

Supplementary Material B

Evaluation of Parkinson's disease early diagnosis using single-channel EEG features and auditory cognitive assessment

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Demographic results

To ensure that the groups were well-balanced we compared some demographic characteristics of each group. Table 1 presents descriptive information regarding the motor symptoms side. The table presents the group association, gender and laterality of the motor symptoms of the patients. Data of 29 patients was collected, 3 additional patients did not have this data in their record.

Study group	PD medications	Count
Negative	Sinemet CR (Levodopa / carbidopa)	1
	Propranolol	1
	Rasagiline	1
	Amantadine	1
Positive	Sinemet CR (Levodopa / carbidopa)	4
	Rasagiline	9
	Amantadine	8
	Levodopa/ carbidopa/entacapone	2
	levodopa/carbidopa	8
	levodopa/ benserazide	1

	Pramipexol	2
	Losartan + Hydrochlorothiazide	1
	ISOSORBIDE MONONITRATE	1
	Propranolol	1
	Gabapentin	1
	Mirtazapine	1
	Aspirin	1
	Rasagiline	1
	Simvastatin	1
	Losartan	1
	Trihexyphenidyl	1

Table 1. PD medications given at the time of the auditory test for patients holding a valid F-DOPA test result.

Study group	Gender	Motor symptom side	Count
Negative	Female	Bilateral	1
		L	1
		R	2
	Male	Bilateral	1
Positive	Female	Bilateral	4
		L	2
		R	5
	Male	Bilateral	4
		L	2
		R	7

Table 2. Motor symptom laterality information for patients holding a valid F-DOPA test result.

Bayesian results

Quantitative analysis using Bayesian Mann-Whitney U tests was performed to determine the similarity between the groups. This follow-up analysis was conducted using a data augmentation algorithm with 5 chains of 1000 iterations. We report the BF_{01} (i.e., the null hypothesis that H_0 is not different from H_1) of the Bayesian U tests between controls vs. negative; and positive vs. unknown, and the BF_{10} (i.e., the hypothesis that H_0 is different from H_1) of the Bayesian U tests between control vs. positive; and control vs. unknown groups.

Bayesian Mann-Whitney U tests revealed strong evidence that the predicted results of the control group differ from positive F-DOPA patients ($BF_{10} = 121.88$, $W = 385$, $R^2 = 1.04$), and presented moderate evidence of similarity to the negatively labeled F-DOPA group ($BF_{01} = 2.97$, $W = 116$, $R^2 = 1.21$). The group with unknown labels, who were all given positive predictor results, was strongly evident to differ from the control group ($BF_{10} = 149.48$, $W = 550$, $R^2 = 1.032$), and showed moderate evidence of similarity to the positive group ($BF_{01} = 2.145$, $W = 98$, $R^2 = 1$). The U tests outputs and figures are presented in tables 2-5 and figures 1-4.

	BF_{01}	W	R^2
Prediction healthy vs. negative	2.793	116.000	1.028

Table 2. Bayesian Mann-Whitney U test for prediction healthy vs. negative groups.

