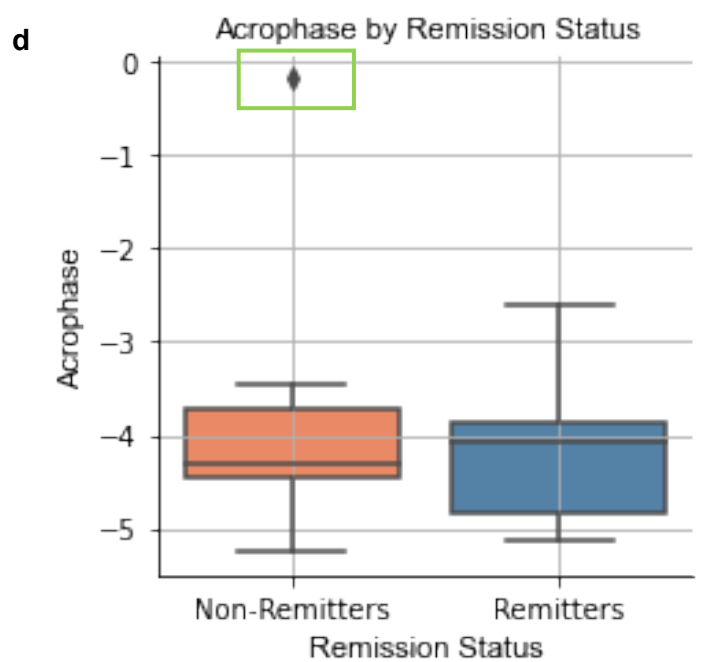
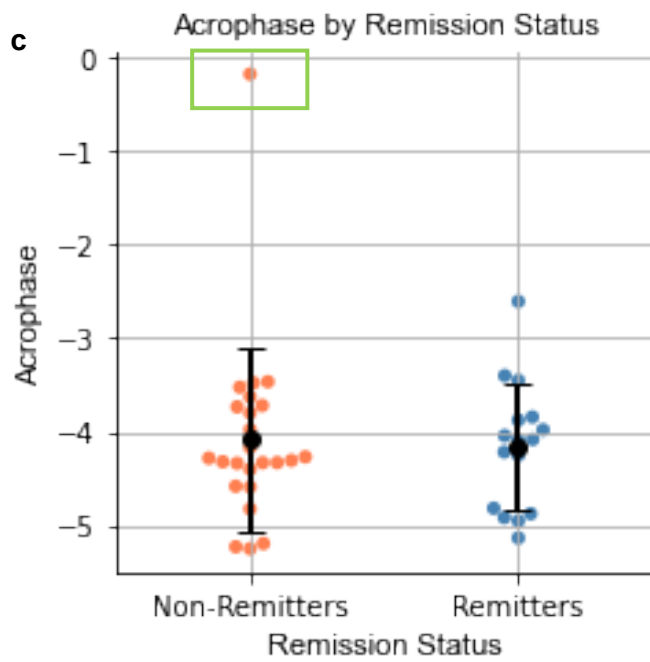
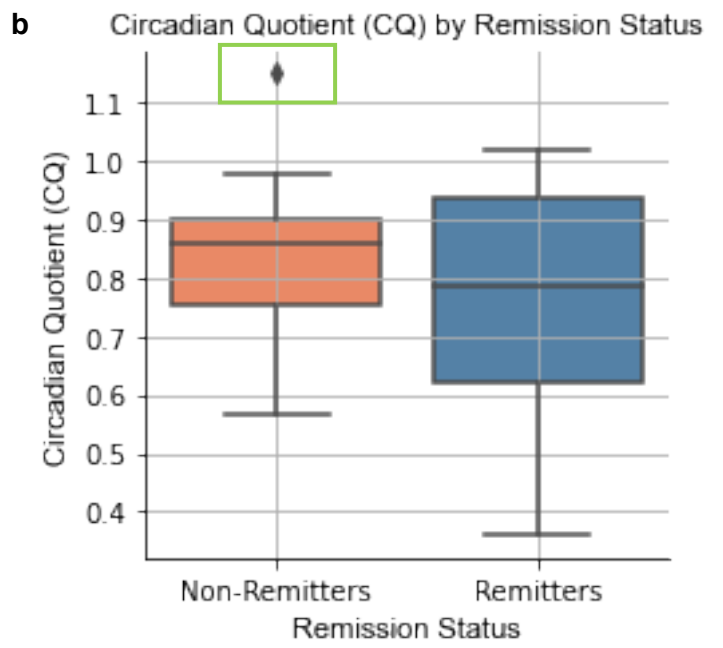
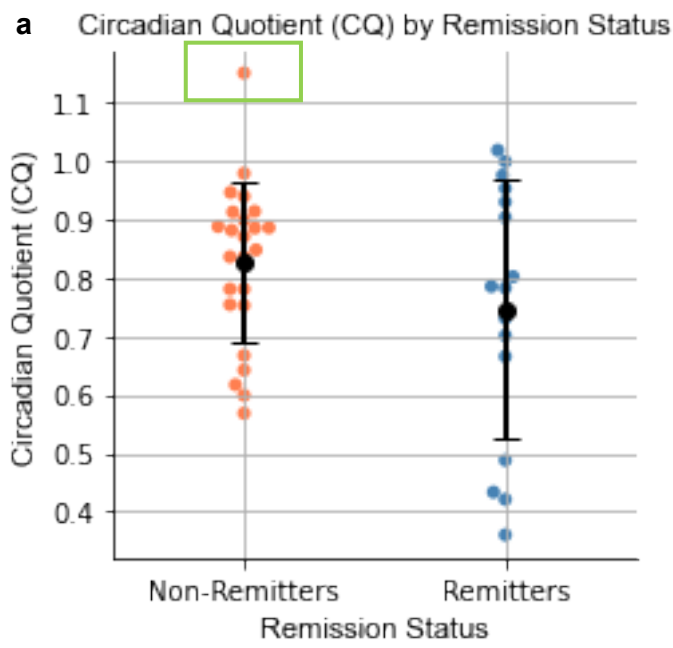


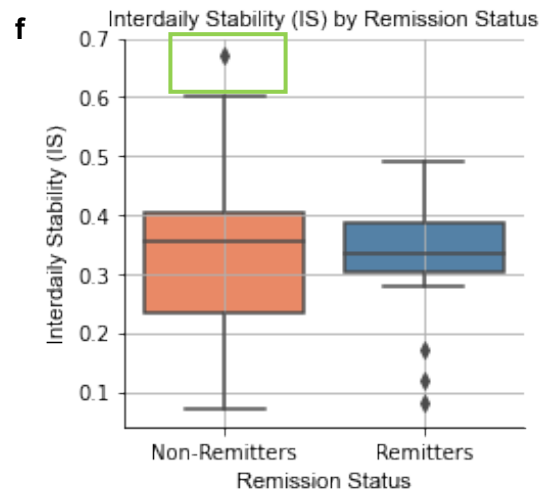
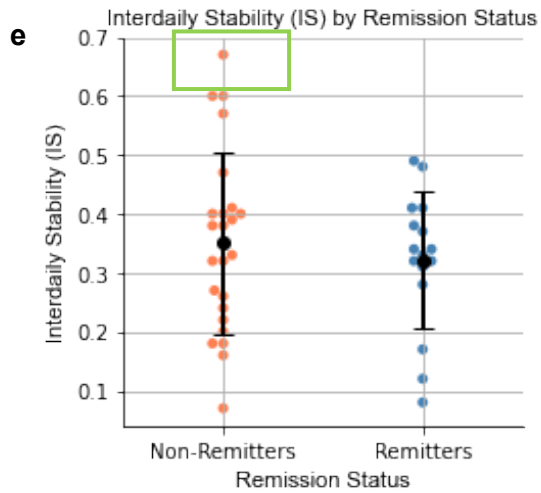
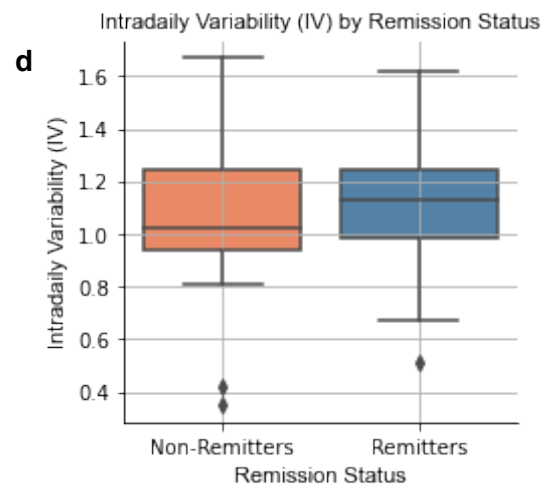
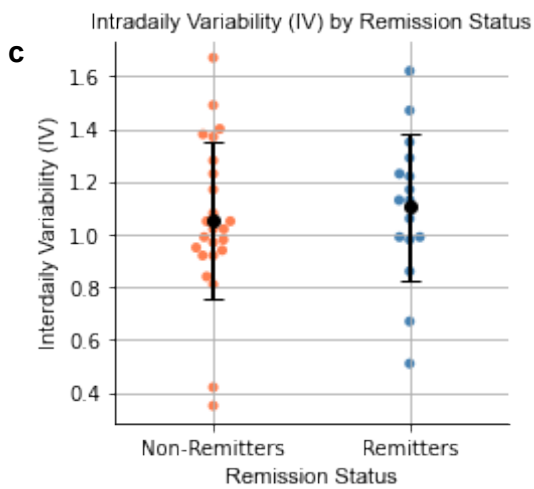
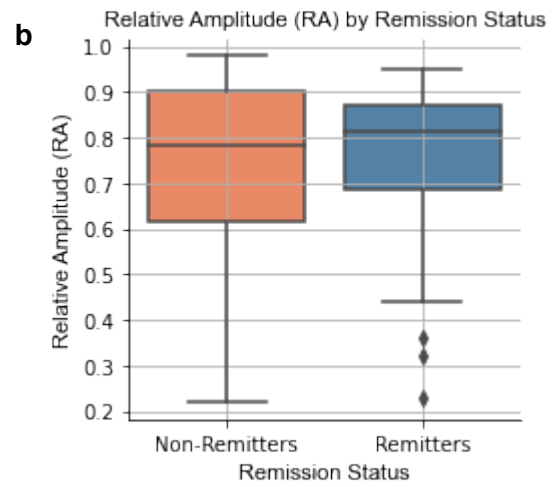
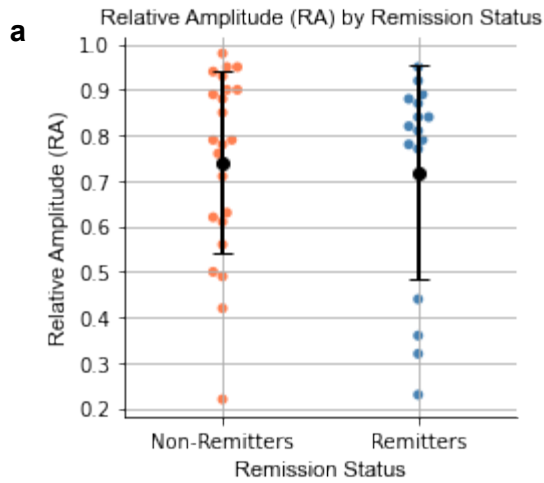
Visualization and summary statistics of circadian rhythm measures

Variables	Treatment Assignment						Fisher's exact test (P)	t-test (DF = 38) t (P)	MW-U test z (P)
	Selective Serotonin Reuptake Inhibitor (SSRI) (N=22, 55%)			Placebo (N=18, 45%)					
