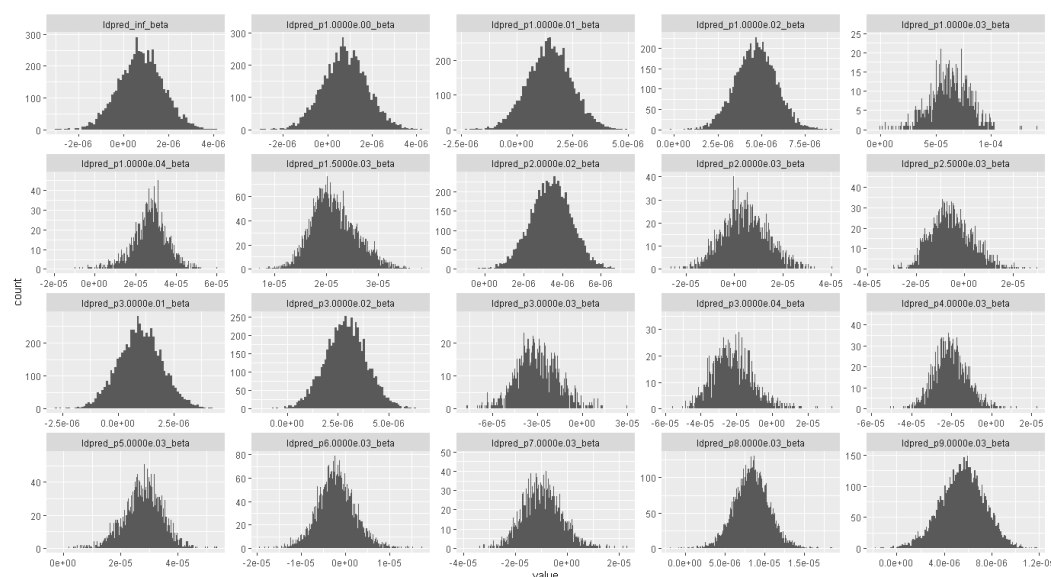


**Supplementary Figure S1.** Flowchart showing the selected study population (combined). SUPER, Suomalainen psykoosisairauksien perinnöllisyysmekanismien tutkimus; MHI-5, mental health inventory-5; RT, reaction time; PAL, paired associative learning.

**Supplementary Figure S2.** Distribution of polygenic scores.



**Supplementary Table S1.** Background factors and hazardous drinking PGS in male and female schizophrenia, schizoaffective and bipolar disorder patients.

	Male	Female
	N = 2048	N = 2284
Age (mean (SD))	44.57 (12.46)	45.39 (12.64)
Age of onset (mean (SD))	26.75 (8.06)	27.74 (9.38)
Completing matriculation examination (%)	650 (31.7)	965 (42.3)
Living with spouse (%)	337 (16.5)	725 (31.7)
Having depressive symptoms <sup>Ω</sup> (%)	1348 (65.8)	1557 (68.2)
Currently on Psychotropic medications (%)	1990 (97.2)	2218 (97.1)
Currently on Antipsychotics (%)	1895 (92.5)	2034 (89.1)
Currently on Benzodiazepines (%)	510 (24.9)	621 (27.2)
Currently on Antidepressant (%)	676 (33.0)	872 (38.2)
Currently on Mood stabilizer (%)	502 (24.5)	615 (26.9)
On some other Psychotropics/Missing data (%)	35 (1.7)	43 (1.9)
Hazardous drinking PGS (Mean (SD))	7.92×10 <sup>-07</sup> (9.73×10 <sup>-07</sup> )	7.67 ×10 <sup>-07</sup> (9.80×10 <sup>-07</sup> )

SD = Standard deviation. <sup>Ω</sup> MHI-5 cutoff score for depression was ≤72.

**Supplementary Table S2.** Association of hazardous drinking PGS with RT test and PAL test in male and female schizophrenia, schizoaffective and bipolar disorder patients.

	Male			Female		
RT test	e <sup>β</sup> (95% CI)	p-value	R <sup>2</sup>	e <sup>β</sup> (95% CI)	p-value	R <sup>2</sup>
Median						
Crude	0.99 (0.95, 1.03)	0.494	0.00	1.00 (0.96, 1.04)	0.941	0.00
Adjusted	0.97 (0.93, 1.01)	0.138	0.09	0.97 (0.93, 1.02)	0.262	0.09
SD						

Crude	1.01 (0.97, 1.06)	0.585	0.00	1.00 (0.97, 1.04)	0.800	0.00
Adjusted	1.01 (0.97, 1.05)	0.710	0.10	0.98 (0.94, 1.03)	0.428	0.12
<b>PAL FTMS</b>	<b><math>\beta</math> (95% CI)</b>	<b>p-value</b>	<b>R<sup>2</sup></b>	<b><math>\beta</math> (95% CI)</b>	<b>p-value</b>	<b>R<sup>2</sup></b>
Crude	0.01 (-0.04, 0.05)	0.829	0.00	-0.01 (-0.06, 0.03)	0.557	0.00
Adjusted	0.02 (-0.03, 0.06)	0.451	0.19	-0.01 (-0.06, 0.03)	0.549	0.17
<b>PAL TEAS</b>	<b>OR (95% CI)</b>	<b>p-value</b>	<b>Cohens' D</b>	<b>OR (95% CI)</b>	<b>p-value</b>	<b>Cohens' D</b>
Crude	0.96 (0.85, 1.09)	0.554	0.04	0.97 (0.87, 1.08)	0.604	0.03
Adjusted	0.98 (0.84-1.14)	0.794		0.97 (0.84, 1.12)	0.671	

Adjusted with age, age of onset, education, household pattern and depressive symptoms. R<sup>2</sup>= Effect size measures for (simple and multiple) linear regression models. SD= Standard deviation. OR= Odd ratio. CI= Confidence interval. RT= Reaction time. PAL= Paired association learning. FTMS= First trial memory score. TEAS= Total error adjusted score.