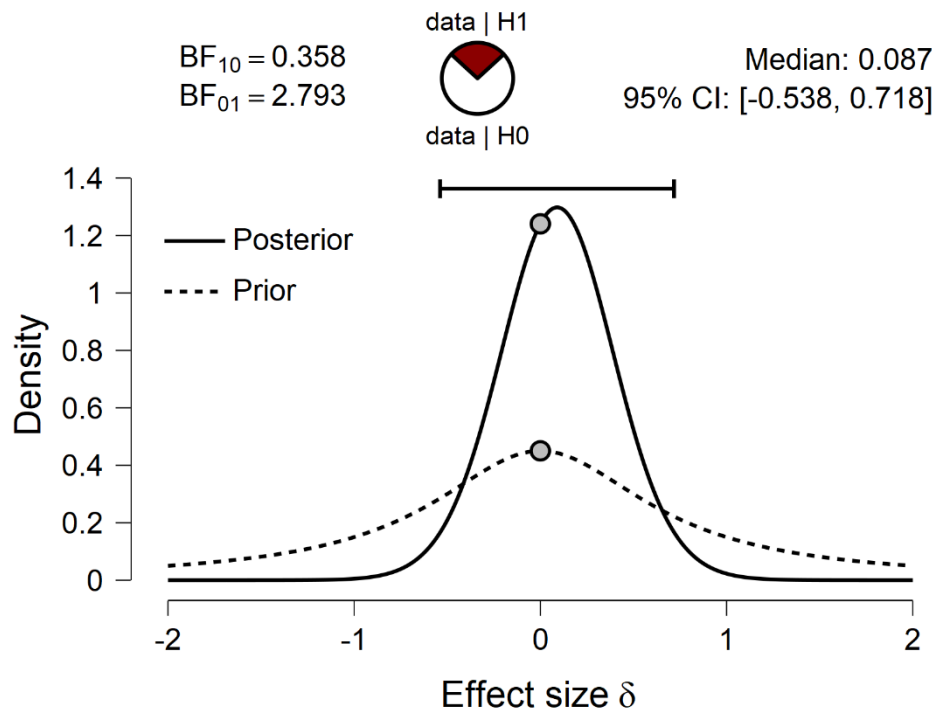


Figure 1. Inferential plots prediction healthy vs. negative groups prior and posterior.

	BF_{10}	W	R^2
Prediction healthy vs. positive	121.881	385.000	1.043

Table 3. Bayesian Mann-Whitney U test of prediction healthy vs. positive groups.

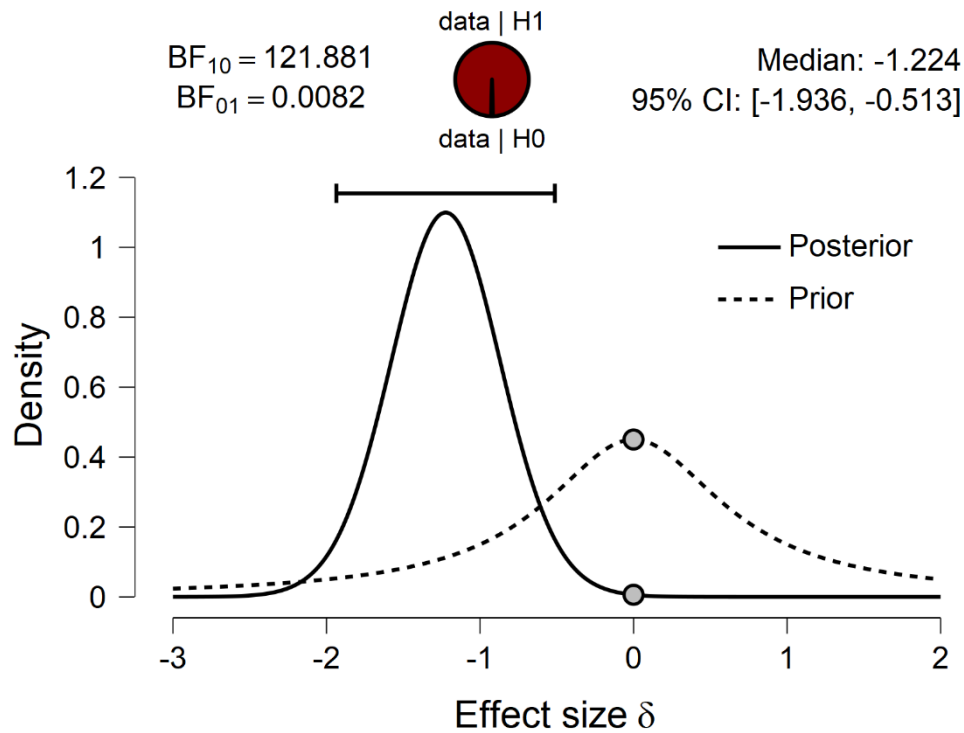


Figure 2. Inferential plots prediction healthy vs. positive groups prior and posterior.

	BF_{10}	W	R^2
Prediction healthy vs. unknown	149.481	550.000	1.032

Table 4. Bayesian Mann-Whitney U test for prediction healthy vs. unknown groups.

