

Posterior predictive checks and diagnostics

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1 Posterior predictive check

We use `bayesplot` (Gabry and Mahr 2024) and `loo` (Vehtari et al. 2024) conduct posterior predictive checks and evaluate model diagnostics.

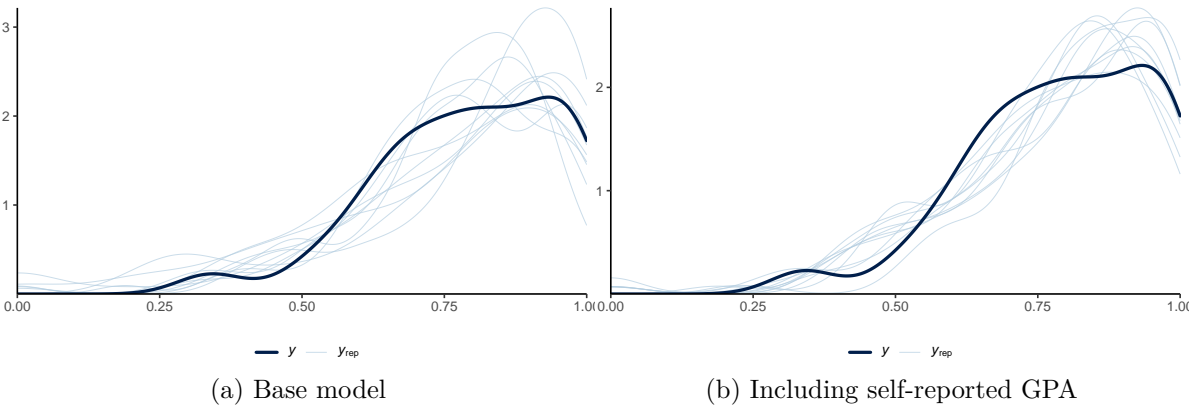


Figure 1: Posterior predictive checking

Table 1: Model comparison

	elpd_diff	se_diff	elpd_loo	se_elpd_loo	p_loo	se_p_loo	looic	se_looic
fit2	0.000	0.000	39.171	9.382	11.686	2.021	-78.343	18.765
fit1	-24.854	6.547	14.318	10.457	8.765	1.603	-28.635	20.915

