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# Polygenic Index Inventories Documentation



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This guide documents the key information regarding the construction and use of polygenic indexes (PGIs) for the National Longitudinal Study of Adolescent to Adult Health (Add Health) as part of the Resource Profile and User Guide of the Polygenic Index Repository.

## Summary Information About PGIs

Polygenic indexes (PGIs) are constructed using the same general approach (described below) and have the same substantive meaning as polygenic scores (PGSs, used more prominently in social science genomics contexts) and genetic risk scores (GRSs, used more prominently in the medical contexts). Here, we provide a brief summary of how the PGIs were constructed (please see the Methods section of Becker et al. for a more detailed description). We refer the reader to the relevant tables of Becker et al. where more information can be found.

## Introduction of Polygenic Indexes

The PGIs were constructed by the Social Science Genetic Association Consortium (SSGAC) as part of the Resource Profile and User Guide of the Polygenic Index Repository (Becker et al. 2021). Research has shown that many outcomes of interest in the health, behavioral, and social sciences are influenced by genes (Domingue et al. 2016 ; Plomin et al. 2016; Turkheimer 2000). For most human traits/behaviors, commonly referred to as phenotypes, it appears that the genetic influence on the phenotype is highly polygenic; i.e., there is no single gene that can account for the association between genetic variance and variance in the outcome. Instead, the influence of genetics on most phenotypes appears to be due to many small associations across thousands, and possibly millions, of individual single-nucleotide polymorphisms (SNPs) (Chabris et al. 2015). Polygenic indexes allow researchers to avoid the methodological complexities of including thousands, or millions, of covariates in their analyses by condensing, into a single measure, the associations between individual SNPs and the phenotype of interest (Plomin, Haworth, and Davis 2009).

PGIs represent a general measure of the influence of additive genetics on a specific phenotype. They are a weighted sum of allele counts from SNPs throughout the genome. The weights used in the PGIs are based on summary statistics from genome-wide association studies (GWASs), conducted in large independent samples. Because PGIs represent the associations between SNPs across the entire genome and a phenotype in a single measure, they can easily be incorporated into many of the quantitative analyses common in economics (Benjamin et al. 2012), sociology (Conley 2016), social stratification (Braudt ), as well as other social, behavioral, and health sciences (Belsky and Israel 2014).

## Add Health Study

Add Health is an ongoing nationally representative longitudinal study of adolescents in the U.S. who were in grades 7-12 in 1994-5. Wave I (1994-5, 79% response rate) included a sample of 80 high schools and 52 middle schools chosen from a stratified sample according to region, urbanicity, school size, school type, and racial and ethnic composition. From school rosters, an adolescent and a parent was selected for an extensive in-home interview at Wave I. This adolescent cohort has been follow up with four subsequent interviews into adulthood. With five waves of data—Wave II (1996, 89% response rate), Wave III (2001-2, 77% response rate), Wave IV (2008, 80% response rate), and Wave V (2016-18, 72% response rate) — and information on adolescents' fellow students, school administrators, parents, siblings, friends, and

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romantic pairs, as well as extensive longitudinal geospatial data on neighborhood measures such as income, poverty, unemployment, the availability and use of health services, crime, religious membership, and social programs, Add Health represents one of the richest longitudinal studies of health and behavior in the U.S. available today. For more information on the Add Health study design see Harris et al. (2019).

## Add Health Genetic Data and Genotyping

As part of the Wave IV data collection, saliva samples were obtained from consenting participants (96% of Wave IV respondents). Approximately 12,200, or 80% of those participants, consented to long-term archiving and were consequently eligible for genome-wide genotyping. Genotyping was done on two Illumina platforms, with approximately 80% of the sample genotyping performed with the Illumina Omni1-Quad BeadChip and 20% genotyped with the Illumina Omni2.5-Quad BeadChip. After quality control procedures, genotyped data are available for 9,974 individuals (7,917 from the Omni1 chip and 2,057 from the Omni2 chip) on 609,130 SNPs common across both genotyping platforms (Avery, Christy L.; Duan, Qing; Li, Yun; Mullan Harris, Kathleen 2018). For more information on the genotyping and quality control procedures see the Add Health GWAS QC report online at: [http://www.cpc.unc.edu/projects/addhealth/documentation/guides/copy\\_of\\_AH\\_GWAS\\_QC.pdf](http://www.cpc.unc.edu/projects/addhealth/documentation/guides/copy_of_AH_GWAS_QC.pdf). Using the genotype data for the 9,974 Add Health participants and 609,130 variants, the SSGAC imputed genotypes against the Haplotype Reference Consortium (HRC) v1.1 European reference panel using the Michigan Imputation Server. Prior to imputation, SSGAC identified the non-European individuals by plotting the principal components (PCs) of the covariance matrix of the individuals' genotype data together with the PCs of 1000 Genomes populations and visually inspecting the plots.

## Participant Inclusion Criteria

The SSGAC dropped the identified 4,187 non-European individuals from the sample. Additionally, individuals who did not satisfy the following criteria were also excluded:

- (i) genotype missingness rate is less than 0.05 in all chromosomes,
- (ii) there is no mismatch between surveyed sex and genetic sex,
- (iii) the individual is not an outlier in terms of heterozygosity/homozygosity, and
- (iv) the individual is not an ancestral outlier.

## SNP Inclusion Criteria

SNPs were also dropped with a call rate less than 0.98, Hardy-Weinberg exact test Pvalue less than  $10^{-4}$ , or minor allele frequency  $> 0.01$ . Next, the SSGAC checked the data against the HRC reference panel for consistency of strand, ID names, positions, alleles, reference/alternative allele assignment, and allele frequency differences using version 4.2.5 of the HRC-1000G-check-bim.pl program. The program updates strand, position and reference/alternative allele assignment when possible. It removes a SNP if it has any of the following properties:

- (i) A/T or G/C alleles and a minor allele frequency greater than 0.4,
- (ii) alleles that do not match the HRC data,

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- (iii) minor allele frequency discrepancy with the HRC data greater than 0.2,
- (iv) not available in the HRC data.

## Imputation and Linkage Disequilibrium

After all these checks, 346,754 SNPs remained which were used for imputation. Genotype probabilities were imputed for 39,117,084 variants and 5,690 individuals. SSGAC estimated linkage disequilibrium (LD) patterns using the imputed Add Health genotype data for individuals of European ancestry. To obtain the LD reference data, the genotype probabilities were converted for 38,898,725 biallelic SNPs to hard calls using Plink v1.91. The set of genetic variants were restricted to a well-imputed and high coverage site list was downloaded from <http://www.haplotype-reference-consortium.org/site> (Script available at <http://www.well.ox.ac.uk/~wrayner/tools/HRC-1000G-check-bim.v4.2.5.zi>)

## Genetic Relatedness of Participants

SSGAC estimated a genetic relatedness matrix, restricting further to SNPs with minor allele frequency greater than 0.01. The SSGAC randomly dropped one individual from each of the 874 pairs of individuals with a genetic relatedness exceeding 0.025. In order to make sure that there are no genetic outliers in the sample that can bias the LD estimates, the SSGAC clustered the remaining 4,816 individuals based on identity-by-state distances in Plink v1.91, again restricting to SNPs with minor allele frequency greater than 0.01. Plink reports a Z-score for each individual's identity-by-state distance to his/her closest neighbor. SSGAC examined these Z-scores and marked an individual as genetic outlier if his/her Z-score was smaller than -5. One such individual was identified who was then dropped from the sample. The process was repeated, confirming that no individual with a Z-score less than -5 remained in the sample. In the final data set, there were 4,815 individuals of European ancestry and 1,211,662 SNPs.

## Polygenic Index Construction

A polygenic index for an individual is defined as a weighted sum of a person's genotypes at K SNPs,

$$pgi = \sum_{j=1}^K x_{ij} w_j \quad (10)$$

## LDpred

The PGIs were constructed using LDpred3, a Bayesian method that includes all measured SNPs and weights for each SNP by (an approximation) to its conditional effect, given other SNPs. The theory underlying LDpred is derived assuming the variance-covariance matrix of the genotype data in the training sample is known and assuming some prior effect-size distribution. In practice, the matrix is not known but must be approximated using LD patterns from a reference sample. LDpred calculates posterior effect-size distributions for the true effect sizes  $\beta$  (i.e., that are conditional on all other SNPs, unlike the GWAS estimates), and each SNP's weight is set equal to the mean of its (conditional) posterior effect-size distribution.

## Single-trait PGIs

The single-trait PGIs are based on meta-analyses of summary statistics from three sources: GWAS conducted in 23andMe, UKB, and other published GWAS. Several supplementary tables describe the GWAS studies used to generate these polygenic indices:

- Supplementary Table 5 lists the phenotype measures used in the UKB GWAS that SSGAC conducted, including information on how repeated measures were handled and the sample size in each of the three UKB partitions.
- Supplementary Table 6 lists the phenotype definitions and describes the association models for all novel or published 23andMe and for other published GWAS. It cites the relevant publications. To avoid sample overlap between the GWAS and repository datasets, SSGAC conducted multiple versions of the GWAS meta-analysis for each phenotype (so as to have, for each dataset, a version of the meta-analysis that excludes that dataset).
- Supplementary Table 8 lists all GWAS meta-analyses used as inputs for the single-trait PGIs.

## Multi-trait PGIs

Multi-trait polygenic indexes are generated for traits that show correlation based upon an MTAG analysis (pairwise  $r_g > 0.6$ ). Supplementary tables detail these correlations:

- Supplementary Table 9 lists genetic correlations between all pairs of phenotypes.
- Supplementary Table 10 lists MTAG groups based on these correlations. The 'Input Files' column lists, for each group, the codes for the single-trait GWAS (see Supplementary Table 8 for the GWAS that the codes refer to) that were included in the multi-trait MTAG analysis. Like the single-trait PGIs, there are multiple versions for each phenotype to avoid sample overlap between the discovery and validation populations.

## Principal Components

SSGAC released 20 principal components (PCs) based on the genome-wide data in Add Health. The primary purpose of this release is to make them available for users who wish to use them as controls for population stratification. In order to make the PCs, SSGAC restricted the samples to European-ancestry individuals and removed markers with imputation accuracy less than 70% or minor allele frequency less than 1%, as well as markers in long-range LD blocks (chr5:44mb-51.5mb, chr6:25mb-33.5mb, chr8:8mb-12mb, chr11:45mb-57mb). SSGAC then pruned all SNPs that survived these filters using a 1Mb rolling window (incremented in steps of 5 variants) and an  $r^2$  threshold of 0.1. Next, SSGAC calculated the pairwise relatedness between all individuals in our full sample and generated a sample of conventionally unrelated individuals by dropping one individual from each pair of individuals with an estimated relatedness greater than 0.05. SSGAC then estimated SNP loadings for the top 20 PCs in this sample of approximately unrelated individuals. Finally, SSGAC used the estimated SNP loadings to compute 20 PCs for all individuals in the full Add Health sample (including both members from all pairs whose estimated relatedness exceeded our 0.05 threshold).

