

Figure S1. EA3 by historical period.

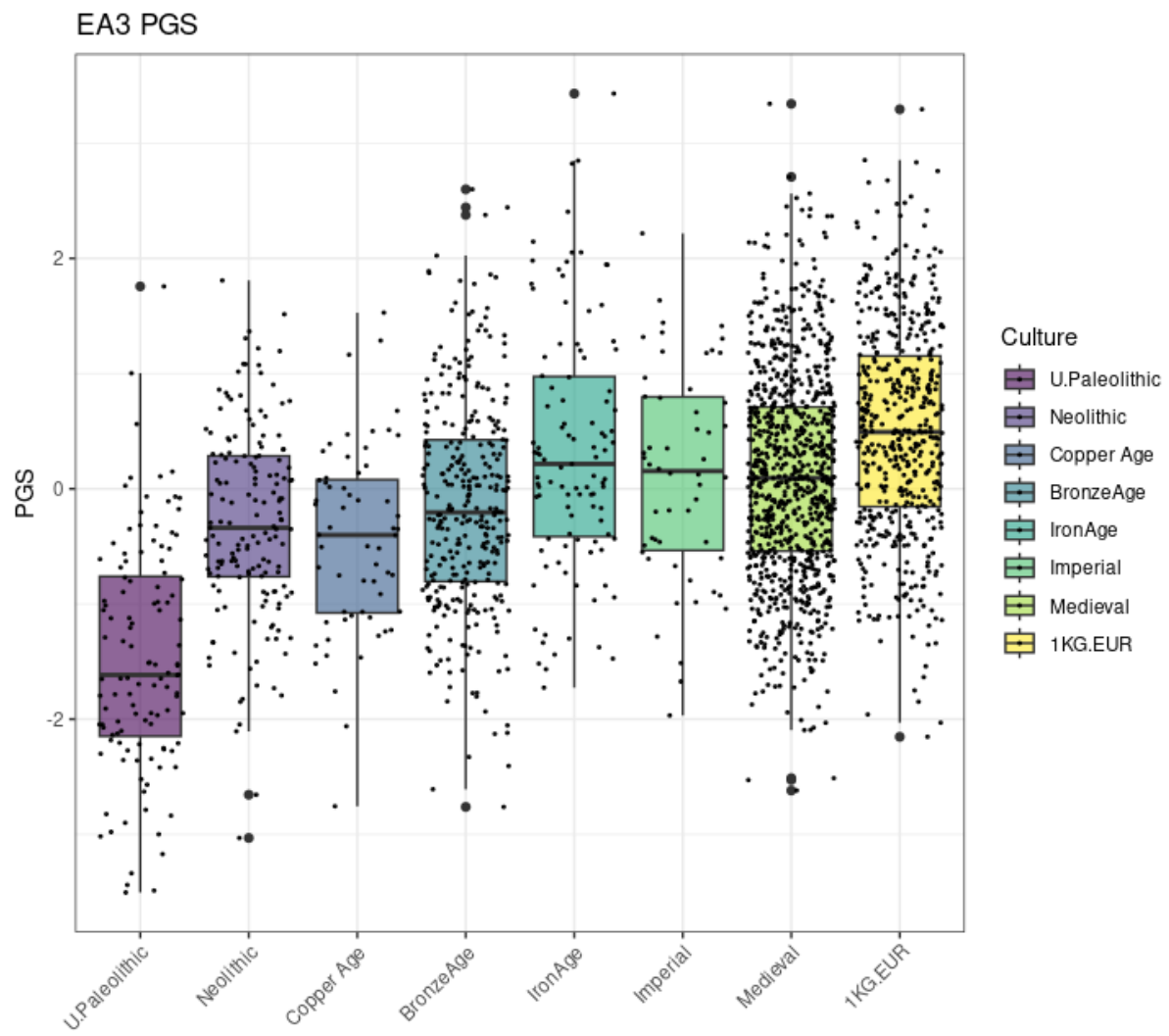


Figure S2. EA4 by historical period.

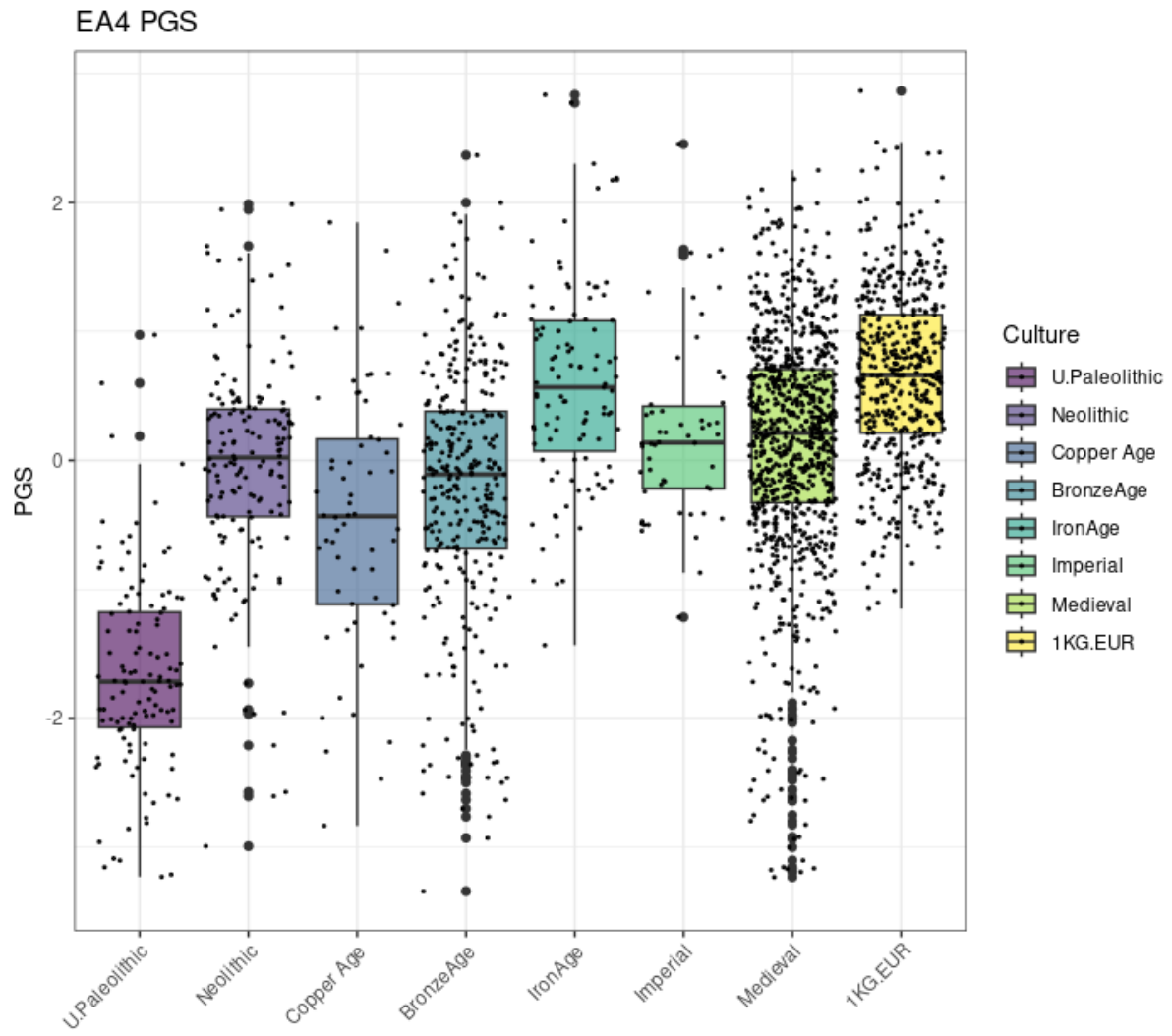


Figure S3. IQ PGS by historical period.