2 Diagnostics

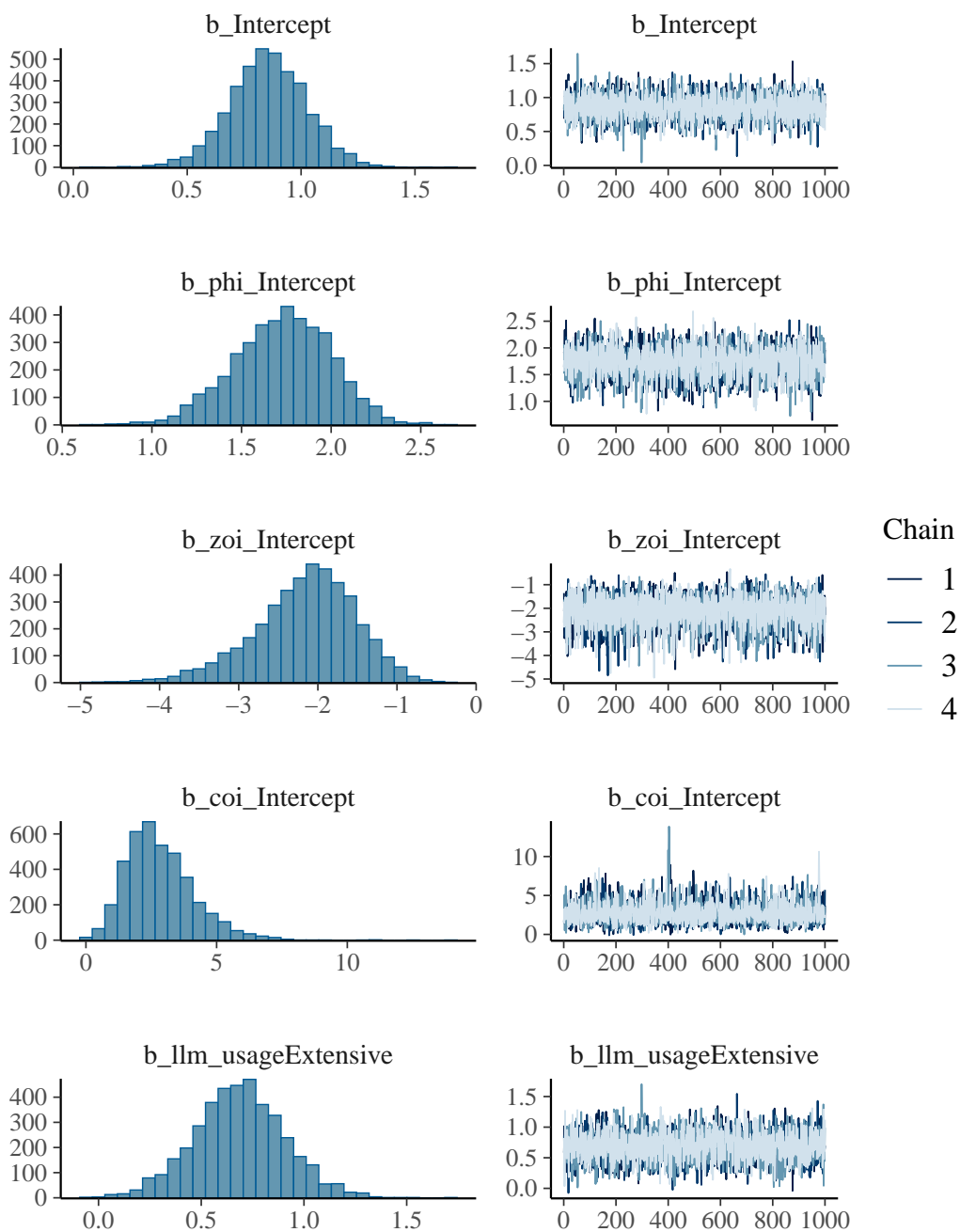


Figure 2: Base model diagnostics

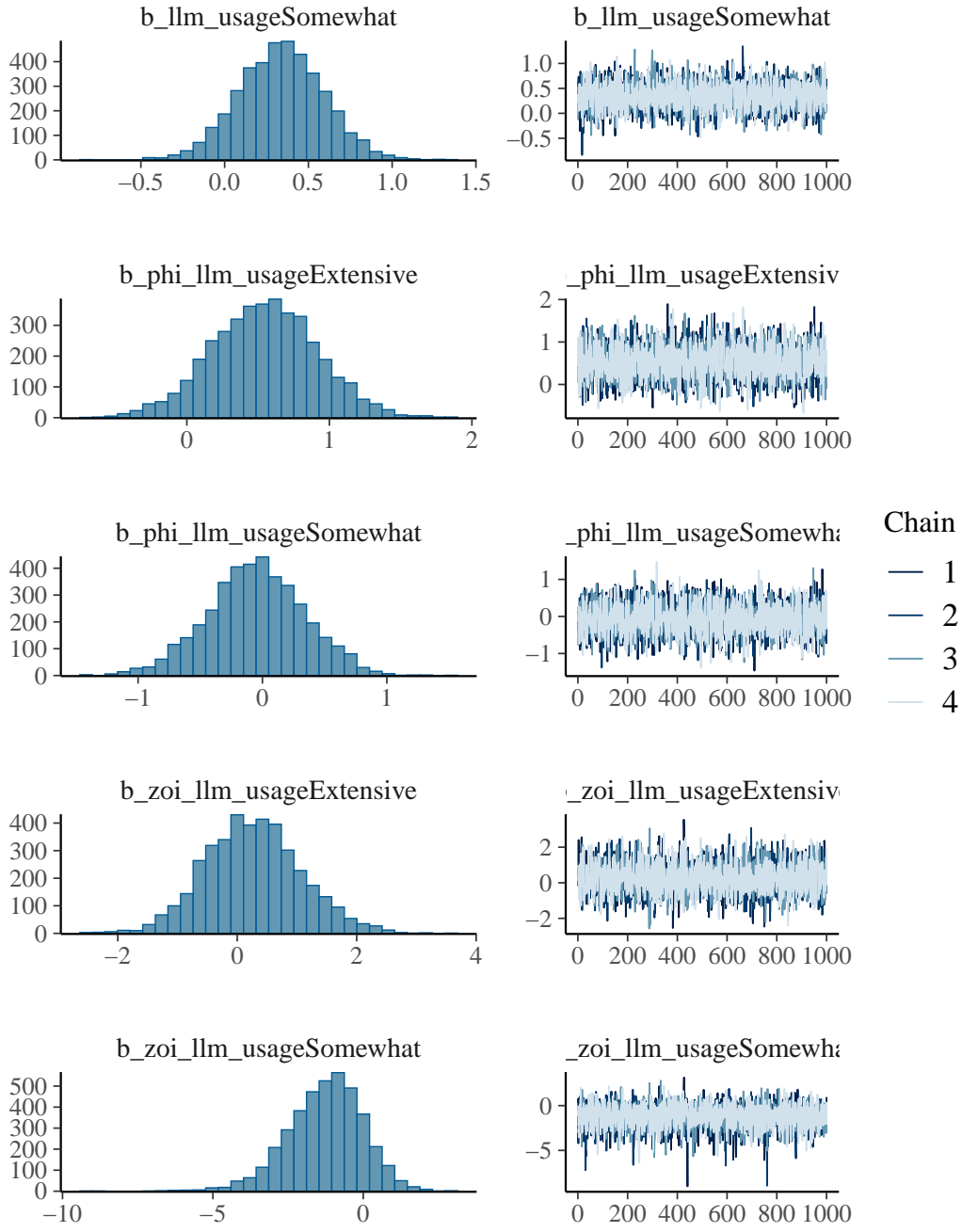


Figure 3: Base model diagnostics