	N (%)	Mean (SD)	Median (IQR)	N (%)	Mean (SD)	Median (IQR)			
Demographic									
Sex: F (vs. M)	15 (68)			13 (72)			1.00		
Age (years)		33.74 (16.76)	25.05 (29.60)		27.68 (13.22)	22.70 (7.20)		-1.25 (0.22)	-0.84 (0.40)
Clinical									
Week0-HDRS		19.45 (5.20)	19.00 (5.00)		15.83 (3.62)	15.50 (3.00)		-2.50 (0.02*)	-2.74 (0.01*)
Week1-HDRS		15.59 (4.18)	16.00 (7.00)		14.17 (3.63)	14.00 (3.00)		-1.14 (0.26)	-1.25 (0.21)
Week8-HDRS		11.91 (6.89)	10.00 (8.00)		8.69 (5.57)	7.00 (8.00)		-1.60 (0.12)	-1.47 (0.14)
Δ HDRS1		-0.22 (0.16)	-0.25 (0.17)		-0.12 (0.30)	-0.18 (0.32)		1.43 (0.16)	1.33 (0.18)
Δ HDRS8		-0.64 (0.54)	-0.56 (0.76)		-0.89 (0.93)	-0.68 (0.93)		-1.08 (0.29)	-0.64 (0.52)

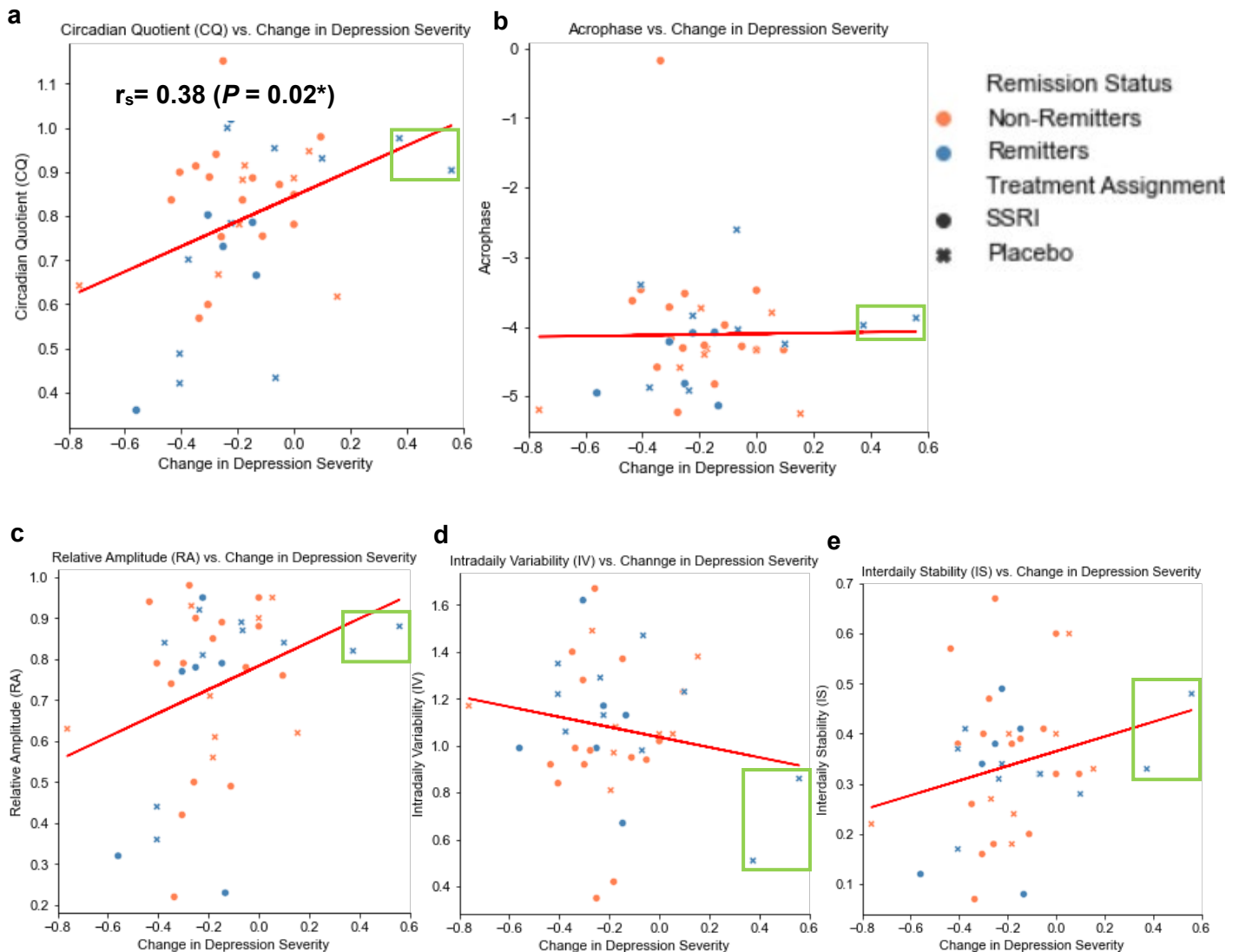
Supplementary Table 1 Participants' demographics and clinical characteristics stratified by treatment assignment. *N*: sample size. *DF*: degrees of freedom = 38 for all the variables in the t-test. *MW-U test*: Mann-Whitney U test. *SD*: standard deviation. *IQR*: interquartile range (75th percentile – 25th percentile). *F*: Female. *M*: Male. *HDRS*: Hamilton Depression Rating Scale. *Week0-HDRS*: Hamilton Depression Rating Scale score at baseline. *Week1-HDRS*: Hamilton Depression Rating Scale score after first week of treatment. *Week8-HDRS*: Hamilton Depression Rating Scale score after eight weeks of treatment. Δ *HDRS1*: change in depression severity after first week of treatment, $\ln(\text{Week1-HDRS}/\text{Week0-HDRS})$, with a higher value indicating more depression symptoms and a lower value indicating improvement in depression. Δ *HDRS8*: change in depression severity after eight weeks of treatment, $\ln(\text{Week8-HDRS}/\text{Week0-HDRS})$, with a higher value indicating more depression symptoms and a lower value indicating improvement in depression. The *P*-values that are statistically significant are indicated in bold for **P* < 0.05 at $\alpha = 0.05$.