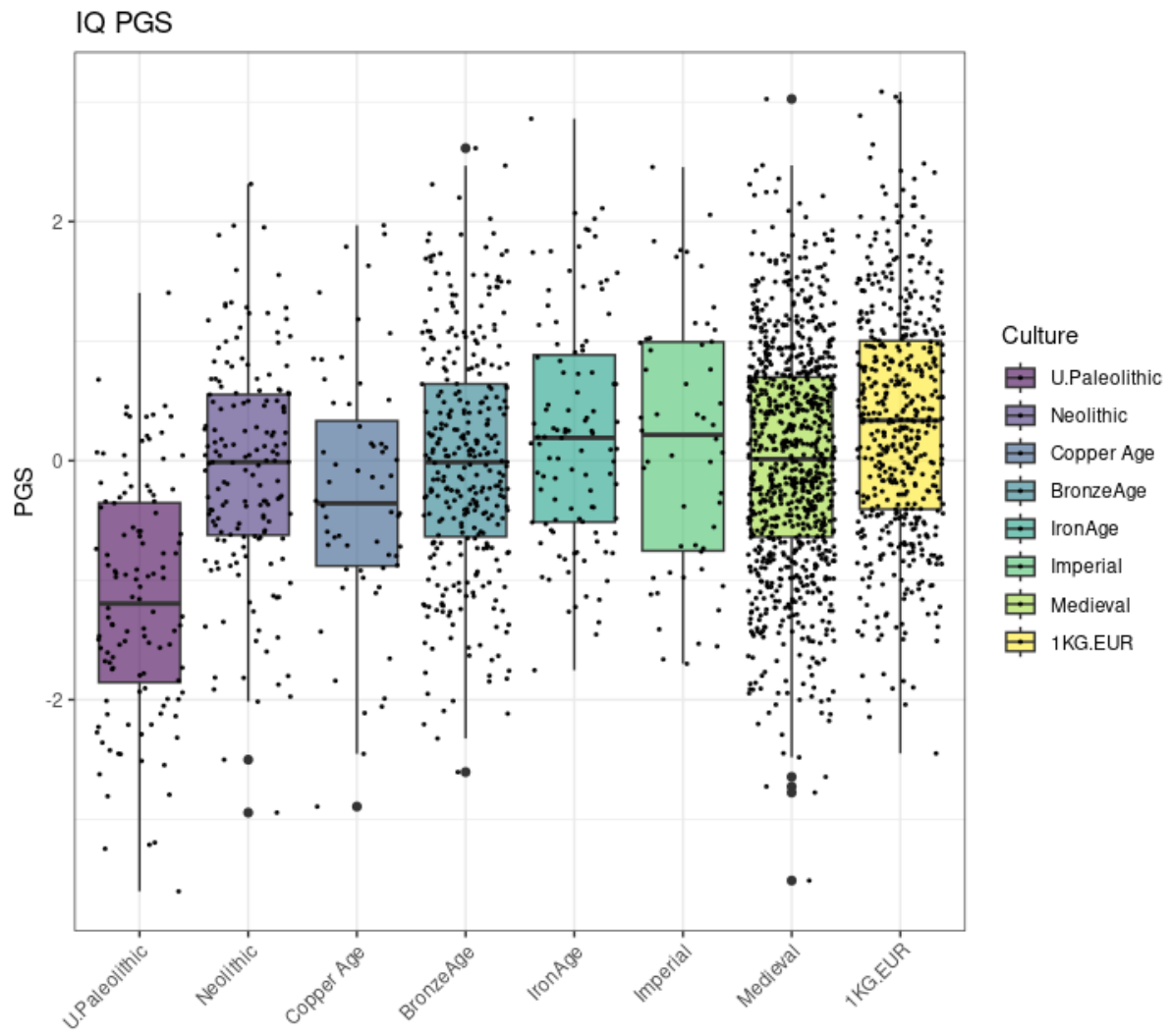


Figure S4. ASD PGS by historical period

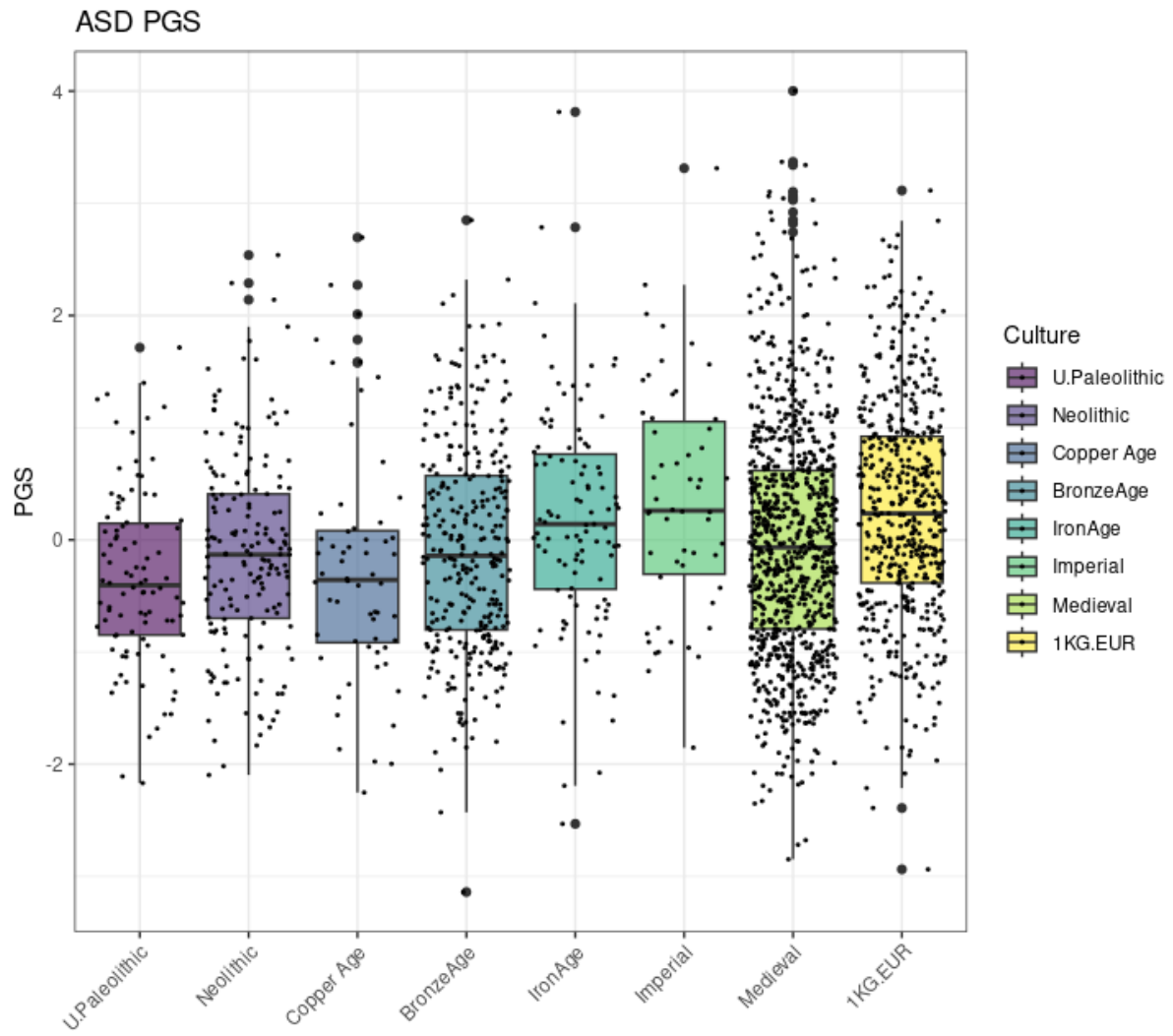


Figure S5. SCZ by historical period.

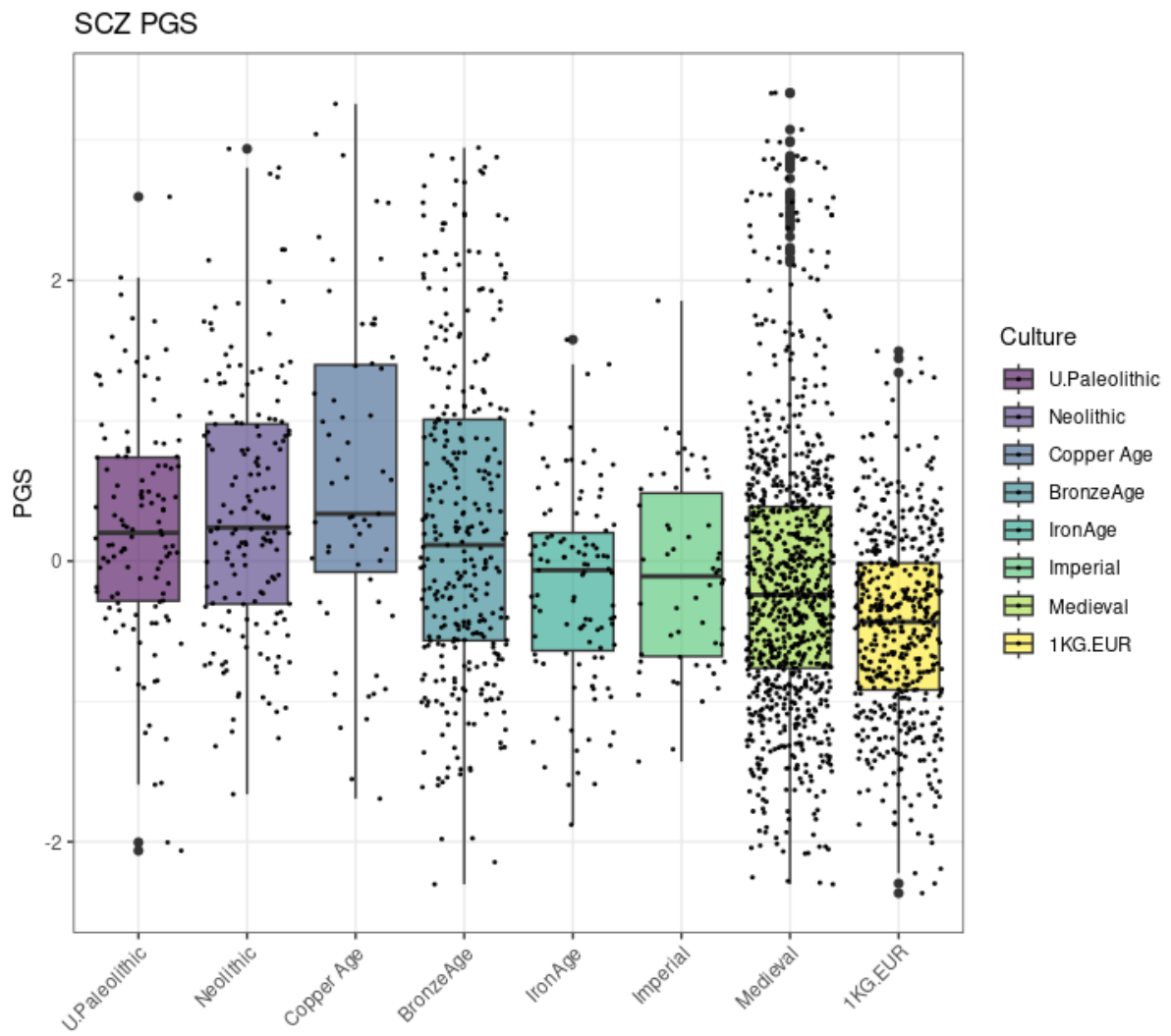


Figure S6. Depression PGS by historical period.

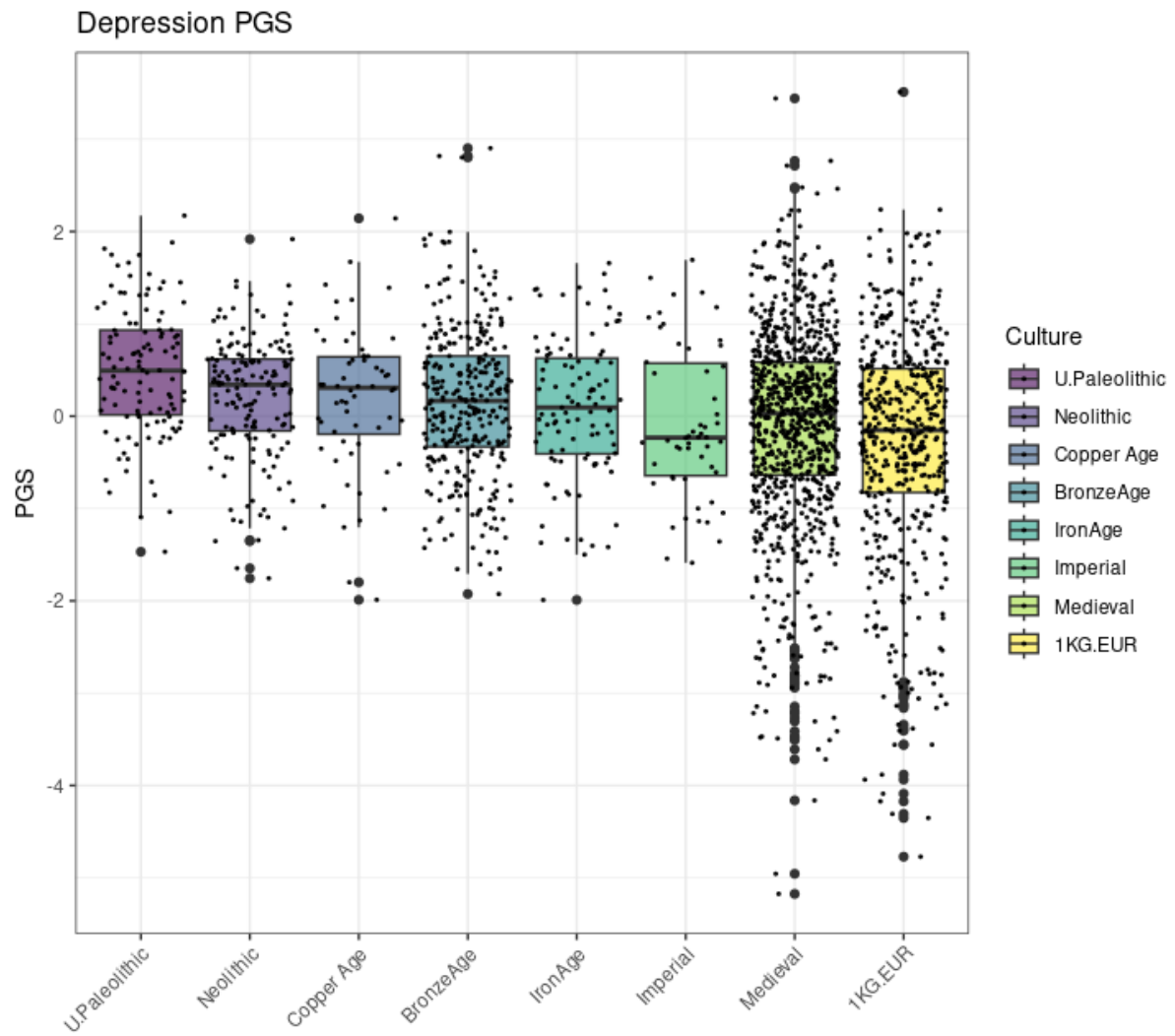


Figure S7. Neuroticism PGS by historical period.

