Affect and SM Use - SMASH Study

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Descriptive Statistics

```
## Days in Study

# summarize max days in study
Max_days <- data %>%
  group_by(pid) %>%
  summarise(Max_day = max(day_in_study, na.rm=TRUE))

# get mean/sd day in study
mean(Max_days$Max_day, na.rm=TRUE)
```

```
## [1] 30.57895
```

```
sd(Max_days$Max_day, na.rm=TRUE)
```

```
## [1] 5.620555
```

Models Prediciting Evenign Negative Mood

```
###check utility of random slopes
model1 <- lmer(NAf_pm_p ~ sum_sm_p + NAf_am_p + sum_sm_p_c + day_in_study + (1 | pid), data = day)
model2 <- lmer(NAf_pm_p ~ sum_sm_p + NAf_am_p + sum_sm_p_c + day_in_study + (sum_sm_p | pid), data = da

anova(model1, model2)
```

```
## Data: day
## Models:
## model1: NAf_pm_p ~ sum_sm_p + NAf_am_p + sum_sm_p_c + day_in_study + (1 | pid)
## model2: NAf_pm_p ~ sum_sm_p + NAf_am_p + sum_sm_p_c + day_in_study + (sum_sm_p | pid)
##        npar    AIC    BIC  logLik deviance Chisq Df Pr(>Chisq)
## model1    7 2466.7 2492.3 -1226.3   2452.7
## model2    9 2470.7 2503.6 -1226.3   2452.7     0  2          1
```

```r
model3 <- lmer(NAf_pm_p ~ count_sm_p + NAf_am_p + count_sm_p_c + day_in_study + (1 | pid), data = day)
model4 <- lmer(NAf_pm_p ~ count_sm_p + NAf_am_p + count_sm_p_c + day_in_study + (count_sm_p | pid), data

anova(model3, model4)
```

```
## Data: day
## Models:
## model3: NAf_pm_p ~ count_sm_p + NAf_am_p + count_sm_p_c + day_in_study + (1 | pid)
## model4: NAf_pm_p ~ count_sm_p + NAf_am_p + count_sm_p_c + day_in_study + (count_sm_p | pid)
##        npar    AIC    BIC  logLik deviance Chisq Df Pr(>Chisq)
## model3    7 2462.7 2488.3 -1224.4   2448.7
## model4    9 2466.7 2499.6 -1224.4   2448.7     0  2          1
```

```r
#-----------------------------------------------Bayesian multilevel models--------------------------------

## Negative mood - sumduration
NA_sm_sum_bayes  <- brm(NAf_pm_p ~ sum_sm_p + NAf_am_p + sum_sm_p_c + day_in_study + (1 | pid), prior =
```

```
##
## SAMPLING FOR MODEL '48186b7868f5edea6c7fb9df0f161535' NOW (CHAIN 1).
## Chain 1:
## Chain 1: Gradient evaluation took 0 seconds
## Chain 1: 1000 transitions using 10 leapfrog steps per transition would take 0 seconds.
## Chain 1: Adjust your expectations accordingly!
## Chain 1:
## Chain 1:
## Chain 1: Iteration:    1 / 2000 [  0%]  (Warmup)
## Chain 1: Iteration:  200 / 2000 [ 10%]  (Warmup)
## Chain 1: Iteration:  400 / 2000 [ 20%]  (Warmup)
## Chain 1: Iteration:  600 / 2000 [ 30%]  (Warmup)
## Chain 1: Iteration:  800 / 2000 [ 40%]  (Warmup)
## Chain 1: Iteration: 1000 / 2000 [ 50%]  (Warmup)
## Chain 1: Iteration: 1001 / 2000 [ 50%]  (Sampling)
## Chain 1: Iteration: 1200 / 2000 [ 60%]  (Sampling)
## Chain 1: Iteration: 1400 / 2000 [ 70%]  (Sampling)
## Chain 1: Iteration: 1600 / 2000 [ 80%]  (Sampling)
## Chain 1: Iteration: 1800 / 2000 [ 90%]  (Sampling)
## Chain 1: Iteration: 2000 / 2000 [100%]  (Sampling)
## Chain 1:
## Chain 1:  Elapsed Time: 0.852 seconds (Warm-up)
## Chain 1:                0.242 seconds (Sampling)
## Chain 1:                1.094 seconds (Total)
## Chain 1:
##
## SAMPLING FOR MODEL '48186b7868f5edea6c7fb9df0f161535' NOW (CHAIN 2).
## Chain 2:
## Chain 2: Gradient evaluation took 0 seconds
## Chain 2: 1000 transitions using 10 leapfrog steps per transition would take 0 seconds.
## Chain 2: Adjust your expectations accordingly!
## Chain 2:
## Chain 2:
## Chain 2: Iteration:    1 / 2000 [  0%]  (Warmup)
## Chain 2: Iteration:  200 / 2000 [ 10%]  (Warmup)
```

