

Supplementary Material

Causal Relationship between Genetically Predicted Psychiatric Disorders and Colorectal Cancer Risk: A Two-Sample Mendelian Randomization

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Uploaded separately as Supplementary Table 3.xlsx

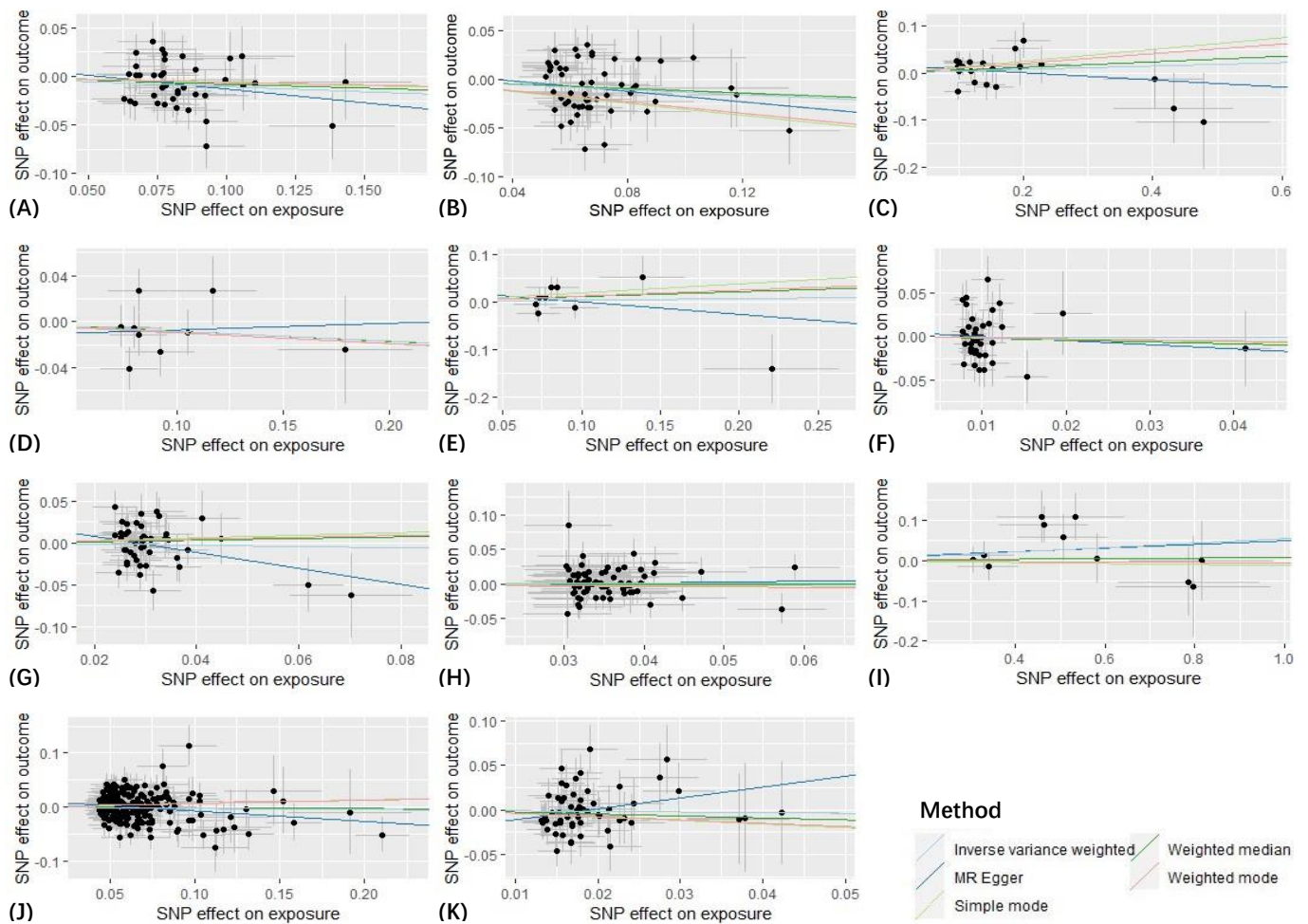


Figure S1: Scatter plot of the causal effect of different types of psychiatric disorders on colorectal cancer, with the slope of each line corresponding to estimated causal effect per method: (A) Bipolar Disorder type I; (B) Bipolar Disorder all; (C) Bipolar Disorder type II; (D) Attention Deficit Hyperactivity Disorder; (E) Autism Disorder; (F) Insomnia; (G) Major Depressive Disorder; (H) Neuroticism; (I) Panic; (J) Schizophrenia; (K) Worry.