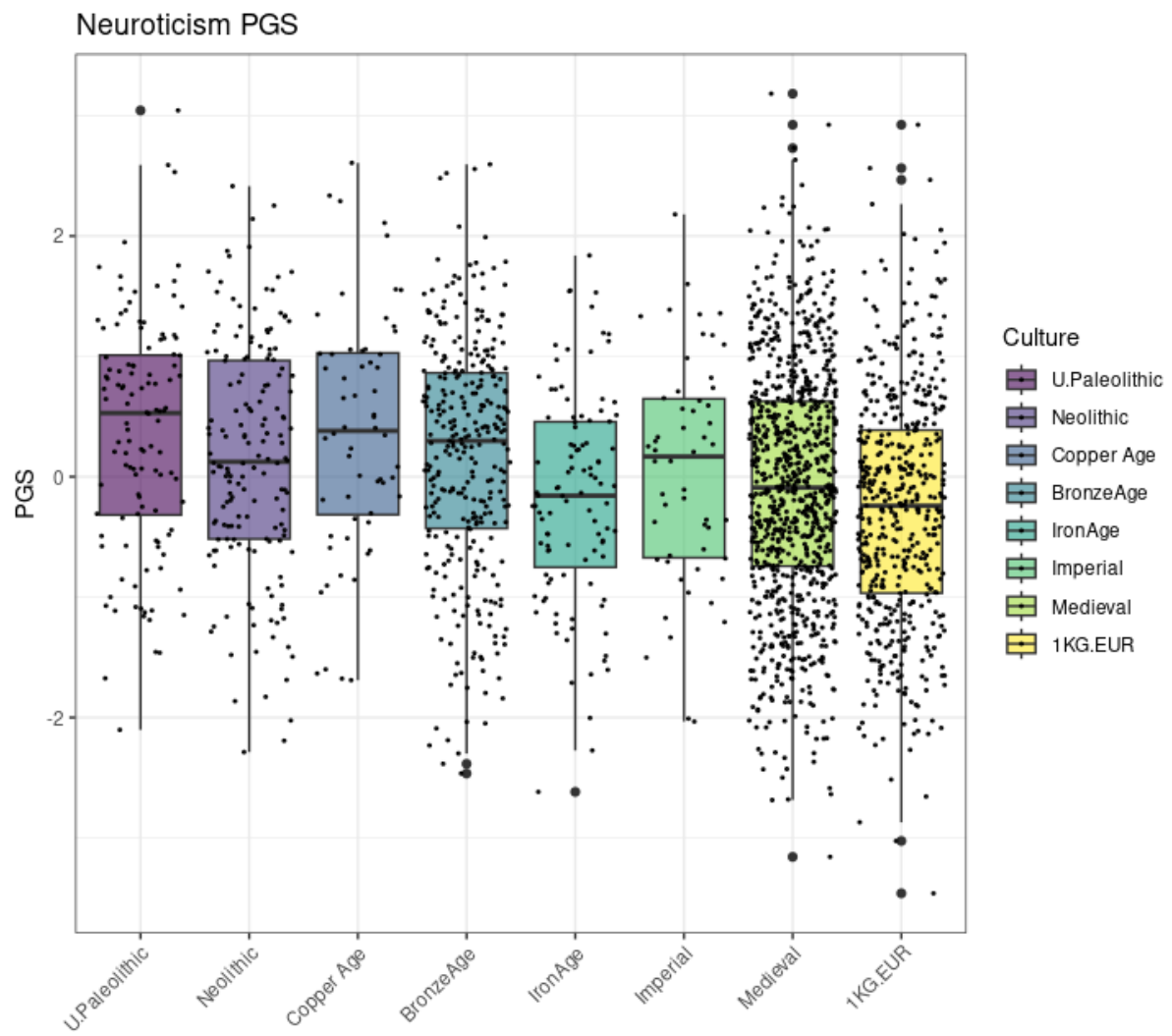


Figure S8. SES PGS by historical period.

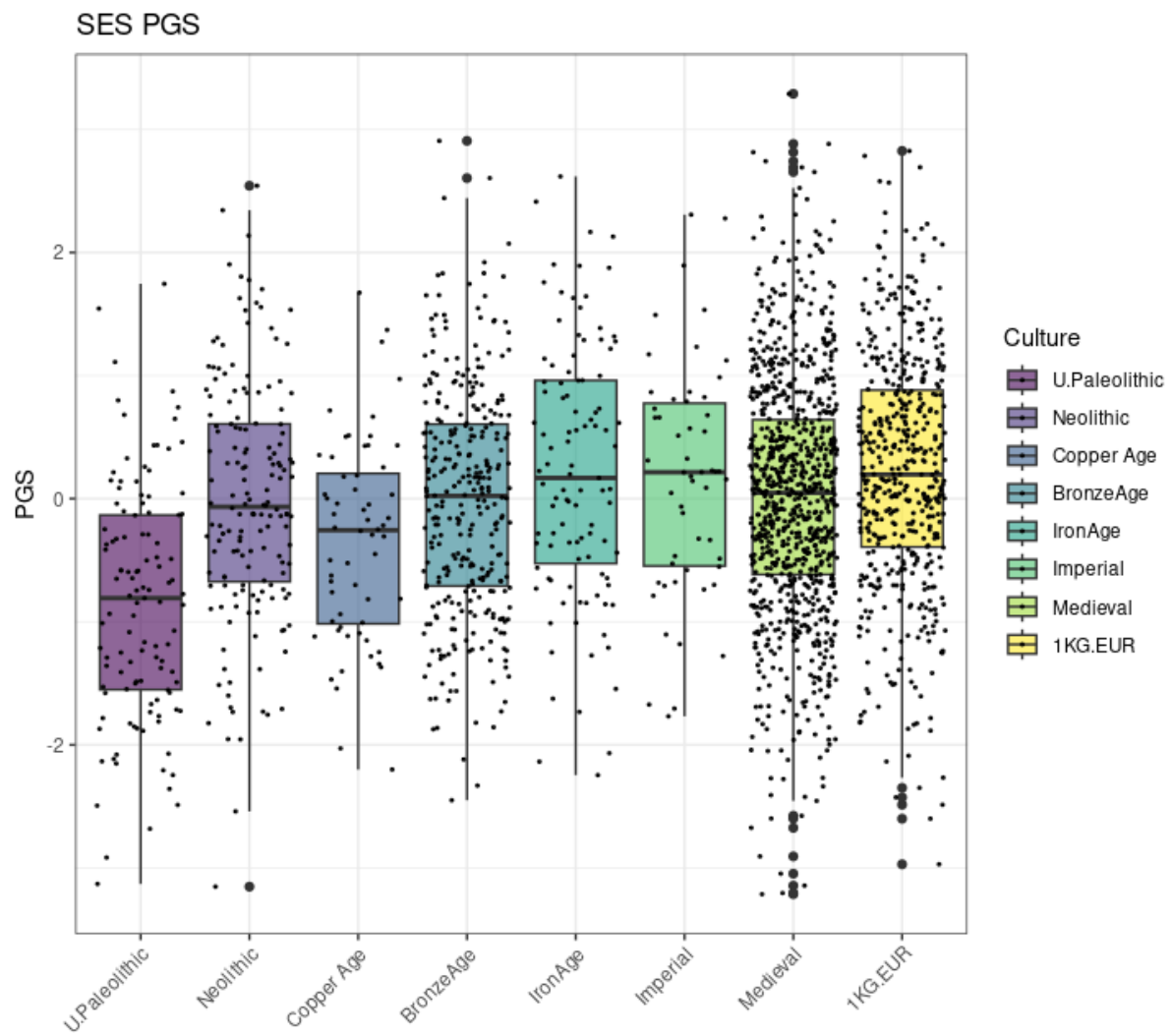


Figure S9. Height PGS by historical period.

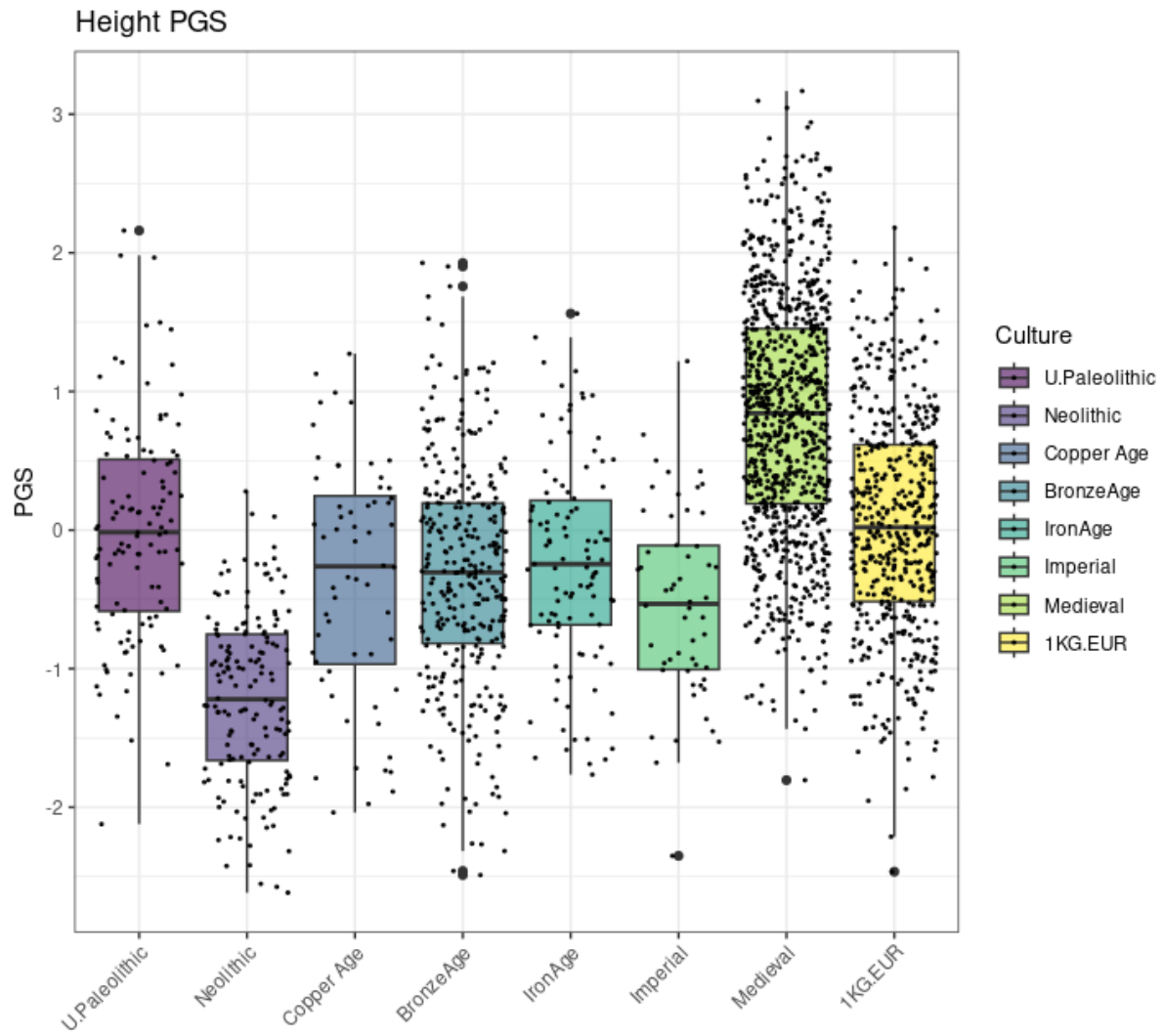


Figure S10. Intracranial volume PGS by historical period.