```
## Chain 2: Iteration:  400 / 2000 [ 20%]  (Warmup)
## Chain 2: Iteration:  600 / 2000 [ 30%]  (Warmup)
## Chain 2: Iteration:  800 / 2000 [ 40%]  (Warmup)
## Chain 2: Iteration: 1000 / 2000 [ 50%]  (Warmup)
## Chain 2: Iteration: 1001 / 2000 [ 50%]  (Sampling)
## Chain 2: Iteration: 1200 / 2000 [ 60%]  (Sampling)
## Chain 2: Iteration: 1400 / 2000 [ 70%]  (Sampling)
## Chain 2: Iteration: 1600 / 2000 [ 80%]  (Sampling)
## Chain 2: Iteration: 1800 / 2000 [ 90%]  (Sampling)
## Chain 2: Iteration: 2000 / 2000 [100%]  (Sampling)
## Chain 2:
## Chain 2:  Elapsed Time: 0.8 seconds (Warm-up)
## Chain 2:                0.138 seconds (Sampling)
## Chain 2:                0.938 seconds (Total)
## Chain 2:
##
## SAMPLING FOR MODEL '48186b7868f5edea6c7fb9df0f161535' NOW (CHAIN 3).
## Chain 3:
## Chain 3: Gradient evaluation took 0 seconds
## Chain 3: 1000 transitions using 10 leapfrog steps per transition would take 0 seconds.
## Chain 3: Adjust your expectations accordingly!
## Chain 3:
## Chain 3:
## Chain 3: Iteration:    1 / 2000 [  0%]  (Warmup)
## Chain 3: Iteration:  200 / 2000 [ 10%]  (Warmup)
## Chain 3: Iteration:  400 / 2000 [ 20%]  (Warmup)
## Chain 3: Iteration:  600 / 2000 [ 30%]  (Warmup)
## Chain 3: Iteration:  800 / 2000 [ 40%]  (Warmup)
## Chain 3: Iteration: 1000 / 2000 [ 50%]  (Warmup)
## Chain 3: Iteration: 1001 / 2000 [ 50%]  (Sampling)
## Chain 3: Iteration: 1200 / 2000 [ 60%]  (Sampling)
## Chain 3: Iteration: 1400 / 2000 [ 70%]  (Sampling)
## Chain 3: Iteration: 1600 / 2000 [ 80%]  (Sampling)
## Chain 3: Iteration: 1800 / 2000 [ 90%]  (Sampling)
## Chain 3: Iteration: 2000 / 2000 [100%]  (Sampling)
## Chain 3:
## Chain 3:  Elapsed Time: 0.572 seconds (Warm-up)
## Chain 3:                0.275 seconds (Sampling)
## Chain 3:                0.847 seconds (Total)
## Chain 3:
##
## SAMPLING FOR MODEL '48186b7868f5edea6c7fb9df0f161535' NOW (CHAIN 4).
## Chain 4:
## Chain 4: Gradient evaluation took 0 seconds
## Chain 4: 1000 transitions using 10 leapfrog steps per transition would take 0 seconds.
## Chain 4: Adjust your expectations accordingly!
## Chain 4:
## Chain 4:
## Chain 4: Iteration:    1 / 2000 [  0%]  (Warmup)
## Chain 4: Iteration:  200 / 2000 [ 10%]  (Warmup)
## Chain 4: Iteration:  400 / 2000 [ 20%]  (Warmup)
## Chain 4: Iteration:  600 / 2000 [ 30%]  (Warmup)
## Chain 4: Iteration:  800 / 2000 [ 40%]  (Warmup)
## Chain 4: Iteration: 1000 / 2000 [ 50%]  (Warmup)
```

```
## Chain 4: Iteration: 1001 / 2000 [ 50%]  (Sampling)
## Chain 4: Iteration: 1200 / 2000 [ 60%]  (Sampling)
## Chain 4: Iteration: 1400 / 2000 [ 70%]  (Sampling)
## Chain 4: Iteration: 1600 / 2000 [ 80%]  (Sampling)
## Chain 4: Iteration: 1800 / 2000 [ 90%]  (Sampling)
## Chain 4: Iteration: 2000 / 2000 [100%]  (Sampling)
## Chain 4:
## Chain 4:  Elapsed Time: 0.642 seconds (Warm-up)
## Chain 4:                0.136 seconds (Sampling)
## Chain 4:                0.778 seconds (Total)
## Chain 4:
```

```
model_parameters(NA_sm_sum_bayes, centrality = "mean")
```

```
## # Fixed effects
##
## Parameter    |      Mean |        95% CI |     pd | % in ROPE |  Rhat |     ESS
## ------------------------------------------------------------------------------
## (Intercept)  |     -2.10 | [-7.60, 3.38] | 78.00% |    40.16% | 0.999 | 5355.00
## sum_sm_p     |  9.10e-03 | [-0.02, 0.03] | 76.02% |      100% | 1.000 | 5705.00
## NAf_am_p     |      0.11 | [ 0.01, 0.22] | 98.35% |      100% | 1.000 | 4856.00
## sum_sm_p_c   | -3.55e-04 | [-0.04, 0.04] | 50.48% |      100% | 1.000 | 4878.00
## day_in_study |      0.11 | [-0.13, 0.36] | 81.92% |      100% | 1.000 | 4732.00
##
## # Fixed effects sigma
##
## Parameter |  Mean |         95% CI |   pd | % in ROPE |  Rhat |     ESS
## ----------------------------------------------------------------------
## sigma     | 18.07 | [16.60, 19.67] | 100% |        0% | 1.000 | 5815.00
```

```
standard_error(NA_sm_sum_bayes)
```

```
##        Parameter         SE
## 1    b_Intercept 2.76501559
## 2     b_sum_sm_p 0.01288907
## 3     b_NAf_am_p 0.05361455
## 4   b_sum_sm_p_c 0.01855237
## 5 b_day_in_study 0.12304424
## 6          sigma 0.77755929
```

```
## Negative mood - counts

NA_sm_count_bayes  <- brm(NAf_pm_p ~ count_sm_p + NAf_am_p + count_sm_p_c + day_in_study + (1 | pid), p
```

```
##
## SAMPLING FOR MODEL '48186b7868f5edea6c7fb9df0f161535' NOW (CHAIN 1).
## Chain 1:
## Chain 1: Gradient evaluation took 0 seconds
## Chain 1: 1000 transitions using 10 leapfrog steps per transition would take 0 seconds.
## Chain 1: Adjust your expectations accordingly!
## Chain 1:
## Chain 1:
```