## Phenotypes

The phenotypes for which Add Health PGIs are available are based on GWASs using UKB, 23andMe and other published studies. The phenotypes are abbreviated as follows:

Variable Names:

PGI01	PGI_ACTIVITY-single	Physical activity
PGI02	PGI_ADHD-single	Attention Deficit Hyperactivity Disorder
PGI03	PGI_ADVENTURE-single	Adventurousness
PGI04	PGI_AFB-single	Age First Birth
PGI05	PGI_ASTECZRHI-single	Asthma/Eczema/Rhinitis
PGI06	PGI_ASTHMA-single	Asthma
PGI07	PGI_AUDIT-single	Alcohol Misuse
PGI08	PGI_BMI-single	Body Mass Index
PGI09	PGI_CANNABIS-single	Cannabis Use
PGI10	PGI_CPD-single	Cigarettes Per Day
PGI11	PGI_CP-single	Cognitive Performance
PGI12	PGI_DEP-single	Depressive Symptoms
PGI13	PGI_DPW-single	Drinks Per Week
PGI14	PGI_EA-single	Educational Attainment
PGI15	PGI_EVERSMOKE-single	Ever Smoker
PGI16	PGI_EXTRA-single	Extraversion
PGI17	PGI_FAMSAT-single	Life Satisfaction - Family
PGI18	PGI_FRIENDSAT-single	Life Satisfaction - Friend
PGI19	PGI_HAYFEVER-single	Hayfever (Allergic Rhinitis)
PGI20	PGI_HEIGHT-single	Height
PGI21	PGI_HIGHMATH-single	Highest Math
PGI22	PGI_LEFTOUT-single	Left Out of Social Activity
PGI23	PGI_MENARCHE-single	Age First Menses
PGI24	PGI_MIGRAINE-single	Migraine
PGI25	PGI_MORNING-single	Morning Person
PGI26	PGI_NARCIS-single	Narcissism
PGI27	PGI_NEARSIGHTED-single	Nearsightedness
PGI28	PGI_NEBwomen-single	Number Ever Born (women)
PGI29	PGI_NEURO-single	Neuroticism
PGI30	PGI_OPEN-single	Openness
PGI31	PGI_READING-single	Childhood Reading
PGI32	PGI_RELIGATT-single	Religious Attendance
PGI33	PGI_RISK-single	Risk Tolerance
PGI34	PGI_SELFHEALTH-single	Self-Rated Health
PGI35	PGI_SELFMATH-single	Self-Rated Math Ability
PGI36	PGI_SWB-single	Subjective Well-Being
PGI37	PGI_ADHD-multi	Attention Deficit Hyperactivity Disorder
PGI38	PGI_ADVENTURE-multi	Adventurousness
PGI39	PGI_AFB-multi	Age First Birth

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PGI40	PGI_ALLERGYCAT-multi	Allergy - Cat
PGI41	PGI_ALLERGYDUST-multi	Allergy - Dust
PGI42	PGI_ALLERGYPOLLEN-multi	Allergy - Pollen
PGI43	PGI_ASTECZRHI-multi	Asthma/Eczema/Rhinitis
PGI44	PGI_ASTHMA-multi	Asthma
PGI45	PGI_AUDIT-multi	Alcohol Misuse
PGI46	PGI_COGEMP-multi	Cognitive Empathy
PGI47	PGI_COPD-multi	Chronic Obstructive Pulmonary Disease
PGI48	PGI_CP-multi	Cognitive Performance
PGI49	PGI_DELAYDISC-multi	Delay Discounting
PGI50	PGI_DEP-multi	Depressive Symptoms
PGI51	PGI_DPW-multi	Drinks per Week
PGI52	PGI_EA-multi	Educational Attainment
PGI53	PGI_EXTRA-multi	Extraversion
PGI54	PGI_FAMSAT-multi	Life Satisfaction - Family
PGI55	PGI_FINSAT-multi	Life Satisfaction - Finance
PGI56	PGI_FRIENDSAT-multi	Life Satisfaction - Friend
PGI57	PGI_HAYFEVER-multi	Hayfever (Allergic Rhinitis)
PGI58	PGI_HIGHMATH-multi	Highest Math
PGI59	PGI_LEFTOUT-multi	Left Out of Social Activity
PGI60	PGI_LONELY-multi	Loneliness
PGI61	PGI_MENARCHE-multi	Age First Menses
PGI62	PGI_NEBmen-multi	Number Ever Born (men)
PGI63	PGI_NEBwomen-multi	Number Ever Born (women)
PGI64	PGI_NEURO-multi	Neuroticism
PGI65	PGI_RELIGATT-multi	Religious Attendance
PGI66	PGI_RISK-multi	Risk Tolerance
PGI67	PGI_SELFHEALTH-multi	Self-Rated Health
PGI68	PGI_SELFMATH-multi	Self-Rated Math Ability
PGI69	PGI_SWB-multi	Subjective Well-Being
PGI70	PGI_VOICEDEEP-multi	Age Voice Deepened
PGI71	PGI_WORKSAT-multi	Life Satisfaction – Work

## Considerations for Interpretation of PGIs

SSGAC has provided the following executive summary of issues that are likely to arise as researchers begin to use these Add Health PGIs from the SSGAC repository.

1. The methodologies used to conduct the GWAS and construct PGI weights jointly determine the PGI outcome for each phenotype.
2. These methodologies, together with the PGI phenotype, determine the relative importance of various potential confounds to a causal interpretation of PGI associations. In most applications, researchers should control for PCs.



3. Whether and which confounds should be highlighted (or can be safely ignored) depends upon the application.
4. While a multi-trait PGI generally has higher predictive power than its corresponding single-trait PGI, it is subject to additional potential confounds. This tradeoff should be evaluated when deciding whether to use a single-trait or multi-trait PGI.
5. Currently, the most feasible way to cleanly identify causal effects of a PGI is to conduct a within-family analysis (where the PGI is analyzed in a sibling sample, with sibling fixed effects). In the absence of clean identification of a causal effect, researchers should highlight the potential confounds to a causal interpretation.
6. In interpreting PGI associations (whether causal or not), it is important to keep in mind that genetic effects can operate through environmental mechanisms, and these mechanisms may be modifiable. For this reason, terminology such as genetic endowment should be avoided. Researchers should remind readers of the potential role of environmental mechanisms in explaining PGI associations.

The following subsections provide more detail on these points. SSGAC recommends users of these data conduct power calculations prior to undertaking analyses; to pursue analyses only if they are adequately powered; and, when feasible, to preregister planned analyses (along with the power calculations).

### Limitation to European Ancestry

We note that the GWAS from which the PGIs are constructed were conducted in European ancestry samples. Due to the limited portability of such GWAS results to other ancestries, the current scores are restricted to individuals of European ancestries in the Add Health GWAS data.

### Confounding due to GWAS and Weights

In the Supplementary Methods section 6 of Becker et al., SSGAC showed that the control variables used in a GWAS affects PGI utility. The choice of controls, however, is just one of many dimensions of GWAS methodology. A change to any of these dimensions is likely to result in a different score. For example, it is increasingly common for researchers to conduct association analyses using mixed-linear models rather than an ordinal linear model. Since mixed linear models often produce estimates that are more robust to stratification, the polygenic index will be akin to that generated by an OLS-based GWAS with some additional controls for stratification. Knowledge of the methodology of the GWAS underlying a particular PGI is therefore often a necessary first step for understanding the meaning of a PGI. For example, the methodologies underlying the GWASs SSGAC conducted in UKB for the PGIs in the Repository are described in the UKB GWAS subsection of Section I in Methods of Becker et al.. Information about the association models in the 23andMe GWASs can be found in Supplementary Table 6 of Becker et al..

The PGI-weight methodology can matter, as well. For example, SSGAC PGI weights are calculated from the GWAS results using the HapMap3 set of SNPs, which primarily captures common genetic variation. If PGI weights were instead calculated based on results from SNPs that capture a different mix of common and rare genetic variation, then the PGI would have a different interpretation: it would be the best linear predictor based on that set of SNPs.

## Potential Confounds to a Causation

It is increasingly understood that standard GWAS approaches with a limited set of controls (sex, age, 10 PCs) can generate PGIs that are subject to a number of confounds to a causal interpretation. For example, PGIs for educational attainment derive a substantial share of their overall predictive power from their positive association with rearing environment. In behavior-genetic parlance, this positive correlation arises due to the vertical transmission of the parental phenotypes (parents' phenotypes impact their children's phenotypes). In recent molecular-genetic research, this source of positive gene-environment correlation has been labeled genetic nurture. This effect can be further exacerbated by assortative mating at the genetic level.

When the PCs are estimated in a small sample, they are often not very accurate proxies for ancestry. Failure to adequately control for genetic ancestry gives rise to population stratification 11: because the PGI is correlated with ancestry, which in turn is correlated with ethnicity and regional background, it picks up cultural or environmental factors that are correlated with these factors. In many empirical applications, the goal is to estimate an association that is net of any such cultural and environmental confounds. In such cases, it may be possible to mitigate concerns that the underlying GWAS may have relied on inaccurate ancestry controls by including a richer-than-usual set of environmental controls in the analysis of the PGI.

Indeed, in most applications, researchers should include PCs in the set of environmental controls. When estimating PGI-by-environment interactions, researchers should additionally control for interactions between PCs and the environment variable. However, it is important to recognize and acknowledge that the PCs are not fully accurate measures of ancestry, so even after controlling for PCs, residual confounding almost surely remains.

The relevance of potential confounds could vary across phenotypes. For example, genetic nurture effects are much smaller for height than educational attainment. Although the noisiness of PCs as measures of ancestry in a given sample is the same across phenotypes, the noisiness is likely to be substantially more problematic for educational attainment than for height because finer ancestral distinctions (which require more PCs to capture) probably matter for the social and environmental factors that influence educational attainment. More generally, it seems likely that potential confounds to a causal interpretation matter more for PGIs for social and behavioral phenotypes than for PGIs for more biologically proximal phenotypes.

## Relevance of Confounds Depends Upon Application

The degree to which potential confounds to a causal interpretation matter depends on how the PGI is used. For example, if a PGI is used as a control variable to increase precision for a randomized treatment 5 evaluation, then the goal is simply to use controls that absorb as much residual variance as possible (and avoid controlling for any variables realized after the randomized intervention). Since the PGI is simply being used as a predictive variable, its interpretation is irrelevant in that case. As a contrasting example, consider the illustrative application in the main text of Becker et al. that tests how much parental education mediates the predictive power of the PGI for educational attainment. There, the PGI should be understood as capturing some of the genetic nurture effects and ancestry associations with education. In most applications, the potential confounds do matter and should be highlighted.

## Single- Versus Multi-trait PGIs

MTAG coefficient estimates are a weighted sum of GWAS coefficient estimates. Relative to GWAS estimates, MTAG coefficients have a lower expected mean-squared error, which means that multi-trait PGIs will in general have greater predictive power.

Multi-trait PGIs, however, do not necessarily have the same interpretation as single-trait PGIs. Because MTAG estimates are a weighted average of GWAS estimates for several traits, the multi-trait PGI based on MTAG estimates is roughly a weighted average of PGIs for the set of included traits. As a result, a multitrait PGI may be correlated with an outcome variable if that outcome variable is genetically correlated with a supplementary phenotype for the multi-trait PGI. This can even be the case if the outcome variable and the target phenotype are not genetically correlated. Therefore, results using the multi-trait PGI have the same interpretation as results using the single-trait PGI in analyses where

- (i) the dependent variable and the PGI correspond to the same phenotype, and;
- (ii) no other covariates are included in the regression that are genetically correlated with any of the supplementary phenotypes used to construct the multi-trait PGI.

