

## Supplementary Table 1. Behavioral Results

	Accuracy		Response Time	
	AB vs. CB	AB vs. S	AB vs. CB	AB vs. S
Effect of Digit-Number	F(1,31)=0.002, p=0.96	F(1,30)=2.37, p=0.13	F(1,31)=1.35, p=0.25	F(1,30)=0.66, p=0.42
Effect of Algebraic Complexity	F(1,31)=3.01, p=0.09	F(1,30)=6.51, p=0.02	F(1,31)=0.28, p=0.60	F(1,30)=5.12, p=0.03
Effect of Task	F(1,31)=2.57, p=0.12	F(1,30)=0.31, p=0.59	F(1,31)=1.27, p=0.27	F(1,30)=1.46, p=0.24
Math	t(31)=1.41, p=0.17	t(30)=2.1, p=0.04	t(31)=-1.85, p=0.07	t(30)=1.67, p=0.11
Sentences	t(31)=3.60, p=0.001	t(30)=2.03, p=0.051	t(31)=-2.54, p=0.02	t(30)=0.87, p=0.39

## Supplementary Table 2. Brain regions active during math and language tasks

Brain regions active for math > language	x	y	z	Peak t	mm2	Pcluster
<b>Adult-Onset Blind Group</b>						
Left postcentral sulcus	40	-40	37	13.56	3247.83	0.0008
Left intraparietal sulcus and transverse parietal sulci	31	-65	34	10.53		
Left precuneus	7	-65	50	9.05		
Left marginal branch of the cingulate sulcus	7	-33	43	6.84	671.49	0.043
Right intraparietal sulcus and transverse parietal sulci	29	-51	44	12.67	2274.23	0.0002
Right supramarginal gyrus	56	-41	42	10.78		
Right middle occipital gyrus	35	-79	34	9.01		
Right superior occipital sulcus and transverse occipital sulcus	28	-64	29	7.5		
Right superior parietal lobule	17	-68	54	7.09		
Right inferior temporal sulcus	55	-53	-4	5.98	590.13	0.033
Right inferior occipital gyrus and sulcus	45	-82	-9	5.08		
Right marginal branch of the cingulate sulcus	7	-38	43	11.66	579.53	0.0332
<b>Congenitally Blind Group</b>						
Left superior parietal lobule	-17	-70	45	9.62	4297.49	0.0002
Left supramarginal gyrus	-52	-39	47	7.96		
Left middle occipital gyrus	-38	-88	16	6.25		
Left middle frontal gyrus	-39	50	9	8.39	1703.1	0.003
Left middle frontal gyrus	-44	31	30	6.46		
Left fronto-marginal gyrus and sulcus	-23	56	-7	5.02		
Left superior frontal sulcus	-21	7	50	9.51	1127.99	0.0086
Left posterior-dorsal part of the cingulate gyrus	-6	-30	29	6.88	871.01	0.016
Left marginal branch of the cingulate sulcus	-11	-41	45	6.46		
Left middle-anterior part of the cingulate gyrus and sulcus	-8	8	45	6.4	642.01	0.0286
Left anterior part of the cingulate gyrus and sulcus	-9	35	26	6.32		
Right sulcus intermedius primus	43	-44	36	10.3	3551.84	0.002
Right intraparietal sulcus and transverse parietal sulci	19	-63	53	9.07		

Right marginal branch of the cingulate sulcus	7	-41	44	7.95		
Right middle frontal gyrus	38	27	39	7.36	1591.46	0.0068
Right inferior frontal sulcus	43	33	20	7.12		
Right middle frontal sulcus	30	50	0	5.89		
Right middle occipital sulcus and lunatus sulcus	33	-82	9	6.83	1204.35	0.0092
Right superior frontal sulcus	28	6	51	8.29	925.6	0.0138
Right middle-posterior part of the cingulate gyrus and sulcus	3	3	34	7.45	570.11	0.0342
Right superior frontal gyrus	6	23	43	6.62		
Right medial occipito-temporal sulcus and lingual sulcus	31	-45	-14	6.04	455.74	0.0476