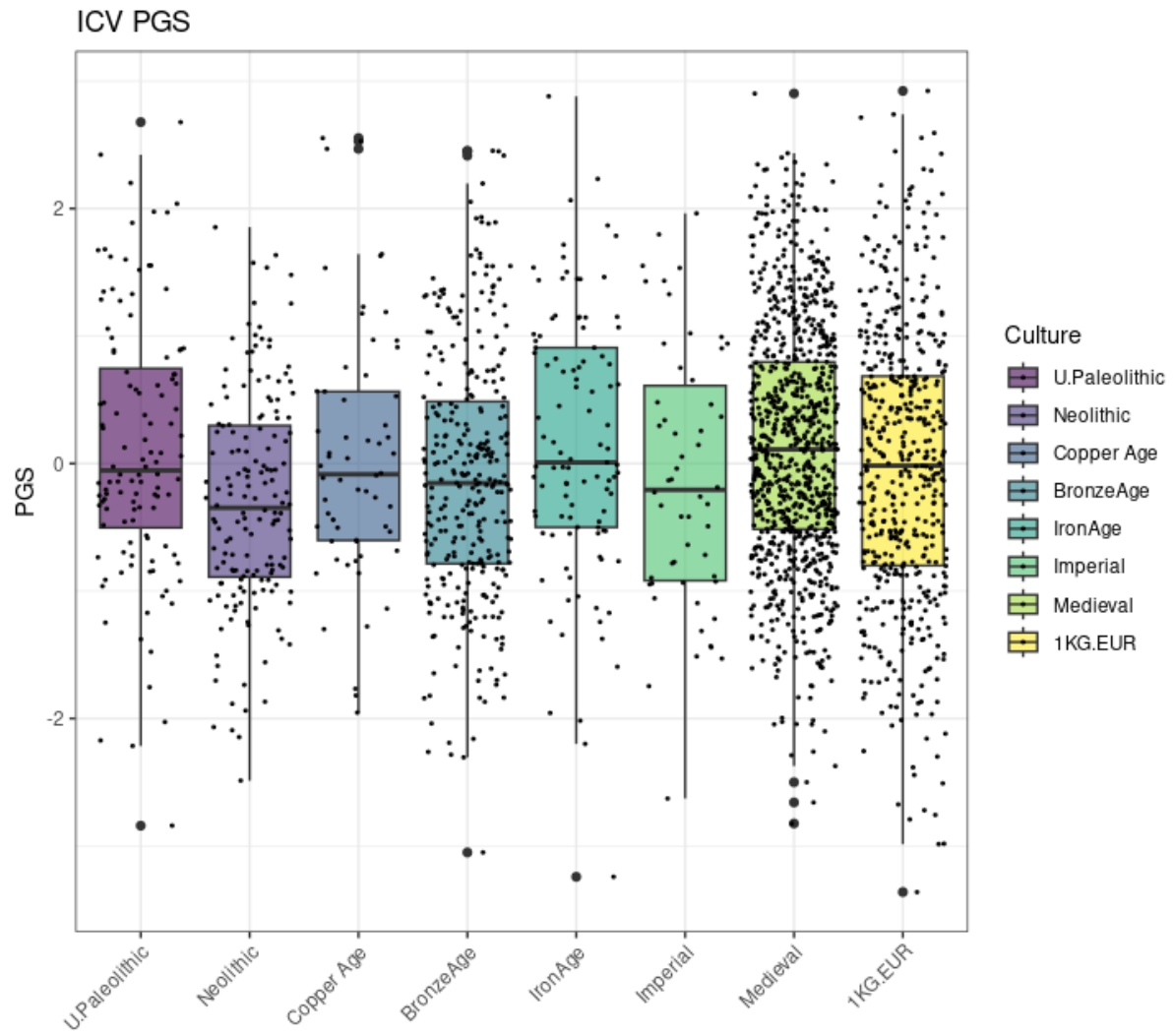


Figure S11

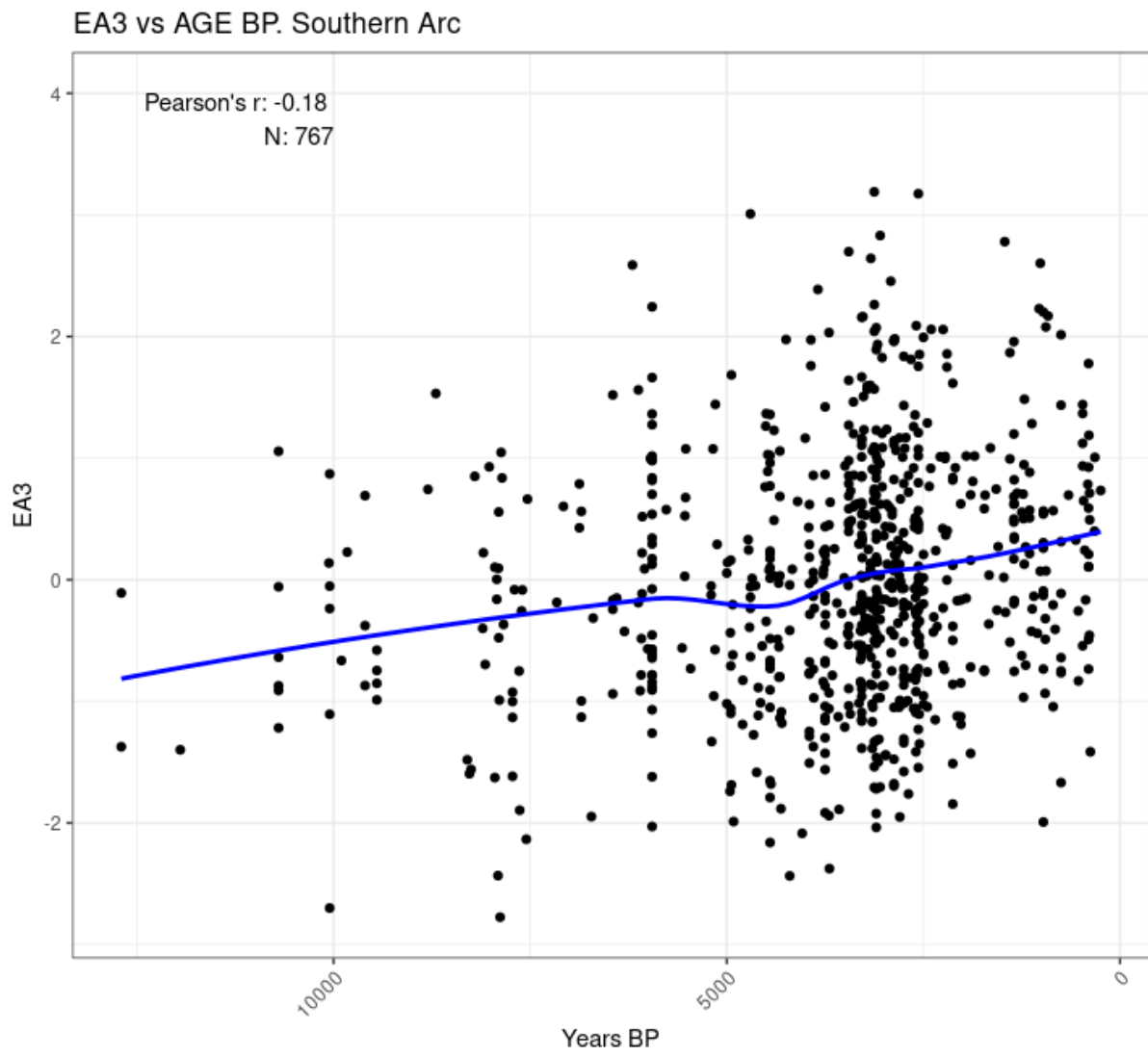


Figure S12.

