

Nine RS-fMRI Datasets under Eyes Closed and Eyes Open Conditions

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Brief introduction:

Dr. ZANG Yu-Feng's research group acquired nine resting-state functional magnetic resonance imaging (RS-fMRI) datasets under eyes closed (EC) and eyes open (EO) conditions from 2007 to 2018. 3D T1 image were also shared.

The difference between EC and EO in RS-fMRI data is very consistent across studies which have used within-group design. Given that between-group comparisons are more prevalent in clinical studies and are not very reproducible, in our ongoing study (Yue et al., under submission), we divided the 9 datasets into 18 between-group design datasets with strictly matched for the gender, age and scanning order (See the folder of *Grouping datasets1-9* in the downloaded page).

Data is freely available. Please see below for the ongoing manuscript paper (Yue et al., under submission).

Yue J, Zhao N, Qiao Y, Feng Z-J, Hu Y-S, Wang J, Zang Y-F. Higher reliability and validity of Wavelet-based ALFF of resting-state fMRI from multicenter eyes open and eyes closed databases. Under submission.

Contact me

If there is any question about the availability and utility of the datasets, please contact me. (Name: Yue Juan, E-mail address: yuejuan1016@foxmail.com)

Data information

There are 9 resting-state functional MRI (rs-fMRI) datasets under eyes closed (EC) and

eyes open (EO) conditions. Resting-state blood-oxygenation-level-dependent fMRI (BOLD-fMRI) under EC and EO conditions and high-resolution 3D T1 imaging were included in each of dataset.

All participants were recruited after signed written informed consent approved by the Ethics Committee of each research center. All subjects were right-handed with no history of neurological or psychiatric disorders. Participants were asked to lie spine in the scanner at rest, and foam pads and strap were used to minimize the head movement during scanning.

Dataset 1-3 (called Reliability Dataset)

Datasets 1-3 were collected from 3 visits (V1, V2, V3) by the same set of participants (named Reliability dataset hereafter), where V1 and V2 were performed on a GE 3T scanner and V3 on a Siemens 3T scanner with an interval of 8 months. For each scanning visit, two resting-state scans (EC and EO) were performed for each subject by counter-balanced order. In total, six resting-state scans were acquired for each subject across three scanning visits and two resting-state scans (EC and EO). Scanning parameters and Subject information were shown in Table 1 and Table 2, respectively. If there is any information you would like to obtain, please see the following original paper.

Yuan, L.-X. et al. (2018) 'Intra- and Inter-scanner Reliability of Scaled Subprofile Model of Principal Component Analysis on ALFF in Resting-State fMRI Under Eyes Open and Closed Conditions', Frontiers in Neuroscience, 12, p. 311. doi: 10.3389/fnins.2018.00311

Zhao, N. et al. (2018) 'Intra- and Inter-Scanner Reliability of Voxel-Wise Whole-Brain Analytic Metrics for Resting State fMRI', Frontiers in Neuroinformatics, 12, p. 54. doi: 10.3389/fninf.2018.00054

Dataset 4-5

Dataset 5 (n = 19, TR = 400 ms) is a subset of Dataset 4 (n = 33, TR = 2000 ms), i.e., 19 of the 33 participants had undergone additional scanning of with shorter TR (Table 1 and Table 3). Scanning parameters and Subject information were shown in Table 1 and Table 3, respectively.

Please see below for the original paper.

Zou Q, Yuan B-K, Gu H, Liu D, Wang DJJ, Gao J-H, et al. Detecting static and dynamic differences between eyes-closed and eyes-open resting states using ASL and BOLD fMRI. *PloS One*. 2015;10: e0121757. doi: 10.1371/journal.pone.0121757

Dataset 6- Dataset 9

Two resting-state scans (EC and EO) were performed for each subject by counter-balanced order. Scanning parameters and Subject information were shown in Table 1 and Table 4-7.