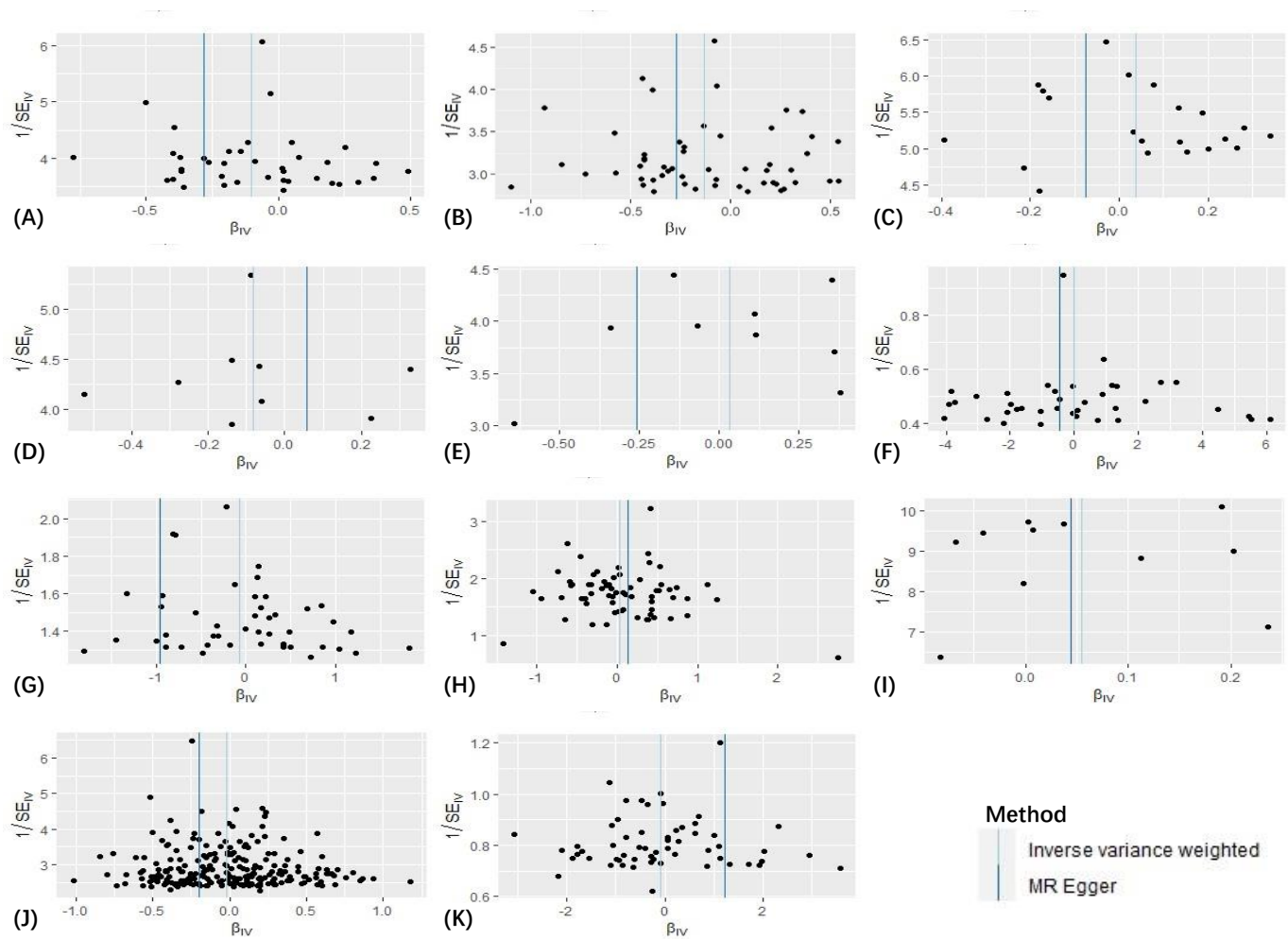


Figure S2: Funnel plot of the causal effect of different types of psychiatric disorders on colorectal cancer: (A) Bipolar Disorder type I; (B) Bipolar Disorder all; (C) Bipolar Disorder type II; (D) Attention Deficit Hyperactivity Disorder; (E) Autism Disorder; (F) Insomnia; (G) Major Depressive Disorder; (H) Neuroticism; (I) Panic; (J) Schizophrenia; (K) Worry.

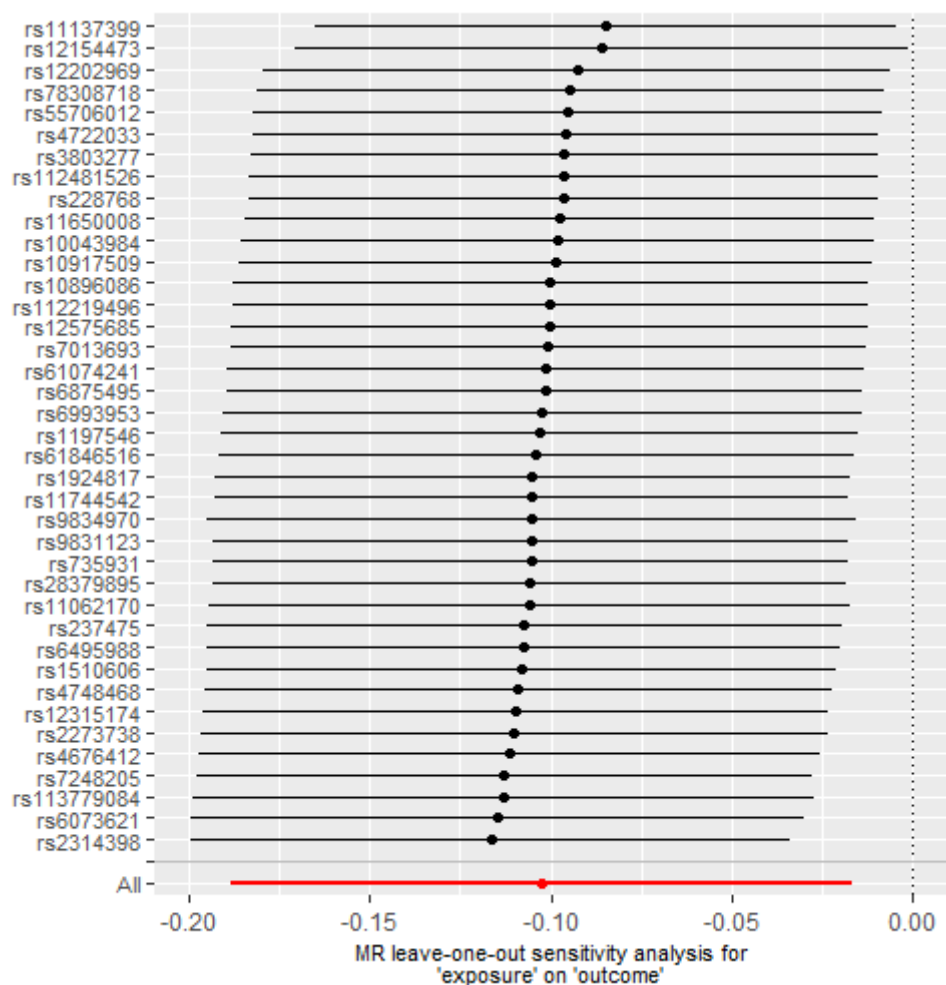


Figure S3: Leave-one-out inverse-variance weighted mendelian randomization analyses of Bipolar Disorder type I on colorectal cancer.