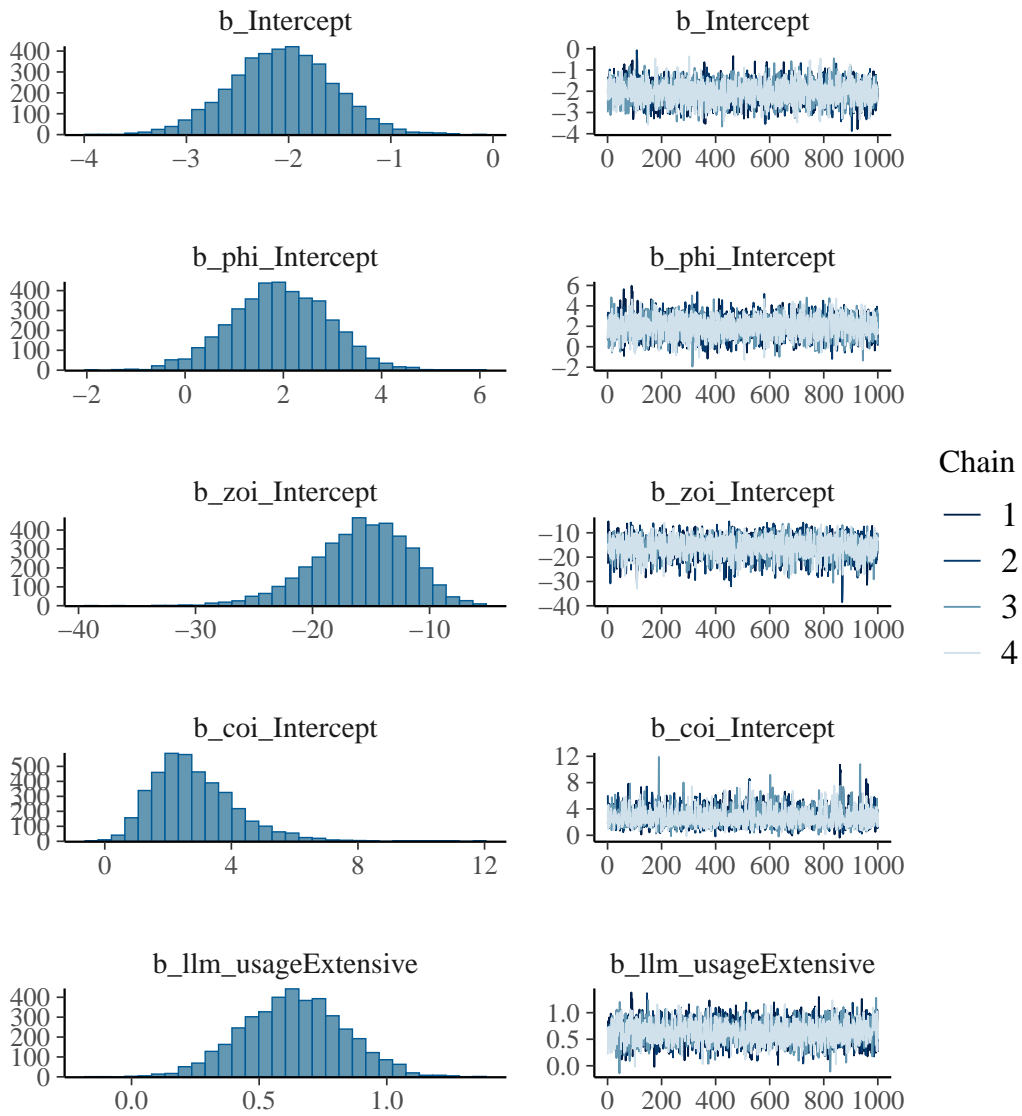


Figure 4: Model including self-reported GPA diagnostics

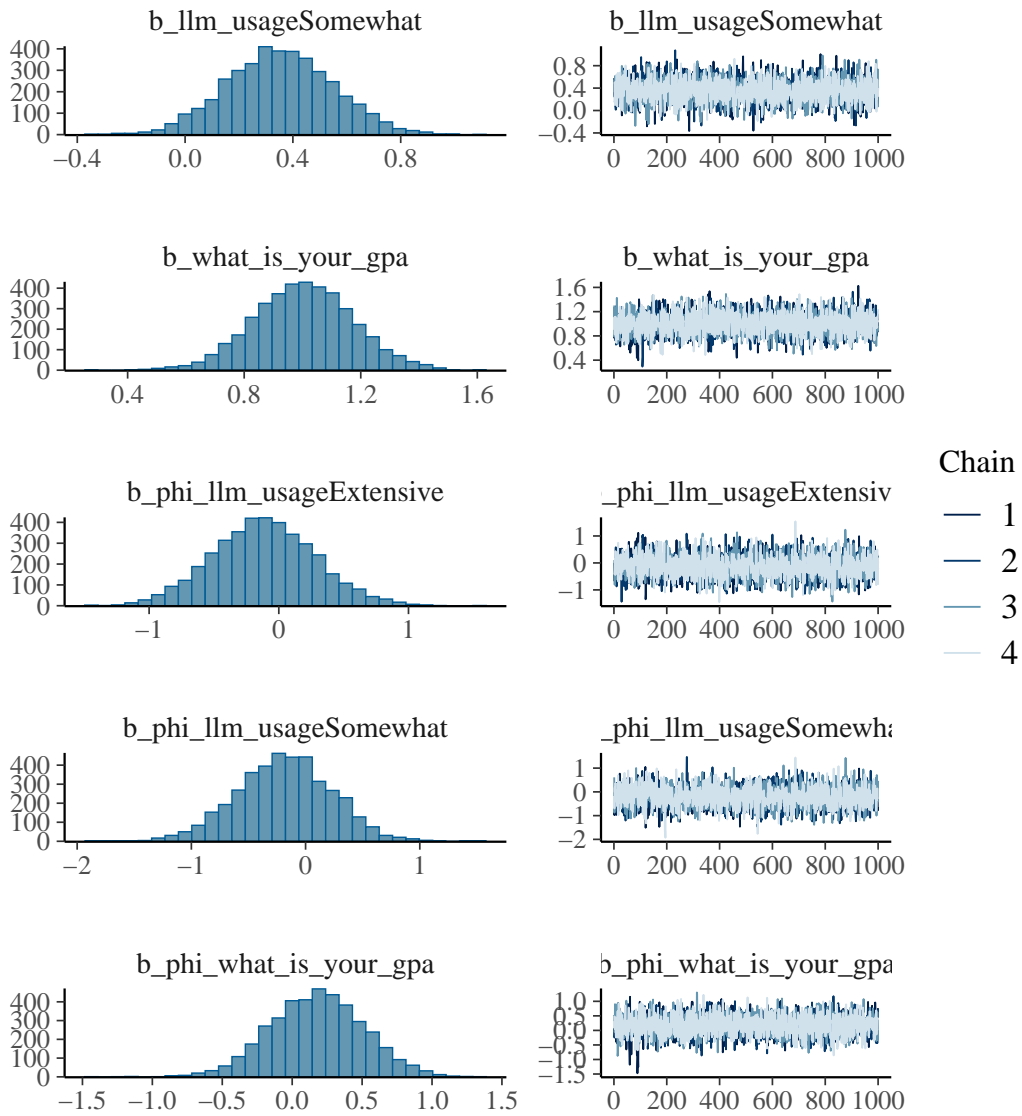


Figure 5: Model including self-reported GPA diagnostics

