## Supplementary Material

# Inconsistency in abnormal brain activity across cohorts of ADHD-200 in children with attention deficit hyperactivity disorder

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### **1.** Supplementary Figures and Tables

#### **1.1 Supplementary Table**

Supplementary Table 1. Functional parameters

sites	TR/TE/Flip Angle	Slice thickness/Gap	FOV	Slice	ТР	duration
NYU	2000 ms/15 ms/90 $^\circ$	4.0 mm/0mm	240×192mm	33	176	6 min
PKU1	2000 ms/30 ms/90 $^\circ$	3.5 mm/0.7mm	200×200mm	33	236	8 min
PKU2	2000 ms/30 ms/90 $^\circ$	3.0 mm/0.6mm	200×200mm	33	236	8 min
PKU3	2000 ms/30 ms/90 $^\circ$	4.5 mm/0mm	220×220mm	30	236	8 min

The parameters of T1-weighted structural image can be found in http://fcon\_1000.projects.nitrc.org/indi/adhd200/.

## **1.2** Supplementary Figures



#### **1.2.1** Results of each cohort in conventional frequency band (0.01-0.08 Hz)

**Supplementary Figure 1.** Clusters showing significant ALFF differences between TDC and children with ADHD. (A), (B), (C) and (D) indicate the result of NYU, PKU1, PKU2 and PKU3, respectively. Cold color indicates the region in which ADHD subjects had decreased activity compared with TDC and the warm color indicates the opposite.



**Supplementary Figure 2.** Clusters showing significant ReHo differences between TDC and children with ADHD. (A), (B), (C) and (D) indicate the result of NYU, PKU1, PKU2 and PKU3, respectively. Cold color indicates the region in which ADHD subjects had decreased activity compared with TDC and the warm color indicates the opposite.

DC

**Supplementary Figure 3.** Clusters showing significant DC differences between TDC and children with ADHD. (A), (B), (C) and (D) indicate the result of NYU, PKU1, PKU2 and PKU3, respectively. Cold color indicates the region in which ADHD subjects had decreased activity compared with TDC and the warm color indicates the opposite.

**1.2.2** Results of each cohort in conventional frequency band (0.01-0.08 Hz) in lenient threshold



**Supplementary Figure 4.** Clusters showing significant ALFF differences between TDC and children with ADHD at a lenient threshold (p < 0.05, cluster size > 10 voxels) in each cohort. (A), (B), (C) and (D) indicate the result of NYU, PKU1, PKU2 and PKU3, respectively. Cold color indicates the region in which ADHD subjects had decreased activity compared with TDC and the warm color indicates the opposite.



**Supplementary Figure 5.** Clusters showing significant ReHo differences between TDC and children with ADHD at a lenient threshold (p < 0.05, cluster size > 10 voxels) in each cohort. (A), (B), (C) and (D) indicate the result of NYU, PKU1, PKU2 and PKU3, respectively. Cold color indicates the region in which ADHD subjects had decreased activity compared with TDC and the warm color indicates the opposite.



**Supplementary Figure 6.** Clusters showing significant DC differences between TDC and children with ADHD at a lenient threshold (p < 0.05, cluster size > 10 voxels) in each cohort. (A), (B), (C) and (D) indicate the result of NYU, PKU1, PKU2 and PKU3, respectively. Cold color indicates the region in which ADHD subjects had decreased activity compared with TDC and the warm color indicates the opposite.



## 1.2.3 Overlapping of effect size across each cohort and pooled data

Supplementary Figure 7. The overlapped effect size across the 4 cohorts and the effect size of pooled data for ALFF, ReHo and DC. Mint, red, and yellow indicate the

regions detected in 2, 3, and 4 cohorts, respectively. In each cohort, the threshold was set at ES > 0.30.