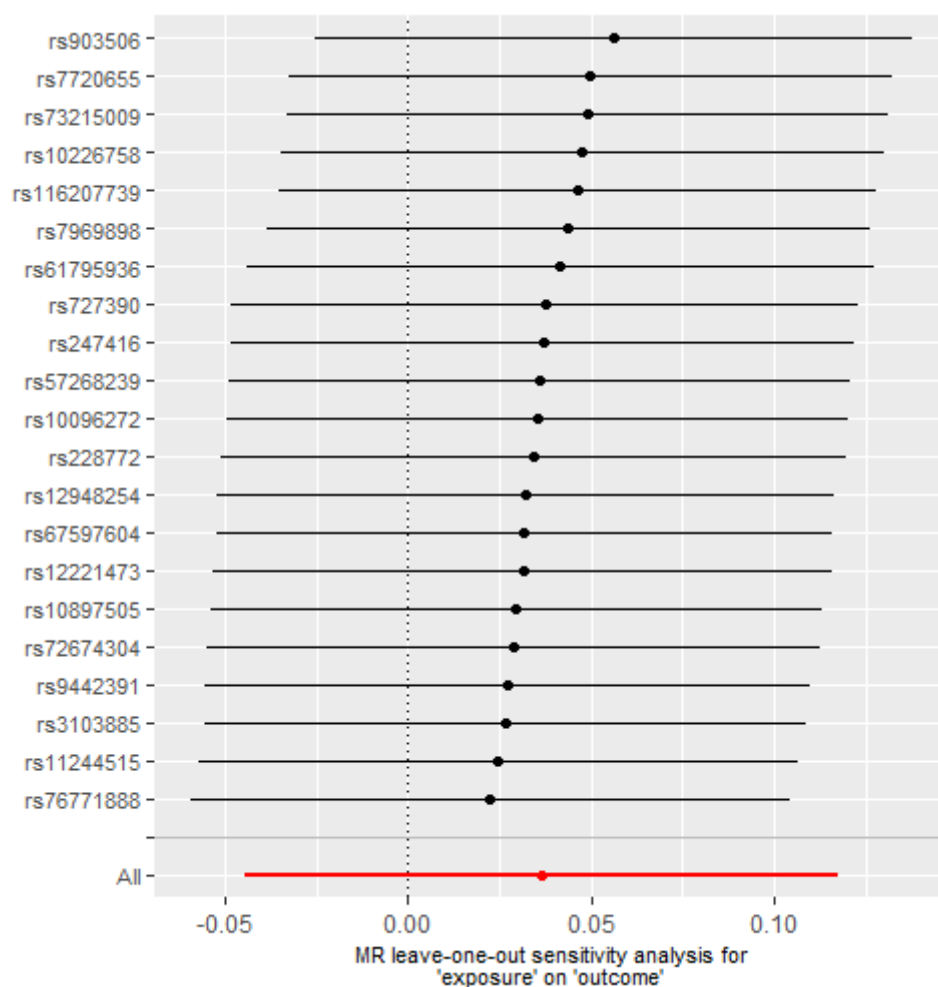


Figure S5: Leave-one-out inverse-variance weighted mendelian randomization analyses of Bipolar Disorder type II on colorectal cancer.

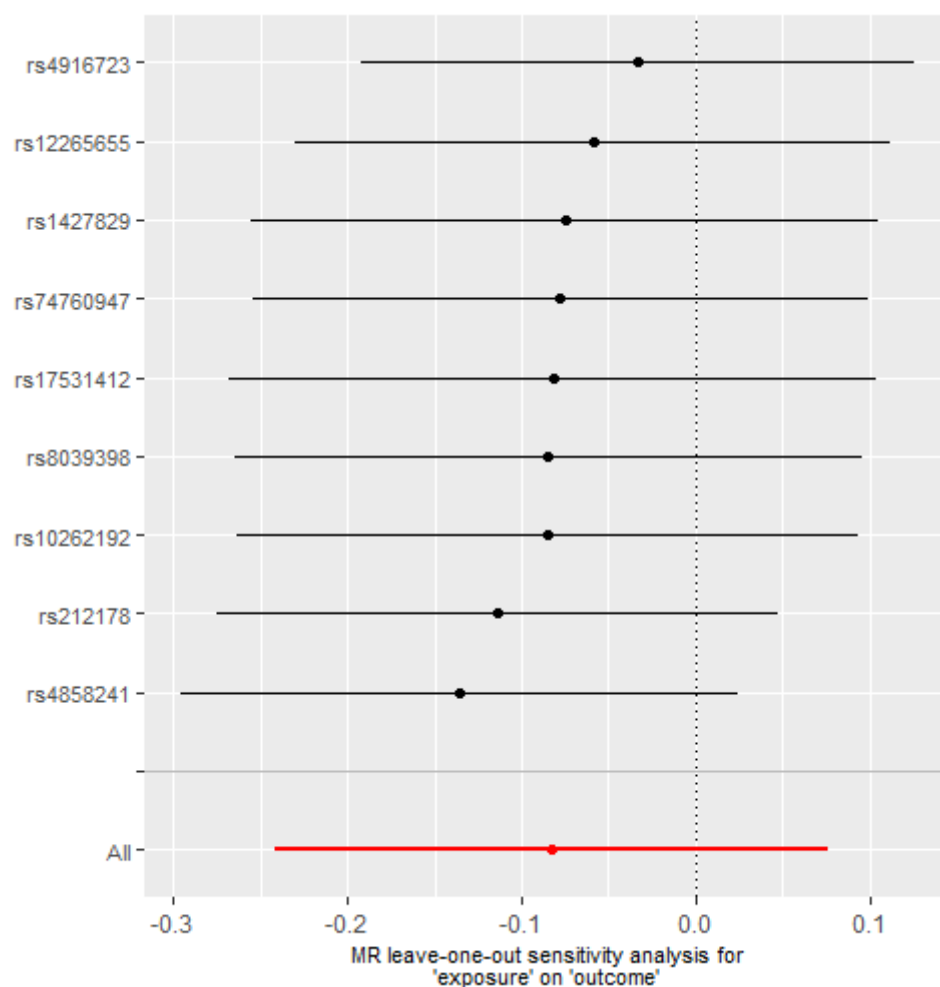


Figure S6: Leave-one-out inverse-variance weighted mendelian randomization analyses of Attention Deficit Hyperactivity Disorder on colorectal cancer.