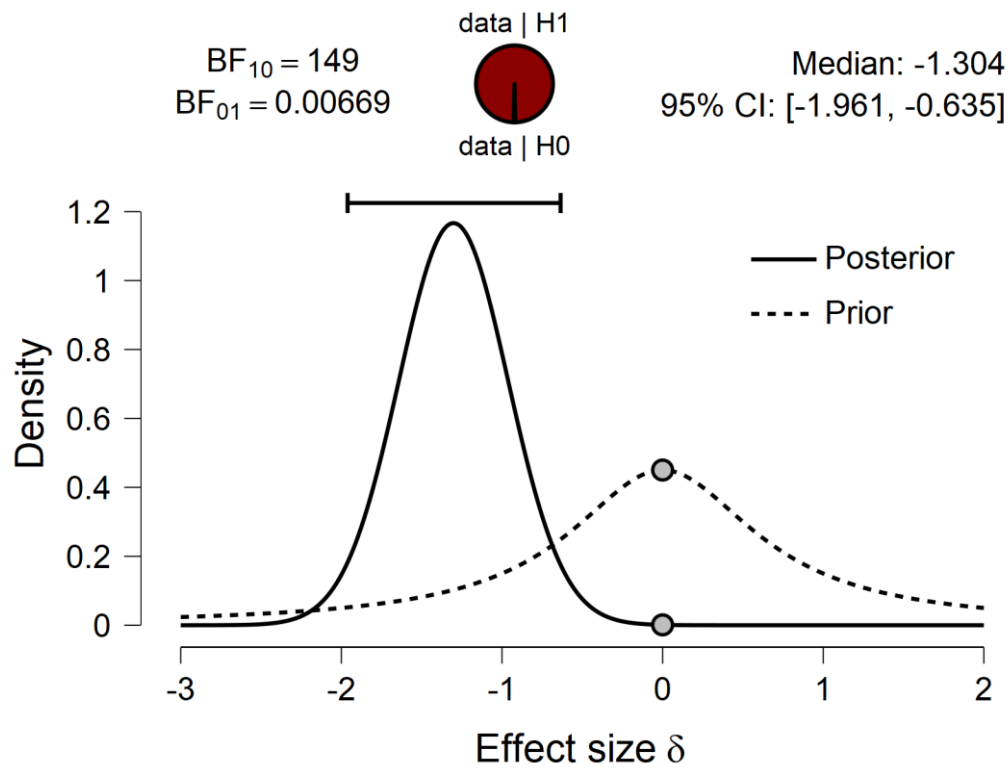


Figure 3. Inferential plots prediction healthy vs. unknown groups prior and posterior.

	BF_{01}	W	R^2
Prediction positive vs. unknown	2.145	98.000	1.000

Table 5. Bayesian Mann-Whitney U test for prediction positive vs. unknown groups.

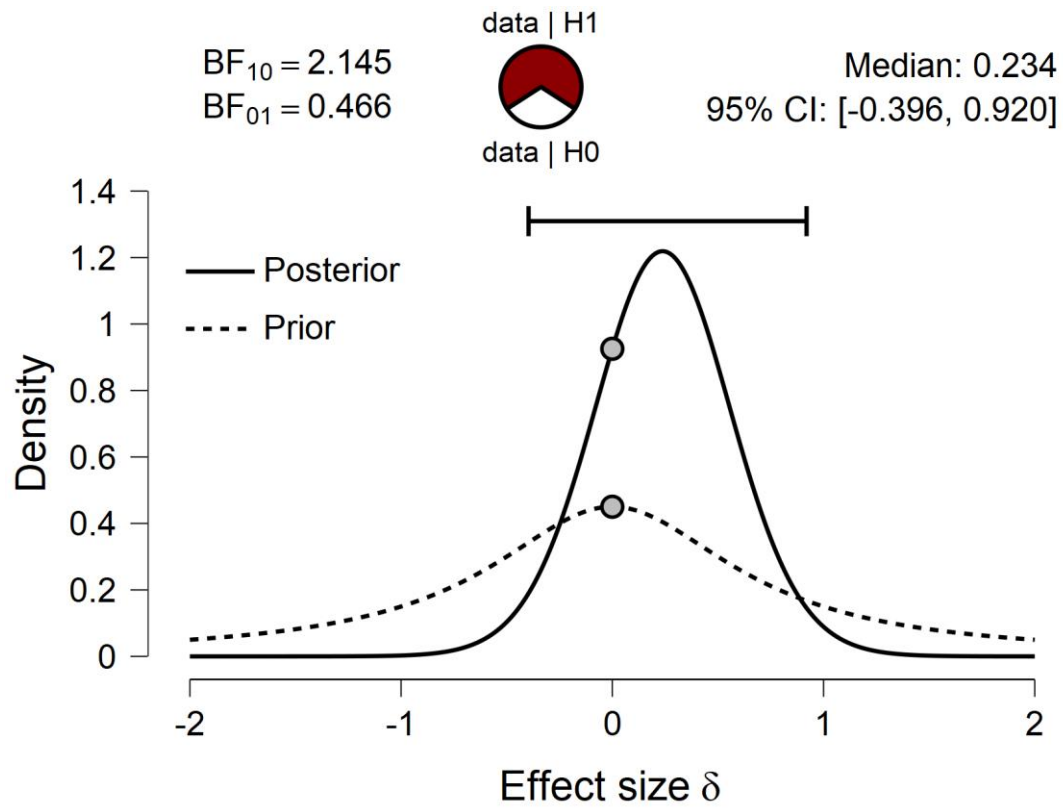


Figure 4. Inferential plots prediction positive vs. unknown groups prior and posterior.