Negative Affect and SM Use - SMASH Study

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Descriptive Statistics

```
## Age

mean(data$Age, na.rm=TRUE)
```

```
## [1] 15.82034
```

```
sd(data$Age, na.rm=TRUE)
```

```
## [1] 0.9989791
```

```
## Race

table(data$Race_012, data$pid)
```

```
##
##     1002 1004 1005 1006 1007 1008 1009 1011 1013 1014 1021 1022 1023 1024 1025
##   0  724  739    0  678  432  652  695    0    0  621  337  675  698    0  817
##   1    0    0  677    0    0    0    0  989    0    0    0    0    0    0    0
##   2    0    0    0    0    0    0    0    0  834    0    0    0    0  672    0
##
##     1026 1027 1029 1030
##   0  815  704  669  602
##   1    0    0    0    0
##   2    0    0    0    0
```

```
table(data$Gender, data$pid)
```

```
##
##     1002 1004 1005 1006 1007 1008 1009 1011 1013 1014 1021 1022 1023 1024 1025
##   0    0    0  677    0    0    0    0  989  834    0    0    0    0  672  817
##   1  724    0    0  678  432  652  695    0    0  621  337  675  698    0    0
##   2    0  739    0    0    0    0    0    0    0    0    0    0    0    0    0
##
##     1026 1027 1029 1030
##   0    0  704    0  602
##   1  815    0  669    0
##   2    0    0    0    0
```

```r
## 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
```

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

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

```r
## Get Means/SDs of SM time spent

sm_summary <- day %>%
  group_by %>%
  summarise(sm_time = (mean(sum_sm, na.rm=TRUE) * 60), sm_checks = mean(count_sm, na.rm=TRUE))
```

Negative Mood - Bayesian Framework

```r
## 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 =
                    family = "gaussian", data = day, warmup = 2.5e3, iter = 1.5e4, thin = 1,
                    chains = 4, cores = 4, seed = "123",control = list(adapt_delta = 0.999, max_treedep

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

```
## # Fixed effects
##
## Parameter    |  Mean |            95% CI |     pd | % in ROPE |  Rhat |      ESS
## ------------------------------------------------------------------------------
## (Intercept)  |  3.16 | [-119.74, 127.59] | 52.05% |    61.13% | 1.000 | 70526.00
## sum_sm_p     |  0.19 | [  -0.40,   0.77] | 73.76% |      100% | 1.000 | 79259.00
## NAf_am_p     |  2.15 | [  -0.49,   4.78] | 94.42% |      100% | 1.000 | 70054.00
## sum_sm_p_c   | -0.19 | [  -1.04,   0.66] | 66.96% |      100% | 1.000 | 62673.00
## day_in_study |  1.19 | [  -4.47,   6.92] | 65.79% |      100% | 1.000 | 70156.00
##
## # Fixed effects sigma
##
## Parameter |   Mean |          95% CI |   pd | % in ROPE |  Rhat |      ESS
## ------------------------------------------------------------------------
## sigma     | 506.33 | [470.27, 545.79] | 100% |        0% | 1.000 | 76395.00
```

```
standard_error(NA_sm_sum_bayes)
```

```
##        Parameter         SE
## 1    b_Intercept 62.8516695
## 2     b_sum_sm_p  0.2950649
## 3     b_NAf_am_p  1.3409750
## 4   b_sum_sm_p_c  0.4319137
## 5 b_day_in_study  2.9119264
## 6          sigma 19.2549247
```

```
## 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), pr
                    family = "gaussian", data = day, warmup = 2.5e3, iter = 1.5e4, thin = 1,
                    chains = 4, cores = 4, seed = "123",control = list(adapt_delta = 0.999, max_treedep
model_parameters(NA_sm_count_bayes, centrality = "mean")
```

