

Supplementary Table 1. PRS analyses of symptom variables, Model 1 with base covariates (age + sex+ 4 MDS components) across all SNP selection thresholds.

Thres- hold	No of SNPs	Positive			Negative			Disorganized			Excited			Depressed		
		$\beta$	p-val	R-sq	$\beta$	p-val	R-sq	$\beta$	p-val	R-sq	$\beta$	p-val	R-sq	$\beta$	p-val	R-sq
5.00E-08	103	50.8	0.38	0.001	-154.28	0.058	0.0049	63.05	0.109	0.0036	19.99	0.59	0.0004	-6.07	0.887	0
1.00E-07	120	16.4	0.8	0	<b>-180.49</b>	<b>0.047</b>	<b>0.0054</b>	74.94	0.087	0.004	30.76	0.457	0.0008	-9.02	0.849	0
1.00E-06	200	17.8	0.85	0.0001	-137.36	0.297	0.0015	93.4	0.142	0.003	-2.32	0.969	0.0001	-35.29	0.609	0.0004
1.00E-05	391	17.1	0.91	0	56.15	0.781	0.00011	182.77	0.062	0.0048	-25.54	0.781	0.0001	-90.18	0.395	0.001
1.00E-04	903	74.7	0.78	0.0001	340.45	0.355	0.0012	331.38	0.062	0.0048	41.14	0.806	0.0001	-247.22	0.199	0.0022
0.001	2237	197.8	0.65	0.0003	386.69	0.531	0.0005	279.39	0.349	0.0012	247.76	0.378	0.001	-320.35	0.321	0.0013
0.01	6834	1204.6	0.15	0.0028	684.68	0.562	0.0005	602.04	0.291	0.0015	288.71	0.591	0.0004	248.13	0.688	0.0002
0.05	16217	2695.9	0.05	0.0054	2303.11	0.23	0.00198	1103.36	0.234	0.002	1020.17	0.243	0.0019	-347.18	0.729	0.0002
0.1	23929	2840.9	0.11	0.0035	1763.02	0.479	0.0007	1376.58	0.253	0.0018	708.99	0.532	0.0005	337.69	0.796	0
0.2	35378	3983.6	0.09	0.0041	2472.34	0.449	0.0008	2473.28	0.117	0.0034	867.95	0.559	0.0005	824.8	0.629	0.0003
0.3	44267	5666.3	0.04	0.0058	3477.86	0.369	0.0011	3211.05	0.086	0.0041	512.44	0.771	0.00012	593.28	0.77	0.0001
0.4	51495	5996.8	0.06	0.005	4350.9	0.325	0.0013	3484.96	0.103	0.0037	814.41	0.686	0.00022	-339.88	0.883	0
0.5	57724	<b>7740</b>	<b>0.03</b>	<b>0.0067</b>	6454.62	0.192	0.0023	4481.55	0.061	0.0049	733.22	0.745	0.00014	-1110.88	668	0.0003

$\beta$  : Unstandardized coefficient; R-sq: variance explained

Supplementary Table 2. PRS analyses of symptom variables (Model 2 with base covariates [age + sex+ 4 MDS components] and neurocognition) across all SNP selection thresholds

Threshold	SNPs	Positive			Negative			Disorganized			Excited			Depressed		
		$\beta$	p-val	R-sq	$\beta$	p-val	R-sq	$\beta$	p-val	R-sq	$\beta$	p-val	R-sq	$\beta$	p-val	R-sq
5.00E-08	103	330.26	0.079	0.0036	-110.95	0.715	0.0002	-3.24	0.978	0	202.83	0.121	0.0034	-188.97	0.243	0.0021
1.00E-07	120	305.31	0.133	0.0027	-100.23	0.76	0.0002	-12.73	0.92	0	238.89	0.089	0.004	-194.61	0.265	0.002
1.00E-06	200	446.52	0.095	0.0033	-136.75	0.752	0.0002	21.01	0.9	0	163.99	0.38	0.0011	-104.62	0.651	0.0003
1.00E-05	391	533.94	0.17	0.0022	323.28	0.606	0.0004	108.37	0.656	0.0002	284.63	0.293	0.0016	145.91	0.664	0.0003
1.00E-04	903	<b>1786.27</b>	<b>0.022</b>	<b>0.006</b>	1481.24	0.243	0.0021	232.47	0.639	0.0002	457.72	0.407	0.001	-38.9	0.955	0
0.001	2237	<b>2604.31</b>	<b>0.026</b>	<b>0.0057</b>	3573.38	0.059	0.0055	690.08	0.351	0.0009	143.15	0.862	0	-467.42	0.648	0.0003
0.01	6834	<b>5743.14</b>	<b>0.013</b>	<b>0.007</b>	6033.44	0.108	0.004	194.92	0.894	0	945.32	0.564	0.0005	1740.12	0.389	0.0011
0.05	16217	6759.92	0.058	0.0042	<b>11628.29</b>	<b>0.041</b>	<b>0.0063</b>	-151.38	0.946	0	2712.78	0.278	0.0017	3464.94	0.26	0.002
0.1	23929	<b>10501.91</b>	<b>0.018</b>	<b>0.0064</b>	<b>20396.48</b>	<b>0.004</b>	<b>0.0123</b>	1640.77	0.561	0.0003	2393.96	0.447	0.0008	6089.17	0.114	0.0039
0.2	35378	<b>14315.41</b>	<b>0.019</b>	<b>0.0063</b>	<b>21515.42</b>	<b>0.029</b>	<b>0.0072</b>	2167.26	0.577	0.0003	3649.86	0.4	0.001	8350.21	0.115	0.0039
0.3	44267	<b>16131.68</b>	<b>0.033</b>	<b>0.0052</b>	<b>24430.87</b>	<b>0.044</b>	<b>0.0061</b>	1764.74	0.712	0.0001	4489.5	0.4	0.001	7712.66	0.24	0.0022
0.4	51495	<b>17415.23</b>	<b>0.048</b>	<b>0.0045</b>	<b>28618.41</b>	<b>0.043</b>	<b>0.0062</b>	2443.58	0.66	0.0002	5480.15	0.376	0.0011	7002.87	0.359	0.0013
0.5	57724	<b>21378.53</b>	<b>0.029</b>	<b>0.0055</b>	<b>35650.64</b>	<b>0.023</b>	<b>0.0078</b>	3386.5	0.584	0.0003	5908.44	0.391	0.001	8079.93	0.342	0.0014

