Rough Draft

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Abstract

Tingley, McDermmott, and Hatemi (2014) find that olfactory senses could explain assortative mating by ideology. My replication of this paper succeeded except for minor discrepancies which do not affect his conclusions. Through my extension, I further evaluate the three models Tingley, McDermott, and Hatemi use by applying a bayesian framework instead of a regular linear model. I further use the sampled iterations created by `stan_lm` to graph density plots of the main coefficient being evaluated in the respective models. Through this framework, I confirm that Tingley's model illustrates little variability in their coefficients. The data and code used in this analysis replication is available on my github.[1]

Introduction

Have you ever wondered why dogs smell eachother upon meeting eachother? They use smell in deciding whether or not they like each other, and many more animals do this as well. Tingley, McDermmott, and Hatemi take this knowledge to study whether smell affects who we like based on our political ideologies. According to Iyengar, Konitzer, and Tedin (2018), in 2015, there was a spousal [political] agreement level of 81.5%. There are numerous factors that can attribute to such a high percentage like this, but Tingley, McDermmott, and Hatemi explore the connection to our sense of smell. In order to do so, they surveyed 146 participants asking them to rate the odor of anonymous targets who were either strong liberals or strong conservatives. With this data, they create three separate models. The models all regress the reported attractive rating on numerous variables. In the first model, they primarily focus on the coeficient explaining when the evaluator and the target shared ideologies. The second two models focus on the coefficient that measures the distance between ideology on a 7 point scale. This coeficient explains how a smaller or larger distance apart in ideology between the evaluator and target leads to different attractive ratings. The constant, or the intercept, in these models explain the predicted shift in attractiveness rating of the targets. Through these models, Tingley, McDermmott, and Hatemi observe that their hypotheses hold true even though there were small reported coefficient values.

For my replication, I use R software[2] to translate Tingely's, McDermmott's, and Hatemi's Stata code. Their code is available in the Harvard Dataverse here ("Replication Data for: Assortative Mating on Ideology Could Operate Through Olfactory Cues," n.d.).

Table 1: Odor Attraction as a Function of Ideological Similarity

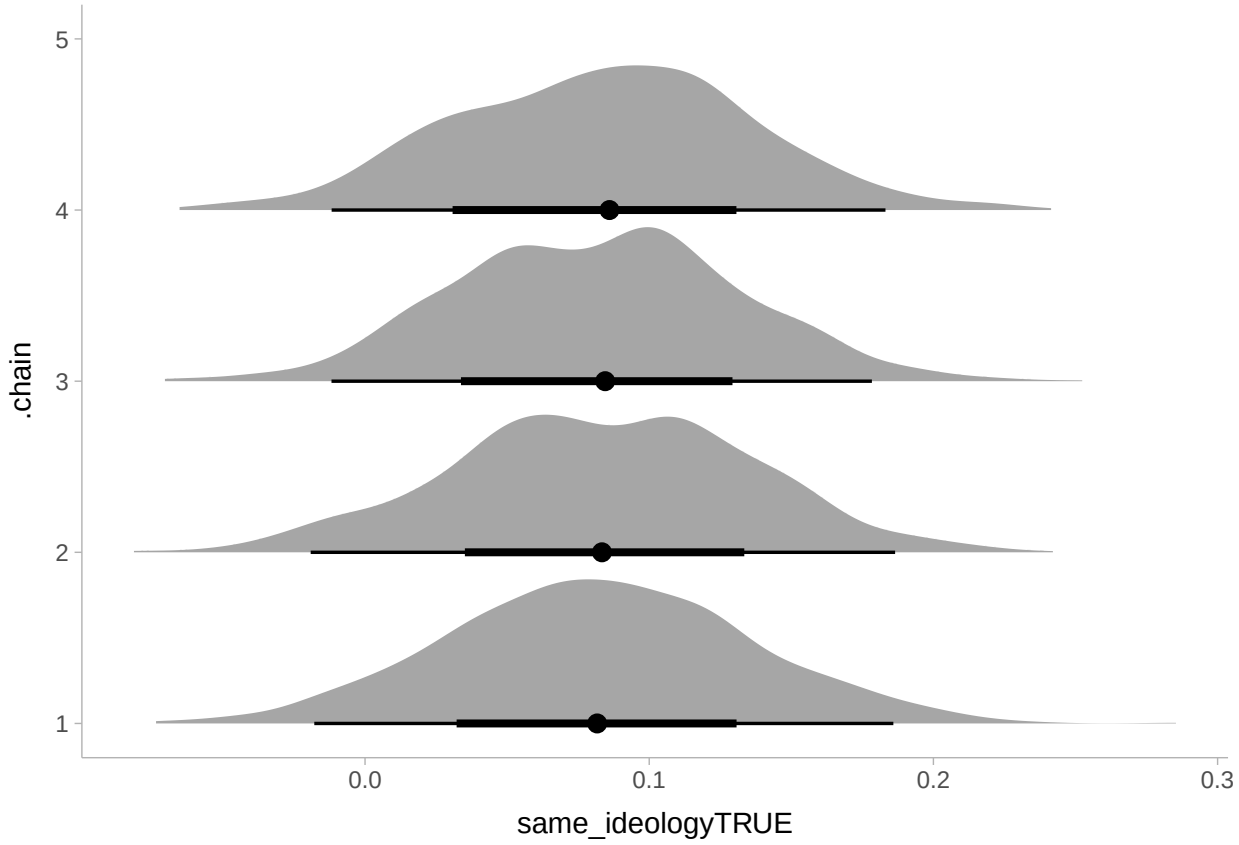
	Model 1	**Model 2**	**Model 3**
Same Ideology	0.0853		
	(0.0522)		
- Abs Ideology Diff.		−0.0206	0.0008
		(0.0142)	(0.0163)
Same Sex	−0.1436***	−0.1430***	−0.1877***
	(0.0507)	(0.0508)	(0.0618)
Conservative Eval.	−0.0056		
	(0.0540)		
Conservative Target	0.0196		
	(0.0522)		
Ideology of Eval.		−0.0009	
		(0.0136)	
Ideology of Target		0.0056	
		(0.0121)	
Male Evaluator	−0.00003	0.0004	
	(0.0523)	(0.0522)	
Male Target	−0.0174	−0.0141	
	(0.0526)	(0.0533)	
Avg. Target Attract	0.9990***	1.0012***	
	(0.0404)	(0.0406)	
Avg. Eval. Attract	0.9988***	0.9988***	
	(0.0463)	(0.0463)	
Constant	−3.5759***	−3.5058***	3.7053***
	(0.2254)	(0.2267)	(0.0580)
N	2195	2195	2195