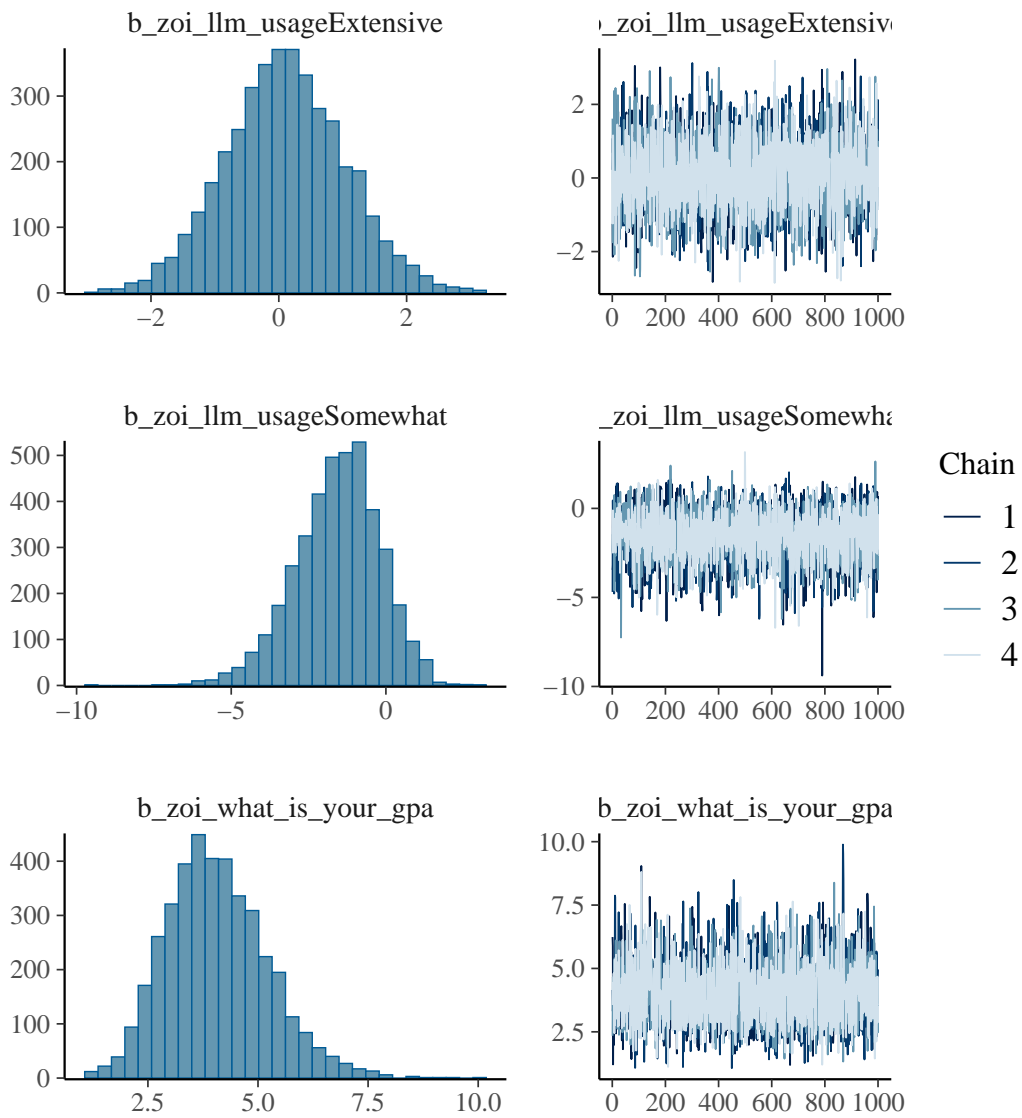


Figure 6: Model including self-reported GPA diagnostics

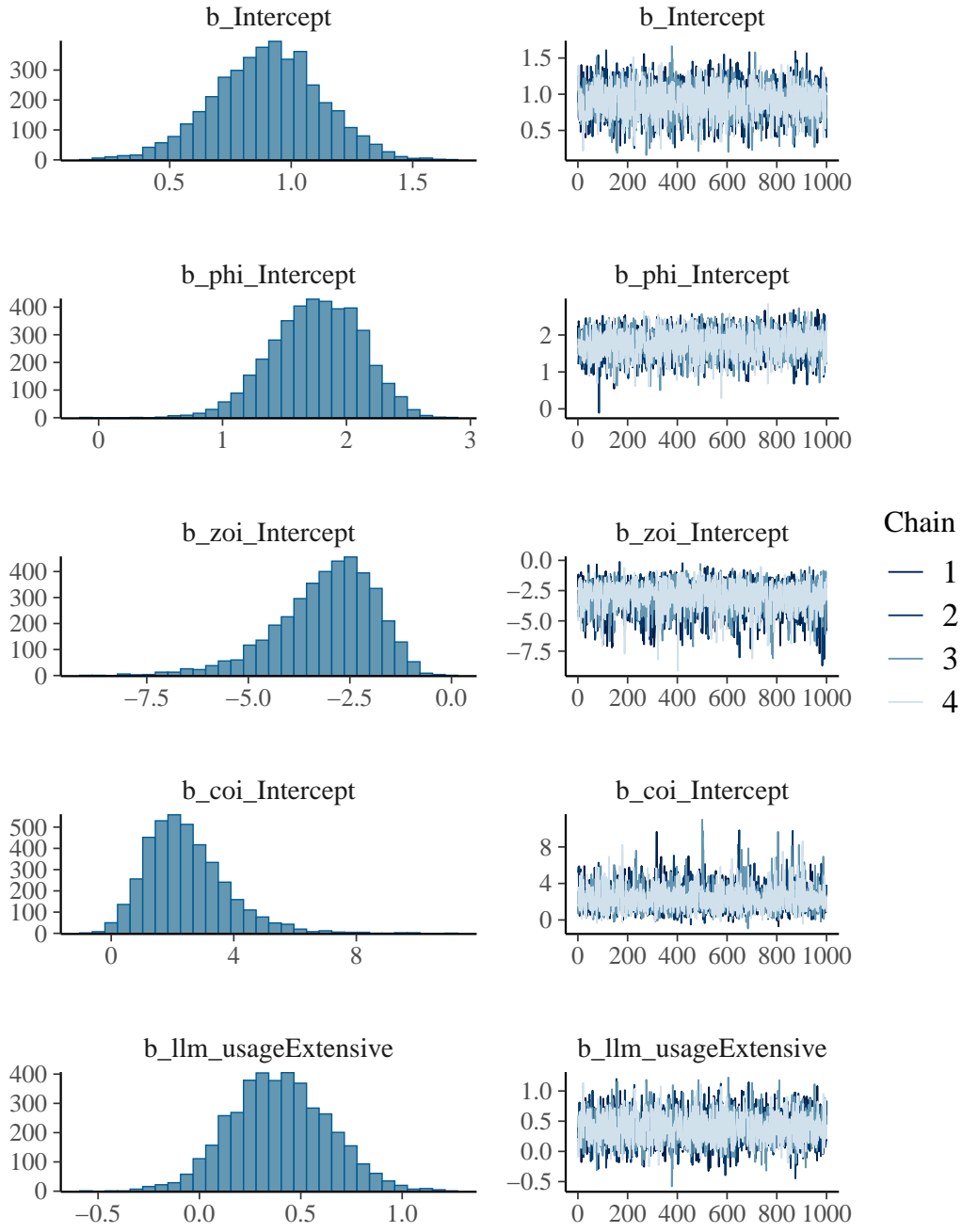


Figure 7: Base model diagnostics (STA304)