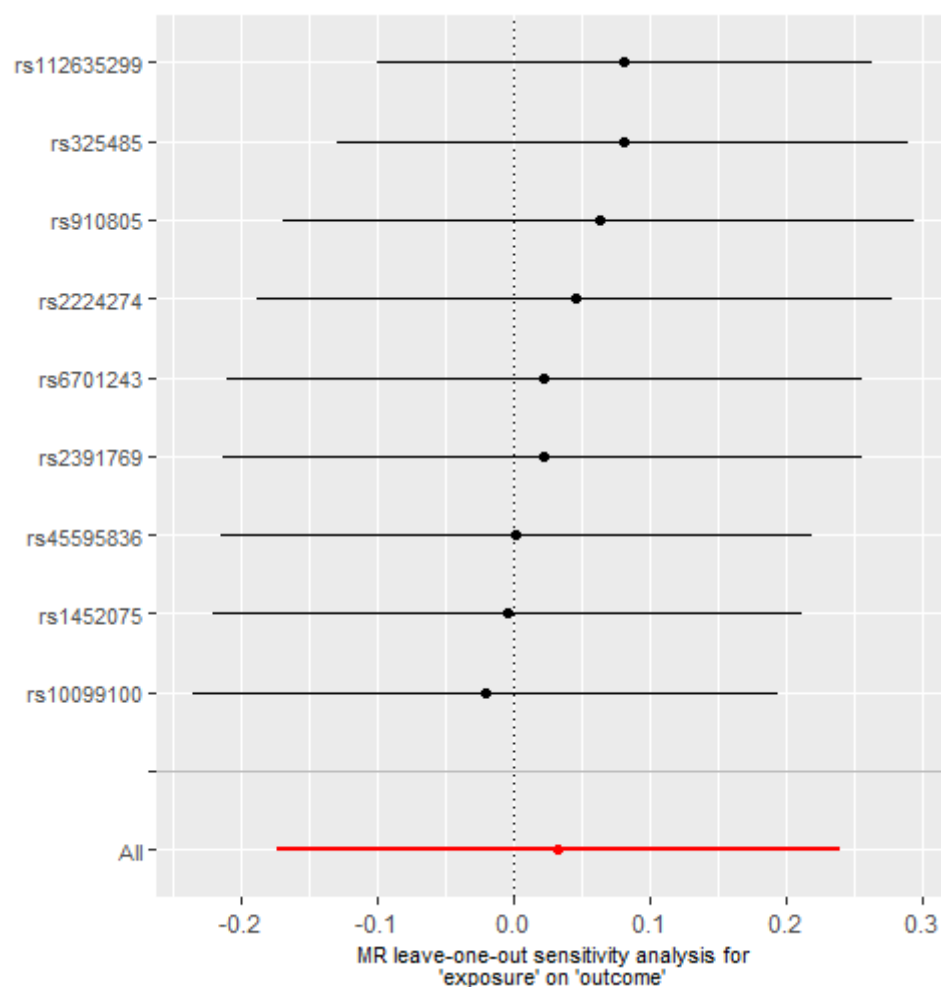


Figure S7: Leave-one-out inverse-variance weighted mendelian randomization analyses of Autism Disorder on colorectal cancer.

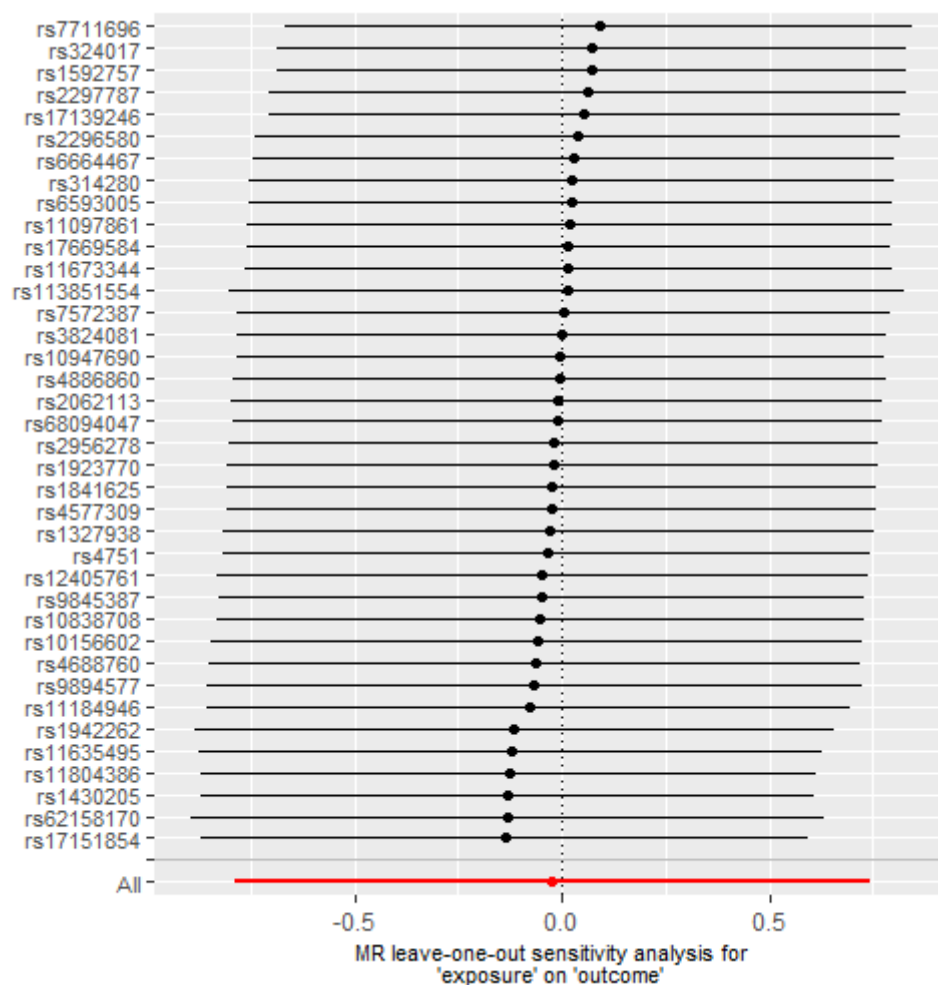


Figure S8: Leave-one-out inverse-variance weighted mendelian randomization analyses of Insomnia on colorectal cancer.