***p < .01; **p < .05; *p < .1

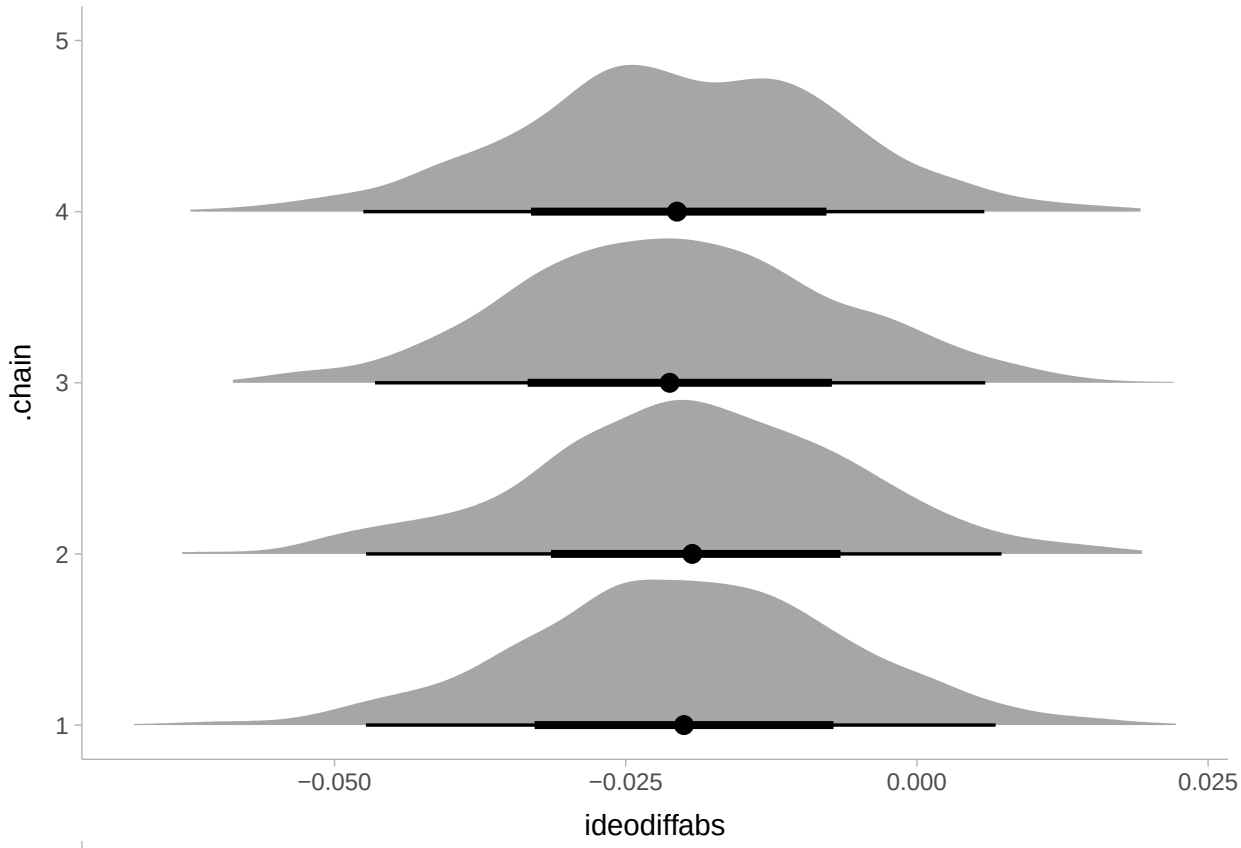
Appendix

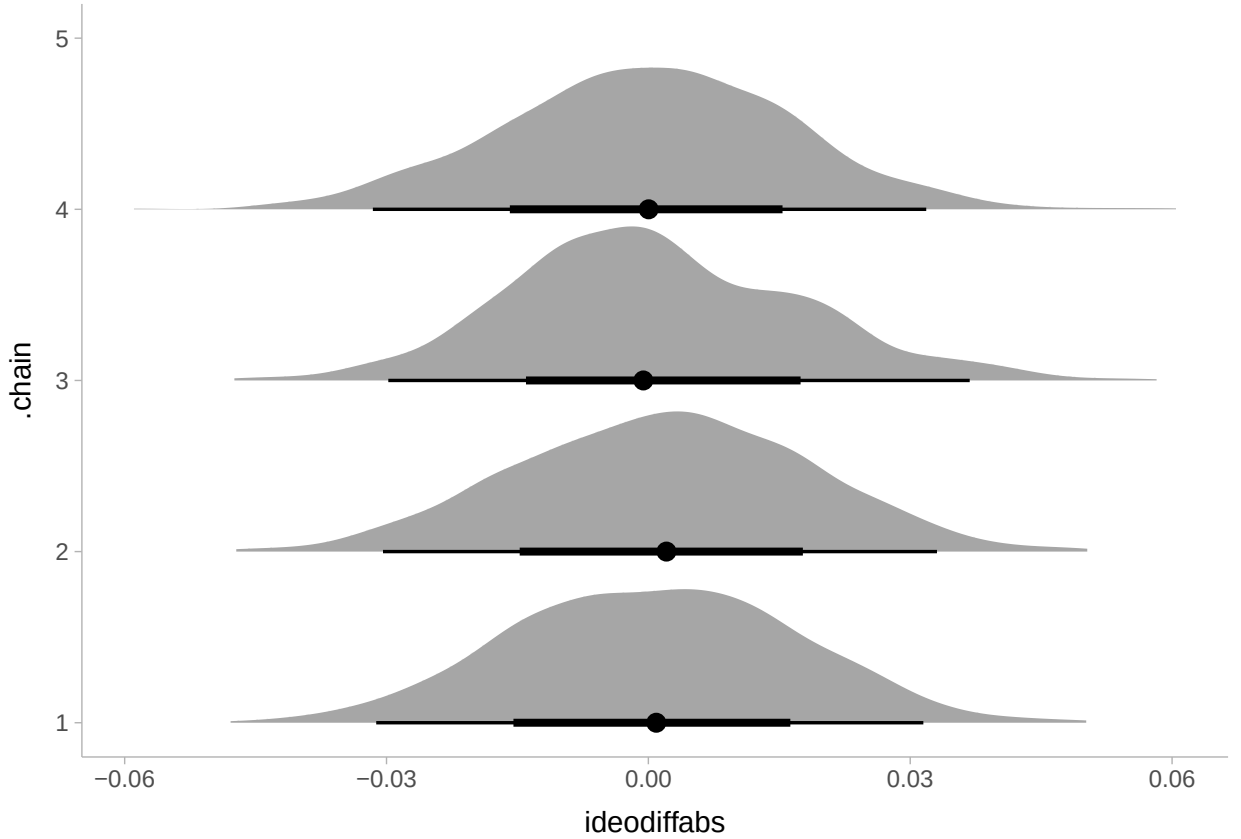
Extension

Pictured below are individual graphs for each focused parameter in Tingley's three models. These graphs illustrate the distribution of those variables sampled from the model using `stan_lm`.



[1]("Mike Silva Replication Project Github," n.d.)
[2]("The R Project for Statistical Computing," n.d.)





Through this graph, we can see how well the data explains the outcome we are looking at in our model,

which is the measure of attractiveness of the subjects. The dark blue line illustrates the actual outcomes of the model. As you can see, there is a lot of fluctuation between each value. This is because the observers only graded on a whole number scale. The peaks in each hump represent each value- there are 7 peaks that coordinate to each of the 'attractive' values. The faded blue line refers to the posterior iterations ran using pp_check that predicts outcomes using the information in our model.

Through this graph we can confidently say that our model significantly explains the data. In most cases the predicted values align closesly with the outcome variables, emphasizing how the model is representative of the data. In a the cases of attractive values 1, 4, and 5, the predicted values underestimated compared to the actual values. This may be because there is less data for those values, so the prediction is less accurate. Regardless, this graph confirms the accuracy and significance of the model created by Tingley et al.

Selected Bibliography + References:

Iyengar, Shanto, Tobias Konitzer, and Kent Tedin. 2018. "The Home as a Political Fortress: Family Agreement in an Era of Polarization." *The Journal of Politics* 80 (4): 1326–38.

"Mike Silva Replication Project Github." n.d. https://github.com/mikesilva23/replication_1006.

"Replication Data for: Assortative Mating on Ideology Could Operate Through Olfactory Cues." n.d.

"The R Project for Statistical Computing." n.d.