### Sighted Group

Left intraparietal sulcus and transverse parietal sulci	33	-43	44	7.86	2594.9	0.0012
Left angular gyrus	33	-65	45	7.41		
Left superior parietal lobule	10	-61	64	6.03		
Left precuneus	14	-75	46	5.94		
Left marginal branch of the cingulate sulcus	16	-39	42	10.96	1043.9	0.0072
Right marginal branch of the cingulate sulcus	13	-28	38	7.7	2172.41	0.0008
Right intraparietal sulcus and transverse parietal sulci	22	-63	43	6.34		
Right middle occipital gyrus	40	-80	30	5.99		
Right intraparietal sulcus and transverse parietal sulci	36	-46	36	5.99	941.89	0.0074
Right supramarginal gyrus	58	-36	44	5.02		
Right calcarine sulcus	12	-75	6	4.18	457	0.0366
Right calcarine sulcus	25	-55	1	3.9		
Right superior frontal gyrus	7	0	59	5.13	450.49	0.037
Right superior part of the precentral sulcus	31	-4	46	4.94	431.03	0.0406
Right superior frontal gyrus	18	14	62	4.66		

### Congenitally Blind Group > Adult-Onset Blind Group

Right superior occipital gyrus	14	-92	15	4.67	483.51	0.046
Right middle occipital gyrus	30	-89	12	4.53		

### Congenitally Blind Group > Sighted Group

Left middle occipital gyrus	-34	-88	14	4.98	528.72	0.0312
Left middle occipital sulcus and lunatus sulcus	-25	-95	1	4.78		
Right middle occipital sulcus and lunatus sulcus	33	-82	9	6.52	807.7	0.011
Right medial occipito-temporal sulcus and lingual sulcus	32	-45	-14	5.43	548.72	0.027

### Brain regions active for language > math

	x	y	z	Peak t	mm2	Pcluster
<b>Adult-Onset Blind Group</b>						
Left superior temporal gyrus	-61	-15	3	11.81	3684.03	0.0002
Left planum polare of the superior temporal gyrus	-47	7	-17	11.14		
Left superior temporal sulcus	-51	-49	5	9.74		
Left superior temporal sulcus	-54	-19	-15	8.88		
Left superior temporal sulcus	-41	-63	19	7.08		
Left opercular part of the inferior frontal gyrus	-52	25	17	7.36	835.81	0.0242
Left orbital sulci	-38	31	-13	6.54		

Left precuneus	-5	-61	31	7.28	781.82	0.0268
Right superior temporal sulcus	57	-9	-20	9.98	1576.82	0.0014
Right lateral aspect of the superior temporal gyrus	48	15	-21	9.88		
Right lateral aspect of the superior temporal gyrus	64	-5	-4	7.88		

### **Congenitally Blind Group**

Left lateral aspect of the superior temporal gyrus	-61	-14	-5	13.01	4536.4	0.0002
Left superior temporal sulcus	-53	-39	3	9.03		
Left lateral aspect of the superior temporal gyrus	-46	16	-26	8.68		
Left triangular part of the inferior frontal gyrus	-55	23	12	8.52	1166.59	0.0108
Left orbital part of the inferior frontal gyrus	-47	32	-14	7.08		
Left orbital gyri	-31	18	-22	5.57		
Left superior frontal gyrus	-9	61	25	7.66	876.66	0.016
Left subparietal sulcus	-10	-55	26	9.64	799.73	0.019
Right lateral aspect of the superior temporal gyrus	65	-10	0	12.51	5884.37	0.0002
Right superior temporal sulcus	49	-13	-15	12.07		
Right planum polare of the superior temporal gyrus	39	9	-27	9.7		
Right superior temporal sulcus	51	-60	19	9.41		
Right superior temporal sulcus	45	-40	3	8.55		
Right parahippocampal gyrus	25	-7	-30	8.01		
Right anterior occipital sulcus and preoccipital notch	45	-69	10	7.09		
Right triangular part of the inferior frontal gyrus	56	24	18	8.87	1309.03	0.0092
Right triangular part of the inferior frontal gyrus	52	32	-4	7.72		
Right superior frontal gyrus	10	56	32	7.64	978.34	0.0152
Right superior frontal gyrus	10	15	65	5.6		
Right lateral occipito-temporal gyrus (fusiform gyrus)	38	-48	-22	8.69	891.01	0.017
Right anterior transverse collateral sulcus	41	-8	-35	6.59		
Right subparietal sulcus	8	-56	36	9.01	635.66	0.0278
Right straight gyrus	6	54	-13	8.58	633.27	0.0282