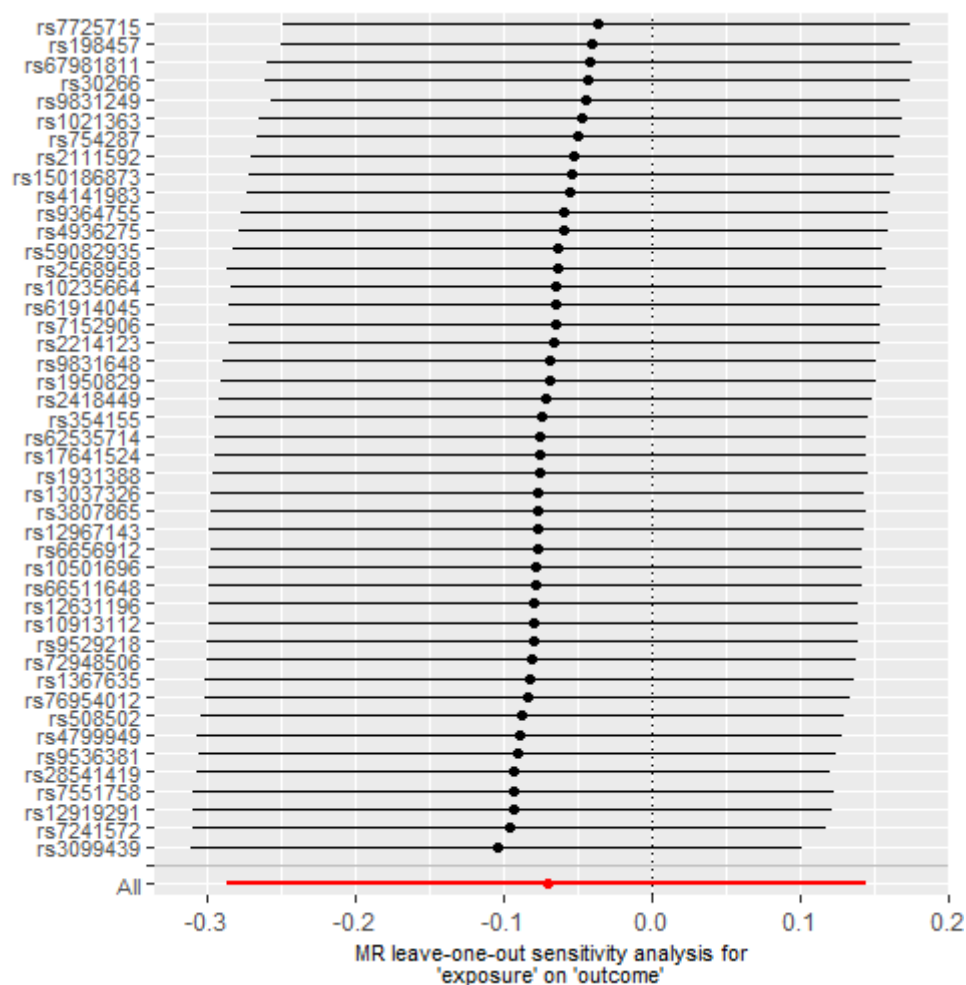


Figure S9: Leave-one-out inverse-variance weighted mendelian randomization analyses of Major Depressive Disorder on colorectal cancer.

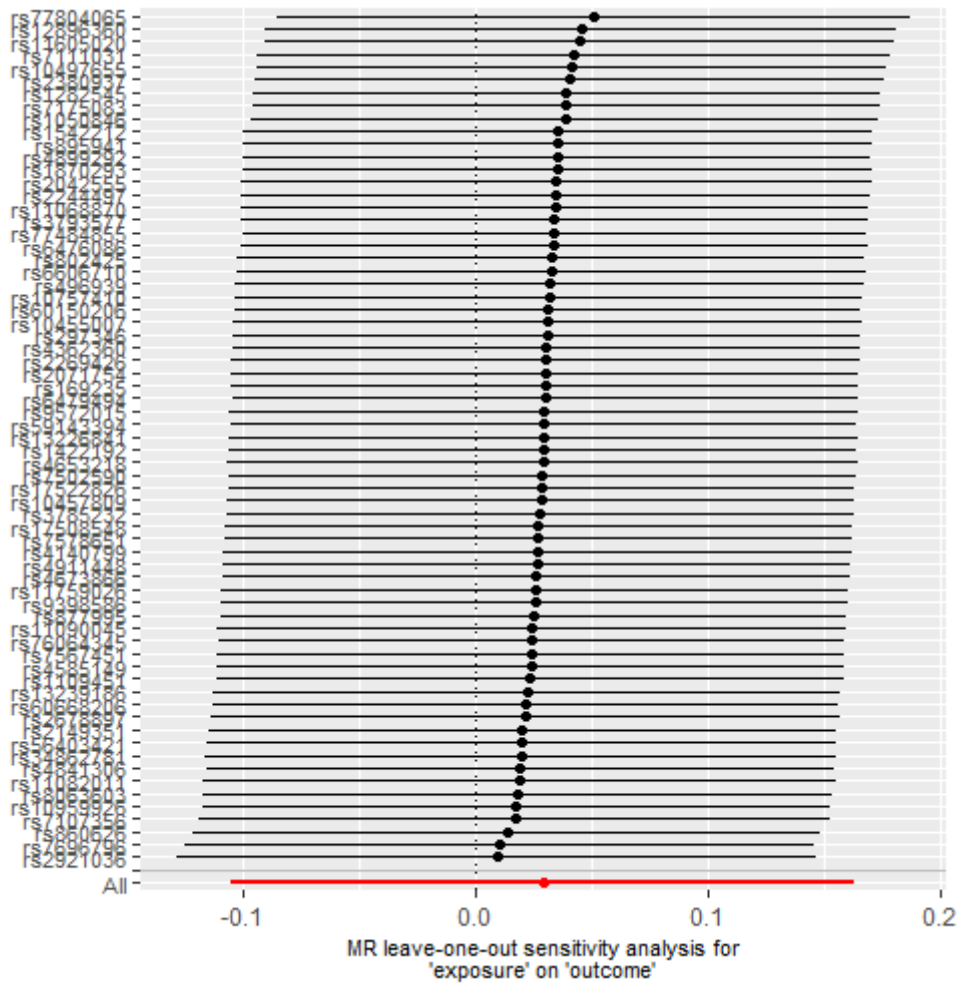


Figure S10: Leave-one-out inverse-variance weighted mendelian randomization analyses of Neuroticism on colorectal cancer.

