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
```

```
## 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
```

```
## 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

```
## 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
tidy_stan(NA_sm_sum_bayes, prob = 0.95, typical = "mean", type = "fixed", digits = 3)
```

```
## # Fixed effects
##
## Parameter    | Median |            95% CI |     pd | % in ROPE |  Rhat |       ESS
## ------------------------------------------------------------------------------------
## (Intercept)  |  3.045 | [-119.07, 128.01] | 52.05% |    61.13% | 1.000 | 70526.000
## sum_sm_p     |  0.185 | [  -0.39,   0.77] | 73.76% |      100% | 1.000 | 79259.000
## NAf_am_p     |  2.145 | [  -0.54,   4.71] | 94.42% |      100% | 1.000 | 70054.000
## sum_sm_p_c   | -0.189 | [  -1.02,   0.68] | 66.96% |      100% | 1.000 | 62673.000
## day_in_study |  1.181 | [  -4.45,   6.93] | 65.79% |      100% | 1.000 | 70156.000
##
## # Fixed effects sigma
##
## Parameter |  Median |           95% CI |   pd | % in ROPE |  Rhat |       ESS
## ------------------------------------------------------------------------------
## sigma     | 505.718 | [468.85, 543.97] | 100% |        0% | 1.000 | 76395.000
```

```
## 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
tidy_stan(NA_sm_count_bayes, prob = 0.95, typical = "mean", type = "fixed", digits = 3)
```

```
## # Fixed effects
##
## Parameter    | Median |           95% CI |     pd | % in ROPE |  Rhat |       ESS
## ------------------------------------------------------------------------------
## (Intercept)  | 20.296 | [-95.06, 145.01] | 63.00% |    59.64% | 1.000 | 67682.000
## count_sm_p   |  0.899 | [  0.14,   1.70] | 98.75% |      100% | 1.000 | 67157.000
## NAf_am_p     |  2.180 | [ -0.44,   4.76] | 94.99% |      100% | 1.000 | 65563.000
## count_sm_p_c | -0.347 | [ -0.90,   0.21] | 89.08% |      100% | 1.000 | 65397.000
## day_in_study |  1.730 | [ -3.88,   7.35] | 72.69% |      100% | 1.000 | 68991.000
##
## # Fixed effects sigma
##
## Parameter |  Median |           95% CI |   pd | % in ROPE |  Rhat |       ESS
## ------------------------------------------------------------------------------
## sigma     | 501.488 | [465.86, 540.36] | 100% |        0% | 1.000 | 72613.000
```

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
tidy_stan(PA_on_SM_day_bayes, prob = 0.95, typical = "mean", type = "fixed", digits = 3)
```

```
## # Fixed effects
##
## Parameter    | Median |          95% CI |     pd | % in ROPE |  Rhat |       ESS
## ------------------------------------------------------------------------------
## (Intercept)  |  2.227 | [-25.63, 30.74] | 56.22% |    53.18% | 1.000 | 80331.000
## SM_Pos_p     |  0.236 | [ -0.30,  0.78] | 80.21% |      100% | 1.000 | 83385.000
## SM_Pos_p_c   |  0.072 | [ -0.32,  0.46] | 64.20% |      100% | 1.000 | 79000.000
## day_in_study | -0.175 | [ -1.25,  0.91] | 62.34% |      100% | 1.000 | 82131.000
##
## # Fixed effects sigma
##
## Parameter | Median |          95% CI |   pd | % in ROPE |  Rhat |       ESS
## ------------------------------------------------------------------------------
## sigma     | 98.846 | [92.03, 105.66] | 100% |        0% | 1.000 | 80474.000
```

```
## 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
tidy_stan(PA_on_SM_count_day_bayes, prob = 0.95, typical = "mean", type = "fixed", digits = 3)
```

```
## # Fixed effects
##
## Parameter    | Median |          95% CI |      pd | % in ROPE |  Rhat |       ESS
## ------------------------------------------------------------------------------
## (Intercept)  |  2.668 | [-16.36, 22.11] |  60.86% |    52.20% | 1.000 | 77444.000
## SM_Pos_p     |  0.755 | [  0.38,  1.12] | 100.00% |      100% | 1.000 | 79619.000
## SM_Pos_p_c   | -0.037 | [ -0.30,  0.23] |  60.84% |      100% | 1.000 | 75156.000
## day_in_study |  0.105 | [ -0.61,  0.85] |  60.95% |      100% | 1.000 | 77993.000
##
## # Fixed effects sigma
##
## Parameter | Median |         95% CI |   pd | % in ROPE |  Rhat |       ESS
## ------------------------------------------------------------------------
## sigma     | 66.838 | [62.49, 71.67] | 100% |        0% | 1.000 | 88627.000
```

Negative Affect on SM - Within-Day Models Bayesian

```
#-----------------------------------------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
tidy_stan(NA_on_SM_day_bayes, prob = 0.95, typical = "mean", type = "fixed", digits = 3)
```

```
## # Fixed effects
##
## Parameter    | Median |         95% CI |     pd | % in ROPE |  Rhat |       ESS
## ------------------------------------------------------------------------------
## (Intercept)  | 14.632 | [-4.92, 34.30] | 93.43% |    20.28% | 1.000 | 42211.000
## SM_Neg_p     |  0.239 | [-0.29,  0.76] | 81.21% |      100% | 1.000 | 69104.000
## SM_Neg_p_c   | -0.278 | [-1.11,  0.49] | 77.51% |      100% | 1.000 | 30892.000
## day_in_study | -0.652 | [-1.56,  0.27] | 91.81% |      100% | 1.000 | 54915.000
##
## # Fixed effects sigma
##
## Parameter | Median |         95% CI |   pd | % in ROPE |  Rhat |       ESS
## ------------------------------------------------------------------------
## sigma     | 69.249 | [63.77, 75.21] | 100% |        0% | 1.000 | 62134.000
```

```
## 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
tidy_stan(NA_on_SM_count_day_bayes, prob = 0.95, typical = "mean", type = "fixed", digits = 3)
```

```
## # Fixed effects
##
## Parameter    | Median |         95% CI |     pd | % in ROPE |  Rhat |       ESS
## ------------------------------------------------------------------------------
## (Intercept)  | 12.660 | [-4.97, 29.70] | 92.61% |    23.89% | 1.000 | 69702.000
## SM_Neg_p     |  0.486 | [-0.03,  0.99] | 96.73% |      100% | 1.000 | 64540.000
## SM_Neg_p_c   |  0.093 | [-0.56,  0.73] | 61.42% |      100% | 1.000 | 55622.000
## day_in_study | -0.617 | [-1.49,  0.23] | 91.90% |      100% | 1.000 | 63927.000
##
## # Fixed effects sigma
##
## Parameter | Median |         95% CI |   pd | % in ROPE |  Rhat |       ESS
## ---------------------------------------------------------------------------
## sigma     | 67.550 | [62.20, 73.13] | 100% |        0% | 1.000 | 71599.000
```