### **Sighted Group**

Left lateral aspect of the superior temporal gyrus	-50	13	-21	12.91	4568.42	0.0002
Left superior temporal sulcus	-54	-46	0	10.68		
Left lateral aspect of the superior temporal gyrus	-57	-15	-8	9.85		
Left superior temporal sulcus	-44	-67	26	5.01		
Left horizontal ramus of the anterior segment of the lateral sulcus	-44	31	-3	9.91	950.64	0.0112
Left superior frontal gyrus	-6	55	32	10.72	902.06	0.0132
Left superior frontal gyrus	-8	12	66	6.37		
Left subparietal sulcus	-12	-51	36	8.66	811.73	0.0154
Right lateral aspect of the superior temporal gyrus	47	13	-20	10.68	3109.97	0.0002
Right lateral aspect of the superior temporal gyrus	62	-6	-7	9.61		
Right superior temporal sulcus	52	-33	1	8.97		
Right middle temporal gyrus	61	-35	-6	7.18		
Right precuneus	5	-58	31	6.23	642.25	0.018

### **Congenitally Blind Group > Adult-Onset Blind Group**

Right superior temporal sulcus	51	-6	-17	6.01	2604.86	0.0002
Right lateral occipito-temporal sulcus	42	-52	-17	5.52	518.55	0.0436
<b>Congenitally Blind Group &gt; Sighted Group</b>						
Right anterior occipital sulcus and preoccipital notch	46	-68	8	5.96	689.95	0.016
Right lateral occipito-temporal sulcus	42	-50	-18	6.14	533.68	0.0316
Right calcarine sulcus	17	-74	9	5	477.16	0.0386

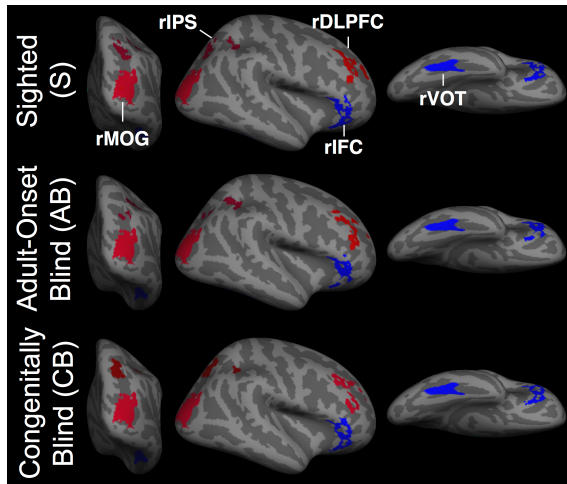
Peaks of brain regions active more for math than language ( $p < 0.05$ , cluster corrected;  $p < 0.01$  cluster-forming threshold; 20 mm minimum distance between peaks). Coordinates reported in MNI space. Peak t: t values corresponding to local maxima; mm<sup>2</sup>: area occupied by cluster on cortical surface; Pcluster: P value for entire cluster

**Supplementary Table 3. Results of ROI Analysis for Math Task**

		AB Group	AB vs. CB	AB vs. S	S
IPS	Effect of Digit	F(1,12)=14.38, p=0.003	F(1,31)=0.002, p=0.96	F(1,30)=0.95, p=0.34	--
	Effect of Alg. Comp.	(1,12)=0.20, p=0.66	F(1,31)=0.84, p=0.37	F(1,30)=3.18, p=0.09	--
	Effect of Task	F(1,12)=187.91, p<0.001	F(1,31)=0.13, p=0.72	F(1,30)=1.63, p=0.21	--
rMOG	Effect of Digit	F(1,12)=2.90, p=0.12	F(1,31)=9.58, p=0.004	F(1,30)=2.88, p=0.10	--
	Effect of Alg. Comp.	F(1,12)=0.06, p=0.82	F(1,31)=3.28, p=0.08	F(1,30)=0.00 4, p=0.95	--
	Effect of Task	t(12)=2.28, p=0.04	F(1,31)=10.72, p=0.003	F(1,30)=1.27, p=0.27	--
rV1	Effect of Digit	F(1,12)=1.16, p=0.30	F(1,31)=4.18, p=0.05	F(1,30)=0.09, p=0.77	F(1,18)=1.70, p=0.21
	Effect of Alg. Comp.	F(1,12)=0.90, p=0.36	F(1,31)=0.17, p=0.69	F(1,30)=2.58, p=0.12	F(1,18)=10.67, p=0.004
	Effect of Task	t(12)=2.72, p=0.13	F(1,31)=18.87, p<0.001	F(1,30)=3.43, p=0.07	F(1,18)=14.59, p=0.001