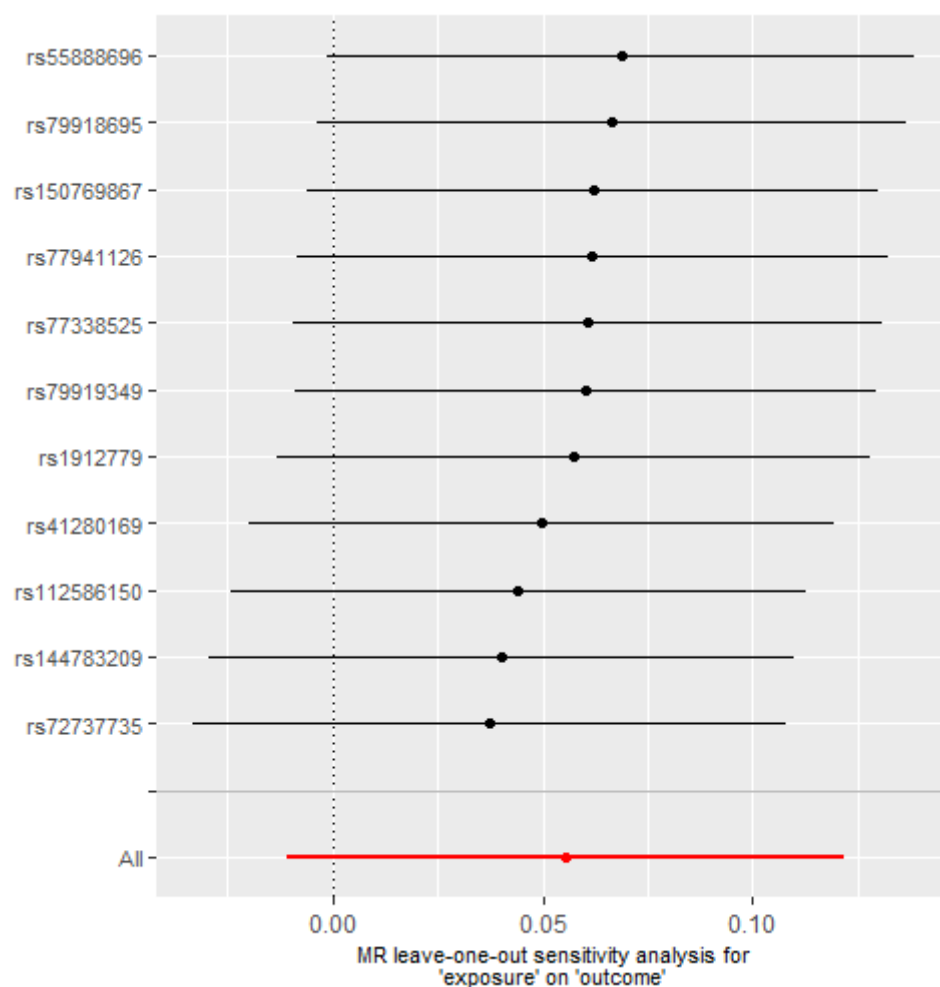


Figure S11: Leave-one-out inverse-variance weighted mendelian randomization analyses of Panic on colorectal cancer.

