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| **Table S1. Details of allergic rhinitis GWASs included in Mendelian randomization** | | | | |
| **Trait** | **No. of cases** | **No. of controls** | **Consortium** | **GWAS ID** |
| Allergic rhinitis | 26,107 | 436,826 | UKBB | ukb-b-16499 |
| Allergic rhinitis | 18,934 | 64,595 | UKBB | ukb-a-254 |
| Allergic rhinitis | 106,201 | 355,812 | UKBB | ukb-b-17241 |
| Allergic rhinitis | 12,212 | 13,274 | UKBB | ukb-b-12753 |
| Allergic rhinitis | 19,320 | 317,839 | UKBB | ukb-a-94 |
| Allergic rhinitis | 77,891 | 258,891 | UKBB | ukb-a-447 |
| Allergic rhinitis | 25,486 | 87,097 | UKBB | ukb-b-7178 |
| Allergic rhinitis | 2,105 | 94,078 | FinnGen | finn-a-ALLERG\_RHINITIS |
| Allergic rhinitis | 2,925 | 76,330 | FinnGen | finn-a-J10\_VASOALLERRHIN |
| Note: Abbreviations: UKBB: UK Biobank. | | | | |

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| **Table S2. Details of psychiatric disorders GWASs included in Mendelian randomization** | | | | |
| **Trait** | **No. of cases** | **No. of controls** | **Consortium** | **GWAS ID** |
| Anorexia nervosa | 2,907 | 14,860 | GCAN | ieu-a-45 |
| Anxiety disorders | 7,954 | 88,545 | FinnGen | finn-a-KRA\_PSY\_ANXIETY |
| ADHD | 20,183 | 35,191 | PGC | ieu-a-1183 |
| ASD | 18,382 | 27,969 | iPSYCH-PGC | ieu-a-1185 |
| Bipolar disorder | 20,352 | 31,358 | PGC | ieu-b-41 |
| Insomnia complaints | 12,863 | 40,776 | UKBB | ebi-a-GCST006488 |
| MDD | 9,487 | 39,677 | UKBB | ebi-a-GCST009981 |
| OCD | 26,888 | 7,037 | PGC | ieu-a-1189 |
| Panic disorder | 840 | 88,700 | FinnGen | finn-a-F5\_PANIC |
| PTSD | 358 | 88,700 | FinnGen | finn-a-F5\_PTSD |
| Schizophrenia | 33,640 | 43,456 | PGC | ieu-b-42 |
| Note: Abbreviations: ADHD: Attention deficit/hyperactivity disorder; ASD: Autism spectrum disorder; MDD: Major depressive disorder; OCD: Obsessive compulsive disorder; PTSD: Post-traumatic stress disorder; PGC: The Psychiatric Genomics Consortium; iPSYCH: The Lundbeck Foundation Initiative for Integrative Psychiatric Research. | | | | |

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| **Table S3. Mendelian randomization analyses showing the effect estimates of AR and psychiatric disoders. (Full results)** | | | | | | | | | |
| **Exposure (ID)** | **Outcome (ID)** | **nSNP** | **method** | **OR** | **Low 95%CI** | **Up 95%CI** | P value | **Heterogeneity P value** | **Intercept P value** |
| Allergic rhinitis (ukb-a-447) | Anorexia nervosa (ieu-a-45) | 63 | IVW | 1.049 | 0.355 | 3.094 | 0.932 | 0.006 | NA |
|  |  |  | Weighted median | 1.169 | 0.280 | 4.881 | 0.831 | NA | NA |
|  |  |  | MR Egger | 0.209 | 0.011 | 4.042 | 0.304 | 0.007 | 0.256 |