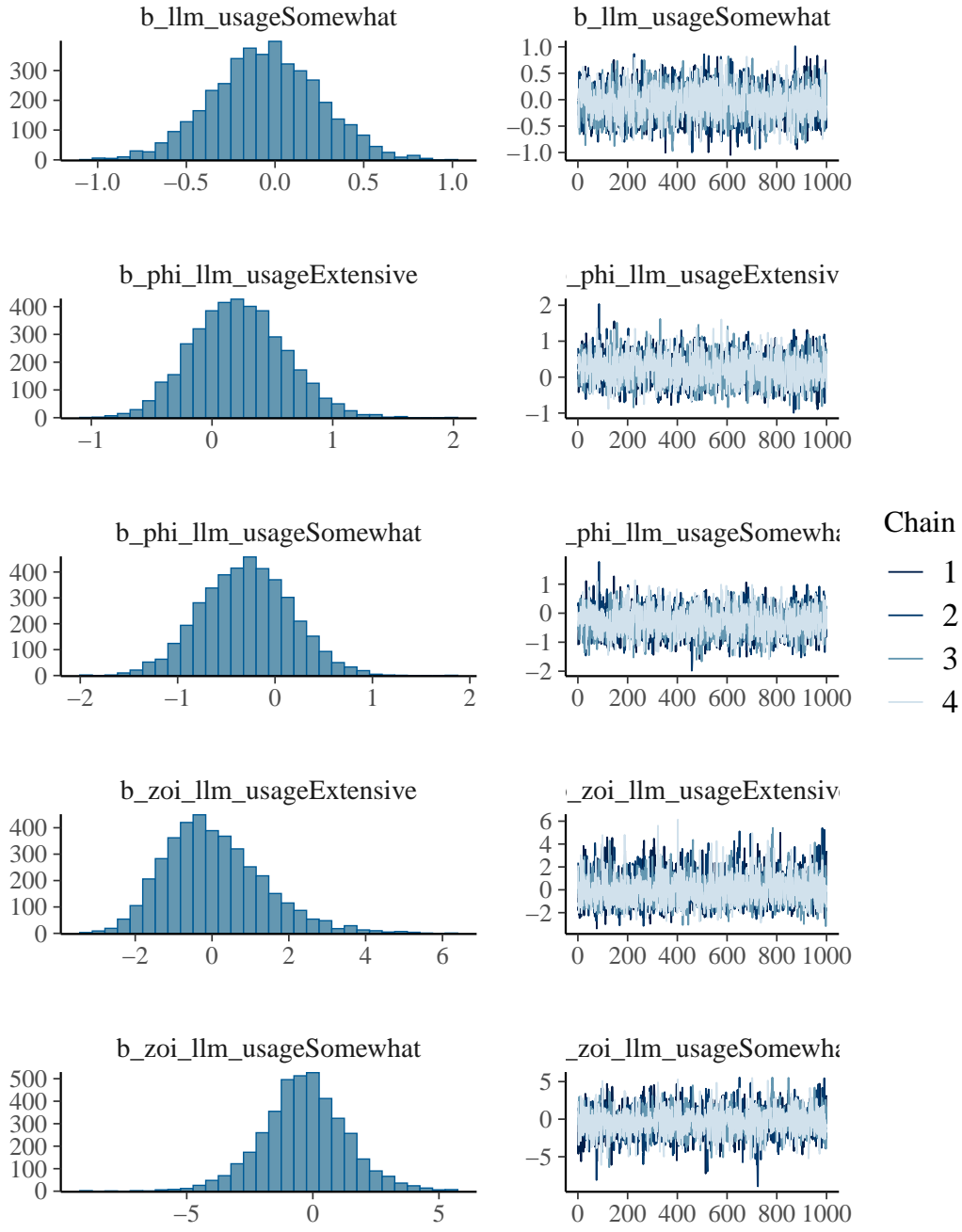


Figure 8: Base model diagnostics (STA304)

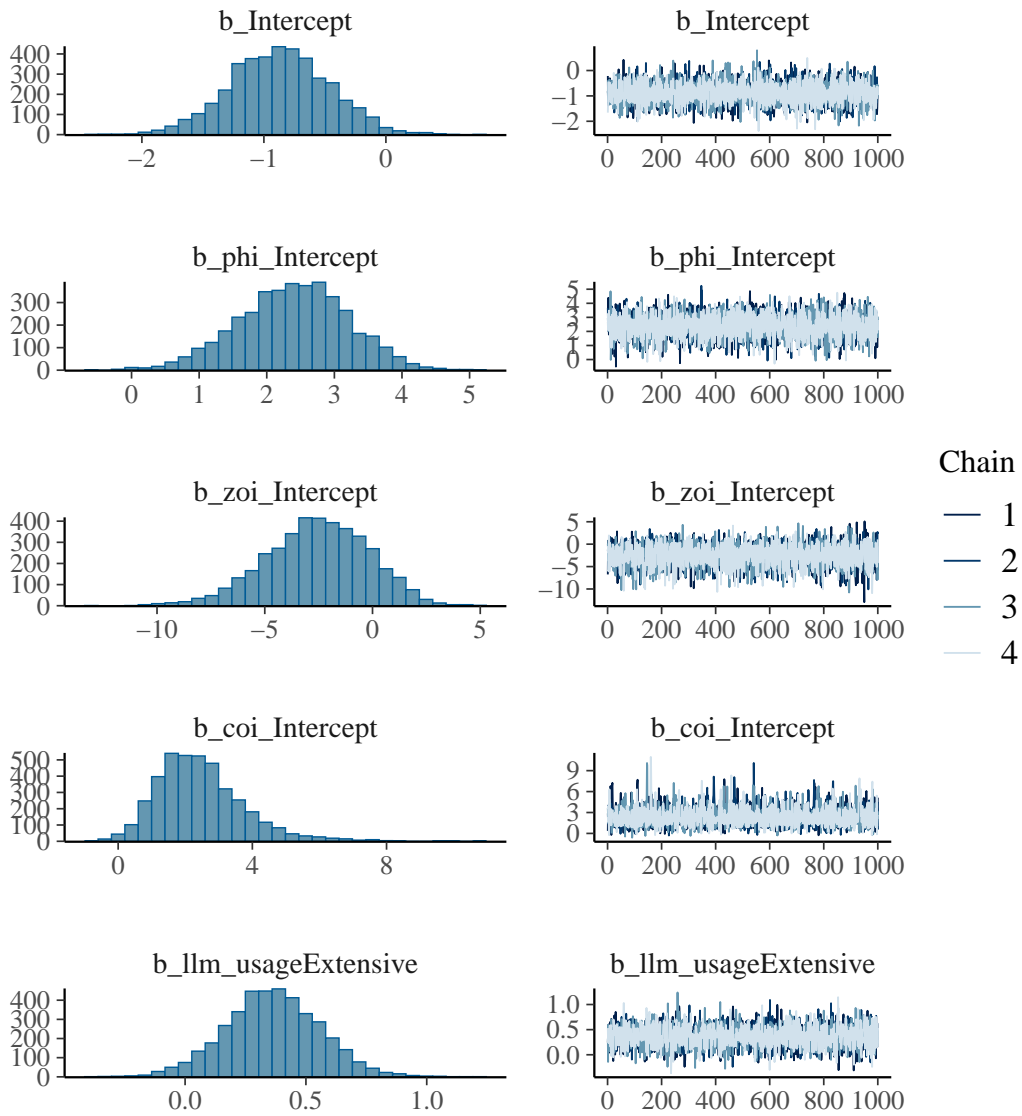


Figure 9: Model including self-reported GPA diagnostics (STA304)