However, if either (i) or (ii) is violated, results from the multi-trait PGI should be interpreted differently than results from the single-trait PGI because it may be driven by a supplementary phenotype rather than the target phenotype. In that case, the risk of spurious results increases when (a) the GWAS sample size for the target GWAS is small relative to the GWAS sample size of the supplementary phenotypes, and (b) the genetic correlation between the target phenotype and the supplementary phenotypes is only moderate. Researchers who use multi-trait PGIs should make clear to readers how large the potential for a confounded interpretation is and how much it matters for the application at hand. To facilitate this, SSGAC reported the average weight that MTAG assigns to each trait that enters into the multi-trait PGIs in Supplementary Table 10 of Becker et al.. Although these weights may vary by SNP when there is variation in the sample size across SNPs, they are informative about where the predictive power comes from.

In settings where the PGI is being used as a covariate (e.g., as a control variable in a randomized controlled trial), the confounds associated with using the multi-trait PGI may be less important. In all settings, however, it is good practice to describe which supplementary phenotypes were included in the multi-trait PGI whenever an analysis employs the multi-trait PGI.

## Identifying Causal Effects of a PGI

A clean way to identify the causal effects of a PGI is to conduct the analysis of the PGI in a sibling sample and control for family fixed effects (even if the PGI itself is generated from between-family GWAS). The family fixed effects control for all common factors shared by siblings within a family, including the parents that the siblings share. This empirical strategy exploits a natural experiment: conditional on a pair of biological parents, genetic inheritance is random. A robustly estimated non-zero within-family association from a large and attrition-free sample would provide strong evidence of a causal effect of the PGI. The coefficient estimate could be interpreted as a weighted average of treatment effects from hypothetical experiments that randomly modify, at conception, the genotypes of the causal SNPs responsible for the predictive power of the PGI .

The PGIs are not necessarily the best linear predictors when they are conditional on a pair of biological parents (because the GWAS underlying the PGI weights do not control for the biological parents). The PGIs

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that would be the best linear predictors for such a within-family analysis would be PGIs constructed from GWAS that control for parental genotypes or from GWAS (in sibling samples) that control for family fixed effects. Unfortunately, to-date genotyped family-based samples have been too small to produce reliable within-family PGIs. Ultimately, however, when genotyped family-based samples become sufficiently large, the resulting within-family PGIs will be more predictive for within-family analyses than PGIs constructed from currently-standard (between-family) GWAS.

## Genetic Effects can Operate Through Environmental Mechanisms

SSGAC urges researchers who use PGIs in their research to be mindful of three important issues of interpretation for the causal effects of a PGI.

First, a PGI could exert its effects through the environment. Consider a PGI for BMI, suppose a within-family association analysis yields unambiguous evidence of a within-family association between the PGI and BMI. Even though the within-family design provides strong support for a causal interpretation, this does not imply that the SNPs in the PGI must be influencing BMI through some narrowly physiological mechanism. In principle, the sibling differences in BMI could arise because of sibling differences in genes that influence the proneness to eat sweets, exercise habits, or myriad other behaviors with downstream effects on BMI. PGIs for seemingly biological phenotypes can thus have a substantial behavioral component. A PGI for lung health may similarly derive predictive power from SNPs that influence lung health very indirectly, through smoking habits.

Second, it is therefore a fallacy to assume that any genetic sources of heterogeneity captured by a PGI are immutable or even harder to modify than environmental sources of heterogeneity. Indeed, the possibility of identifying modifiable mechanisms through which PGIs exert some of their effects motivates some of the research using PGIs. To continue the BMI example, the widespread replacement of sugar by low-calorie sweeteners or better behavioral tools for avoiding temptation could eliminate or reduce the effect of the PGI on BMI. Because of these issues, SSGAC urges researchers to avoid describing PGIs as genetic endowments or other terms that may, however inadvertently, promote the common misunderstanding that genes are a resource that is easily separable from choices made in light of that resource.

Third, because the additive genetic factor is defined conditional on the GWAS phenotype, population, and environment, the same PGI may have a different predictive power in different samples if there are differences in the phenotype measure, population sampled, the sampling methodology, or the environmental context. For example, the research participants from the UKB were recruited through the mail and had a 5.5% response rate. Those that responded to the recruitment mailers were more healthy and more educated than the UK population as a whole. Because UKB participants make up a large fraction of the discovery sample for many phenotypes, it may be that the PGI does not correspond to a PGI that would be produced from a representative sample or a sample of individuals not from the UK.

## Citation Instructions

In any publication that uses one or more Repository PGIs, please cite the published GWAS included in the single-trait or multi-trait input GWAS for the PGI as well as: Becker, J. et al. 2021. Resource profile and user guide of the Polygenic Index Repository. *Nat. Hum. Behav.*

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**Supplementary Table 1: Expected predictive power of single-trait PGIs**

Phenotype	# SNPs MTAG	Mean $\chi^2$	# SNPs ldsc	$h^2_{\text{SNP}}$	SE	GWAS-equivalent $N$	E( $R^2$ )
<i>Anthropometric</i>							
Body Mass Index (BMI)	1,987,862	3.913	1,040,351	24.26%	0.008	582,457	17.03%
Height	1,983,776	5.338	1,039,892	46.60%	0.024	448,198	36.20%
<i>Cognition and Education</i>							
Alzheimer's	6,459,996	1.046	1,183,032	4.62%	0.02	63,836	0.22%
Childhood Reading	6,068,158	1.199	1,166,542	6.90%	0.004	172,502	1.14%
Cognitive Performance	6,244,879	1.872	1,164,336	23.18%	0.008	222,914	10.73%
Educational Attainment	6,220,372	2.907	1,163,714	11.04%	0.003	1,047,538	7.27%
Highest Math	6,070,107	2.119	1,166,662	15.10%	0.004	430,439	7.85%
Self-Reported Math Ability	6,070,704	2.42	1,166,704	14.62%	0.004	564,692	8.47%
<i>Fertility and Sexual Development</i>							
Age First Birth	1,897,308	1.68	1,013,478	19.58%	0.007	169,901	6.98%
Age First Menses (Women)	5,743,131	2.05	1,160,076	19.65%	0.006	309,043	9.88%
Age Voice Deepened (Men)	5,886,973	1.092	1,169,476	9.63%	0.011	55,870	0.79%
Number Ever Born (Men)	2,001,872	1.188	1,051,705	4.40%	0.004	206,064	0.58%
Number Ever Born (Women)	2,002,008	1.332	1,051,739	7.96%	0.004	207,393	1.72%
<i>Health and Health Behaviors</i>							
Alcohol Misuse	5,925,450	1.215	1,163,376	9.83%	0.006	120,684	1.62%
Allergy - Cat	5,152,018	1.098	1,134,220	9.61%	0.013	46,646	0.67%
Allergy - Dust	5,152,018	1.081	1,134,220	8.17%	0.013	46,646	0.49%
Allergy - Pollen	5,152,018	1.106	1,134,220	11.03%	0.014	46,645	0.87%
Asthma	6,492,307	1.484	1,177,347	5.91%	0.006	418,164	1.72%
Asthma/Eczema/Rhinitis	5,582,789	1.741	1,156,044	8.18%	0.007	513,889	3.37%
Attention Deficit Hyperactivity Disorder (ADHD)	5,287,305	1.243	1,099,633	22.84%	0.013	57,386	4.09%
Cannabis Use	4,860,547	1.256	1,107,042	8.25%	0.006	156,756	1.46%
Cigarettes per Day	6,256,203	1.448	1,165,651	11.07%	0.015	250,057	3.49%

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COPD	6,492,307	1.159	1,177,347	2.64%	0.002	363,063	0.36%
Depressive Symptoms	5,799,310	1.797	1,156,270	7.22%	0.003	619,272	3.08%
Drinks per Week	6,257,406	1.676	1,165,657	5.46%	0.002	723,487	2.17%
Eczema	6,492,101	1.08	1,177,340	1.03%	0.002	440,482	0.07%
Ever Smoker	6,215,745	2.655	1,158,396	8.73%	0.003	1,129,163	5.43%
Hayfever	6,492,220	1.537	1,177,347	7.63%	0.006	403,179	2.59%
Migraine	5,741,204	1.426	1,164,913	5.97%	0.003	421,013	1.76%
Nearsightedness	5,740,056	1.836	1,164,817	16.57%	0.008	301,938	7.53%
Physical Activity	5,758,007	1.366	1,123,933	15.13%	0.006	140,190	3.95%
Self-Rated Health	5,956,904	2.467	1,162,476	9.34%	0.002	911,102	5.48%

#### *Personality and Well-Being*

Adventurousness	6,070,564	1.805	1,166,706	8.14%	0.003	557,923	3.51%
Agreeableness	5,882,648	1.087	1,169,368	8.58%	0.009	59,175	0.67%
Cognitive Empathy	5,883,313	1.081	1,169,303	10.33%	0.012	46,861	0.77%
Conscientiousness	5,882,648	1.098	1,169,368	9.81%	0.009	59,176	0.87%
Delay Discounting	6,073,966	1.026	1,167,812	7.48%	0.017	23,217	0.21%
Extraversion	5,033,701	1.29	1,133,492	19.78%	0.011	73,906	3.88%
Left Out of Social Activity	6,070,335	1.525	1,166,706	5.79%	0.002	507,803	1.90%
Life Satisfaction: Family	6,485,582	1.165	1,177,220	7.17%	0.004	141,864	1.04%
Life Satisfaction: Finance	6,485,525	1.159	1,177,216	7.16%	0.005	134,080	0.99%
Life Satisfaction: Friends	6,485,346	1.176	1,177,204	7.61%	0.005	138,807	1.14%
Life Satisfaction: Work	6,480,657	1.086	1,177,103	7.55%	0.008	66,733	0.58%
Loneliness	6,492,148	1.273	1,177,337	3.99%	0.002	410,968	0.86%
Morning Person	5,073,973	2.1	1,141,393	15.86%	0.005	362,840	7.76%
Narcissism	6,070,099	1.375	1,166,677	4.69%	0.003	452,535	1.23%
Neuroticism	4,353,421	2.11	1,048,147	12.61%	0.006	389,237	5.67%
Openness	1,894,573	1.175	1,004,627	11.17%	0.008	72,308	1.33%
Recharge by Socializing	6,070,315	1.289	1,166,676	3.43%	0.002	476,143	0.73%
Religious Attendance	6,492,220	1.317	1,177,349	5.17%	0.002	383,466	1.28%
Religious Belief	6,062,699	1.104	1,166,319	7.01%	0.006	86,528	0.64%
Risk Tolerance	5,705,829	1.998	1,089,103	5.13%	0.002	1,070,480	2.45%

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Subjective Well-Being	1,728,748	1.834	921,804	7.68%	0.003	502,976	3.01%
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*Notes:* "# SNPs MTAG" is the number of SNPs in the MTAG output. "Mean  $\chi^2$ " is the mean  $\chi^2$  statistic across all SNPs in the MTAG output. "# SNPs ldsc" is the number of SNPs included in LD score regression. " $h^2_{SNP}$ " is the LD score regression heritability estimate. "SE" is the standard error of the heritability estimate. "GWAS-equivalent  $N$ " is the GWAS-equivalent sample size as reported by MTAG. " $E(R^2)$ " is the expected out-of-sample predictive power of a PGI based on the single-trait input GWAS.

