HW 9

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HW 9

Introduction

Research Question

How does relationship context affect moral judgment and moral emotion?

Method

Each participant was randomly assigned to learn about moral transgressions committed by either 1) their romantic partner, 2) a close friend, or 3) a stranger. Participants first rated their partner's morality and then learned about moral transgressions ostensibly committed by their partner. Finally, participants rated their partner's morality again and reported their own emotions.

Variables

- `Pair_ID`: ID for each dyad (romantic partners, friends, or strangers)
- `Group`: Condition. 1: Romantic Partner, 2: Close friend, 3: Stranger
- `Other1Moral`: Morality rating at baseline. "After learning this information, please rate the other person on the following traits. (honest, trustworthy, fair, unethical)" 1 (Not at all) to 5 (Extremely)
- `Other2Moral`: Morality rating after learning about transgression. "After learning this information, please rate the other person on the following traits. (honest, trustworthy, fair, unethical)" 1 (Not at all) to 5 (Extremely)
- `SCEmo`: Self-conscious emotions after learning about transgression. "After learning this information, how much do you feel the following emotions your self? (Embarrassed, Shame, Guilt)" 1: None at all, 10: As much as I've ever felt.

Variable Summary

Table 1 shows the summary statistics of moral evaluations and self-conscious emotion ratings by conditions.

Model

Let $Y =$ `Other2Moral`, `SCEmo`, $G =$ `Group`

For each of the DVs, I fit the following model:

$$
\begin{aligned}
Y_{ij,G=romantic} &\sim N(\theta_{j1}, \sigma) \\
Y_{ij,G=friend} &\sim N(\theta_{j2}, \sigma) \\
Y_{ij,G=stranger} &\sim N(\theta_{j3}, \sigma) \\
\theta_{j1} &\sim N(\mu_1, \sigma_1) \\
\theta_{j2} &\sim N(\mu_2, \sigma_2) \\
\theta_{j3} &\sim N(\mu_3, \sigma_3)
\end{aligned}
$$

Below are the priors for the `OtherMoralDif` variable, based on data from Study 1.

$$
\begin{aligned}
\mu_1 &\sim N(2.61, 2) \\
\mu_2 &\sim N(2.52, 2) \\
\mu_2 &\sim N(2.11, 2) \\
\sigma &\sim N^{+}(0, 2) \\
\sigma_1 &\sim N^{+}(1.6, 2) \\
\sigma_2 &\sim N^{+}(1.35, 2) \\
\sigma_2 &\sim N^{+}(1.35, 2)
\end{aligned}
$$

Below are the priors for the `SCEmo` variable.

$$\mu_1 \sim N(2.89, 2)$$

$$\mu_2 \sim N(2.42, 2)$$

$$\mu_2 \sim N(1.85, 2)$$

$$\sigma \sim N^{+}(0, 2)$$

$$\sigma_1 \sim N^{+}(1.17, 2)$$

$$\sigma_2 \sim N^{+}(1.07, 2)$$

$$\sigma_2 \sim N^{+}(1.06, 2)$$

Running Stan

We ran a separate model for each DV. In each model, we used 4 chains, each with 4,000 iterations (first 2,000 as warm-ups). For this preliminary analysis, I did not control for baseline moral judgment (`Other2Moral`). I also treated participants in the same dyad individuals, without taking into account the within-dyadic correlations.

Results

As shown in the rank histograms (Vehtari et al., 2021) in Figure 1 and Figure 2, the chains mixed well for both DVs.

Table 3 shows the posterior distributions of μ_1, μ_2, μ_3, σ_1, σ_2, σ_3 for `Other2Moral` and the difference between each combinations of the three groups.

Table 2 shows the posterior distributions of μ_1, μ_2, μ_3, σ_1, σ_2, σ_3 for `SCEmo` and the difference between each combinations of the three groups.

The analysis showed that on average, participants in the romantic partner and close friend groups made less negative evaluations for their partners compared with participants in the stranger group. The posterior mean of the difference in moral judgment between the romantic partner and stranger groups was -0.84 and a 90% CI of [-1.09, -0.58]. The posterior

mean of the difference in moral judgment between the friend and stranger groups was -0.85 and a 90% CI of [-1.05, -0.65].

In the meantime, participants in the friend and stranger groups experienced less self-conscious emotions after learning that their partners had committed moral transgressions. The posterior mean of the difference between the romantic partner and friend groups was -0.49, with a 90% CI of [-0.92, -0.07]. The posterior mean of difference between the romantic partner and stranger groups was -0.61, with a 90% CI of [-1.03, -0.19].