| Allergic rhinitis (ukb-a-447) | Anxiety disorder (finn-a-KRA\_PSY\_ANXIETY) | 74 | IVW | 1.213 | 0.731 | 2.012 | 0.454 | 0.323 | NA |
|  |  |  | Weighted median | 1.875 | 0.870 | 4.042 | 0.108 | NA | NA |
|  |  |  | MR Egger | 1.052 | 0.287 | 3.852 | 0.939 | 0.295 | 0.816 |
| Allergic rhinitis (ukb-a-447) | ADHD (ieu-a-1183) | 84 | IVW | 0.742 | 0.511 | 1.076 | 0.115 | 0.167 | NA |
|  |  |  | Weighted median | 0.803 | 0.458 | 1.408 | 0.444 | NA | NA |
|  |  |  | MR Egger | 1.157 | 0.448 | 2.991 | 0.764 | 0.169 | 0.321 |
| Allergic rhinitis (ukb-a-447) | ASD (ieu-a-1185) | 91 | IVW | 0.880 | 0.616 | 1.257 | 0.483 | 0.331 | NA |
|  |  |  | Weighted median | 0.938 | 0.564 | 1.562 | 0.806 | NA | NA |
|  |  |  | MR Egger | 1.141 | 0.458 | 2.843 | 0.778 | 0.314 | 0.547 |
| Allergic rhinitis (ukb-a-447) | Bipolar disorder (ieu-b-41) | 97 | IVW | 1.649 | 1.077 | 2.526 | 0.021 | 5.40E-05 | NA |
|  |  |  | Weighted median | 1.972 | 1.186 | 3.279 | 0.009 | NA | NA |
|  |  |  | MR Egger | 1.593 | 0.527 | 4.820 | 0.412 | 4.11E-05 | 0.947 |
| Allergic rhinitis (ukb-a-447) | Insomnia complaints (ebi-a-GCST006488) | 100 | IVW | 1.054 | 0.753 | 1.475 | 0.760 | 0.778 | NA |
|  |  |  | Weighted median | 0.964 | 0.590 | 1.576 | 0.884 | NA | NA |
|  |  |  | MR Egger | 1.073 | 0.461 | 2.499 | 0.870 | 0.755 | 0.963 |
| Allergic rhinitis (ukb-a-447) | MDD (ebi-a-GCST009981) | 101 | IVW | 1.296 | 0.828 | 2.028 | 0.256 | 0.966 | NA |
|  |  |  | Weighted median | 1.782 | 0.859 | 3.696 | 0.121 | NA | NA |
|  |  |  | MR Egger | 1.646 | 0.692 | 3.916 | 0.262 | 0.963 | 0.529 |
| Allergic rhinitis (ukb-a-447) | OCD (ieu-a-1189) | 90 | IVW | 0.637 | 0.272 | 1.488 | 0.297 | 0.659 | NA |
|  |  |  | Weighted median | 0.436 | 0.113 | 1.675 | 0.227 | NA | NA |
|  |  |  | MR Egger | 0.095 | 0.011 | 0.827 | 0.036 | 0.730 | 0.064 |
| Allergic rhinitis (ukb-a-447) | Panic disorder (finn-a-F5\_PANIC) | 74 | IVW | 1.371 | 0.325 | 5.793 | 0.668 | 0.280 | NA |
|  |  |  | Weighted median | 0.963 | 0.117 | 7.911 | 0.972 | NA | NA |
|  |  |  | MR Egger | 0.962 | 0.024 | 38.720 | 0.984 | 0.255 | 0.839 |
| Allergic rhinitis (ukb-a-447) | PTSD (finn-a-F5\_PTSD) | 74 | IVW | 1.081 | 0.133 | 8.810 | 0.942 | 0.498 | NA |
|  |  |  | Weighted median | 0.915 | 0.042 | 20.065 | 0.955 | NA | NA |
|  |  |  | MR Egger | 0.053 | 0.000 | 11.186 | 0.286 | 0.513 | 0.234 |
| Allergic rhinitis (ukb-a-447) | Schizophrenia (ieu-b-42) | 97 | IVW | 1.296 | 0.826 | 2.032 | 0.259 | 2.31E-18 | NA |
|  |  |  | Weighted median | 1.206 | 0.742 | 1.959 | 0.450 | NA | NA |
|  |  |  | MR Egger | 0.523 | 0.165 | 1.659 | 0.274 | 1.67E-17 | 0.098 |