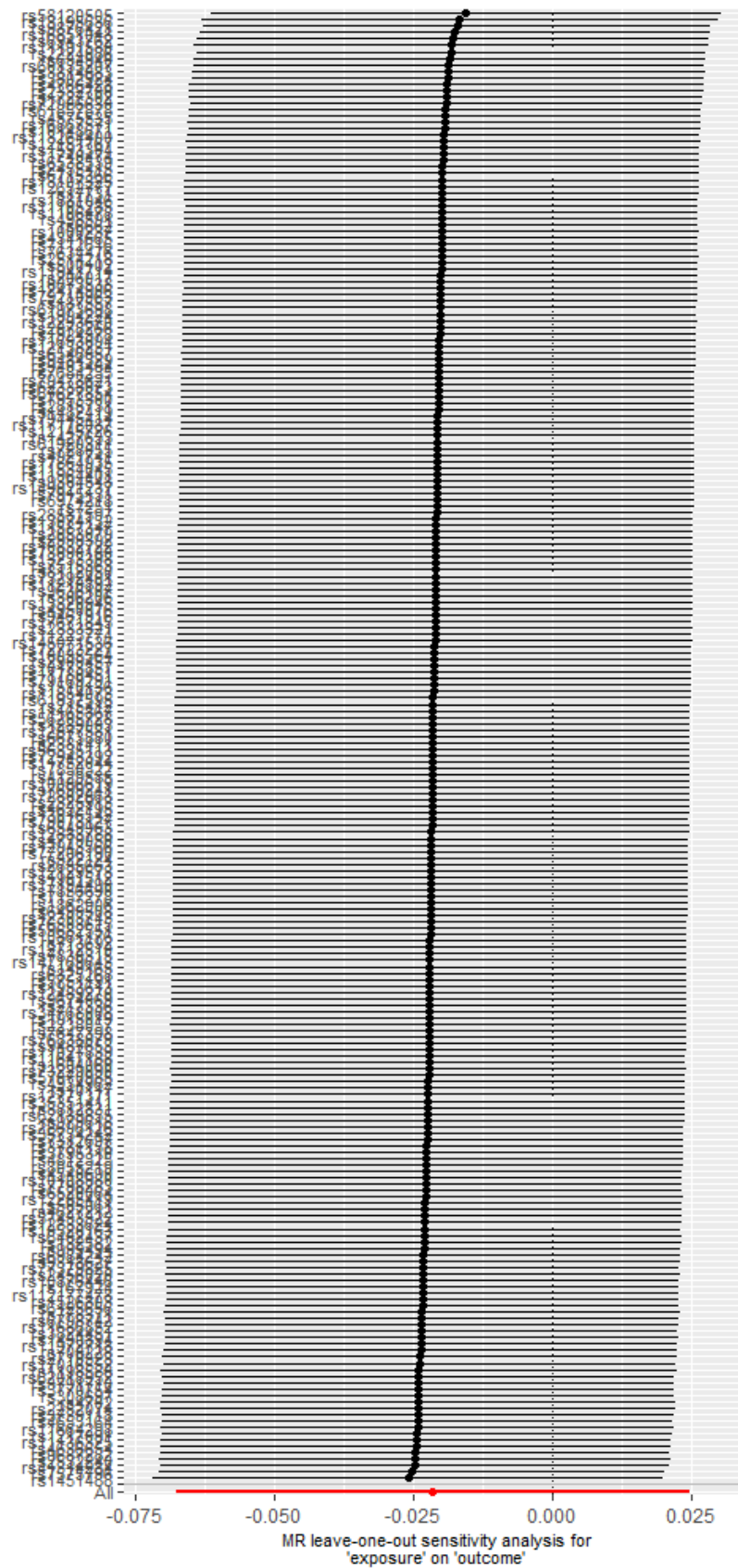


Figure S12: Leave-one-out inverse-variance weighted mendelian randomization analyses of Schizophrenia on colorectal cancer.

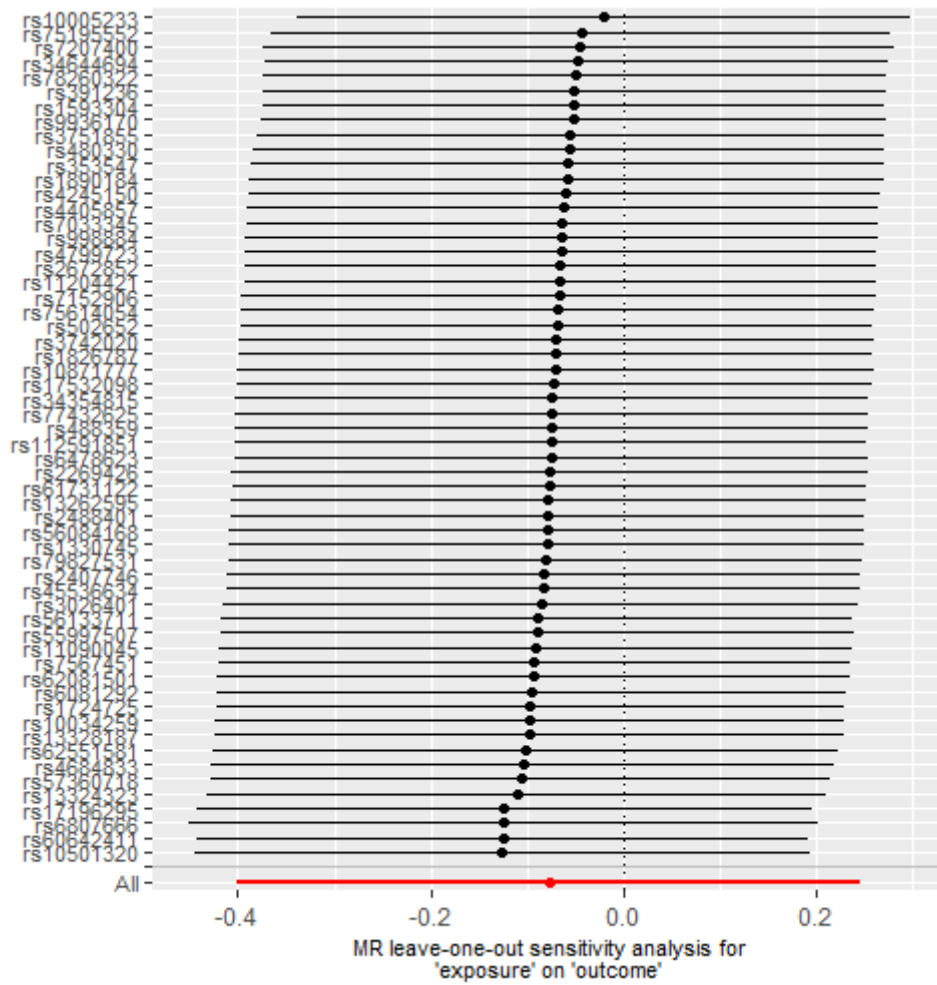


Figure S13: Leave-one-out inverse-variance weighted mendelian randomization analyses of Worry on colorectal cancer.

Supplementary Table S1:List of studies included for the Mendelian Randomization				
Categories	Disease	Participants included in analysis	publish year	PMID
psychiatric disorders	Major Depressive Disorder (MDD)	246,363 MDD cases and 561,190 controls of European ancestry	2019	30718901
	Attention Deficit/Hyperactivity Disorder(ADHD)	20,183 ADHD cases and 35,191 controls of European ancestry	2019	30478444
	Neuroticism	sample size = 329,821 of European ancestry (Dataset: ebi-a-GCST005232ebi-a-GCST005232)	2018	29255261
	Worry	sample size= 348,219 of European ancestry	2018	29942085
	Bipolar Disorder	bipolar I disorder	2021	34002096
		bipolar II disorder	2021	34002096
		bipolar disorder(all)	2021	34002096
	Autistic disorder	18,381 ASD cases and 27,969 controls of European ancestry	2019	30804558
	Schizophrenia	76,755 SCZ cases and 243,649 controls of European ancestry	2022	35396580
	Panic	2,248 panic cases and 7,792 controls of European ancestry	2019	31712720
cancer	Insomnia	17,140 insomnia cases and 61,400 controls of European ancestry	2019	30804566
	colorectal cancer	34,869 cases and 29,051 controls of European(91.7%) and East Asian ancestry (8.3%)	2019	30510241

Supplementary Table S1: List of studies included for the Mendelian Randomization.

