

**S2 Table. Longitudinal genetic effects.**

Trait	SNP	Age group	Gender	$\beta_{SNP}$	95% CI	Adjusted p-value	
WHR	FTO	30-40 years	Men	0.0023	-0.0029, 0.0075	0.71	
			Women	0.0046	-0.0014, 0.011	0.36	
		40-60 years	Men	0.0015	-0.00095, 0.0039	0.5	
			Women	0.0026	3.8e-05, 0.0051	0.15	
		60-80 years	Men	-0.00073	-0.0037, 0.0023	0.86	
			Women	-0.00033	-0.0036, 0.0029	1	
	MC4R	30-40 years	Men	0.00076	-0.0055, 0.0071	1	
			Women	0.0074	0.00092, 0.014	0.11	
		40-60 years	Men	0.00017	-0.0025, 0.0028	1	
			Women	0.00063	-0.0023, 0.0035	0.86	
60-80 years		Men	0.00032	-0.003, 0.0036	1		
		Women	0.0033	-0.00032, 0.0069	0.21		
BMI	FTO	30-40 years	Men	-0.091	-0.33, 0.15	0.74	
			Women	0.091	-0.18, 0.36	0.78	
		40-60 years	Men	0.14	0.045, 0.23	0.029	
			Women	0.11	-0.0065, 0.22	0.2	
		60-80 years	Men	0.0095	-0.1, 0.12	1	
			Women	-0.0023	-0.13, 0.13	1	
		MC4R	30-40 years	Men	0.096	-0.2, 0.39	0.78
				Women	0.32	0.032, 0.62	0.11
			40-60 years	Men	0.041	-0.062, 0.14	0.73
				Women	-0.047	-0.18, 0.083	0.78
			60-80 years	Men	-0.17	-0.3, -0.043	0.048
				Women	0.086	-0.06, 0.23	0.5

Estimated longitudinal effects ( $\beta_{SNP}$ ) with 95% confidence intervals for men and women in age groups 30-40 years (individuals younger than 30 years in HUNT3 did not participate in HUNT2), 40-60 years and 60-80 years. FDR-adjusted p-values for testing  $H_0: \beta_{SNP} = 0$  against  $H_1: \beta_{SNP} \neq 0$ .