| Allergic rhinitis(ukb-b-17241) | Anorexia nervosa (ieu-a-45) | 86 | IVW | 2.468 | 0.938 | 6.497 | 0.067 | 0.135 | NA |
|  |  |  | Weighted median | 2.797 | 0.646 | 12.115 | 0.169 | NA | NA |
|  |  |  | MR Egger | 0.291 | 0.018 | 4.610 | 0.384 | 0.166 | 0.110 |
| Allergic rhinitis (ukb-b-17241) | Anxiety disorder (finn-a-KRA\_PSY\_ANXIETY) | 108 | IVW | 1.433 | 0.854 | 2.405 | 0.173 | 0.045 | NA |
|  |  |  | Weighted median | 1.726 | 0.822 | 3.627 | 0.149 | NA | NA |
|  |  |  | MR Egger | 0.727 | 0.198 | 2.664 | 0.631 | 0.048 | 0.266 |
| Allergic rhinitis (ukb-b-17241) | ADHD (ieu-a-1183) | 111 | IVW | 0.890 | 0.616 | 1.284 | 0.533 | 0.215 | NA |
|  |  |  | Weighted median | 0.944 | 0.540 | 1.652 | 0.840 | NA | NA |
|  |  |  | MR Egger | 0.918 | 0.347 | 2.431 | 0.864 | 0.196 | 0.938 |
| Allergic rhinitis (ukb-b-17241) | ASD (ieu-a-1185) | 123 | IVW | 0.972 | 0.669 | 1.412 | 0.882 | 0.088 | NA |
|  |  |  | Weighted median | 0.816 | 0.473 | 1.410 | 0.467 | NA | NA |
|  |  |  | MR Egger | 0.690 | 0.259 | 1.839 | 0.460 | 0.084 | 0.460 |
| Allergic rhinitis (ukb-b-17241) | Bipolar disorder (ieu-b-41) | 140 | IVW | 1.599 | 1.058 | 2.417 | 0.026 | 1.22E-06 | NA |
|  |  |  | Weighted median | 1.668 | 0.993 | 2.803 | 0.053 | NA | NA |
|  |  |  | MR Egger | 1.768 | 0.607 | 5.155 | 0.298 | 9.44E-07 | 0.842 |
| Allergic rhinitis (ukb-b-17241) | Insomnia complaints (ebi-a-GCST006488) | 142 | IVW | 1.107 | 0.798 | 1.537 | 0.541 | 0.494 | NA |
|  |  |  | Weighted median | 1.172 | 0.708 | 1.942 | 0.537 | NA | NA |
|  |  |  | MR Egger | 1.221 | 0.536 | 2.783 | 0.635 | 0.471 | 0.800 |
| Allergic rhinitis (ukb-b-17241) | MDD (ebi-a-GCST009981) | 143 | IVW | 1.539 | 1.007 | 2.353 | 0.047 | 0.908 | NA |
|  |  |  | Weighted median | 1.996 | 1.030 | 3.868 | 0.041 | NA | NA |
|  |  |  | MR Egger | 1.362 | 0.611 | 3.040 | 0.451 | 0.899 | 0.726 |
| Allergic rhinitis (ukb-b-17241) | OCD (ieu-a-1189) | 118 | IVW | 0.795 | 0.333 | 1.898 | 0.606 | 0.476 | NA |
|  |  |  | Weighted median | 0.655 | 0.169 | 2.541 | 0.541 | NA | NA |
|  |  |  | MR Egger | 0.060 | 0.006 | 0.598 | 0.018 | 0.598 | 0.019 |
| Allergic rhinitis (ukb-b-17241) | Panic disorder (finn-a-F5\_PANIC) | 108 | IVW | 1.645 | 0.421 | 6.424 | 0.474 | 0.263 | NA |
|  |  |  | Weighted median | 1.092 | 0.144 | 8.293 | 0.932 | NA | NA |
|  |  |  | MR Egger | 0.665 | 0.021 | 20.624 | 0.816 | 0.249 | 0.574 |
| Allergic rhinitis (ukb-b-17241) | PTSD (finn-a-F5\_PTSD) | 108 | IVW | 2.776 | 0.369 | 20.886 | 0.321 | 0.396 | NA |
|  |  |  | Weighted median | 1.531 | 0.078 | 30.248 | 0.780 | NA | NA |
|  |  |  | MR Egger | 0.338 | 0.002 | 54.317 | 0.676 | 0.391 | 0.378 |