```
## Chain 1: Iteration:    1 / 2000 [  0%]  (Warmup)
## Chain 1: Iteration:  200 / 2000 [ 10%]  (Warmup)
## Chain 1: Iteration:  400 / 2000 [ 20%]  (Warmup)
## Chain 1: Iteration:  600 / 2000 [ 30%]  (Warmup)
## Chain 1: Iteration:  800 / 2000 [ 40%]  (Warmup)
## Chain 1: Iteration: 1000 / 2000 [ 50%]  (Warmup)
## Chain 1: Iteration: 1001 / 2000 [ 50%]  (Sampling)
## Chain 1: Iteration: 1200 / 2000 [ 60%]  (Sampling)
## Chain 1: Iteration: 1400 / 2000 [ 70%]  (Sampling)
## Chain 1: Iteration: 1600 / 2000 [ 80%]  (Sampling)
## Chain 1: Iteration: 1800 / 2000 [ 90%]  (Sampling)
## Chain 1: Iteration: 2000 / 2000 [100%]  (Sampling)
## Chain 1:
## Chain 1:  Elapsed Time: 0.644 seconds (Warm-up)
## Chain 1:                0.25 seconds (Sampling)
## Chain 1:                0.894 seconds (Total)
## Chain 1:
##
## SAMPLING FOR MODEL '48186b7868f5edea6c7fb9df0f161535' NOW (CHAIN 2).
## Chain 2:
## Chain 2: Gradient evaluation took 0 seconds
## Chain 2: 1000 transitions using 10 leapfrog steps per transition would take 0 seconds.
## Chain 2: Adjust your expectations accordingly!
## Chain 2:
## Chain 2:
## Chain 2: Iteration:    1 / 2000 [  0%]  (Warmup)
## Chain 2: Iteration:  200 / 2000 [ 10%]  (Warmup)
## Chain 2: Iteration:  400 / 2000 [ 20%]  (Warmup)
## Chain 2: Iteration:  600 / 2000 [ 30%]  (Warmup)
## Chain 2: Iteration:  800 / 2000 [ 40%]  (Warmup)
## Chain 2: Iteration: 1000 / 2000 [ 50%]  (Warmup)
## Chain 2: Iteration: 1001 / 2000 [ 50%]  (Sampling)
## Chain 2: Iteration: 1200 / 2000 [ 60%]  (Sampling)
## Chain 2: Iteration: 1400 / 2000 [ 70%]  (Sampling)
## Chain 2: Iteration: 1600 / 2000 [ 80%]  (Sampling)
## Chain 2: Iteration: 1800 / 2000 [ 90%]  (Sampling)
## Chain 2: Iteration: 2000 / 2000 [100%]  (Sampling)
## Chain 2:
## Chain 2:  Elapsed Time: 0.722 seconds (Warm-up)
## Chain 2:                0.128 seconds (Sampling)
## Chain 2:                0.85 seconds (Total)
## Chain 2:
##
## SAMPLING FOR MODEL '48186b7868f5edea6c7fb9df0f161535' NOW (CHAIN 3).
## Chain 3:
## Chain 3: Gradient evaluation took 0 seconds
## Chain 3: 1000 transitions using 10 leapfrog steps per transition would take 0 seconds.
## Chain 3: Adjust your expectations accordingly!
## Chain 3:
## Chain 3:
## Chain 3: Iteration:    1 / 2000 [  0%]  (Warmup)
## Chain 3: Iteration:  200 / 2000 [ 10%]  (Warmup)
## Chain 3: Iteration:  400 / 2000 [ 20%]  (Warmup)
## Chain 3: Iteration:  600 / 2000 [ 30%]  (Warmup)
```

```
## Chain 3: Iteration:  800 / 2000 [ 40%]  (Warmup)
## Chain 3: Iteration: 1000 / 2000 [ 50%]  (Warmup)
## Chain 3: Iteration: 1001 / 2000 [ 50%]  (Sampling)
## Chain 3: Iteration: 1200 / 2000 [ 60%]  (Sampling)
## Chain 3: Iteration: 1400 / 2000 [ 70%]  (Sampling)
## Chain 3: Iteration: 1600 / 2000 [ 80%]  (Sampling)
## Chain 3: Iteration: 1800 / 2000 [ 90%]  (Sampling)
## Chain 3: Iteration: 2000 / 2000 [100%]  (Sampling)
## Chain 3:
## Chain 3:  Elapsed Time: 0.683 seconds (Warm-up)
## Chain 3:                0.22 seconds (Sampling)
## Chain 3:                0.903 seconds (Total)
## Chain 3:
##
## SAMPLING FOR MODEL '48186b7868f5edea6c7fb9df0f161535' NOW (CHAIN 4).
## Chain 4:
## Chain 4: Gradient evaluation took 0 seconds
## Chain 4: 1000 transitions using 10 leapfrog steps per transition would take 0 seconds.
## Chain 4: Adjust your expectations accordingly!
## Chain 4:
## Chain 4:
## Chain 4: Iteration:    1 / 2000 [  0%]  (Warmup)
## Chain 4: Iteration:  200 / 2000 [ 10%]  (Warmup)
## Chain 4: Iteration:  400 / 2000 [ 20%]  (Warmup)
## Chain 4: Iteration:  600 / 2000 [ 30%]  (Warmup)
## Chain 4: Iteration:  800 / 2000 [ 40%]  (Warmup)
## Chain 4: Iteration: 1000 / 2000 [ 50%]  (Warmup)
## Chain 4: Iteration: 1001 / 2000 [ 50%]  (Sampling)
## Chain 4: Iteration: 1200 / 2000 [ 60%]  (Sampling)
## Chain 4: Iteration: 1400 / 2000 [ 70%]  (Sampling)
## Chain 4: Iteration: 1600 / 2000 [ 80%]  (Sampling)
## Chain 4: Iteration: 1800 / 2000 [ 90%]  (Sampling)
## Chain 4: Iteration: 2000 / 2000 [100%]  (Sampling)
## Chain 4:
## Chain 4:  Elapsed Time: 0.722 seconds (Warm-up)
## Chain 4:                0.222 seconds (Sampling)
## Chain 4:                0.944 seconds (Total)
## Chain 4:
```

```
model_parameters(NA_sm_count_bayes, centrality = "mean")
```

```
## # Fixed effects
##
## Parameter    |      Mean |        95% CI |     pd | % in ROPE |  Rhat |     ESS
## ------------------------------------------------------------------------------
## (Intercept)  |     -1.35 | [-7.20, 4.35] | 67.17% |    45.05% | 1.001 | 4838.00
## count_sm_p   |      0.03 | [ 0.00, 0.06] | 97.32% |      100% | 0.999 | 6600.00
## NAf_am_p     |      0.11 | [ 0.01, 0.22] | 98.25% |      100% | 1.000 | 4630.00
## count_sm_p_c | -7.87e-03 | [-0.03, 0.02] | 73.47% |      100% | 1.000 | 5463.00
## day_in_study |      0.12 | [-0.12, 0.36] | 84.52% |      100% | 1.000 | 4533.00
##
## # Fixed effects sigma
##
## Parameter |  Mean |         95% CI |   pd | % in ROPE |  Rhat |     ESS
```

```
## ------------------------------------------------------------------------
## sigma     | 17.94 | [16.55, 19.51] | 100% |        0% | 1.000 | 4681.00
```

```
standard_error(NA_sm_count_bayes)
```

```
##        Parameter         SE
## 1    b_Intercept 2.91013205
## 2   b_count_sm_p 0.01612718
## 3     b_NAf_am_p 0.05344121
## 4 b_count_sm_p_c 0.01299699
## 5 b_day_in_study 0.12226484
## 6          sigma 0.76053623
```

Positive Affect on SM predicting social media use

```
###check utility of random slopes
model1 <- lmer(sum_sm_p ~ SM_Pos_p + SM_Pos_p_c + day_in_study + (1 | pid), data = day)
model2 <- lmer(sum_sm_p ~ SM_Pos_p + SM_Pos_p_c + day_in_study + (SM_Pos_p | pid), data = day)

anova(model1, model2)
```

```
## Data: day
## Models:
## model1: sum_sm_p ~ SM_Pos_p + SM_Pos_p_c + day_in_study + (1 | pid)
## model2: sum_sm_p ~ SM_Pos_p + SM_Pos_p_c + day_in_study + (SM_Pos_p | pid)
##        npar    AIC    BIC  logLik deviance Chisq Df Pr(>Chisq)
## model1    6 4854.2 4878.2 -2421.1   4842.2
## model2    8 4858.2 4890.2 -2421.1   4842.2     0  2          1
```

```
model3 <- lmer(count_sm_p ~ SM_Pos_p + SM_Pos_p_c + day_in_study + (1 | pid), data = day)
model4 <- lmer(count_sm_p ~ SM_Pos_p + SM_Pos_p_c + day_in_study + (SM_Pos_p | pid), data = day)

anova(model3, model4)
```

```
## Data: day
## Models:
## model3: count_sm_p ~ SM_Pos_p + SM_Pos_p_c + day_in_study + (1 | pid)
## model4: count_sm_p ~ SM_Pos_p + SM_Pos_p_c + day_in_study + (SM_Pos_p | pid)
##        npar    AIC    BIC  logLik deviance  Chisq Df Pr(>Chisq)
## model3    6 4538.1 4562.1 -2263.1   4526.1
## model4    8 4542.1 4574.1 -2263.1   4526.1 0.0356  2     0.9824
```

```
#-----------------------------------------Bayesian multilevel models-------------------------------

## Positive affect & minutes of SM

PA_on_SM_day_bayes  <- brm(sum_sm_p ~ SM_Pos_p + SM_Pos_p_c + day_in_study + (1 | pid), prior = prior1,
```

```
##
```