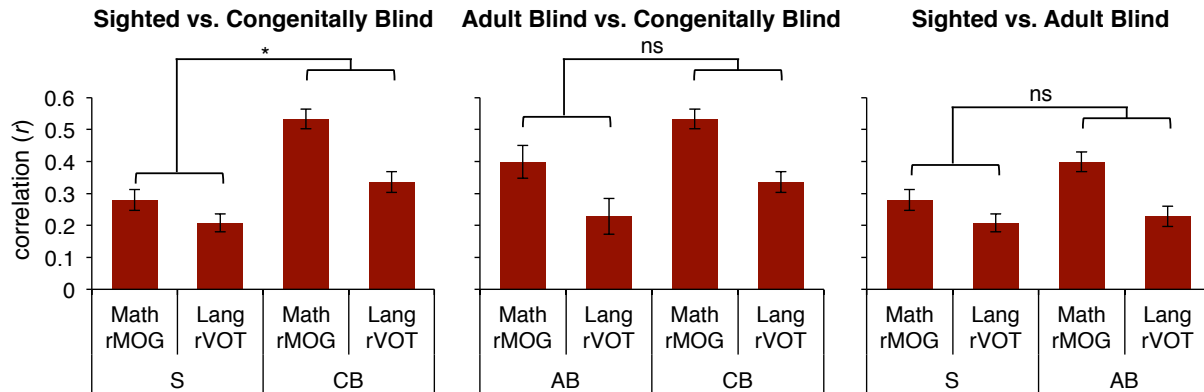
**Supplementary Table 4. Results of resting-state functional connectivity seed-to-ROI analysis**

		AB vs S	AB vs CB	CB vs S	AB Group	CB Group	S Group
Correlation with rIPS ROI	Main effect of seed (rMOG vs rVOT)	F(1,53)=2.00, p=0.16	F(1,34)=0.17, p=0.68	F(1,65)=5.32, p=0.02	t(11)=3.52, p=0.005	t(23)=5.00, p<0.001	t(42)=2.08, p=0.04
	Main effect of group across seed (rMOG vs rVOT)	F(1,53)=1.68, p=0.20	F(1,34)=6.14, p=0.02	F(1,65)=24.49, p<0.001	N/A	N/A	N/A
Correlation with Math DLFC and Lang rIFC ROIs	Seed by ROI interaction	F(1,53)=2.40, p=0.13	F(1,34)=1.28, p=0.27	F(1,65)=12.39, p=0.001	F(1,11)=7.81, p=0.02	F(1,23)=23.41, p<0.001	F(1,42)=6.57, p=0.01
	Main effect of group across seed (rMOG vs rVOT)	F(1,53)=1.15, p=0.29	F(1,34)=3.25, p=0.08	F(1,65)=16.11, p<0.001	N/A	N/A	N/A



**Supplementary Figure 1 Resting-State Regions of Interest.** Regions of interest (ROIs) used for resting-state analysis in sighted, adult-onset blind and congenitally blind groups. Red colors indicate ROIs of math network and blue colors indicate ROIs of language network. Visual cortex ROIs are identical across groups. Prefrontal and parietal ROIs defined separately for each group.

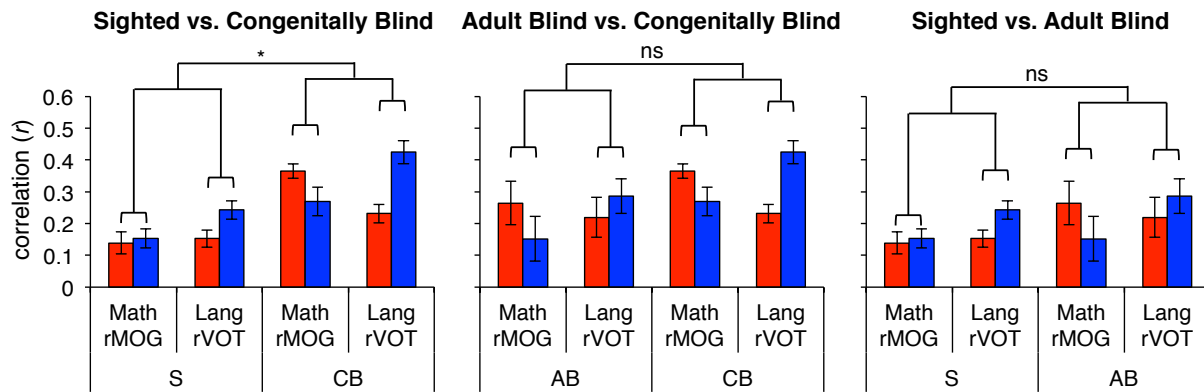
## Correlation with IPS



## Correlation with PFC

Correlation with math rDLPFC

Correlation with language rIFC



**Supplementary Figure 2 Resting-State Functional Connectivity Results.** Group interactions of resting-state functional connectivity analyses.