| Allergic rhinitis (ukb-b-17241) | Schizophrenia (ieu-b-42) | 139 | IVW | 1.240 | 0.807 | 1.906 | 0.327 | 6.57E-24 | NA |
|  |  |  | Weighted median | 1.154 | 0.725 | 1.838 | 0.547 | NA | NA |
|  |  |  | MR Egger | 0.771 | 0.254 | 2.341 | 0.647 | 8.13E-24 | 0.365 |
| ADHD (ieu-a-1183) | Allergic rhinitis (ukb-b-16499) | 9 | IVW | 1.000 | 0.996 | 1.004 | 0.943 | 0.632 | NA |
|  |  |  | Weighted median | 1.003 | 0.997 | 1.008 | 0.305 | NA | NA |
|  |  |  | MR-Egger | 1.013 | 0.996 | 1.031 | 0.176 | 0.804 | 0.170 |
| ADHD (ieu-a-1183) | Allergic rhinitis (ukb-a-254) | 9 | IVW | 0.982 | 0.954 | 1.010 | 0.205 | 0.007 | NA |
|  |  |  | Weighted median | 0.974 | 0.948 | 1.001 | 0.055 | NA | NA |
|  |  |  | MR-Egger | 1.063 | 0.950 | 1.190 | 0.320 | 0.022 | 0.196 |
| ADHD (ieu-a-1183) | Allergic rhinitis (ukb-b-17241) | 9 | IVW | 0.994 | 0.982 | 1.007 | 0.364 | 0.004 | NA |
|  |  |  | Weighted median | 0.988 | 0.977 | 0.999 | 0.031 | NA | NA |
|  |  |  | MR-Egger | 1.013 | 0.960 | 1.069 | 0.642 | 0.004 | 0.498 |
| ADHD (ieu-a-1183) | Allergic rhinitis (ukb-b-12753) | 9 | IVW | 0.977 | 0.937 | 1.019 | 0.281 | 0.270 | NA |
|  |  |  | Weighted median | 0.961 | 0.912 | 1.011 | 0.126 | NA | NA |
|  |  |  | MR-Egger | 0.941 | 0.779 | 1.136 | 0.546 | 0.206 | 0.697 |
| ADHD (ieu-a-1183) | Allergic rhinitis (ukb-a-94) | 9 | IVW | 0.999 | 0.993 | 1.004 | 0.591 | 0.321 | NA |
|  |  |  | Weighted median | 0.998 | 0.991 | 1.005 | 0.524 | NA | NA |
|  |  |  | MR-Egger | 1.012 | 0.991 | 1.033 | 0.306 | 0.377 | 0.243 |
| ADHD (ieu-a-1183) | Allergic rhinitis (ukb-a-447) | 9 | IVW | 0.991 | 0.977 | 1.005 | 0.207 | 0.006 | NA |
|  |  |  | Weighted median | 0.986 | 0.972 | 0.999 | 0.041 | NA | NA |
|  |  |  | MR-Egger | 0.994 | 0.932 | 1.060 | 0.861 | 0.003 | 0.922 |
| ADHD (ieu-a-1183) | Allergic rhinitis (ukb-b-7178) | 9 | IVW | 0.988 | 0.963 | 1.014 | 0.369 | 0.002 | NA |
|  |  |  | Weighted median | 0.977 | 0.955 | 0.999 | 0.045 | NA | NA |
|  |  |  | MR-Egger | 1.051 | 0.944 | 1.171 | 0.392 | 0.005 | 0.284 |
| ADHD (ieu-a-1183) | Allergic rhinitis (finn-a-ALLERG\_RHINITIS) | 7 | IVW | 1.250 | 0.919 | 1.699 | 0.155 | 0.947 | NA |
|  |  |  | Weighted median | 1.229 | 0.838 | 1.802 | 0.291 | NA | NA |
|  |  |  | MR-Egger | 0.796 | 0.256 | 2.477 | 0.709 | 0.961 | 0.455 |
| ADHD (ieu-a-1183) | Allergic rhinitis (finn-a-J10\_VASOALLERRHIN) | 7 | IVW | 1.199 | 0.922 | 1.560 | 0.176 | 0.616 | NA |
|  |  |  | Weighted median | 1.058 | 0.756 | 1.481 | 0.741 | NA | NA |
|  |  |  | MR-Egger | 0.804 | 0.303 | 2.135 | 0.680 | 0.585 | 0.443 |
| Bipolar disorder (ieu-b-41) | Allergic rhinitis (ukb-b-16499) | 14 | IVW | 1.000 | 0.997 | 1.004 | 0.826 | 0.126 | NA |
|  |  |  | Weighted median | 1.001 | 0.996 | 1.006 | 0.656 | NA | NA |