```
## SAMPLING FOR MODEL '59f3818614e70d56fb62f6508b9dce85' NOW (CHAIN 1).
## Chain 1:
## Chain 1: Gradient evaluation took 0 seconds
## Chain 1: 1000 transitions using 10 leapfrog steps per transition would take 0 seconds.
## Chain 1: Adjust your expectations accordingly!
## Chain 1:
## Chain 1:
## Chain 1: Iteration:    1 / 2000 [  0%]  (Warmup)
## Chain 1: Iteration:  200 / 2000 [ 10%]  (Warmup)
## Chain 1: Iteration:  400 / 2000 [ 20%]  (Warmup)
## Chain 1: Iteration:  600 / 2000 [ 30%]  (Warmup)
## Chain 1: Iteration:  800 / 2000 [ 40%]  (Warmup)
## Chain 1: Iteration: 1000 / 2000 [ 50%]  (Warmup)
## Chain 1: Iteration: 1001 / 2000 [ 50%]  (Sampling)
## Chain 1: Iteration: 1200 / 2000 [ 60%]  (Sampling)
## Chain 1: Iteration: 1400 / 2000 [ 70%]  (Sampling)
## Chain 1: Iteration: 1600 / 2000 [ 80%]  (Sampling)
## Chain 1: Iteration: 1800 / 2000 [ 90%]  (Sampling)
## Chain 1: Iteration: 2000 / 2000 [100%]  (Sampling)
## Chain 1:
## Chain 1:  Elapsed Time: 0.579 seconds (Warm-up)
## Chain 1:                0.35 seconds (Sampling)
## Chain 1:                0.929 seconds (Total)
## Chain 1:
##
## SAMPLING FOR MODEL '59f3818614e70d56fb62f6508b9dce85' NOW (CHAIN 2).
## Chain 2:
## Chain 2: Gradient evaluation took 0 seconds
## Chain 2: 1000 transitions using 10 leapfrog steps per transition would take 0 seconds.
## Chain 2: Adjust your expectations accordingly!
## Chain 2:
## Chain 2:
## Chain 2: Iteration:    1 / 2000 [  0%]  (Warmup)
## Chain 2: Iteration:  200 / 2000 [ 10%]  (Warmup)
## Chain 2: Iteration:  400 / 2000 [ 20%]  (Warmup)
## Chain 2: Iteration:  600 / 2000 [ 30%]  (Warmup)
## Chain 2: Iteration:  800 / 2000 [ 40%]  (Warmup)
## Chain 2: Iteration: 1000 / 2000 [ 50%]  (Warmup)
## Chain 2: Iteration: 1001 / 2000 [ 50%]  (Sampling)
## Chain 2: Iteration: 1200 / 2000 [ 60%]  (Sampling)
## Chain 2: Iteration: 1400 / 2000 [ 70%]  (Sampling)
## Chain 2: Iteration: 1600 / 2000 [ 80%]  (Sampling)
## Chain 2: Iteration: 1800 / 2000 [ 90%]  (Sampling)
## Chain 2: Iteration: 2000 / 2000 [100%]  (Sampling)
## Chain 2:
## Chain 2:  Elapsed Time: 0.699 seconds (Warm-up)
## Chain 2:                0.282 seconds (Sampling)
## Chain 2:                0.981 seconds (Total)
## Chain 2:
##
## SAMPLING FOR MODEL '59f3818614e70d56fb62f6508b9dce85' NOW (CHAIN 3).
## Chain 3:
## Chain 3: Gradient evaluation took 0 seconds
## Chain 3: 1000 transitions using 10 leapfrog steps per transition would take 0 seconds.
```