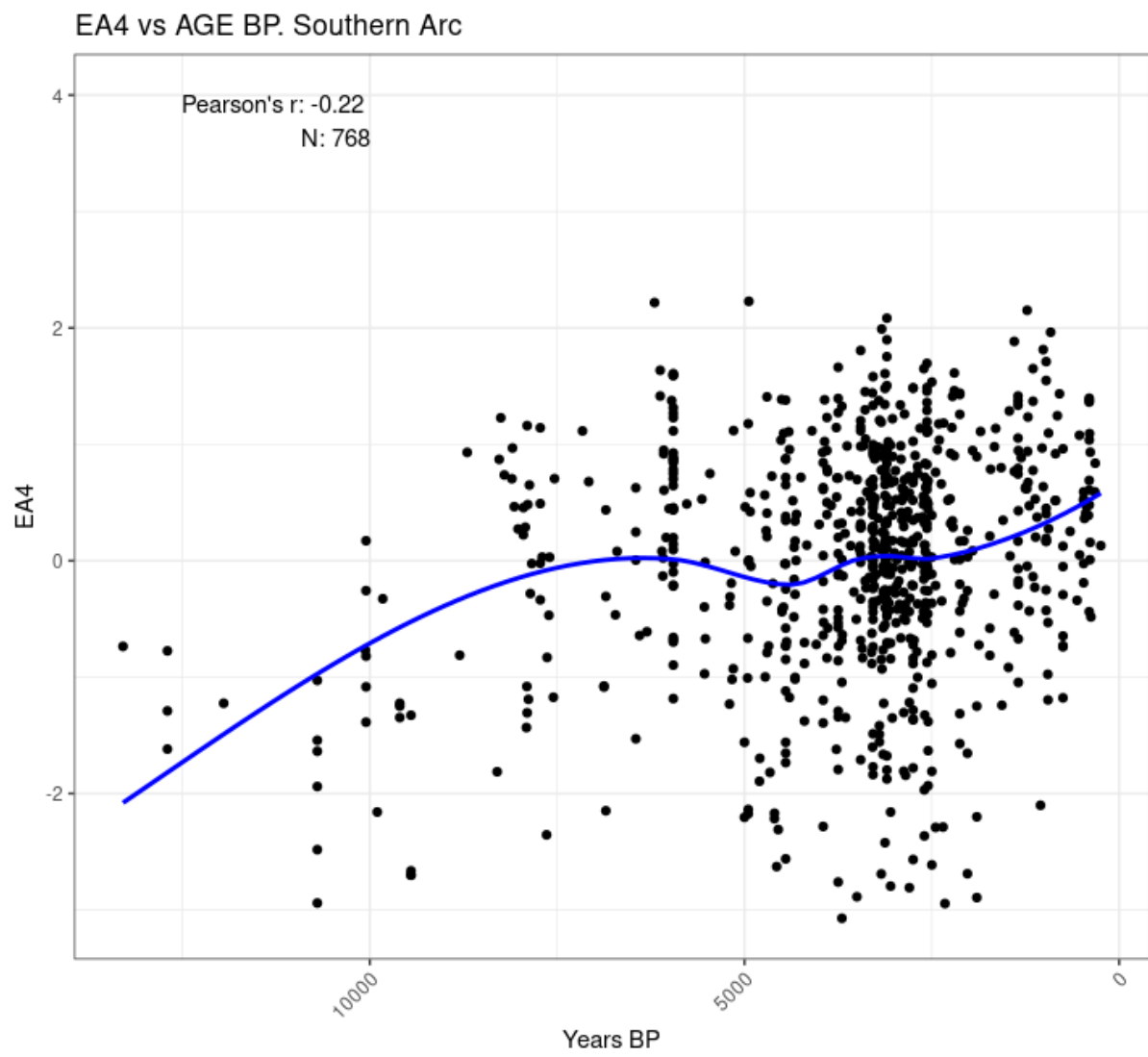


Figure S13

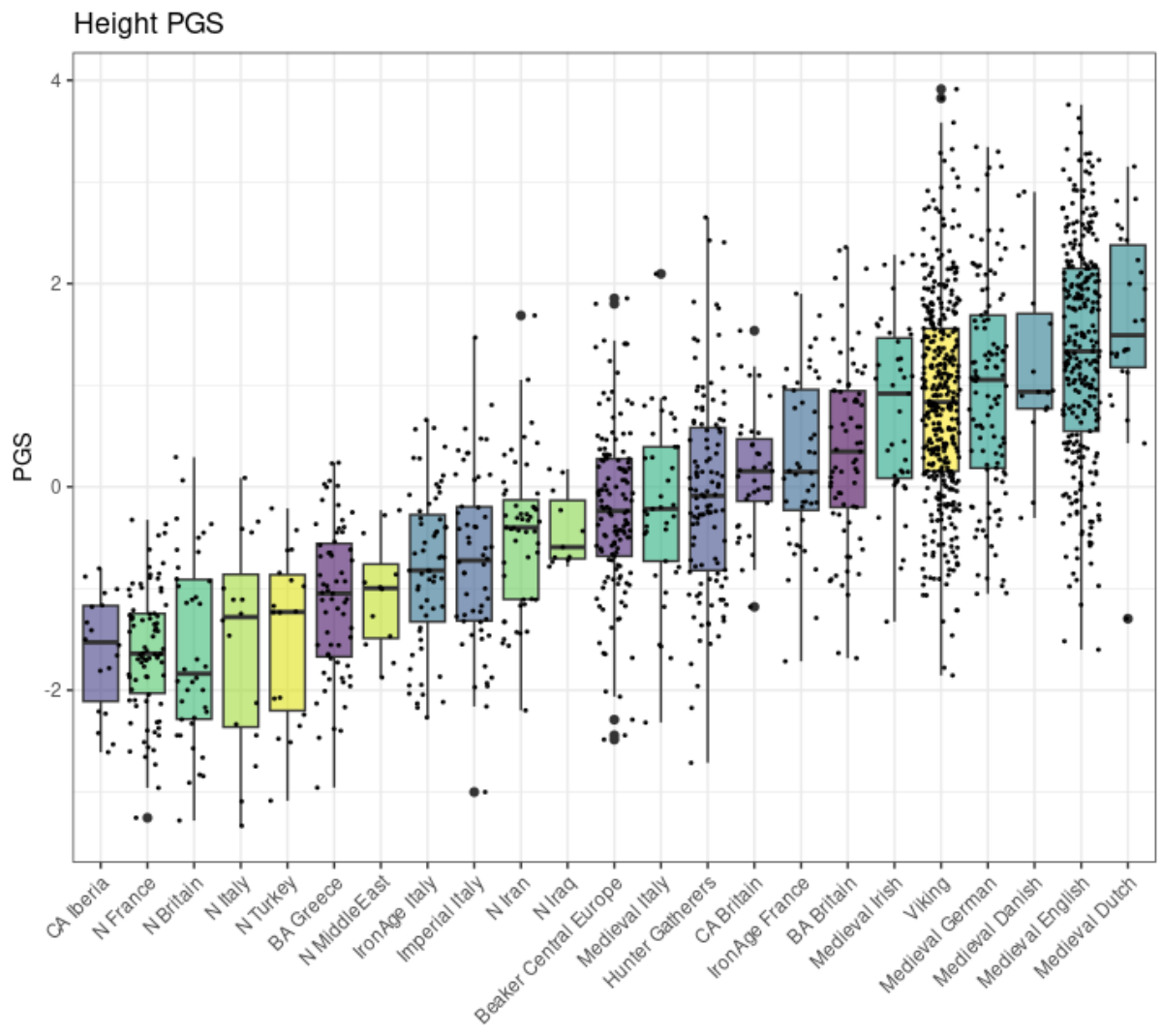
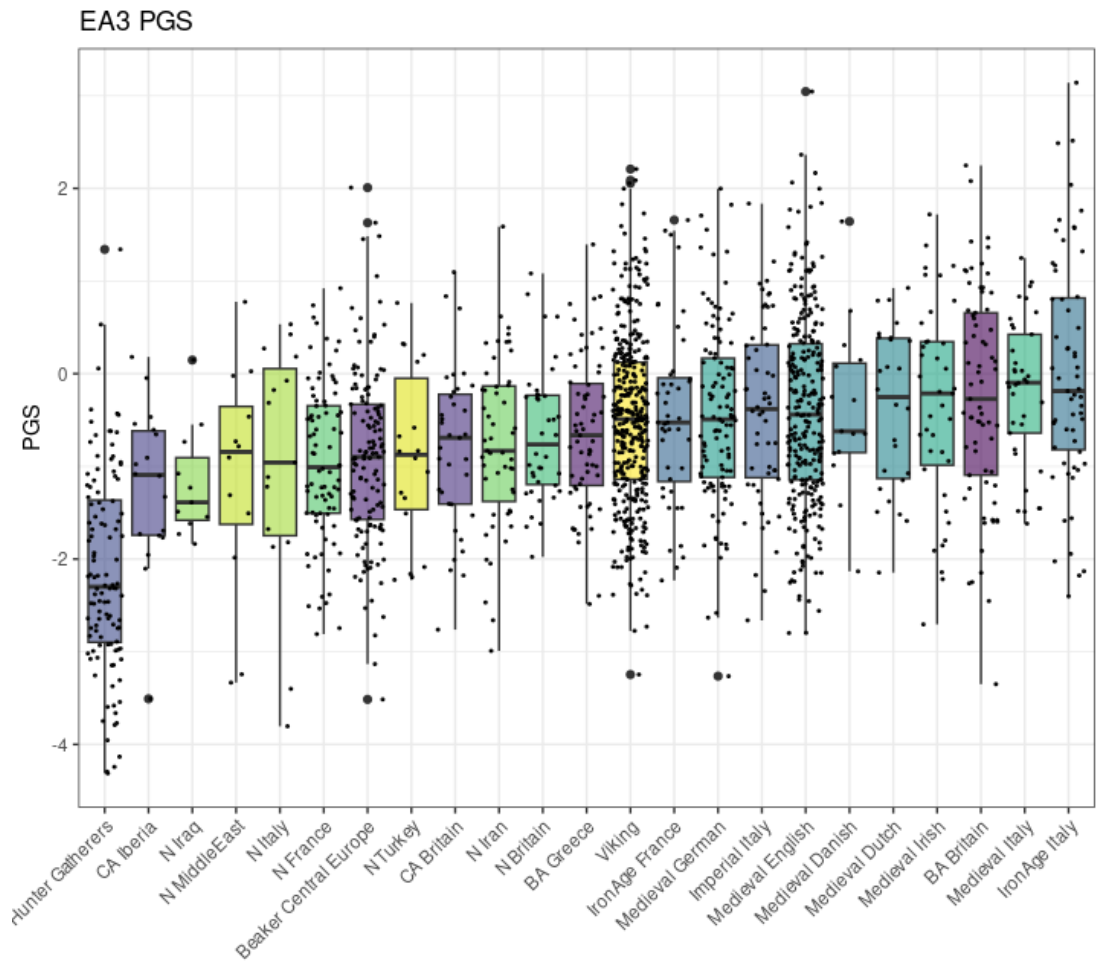