Reference of Dataset 6:

Liu, D-Q, Dong, Z-Y, Zuo, X-N, Wang, J, Zang, Y-F. Eyes-Open/Eyes-Closed Dataset Sharing for Reproducibility Evaluation of Resting State fMRI Data Analysis Methods. Neuroinformatics. 2013; 11: 469. Doi: 10.1007/s12021-013-9187-0

Reference of Dataset 9:

Yuan B-K, Wang J, Zang Y-F, Liu D-Q. Amplitude differences in high-frequency fMRI signals between eyes open and eyes closed resting states. Frontiers in Human Neuroscience. 2012; 8:503. Doi: 10.3389/fnhum.2014.00503

Table 1. Scanning information

Dataset	RS-fMRI	3D-T1
Dataset 1	TR/TE = 2000/30 ms, FA= 90°, 43 slices with interleaved acquisition; slice thickness/gap = 3.2/0 mm; matrix = 64 × 64; FOV = 220 × 220 mm ² ; in-plane voxel size = 3.44 × 3.44 mm ² ; total duration = 8 min.	176 sagittal slices, thickness = 1 mm, TR/TE = 8100/3.1 ms, FA = 9°, FOV = 250 × 250 mm ²
Dataset 2		

Dataset 3	TR/TE = 2000/30 ms, FA = 90°, 43 slices with interleaved acquisition; slice thickness/gap = 3.4/0 mm; matrix = 64 × 64; FOV = 220 × 220 mm ² ; in-plane voxel size = 3.44 × 3.44 mm; total duration = 8 min.	176 sagittal slices, thickness = 1 mm, TR/TE = 1800/2.28 ms, FA = 8°, FOV = 250 × 250 mm ²
Dataset 4	TR/TE = 2000/30 ms, FA = 60°, 37 slices with interleaved acquisition; thickness/gap = 3.4/0 mm, matrix = 64 × 64; FOV = 220×220 mm ² ; in-plane voxel size = 3.44×3.44 mm ² ; total duration = 8 min	176 sagittal slices, thickness = 1 mm, TR/TE = 8100/3.1 ms, FA = 8°, FOV = 250×250 mm ²
Dataset 5	TR/TE = 400/15 ms, FA = 30°, 13 slices with interleaved acquisition; thickness/gap = 6/1 mm, matrix = 64 × 64; FOV = 240×240 mm ² ; in-plane voxel size = 3.75×3.75 mm ² ; total duration = 8 min	176 sagittal slices, thickness = 1 mm, TR/TE = 8100/3.1 ms, FA = 8°, FOV = 250×250 mm ²
Dataset 6	TR/TE = 2000/30 ms, FA = 90°, 33 slices with interleaved acquisition; thickness/gap = 3.5/0 mm, matrix = 64 × 64; FOV = 200×200 mm ² ; in-plane voxel size = 3.1×3.1 mm ² ; total duration = 8 min	128 sagittal slices, thickness = 1.33 mm, TR/TE = 2530/3.39 ms, FA = 7°, FOV = 256×256 mm ²
Dataset 7	TR/TE = 2000/30 ms, FA = 90°, 43 slices with interleaved acquisition; slice thickness/gap = 3.2/0 mm; matrix = 64 × 64; FOV = 220 × 220 mm ² ; in-plane voxel size = 3.44 × 3.44 mm; total duration = 8 min.	176 sagittal slices, thickness = 1 mm, TR/TE = 8.1/3.1 ms, FA = 9°, FOV = 250 × 250 mm ²
Dataset 8	TR/TE = 2000/30 ms, FA = 90°, 33 slices with interleaved acquisition; thickness/gap = 3.6/0 mm, matrix = 64 × 64; FOV = 200×200 mm ² ; in-plane voxel size = 3.125×3.125 mm ² ; total duration = 8 min	128 sagittal slices, thickness = 1.33 mm, TR/TE = 2530/3.39 ms, FA = 7°, FOV = 256×256 mm ²

Dataset 9	TR/TE = 400/15 ms, FA = 30°, 13 slices with interleaved acquisition; thickness/gap = 6/1 mm, matrix = 64 × 64; FOV = 240 × 240 mm ² ; in-plane voxel size = 3.75×3.75 mm ² ; total duration = 8 min	176 sagittal slices, thickness = 1 mm, TR/TE=8100/3.1 ms, FA = 8°, and FOV = 250 × 250 mm ²
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Table 2. Gender, sequence order, handedness, age of dataset 1-3.