**Supplementary Table 2: Expected predictive power of multi-trait PGIs**

Phenotype	# SNPs MTAG	Mean $\chi^2$	# SNPs ldsc	$h^2_{\text{SNP}}$	SE	GWAS- equivalent $N$	$E(R^2)$
<i>Anthropometric</i>							
Body Mass Index (BMI)	No Supplementary Phenotypes						
Height	No Supplementary Phenotypes						
<i>Cognition and Education</i>							
Alzheimer's	No Supplementary Phenotypes						
Childhood Reading	No Supplementary Phenotypes						
Cognitive Performance	5,828,916	2.395	1,150,845	26.26%	0.0074	343,411	15.77%
Educational Attainment	1,875,226	3.976	1,000,179	11.50%	0.003	1,295,788	8.20%
Highest Math	1,875,244	3.489	1,000,186	16.13%	0.0041	801,291	11.02%
Self-Rated Math Ability	5,859,177	2.703	1,151,958	15.23%	0.0041	663,024	9.55%
<i>Fertility and Sexual Development</i>							
Age First Birth	1,813,002	2.531	957,423	22.31%	0.0065	373,210	12.97%
Age First Menses (Women)	5,738,235	2.085	1,159,931	19.66%	0.0064	319,522	10.06%
Age Voice Deepened (Men)	5,738,235	1.458	1,159,931	13.39%	0.0047	294,997	5.32%
Number Ever Born (Men)	1,897,090	1.495	1,013,407	5.11%	0.0017	593,761	1.72%
Number Ever Born (Women)	1,897,090	1.564	1,013,407	6.34%	0.0023	497,396	2.18%
<i>Health and Health Behaviors</i>							
Alcohol Misuse	5,809,659	1.678	1,152,103	0.0912	0.0038	444,496	3.68%
Allergy - Cat	4,031,798	1.724	1,120,565	0.1119	0.009	366,535	4.54%
Allergy - Dust	4,031,798	1.622	1,120,565	0.1068	0.0085	356,879	4.15%
Allergy - Pollen	4,031,798	1.597	1,120,565	0.1459	0.0114	254,386	5.58%
Asthma	4,031,798	1.676	1,120,565	0.0649	0.0058	559,863	2.45%
Asthma/Eczema/Rhinitis	4,031,756	1.922	1,120,555	0.05	0.0041	920,692	2.17%
Attention Deficit Hyperactivity Disorder (ADHD)	1,819,283	1.512	961,365	4.03%	0.0015	760,838	1.36%
Cannabis Use	No Supplementary Phenotypes						
Cigarettes per Day	No Supplementary Phenotypes						

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COPD	1,814,054	1.712	958,044	2.61%	0.0008	1,869,820	1.17%
Depressive Symptoms	1,651,414	2.513	882,029	5.62%	0.0017	1,306,090	3.09%
Drinks per Week	5,809,659	1.793	1,152,103	0.0351	0.0015	1,245,225	1.48%
Eczema	5,582,561	1.223	1,156,029	0.0205	0.0016	1,214,626	0.60%
Ever Smoker	No Supplementary Phenotypes						
Hayfever	4,031,756	1.801	1,120,555	0.0802	0.0063	518,480	3.28%
Migraine	No Supplementary Phenotypes						
Nearsightedness	No Supplementary Phenotypes						
Physical Activity	No Supplementary Phenotypes						
Self-Rated Health	5,759,940	2.579	1,152,357	7.35%	0.0019	1,250,433	4.45%

#### *Personality and Well-Being*

Adventurousness	5,525,191	2.208	1,083,349	8.57%	0.0032	800,552	4.57%
Agreeableness	5,875,115	1.1	1,169,194	8.92%	0.0081	68,286	0.82%
Cognitive Empathy	5,875,115	1.097	1,169,194	10.80%	0.0102	55,982	1.00%
Conscientiousness	No Supplementary Phenotypes						
Delay Discounting	5,943,532	1.509	1,159,189	13.40%	0.0033	445,313	6.68%
Extraversion	4,998,565	1.436	1,126,550	23.95%	0.0099	111,464	7.37%
Left Out of Social Activity	1,720,691	2.011	917,347	6.23%	0.0021	801,505	2.83%
Life Satisfaction: Family	1,728,747	1.422	921,803	9.07%	0.0035	289,950	2.76%
Life Satisfaction: Finance	1,724,361	1.587	918,998	8.65%	0.0027	491,335	3.59%
Life Satisfaction: Friends	1,724,363	1.605	918,999	8.91%	0.0031	401,682	3.33%
Life Satisfaction: Work	1,728,747	1.444	921,803	4.16%	0.0015	702,208	1.36%
Loneliness	1,651,414	2.042	882,029	4.87%	0.0016	1,170,314	2.37%
Morning Person	No Supplementary Phenotypes						
Narcissism	No Supplementary Phenotypes						
Neuroticism	1,653,404	2.391	883,362	13.36%	0.0051	480,371	6.90%
Openness	No Supplementary Phenotypes						
Recharge by Socializing	No Supplementary Phenotypes						
Religious Attendance	6,103,041	1.628	1,161,410	6.71%	0.0019	792,789	3.15%
Religious Belief	No Supplementary Phenotypes						
Risk Tolerance	5,525,191	2.299	1,083,349	4.10%	0.0016	1,752,580	2.23%

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Subjective Well-Being	1,651,414	2.421	882,029	4.26%	0.0013	1,618,616	2.28%
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Notes: "# SNPs MTAG" is the number of SNPs in the MTAG output. "Mean  $\chi^2$ " is the mean  $\chi^2$  statistic across all SNPs in the MTAG output. "# SNPs ldsc" is the number of SNPs included in LD score regression. " $h^2_{SNP}$ " is the LD score regression heritability estimate. "SE" is the standard error of the heritability estimate. "GWAS-equivalent  $N$ " is the GWAS-equivalent sample size as reported by MTAG. " $E(R^2)$ " is the expected out-of-sample predictive power of a PGI based on the single-trait input GWAS.

**Supplementary Table 3: Predictive power of the single- and multi-trait PGIs in the validation datasets**

Phenotype	Health and Retirement Study (HRS)						
	<i>N</i>	Single-trait PGI $\Delta R^2$ (95% CI)	Multi-trait PGI $\Delta R^2$ (95% CI)	Public PGI $\Delta R^2$ (95% CI)	Single vs Public $\Delta R^2$ (95% CI)	Multi vs Public $\Delta R^2$ (95% CI)	Multi vs Single $\Delta R^2$ (95% CI)
<i>Anthropometric</i>							
Body Mass Index (BMI)	11,050	12.70% (11.63% to 13.78%)	N/A	12.88% (11.77% to 14.06%)	-0.18% (-0.61% to 0.27%)	N/A	N/A
Height	11,054	26.34% (24.87% to 27.73%)	N/A	24.86% (23.47% to 26.27%)	1.48% (0.65% to 2.30%)	N/A	N/A
<i>Cognition and Education</i>							
Alzheimer's				N/A*†			
Childhood Reading				N/A*			
Cognitive Performance				N/A*			
Educational Attainment	11,026	10.13% (9.11% to 11.20)	11.26% (10.17% to 12.34%)	N/A	N/A	N/A	1.13% (0.71% to 1.52%)
Highest Math				N/A*			
Self-Rated Math Ability				N/A*			
<i>Fertility and Sexual Development</i>							
Age First Birth				N/A*			
Age First Menses (women)				N/A*			
Age Voice Deepened (men)				N/A*			
Number Ever Born (men)	4,713	N/A	0.52% (0.19% to 0.98%)	0.11% (0.00% to 0.38%)	N/A	0.41% (0.10% to 0.77%)	N/A

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Number Ever Born (women)	6,331	0.40% (0.16% to 0.78%)	0.67% (0.34% to 1.15%)	0.33% (0.11% to 0.67%)	0.07% (-0.09% to 0.23%)	0.34% (0.08% to 0.67%)	0.27% (0.06% to 0.54%)
<i>Health and Health Behaviors</i>							
Alcohol Misuse	8,132	0.09% (0.00% to 0.32%)	0.26% (0.07% to 0.58%)	N/A	N/A	N/A	0.17% (0.02% to 0.36%)
Allergy - Cat				N/A*			
Allergy - Dust				N/A*			
Allergy - Pollen				N/A*			
Asthma	7,743	1.05% (0.64% to 1.53%)	1.28% (0.81% to 1.83%)	0.90% (0.54% to 1.32%)	0.15% (-0.05% to 0.35%)	0.38% (0.06% to 0.67%)	0.23% (0.03% to 0.45%)
Asthma/Eczema/Rhinitis				N/A*			
Attention Deficit Hyperactivity Disorder (ADHD)	641	0.24% (0.00 to 1.66%)	1.61% (0.24% to 4.13%)	0.16% (0.00% to 1.39%)	0.07% (-0.20% to 0.56%)	1.45% (0.13% to 3.40%)	1.37% (0.16% to 3.12%)
Cannabis Use				N/A*			
Cigarettes per Day	5,747	0.93% (0.48% to 1.46%)	N/A	0.31% (0.09% to 0.66%)	0.63% (0.18% to 1.08%)	N/A	N/A
COPD	11,053	N/A	2.06% (1.53% to 2.66%)	0.22% (0.08% to 0.44%)	N/A	1.84% (1.30% to 2.41%)	N/A
Depressive Symptoms	11,022	1.57% (1.15% to 2.08%)	1.49% (1.06% to 1.94%)	1.12% (0.78% to 1.55%)	0.44% (0.07% to 0.82%)	0.36% (-0.03% to 0.75%)	-0.08% (-0.33% to 0.14%)
Drinks per Week	11,053	1.33% (0.95% to 1.82%)	1.38% (0.99% to 1.84%)	1.05% (0.69% to 1.49%)	0.28% (0.03% to 0.53)	0.33% (0.10% to 0.59%)	0.05% (-0.07% to 0.16%)
Eczema				N/A*†			

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Ever Smoker	11,054	4.91% (4.11% to 5.72%)	N/A	3.57% (2.92% to 4.22%)	1.34% (0.81% to 1.87%)	N/A	N/A
Hayfever				N/A*			
Migraine				N/A*			
Nearsightedness				N/A*			
Physical Activity	11,053	1.47% (1.05% to 1.92%)	N/A	0.39% (0.18% to 0.64%)	1.08% (0.78% to 1.42%)	N/A	N/A
Self-Rated Health	9,526	3.03% (2.36% to 3.73%)	3.25% (2.54% to 3.95%)	1.93% (1.39% to 2.48%)	1.10% (0.60% to 1.61%)	1.32% (0.79% to 1.85%)	0.22% (0.05% to 0.40%)
<i>Personality and Well-Being</i>							
Adventurousness	10,430	1.41% (1.02% to 1.89%)	1.68% (1.26% to 2.21%)	N/A	N/A	N/A	0.27% (0.05% to 0.49%)
Agreeableness				N/A†			
Cognitive Empathy				N/A*			
Conscientiousness				N/A†			
Delay Discounting				N/A*			
Extraversion	10,483	1.58% (1.15% to 2.08%)	2.46% (1.89% to 3.09%)	0.56% (0.33% to 0.87%)	1.02% (0.59% to 1.44%)	1.90% (1.37% to 2.44%)	0.88% (0.57% to 1.21%)
Left Out of Social Activity				N/A*			
Life Satisfaction: Family	9,984	0.89% (0.57% to 1.32%)	1.75% (1.27% to 2.31%)	0.66% (0.38% to 1.04%)	0.23% (0.03% to 0.45%)	1.09% (0.72% to 1.50%)	0.86% (0.51% to 1.23%)
Life Satisfaction: Finance	10,517	N/A	2.44% (1.86% to 3.05%)	0.49% (0.24% to 0.78%)	N/A	1.95% (1.47% to 2.44%)	N/A