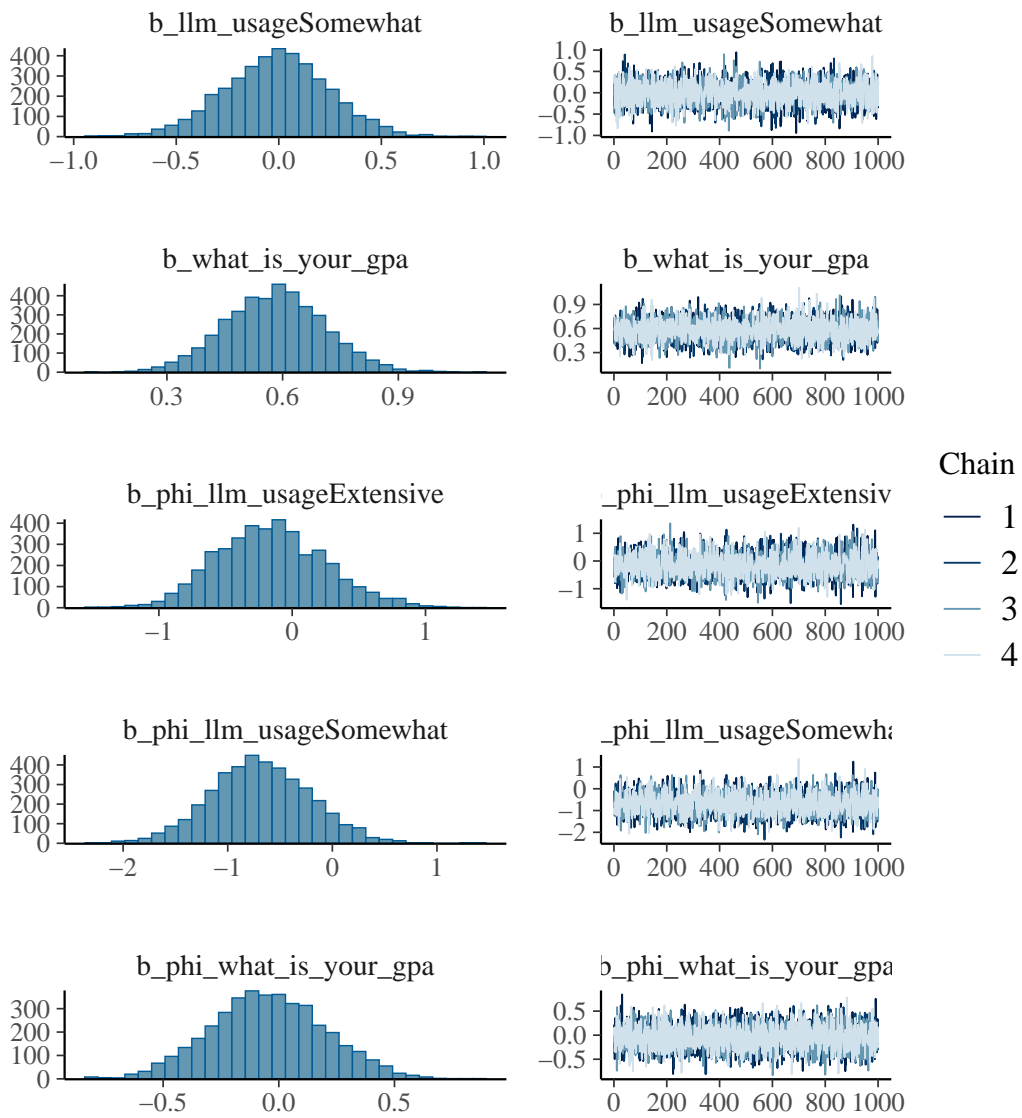


Figure 10: Model including self-reported GPA diagnostics (STA304)

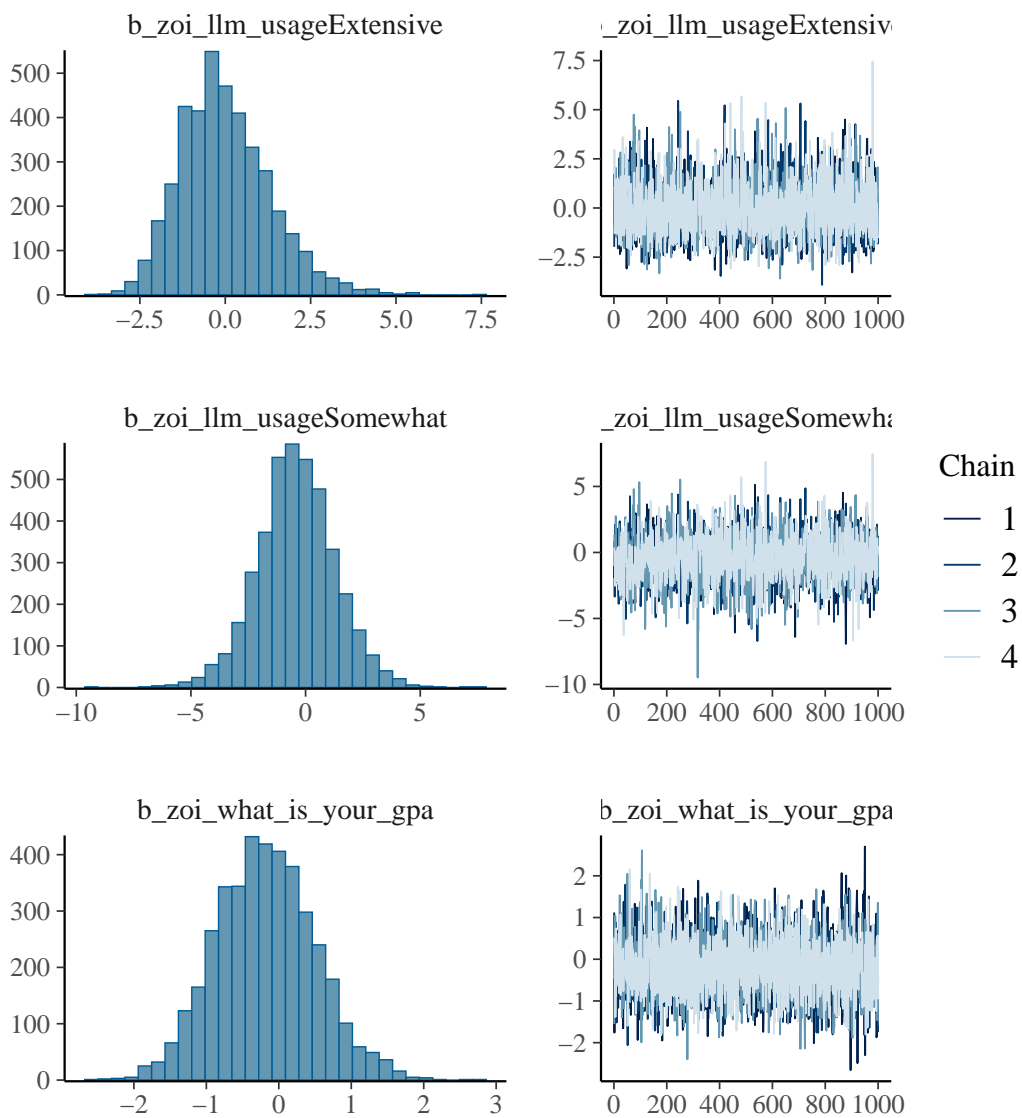


Figure 11: Model including self-reported GPA diagnostics (STA304)