Subject ID	Sex	Sequence order		Age	Handedness
sub001	female	EC	EO	26	right
sub002	female	EO	EC	22	right
sub003	male	EO	EC	25	right
sub004	female	EC	EO	22	right
sub005	female	EO	EC	21	right
sub006	female	EO	EC	21	right
sub007	male	EO	EC	21	right
sub008	male	EO	EC	23	right
sub009	female	EC	EO	21	right
sub010	female	EO	EC	21	right
sub011	male	EC	EO	22	right
sub012	female	EO	EC	25	right
sub013	female	EC	EO	20	right
sub014	female	EC	EO	21	right
sub015	female	EC	EO	20	right
sub016	male	EO	EC	21	right
sub017	male	EC	EO	20	right
sub018	male	EO	EC	20	right
sub019	male	EC	EO	21	right
sub020	male	EO	EC	21	right
sub021	male	EC	EO	21	right

Table 3. Gender, sequence order, handedness, age of dataset 4-5.

Subject ID	Sequence Order				Gender	Age	Handedness
	TR (2000 ms)	TR (400 ms)					
sub001	EO	EC	EO	EC	male	24	right
sub002	EC	EO	EC	EO	female	21	right
sub003	EC	EO	EC	EO	female	31	right
sub004	EO	EC	EO	EC	female	23	right
sub005	EC	EO	EC	EO	male	24	right
sub006	EC	EO	EC	EO	male	23	right
sub007	EO	EC	EO	EC	female	25	right
sub008	EC	EO	EC	EO	male	23	right
sub009	EO	EC	NO	NO	male	25	right
sub010	EC	EO	EC	EO	female	24	right
sub011	EO	EC	EO	EC	female	22	right
sub012	EC	EO	EC	EO	female	24	right
sub013	EO	EC	EO	EC	female	22	right
sub014	EC	EO	EC	EO	male	24	right
sub015	EO	EC	EO	EC	male	24	right
sub016	EO	EC	NO	NO	male	19	right
sub017	EC	EO	NO	NO	male	23	right
sub018	EO	EC	NO	NO	female	24	right
sub019	EO	EC	EO	EC	male	24	right
sub020	EC	EO	NO	NO	female	25	right
sub021	EC	EO	EC	EO	female	24	right
sub022	EO	EC	EO	EC	female	24	right
sub023	EC	EO	EC	EO	female	20	right
sub024	EO	EC	EC	EO	male	23	right
sub025	EC	EO	NO	NO	male	23	right
sub026	EC	EO	NO	NO	male	24	right
sub027	EO	EC	NO	NO	female	22	right
sub028	EO	EC	NO	NO	male	23	right
sub029	EC	EO	NO	NO	male	25	right
sub030	EC	EO	NO	NO	female	23	right
sub031	EO	EC	NO	NO	female	24	right
sub032	EC	EO	NO	NO	female	26	right
sub033	EO	EC	NO	NO	female	20	right

Note: Dataset 5 is a subset of dataset 4 (TR=2000 ms). No RS-fMRI data (TR=400 ms) for sub009, sub016-sub018, sub020, and sub025-sub033. EO: eyes open; EC: eyes closed.

Table 4. Gender, sequence order, handedness, age of dataset 6.

Subject ID	Sequence Order		Gender	Age	Handedness
sub001	EO	EC	female	23	right
sub002	EC	EO	male	18	right
sub003	EO	EC	female	23	right
sub004	EC	EO	male	22	right
sub005	EC	EO	female	21	right
sub006	EO	EC	male	24	right
sub007	EC	EO	female	24	right
sub008	EO	EC	male	23	right
sub009	EC	EO	female	20	right
sub010	EO	EC	female	20	right
sub011	EC	EO	female	24	right
sub012	EO	EC	female	21	right
sub013	EC	EO	female	23	right
sub014	EO	EC	female	23	right
sub015	EO	EC	female	23	right
sub016	EC	EO	female	23	right
sub017	EC	EO	female	23	right
sub018	EO	EC	female	20	right
sub019	EC	EO	female	23	right
sub020	EO	EC	female	20	right
sub021	EC	EO	male	25	right
sub022	EO	EC	male	24	right
sub023	EO	EC	female	23	right
sub024	EC	EO	female	21	right
sub025	EO	EC	male	23	right
sub026	EC	EO	male	24	right
sub027	EO	EC	male	23	right
sub028	EC	EO	male	23	right
sub029	EC	EO	male	22	right
sub030	EO	EC	male	24	right
sub031	EC	EO	male	22	right
sub032	EO	EC	male	22	right
sub033	EC	EO	male	23	right
sub034	EO	EC	male	24	right
sub035	EC	EO	male	23	right
sub036	EO	EC	female	21	right
sub037	EC	EO	male	20	right
sub038	EC	EO	male	22	right
sub039	EC	EO	female	20	right
sub040	EC	EO	male	19	right
sub041	EO	EC	female	25	right
sub042	EC	EO	female	21	right
sub043	EO	EC	male	21	right

Table 5. Gender, sequence order, handedness, age of dataset 7.