|  |  |  | MR-Egger | 1.020 | 0.998 | 1.043 | 0.097 | 0.244 | 0.100 |
| Bipolar disorder (ieu-b-41) | Allergic rhinitis (ukb-a-254) | 14 | IVW | 0.997 | 0.982 | 1.012 | 0.713 | 0.278 | NA |
|  |  |  | Weighted median | 0.996 | 0.977 | 1.016 | 0.718 | NA | NA |
|  |  |  | MR-Egger | 1.022 | 0.929 | 1.124 | 0.668 | 0.232 | 0.624 |
| Bipolar disorder (ieu-b-41) | Allergic rhinitis (ukb-b-17241) | 14 | IVW | 1.001 | 0.992 | 1.010 | 0.795 | 0.002 | NA |
|  |  |  | Weighted median | 1.006 | 0.997 | 1.016 | 0.204 | NA | NA |
|  |  |  | MR-Egger | 1.050 | 0.996 | 1.106 | 0.093 | 0.014 | 0.096 |
| Bipolar disorder (ieu-b-41) | Allergic rhinitis (ukb-b-12753) | 14 | IVW | 0.964 | 0.936 | 0.993 | 0.015 | 0.598 | NA |
|  |  |  | Weighted median | 0.957 | 0.919 | 0.996 | 0.030 | NA | NA |
|  |  |  | MR-Egger | 1.149 | 0.957 | 1.379 | 0.162 | 0.822 | 0.081 |
| Bipolar disorder (ieu-b-41) | Allergic rhinitis (ukb-a-94) | 14 | IVW | 1.001 | 0.996 | 1.005 | 0.778 | 0.091 | NA |
|  |  |  | Weighted median | 1.003 | 0.997 | 1.009 | 0.315 | NA | NA |
|  |  |  | MR-Egger | 1.012 | 0.983 | 1.043 | 0.441 | 0.083 | 0.461 |
| Bipolar disorder (ieu-b-41) | Allergic rhinitis (ukb-a-447) | 14 | IVW | 1.003 | 0.994 | 1.012 | 0.504 | 0.047 | NA |
|  |  |  | Weighted median | 1.008 | 0.998 | 1.018 | 0.126 | NA | NA |
|  |  |  | MR-Egger | 1.032 | 0.975 | 1.091 | 0.298 | 0.052 | 0.340 |
| Bipolar disorder (ieu-b-41) | Allergic rhinitis (ukb-b-7178) | 14 | IVW | 0.993 | 0.980 | 1.007 | 0.345 | 0.181 | NA |
|  |  |  | Weighted median | 0.995 | 0.979 | 1.011 | 0.525 | NA | NA |
|  |  |  | MR-Egger | 1.030 | 0.946 | 1.122 | 0.510 | 0.171 | 0.417 |
| Bipolar disorder (ieu-b-41) | Allergic rhinitis (finn-a-ALLERG\_RHINITIS) | 13 | IVW | 1.179 | 0.928 | 1.497 | 0.177 | 0.354 | NA |
|  |  |  | Weighted median | 1.242 | 0.924 | 1.668 | 0.151 | NA | NA |
|  |  |  | MR-Egger | 4.426 | 1.108 | 17.675 | 0.059 | 0.566 | 0.084 |
| Bipolar disorder (ieu-b-41) | Allergic rhinitis (finn-a-J10\_VASOALLERRHIN) | 13 | IVW | 1.133 | 0.933 | 1.377 | 0.208 | 0.571 | NA |
|  |  |  | Weighted median | 1.193 | 0.915 | 1.555 | 0.193 | NA | NA |
|  |  |  | MR-Egger | 2.539 | 0.777 | 8.296 | 0.151 | 0.652 | 0.203 |
| Schizophrenia (ieu-b-42) | Allergic rhinitis (ukb-b-16499) | 77 | IVW | 1.002 | 1.000 | 1.004 | 0.124 | 1.61E-05 | NA |
|  |  |  | Weighted median | 1.000 | 0.998 | 1.003 | 0.778 | NA | NA |
|  |  |  | MR-Egger | 1.002 | 0.995 | 1.010 | 0.526 | 1.19E-05 | 0.809 |
| Schizophrenia (ieu-b-42) | Allergic rhinitis (ukb-a-254) | 77 | IVW | 1.002 | 0.995 | 1.009 | 0.592 | 0.068 | NA |
|  |  |  | Weighted median | 1.008 | 0.998 | 1.018 | 0.122 | NA | NA |