```
## Chain 3: Adjust your expectations accordingly!
## Chain 3:
## Chain 3:
## Chain 3: Iteration:    1 / 2000 [  0%]  (Warmup)
## Chain 3: Iteration:  200 / 2000 [ 10%]  (Warmup)
## Chain 3: Iteration:  400 / 2000 [ 20%]  (Warmup)
## Chain 3: Iteration:  600 / 2000 [ 30%]  (Warmup)
## Chain 3: Iteration:  800 / 2000 [ 40%]  (Warmup)
## Chain 3: Iteration: 1000 / 2000 [ 50%]  (Warmup)
## Chain 3: Iteration: 1001 / 2000 [ 50%]  (Sampling)
## Chain 3: Iteration: 1200 / 2000 [ 60%]  (Sampling)
## Chain 3: Iteration: 1400 / 2000 [ 70%]  (Sampling)
## Chain 3: Iteration: 1600 / 2000 [ 80%]  (Sampling)
## Chain 3: Iteration: 1800 / 2000 [ 90%]  (Sampling)
## Chain 3: Iteration: 2000 / 2000 [100%]  (Sampling)
## Chain 3:
## Chain 3:  Elapsed Time: 0.688 seconds (Warm-up)
## Chain 3:                0.216 seconds (Sampling)
## Chain 3:                0.904 seconds (Total)
## Chain 3:
##
## SAMPLING FOR MODEL '59f3818614e70d56fb62f6508b9dce85' NOW (CHAIN 4).
## Chain 4:
## Chain 4: Gradient evaluation took 0 seconds
## Chain 4: 1000 transitions using 10 leapfrog steps per transition would take 0 seconds.
## Chain 4: Adjust your expectations accordingly!
## Chain 4:
## Chain 4:
## Chain 4: Iteration:    1 / 2000 [  0%]  (Warmup)
## Chain 4: Iteration:  200 / 2000 [ 10%]  (Warmup)
## Chain 4: Iteration:  400 / 2000 [ 20%]  (Warmup)
## Chain 4: Iteration:  600 / 2000 [ 30%]  (Warmup)
## Chain 4: Iteration:  800 / 2000 [ 40%]  (Warmup)
## Chain 4: Iteration: 1000 / 2000 [ 50%]  (Warmup)
## Chain 4: Iteration: 1001 / 2000 [ 50%]  (Sampling)
## Chain 4: Iteration: 1200 / 2000 [ 60%]  (Sampling)
## Chain 4: Iteration: 1400 / 2000 [ 70%]  (Sampling)
## Chain 4: Iteration: 1600 / 2000 [ 80%]  (Sampling)
## Chain 4: Iteration: 1800 / 2000 [ 90%]  (Sampling)
## Chain 4: Iteration: 2000 / 2000 [100%]  (Sampling)
## Chain 4:
## Chain 4:  Elapsed Time: 0.588 seconds (Warm-up)
## Chain 4:                0.225 seconds (Sampling)
## Chain 4:                0.813 seconds (Total)
## Chain 4:
```

```
model_parameters(PA_on_SM_day_bayes, centrality = "mean")
```

```
## # Fixed effects
##
## Parameter    |  Mean |          95% CI |     pd | % in ROPE |  Rhat |     ESS
## ------------------------------------------------------------------------------
## (Intercept)  |  1.95 | [-26.36, 31.43] | 54.93% |    51.71% | 1.000 | 3803.00
## SM_Pos_p     |  0.24 | [ -0.30,  0.76] | 81.05% |      100% | 1.000 | 4413.00
```

```
## SM_Pos_p_c   |  0.07 | [ -0.32,  0.47] | 63.88% |      100% | 1.000 | 3821.00
## day_in_study | -0.18 | [ -1.30,  0.93] | 62.35% |      100% | 1.000 | 3683.00
##
## # Fixed effects sigma
##
## Parameter |  Mean |          95% CI |   pd | % in ROPE |  Rhat |     ESS
## ------------------------------------------------------------------------
## sigma     | 98.95 | [92.28, 106.11] | 100% |        0% | 1.000 | 4066.00
```

```
standard_error(PA_on_SM_day_bayes)
```

```
##        Parameter         SE
## 1    b_Intercept 14.6977604
## 2     b_SM_Pos_p  0.2716334
## 3   b_SM_Pos_p_c  0.2032143
## 4 b_day_in_study  0.5610287
## 5          sigma  3.5120069
```

```
## Positive affect & SM checks

PA_on_SM_count_day_bayes  <- brm(count_sm_p ~ SM_Pos_p + SM_Pos_p_c + day_in_study + (1 | pid), prior =
```

```
##
## SAMPLING FOR MODEL '88c1aa55bb241c24edf3a3107280e873' NOW (CHAIN 1).
## Chain 1:
## Chain 1: Gradient evaluation took 0 seconds
## Chain 1: 1000 transitions using 10 leapfrog steps per transition would take 0 seconds.
## Chain 1: Adjust your expectations accordingly!
## Chain 1:
## Chain 1:
## Chain 1: Iteration:    1 / 2000 [  0%]  (Warmup)
## Chain 1: Iteration:  200 / 2000 [ 10%]  (Warmup)
## Chain 1: Iteration:  400 / 2000 [ 20%]  (Warmup)
## Chain 1: Iteration:  600 / 2000 [ 30%]  (Warmup)
## Chain 1: Iteration:  800 / 2000 [ 40%]  (Warmup)
## Chain 1: Iteration: 1000 / 2000 [ 50%]  (Warmup)
## Chain 1: Iteration: 1001 / 2000 [ 50%]  (Sampling)
## Chain 1: Iteration: 1200 / 2000 [ 60%]  (Sampling)
## Chain 1: Iteration: 1400 / 2000 [ 70%]  (Sampling)
## Chain 1: Iteration: 1600 / 2000 [ 80%]  (Sampling)
## Chain 1: Iteration: 1800 / 2000 [ 90%]  (Sampling)
## Chain 1: Iteration: 2000 / 2000 [100%]  (Sampling)
## Chain 1:
## Chain 1:  Elapsed Time: 0.799 seconds (Warm-up)
## Chain 1:                0.433 seconds (Sampling)
## Chain 1:                1.232 seconds (Total)
## Chain 1:
##
## SAMPLING FOR MODEL '88c1aa55bb241c24edf3a3107280e873' NOW (CHAIN 2).
## Chain 2:
## Chain 2: Gradient evaluation took 0 seconds
## Chain 2: 1000 transitions using 10 leapfrog steps per transition would take 0 seconds.
## Chain 2: Adjust your expectations accordingly!
```