Subject ID	Sequence order	Gender	Age	Handedness	
sub001	EO	EC	female	24	right
sub002	EC	EO	male	23	right
sub003	EO	EC	male	24	right
sub004	EC	EO	female	26	right
sub005	EO	EC	female	24	right
sub006	EC	EO	female	22	right
sub007	EO	EC	male	29	right
sub008	EC	EO	female	25	right
sub009	EC	EO	female	26	right
sub010	EO	EC	female	23	right
sub011	EC	EO	male	25	right
sub012	EO	EC	male	24	right
sub013	EC	EO	female	24	right
sub014	EO	EC	female	28	right
sub015	EO	EC	female	23	right
sub016	EC	EO	female	22	right
sub017	EO	EC	female	24	right
sub018	EO	EC	male	24	right
sub019	EC	EO	male	28	right
sub020	EO	EC	male	19	right
sub021	EC	EO	male	23	right
sub022	EC	EO	male	21	right
sub023	EO	EC	male	21	right
sub024	EC	EO	male	26	right
sub025	EO	EC	female	19	right
sub026	EC	EO	female	19	right
sub027	EO	EC	female	21	right
sub028	EC	EO	male	19	right
sub029	EO	EC	female	25	right

Table 6. Gender, sequence order, handedness, age of dataset 8.

Subject ID	Sequence order		Gender	Age	Handedness
sub001	EO	EC	female	24	right
sub002	EC	EO	male	19	right
sub003	EO	EC	female	19	right
sub004	EO	EC	female	20	right
sub005	EC	EO	female	20	right
sub006	EO	EC	female	23	right
sub007	EO	EC	male	22	right
sub008	EO	EC	male	24	right
sub009	EO	EC	male	22	right
sub010	EC	EO	male	24	right
sub011	EC	EO	male	19	right
sub012	EC	EO	male	21	right
sub013	EO	EC	male	18	right
sub014	EO	EC	male	20	right
sub015	EC	EO	female	20	right
sub016	EO	EC	female	20	right
sub017	EO	EC	male	22	right
sub018	EO	EC	female	20	right
sub019	EC	EO	female	22	right
sub020	EC	EO	female	20	right

Table 7. Gender, sequence order, handedness, age of dataset 9.

Subject ID	Sequence order		sex	age	handedness
sub001	EC	EO	female	26	right
sub002	EO	EC	female	26	right
sub003	EO	EC	female	23	right
sub004	EC	EO	male	23	right
sub005	EC	EO	female	23	right
sub006	EO	EC	female	26	right
sub007	EC	EO	female	24	right
sub008	EO	EC	female	22	right
sub009	EC	EO	male	24	right
sub010	EO	EC	male	25	right
sub011	EC	EO	male	25	right
sub012	EO	EC	male	24	right
sub013	EC	EO	male	25	right
sub014	EO	EC	male	24	right
sub015	EC	EO	male	23	right
sub016	EO	EC	female	24	right
sub017	EC	EO	female	25	right
sub018	EO	EC	female	25	right
sub019	EC	EO	female	23	right
sub020	EO	EC	female	23	right
sub021	EC	EO	female	22	right
sub022	EO	EC	male	24	right
sub023	EO	EC	male	31	right
sub024	EC	EO	male	24	right
sub025	EO	EC	male	25	right
sub026	EC	EO	female	23	right
sub027	EC	EO	female	22	right
sub028	EO	EC	male	23	right
sub029	EO	EC	male	23	right
sub030	EC	EO	female	24	right
sub031	EO	EC	male	23	right
sub032	EC	EO	male	22	right
sub033	EO	EC	male	22	right
sub034	EC	EO	female	22	right
sub035	EC	EO	female	23	right
sub036	EO	EC	female	23	right
sub037	EC	EO	male	24	right
sub038	EO	EC	male	24	right
sub039	EO	EC	male	25	right
sub040	EC	EO	male	24	right
sub041	EO	EC	female	22	right