```
## # Fixed effects
##
## Parameter    |  Mean |           95% CI |     pd | % in ROPE |  Rhat |      ESS
## ------------------------------------------------------------------------------
## (Intercept)  | 20.62 | [-98.18, 142.02] | 63.00% |    59.64% | 1.000 | 67682.00
## count_sm_p   |  0.90 | [  0.11,   1.68] | 98.75% |      100% | 1.000 | 67157.00
## NAf_am_p     |  2.17 | [ -0.43,   4.77] | 94.99% |      100% | 1.000 | 65563.00
## count_sm_p_c | -0.35 | [ -0.90,   0.20] | 89.08% |      100% | 1.000 | 65397.00
## day_in_study |  1.73 | [ -3.90,   7.33] | 72.69% |      100% | 1.000 | 68991.00
##
## # Fixed effects sigma
##
## Parameter |   Mean |           95% CI |   pd | % in ROPE |  Rhat |      ESS
## ------------------------------------------------------------------------
## sigma     | 502.10 | [466.45, 541.03] | 100% |        0% | 1.000 | 72613.00
```

```
standard_error(NA_sm_count_bayes)
```

```
##        Parameter         SE
## 1    b_Intercept 61.0762471
## 2   b_count_sm_p  0.4000597
## 3     b_NAf_am_p  1.3194582
## 4 b_count_sm_p_c  0.2816419
## 5 b_day_in_study  2.8707431
## 6          sigma 19.0431873
```

Positive Affect on SM - Within-Day Models Bayesian

```
#-----------------------------------------Pos affect & same day SM---------------------------------

## 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,
                    family = "gaussian", data = day, warmup = 2.5e3, iter = 1.5e4, thin = 1,
                    chains = 4, cores = 4, seed = "123",control = list(adapt_delta = 0.999, max_treedep

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

```
## # Fixed effects
##
## Parameter    |  Mean |          95% CI |     pd | % in ROPE |  Rhat |      ESS
## ------------------------------------------------------------------------------
## (Intercept)  |  2.28 | [-25.85, 30.56] | 56.22% |    53.18% | 1.000 | 80331.00
## SM_Pos_p     |  0.24 | [ -0.31,  0.77] | 80.21% |      100% | 1.000 | 83385.00
## SM_Pos_p_c   |  0.07 | [ -0.32,  0.46] | 64.20% |      100% | 1.000 | 79000.00
## day_in_study | -0.18 | [ -1.25,  0.90] | 62.34% |      100% | 1.000 | 82131.00
##
## # Fixed effects sigma
##
## Parameter |  Mean |          95% CI |   pd | % in ROPE |  Rhat |      ESS
## ---------------------------------------------------------------------------
## sigma     | 98.95 | [92.40, 106.11] | 100% |        0% | 1.000 | 80474.00
```

```
standard_error(PA_on_SM_day_bayes)
```

```
##        Parameter         SE
## 1    b_Intercept 14.4081824
## 2     b_SM_Pos_p  0.2767788
## 3   b_SM_Pos_p_c  0.1993240
## 4 b_day_in_study  0.5510825
## 5          sigma  3.4919061
```

```
## 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 =
                    family = "gaussian", data = day, warmup = 2.5e3, iter = 1.5e4, thin = 1,
                    chains = 4, cores = 4, seed = "123",control = list(adapt_delta = 0.999, max_treedep


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

```
## # Fixed effects
##
## Parameter    |  Mean |          95% CI |      pd | % in ROPE |  Rhat |      ESS
## -------------------------------------------------------------------------------
## (Intercept)  |  2.69 | [-16.54, 21.97] |  60.86% |    52.20% | 1.000 | 77444.00
## SM_Pos_p     |  0.75 | [  0.39,  1.12] | 100.00% |      100% | 1.000 | 79619.00
## SM_Pos_p_c   | -0.04 | [ -0.30,  0.23] |  60.84% |      100% | 1.000 | 75156.00
## day_in_study |  0.10 | [ -0.62,  0.83] |  60.95% |      100% | 1.000 | 77993.00
##
## # Fixed effects sigma
##
## Parameter |  Mean |         95% CI |   pd | % in ROPE |  Rhat |      ESS
## ----------------------------------------------------------------------------
## sigma     | 66.91 | [62.53, 71.71] | 100% |        0% | 1.000 | 88627.00
```