```
## Chain 2:
## Chain 2:
## Chain 2: Iteration:    1 / 2000 [  0%]  (Warmup)
## Chain 2: Iteration:  200 / 2000 [ 10%]  (Warmup)
## Chain 2: Iteration:  400 / 2000 [ 20%]  (Warmup)
## Chain 2: Iteration:  600 / 2000 [ 30%]  (Warmup)
## Chain 2: Iteration:  800 / 2000 [ 40%]  (Warmup)
## Chain 2: Iteration: 1000 / 2000 [ 50%]  (Warmup)
## Chain 2: Iteration: 1001 / 2000 [ 50%]  (Sampling)
## Chain 2: Iteration: 1200 / 2000 [ 60%]  (Sampling)
## Chain 2: Iteration: 1400 / 2000 [ 70%]  (Sampling)
## Chain 2: Iteration: 1600 / 2000 [ 80%]  (Sampling)
## Chain 2: Iteration: 1800 / 2000 [ 90%]  (Sampling)
## Chain 2: Iteration: 2000 / 2000 [100%]  (Sampling)
## Chain 2:
## Chain 2:  Elapsed Time: 0.693 seconds (Warm-up)
## Chain 2:                0.387 seconds (Sampling)
## Chain 2:                1.08 seconds (Total)
## Chain 2:
##
## SAMPLING FOR MODEL '88c1aa55bb241c24edf3a3107280e873' NOW (CHAIN 3).
## Chain 3:
## Chain 3: Gradient evaluation took 0 seconds
## Chain 3: 1000 transitions using 10 leapfrog steps per transition would take 0 seconds.
## Chain 3: Adjust your expectations accordingly!
## Chain 3:
## Chain 3:
## Chain 3: Iteration:    1 / 2000 [  0%]  (Warmup)
## Chain 3: Iteration:  200 / 2000 [ 10%]  (Warmup)
## Chain 3: Iteration:  400 / 2000 [ 20%]  (Warmup)
## Chain 3: Iteration:  600 / 2000 [ 30%]  (Warmup)
## Chain 3: Iteration:  800 / 2000 [ 40%]  (Warmup)
## Chain 3: Iteration: 1000 / 2000 [ 50%]  (Warmup)
## Chain 3: Iteration: 1001 / 2000 [ 50%]  (Sampling)
## Chain 3: Iteration: 1200 / 2000 [ 60%]  (Sampling)
## Chain 3: Iteration: 1400 / 2000 [ 70%]  (Sampling)
## Chain 3: Iteration: 1600 / 2000 [ 80%]  (Sampling)
## Chain 3: Iteration: 1800 / 2000 [ 90%]  (Sampling)
## Chain 3: Iteration: 2000 / 2000 [100%]  (Sampling)
## Chain 3:
## Chain 3:  Elapsed Time: 0.612 seconds (Warm-up)
## Chain 3:                0.339 seconds (Sampling)
## Chain 3:                0.951 seconds (Total)
## Chain 3:
##
## SAMPLING FOR MODEL '88c1aa55bb241c24edf3a3107280e873' NOW (CHAIN 4).
## Chain 4:
## Chain 4: Gradient evaluation took 0 seconds
## Chain 4: 1000 transitions using 10 leapfrog steps per transition would take 0 seconds.
## Chain 4: Adjust your expectations accordingly!
## Chain 4:
## Chain 4:
## Chain 4: Iteration:    1 / 2000 [  0%]  (Warmup)
## Chain 4: Iteration:  200 / 2000 [ 10%]  (Warmup)
```

```
## Chain 4: Iteration:  400 / 2000 [ 20%]  (Warmup)
## Chain 4: Iteration:  600 / 2000 [ 30%]  (Warmup)
## Chain 4: Iteration:  800 / 2000 [ 40%]  (Warmup)
## Chain 4: Iteration: 1000 / 2000 [ 50%]  (Warmup)
## Chain 4: Iteration: 1001 / 2000 [ 50%]  (Sampling)
## Chain 4: Iteration: 1200 / 2000 [ 60%]  (Sampling)
## Chain 4: Iteration: 1400 / 2000 [ 70%]  (Sampling)
## Chain 4: Iteration: 1600 / 2000 [ 80%]  (Sampling)
## Chain 4: Iteration: 1800 / 2000 [ 90%]  (Sampling)
## Chain 4: Iteration: 2000 / 2000 [100%]  (Sampling)
## Chain 4:
## Chain 4:  Elapsed Time: 0.525 seconds (Warm-up)
## Chain 4:                0.186 seconds (Sampling)
## Chain 4:                0.711 seconds (Total)
## Chain 4:
```

```
model_parameters(PA_on_SM_count_day_bayes, centrality = "mean")
```

```
## # Fixed effects
##
## Parameter    |  Mean |          95% CI |     pd | % in ROPE |  Rhat |     ESS
## ------------------------------------------------------------------------------
## (Intercept)  |  2.60 | [-17.53, 22.61] | 60.22% |    50.24% | 1.000 | 4702.00
## SM_Pos_p     |  0.76 | [  0.41,  1.12] |   100% |      100% | 1.000 | 5187.00
## SM_Pos_p_c   | -0.04 | [ -0.31,  0.23] | 61.20% |      100% | 1.000 | 4673.00
## day_in_study |  0.11 | [ -0.68,  0.85] | 62.58% |      100% | 0.999 | 5256.00
##
## # Fixed effects sigma
##
## Parameter |  Mean |         95% CI |   pd | % in ROPE |  Rhat |     ESS
## ------------------------------------------------------------------------
## sigma     | 66.87 | [62.42, 71.81] | 100% |        0% | 0.999 | 5159.00
```

```
standard_error(PA_on_SM_count_day_bayes)
```

```
##        Parameter         SE
## 1    b_Intercept 10.1771384
## 2     b_SM_Pos_p  0.1842912
## 3   b_SM_Pos_p_c  0.1382257
## 4 b_day_in_study  0.3799878
## 5          sigma  2.4303486
```

Negative Affect on SM predicting social media use

```
###check utility of random slopes
model1 <- lmer(sum_sm_p ~ SM_Neg_p + SM_Neg_p_c + day_in_study + (1 | pid), data = day)
model2 <- lmer(sum_sm_p ~ SM_Neg_p + SM_Neg_p_c + day_in_study + (SM_Neg_p | pid), data = day)

anova(model1, model2)
```

```
## Data: day
## Models:
## model1: sum_sm_p ~ SM_Neg_p + SM_Neg_p_c + day_in_study + (1 | pid)
## model2: sum_sm_p ~ SM_Neg_p + SM_Neg_p_c + day_in_study + (SM_Neg_p | pid)
##        npar  AIC    BIC  logLik deviance Chisq Df Pr(>Chisq)
## model1    6 3337 3359.1 -1662.5     3325
## model2    8 3341 3370.5 -1662.5     3325     0  2          1
```

```
model3 <- lmer(count_sm_p ~ SM_Neg_p + SM_Neg_p_c + day_in_study + (1 | pid), data = day)
model4 <- lmer(count_sm_p ~ SM_Neg_p + SM_Neg_p_c + day_in_study + (SM_Neg_p | pid), data = day)

anova(model3, model4)
```

```
## Data: day
## Models:
## model3: count_sm_p ~ SM_Neg_p + SM_Neg_p_c + day_in_study + (1 | pid)
## model4: count_sm_p ~ SM_Neg_p + SM_Neg_p_c + day_in_study + (SM_Neg_p | pid)
##        npar    AIC    BIC  logLik deviance Chisq Df Pr(>Chisq)
## model3    6 3318.9 3341.0 -1653.5   3306.9
## model4    8 3322.9 3352.4 -1653.5   3306.9     0  2          1
```

```
#-----------------------------------------------Bayesian multilevel models-------------------------------


## Negative affect & minutes of SM

NA_on_SM_day_bayes  <- brm(sum_sm_p ~ SM_Neg_p + SM_Neg_p_c + day_in_study + (1 | pid), prior = prior1,
```

```
##
## SAMPLING FOR MODEL 'a2421fbbc774f31efee8bf9a7731dc7e' NOW (CHAIN 1).
## Chain 1:
## Chain 1: Gradient evaluation took 0 seconds
## Chain 1: 1000 transitions using 10 leapfrog steps per transition would take 0 seconds.
## Chain 1: Adjust your expectations accordingly!
## Chain 1:
## Chain 1:
## Chain 1: Iteration:    1 / 2000 [  0%]  (Warmup)
## Chain 1: Iteration:  200 / 2000 [ 10%]  (Warmup)
## Chain 1: Iteration:  400 / 2000 [ 20%]  (Warmup)
## Chain 1: Iteration:  600 / 2000 [ 30%]  (Warmup)
## Chain 1: Iteration:  800 / 2000 [ 40%]  (Warmup)
## Chain 1: Iteration: 1000 / 2000 [ 50%]  (Warmup)
## Chain 1: Iteration: 1001 / 2000 [ 50%]  (Sampling)
## Chain 1: Iteration: 1200 / 2000 [ 60%]  (Sampling)
## Chain 1: Iteration: 1400 / 2000 [ 70%]  (Sampling)
## Chain 1: Iteration: 1600 / 2000 [ 80%]  (Sampling)
## Chain 1: Iteration: 1800 / 2000 [ 90%]  (Sampling)
## Chain 1: Iteration: 2000 / 2000 [100%]  (Sampling)
## Chain 1:
## Chain 1:  Elapsed Time: 0.923 seconds (Warm-up)
## Chain 1:                0.405 seconds (Sampling)
## Chain 1:                1.328 seconds (Total)
## Chain 1:
```