$\beta$ :Unstandardized coefficient; R-sq: variance explained;

Supplementary Table 3. Results of set based analysis for neurocognitive subdomains (p<0.05 with 10,000 permutations within each set)

COGNITIVE PHENO-TYPES	LOCI	TOP VARIANT IN SET	P-VAL IN SET	BETA	GENE	RELEVANT BIOLOGICAL FUNCTION <sup>a</sup>
WORKING MEMORY	chr7:131539263-131567263	rs12706998	0.003	0.23	*	
	chr8:60475469-60954469	rs17269617	0.011	-0.54	*	
	chr15:40566759-40602237	rs3784397	0.013	0.16	<i>PLCB2</i> (1-phosphatidylinositol 4,5-bisphosphate phosphodiesterase beta)	G-protein coupled receptor binding signaling pathway, intracellular signal transduction; Involved with thyrotropin, oxytocin, WNT signaling, alpha adrenergic and 5HT2 receptor signaling pathways.
	chr1:243503719-244002945	rs7551067	0.026	0.24	<i>SDCCAG8</i> (Serologically defined colon cancer antigen 8)	Neuron migration
	chr2:149390778-149520178	rs13026690	0.033	-0.23	<i>EPC2</i> (Enhancer of polycomb homolog 2)	NA
	chr11:124610007-124620147	rs12278912	0.037	0.13	<i>NRGN</i> (Neurogranin)	Calmodulin binding, signal transduction, nervous system development
	chr1:149998890-150242490	rs11205334	0.038	-0.55	<i>PLEKHO1</i> (Pleckstrin homolog domain containing family O member 1)	NA
VERBAL MEMORY	chr8:60475469-60954469	rs17269617	2e-04	-0.75	*	
	chr2:146416922-146441832	rs10496985	0.009	-0.29	*	
	chr2:200161422-200309252	rs17266097	0.13	-0.20	<i>SATB2</i> (DNA binding protein SATB2)	Neuron migration, embryonic development
	chr20:37361494-37485994	rs6100962	0.02	0.41	*	
	chr2:193848340-194028340	rs16824151	0.04	0.46	*	
	chr2:146416922-146441832	rs10496985	0.033	-0.24	*	

<b>REASON- ING</b>	chr2:233559301-233753501	rs1947105	0.042	-0.16	<i>GIGYF2</i> (PERQ amino acid rich with gyf domain containing protein 2)	Neuromuscular process controlling balance; cell component of part of proximal dendrite
<b>PROCESS- ING SPEED</b>	chr15:40566759-40602237	rs3784397	0.015	0.155	<i>PLCB2</i> (1-phosphatidylinositol 4,5-bisphosphate phosphodiesterase beta)	G-protein coupled receptor binding signaling pathway, intracellular signal transduction; Involved with thyrotropin, oxytocin, WNT signaling, alpha adrenergic and 5HT2 receptor signaling pathways.
<b>VIGILANCE</b>	chr10:104423800-105165583	rs999867	0.0113	0.36	<i>WBP1L</i> (WW domain binding protein 1 like)	NA
	chr15:84661161-85153461	rs17841161	0.0191	-0.68	<i>EFTUD1P1</i>	NA
	chr8:143309503-143330533	rs10098073	0.0465	-0.15	<i>TSNARE1</i> (T-SNARE domain containing protein 1)	NA
	chr2:149390778-149520178	rs1348853	0.0475	-0.24	<i>EPC2</i> (Enhancer of polycomb homolog 2)	NA
<b>SOCIAL COGNITION</b>	chr8:27412627-27453627	rs17466684	0.0065	-0.82	<i>CLU</i> (Clusterin)	CCKR signaling map
	chr12:2321860-2523731	rs11062160	0.0081	-1.22	<i>CACNA1C</i> (Voltage dependent L type calcium channel subunit alpha 1C)	5HT2, Alzheimer's disease amyloid secretase, Nicotinic acetyl choline receptor, oxytocin receptor signaling pathways
	chr19:50067499-50135399	rs2288920	0.0319	0.48	<i>PRRG2</i> (Transmembrane gamma - carboxyglutamic acid protein 2)	Immune system process, proteolysis, response to stimulus
	chr1:149998890-150242490	rs12073359	0.0498	0.66	*	

Highlight in bold are variants that survived Benjamini FDR correction ( $p < 0.05$ ) for multiple set comparisons; \*Intergenic variants; NA-information not available; a- a- Source: PANTHER database (<http://pantherdb.org>);