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Life Satisfaction: Friends	4,485	0.54% (0.23% to 1.01%)	0.74% (0.35% to 1.31%)	0.41% (0.13% to 0.83%)	0.12% (-0.08% to 0.37%)	0.33% (-0.06% to 0.80%)	0.20% (-0.19% to 0.63)
Life Satisfaction: Work	715	N/A	2.08% (0.48% to 4.77%)	0.19% (0.00% to 1.51%)	N/A	1.89% (0.28% to 3.97%)	N/A
Loneliness	11,054	N/A	1.57% (1.14% to 2.05%)	1.22% (0.85% to 1.70%)	N/A	0.35% (-0.06% to 0.72%)	N/A
Morning Person				N/A*			
Narcissism				N/A*			
Neuroticism	10,478	2.77% (2.21% to 3.44%)	2.44% (1.92% to 3.10%)	2.37% (1.83% to 3.01%)	0.41% (-0.02% to 0.84%)	0.08% (-0.38% to 0.54%)	-0.33% (-0.71% to 0.03%)
Openness	10,458	0.84% (0.54% to 1.22%)	N/A	0.04% (0.00% to 0.16%)	0.80% (0.51% to 1.15%)	N/A	N/A
Recharge by Socializing				N/A*†			
Religious Attendance	11,053	1.38% (0.99% to 1.83%)	1.85% (1.42% to 2.38%)	1.19% (0.84% to 1.62%)	0.18% (0.02% to 0.34%)	0.66% (0.34% to 0.98%)	0.47% (0.19% to 0.76%)
Religious Belief				N/A†			
Risk Tolerance	8,426	0.13% (0.02% to 0.34%)	0.20% (0.06% to 0.45%)	0.19% (0.05% to 0.42%)	-0.06% (-0.22% to 0.08%)	0.01% (-0.15% to 0.18%)	0.07% (0.01% to 0.15%)
Subjective Well-Being	10,458	2.49% (1.91% to 3.13%)	2.35% (1.78% to 2.96%)	0.37% (0.19% to 0.64%)	2.12% (1.60% to 2.64%)	1.97% (1.42% to 2.52%)	-0.15% (-0.52% to 0.25%)

Phenotype	Wisconsin Longitudinal Study (WLS)						
	N	Single-trait PGI $\Delta R^2$ (95% CI)	Multi-trait PGI $\Delta R^2$ (95% CI)	Public PGI $\Delta R^2$ (95% CI)	Single vs Public $\Delta R^2$ (95% CI)	Multi vs Public $\Delta R^2$ (95% CI)	Multi vs Single $\Delta R^2$ (95% CI)
<i>Anthropometric</i>							
Body Mass Index (BMI)	8,626	13.55% (12.29% to 14.90%)	N/A	13.39% (12.13% to 14.77%)	0.15% (-0.35% to 0.62%)	N/A	N/A

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Height	8,545	27.13% (25.41% to 28.74%)	N/A	25.47% (23.81% to 27.22%)	1.66% (0.76% to 2.51%)	N/A	N/A
<i>Cognition and Education</i>							
Alzheimer's				N/A*†			
Childhood Reading				N/A*			
Cognitive Performance	8,410	7.71% (6.67% to 8.85%)	9.05% (7.95% to 10.22%)	7.84% (6.81% to 8.96%)	-0.13% (-0.74% to 0.40%)	1.21% (0.36% to 1.91%)	1.34% (0.68% to 1.99%)
Educational Attainment	8,687	6.17% (5.27% to 7.13%)	6.40% (5.51% to 7.36%)	4.67% (3.88% to 5.57%)	1.50% (0.82% to 2.22%)	1.73% (1.07% to 2.42%)	0.23% (-0.16% to 0.63%)
Highest Math				N/A*			
Self-Rated Math Ability				N/A*			
<i>Fertility and Sexual Development</i>							
Age First Birth	8,053	1.92% (1.37% to 2.51%)	2.12% (1.53% to 2.77%)	1.18% (0.74% to 1.70%)	0.74% (0.36% to 1.13%)	0.94% (0.46% to 1.46%)	0.20% (-0.20% to 0.61%)
Age First Menses (women)	4,082	8.47% (6.85% to 10.14%)	8.89% (7.25% to 10.73%)	7.09% (5.55% to 8.64%)	1.38% (0.64% to 2.17%)	1.81% (0.98% to 2.76%)	0.42% (-0.46% to 1.24%)
Age Voice Deepened (men)				N/A*			
Number Ever Born (men)	3,906	N/A	0.88% (0.39% to 1.54%)	0.14% (0.01% to 0.46%)	N/A	0.74% (0.30% to 1.34%)	N/A
Number Ever Born (women)	4,313	0.53% (0.17% to 1.09%)	0.89% (0.41% to 1.59%)	0.20% (0.03% to 0.58%)	0.33% (0.00% to 0.73%)	0.68% (0.22% to 1.24%)	0.36% (0.09% to 0.70%)
<i>Health and Health Behaviors</i>							
Alcohol Misuse	7,010	0.26% (0.08% to 0.53%)	0.83% (0.45% to 1.29%)	N/A	N/A	N/A	0.57% (0.28% to 0.92%)
Allergy - Cat	3,405	N/A	0.22% (0.02% to 0.60%)	N/A	N/A	N/A	N/A

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Allergy - Dust	3,405	N/A	0.09% (0.00% to 0.44%)	N/A	N/A	N/A	N/A
Allergy - Pollen	3,405	N/A	0.00% (0.00% to 0.15%)	N/A	N/A	N/A	N/A
Asthma	8,277	1.17% (0.75% to 1.68%)	1.47% (0.98% to 2.03%)	1.06% (0.63% to 1.54%)	0.11% (-0.09% to 0.31%)	0.41% (0.14% to 0.70%)	0.30% (0.10% to 0.52%)
Asthma/Eczema/Rhinitis	1,775	2.06% (0.98% to 3.73%)	2.07% (1.01% to 3.74%)	1.80% (0.77% to 3.17%)	0.26% (-0.69% to 1.28%)	0.28% (-0.72% to 1.33%)	0.01% (-0.25% to 0.30%)
Attention Deficit Hyperactivity Disorder (ADHD)	222	0.54% (0.00% to 3.25%)	1.15% (0.01% to 4.82%)	0.61% (0.00% to 3.57%)	-0.07% (-0.97% to 0.70%)	0.54% (-1.31% to 2.91%)	0.61% (-1.22% to 2.98%)
Cannabis Use				N/A*			
Cigarettes per Day	2,976	2.12% (1.19% to 3.16%)	N/A	1.56% (0.78% to 2.45%)	0.56% (0.15% to 1.04%)	N/A	N/A
COPD	8,624	N/A	0.71% (0.41% to 1.11%)	0.03% (0.00% to 0.15%)	N/A	0.68% (0.36% to 1.07%)	N/A
Depressive Symptoms	8,601	1.53% (1.06% to 2.05%)	2.00% (1.48% to 2.58%)	0.64% (0.33% to 1.01%)	0.89% (0.51% to 1.29%)	1.36% (0.90% to 1.82%)	0.47% (0.19% to 0.77%)
Drinks per Week	7,183	1.91% (1.35% to 2.53%)	1.87% (1.33% to 2.50%)	1.67% (1.17% to 2.27%)	0.24% (-0.04% to 0.49%)	0.20% (-0.06% to 0.49%)	-0.04 (-0.19% to 0.12%)
Eczema				N/A*†			
Ever Smoker	8,632	4.25% (3.44% to 5.09%)	N/A	3.14% (2.44% to 3.83%)	1.11% (0.65% to 1.60%)	N/A	N/A
Hayfever	3,405	1.11% (0.53% to 1.95%)	1.27% (0.63% to 2.15%)	0.39% (0.09% to 0.99%)	0.73% (0.15% to 1.35%)	0.88% (0.29% to 1.52%)	0.16% (-0.12% to 0.44%)
Migraine				N/A*			

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Nearsightedness				N/A*			
Physical Activity	8,462	0.76% (0.43% to 1.15%)	N/A	0.30% (0.10% to 0.56%)	0.47% (0.23% to 0.74%)	N/A	N/A
Self-Rated Health	8,571	3.32% (2.65% to 4.08%)	3.27% (2.62% to 4.04%)	2.29% (1.73% to 2.99%)	1.03% (0.51% to 1.60%)	0.98% (0.45% to 1.59%)	-0.05 (-0.23% to 0.14%)
<i>Personality and Well-Being</i>							
Adventurousness				N/A*			
Agreeableness				N/A†			
Cognitive Empathy				N/A*			
Conscientiousness				N/A†			
Delay Discounting				N/A*			
Extraversion	8,618	1.90% (1.40% to 2.51%)	2.69% (2.08% to 3.40%)	0.73% (0.42% to 1.15%)	1.17% (0.69% to 1.67%)	1.96% (1.39% to 2.58%)	0.79% (0.45% to 1.16%)
Left Out of Social Activity				N/A*			
Life Satisfaction: Family	8,137	0.34% (0.13% to 0.63%)	0.66% (0.36% to 1.05%)	0.33% (0.12% to 0.62%)	0.01% (-0.14% to 0.16%)	0.33% (0.09% to 0.63%)	0.32% (0.10% to 0.59%)
Life Satisfaction: Finance	8,777	N/A	1.34% (0.91% to 1.85%)	0.30% (0.12% to 0.57%)	N/A	1.04% (0.68% to 1.48%)	N/A
Life Satisfaction: Friends				N/A*			
Life Satisfaction: Work	8,539	N/A	1.00% (0.61% to 1.45%)	0.37% (0.17% to 0.68%)	N/A	0.63% (0.24% to 1.03%)	N/A

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Loneliness	8,590	N/A	1.08% (0.69% to 1.56%)	0.50% (0.24% to 0.85%)	N/A	0.58% (0.22% to 0.93%)	N/A
Morning Person				N/A*			
Narcissism				N/A*			
Neuroticism	8,614	2.83% (2.17% to 3.53%)	2.11% (1.56% to 2.70%)	2.75% (2.07% to 3.46%)	0.07% (-0.40% to 0.49%)	-0.65% (-1.18% to -0.12%)	-0.72% (-1.27% to -0.13%)
Openness	8,609	1.15% (0.78% to 1.70%)	N/A	0.09% (0.01% to 0.27%)	1.06% (0.71% to 1.52%)	N/A	N/A
Recharge by Socializing				N/A*†			
Religious Attendance	8,903	0.75% (0.43% to 1.13%)	0.90% (0.52% to 1.31%)	0.59% (0.30% to 0.92%)	0.16% (0.03% to 0.30%)	0.31% (0.06% to 0.56%)	0.14% (-0.08% to 0.37%)
Religious Belief				N/A†			
Risk Tolerance	6,363	0.03% (0.00% to 0.17%)	0.03% (0.00% to 0.18%)	0.00% (0.00% to 0.10%)	0.02% (-0.03% to 0.12%)	0.03% (-0.03% to 0.14%)	0.00% (-0.04% to 0.04%)
Subjective Well-Being	8,600	1.49% (0.97% to 2.07%)	1.35% (0.88% to 1.84%)	0.53% (0.26% to 0.86%)	0.96% (0.52% to 1.44%)	0.83% (0.38% to 1.31%)	-0.14% (-0.43% to 0.18%)