Figure S14



*N= Neolithic; CA= Copper Age; BA= Bronze Age

Figure S15

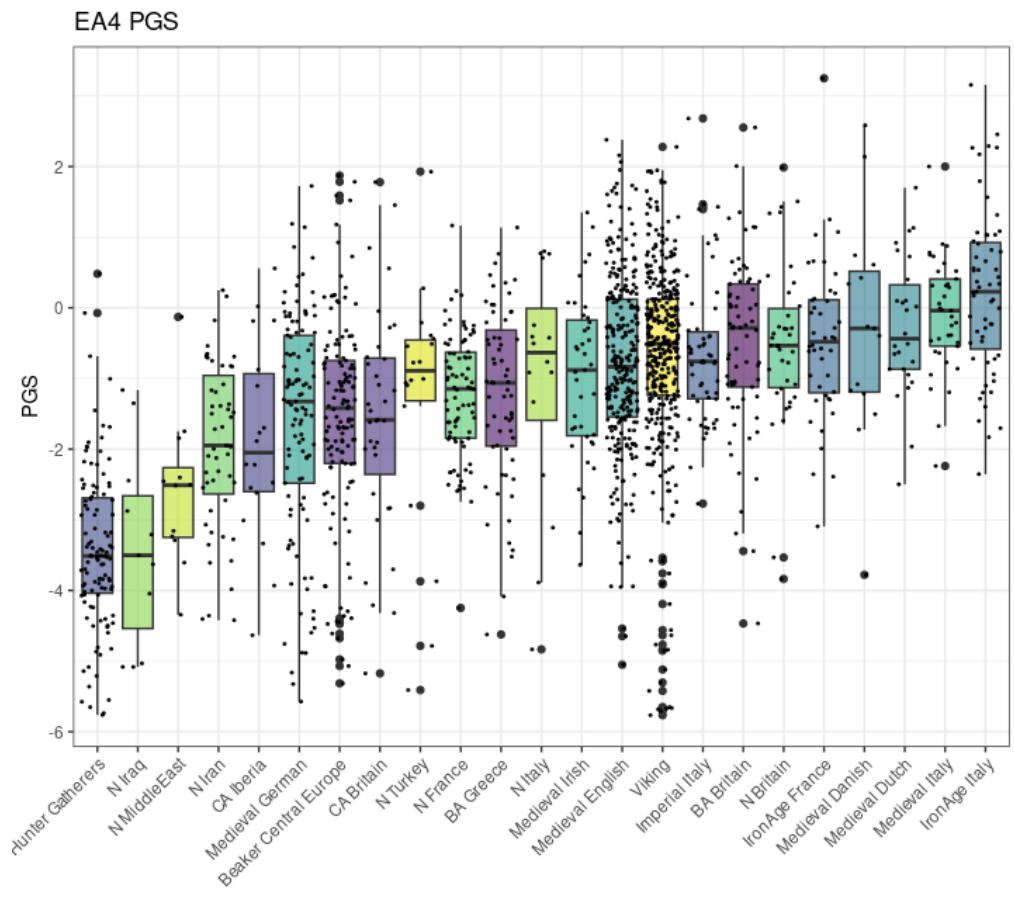


Figure S16

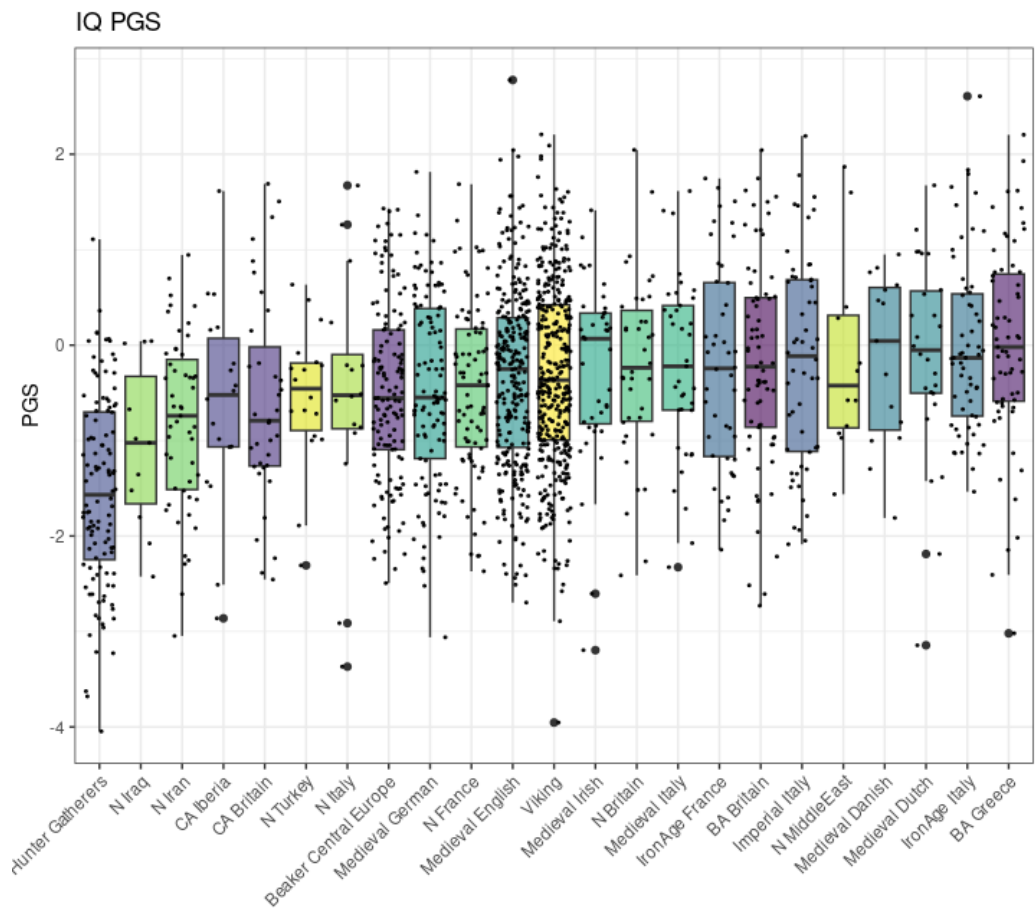


Figure S17

ASD PGS

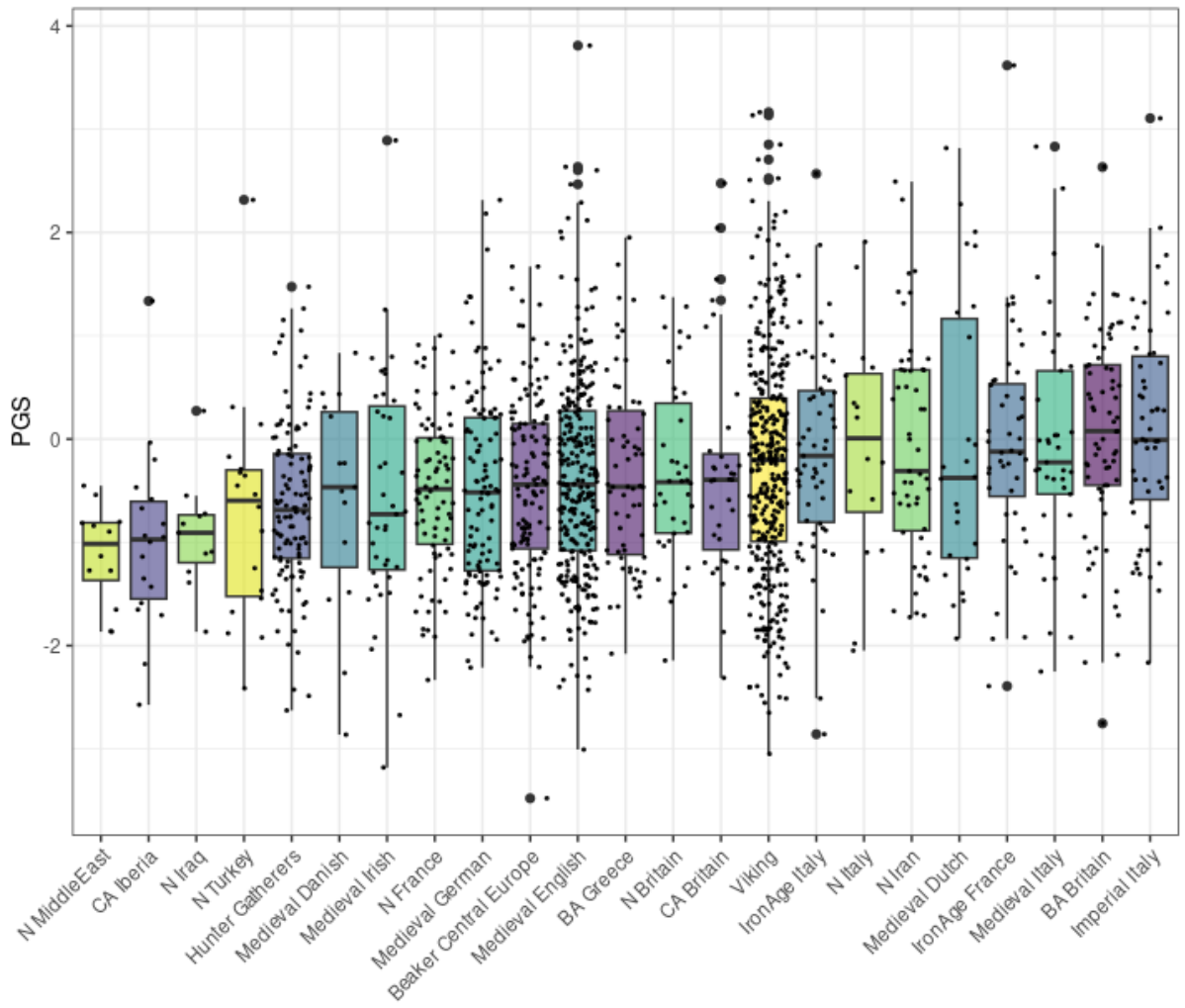


Figure S18

Depression PGS

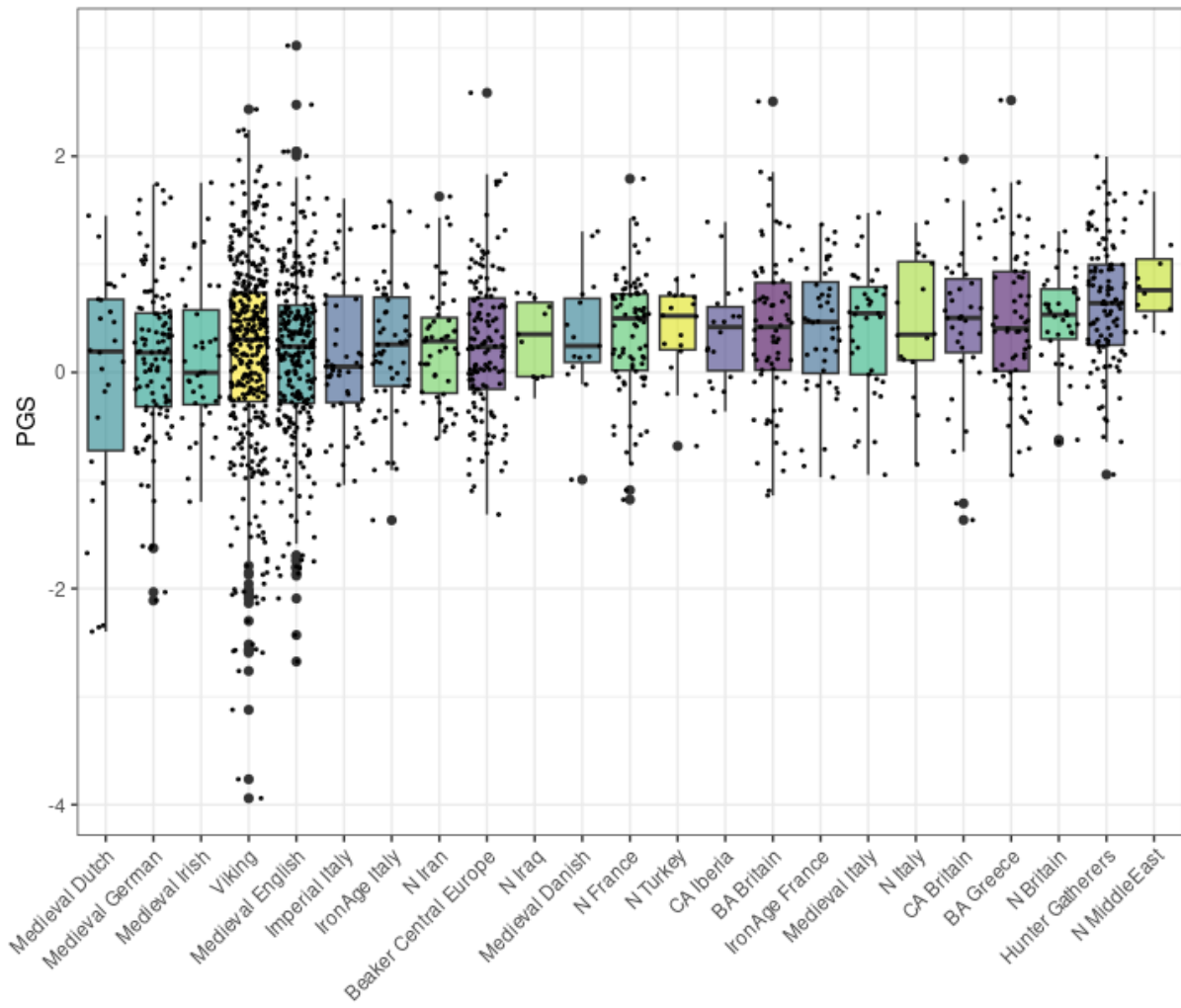


Figure S19