Exposure	Outcome	Method	SNPs	Beta	SE	Pval	IVW			Heterogeneity		IVW random effect	Pleiotropy Pval
							OR	95%CI		Cochran's Q	Q_pval		
Bipolar Disorder type I	Colorectal Cancer	MR Egger	39	-0.281677742	0.257275383	0.280658844							
		Weighted median	39	-0.079656576	0.06098846	0.19152107							
		Inverse variance weighted	39	-0.102681856	0.043742359	0.018903739	0.902414	0.8282693	0.983196	44.36769	1.89E-01		0.4845139
		Simple mode	39	-0.063085164	0.141536466	0.658331115							
		Weighted mode	39	-0.05919354	0.114519739	0.608231936							
Bipolar Disorder all	Colorectal Cancer	MR Egger	52	-0.217347525	0.259554254	0.406359598							
		Weighted median	52	-0.104075713	0.065010054	0.109395262							
		Inverse variance weighted	52	-0.108906376	0.050278092	0.030305063	0.8968144	0.8126527	0.9896922	68.28422	4.38E-02	0.030305063	0.6719366
		Simple mode	52	-0.309752874	0.183513733	0.097537503							
		Weighted mode	52	-0.294780006	0.175060317	0.0983174							
Bipolar Disorder type II	Colorectal Cancer	MR Egger	21	-0.075233994	0.112047208	0.510016433							
		Weighted median	21	0.057897296	0.057373676	0.312913982							
		Inverse variance weighted	21	0.036504857	0.041275073	0.376464854	1.0371793	0.9565767	1.124574	19.3371	4.35E-01		0.2971233
		Simple mode	21	0.124438428	0.106475421	0.25626438							
		Weighted mode	21	0.101485959	0.110913222	0.371090619							
Attention Deficit Hyperactivity Disorder	Colorectal Cancer	MR Egger	9	0.134300238	0.981670309	0.895034307							
		Weighted median	9	-0.196729765	0.264454759	0.456932699							
		Inverse variance weighted	9	-0.190850641	0.186506353	0.306169342	0.9204566	0.7853367	1.078825	8.773325	2.69E-01		0.7451611
		Simple mode	9	-0.219265971	0.375889206	0.575745091							
		Weighted mode	9	-0.209167518	0.323127695	0.535553032							
Autism Disorder	Colorectal Cancer	MR Egger	9	-0.258789742	0.491795681	0.614994444							
		Weighted median	9	0.103320083	0.118272187	0.382347638							
		Inverse variance weighted	9	0.032620055	0.105570698	0.757330831	1.0331579	0.8400461	1.270663	11.48074	0.1189807		0.5624223
		Simple mode	9	0.189492689	0.204142001	0.380437254							
		Weighted mode	9	0.119485171	0.198444789	0.563773679							
Insomnia	Colorectal Cancer	MR Egger	38	-0.469785039	1.38670667	0.736745472							
		Weighted median	38	-0.21235284	0.518926281	0.682381291							
		Inverse variance weighted	38	-0.02282628	0.390233191	0.953355183	0.9774323	0.45489742	2.100196	52.12151	0.04012547	0.9533552	0.7386373
		Simple mode	38	-0.155953591	0.976305545	0.873955916							
		Weighted mode	38	-0.124459328	0.794174055	0.876321148							
Major Depressive Disorder	Colorectal Cancer	MR Egger	45	-0.959868423	0.590324088	0.111256788							
		Weighted median	45	0.096138379	0.14950662	0.520199699							
		Inverse variance weighted	45	-0.070747174	0.109978048	0.520039511	0.9316974	0.7510342	1.15582	49.18347	0.2393469		0.1328034
		Simple mode	45	0.15276654	0.339778293	0.655201309							
		Weighted mode	45	0.109365621	0.320701629	0.734711743							
Neuroticism	Colorectal Cancer	MR Egger	67	0.139562055	0.457967461	0.761536051							
		Weighted median	67	-0.006005962	0.098299629	0.951280747							
		Inverse variance weighted	67	0.02871397	0.0685298	0.675216303	1.0291302	0.8997805	1.177075	53.82335	0.8373086		0.8073826
		Simple mode	67	-0.053006782	0.246374151	0.83031577							
		Weighted mode	67	-0.074609799	0.2300265	0.74669651							
Panic	Colorectal Cancer	MR Egger	11	0.044921546	0.110401793	0.693594308							
		Weighted median	11	0.0074777	0.048205438	0.876725532							
		Inverse variance weighted	11	0.055364165	0.03384724	0.101900945	1.0569254	0.9890836	1.129421	9.152192	0.4233459		0.9229532
		Simple mode	11	-0.012840573	0.071497949	0.861058541							
		Weighted mode	11	-0.006064415	0.073129911	0.935546379							
Schizophrenia	Colorectal Cancer	MR Egger	230	-0.195026278	0.091504722	0.034132609							
		Weighted median	230	-0.013900752	0.032661625	0.670400132							
		Inverse variance weighted	230	-0.021448763	0.023547603	0.362364818	0.9787796	0.9346323	1.0250122	279.1373	0.01654276	0.3623648	0.05776483
		Simple mode	230	0.066393245	0.115597482	0.566295717							
		Weighted mode	230	0.060807608	0.112406152	0.589058671							
Worry	Colorectal Cancer	MR Egger	58	1.218157154	0.802641298	0.134719213							
		Weighted median	58	-0.224396113	0.246288006	0.362236032							
		Inverse variance weighted	58	-0.077046672	0.16490588	0.640345319	0.9258466	0.6701443	1.279116	57.00842	0.4373568		0.1049957
		Simple mode	58	-0.397747105	0.537176452	0.46207209							
		Weighted mode	58	-0.379410856	0.559684276	0.500576773							

Supplementary Table S2: List of Mendelian Randomization's result.