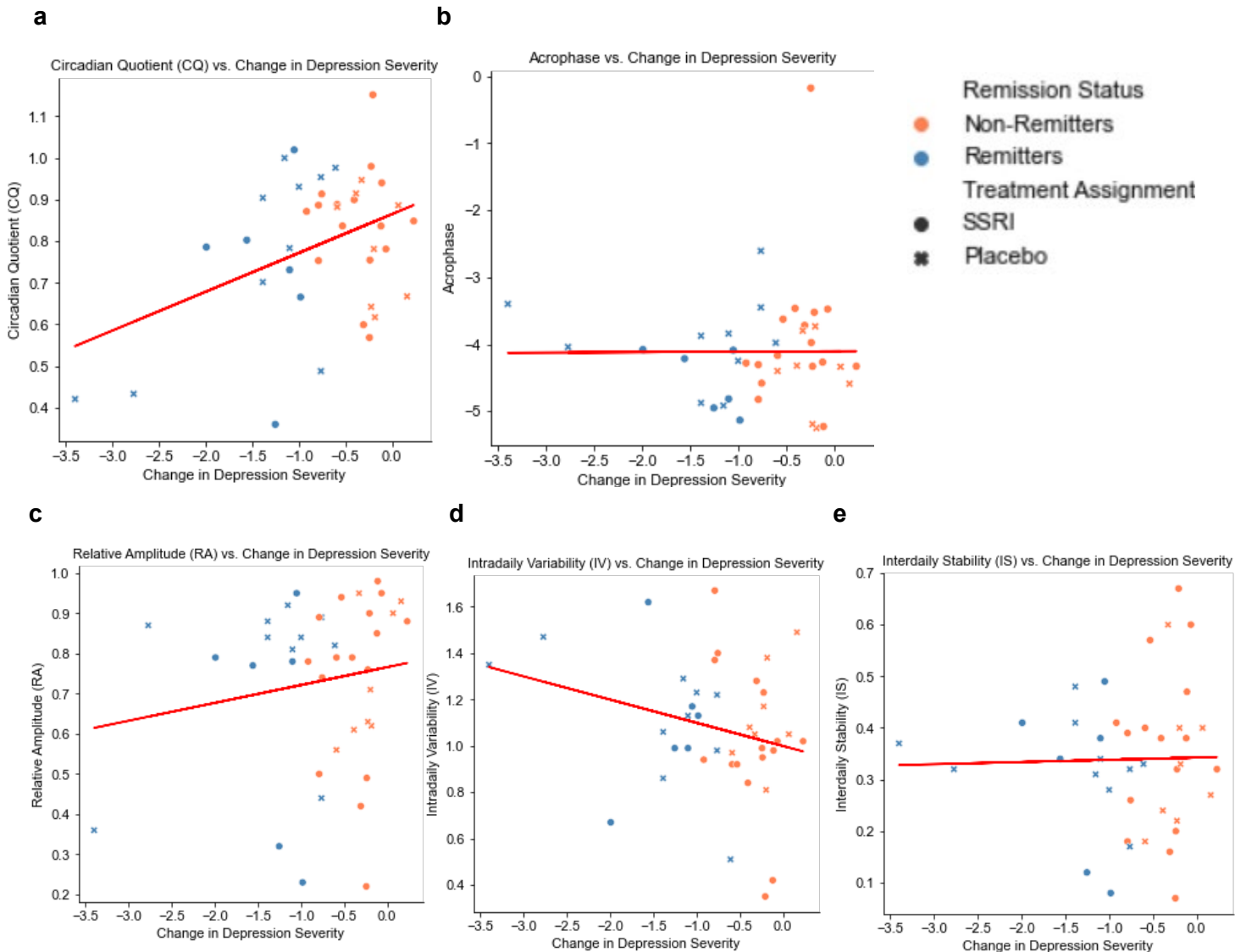
Supplementary Figure 1: Parametric measures of circadian rhythm by remission status. Mean (black circle) and standard deviation (black error bars) are reported for comparing non-remitters and remitters for the measures of **a** circadian quotient (CQ) and **c** acrophase. In addition, the median (center line) and interquartile range (box) with 25th and 75th percentiles (bounds of box) are reported for comparing non-remitters and remitters for the measures of **b** circadian quotient (CQ) and **d** acrophase. The whiskers go from 25th percentile to the minimum value and 75th percentile to the maximum value. *Non-Remitters* (orange): Week8-HDRS > 7. *Remitters* (blue): Week8-HDRS ≤ 7. *HDRS*: Hamilton Depression Rating Scale. *Week8-HDRS*: Hamilton Depression Rating Scale score after eight weeks of treatment. The actigraphy data associated with the two outliers marked inside the green rectangle for CQ = 1.15 and acrophase = - 0.18 were visually inspected to assess for any unusual patterns that did not lead to removal of any data. All analysis was performed with and without the outliers to test for robustness. The *P*-values that are statistically significant are indicated in bold for **P* < 0.05 at $\alpha = 0.05$.



