
```

Try to fit a "maximal" model (correlated varying intercept and slopes for subjects) assuming a normal likelihood, and using these priors:

```
prior = c(
prior(normal(1000, 500), class = Intercept),
prior(normal(0, 1000), class = sigma),
prior(normal(0, 100), class = b, coef = c_load),
prior(normal(0, 1000), class = sd),
prior(lkj(2), class = cor))
```

(a) Examine the effect of (centered) load on pupil size, and the average pupil size. What do you conclude?
(b) Do a sensitivity analysis for the prior on the intercept (α). What is the estimate of the effect (β) under different priors?
(c) Is the effect of load consistent across subjects? Investigate this visually.