Phenotype	Dunedin Multidisciplinary Health and Development Study						
	<i>N</i>	Single-trait PGI $\Delta R^2$ (95% CI)	Multi-trait PGI $\Delta R^2$ (95% CI)	Public PGI $\Delta R^2$ (95% CI)	Single vs Public $\Delta R^2$ (95% CI)	Multi vs Public $\Delta R^2$ (95% CI)	Multi vs Single $\Delta R^2$ (95% CI)
<i>Anthropometric</i>							
Body Mass Index (BMI)	845	14.40% (9.48% to 19.21%)	N/A	13.68% (8.97% to 18.43%)	0.72% (-0.78% to 2.35%)	N/A	N/A
Height	855	29.86% (24.88% to 34.46%)	N/A	29.07% (24.02% to 34.23%)	0.79% (-2.44% to 3.88%)	N/A	N/A
<i>Cognition and Education</i>							
Alzheimer's				N/A*†			

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Childhood Reading	819	2.37% (1.37% to 4.22%)	N/A	N/A	N/A	N/A	N/A
Cognitive Performance	853	9.61% (6.27% to 13.11%)	12.73% (9.02% to 16.88%)	9.63% (6.30% to 13.28%)	-0.03% (-1.83% to 1.81%)	3.10% (0.51% to 5.92%)	3.12% (1.01% to 5.48%)
Educational Attainment	886	9.39% (6.13% to 13.28%)	11.42% (7.89% to 15.29%)	9.32% (6.08% to 12.91%)	0.06% (-1.92% to 2.00%)	2.09% (-0.32% to 4.60%)	2.03% (0.24% to 3.96%)
Highest Math				N/A*			
Self-Rated Math Ability				N/A*			
<i>Fertility and Sexual Development</i>							
Age First Birth	634	2.13% (1.56% to 3.72%)	2.28% (1.57% to 4.01%)	1.71% (1.53% to 2.79%)	0.42% (-0.24% to 1.43%)	0.57% (-0.25% to 2.04%)	0.15% (-0.72% to 1.24%)
Age First Menses (women)	427	10.49% (6.16% to 15.46%)	11.98% (7.12% to 17.43%)	10.22% (5.52% to 15.50%)	0.28% (-2.53% to 2.96%)	1.76% (-1.20% to 4.78%)	1.48% (0.46% to 2.62%)
Age Voice Deepened (men)				N/A*			
Number Ever Born (men)	434	N/A	2.74% (2.19% to 4.88%)	2.28% (2.17% to 3.48%)	N/A	0.47% (-0.79% to 2.17%)	N/A
Number Ever Born (women)	428	2.48% (2.27% to 3.85%)	3.25% (2.31% to 5.95%)	2.42% (2.27% to 3.63%)	0.05% (-0.79% to 1.08%)	0.82% (-0.41% to 2.87%)	0.77% (-0.38% to 2.34%)
<i>Health and Health Behaviors</i>							
Alcohol Misuse	859	2.24% (1.28% to 3.82%)	2.93% (1.59% to 4.94%)	N/A	N/A	N/A	0.68% (-0.59% to 2.16%)
Allergy - Cat	798	N/A	6.90% (4.26% to 10.27%)	N/A	N/A	N/A	N/A
Allergy - Dust	798	N/A	5.71% (3.19% to 9.00%)	N/A	N/A	N/A	N/A

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Allergy - Pollen	798	N/A	4.38% (2.32% to 7.27%)	N/A	N/A	N/A	N/A
Asthma	855	3.93% (2.12% to 6.29%)	5.44% (3.11% to 8.18%)	2.80% (1.52% to 4.87%)	1.13% (0.19% to 2.23%)	2.64% (1.16% to 4.37%)	1.51% (0.44% to 2.73%)
Asthma/Eczema/Rhinitis	883	4.83% (2.84% to 7.39%)	5.30% (3.07% to 8.01%)	3.15% (1.74% to 5.29%)	1.68% (0.24% to 3.27%)	2.14% (0.45% to 3.96%)	0.46% (-0.10% to 1.02%)
Attention Deficit Hyperactivity Disorder (ADHD)	858	2.10% (1.22% to 4.06%)	2.34% (1.38% to 4.14%)	2.42% (1.36% to 4.40%)	-0.32% (-0.83% to 0.15%)	-0.09% (-1.18% to 0.87%)	0.23% (-0.78% to 1.05%)
Cannabis Use	877	1.78% (1.15% to 3.16%)	N/A	1.82% (1.15% to 3.36%)	-0.04% (-0.76% to 0.62%)	N/A	N/A
Cigarettes per Day	181	13.82% (6.60% to 23.04%)	N/A	16.20% (7.83% to 26.68%)	-2.38% (-5.99% to 0.94%)	N/A	N/A
COPD	831	N/A	1.93% (1.26% to 3.20%)	1.40% (1.18% to 2.42%)	N/A	0.53% (-0.56% to 1.67%)	N/A
Depressive Symptoms	859	2.79% (1.51% to 4.55%)	2.96% (1.62% to 4.77%)	2.37% (1.39% to 4.02%)	0.42% (-1.11% to 1.79%)	0.59% (-1.05% to 2.13%)	0.17% (-0.78% to 0.99%)
Drinks per Week	858	2.56% (1.36% to 4.56%)	2.59% (1.35% to 4.68%)	2.55% (1.29% to 4.83%)	0.00% (-0.74% to 0.62%)	0.04% (-0.74% to 0.68%)	0.04% (-0.35% to 0.44%)
Eczema				N/A†			
Ever Smoker	887	6.27% (3.55% to 9.39%)	N/A	6.75% (4.14% to 9.96%)	-0.48% (-2.39% to 1.51%)	N/A	N/A
Hayfever	882	5.35% (3.16% to 8.12%)	5.82% (3.54% to 8.68%)	2.45% (1.38% to 4.34%)	2.90% (0.87% to 5.18%)	3.37% (1.19% to 5.74%)	0.47% (-0.55% to 1.48%)
Migraine	885	3.80% (2.12% to 6.25%)	N/A	1.41% (1.13% to 2.40%)	2.39% (0.56% to 4.77%)	N/A	N/A
Nearsightedness				N/A*			

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Physical Activity	859	1.30% (1.15% to 2.20%)	N/A	1.18% (1.14% to 1.76%)	0.12% (-0.25% to 0.73%)	N/A	N/A
Self-Rated Health	862	5.77% (3.31% to 8.74%)	5.93% (3.34% to 8.92%)	4.48% (2.52% to 6.99%)	1.30% (-0.77% to 3.38%)	1.45% (-0.68% to 3.52%)	0.15% (-0.63% to 0.95%)
<i>Personality and Well-Being</i>							
Adventurousness				N/A*			
Agreeableness				N/A†			
Cognitive Empathy				N/A*			
Conscientiousness				N/A†			
Delay Discounting				N/A*			
Extraversion	866	4.00% (2.24% to 6.63%)	4.16% (2.18% to 6.98%)	1.32% (1.14% to 2.25%)	2.68% (0.95% to 4.95%)	2.84% (0.85% to 5.29%)	0.16% (-1.13% to 1.49%)
Left Out of Social Activity	859	1.79% (1.16% to 3.16%)	1.68% (1.15% to 3.01%)	N/A	N/A	N/A	-0.11% (-0.78% to 0.52%)
Life Satisfaction: Family				N/A*			
Life Satisfaction: Finance				N/A*			
Life Satisfaction: Friends				N/A*			
Life Satisfaction: Work	848	N/A	3.71% (2.19% to 6.07%)	2.55% (1.42% to 4.50%)	N/A	1.16% (-0.62% to 3.11%)	N/A

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Loneliness	859	N/A	2.32% (1.27% to 4.09%)	1.27% (1.14% to 2.22%)	N/A	1.04% (-0.03% to 2.44%)	N/A
Morning Person	860	5.92% (3.56% to 8.64%)	N/A	5.55% (3.38% to 8.35%)	0.37% (-1.54% to 2.32%)	N/A	N/A
Narcissism				N/A*			
Neuroticism	866	2.40% (1.36% to 4.26%)	2.10% (1.23% to 3.83%)	2.41% (1.38% to 4.39%)	-0.01% (-1.07% to 0.92%)	-0.31% (-1.59% to 0.82%)	-0.30% (-1.35% to 0.60%)
Openness	866	3.22% (1.71% to 5.40%)	N/A	1.16% (1.13% to 1.72%)	2.06% (0.43% to 4.02%)	N/A	N/A
Recharge by Socializing				N/A*†			
Religious Attendance				N/A*			
Religious Belief				N/A*†			
Risk Tolerance	821	1.80% (1.22% to 3.12%)	2.11% (1.26% to 3.62%)	1.67% (1.22% to 2.98%)	0.14% (-0.64% to 0.95%)	0.45% (-0.34% to 1.43%)	0.31% (-0.12% to 0.86%)
Subjective Well-Being	860	4.38% (2.45% to 6.80%)	2.64% (1.47% to 4.49%)	1.84% (1.16% to 3.30%)	2.54% (0.81% to 4.54%)	0.80% (-0.72% to 2.41%)	-1.74% (-3.23% to -0.43%)

Phenotype	Environmental Risk (E-Risk) Longitudinal Twin Study						
	N	Single-trait PGI $\Delta R^2$ (95% CI)	Multi-trait PGI $\Delta R^2$ (95% CI)	Public PGI $\Delta R^2$ (95% CI)	Single vs Public $\Delta R^2$ (95% CI)	Multi vs Public $\Delta R^2$ (95% CI)	Multi vs Single $\Delta R^2$ (95% CI)
<i>Anthropometric</i>							
Body Mass Index (BMI)	1,794	15.18% (12.21% to 18.12%)	N/A	16.18% (13.19% to 19.32%)	-1.00% (-2.14% to 0.08%)	N/A	N/A
Height	1,825	34.10% (30.46% to 37.80%)	N/A	32.07% (28.58% to 35.57%)	2.04% (-0.27% to 4.24%)	N/A	N/A
<i>Cognition and Education</i>							
Alzheimer's				N/A*†			

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Childhood Reading	1,913	0.99% (0.57% to 1.82%)	N/A	N/A	N/A	N/A	N/A
Cognitive Performance	1,829	10.27% (7.74% to 13.04%)	14.38% (11.49% to 17.46%)	12.69% (9.98% to 15.63%)	-2.42% (-3.88% to -1.02%)	1.69% (-0.23% to 3.57%)	4.11% (2.64% to 5.65%)
Educational Attainment	1,831	11.56% (9.12% to 14.27%)	12.86% (10.34% to 15.63%)	9.47% (7.18% to 11.81%)	2.09% (0.48% to 3.73%)	3.40% (1.69% to 5.16%)	1.31% (0.33% to 2.28%)
Highest Math				N/A*			
Self-Rated Math Ability				N/A*			
<i>Fertility and Sexual Development</i>							
Age First Birth				N/A*			
Age First Menses (women)	933	10.33% (7.03% to 13.91%)	10.65% (7.18% to 14.33%)	10.63% (7.38% to 14.23%)	-0.30% (-2.23% to 1.68%)	0.03% (-1.97% to 2.16%)	0.33% (-0.24% to 0.90%)
Age Voice Deepened (men)				N/A*			
Number Ever Born (men)				N/A*			
Number Ever Born (women)				N/A*			
<i>Health and Health Behaviors</i>							
Alcohol Misuse	1,833	1.34% (0.69% to 2.37%)	1.53% (0.81% to 2.68%)	N/A	N/A	N/A	0.20% (-0.42% to 0.92%)
Allergy - Cat				N/A*			
Allergy - Dust				N/A*			