References

Vehtari, A., Gelman, A., Simpson, D., Carpenter, B., & Bürkner, P.-C. (2021). Rank-normalization, folding, and localization: An improved R^ for assessing convergence of MCMC (with discussion). *Bayesian Analysis*, *16*(2). https://doi.org/10.1214/20-BA1221

Table 1

Summary Statistics

		Romantic Partner	Friend	Stranger
Other1Moral	N	61	79	79
	Mean	4.27	4.16	3.92
	SD	0.56	0.49	0.46
	Min	2.75	3.00	3.00
	Max	5.00	5.00	5.00
Other2Moral	N	61	79	102
	Mean	3.32	3.32	2.47
	SD	1.03	0.81	0.78
	Min	1.00	1.25	1.00
	Max	5.00	4.75	4.25
SCEmo	N	61	77	79
	Mean	2.08	1.60	1.48
	SD	1.76	1.00	1.04
	Min	1.00	1.00	1.00
	Max	7.67	5.33	5.67

SD = standard deviation

Table 2

Posterior summary of model parameters for moral judgment.

variable	mean	median	sd	mad	q5	q95	rhat	ess_bulk	ess_tail
mu1	3.31	3.31	0.13	0.13	3.10	3.52	1.00	10,458.35	6,252.04
mu2	3.32	3.32	0.09	0.09	3.17	3.47	1.00	12,342.99	5,926.53
mu3	2.47	2.47	0.08	0.08	2.34	2.60	1.00	10,984.91	6,269.67
sigma1	1.05	1.05	0.10	0.10	0.90	1.23	1.00	12,444.85	6,025.24
sigma2	0.82	0.82	0.07	0.07	0.72	0.94	1.00	10,789.19	6,173.16
sigma3	0.79	0.79	0.06	0.05	0.71	0.89	1.00	10,841.87	6,134.02
mu2 - mu1	0.01	0.01	0.16	0.16	-0.25	0.27	1.00	11,342.64	5,872.54
mu3 - mu1	-0.84	-0.84	0.15	0.15	-1.09	-0.58	1.00	11,166.58	6,039.43
mu3 - mu2	-0.85	-0.85	0.12	0.12	-1.05	-0.65	1.00	11,692.75	5,650.61

Note. sd = standard deviation. ess = effective sample size.

Table 3

Posterior summary of model parameters for self-conscious emotions.

variable	mean	median	sd	mad	q5	q95	rhat	ess_bulk	ess_tail
mu1	2.09	2.09	0.23	0.23	1.72	2.47	1.00	11,654.88	5,472.52
mu2	1.60	1.60	0.11	0.11	1.41	1.79	1.00	11,086.53	6,152.15
mu3	1.48	1.48	0.12	0.12	1.28	1.67	1.00	11,692.18	5,834.47
sigma1	1.79	1.77	0.17	0.16	1.54	2.08	1.00	11,958.88	5,454.51
sigma2	1.01	1.01	0.08	0.08	0.88	1.16	1.00	11,910.35	5,821.53
sigma3	1.06	1.05	0.09	0.08	0.92	1.20	1.00	10,513.82	5,739.11
mu2 - mu1	-0.49	-0.49	0.25	0.25	-0.92	-0.07	1.00	11,992.74	5,881.90
mu3 - mu1	-0.61	-0.61	0.26	0.26	-1.03	-0.19	1.00	11,964.96	6,201.61
mu3 - mu2	-0.12	-0.12	0.16	0.17	-0.39	0.15	1.00	11,506.50	5,969.19

Note. sd = standard deviation. ess = effective sample size.

