

Using Behavioral Rhythms and Multi-task Learning to Predict Fine Grained Symptoms of Schizophrenia

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Supplementary Information

Ranking	Depressed	Seeing Things
1	#draft_messages⊗8-hour_PSD⊗2-day_window	light⊗median_deviation⊗14-day_window
2	#draft_messages⊗10-hour_PSD⊗2-day_window	ambient_sound⊗3-hour_MSE⊗12-day_window
3	ambient_sound⊗3-hour_MSE⊗6-day_window	ambient_sound⊗5-hour_MSE⊗10-day_window
4	#draft_messages⊗2-hour_PSD⊗2-day_window	ambient_sound⊗5-hour_MSE⊗8-day_window
5	#draft_messages⊗27-hour_PSD⊗2-day_window	ambient_sound⊗1-hour_MSE⊗2-day_window
6	#draft_messages⊗12-hour_PSD⊗2-day_window	ambient_sound⊗5-hour_MSE⊗6-day_window
7	ambient_sound⊗3-hour_MSE⊗12-day_window	#outgoing_calls⊗4-hour_PSD⊗2-day_window
8	ambient_sound⊗5-hour_MSE⊗10-day_window	#missed_calls⊗4-hour_PSD⊗8-day_window
9	#incoming_calls⊗4-hour_PSD⊗6-day_window	ambient_sound⊗2-hour_MSE⊗10-day_window
10	ambient_sound⊗5-hour_MSE⊗8-day_window	#outgoing_calls⊗SD_deviation⊗14-day_window

Ranking	Harm	Hearing Voices
1	ambient_sound⊗3-hour_MSE⊗12-day_window	ambient_sound⊗3-hour_MSE⊗6-day_window
2	ambient_sound⊗5-hour_MSE⊗10-day_window	#draft_messages⊗10-hour_PSD⊗2-day_window
3	#incoming_calls⊗4-hour_PSD⊗6-day_window	#draft_messages⊗12-hour_PSD⊗2-day_window
4	ambient_sound⊗5-hour_MSE⊗8-day_window	light⊗median_deviation⊗14-day_window
5	ambient_sound⊗5-hour_MSE⊗6-day_window	ambient_sound⊗3-hour_MSE⊗12-day_window
6	ambient_sound⊗1-hour_MSE⊗12-day_window	#draft_messages⊗2-hour_PSD⊗2-day_window
7	#outgoing_calls⊗4-hour_PSD⊗2-day_window	#draft_messages⊗8-hour_PSD⊗2-day_window
8	ambient_sound⊗4-hour_MSE⊗8-day_window	ambient_sound⊗5-hour_MSE⊗10-day_window
9	#missed_calls⊗4-hour_PSD⊗8-day_window	#incoming_calls⊗4-PSD_MSE⊗6-day_window
10	ambient_sound⊗2-hour_MSE⊗10-day_window	ambient_sound⊗5-hour_MSE⊗8-day_window

Ranking	Sleep	Stressed
1	light⊗median_deviation⊗14-day_window	#draft_messages⊗8-hour_PSD⊗2-day_window
2	#outgoing_calls⊗SD_deviation⊗14-day_window	#draft_messages⊗10-hour_PSD⊗2-day_window
3	ambient_sound⊗3-hour_MSE⊗6-day_window	#draft_messages⊗2-hour_PSD⊗2-day_window
4	#draft_messages⊗8-hour_PSD⊗2-day_window	#draft_messages⊗12-hour_PSD⊗2-day_window
5	#draft_messages⊗64-hour_PSD⊗2-day_window	ambient_sound⊗3-hour_MSE⊗12-day_window
6	ambient_sound⊗3-hour_MSE⊗12-day_window	#incoming_calls⊗4-hour_PSD⊗6-day_window
7	#draft_messages⊗10-hour_PSD⊗2-day_window	ambient_sound⊗1-hour_MSE⊗2-day_window
8	#draft_messages⊗27-hour_PSD⊗2-day_window	ambient_sound⊗5-hour_PSD⊗10-day_window
9	screen_on_time⊗SD_deviation⊗10-day_window	ambient_sound⊗5-hour_PSD⊗8-day_window
10	#draft_messages⊗12-hour_PSD⊗2-day_window	#draft_messages⊗6-hour_PSD⊗2-day_window

Ranking	Think	Hopeful
1	light⊗median_deviation⊗14-day_window	#draft_messages⊗8-hour_PSD⊗2-day_window
2	#draft_messages⊗8-hour_PSD⊗2-day_window	light⊗median_deviation⊗14-day_window
3	#draft_messages⊗10-hour_PSD⊗2-day_window	#draft_messages⊗10-hour_PSD⊗2-day_window
4	#draft_messages⊗2-hour_PSD⊗2-day_window	#draft_messages⊗12-hour_PSD⊗2-day_window
5	#draft_messages⊗12-hour_PSD⊗2-day_window	#draft_messages⊗2-hour_PSD⊗2-day_window
6	ambient_sound⊗3-hour_MSE⊗6-day_window	ambient_sound⊗3-hour_MSE⊗12-day_window
7	#outgoing_calls⊗SD_deviation⊗14-day_window	#draft_messages⊗27-hour_PSD⊗2-day_window
8	ambient_sound⊗3-hour_MSE⊗12-day_window	#draft_messages⊗64-hour_PSD⊗2-day_window
9	#draft_messages⊗64-hour_PSD⊗2-day_window	ambient_sound⊗3-hour_MSE⊗6-day_window
10	#draft_messages⊗6-hour_PSD⊗2-day_window	ambient_sound⊗4-hour_MSE⊗8-day_window

Ranking	Social	Calm
1	light⊗median_deviation⊗14-day_window	light⊗median_deviation⊗14-day_window
2	#outgoing_calls⊗SD_deviation⊗14-day_window	ambient_sound⊗3-hour_MSE⊗6-day_window
3	ambient_sound⊗3-hour_MSE⊗6-day_window	ambient_sound⊗3-hour_MSE⊗12-day_window
4	ambient_sound⊗3-hour_MSE⊗12-day_window	#outgoing_calls⊗SD_deviation⊗14-day_window
5	#outgoing_calls⊗SD_deviation⊗14-day_windo	#draft_messages⊗10-hour_PSD⊗2-day_window
6	#missed_calls⊗12-hour_PSD⊗8-day_window	light⊗3-hour_MSE⊗2-day_window
7	ambient_sound⊗5-hour_MSE⊗2-day_window	#draft_messages⊗8-hour_PSD⊗2-day_window
8	light⊗3-hour_MSE⊗2-day_window	#outgoing_calls⊗SD_deviation⊗14-day_window
9	conversation_length⊗SD_deviation⊗10-day_window	#outgoing_calls⊗mean_deviation⊗14-day_window
10	#incoming_calls⊗4-hour_PSD⊗14-day_window	conversation_length⊗SD_deviation⊗10-day_window

Table S1. Top predictive features for different schizophrenia symptoms.