```
standard_error(PA_on_SM_count_day_bayes)
```

```
##        Parameter        SE
## 1    b_Intercept 9.8469461
## 2     b_SM_Pos_p 0.1876314
## 3   b_SM_Pos_p_c 0.1348922
## 4 b_day_in_study 0.3715356
## 5          sigma 2.3562323
```

Negative Affect on SM

```
#-----------------------------------------Pos affect & same day SM---------------------------------

## 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,
                    family = "gaussian", data = day, warmup = 2.5e3, iter = 1.5e4, thin = 1,
                    chains = 4, cores = 4, seed = "123",control = list(adapt_delta = 0.999, max_treedep

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

```
## # Fixed effects
##
## Parameter    |  Mean |         95% CI |     pd | % in ROPE |  Rhat |      ESS
## ------------------------------------------------------------------------------
## (Intercept)  | 14.74 | [-4.46, 34.73] | 93.38% |    20.11% | 1.000 | 41717.00
## SM_Neg_p     |  0.24 | [-0.28,  0.77] | 81.37% |      100% | 1.000 | 67586.00
## SM_Neg_p_c   | -0.29 | [-1.13,  0.48] | 77.07% |      100% | 1.000 | 29861.00
## day_in_study | -0.66 | [-1.57,  0.26] | 91.97% |      100% | 1.000 | 53227.00
##
## # Fixed effects sigma
##
## Parameter |  Mean |         95% CI |   pd | % in ROPE |  Rhat |      ESS
## ----------------------------------------------------------------------
## sigma     | 69.38 | [63.97, 75.42] | 100% |        0% | 1.000 | 60783.00
```

```
standard_error(NA_on_SM_day_bayes)
```

```
##        Parameter        SE
## 1    b_Intercept 9.9603126
## 2     b_SM_Neg_p 0.2687266
## 3   b_SM_Neg_p_c 0.4081199
## 4 b_day_in_study 0.4675308
## 5          sigma 2.9305403
```

```
## 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 =
                    family = "gaussian", data = day, warmup = 2.5e3, iter = 1.5e4, thin = 1,
                    chains = 4, cores = 4, seed = "123",control = list(adapt_delta = 0.999, max_treedep
```

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

```
## # Fixed effects
##
## Parameter    |  Mean |         95% CI |     pd | % in ROPE |  Rhat |      ESS
## ------------------------------------------------------------------------------
## (Intercept)  | 12.67 | [-4.60, 30.09] | 92.61% |    23.63% | 1.000 | 69702.00
## SM_Neg_p     |  0.49 | [-0.03,  1.00] | 96.73% |      100% | 1.000 | 64540.00
## SM_Neg_p_c   |  0.09 | [-0.56,  0.73] | 61.42% |      100% | 1.000 | 55622.00
## day_in_study | -0.62 | [-1.48,  0.24] | 91.90% |      100% | 1.000 | 63927.00
##
## # Fixed effects sigma
##
## Parameter |  Mean |         95% CI |   pd | % in ROPE |  Rhat |      ESS
## ------------------------------------------------------------------------
## sigma     | 67.64 | [62.40, 73.37] | 100% |        0% | 1.000 | 71599.00
```

```
standard_error(NA_on_SM_count_day_bayes)
```

```
##        Parameter        SE
## 1    b_Intercept 8.8099235
## 2     b_SM_Neg_p 0.2613456
## 3   b_SM_Neg_p_c 0.3279461
## 4 b_day_in_study 0.4425889
## 5          sigma 2.8079436
```