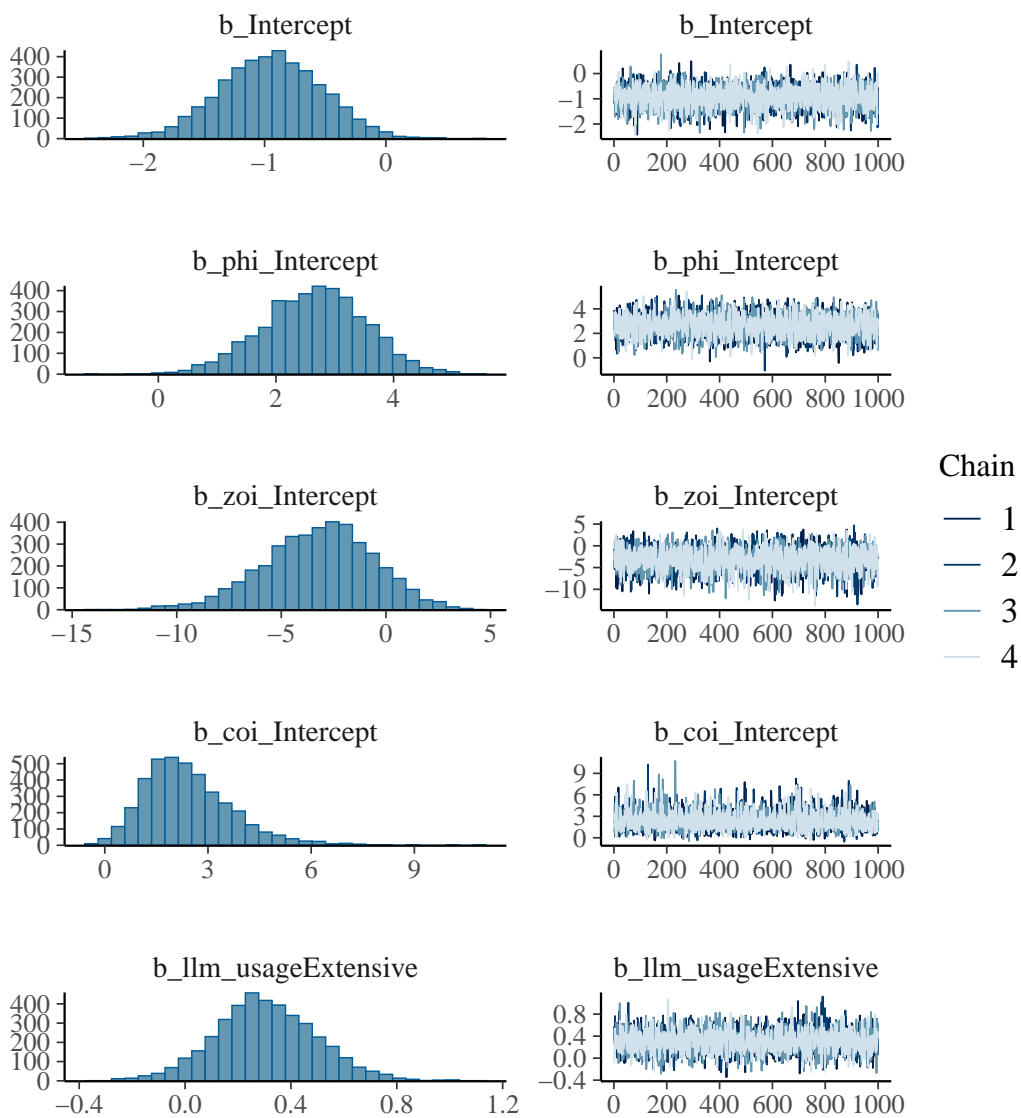


Figure 12: Model including self-reported GPA and ESL diagnostics (STA304)

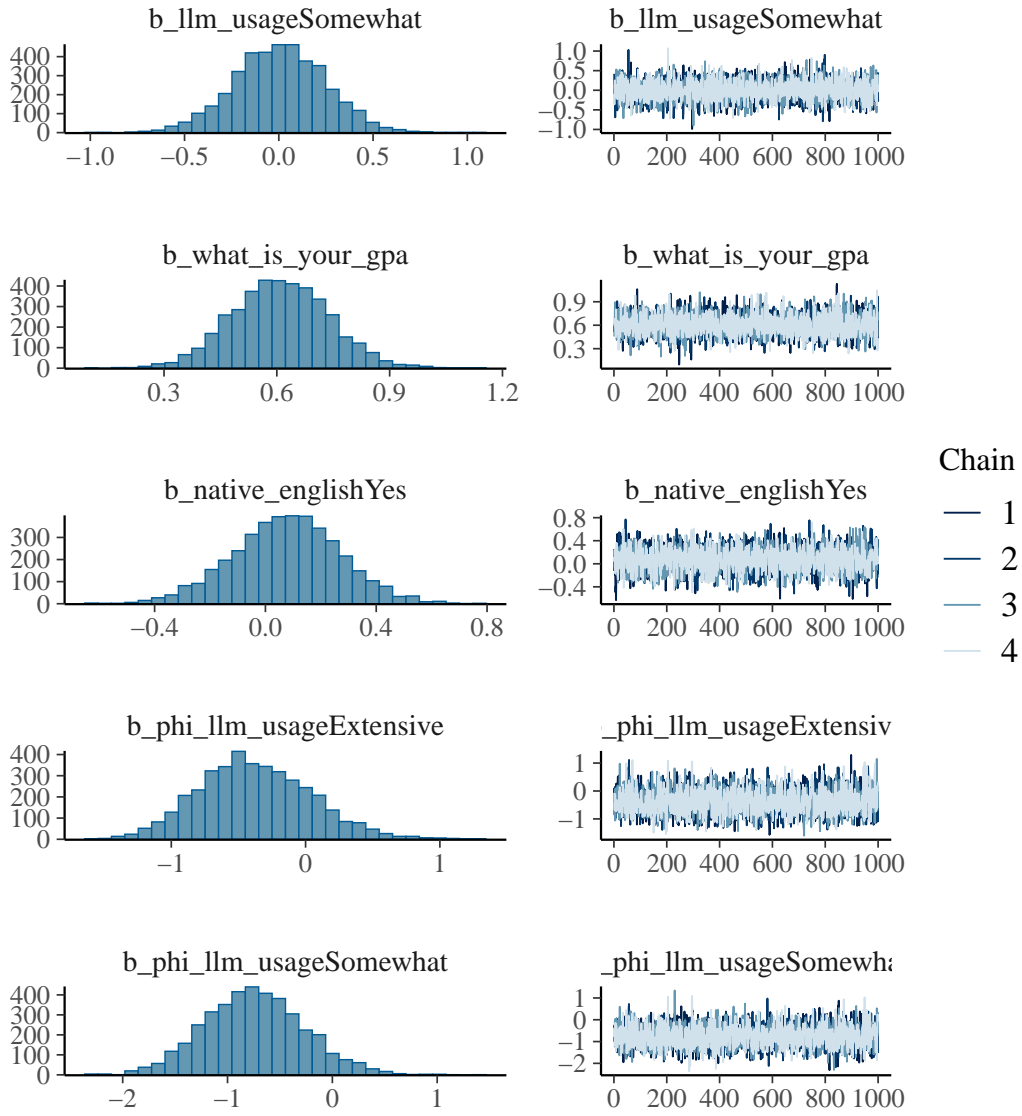


Figure 13: Model including self-reported GPA and ESL diagnostics (STA304)