Allergy - Pollen				N/A*			
Asthma	1,833	1.64% (0.94% to 2.68%)	2.28% (1.28% to 3.59%)	1.28% (0.78% to 2.13%)	0.35% (0.01% to 0.81%)	0.99% (0.33% to 1.82%)	0.64% (0.15% to 1.20%)
Asthma/Eczema/Rhinitis	1,833	2.97% (1.76% to 4.49%)	3.12% (1.85% to 4.69%)	1.74% (0.92% to 2.81%)	1.24% (0.37% to 2.22%)	1.38% (0.46% to 2.43%)	0.14% (-0.13% to 0.47%)
Attention Deficit Hyperactivity Disorder (ADHD)	1,934	1.12% (0.62% to 2.06%)	0.85% (0.53% to 1.60%)	1.03% (0.59% to 1.89%)	0.08% (-0.15% to 0.32%)	-0.19% (-0.67% to 0.22%)	-0.27% (-0.77% to 0.13%)
Cannabis Use	1,834	2.44% (1.41% to 3.92%)	N/A	1.58% (0.86% to 2.73%)	0.86% (0.29% to 1.53%)	N/A	N/A
Cigarettes per Day				N/A*			
COPD				N/A*			
Depressive Symptoms	1,832	1.75% (0.97% to 2.86%)	1.43% (0.80% to 2.42%)	1.93% (1.11% to 3.14%)	-0.18% (-1.06% to 0.72%)	-0.50% (-1.43% to 0.35%)	-0.32% (-0.95% to 0.23%)
Drinks per Week	1,832	1.80% (1.12% to 2.78%)	1.50% (0.91% to 2.40%)	1.47% (0.86% to 2.44%)	0.33% (-0.09% to 0.76%)	0.03% (-0.41% to 0.43%)	-0.30% (-0.52% to -0.09%)
Eczema				N/A†			
Ever Smoker	1,833	5.86% (4.16% to 7.86%)	N/A	5.75% (4.02% to 7.78%)	0.11% (-1.09% to 1.34%)	N/A	N/A
Hayfever	1,826	2.32% (1.34% to 3.59%)	2.87% (1.70% to 4.31%)	0.78% (0.55% to 1.46%)	1.55% (0.58% to 2.61%)	2.09% (0.98% to 3.37%)	0.55% (0.08% to 1.09%)
Migraine				N/A*			
Nearsightedness				N/A*			

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Physical Activity	1,830	2.27% (1.36% to 3.74%)	N/A	1.27% (0.71% to 2.21%)	1.00% (0.28% to 1.91%)	N/A	N/A
Self-Rated Health				N/A*			
<i>Personality and Well-Being</i>							
Adventurousness				N/A*			
Agreeableness				N/A†			
Cognitive Empathy				N/A*			
Conscientiousness				N/A†			
Delay Discounting				N/A*			
Extraversion	1,820	2.07% (1.16% to 3.28%)	3.12% (1.90% to 4.64%)	1.86% (1.03% to 3.09%)	0.20% (-0.88% to 1.30%)	1.25% (-0.06% to 2.67%)	1.05% (0.35% to 1.77%)
Left Out of Social Activity	1,821	1.77% (1.00% to 3.02%)	1.44% (0.78% to 2.50%)	N/A	N/A	N/A	-0.33% (-1.02% to 0.27%)
Life Satisfaction: Family				N/A*			
Life Satisfaction: Finance				N/A*			
Life Satisfaction: Friends				N/A*			
Life Satisfaction: Work				N/A*			

Loneliness	1,822	N/A	1.85% (1.00% to 3.16%)	1.81% (0.99% to 3.01%)	N/A	0.04% (-0.93% to 0.99%)	N/A
Morning Person				N/A*			
Narcissism				N/A*			
Neuroticism	1,820	1.45% (0.80% to 2.48%)	1.79% (0.93% to 3.04%)	1.53% (0.83% to 2.65%)	-0.08% (-0.68% to 0.47%)	0.26% (-0.52% to 1.04%)	0.34% (-0.10% to 0.85%)
Openness	1,820	0.94% (0.57% to 1.70%)	N/A	1.29% (0.71% to 2.31%)	-0.35% (-1.24% to 0.39%)	N/A	N/A
Recharge by Socializing				N/A*†			
Religious Attendance				N/A*			
Religious Belief				N/A*†			
Risk Tolerance				N/A*			
Subjective Well-Being	1,828	1.34% (0.73% to 2.26%)	1.52% (0.85% to 2.47%)	1.29% (0.69% to 2.23%)	0.05% (-0.75% to 0.85%)	0.23% (-0.72% to 1.14%)	0.17% (-0.35% to 0.79%)

Phenotype	UK Biobank - 3rd partition (UKB3)						
	N	Single-trait PGI $\Delta R^2$ (95% CI)	Multi-trait PGI $\Delta R^2$ (95% CI)	Public PGI $\Delta R^2$ (95% CI)	Single vs Public $\Delta R^2$ (95% CI)	Multi vs Public $\Delta R^2$ (95% CI)	Multi vs Single $\Delta R^2$ (95% CI)
<i>Anthropometric</i>							
Body Mass Index (BMI)	145,960	13.05% (12.74% to 13.37%)	N/A	8.04% (7.78% to 8.30%)	5.01% (4.79% to 5.25%)	N/A	N/A
Height	148,308	32.56% (32.12% to 32.96%)	N/A	20.38% (19.99% to 20.74%)	12.18% (11.89% to 12.45%)	N/A	N/A
<i>Cognition and Education</i>							
Alzheimer's				N/A*†			

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Childhood Reading				N/A*			
Cognitive Performance	72,761	7.86% (7.50% to 8.22%)	9.58% (9.17% to 9.97%)	1.5% (1.32% to 1.68%)	6.36% (6.03% to 6.69%)	8.08% (7.67% to 8.44%)	1.72% (1.51% to 1.93%)
Educational Attainment	146,980	10.5% (10.22% to 10.77%)	12.76% (12.46% to 13.06%)	3.76% (3.58% to 3.96%)	6.74% (6.47% to 6.99%)	9% (8.72% to 9.25%)	2.26% (2.11% to 2.41%)
Highest Math				N/A*			
Self-Rated Math Ability				N/A*			
<i>Fertility and Sexual Development</i>							
Age First Birth	64,656	1.15% (0.99% to 1.32%)	6.16% (5.79% to 6.50%)	N/A	N/A	N/A	5.01% (4.66% to 5.33%)
Age First Menses (women)	77,758	8.78% (8.39% to 9.13%)	8.64% (8.24% to 8.99%)	5.72% (5.41% to 6.02%)	3.06% (2.77% to 3.35%)	2.92% (2.61% to 3.23%)	-0.14% (-0.30% to 0.00%)
Age Voice Deepened (men)				N/A*			
Number Ever Born (men)	68,126	N/A	0.62% (0.49% to 0.76%)	N/A	N/A	N/A	N/A
Number Ever Born (women)	79,971	0.89% (0.76% to 1.03%)	1.23% (1.09% to 1.39%)	N/A	N/A	N/A	0.34% (0.26% to 0.43%)
<i>Health and Health Behaviors</i>							
Alcohol Misuse	40,709	1.08% (0.88% to 1.29%)	2.31% (2.02% to 2.59%)	N/A	N/A	N/A	1.23% (1.03% to 1.45%)
Allergy - Cat				N/A*			
Allergy - Dust				N/A*			
Allergy - Pollen				N/A*			

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Asthma	148,658	1.61% (1.48% to 1.73%)	1.93% (1.79% to 2.07%)	N/A	N/A	N/A	0.32% (0.26% to 0.39%)
Asthma/Eczema/Rhinitis	148,658	1.18% (1.08% to 1.29%)	3.11% (2.94% to 3.29%)	N/A	N/A	N/A	1.93% (1.79% to 2.07%)
Attention Deficit Hyperactivity Disorder (ADHD)				N/A*			
Cannabis Use	44,612	1.27% (1.07% to 1.48%)	N/A	0.2% (0.13% to 0.29%)	1.07% (0.88% to 1.25%)	N/A	N/A
Cigarettes per Day	46,230	2.02% (1.76% to 2.28%)	N/A	0.43% (0.33% to 0.56%)	1.59% (1.36% to 1.81%)	N/A	N/A
COPD	148,658	N/A	0.62% (0.54% to 0.70%)	N/A	N/A	N/A	N/A
Depressive Symptoms	134,601	1.93% (1.79% to 2.06%)	2.45% (2.29% to 2.59%)	0.66% (0.58% to 0.75%)	1.27% (1.16% to 1.38%)	1.79% (1.65% to 1.92%)	0.52% (0.43% to 0.60%)
Drinks per Week	128,102	1.60% (1.47% to 1.75%)	1.76% (1.62% to 1.91%)	N/A	N/A	N/A	0.16% (0.12% to 0.19%)
Eczema				N/A†			
Ever Smoker	148,620	4.25% (4.05% to 4.43%)	N/A	0.74% (0.66% to 0.83%)	3.51% (3.33% to 3.69%)	N/A	N/A
Hayfever	148,658	2.19% (2.05% to 2.34%)	2.70% (2.54% to 2.86%)	N/A	N/A	N/A	0.50% (0.44% to 0.57%)
Migraine	136,296	0.59% (0.51% to 0.68%)	N/A	N/A	N/A	N/A	N/A
Nearsightedness	52,400	4.51% (4.18% to 4.85%)	N/A	N/A	N/A	N/A	N/A
Physical Activity				N/A*			

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Self-Rated Health	148,083	3.83% (3.63% to 4.02%)	3.79% (3.60% to 3.99%)	N/A	N/A	N/A	-0.03% (-0.07% to 0.01%)
<i>Personality and Well-Being</i>							
Adventurousness				N/A*			
Agreeableness				N/A*†			
Cognitive Empathy				N/A*			
Conscientiousness				N/A*†			
Delay Discounting				N/A*			
Extraversion				N/A*			
Left Out of Social Activity				N/A*			
Life Satisfaction: Family	53,590	0.65% (0.52% to 0.80%)	1.15% (0.98% to 1.34%)	N/A	N/A	N/A	0.5% (0.36% to 0.63%)
Life Satisfaction: Finance	53,863	N/A	1.5% (1.31% to 1.71%)	N/A	N/A	N/A	N/A
Life Satisfaction: Friends	53,541	0.67% (0.53% to 0.81%)	1.48% (1.28% to 1.70%)	N/A	N/A	N/A	0.82% (0.67% to 0.98%)
Life Satisfaction: Work	36,469	N/A	0.99% (0.80% to 1.20%)	N/A	N/A	N/A	N/A
Loneliness	146,361	N/A	0.92% (0.82% to 1.02%)	N/A	N/A	N/A	N/A

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Morning Person	133,392	4.41% (4.20% to 4.63%)	N/A	N/A	N/A	N/A	N/A
Narcissism				N/A*			
Neuroticism	120,062	2.55% (2.39% to 2.72%)	3.54% (3.34% to 3.75%)	0.49% (0.42% to 0.58%)	2.06% (1.89% to 2.22%)	3.05% (2.85% to 3.23%)	0.99% (0.90% to 1.07%)
Openness				N/A*			
Recharge by Socializing				N/A*†			
Religious Attendance	148,251	1% (0.90% to 1.10%)	1.46% (1.34% to 1.58%)	N/A	N/A	N/A	0.46% (0.38% to 0.54%)
Religious Belief				N/A*†			
Risk Tolerance	143,533	1.53% (1.41% to 1.65%)	1.78% (1.65% to 1.92%)	N/A	N/A	N/A	0.25% (0.20% to 0.30%)
Subjective Well-Being	53,957	1.38% (1.20% to 1.60%)	1.4% (1.21% to 1.59%)	N/A	N/A	N/A	0.02% (-0.12% to 0.13%)

*Notes:* The "Dataset(s)" column indicates the datasets whose summary statistics were used. "Total *N*" refers to the sum of sample sizes of the UKB, 23andMe and other GWAS that were meta-analyzed. For Age First Birth, Number Ever Born (Men), Number Ever Born (Women) and Asthma/Eczema/Rhinitis, the publicly available summary statistics include the first release of UK Biobank (UKB). Therefore, there is sample overlap between our UKB GWAS and publicly available summary statistics and the effective sample sizes for these GWASs are less than Total *N*. "Overlapping datasets" refers to the overlapping datasets between the GWAS sample and Repository datasets. "Repository Datasets Sumstats are Used for" indicates which Repository datasets a GWAS was used for when constructing the PGIs. Dataset abbreviations: National Longitudinal Study of Adolescent to Adult Health (AddHealth), Dunedin Multidisciplinary Health and Development Study (Dunedin), Environmental Risk (E-Risk) Longitudinal Twin Study, English Longitudinal Study of Ageing (ELSA), Estonian Genome Center, University of Tartu (EGCUT), Health and Retirement Study (HRS), Minnesota Center for Twin and Family Research (MCTFR), Swedish Twin Registry (STR), Texas Twin Project (Texas Twins), UK Biobank (UKB; UKB1-3 refer to the three UKB partitions - see section "UKB GWAS" in Methods for details on the partitioning), Wisconsin Longitudinal Study (WLS).