```
##
## SAMPLING FOR MODEL 'a2421fbbc774f31efee8bf9a7731dc7e' NOW (CHAIN 2).
## Chain 2:
## Chain 2: Gradient evaluation took 0 seconds
## Chain 2: 1000 transitions using 10 leapfrog steps per transition would take 0 seconds.
## Chain 2: Adjust your expectations accordingly!
## Chain 2:
## Chain 2:
## Chain 2: Iteration:    1 / 2000 [  0%]  (Warmup)
## Chain 2: Iteration:  200 / 2000 [ 10%]  (Warmup)
## Chain 2: Iteration:  400 / 2000 [ 20%]  (Warmup)
## Chain 2: Iteration:  600 / 2000 [ 30%]  (Warmup)
## Chain 2: Iteration:  800 / 2000 [ 40%]  (Warmup)
## Chain 2: Iteration: 1000 / 2000 [ 50%]  (Warmup)
## Chain 2: Iteration: 1001 / 2000 [ 50%]  (Sampling)
## Chain 2: Iteration: 1200 / 2000 [ 60%]  (Sampling)
## Chain 2: Iteration: 1400 / 2000 [ 70%]  (Sampling)
## Chain 2: Iteration: 1600 / 2000 [ 80%]  (Sampling)
## Chain 2: Iteration: 1800 / 2000 [ 90%]  (Sampling)
## Chain 2: Iteration: 2000 / 2000 [100%]  (Sampling)
## Chain 2:
## Chain 2:  Elapsed Time: 0.67 seconds (Warm-up)
## Chain 2:                0.4 seconds (Sampling)
## Chain 2:                1.07 seconds (Total)
## Chain 2:
##
## SAMPLING FOR MODEL 'a2421fbbc774f31efee8bf9a7731dc7e' NOW (CHAIN 3).
## Chain 3:
## Chain 3: Gradient evaluation took 0 seconds
## Chain 3: 1000 transitions using 10 leapfrog steps per transition would take 0 seconds.
## Chain 3: Adjust your expectations accordingly!
## Chain 3:
## Chain 3:
## Chain 3: Iteration:    1 / 2000 [  0%]  (Warmup)
## Chain 3: Iteration:  200 / 2000 [ 10%]  (Warmup)
## Chain 3: Iteration:  400 / 2000 [ 20%]  (Warmup)
## Chain 3: Iteration:  600 / 2000 [ 30%]  (Warmup)
## Chain 3: Iteration:  800 / 2000 [ 40%]  (Warmup)
## Chain 3: Iteration: 1000 / 2000 [ 50%]  (Warmup)
## Chain 3: Iteration: 1001 / 2000 [ 50%]  (Sampling)
## Chain 3: Iteration: 1200 / 2000 [ 60%]  (Sampling)
## Chain 3: Iteration: 1400 / 2000 [ 70%]  (Sampling)
## Chain 3: Iteration: 1600 / 2000 [ 80%]  (Sampling)
## Chain 3: Iteration: 1800 / 2000 [ 90%]  (Sampling)
## Chain 3: Iteration: 2000 / 2000 [100%]  (Sampling)
## Chain 3:
## Chain 3:  Elapsed Time: 0.949 seconds (Warm-up)
## Chain 3:                0.427 seconds (Sampling)
## Chain 3:                1.376 seconds (Total)
## Chain 3:
##
## SAMPLING FOR MODEL 'a2421fbbc774f31efee8bf9a7731dc7e' NOW (CHAIN 4).
## Chain 4:
## Chain 4: Gradient evaluation took 0.001 seconds
```

```
## Chain 4: 1000 transitions using 10 leapfrog steps per transition would take 10 seconds.
## Chain 4: Adjust your expectations accordingly!
## Chain 4:
## Chain 4:
## Chain 4: Iteration:    1 / 2000 [  0%]  (Warmup)
## Chain 4: Iteration:  200 / 2000 [ 10%]  (Warmup)
## Chain 4: Iteration:  400 / 2000 [ 20%]  (Warmup)
## Chain 4: Iteration:  600 / 2000 [ 30%]  (Warmup)
## Chain 4: Iteration:  800 / 2000 [ 40%]  (Warmup)
## Chain 4: Iteration: 1000 / 2000 [ 50%]  (Warmup)
## Chain 4: Iteration: 1001 / 2000 [ 50%]  (Sampling)
## Chain 4: Iteration: 1200 / 2000 [ 60%]  (Sampling)
## Chain 4: Iteration: 1400 / 2000 [ 70%]  (Sampling)
## Chain 4: Iteration: 1600 / 2000 [ 80%]  (Sampling)
## Chain 4: Iteration: 1800 / 2000 [ 90%]  (Sampling)
## Chain 4: Iteration: 2000 / 2000 [100%]  (Sampling)
## Chain 4:
## Chain 4:  Elapsed Time: 0.799 seconds (Warm-up)
## Chain 4:                0.425 seconds (Sampling)
## Chain 4:                1.224 seconds (Total)
## Chain 4:
```

```
model_parameters(NA_on_SM_day_bayes, centrality = "mean")
```

```
## # Fixed effects
##
## Parameter    |  Mean |         95% CI |     pd | % in ROPE |  Rhat |     ESS
## ------------------------------------------------------------------------------
## (Intercept)  | 14.86 | [-4.04, 34.04] | 93.88% |    19.03% | 1.002 | 2258.00
## SM_Neg_p     |  0.24 | [-0.28,  0.76] | 80.60% |      100% | 1.000 | 4157.00
## SM_Neg_p_c   | -0.29 | [-1.09,  0.45] | 76.90% |      100% | 1.002 | 1891.00
## day_in_study | -0.67 | [-1.57,  0.20] | 92.62% |      100% | 1.001 | 3523.00
##
## # Fixed effects sigma
##
## Parameter |  Mean |         95% CI |   pd | % in ROPE |  Rhat |     ESS
## ------------------------------------------------------------------------
## sigma     | 69.35 | [63.72, 75.58] | 100% |        0% | 1.000 | 4138.00
```

```
standard_error(NA_on_SM_day_bayes)
```

```
##        Parameter        SE
## 1    b_Intercept 9.7160286
## 2     b_SM_Neg_p 0.2681096
## 3   b_SM_Neg_p_c 0.3958571
## 4 b_day_in_study 0.4582363
## 5          sigma 2.9698329
```

```
## Negative affect & SM checks

NA_on_SM_count_day_bayes  <- brm(count_sm_p ~ SM_Neg_p + SM_Neg_p_c + day_in_study + (1 | pid), prior =
```

