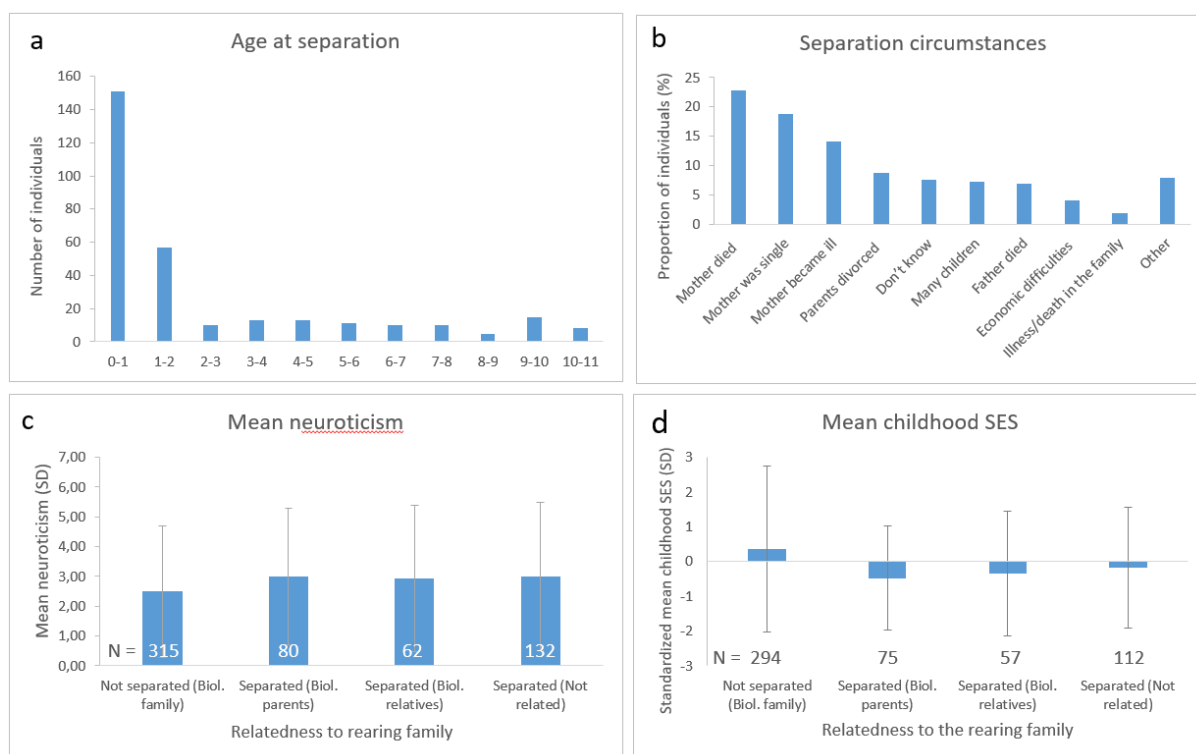# Supplementary Material

Supplementary Figure 1. Descriptive information on separation of twin pairs. Fig 1a: Age at separation; Fig. 1b: Self-reported separation circumstances (N = 276), "Other" is a sum of very rare circumstances such as "one twin being ill", "twins too hard to take care of" or "parents moving a lot"; Fig. 1c: Mean neuroticism levels across groups of separation and relatedness to rearing family; Fig. 1d: Mean childhood SES.

Supplementary Table 1. Standardized PRS_N created under nine p-value cut-offs in TRA and TRT.

PRS p_T	TRA		TRT		p-value[2]
	N[1]	Mean (SD)	N	Mean (SD)	
$5x10^{-8}$	290	0.07 (0.98)	266	-0.07 (1.03)	0.142
$1x10^{-5}$	290	0.08 (1.00)	266	-0.09 (1.00)	0.074
$1x10^{-4}$	290	0.12 (0.99)	266	-0.13 (0.99)	**0.004**
0.001	290	0.02 (1.03)	266	-0.04 (0.95)	0.301
0.01	290	0.01 (0.99)	266	-0.02 (1.00)	0.611
0.05	290	0.02 (0.98)	266	-0.03 (1.01)	0.548
0.1	290	0.01 (0.99)	266	-0.01 (1.00)	0.730
0.5	290	0.00 (0.97)	266	0.00 (1.01)	0.877
1	290	0.01 (0.97)	266	0.00 (1.01)	0.836

Notes: [1] = Number of directly genotyped individuals (i.e. before imputing genotype values to both members of each MZ pair); [2] = Logistic regression, adjusted for 5 PC-s and relatedness of twins, unadjusted p-values reported; TRA = twins reared apart; TRT = twins reared together.

Supplementary Table 2. Sensitivity analysis on cross-phenotype associations between nine PRS_N p_T's and depressive symptoms, anxiety symptoms, loneliness and life satisfaction.

PRS p_T	Depressive Symptoms[a]	Anxiety Symptoms[a]	Loneliness[a]	Life Satisfaction[a]
$5x10^{-8}$	0.013 (0.972)	0.163 (0.669)	0.011 (0.685)	-0.373 (0.282)
$1x10^{-5}$	-0.591 (0.109)	0.257 (0.501)	-0.006 (0.844)	-0.291 (0.435)
$1x10^{-4}$	0.068 (0.849)	0.767 (0.035)	0.011 (0.702)	-0.553 (0.137)
0.001	0.054 (0.889)	0.178 (0.662)	0.010 (0.760)	-0.132 (0.744)
0.01	0.681 (0.079)	0.258 (0.507)	0.033 (0.291)	-0.288 (0.420)
0.05	0.454 (0.234)	0.331 (0.374)	0.021 (0.484)	-0.168 (0.661)
0.1	0.489 (0.203)	0.518 (0.181)	0.021 (0.497)	-0.144 (0.714)
0.5	0.805 (0.032)	0.714 (0.042)	0.045 (0.140)	-0.490 (0.204)
1	0.804 (0.033)	0.712 (0.046)	0.048 (0.117)	-0.547 (0.158)

Notes: [a] = point estimates (p-value); Models adjusted for sex, age, age^2 and 5 PCs.

Supplementary Table 3. Discordant MZ twin analyses with PRS_N $p_T < 0.01$ and interaction between PRS_N and rearing as a predictors of the within-pair trait difference in five outcome phenotypes.

Within-pair difference	N	PRS_N			$PRS_N \times$ rearing		
		B	95% CI	p	B	95% CI	p
Neuroticism	127	0.19	-0.12, 0.49	0.23	-0.19	-0.86, 0.47	0.57
Depressive Symptoms	108	1.38	0.14, 2.63	**0.03**	1.99	-0.7, 4.67	0.15
Anxiety Symptoms	103	0.61	-0.53, 1.75	0.29	-0.31	-2.84, 2.22	0.81
Loneliness	111	0.12	0.00, 0.25	0.05	0.05	-0.24, 0.33	0.73
Life satisfaction	120	0.76	-0.23, 1.74	0.13	1.17	-0.96, 3.29	0.28

Notes: N = number of MZ pairs with available data; B = Unstandardized coefficient; CI = confidence interval;