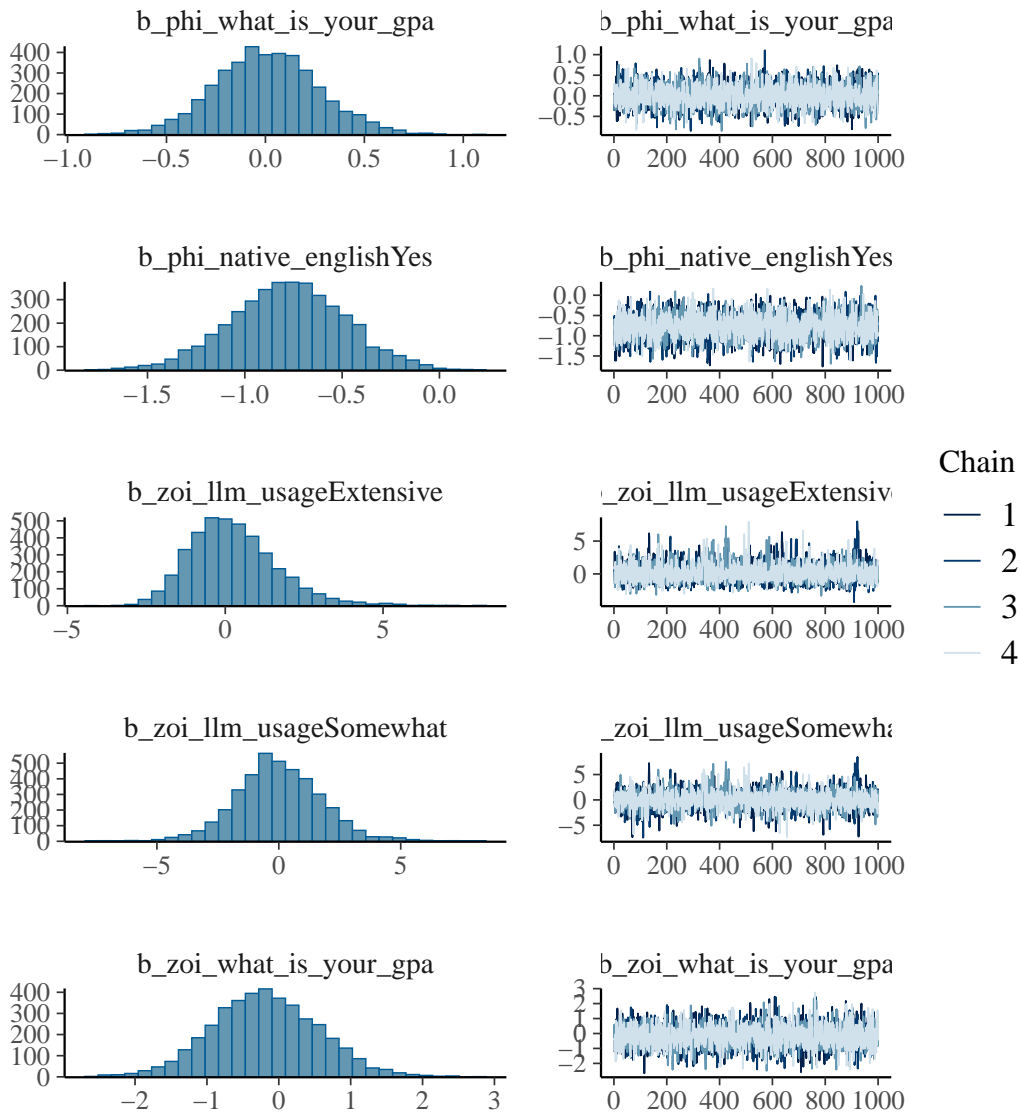


Figure 14: Model including self-reported GPA and ESL diagnostics (STA304)

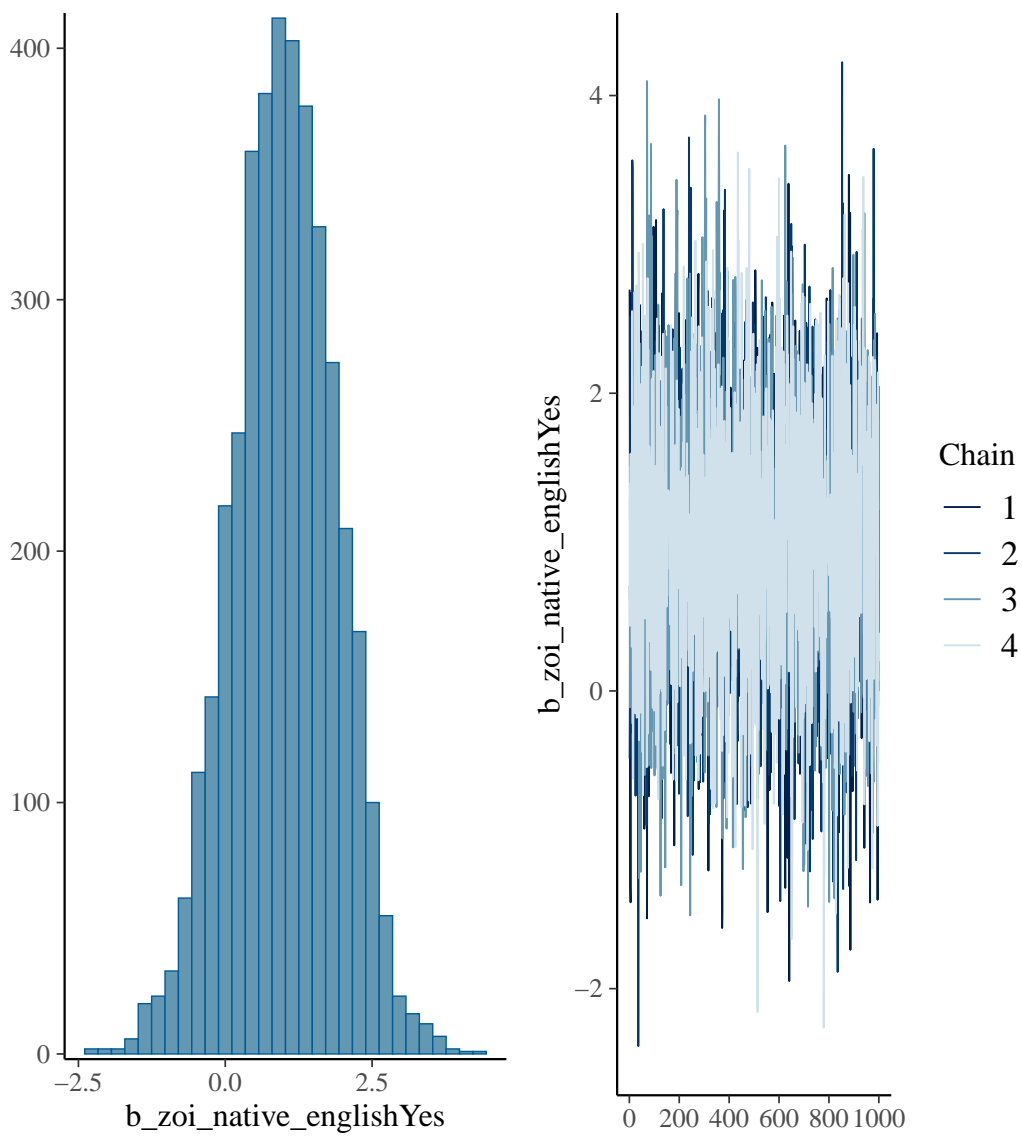


Figure 15: Model including self-reported GPA and ESL diagnostics (STA304)

References

- Gabry, Jonah, and Tristan Mahr. 2024. “bayesplot: Plotting for Bayesian Models.” <https://mc-stan.org/bayesplot/>.
- Vehtari, Aki, Jonah Gabry, Måns Magnusson, Yuling Yao, Paul-Christian Bürkner, Topi Paananen, and Andrew Gelman. 2024. “loo: Efficient leave-one-out cross-validation and WAIC for Bayesian models.” <https://mc-stan.org/loo/>.