

Table1. Forward MR results

(exposure)	(outcome)	Nsnp	Methods	Beta	SE	OR (95%CI)	P value	P _{FDR}	Heterogeneity <i>Q</i> -P value	Horizontal pleiotrop	
										Egger intercept P	MRPresso P
graves	MG	24	MR-Egger	0.27	0.29	1.31 (0.73-2.35)	0.367		1.180e-05	0.996	0.929
			Weighted median	0.10	0.09	1.11 (0.93-1.33)	0.238				
			Inverse variance weighted	0.27	0.09	1.31 (1.08-1.60)	0.005				
			Weighted mode	-0.01	0.11	0.98 (0.79-1.22)	0.892				
Autoimmune hypothyroidism	MG	117	MR-Egger	-8.18e-4	0.17	0.99 (0.71-1.39)	0.996		2.206e-17	0.127	0.620
			Weighted median	0.08	0.09	1.09 (0.90-1.31)	0.341				
			Inverse variance weighted	0.23	0.07	1.26 (1.08-1.47)	0.002				
			Weighted mode	-0.16	0.11	0.84 (0.67-1.06)	0.152				
TPOAb	MG	8	MR-Egger	0.25	0.78	1.28 (0.27-6.04)	0.761		1.461e-08	0.956	-
			Weighted median	0.16	0.12	1.18 (0.92-1.51)	0.178				
			Inverse variance weighted	0.29	0.22	1.34 (0.86-2.07)	0.186				
			Weighted mode	0.15	0.14	1.16 (0.87-1.56)	0.324				
FT4	MG	19	MR-Egger	0.25	0.43	1.29 (0.54-3.04)	0.564		0.659	0.366	-
			Weighted median	0.01	0.20	1.02 (0.68-1.52)	0.922				
			Inverse variance weighted	-0.12	0.14	0.88 (0.65-1.18)	0.406				
			Weighted mode	0.04	0.24	1.04 (0.65-1.67)	0.860				
TSH	MG	41	MR-Egger	-0.36	0.30	0.69 (0.38-1.27)	0.244		0.029	0.238	-
			Weighted median	-0.09	0.14	0.91 (0.68-1.21)	0.518				
			Inverse variance weighted	-0.02	0.11	0.97 (0.77-1.23)	0.846				
			Weighted mode	-0.07	0.21	0.92 (0.60-1.40)	0.716				

Nsnp, number of snps.

nominal significant estimate is defined as P value < 0.05 .

Cochran's Q-derived P value and MR-Egger intercept-derived P value < 0.05 is significant.

Table2. Reverse MR results

(exposure)	(outcome)	Nsnp	Methods	Beta	SE	OR /Beta(95%CI)	P value	P _{FDR}	Heterogeneity <i>Q</i> _P value	Horizontal pleiotrop	
										Egger intercept P	MRPresso P
MG	graves	6	MR-Egger	0.08	0.30	1.09 (0.59-2.00)	0.78		5.407e-22	0.310	1
			Weighted median	0.19	0.04	1.21 (1.10-1.33)	6.04e-5				
			Inverse variance weighted	0.41	0.14	1.50 (1.14-1.98)	3.57e-3				
			Weighted mode	0.18	0.04	1.20 (1.10-1.31)	9.30e-3				
MG	Autoimmune hypothyroidism	6	MR-Egger	0.16	0.26	1.17 (0.69-1.98)	0.579		1.025e-105	0.716	0.001
			Weighted median	0.11	0.02	1.12 (1.07-1.17)	7.43e-8				
			Inverse variance weighted	0.25	0.10	1.29 (1.04-1.59)	0.019				
			Weighted mode	0.12	0.02	1.12 (1.08-1.17)	2.02e-3				
MG	TPOAb	2	Inverse variance weighted	0.61	0.14	1.84 (1.39-2.42)	1.47e-5		-	-	-
MG	FT4	1	Wald ratio	-9.03e-3	0.03	-9.03e-3 (-0.07-0.05)	0.796		-	-	-
MG	TSH	1	Wald ratio	0.08	0.03	0.08 (0.01-0.14)	0.011		-	-	-