|  |  |  | MR-Egger | 0.990 | 0.963 | 1.017 | 0.458 | 0.068 | 0.361 |
| Schizophrenia (ieu-b-42) | Allergic rhinitis (ukb-b-17241) | 77 | IVW | 1.000 | 0.994 | 1.006 | 0.874 | 3.36E-41 | NA |
|  |  |  | Weighted median | 0.996 | 0.992 | 1.001 | 0.127 | NA | NA |
|  |  |  | MR-Egger | 0.979 | 0.957 | 1.001 | 0.066 | 1.38E-38 | 0.063 |
| Schizophrenia (ieu-b-42) | Allergic rhinitis (ukb-b-12753) | 76 | IVW | 0.993 | 0.980 | 1.007 | 0.347 | 0.925 | NA |
|  |  |  | Weighted median | 0.991 | 0.971 | 1.011 | 0.390 | NA | NA |
|  |  |  | MR-Egger | 1.054 | 0.996 | 1.114 | 0.073 | 0.964 | 0.038 |
| Schizophrenia (ieu-b-42) | Allergic rhinitis (ukb-a-94) | 77 | IVW | 1.002 | 1.000 | 1.004 | 0.052 | 0.001 | NA |
|  |  |  | Weighted median | 1.001 | 0.999 | 1.004 | 0.317 | NA | NA |
|  |  |  | MR-Egger | 1.004 | 0.995 | 1.012 | 0.393 | 0.001 | 0.718 |
| Schizophrenia (ieu-b-42) | Allergic rhinitis (ukb-a-447) | 77 | IVW | 1.000 | 0.993 | 1.006 | 0.906 | 1.99E-26 | NA |
|  |  |  | Weighted median | 0.997 | 0.991 | 1.002 | 0.212 | NA | NA |
|  |  |  | MR-Egger | 0.978 | 0.956 | 1.001 | 0.065 | 1.44E-24 | 0.060 |
| Schizophrenia (ieu-b-42) | Allergic rhinitis (ukb-b-7178) | 77 | IVW | 1.001 | 0.995 | 1.008 | 0.736 | 0.005 | NA |
|  |  |  | Weighted median | 1.002 | 0.993 | 1.011 | 0.696 | NA | NA |
|  |  |  | MR-Egger | 0.990 | 0.965 | 1.015 | 0.435 | 0.005 | 0.368 |
| Schizophrenia (ieu-b-42) | Allergic rhinitis (finn-a-ALLERG\_RHINITIS) | 58 | IVW | 1.061 | 0.921 | 1.222 | 0.410 | 0.018 | NA |
|  |  |  | Weighted median | 1.084 | 0.903 | 1.301 | 0.390 | NA | NA |
|  |  |  | MR-Egger | 1.267 | 0.602 | 2.663 | 0.536 | 0.015 | 0.636 |
| Schizophrenia (ieu-b-42) | Allergic rhinitis (finn-a-J10\_VASOALLERRHIN) | 58 | IVW | 1.046 | 0.930 | 1.176 | 0.452 | 0.043 | NA |
|  |  |  | Weighted median | 1.044 | 0.900 | 1.211 | 0.568 | NA | NA |
|  |  |  | MR-Egger | 1.307 | 0.707 | 2.418 | 0.397 | 0.040 | 0.472 |
| Note: Abbreviations: ADHD: Attention deficit/hyperactivity disorder; ASD: Autism spectrum disorder; MDD: Major depressive disorder; OCD: Obsessive compulsive disorder; PTSD: Post-traumatic stress disorder; nSNP: Number of SNPs used to conduct MR analysis; OR: Odds ratios; CI: Confidence interval. | | | | | | | | | |

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| **Table S4**. Results of MR-PRESSO analysis for associations between allergic rhinitis and psychiatric disoders. | | | | | | | | | |
|  |  | |  |  | **Outlier-Corrected IVW method** | | | | |
| **Exposure (ID)** | **Outcome (ID)** | **Global test P value** | | **Outlier indices** | **nSNPs** | **OR** | **Low 95%CI** | **Up 95%CI** | **P** |