ICV PGS

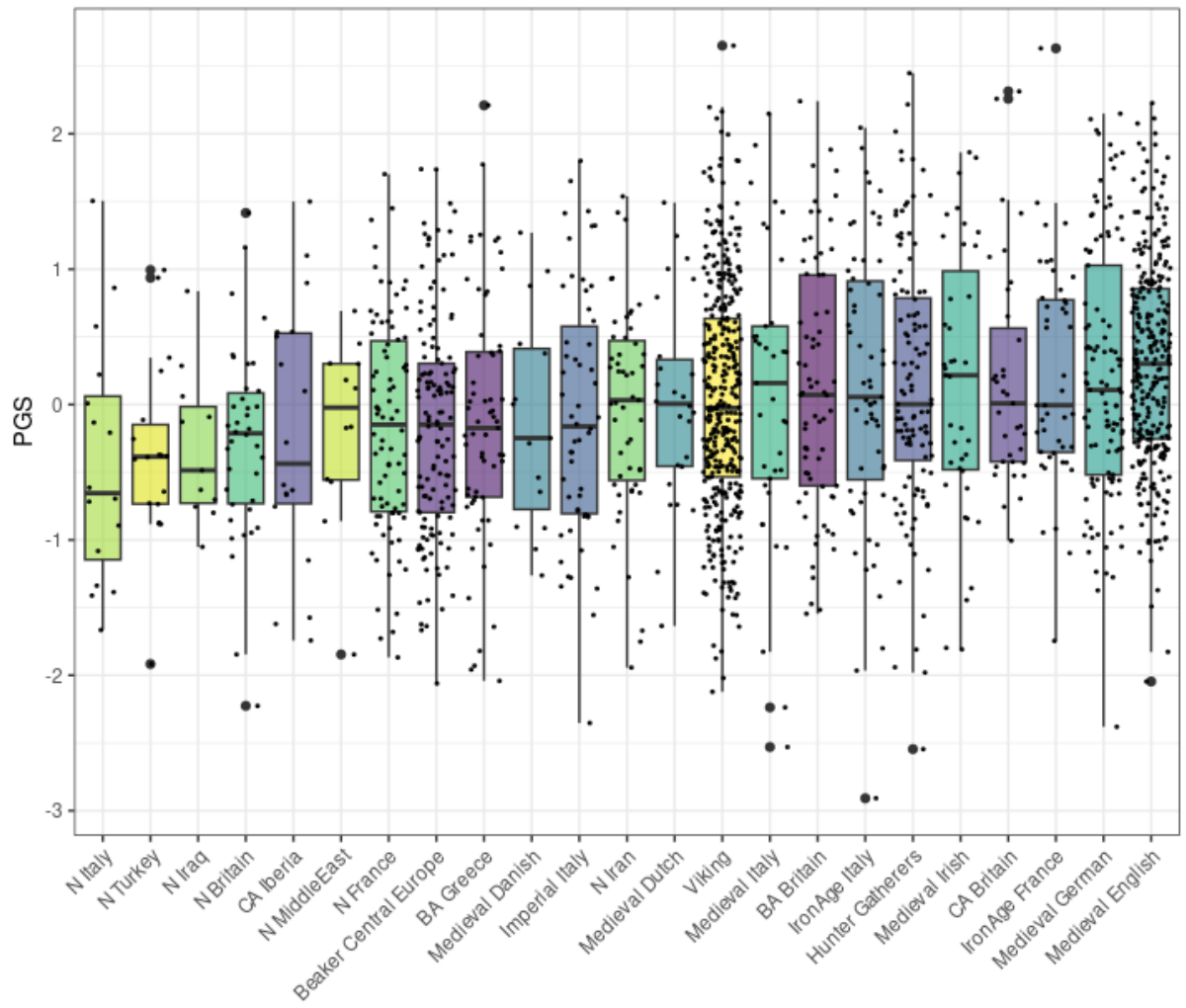


Figure S20

Neuroticism PGS

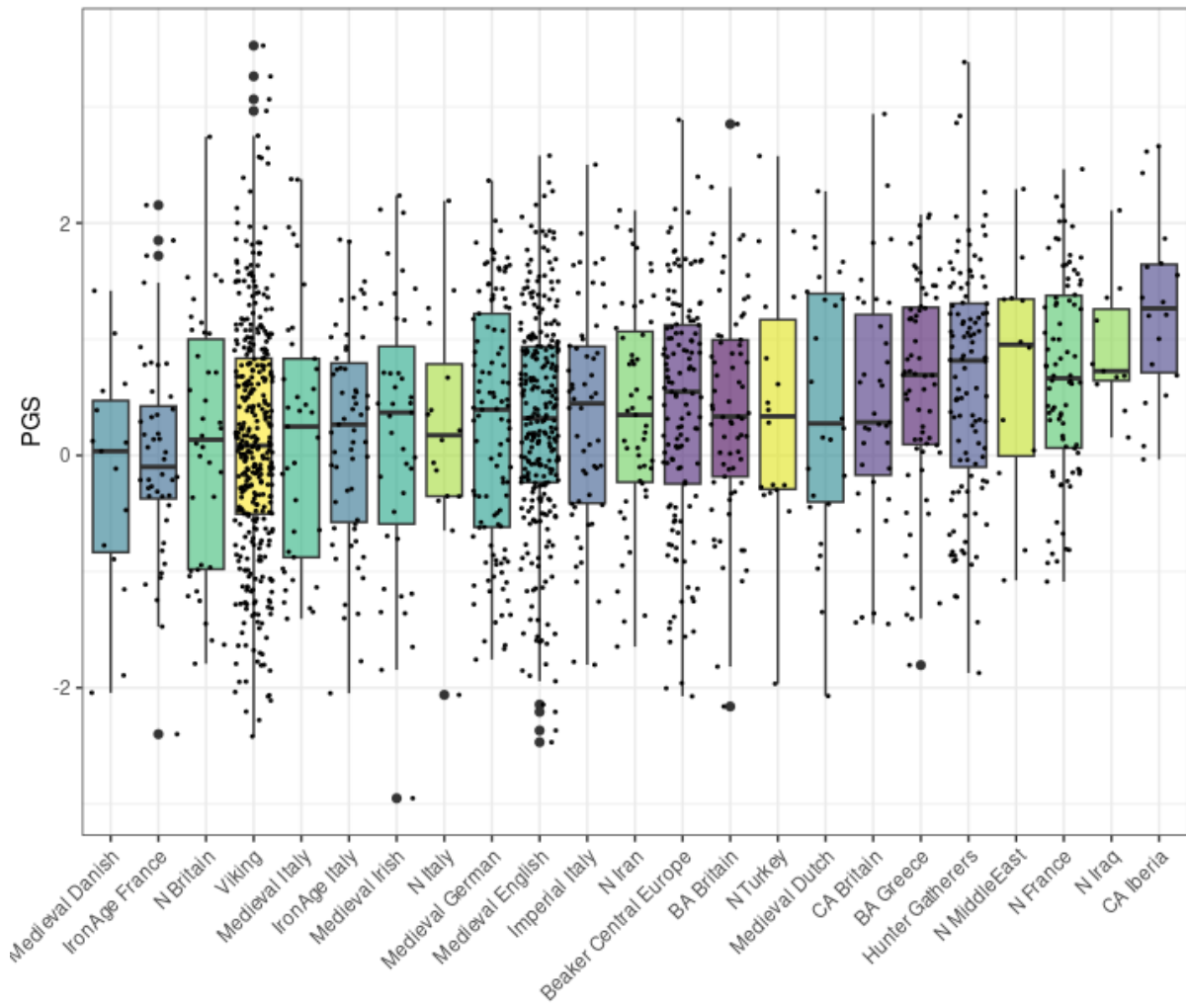


Figure S21

SCZ PGS

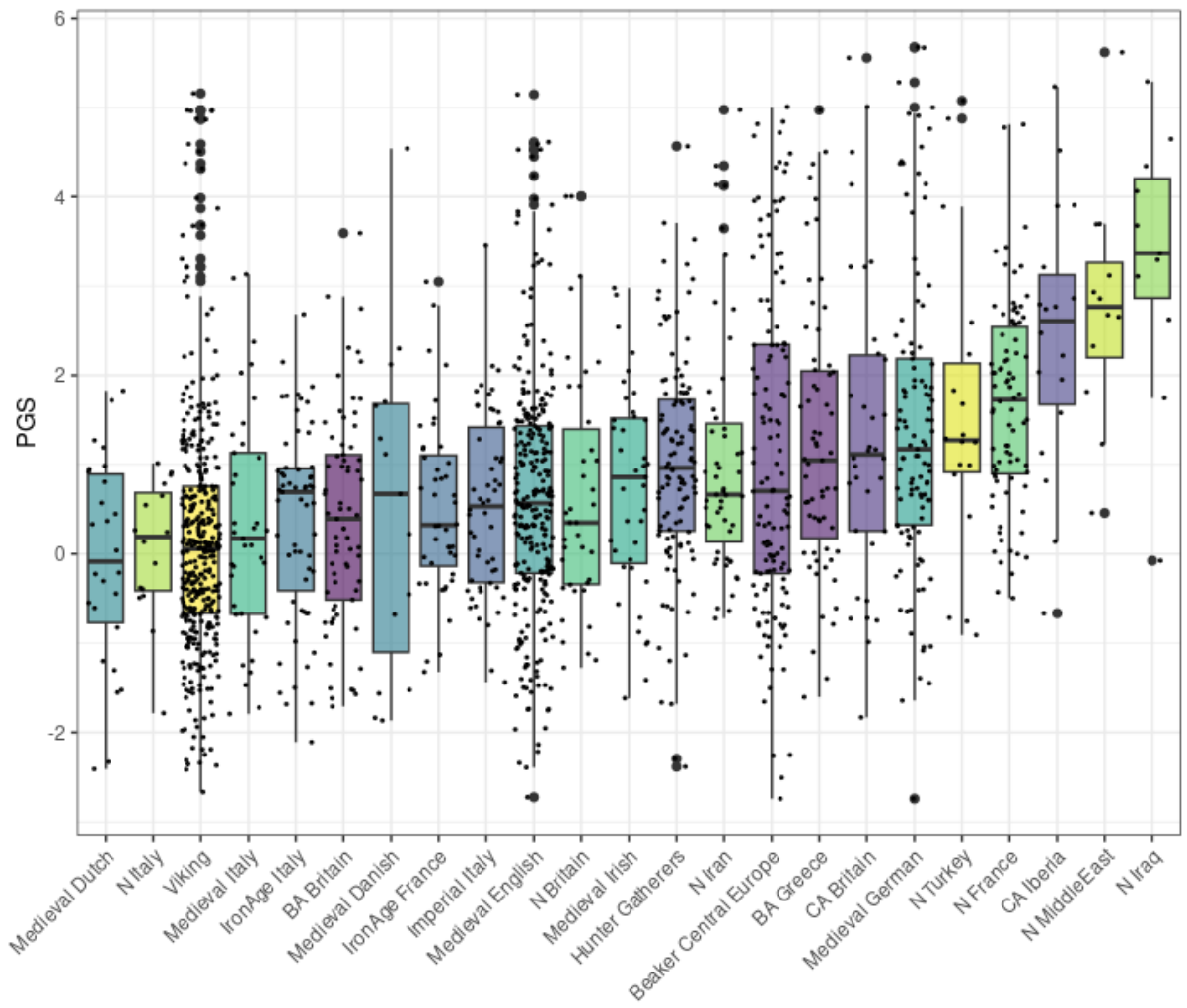


Figure S22
SES PGS

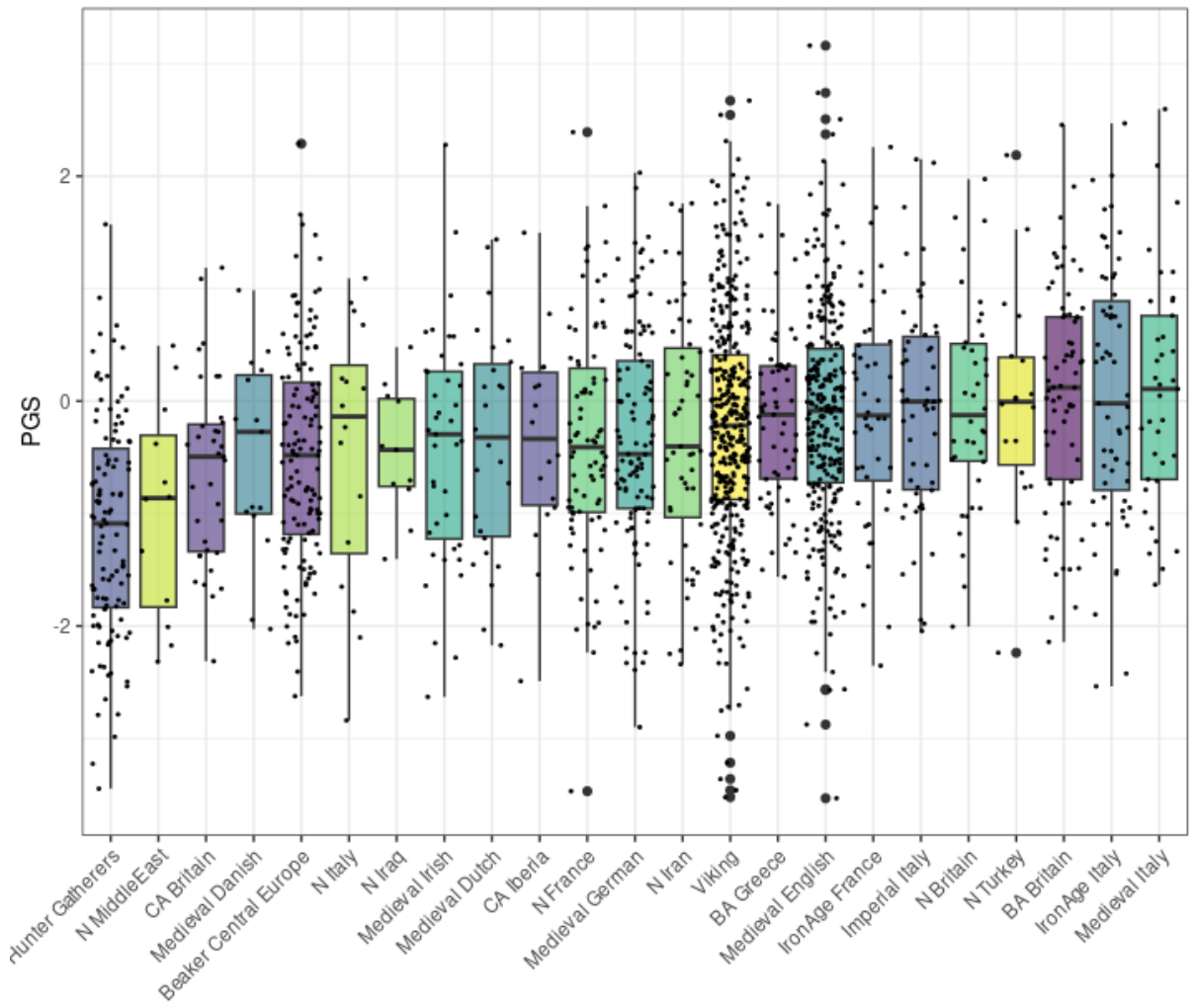


Figure S23. Correlation matrix showing genetic intercorrelations.