ALFF										
(A) Conventional band	(B) Slow-6									
45 0 50 0 55 0 60 65 0 65 0 65 0 65 0 65	45 (D) 50 (D) 55 (D) 60 (D) 65 (D)									
Slow-5	(D) Slow-4									
45 50 55 60 65 <b>6</b> 5	<sup>45</sup> (1) <sup>50</sup> (1) <sup>55</sup> (1) <sup>60</sup> (1) <sup>65</sup> (4)									
Slow-3	Slow-2									
45 50 55 60 65 <b>(</b> )	<sup>45</sup> (1) <sup>50</sup> (1) <sup>55</sup> (1) <sup>60</sup> (1) <sup>65</sup> (2)									
1 cohort 2 cohort	s 📕 3 cohorts 🔜 4 cohorts									

## 1.2.4 Overlapping across each cohort in each frequency band

Supplementary Figure 8. The overlapped results of ALFF across the 4 cohorts. (A) to (F)

indicate each frequency band. Purple indicates the regions detected in only one of the 4 cohorts. Mint, red, and yellow indicate the regions detected in 2, 3, and 4 cohorts, respectively. In each cohort, the statistical threshold was set at p < 0.05, cluster size > 10 voxels.

ReHo												
	(A) Conventional band							Slow-6				
()	-30	-25	-20	-15	-10	(B)	-30	-25	-20	-15	-10	
			5	10 (¥)	15				5	10 The second s	15	
	20 人	25 X Total	30	35 Autor	40		20	25	30	35	40	
	45	50	55	60 A	65		45	50	55	60	65	
(C)			Slow-5	5 		(D)		1.6166	Slow-	4	NAMES COMPANY	
( )		-25	-20	-15	-10		-30	-25	-20	-15	-10	
			5	10 10 10	15				5	10 Y	15	
	20 X	25	30	35	40		20 A	25	30	35 Contrast	40	
	45	50	55	60	65		45	50	55	<sup>60</sup>	<sup>65</sup>	
<b>(E)</b>	Slow-3					<b>(F)</b>	1		Slow-	2		
(-)	-30	-25	-20	-15	-10	(-)	-30	-25	-20	-15	10	
					15				5		5	
	20 X	25 	30	35	40		<sup>20</sup> 入	25 K	30	35	40	
	45	50	55	60	65		45	50	55	60	65	
			1 cohor	rt 📃	2 cohoi	rts 📕	<b>3</b> col	norts 🗌	<mark></mark> 4 co	horts		

Supplementary Figure 9. The overlapped results of ReHo across the 4 cohorts. (A) to (F)

indicate each frequency band. Purple indicates the regions detected in only one of the 4 cohorts. Mint, red, and yellow indicate the regions detected in 2, 3, and 4 cohorts, respectively. In each cohort, the statistical threshold was set at p < 0.05, cluster size > 10 voxels.

DC											
(4)		Conve	ntiona	l band	l.	<b>(D)</b>			Slow-6	5	
(A)	-30	-25	-20	-15	-10	(В)	-30	-25	-20	-15	10
	- S		5	10	15		5		5	10 W	
	20 X	25	30	35	40		20	25	30	35	40
	45	50	55	60 (1)	65		45	50	55	60 (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	65
(C)	30	25	Slow-5	_15	10	(D)	20		Slow-	4	
	-30							-25	-20		
	-5		5	10	15		5		5 × 5.	10	15
	20 X	25	30	35	40		20 X	25 X	30	35	40
	45	50	55	60	65		45	50	55	<sup>60</sup>	<sup>65</sup>
(E)	20		Slow-3	5	10	(F)			Slow-	2	
	-30	-25	-20				-30	-25	-20		
			5	10 Y	15				5		
	20 	25 X	30	35	40		20	25	30	35	
	45	50	55	60 (1)	65		45	50	55	<sup>60</sup>	55
			1 cohor	rt 📃	2 coho	rts 💻	3 col	orts 📘	4 co	horts	

Supplementary Figure 10. The overlapped results of DC across the 4 cohorts. (A) to (F) indicate each frequency band. Purple indicates the regions detected in only one of the 4 cohorts. Mint, red, and yellow indicate the regions detected in 2, 3, and 4 cohorts, respectively. In each cohort, the statistical threshold was set at p < 0.05, cluster size > 10 voxels.

#### Slow-2 Slow-3 Slow-4 Slow-5 Slow-6 0 0 0 0 0 (A) T value +45+45+45+45 +45-2 **(B)**

## **1.2.5 Example for the frequency-dependent feature**

**Supplementary Figure 11.** Clusters showing frequency-dependent differences of DC between TDC and ADHD for PKU2. Cold color indicates the region in which ADHD subjects had decreased activity compared with TDC and the warm color indicates the opposite. The statistical threshold was set at p < 0.05, cluster size > 132 voxels.