| Allergic rhinitis (ukb-a-447) | Anorexia nervosa (ieu-a-45) | | 0.0025 | No significant outliers |  |  |  |  |  |
| Allergic rhinitis (ukb-a-447) | Anxiety disorder (finn-a-KRA\_PSY\_ANXIETY) | | 0.336 |  |  |  |  |  |  |
| Allergic rhinitis (ukb-a-447) | ADHD (ieu-a-1183) | | 0.1685 |  |  |  |  |  |  |
| Allergic rhinitis (ukb-a-447) | ASD (ieu-a-1185) | | 0.349 |  |  |  |  |  |  |
| Allergic rhinitis (ukb-a-447) | Bipolar disorder (ieu-b-41) | | <5e-04 | rs118013485, rs1904522, rs4580194. | 94 | 1.510 | 1.017 | 2.243 | 0.041 |
| Allergic rhinitis (ukb-a-447) | Insomnia complaints (ebi-a-GCST006488) | | 0.765 |  |  |  |  |  |  |
| Allergic rhinitis (ukb-a-447) | MDD (ebi-a-GCST009981) | | 0.9595 |  |  |  |  |  |  |
| Allergic rhinitis (ukb-a-447) | OCD (ieu-a-1189) | | 0.6615 |  |  |  |  |  |  |
| Allergic rhinitis (ukb-a-447) | Panic disorder (finn-a-F5\_PANIC) | | 0.267 |  |  |  |  |  |  |
| Allergic rhinitis (ukb-a-447) | PTSD (finn-a-F5\_PTSD) | | 0.521 |  |  |  |  |  |  |
| Allergic rhinitis (ukb-a-447) | Schizophrenia (ieu-b-42) | | 0.2195 |  |  |  |  |  |  |
| Allergic rhinitis (ukb-b-17241) | Anorexia nervosa (ieu-a-45) | | 0.119 |  |  |  |  |  |  |
| Allergic rhinitis (ukb-b-17241) | Anxiety disorder (finn-a-KRA\_PSY\_ANXIETY) | | 0.048 | No significant outliers |  |  |  |  |  |
| Allergic rhinitis (ukb-b-17241) | ADHD (ieu-a-1183) | | 0.2195 |  |  |  |  |  |  |
| Allergic rhinitis (ukb-b-17241) | ASD (ieu-a-1185) | | 0.09 |  |  |  |  |  |  |
| Allergic rhinitis (ukb-b-17241) | Bipolar disorder (ieu-b-41) | | 0.0005 | rs1904522, rs62385260 | 138 | 1.461 | 0.971 | 2.199 | 0.069 |
| Allergic rhinitis (ukb-b-17241) | Insomnia complaints (ebi-a-GCST006488) | | 0.508 |  |  |  |  |  |  |
| Allergic rhinitis (ukb-b-17241) | MDD (ebi-a-GCST009981) | | 0.9135 |  |  |  |  |  |  |
| Allergic rhinitis (ukb-b-17241) | OCD (ieu-a-1189) | | 0.4695 |  |  |  |  |  |  |
| Allergic rhinitis (ukb-b-17241) | Panic disorder (finn-a-F5\_PANIC) | | 0.2585 |  |  |  |  |  |  |
| Allergic rhinitis (ukb-b-17241) | PTSD (finn-a-F5\_PTSD) | | 0.3885 |  |  |  |  |  |  |
| Allergic rhinitis (ukb-b-17241) | Schizophrenia (ieu-b-42) | | <5e-04 | rs6594499, rs11242709, rs2523562, rs6901855, rs3024971, rs41190 | 133 | 1.208 | 0.798 | 1.827 | 0.371 |
| ADHD (ieu-a-1183) | Allergic rhinitis (ukb-b-16499) | | 0.6005 |  |  |  |  |  |  |
| ADHD (ieu-a-1183) | Allergic rhinitis (ukb-a-254) | | 0.009 | rs112984125 | 8 | 0.972 | 0.945 | 0.999 | 0.041 |
| ADHD (ieu-a-1183) | Allergic rhinitis (ukb-b-17241) | | 0.007 | rs112984125 | 8 | 0.989 | 0.978 | 1.001 | 0.075 |
| ADHD (ieu-a-1183) | Allergic rhinitis (ukb-b-12753) | | 0.296 |  |  |  |  |  |  |