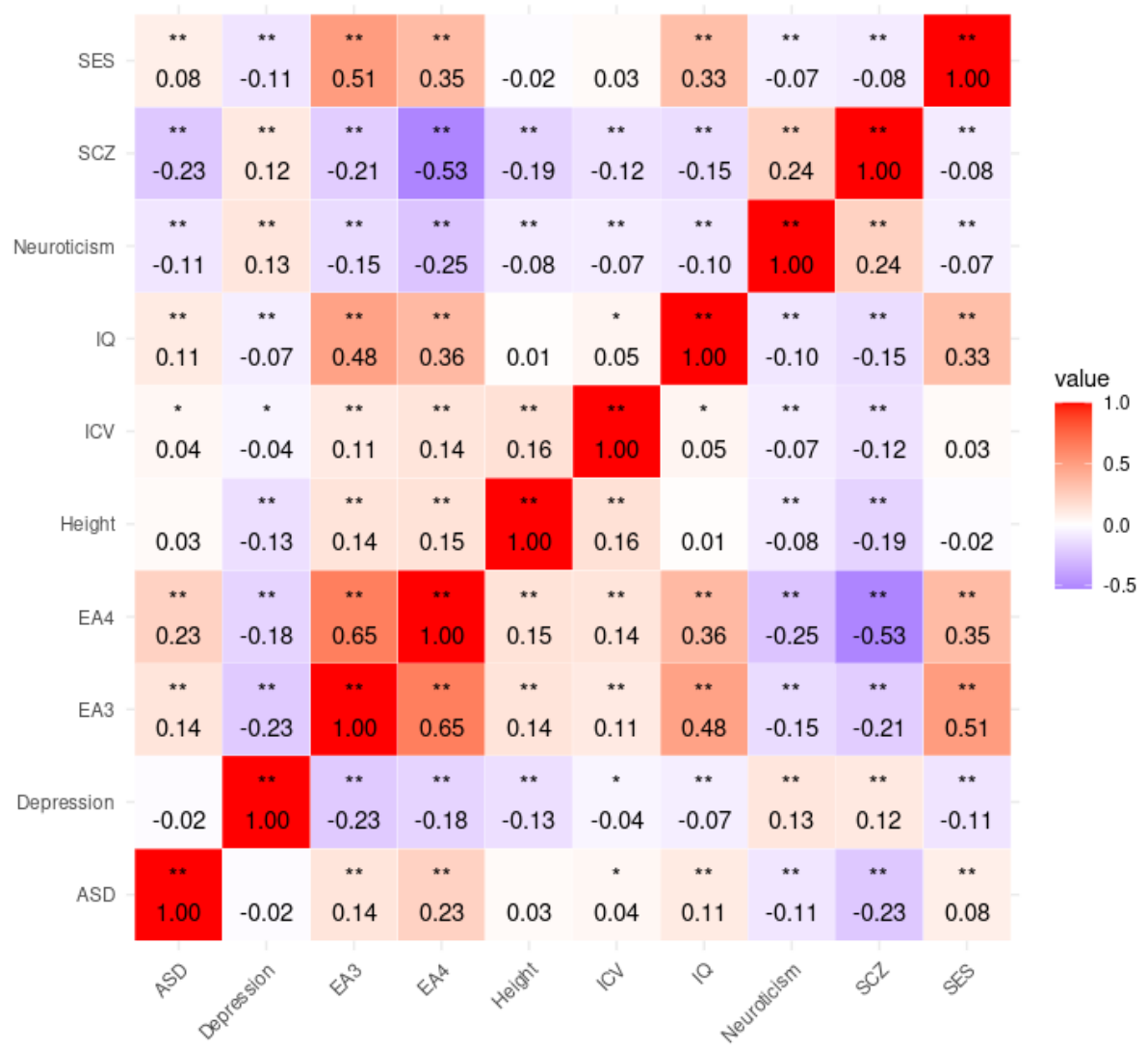


Table S1. EA3

	Model 1 Est.	Model 1 S.E.	Model 1 p	Model 2 Est.	Model 2 S.E.	Model 2 p	Model 3 Est.	Model 3 S.E.	Model 3 p
Date	-0.301	0.021	<0.001	-0.289	0.020	<0.001	-0.127	0.023	<0.001
Coverage	0.078	0.021	<0.001						
Latitude				-0.055	0.020	0.022			
Longitude				-0.057	0.024	0.015			
V1							-0.101	0.028	<0.001
V2							-0.314	0.025	<0.001
V3							-0.114	0.030	<0.001
V4							-0.309	0.029	<0.001

Table S2. EA4

	Model 1 Est.	Model 1 S.E.	Model 1 p	Model 2 Est.	Model 2 S.E.	Model 2 p	Model 3 Est.	Model 3 S.E.	Model 3 p
Date	-0.359	0.021	<0.001	-0.324	0.019	<0.001	-0.141	0.017	<0.001
Coverage	0.177	0.021	<0.001						
Latitude				0.024	0.023	0.296			
Longitude				-0.089	0.023	<0.001			
V1							-0.398	0.021	<0.001
V2							-0.400	0.019	<0.001
V3							-0.361	0.023	<0.001
V4							-0.878	0.022	<0.001

Table S3. IQ

	Model 1 Est.	Model 1 S.E.	Model 1 p	Model 2 Est.	Model 2 S.E.	Model 2 p	Model 3 Est.	Model 3 S.E.	Model 3 p
Date	-0.209	0.022	<0.001	-0.199	0.020	<0.001	-0.111	0.024	<0.001
Coverage	-0.014	0.022	0.527						
Latitude				-0.097	0.024	<0.001			
Longitude				-0.068	0.024	0.005			
V1							-0.156	0.029	<0.001
V2							-0.249	0.026	<0.001
V3							-0.254	0.032	<0.001
V4							-0.313	0.030	<0.001

Table S4. Autism

	Model 1 Est.	Model 1 S.E.	Model 1 p	Model 2 Est.	Model 2 S.E.	Model 2 p	Model 3 Est.	Model 3 S.E.	Model 3 p
Date	-0.097	0.022	<0.001	-0.084	0.021	<0.001	-0.014	0.024	0.551
Coverage	0.105	0.022	<0.001						
Latitude				0.050	0.025	0.046			
Longitude				0.088	0.025	<0.001			
V1							0.045	0.029	0.131
V2							-0.076	0.026	0.003
V3							0.007	0.032	0.822
V4							-0.256	0.031	<0.001

Table S5. Schizophrenia

	Model 1 Est.	Model 1 S.E.	Model 1 p	Model 2 Est.	Model 2 S.E.	Model 2 p	Model 3 Est.	Model 3 S.E.	Model 3 p
Date	0.144	0.021	<0.001	0.131	0.020	<0.001	0.025	0.017	0.153
Coverage	-0.278	0.021	<0.001						
Latitude				-0.187	0.024	<0.001			
Longitude				-0.078	0.024	<0.001			
V1							-0.008	0.022	0.705
V2							-0.034	0.019	0.070
V3							-0.048	0.023	0.038
V4							0.678	0.022	<0.001

Table S6. Depression

Variabl e	Model 1 Est.	Model 1 S.E.	Model 1 p	Model 2 Est.	Model 2 S.E.	Model 2 p	Model 3 Est.	Model 3 S.E.	Model 3 p
Date	0.133	0.022	<0.001	0.153	0.021	<0.00	0.062	0.025	0.011
Coverage	-0.020	0.022	0.367						
Latitude				-0.034	0.025	0.165			
Longitude				-0.001	0.025	0.954			
V1							0.001	0.030	0.973
V2							0.077	0.027	0.004
V3							-0.061	0.033	0.065
V4							0.057	0.031	0.068

Table S7. Neuroticism

	Model 1 Est.	Model 1 S.E.	Model 1 p	Model 2 Est.	Model 2 S.E.	Model 2 p	Model 3 Est.	Model 3 S.E.	Model 3 p
Date	0.116	0.022	<0.001	0.100	0.020	<0.001	0.053	0.024	0.026
Coverage	-0.073	0.022	<0.001						
Latitude				-0.053	0.025	0.033			
Longitude				-0.010	0.025	0.699			
V1							0.056	0.029	0.055
V2							0.040	0.026	0.123
V3							0.070	0.032	0.028
V4							0.326	0.030	<0.001

Table S8. Occupational status

	Model 1 Est.	Model 1 S.E.	Model 1 p	Model 2 Est.	Model 2 S.E.	Model 2 p	Model 3 Est.	Model 3 S.E.	Model 3 p
Date	-0.146	0.022	<0.001	-0.148	0.020	<0.001	-0.087	0.024	<0.001
Coverage	0.032	0.022	0.158						
Latitude				-0.107	0.025	<0.001			
Longitude				-0.061	0.024	0.013			
V1							-0.090	0.030	0.003
V2							-0.172	0.026	<0.001
V3							-0.199	0.032	<0.001
V4							-0.222	0.031	<0.001

Table S9. Height

	Model 1 Est.	Model 1 S.E.	Model 1 p	Model 2 Est.	Model 2 S.E.	Model 2 p	Model 3 Est.	Model 3 S.E.	Model 3 p
Date	-0.306	0.022	<0.001	-0.222	0.017	<0.001	-0.095	0.020	<0.001
Coverage	-0.07	0.022	<0.001						
Latitude				0.497	0.021	<0.001			
Longitude				0.070	0.021	<0.001			
V1							0.177	0.020	<0.001
V2							0.149	0.018	<0.001
V3							0.930	0.022	<0.001
V4							0.338	0.021	<0.001

Table S10. ICV

	Model 1 Est.	Model 1 S.E.	Model 1 p	Model 2 Est.	Model 2 S.E.	Model 2 p	Model 3 Est.	Model 3 S.E.	Model 3 p
Date	-0.080	0.023	<0.001	-0.063	0.020	0.002	-0.013	0.024	0.580
Coverage	0.003	0.023	0.882						
Latitude				0.105	0.025	<0.001			
Longitude				0.023	0.025	0.348			
V1							0.065	0.030	0.030
V2							0.032	0.026	0.226
V3							0.236	0.033	<0.001
V4							0.030	0.031	0.337

Pleiotropic selection: Regression models

Regression models, with each PGS as the dependent variable and Years BP and other polygenic scores as independent variables, were used to assess the strength of selection on each trait, accounting for pleiotropy.

ASD: No significant association with Years BP ($\beta = -0.032$, $p = 0.147$). Significant effects from EA4 ($\beta = 0.113$), SCZ ($\beta = -0.153$) suggest common selective pressures.

Depression: No significant association with Years BP ($\beta = 0.019$, $p = 0.104$). Significant associations with EA3 ($\beta = -0.179$), Height ($\beta = -0.091$), IQ ($\beta = 0.054$), and Neuroticism ($\beta = 0.086$), SCZ ($\beta = 0.054$).

EA3: Significant association with Years BP ($\beta = -0.036$, $p = 0.002$). Influences from Depression ($\beta = -0.088$), EA4 ($\beta = 0.509$), Height ($\beta = 0.065$), IQ ($\beta = 0.221$), SCZ ($\beta = 0.149$), and SES ($\beta = 0.263$) indicate pleiotropic effects.

EA4: Significant association with Years BP ($\beta = -0.061$, $p = 0.000$). ASD ($\beta = 0.051$), EA3 ($\beta = 0.460$), ICV ($\beta = 0.031$), Neuroticism ($\beta = -0.069$), SCZ ($\beta = -0.416$), SES ($\beta = 0.039$) significantly affect changes over time, suggesting pleiotropic selection.

Height: Significant relationship with Years BP ($\beta = -0.335$, $p = 0.000$). Significant effects from Depression ($\beta = -0.079$), EA3 ($\beta = 0.115$), ICV ($\beta = 0.095$), SCZ ($\beta = -0.109$), and SES ($\beta = -0.085$) highlight pleiotropic influences.

ICV: No significant association with Years BP ($\beta = -0.023$, $p = 0.314$). Changes in ICV over time influenced by EA4 ($\beta = 0.074$) and Height ($\beta = 0.112$), implying pleiotropic selection rather than direct Years BP effect.

IQ: No significant association with Years BP ($\beta = -0.011$, $p = 0.587$). Depression ($\beta = 0.046$), EA3 ($\beta = 0.378$), and SES ($\beta = 0.102$) significantly influence changes, suggesting pleiotropic selection effects.

Neuroticism: No significant correlation with Years BP ($\beta = 0.005$, $p = 0.744$). The influence of Depression ($\beta = 0.084$), EA4 ($\beta = -0.152$), SCZ ($\beta = 0.126$) indicates pleiotropic effects rather than direct Years BP influence.

SCZ: No significant association with Years BP ($\beta = 0.016$, $p = 0.368$). Changes over time attributed to pleiotropic effects of traits like ASD ($\beta = -0.101$), Depression ($\beta = 0.036$), EA3 ($\beta = 0.201$), EA4 ($\beta = -0.622$), Height ($\beta = -0.083$), Neuroticism ($\beta = 0.086$).

SES: No significant relationship with Years BP ($\beta = 0.013$, $p = 0.519$). Changes influenced by pleiotropic effects from traits such as EA3 ($\beta = 0.427$), EA4 ($\beta = 0.067$), Height ($\beta = -0.078$), IQ ($\beta = 0.097$), rather than direct Years BP influence.

Overall, these results indicate that while some traits show a direct relationship with Years BP, most changes over time can be attributed to pleiotropic effects of multiple significant traits, rather than a direct influence of Years BP.