```
##
## SAMPLING FOR MODEL '720923e6492929d445f3f5168bd86b44' NOW (CHAIN 1).
## Chain 1:
## Chain 1: Gradient evaluation took 0 seconds
## Chain 1: 1000 transitions using 10 leapfrog steps per transition would take 0 seconds.
## Chain 1: Adjust your expectations accordingly!
## Chain 1:
## Chain 1:
## Chain 1: Iteration:    1 / 2000 [  0%]  (Warmup)
## Chain 1: Iteration:  200 / 2000 [ 10%]  (Warmup)
## Chain 1: Iteration:  400 / 2000 [ 20%]  (Warmup)
## Chain 1: Iteration:  600 / 2000 [ 30%]  (Warmup)
## Chain 1: Iteration:  800 / 2000 [ 40%]  (Warmup)
## Chain 1: Iteration: 1000 / 2000 [ 50%]  (Warmup)
## Chain 1: Iteration: 1001 / 2000 [ 50%]  (Sampling)
## Chain 1: Iteration: 1200 / 2000 [ 60%]  (Sampling)
## Chain 1: Iteration: 1400 / 2000 [ 70%]  (Sampling)
## Chain 1: Iteration: 1600 / 2000 [ 80%]  (Sampling)
## Chain 1: Iteration: 1800 / 2000 [ 90%]  (Sampling)
## Chain 1: Iteration: 2000 / 2000 [100%]  (Sampling)
## Chain 1:
## Chain 1:  Elapsed Time: 0.62 seconds (Warm-up)
## Chain 1:                0.387 seconds (Sampling)
## Chain 1:                1.007 seconds (Total)
## Chain 1:
##
## SAMPLING FOR MODEL '720923e6492929d445f3f5168bd86b44' NOW (CHAIN 2).
## Chain 2:
## Chain 2: Gradient evaluation took 0 seconds
## Chain 2: 1000 transitions using 10 leapfrog steps per transition would take 0 seconds.
## Chain 2: Adjust your expectations accordingly!
## Chain 2:
## Chain 2:
## Chain 2: Iteration:    1 / 2000 [  0%]  (Warmup)
## Chain 2: Iteration:  200 / 2000 [ 10%]  (Warmup)
## Chain 2: Iteration:  400 / 2000 [ 20%]  (Warmup)
## Chain 2: Iteration:  600 / 2000 [ 30%]  (Warmup)
## Chain 2: Iteration:  800 / 2000 [ 40%]  (Warmup)
## Chain 2: Iteration: 1000 / 2000 [ 50%]  (Warmup)
## Chain 2: Iteration: 1001 / 2000 [ 50%]  (Sampling)
## Chain 2: Iteration: 1200 / 2000 [ 60%]  (Sampling)
## Chain 2: Iteration: 1400 / 2000 [ 70%]  (Sampling)
## Chain 2: Iteration: 1600 / 2000 [ 80%]  (Sampling)
## Chain 2: Iteration: 1800 / 2000 [ 90%]  (Sampling)
## Chain 2: Iteration: 2000 / 2000 [100%]  (Sampling)
## Chain 2:
## Chain 2:  Elapsed Time: 0.811 seconds (Warm-up)
## Chain 2:                0.377 seconds (Sampling)
## Chain 2:                1.188 seconds (Total)
## Chain 2:
##
## SAMPLING FOR MODEL '720923e6492929d445f3f5168bd86b44' NOW (CHAIN 3).
## Chain 3:
## Chain 3: Gradient evaluation took 0 seconds
```

```
## Chain 3: 1000 transitions using 10 leapfrog steps per transition would take 0 seconds.
## Chain 3: Adjust your expectations accordingly!
## Chain 3:
## Chain 3:
## Chain 3: Iteration:    1 / 2000 [  0%]  (Warmup)
## Chain 3: Iteration:  200 / 2000 [ 10%]  (Warmup)
## Chain 3: Iteration:  400 / 2000 [ 20%]  (Warmup)
## Chain 3: Iteration:  600 / 2000 [ 30%]  (Warmup)
## Chain 3: Iteration:  800 / 2000 [ 40%]  (Warmup)
## Chain 3: Iteration: 1000 / 2000 [ 50%]  (Warmup)
## Chain 3: Iteration: 1001 / 2000 [ 50%]  (Sampling)
## Chain 3: Iteration: 1200 / 2000 [ 60%]  (Sampling)
## Chain 3: Iteration: 1400 / 2000 [ 70%]  (Sampling)
## Chain 3: Iteration: 1600 / 2000 [ 80%]  (Sampling)
## Chain 3: Iteration: 1800 / 2000 [ 90%]  (Sampling)
## Chain 3: Iteration: 2000 / 2000 [100%]  (Sampling)
## Chain 3:
## Chain 3:  Elapsed Time: 0.5 seconds (Warm-up)
## Chain 3:                0.214 seconds (Sampling)
## Chain 3:                0.714 seconds (Total)
## Chain 3:
##
## SAMPLING FOR MODEL '720923e6492929d445f3f5168bd86b44' NOW (CHAIN 4).
## Chain 4:
## Chain 4: Gradient evaluation took 0 seconds
## Chain 4: 1000 transitions using 10 leapfrog steps per transition would take 0 seconds.
## Chain 4: Adjust your expectations accordingly!
## Chain 4:
## Chain 4:
## Chain 4: Iteration:    1 / 2000 [  0%]  (Warmup)
## Chain 4: Iteration:  200 / 2000 [ 10%]  (Warmup)
## Chain 4: Iteration:  400 / 2000 [ 20%]  (Warmup)
## Chain 4: Iteration:  600 / 2000 [ 30%]  (Warmup)
## Chain 4: Iteration:  800 / 2000 [ 40%]  (Warmup)
## Chain 4: Iteration: 1000 / 2000 [ 50%]  (Warmup)
## Chain 4: Iteration: 1001 / 2000 [ 50%]  (Sampling)
## Chain 4: Iteration: 1200 / 2000 [ 60%]  (Sampling)
## Chain 4: Iteration: 1400 / 2000 [ 70%]  (Sampling)
## Chain 4: Iteration: 1600 / 2000 [ 80%]  (Sampling)
## Chain 4: Iteration: 1800 / 2000 [ 90%]  (Sampling)
## Chain 4: Iteration: 2000 / 2000 [100%]  (Sampling)
## Chain 4:
## Chain 4:  Elapsed Time: 0.427 seconds (Warm-up)
## Chain 4:                0.217 seconds (Sampling)
## Chain 4:                0.644 seconds (Total)
## Chain 4:
```

```
model_parameters(NA_on_SM_count_day_bayes, centrality = "mean")
```

```
## # Fixed effects
##
## Parameter    |  Mean |         95% CI |     pd | % in ROPE |  Rhat |     ESS
## ------------------------------------------------------------------------------
## (Intercept)  | 12.40 | [-5.05, 29.09] | 91.22% |    24.89% | 1.000 | 4503.00
```

```
## SM_Neg_p     |  0.49 | [-0.03,  1.00] | 96.70% |      100% | 1.001 | 4364.00
## SM_Neg_p_c   |  0.09 | [-0.57,  0.75] | 60.98% |      100% | 1.000 | 3493.00
## day_in_study | -0.61 | [-1.46,  0.27] | 92.10% |      100% | 1.000 | 4007.00
##
## # Fixed effects sigma
##
## Parameter |  Mean |         95% CI |   pd | % in ROPE |  Rhat |     ESS
## ------------------------------------------------------------------------
## sigma     | 67.68 | [62.49, 73.34] | 100% |        0% | 1.000 | 4679.00
```

```
standard_error(NA_on_SM_count_day_bayes)
```

```
##        Parameter        SE
## 1    b_Intercept 8.7920886
## 2     b_SM_Neg_p 0.2661176
## 3   b_SM_Neg_p_c 0.3303167
## 4 b_day_in_study 0.4409581
## 5          sigma 2.8286325
```