| ADHD (ieu-a-1183) | Allergic rhinitis (ukb-a-94) | | 0.2955 |  |  |  |  |  |  |
| ADHD (ieu-a-1183) | Allergic rhinitis (ukb-a-447) | | 0.008 | rs112984125 | 8 | 0.984 | 0.973 | 0.995 | 0.006 |
| ADHD (ieu-a-1183) | Allergic rhinitis (ukb-b-7178) | | 0.0035 | rs112984125, rs4916723, rs9677504 | 6 | 0.976 | 0.958 | 0.995 | 0.012 |
| ADHD (ieu-a-1183) | Allergic rhinitis (finn-a-ALLERG\_RHINITIS) | | 0.955 |  |  |  |  |  |  |
| ADHD (ieu-a-1183) | Allergic rhinitis (finn-a-J10\_VASOALLERRHIN) | | 0.6615 |  |  |  |  |  |  |
| Bipolar disorder (ieu-b-41) | Allergic rhinitis (ukb-b-16499) | | 0.12 |  |  |  |  |  |  |
| Bipolar disorder (ieu-b-41) | Allergic rhinitis (ukb-a-254) | | 0.2815 |  |  |  |  |  |  |
| Bipolar disorder (ieu-b-41) | Allergic rhinitis (ukb-b-17241) | | 0.0025 | rs174592 | 13 | 1.003 | 0.995 | 1.012 | 0.444 |
| Bipolar disorder (ieu-b-41) | Allergic rhinitis (ukb-b-12753) | | 0.6185 |  |  |  |  |  |  |
| Bipolar disorder (ieu-b-41) | Allergic rhinitis (ukb-a-94) | | 0.1025 |  |  |  |  |  |  |
| Bipolar disorder (ieu-b-41) | Allergic rhinitis (ukb-a-447) | | 0.0565 |  |  |  |  |  |  |
| Bipolar disorder (ieu-b-41) | Allergic rhinitis (ukb-b-7178) | | 0.191 |  |  |  |  |  |  |
| Bipolar disorder (ieu-b-41) | Allergic rhinitis (finn-a-ALLERG\_RHINITIS) | | 0.3755 |  |  |  |  |  |  |
| Bipolar disorder (ieu-b-41) | Allergic rhinitis (finn-a-J10\_VASOALLERRHIN) | | 0.577 |  |  |  |  |  |  |
| Schizophrenia (ieu-b-42) | Allergic rhinitis (ukb-b-16499) | | <5e-04 |  |  |  |  |  |  |
| Schizophrenia (ieu-b-42) | Allergic rhinitis (ukb-a-254) | | 0.0685 |  |  |  |  |  |  |
| Schizophrenia (ieu-b-42) | Allergic rhinitis (ukb-b-17241) | | <5e-04 |  |  |  |  |  |  |
| Schizophrenia (ieu-b-42) | Allergic rhinitis (ukb-b-12753) | | 0.9355 |  |  |  |  |  |  |
| Schizophrenia (ieu-b-42) | Allergic rhinitis (ukb-a-94) | | 0.001 | rs35225200 | 76 | 1.002 | 1.000 | 1.004 | 0.097 |
| Schizophrenia (ieu-b-42) | Allergic rhinitis (ukb-a-447) | | <5e-04 |  |  |  |  |  |  |
| Schizophrenia (ieu-b-42) | Allergic rhinitis (ukb-b-7178) | | 0.0035 | No significant outliers |  |  |  |  |  |
| Schizophrenia (ieu-b-42) | Allergic rhinitis (finn-a-ALLERG\_RHINITIS) | | 0.021 | No significant outliers |  |  |  |  |  |
| Schizophrenia (ieu-b-42) | Allergic rhinitis (finn-a-J10\_VASOALLERRHIN) | | 0.045 | No significant outliers |  |  |  |  |  |
| Note: Abbreviations: ADHD: Attention deficit/hyperactivity disorder; ASD: Autism spectrum disorder; MDD: Major depressive disorder; OCD: Obsessive compulsive disorder; PTSD: Post-traumatic stress disorder; nSNP: Number of SNPs used to conduct MR analysis; OR: Odds ratios; CI: Confidence interval. | | | | | | | | | |