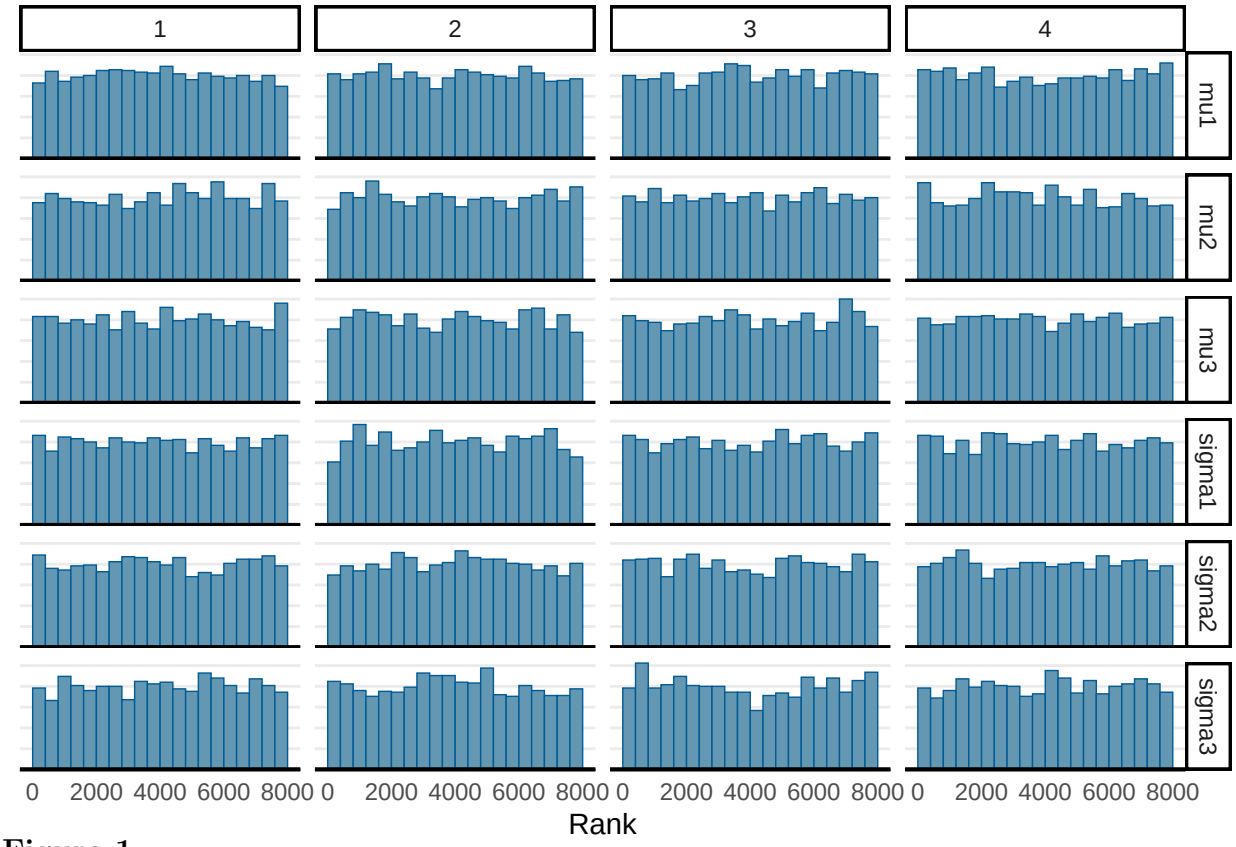

Figure 1

Rank histograms showing convergence of the MCMC chains for moral judgment.

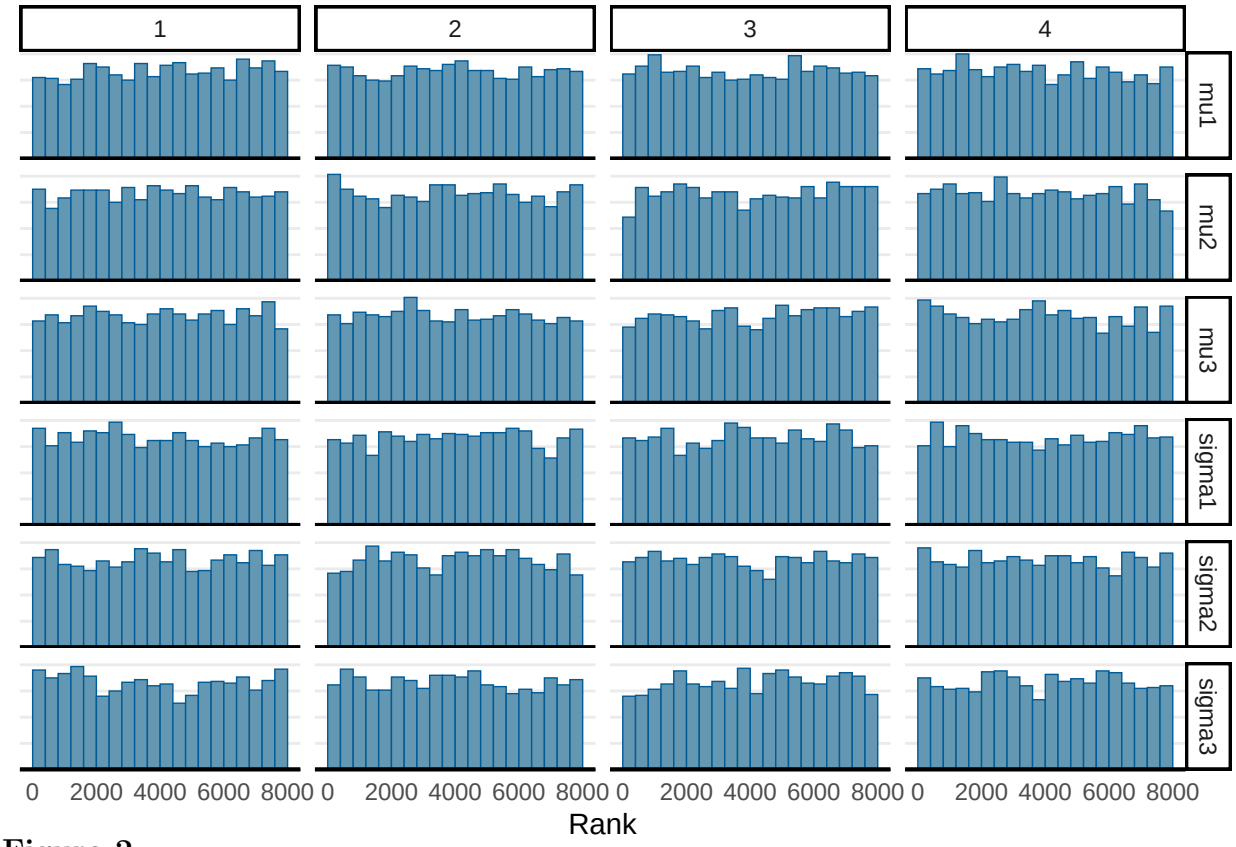

Figure 2

Rank histograms showing convergence of the MCMC chains for self-conscious emotions.