Supplementary Figure 2: Nonparametric measures of circadian rhythm by remission status. Mean (black circle) and standard deviation (black error bars) are reported for comparing non-remitters and remitters for the measures of **a** relative amplitude (RA), **c** intradaily variability (IV) and **e** interdaily stability (IS). In addition, the median (center line) and interquartile range (box) with 25th and 75th percentiles (bounds of box) are reported for comparing non-remitters and remitters for the measures of **b** relative amplitude (RA), **d** intradaily variability (IV) and **f** interdaily stability (IS). The whiskers go from 25th percentile to the minimum value and 75th percentile to the maximum value. *Non-Remitters* (orange): Week8-HDRS > 7. *Remitters* (blue): Week8-HDRS ≤ 7. HDRS: Hamilton Depression Rating Scale. *Week8-HDRS*: Hamilton Depression Rating Scale score after eight weeks of treatment. The actigraphy data associated with the outlier marked inside the green rectangle for IS = 0.67 was visually inspected to assess for any unusual patterns that did not lead to removal of any data. All analysis was performed with and without the outlier to test for robustness. The *P*-values that are statistically significant are indicated in bold for **P* < 0.05 at α = 0.05.



Supplementary Figure 3: Parametric and nonparametric measures of circadian rhythm and their association with change in depression after first week of antidepressant treatment. The relationship between change in depression severity after first week of antidepressant treatment and the parametric measures including **a** circadian quotient (CQ) and **b** acrophase and the nonparametric measures including the **c** relative amplitude (RA), **d** intradaily variability (IV), and **e** interdaily stability (IS). The red line indicates the regression line for the circadian rhythm measures over change in depression severity after first week of antidepressant treatment (ΔHDRS1). ΔHDRS1 : change in depression severity after first week of treatment, $\ln(\text{Week1-HDRS}/\text{Week0-HDRS})$, with a higher value indicating more depression symptoms and a lower value indicating improvement in depression. HDRS: Hamilton Depression Rating Scale. *Week1-HDRS*: Hamilton Depression Rating Scale score after first week of treatment. *Week0-HDRS*: Hamilton Depression Rating Scale score at baseline. r_s : Spearman's correlation coefficient, which was used to assess correlation between each of the parametric and nonparametric measures extracted from the first week of treatment and the change in depression after one week (ΔHDRS1). The two extreme values ($\Delta\text{HDRS1} = 0.37$ and 0.56) marked inside the green rectangle were removed to assess for the robustness of the findings on the relationship between the circadian rhythm measures and depression. All analysis was performed with and without the outliers to test for robustness. The P -values that are statistically significant are indicated in bold for $*P < 0.05$ at $\alpha = 0.05$.



Supplementary Figure 4: Parametric and nonparametric measures of circadian rhythm and their association with change in depression after eight weeks of antidepressant treatment. The relationship between change in depression severity after first week of antidepressant treatment and **a** circadian quotient (CQ), **b** acrophase, **c** relative amplitude (RA), **d** intradaily variability (IV), and **e** interdaily stability (IS). The red line indicates the regression line for the circadian rhythm measures over change in depression severity after eight weeks of antidepressant treatment ($\Delta HDRS8$). $\Delta HDRS8$: change in depression severity after eight weeks of treatment, $\ln(\text{Week8-HDRS} / \text{Week0-HDRS})$, with a higher value indicating more depression symptoms and a lower value indicating improvement in depression. *HDRS*: Hamilton Depression Rating Scale. *Week8-HDRS*: Hamilton Depression Rating Scale score after eight weeks of treatment. *Week0-HDRS*: Hamilton Depression Rating Scale score at baseline. The *P*-values that are statistically significant are indicated in bold for $*P < 0.05$ at $\alpha = 0.05$.