

Negative Affect and SM Use - SMASH Study

Melissa Dreier

3/4/2022

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 ~ sum_sm_p + NAf_am + sm_average + day_in_study + (1 | pid), prior = priors,
  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_treedepth = 5),
  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) | -63.646 | [-389.24, 255.63] | 65.62% | 27.45% | 1.000 | 12506.000
## sum_sm_p | 0.195 | [-0.38, 0.77] | 74.55% | 100% | 1.000 | 50232.000
## NAf_am | 2.758 | [0.16, 5.29] | 98.23% | 100% | 1.000 | 37142.000
## sm_average | -0.225 | [-3.05, 2.53] | 56.55% | 100% | 1.000 | 11637.000
## day_in_study | 1.709 | [-4.31, 7.79] | 71.18% | 100% | 1.000 | 43064.000
##
## # Fixed effects sigma
##
## Parameter | Median | 95% CI | pd | % in ROPE | Rhat | ESS
## -----
## sigma | 511.000 | [473.52, 550.10] | 100% | 0% | 1.000 | 42994.000
```

Negative mood - counts

```
NA_sm_count_bayes <- brm(NAf_pm ~ count_sm_p + NAf_am + sm_average + 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_treedepth = 5),
  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)	-67.019	[-389.46, 259.74]	66.25%	27.05%	1.000	13535.000
count_sm_p	0.882	[0.09, 1.67]	98.54%	100%	1.000	65617.000
NAf_am	2.781	[0.30, 5.41]	98.38%	100%	1.000	43254.000
sm_average	-0.308	[-3.16, 2.52]	58.70%	100%	1.000	12470.000
day_in_study	2.314	[-3.53, 8.56]	77.49%	100%	1.000	57485.000

Fixed effects sigma

Parameter	Median	95% CI	pd	% in ROPE	Rhat	ESS
sigma	507.707	[470.85, 547.36]	100%	0%	1.000	57107.000

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 ~ SM_Pos_p + PA_sm_average + 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_treedepth = 5),
  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)	-16.428	[-138.86, 104.85]	60.90%	16.95%	1.000	8548.000
SM_Pos_p	0.213	[-0.33, 0.79]	77.13%	100%	1.000	44086.000
PA_sm_average	0.673	[-1.56, 2.97]	73.08%	100%	1.000	8199.000
day_in_study	-0.357	[-1.57, 0.85]	71.99%	100%	1.000	42213.000

Fixed effects sigma

Parameter	Median	95% CI	pd	% in ROPE	Rhat	ESS
sigma	100.660	[93.77, 107.99]	100%	0%	1.000	46971.000

Positive affect & SM checks

```
PA_on_SM_count_day_bayes <- brm(count_sm ~ SM_Pos_p + PA_sm_average + day_in_study + (1 | pid), prior = 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_treedepth = 5),
  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)	5.400	[-169.55, 180.93]	52.47%	11.79%	1.000	7981.000
SM_Pos_p	0.729	[0.34, 1.10]	100.00%	100%	1.000	40326.000
PA_sm_average	0.085	[-3.16, 3.42]	52.08%	100%	1.000	7840.000
day_in_study	-0.098	[-0.92, 0.71]	59.37%	100%	1.000	40143.000

Fixed effects sigma

Parameter	Median	95% CI	pd	% in ROPE	Rhat	ESS
sigma	67.945	[63.40, 72.92]	100%	0%	1.000	39069.000

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 ~ SM_Neg_p + NA_sm_average + day_in_study + (1 | pid), prior = 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_treedepth = 5),
  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)	49.769	[-22.89, 117.13]	91.87%	7.35%	1.000	9497.000
SM_Neg_p	0.211	[-0.30, 0.75]	78.44%	100%	1.000	44586.000
NA_sm_average	-1.402	[-6.15, 2.90]	73.94%	100%	1.000	8932.000
day_in_study	-0.989	[-1.96, -0.02]	97.77%	100%	1.000	40599.000

Fixed effects sigma

Parameter	Median	95% CI	pd	% in ROPE	Rhat	ESS
sigma	68.840	[63.19, 74.71]	100%	0%	1.000	40336.000

Negative affect & SM checks

```

NA_on_SM_count_day_bayes <- brm(count_sm ~ SM_Neg_p + NA_sm_average + 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_treedepth = 5),
  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)	77.280	[-32.49, 187.51]	91.76%	6.57%	1.000	7937.000
## SM_Neg_p	0.470	[-0.06, 1.00]	95.99%	100%	1.000	43106.000
## NA_sm_average	-3.843	[-11.00, 3.48]	85.95%	100%	1.000	7680.000
## day_in_study	-0.803	[-1.80, 0.16]	94.89%	100%	1.000	42775.000

```
##
```

```
## # Fixed effects sigma
```

```
##
```

## Parameter	Median	95% CI	pd	% in ROPE	Rhat	ESS
## sigma	68.772	[63.32, 74.84]	100%	0%	1.000	40636.000