**Supplementary Table 4: Rho estimation**

Phenotype	Health and Retirement Study (HRS)					
	Single-trait PGI			Multi-trait PGI		
	$h^2$	$R^2$	$\rho$	$h^2$	$R^2$	$\rho$
<i>Anthropometric</i>						
Body Mass Index (BMI)	0.206 (0.047)	0.129 (0.006)	1.267 (0.137)		N/A†	
Height	0.409 (0.056)	0.273 (0.007)	1.224 (0.08)		N/A†	
<i>Cognition and Education</i>						
Alzheimer's		N/A*†			N/A*†	
Childhood Reading		N/A*			N/A*†	
Cognitive Performance		N/A*			N/A*	
Educational Attainment	0.196 (0.054)	0.098 (0.005)	1.413 (0.194)	0.196 (0.042)	0.112 (0.006)	1.326 (0.143)
Highest Math		N/A*			N/A*	
Self-Rated Math Ability		N/A*			N/A*	
<i>Fertility and Sexual Development</i>						
Age First Birth		N/A*			N/A*	
Age First Menses (women)		N/A*			N/A*	
Age Voice Deepened (men)		N/A*			N/A*	
Number Ever Born (men)		N/A†		0.062 (0.108)	0.005 (0.002)	3.707 (3.395)
Number Ever Born (women)	0.055 (0.067)	0.004 (0.002)	3.909 (2.356)	0.055 (0.083)	0.007 (0.002)	2.831 (2.209)
<i>Health and Health Behaviors</i>						
Alcohol Misuse	0.000 (0.000)	0.001 (0.001)	0.033 (0.012)	0.000 (0.000)	0.003 (0.001)	0.020 (0.005)
Allergy - Cat		N/A*†			N/A*	
Allergy - Dust		N/A*†			N/A*	
Allergy - Pollen		N/A*†			N/A*	
Asthma	0.015 (0.062)	0.011 (0.002)	1.206 (2.919)	0.015 (0.065)	0.013 (0.003)	1.069 (2.575)
Asthma/Eczema/Rhinitis		N/A*			N/A*	
Attention Deficit Hyperactivity Disorder (ADHD)	0.463 (0.724)	0.003 (0.004)	12.753 (13.248)	0.463 (0.651)	0.016 (0.011)	5.426 (3.767)
Cannabis Use		N/A*			N/A*†	

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Cigarettes per Day	0.088 (0.096)	0.009 (0.003)	3.05 (1.676)		N/A†	
COPD		N/A†		0.029 (0.046)	0.02 (0.003)	1.191 (0.950)
Depressive Symptoms	0.109 (0.058)	0.015 (0.003)	2.65 (0.703)	0.109 (0.054)	0.016 (0.003)	2.64 (0.710)
Drinks per Week	0.055 (0.047)	0.013 (0.002)	2.056 (0.882)	0.055 (0.052)	0.013 (0.002)	2.026 (0.954)
Eczema		N/A*†			N/A*†	
Ever Smoker	0.113 (0.054)	0.044 (0.004)	1.598 (0.377)		N/A†	
Hayfever		N/A*			N/A*	
Migraine		N/A*			N/A*†	
Nearsightedness		N/A*			N/A*†	
Physical Activity	0.058 (0.052)	0.015 (0.002)	1.968 (0.890)		N/A†	
Self-Rated Health	0.104 (0.054)	0.031 (0.004)	1.83 (0.475)	0.104 (0.047)	0.034 (0.004)	1.745 (0.408)
<i>Personality and Well-Being</i>						
Adventurousness	0.104 (0.055)	0.016 (0.002)	2.578 (0.680)	0.104 (0.050)	0.024 (0.003)	2.077 (0.459)
Agreeableness		N/A†			N/A†	
Cognitive Empathy		N/A*†			N/A*	
Conscientiousness		N/A†			N/A†	
Delay Discounting		N/A*†			N/A*	
Extraversion	0.082 (0.051)	0.016 (0.003)	2.252 (0.731)	0.082 (0.050)	0.025 (0.003)	1.821 (0.536)
Left Out of Social Activity		N/A*			N/A*	
Life Satisfaction: Family	0.076 (0.048)	0.009 (0.002)	2.935 (0.969)	0.076 (0.058)	0.018 (0.003)	2.048 (0.778)
Life Satisfaction: Finance		N/A†		0.110 (0.049)	0.024 (0.003)	2.134 (0.488)
Life Satisfaction: Friends	0.127 (0.132)	0.006 (0.002)	4.721 (2.758)	0.127 (0.126)	0.009 (0.002)	3.796 (1.982)
Life Satisfaction: Work		N/A†		0.075 (0.635)	0.021 (0.012)	1.877 (8.985)
Loneliness		N/A†		0.076 (0.048)	0.016 (0.003)	2.159 (0.690)
Morning Person		N/A*			N/A*†	
Narcissism		N/A*			N/A*†	
Neuroticism	0.115 (0.052)	0.024 (0.003)	2.187 (0.507)	0.115 (0.051)	0.024 (0.003)	2.200 (0.505)
Openness	0.123 (0.058)	0.008 (0.002)	3.903 (1.000)		N/A†	
Recharge by Socializing		N/A*†			N/A*†	
Religious Attendance	0.056 (0.049)	0.013 (0.002)	2.056 (0.873)	0.056 (0.052)	0.019 (0.003)	1.738 (0.781)
Religious Belief		N/A†			N/A†	
Risk Tolerance	0.000 (0.045)	0.002 (0.001)	0.44 (9.681)	0.000 (0.037)	0.003 (0.001)	0.366 (7.26)
Subjective Well-Being	0.135 (0.057)	0.026 (0.003)	2.294 (0.474)	0.135 (0.048)	0.023 (0.003)	2.397 (0.444)

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Phenotype	Wisconsin Longitudinal Study (WLS)					
	Single-trait PGI			Multi-trait PGI		
	$h^2$	$R^2$	$\rho$	$h^2$	$R^2$	$\rho$
<i>Anthropometric</i>						
Body Mass Index (BMI)	0.246 (0.099)	0.136 (0.007)	1.346 (0.27)		N/A†	
Height	0.476 (0.095)	0.276 (0.008)	1.313 (0.127)		N/A†	
<i>Cognition and Education</i>						
Alzheimer's		N/A*†			N/A*†	
Childhood Reading		N/A*			N/A*†	
Cognitive Performance	0.307 (0.096)	0.077 (0.006)	1.992 (0.307)	0.307 (0.099)	0.091 (0.006)	1.838 (0.305)
Educational Attainment	0.172 (0.103)	0.063 (0.006)	1.649 (0.487)	0.172 (0.098)	0.066 (0.005)	1.618 (0.463)
Highest Math		N/A*			N/A*	
Self-Rated Math Ability		N/A*			N/A*	
<i>Fertility and Sexual Development</i>						
Age First Birth	0.050 (0.101)	0.019 (0.003)	1.622 (1.719)	0.050 (0.101)	0.021 (0.003)	1.519 (1.62)
Age First Menses (women)	0.215 (0.154)	0.085 (0.007)	1.594 (0.563)	0.215 (0.146)	0.089 (0.009)	1.55 (0.528)
Age Voice Deepened (men)						
Number Ever Born (men)		N/A†		0.145 (0.173)	0.009 (0.003)	4.036 (2.543)
Number Ever Born (women)	0.048 (0.152)	0.005 (0.002)	2.982 (5.235)	0.048 (0.154)	0.009 (0.003)	2.32 (4.578)
<i>Health and Health Behaviors</i>						
Alcohol Misuse	0.017 (0.101)	0.003 (0.001)	2.558 (10.057)	0.0170 (0.100)	0.008 (0.002)	1.41 (5.178)
Allergy - Cat		N/A†		0.000 (0.005)	0.002 (0.002)	0.021 (1.468)
Allergy - Dust		N/A†		0.000 (0.002)	0.001 (0.001)	0.033 (1.413)
Allergy - Pollen		N/A†		0.000 (0.000)	0.000 (0.000)	0.348 (7.427)
Asthma	0.000 (0.022)	0.011 (0.002)	0.009 (1.948)	0.000 (0.007)	0.015 (0.003)	0.008 (0.988)
Asthma/Eczema/Rhinitis	0.332 (0.317)	0.020 (0.006)	4.048 (2.011)	0.332 (0.298)	0.021 (0.007)	4.0 (1.916)
Attention Deficit Hyperactivity Disorder (ADHD)	0.038 (1.602)	0.004 (0.007)	3.132 (37.166)	0.038 (1.371)	0.014 (0.013)	1.679 (17.710)

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Cannabis Use		N/A*			N/A*†	
Cigarettes per Day	0.000 (0.000)	0.020 (0.005)	0.007 (0.001)		N/A†	
COPD		N/A†		0.060 (0.101)	0.007 (0.002)	2.939 (2.481)
Depressive Symptoms	0.000 (0.056)	0.015 (0.003)	0.008 (3.887)	0.000 (0.062)	0.02 (0.003)	0.007 (3.275)
Drinks per Week	0.020 (0.106)	0.019 (0.003)	1.039 (3.517)	0.020 (0.099)	0.019 (0.002)	1.041 (3.010)
Eczema		N/A*†			N/A*†	
Ever Smoker	0.154 (0.116)	0.043 (0.005)	1.894 (0.715)		N/A†	
Hayfever	0.076 (0.195)	0.011 (0.003)	2.616 (3.549)	0.076 (0.232)	0.013 (0.004)	2.461 (4.158)
Migraine		N/A*			N/A*†	
Nearsightedness		N/A*			N/A*†	
Physical Activity	0.099 (0.094)	0.007 (0.002)	3.704 (1.809)		N/A†	
Self-Rated Health	0.155 (0.095)	0.034 (0.004)	2.142 (0.671)	0.155 (0.090)	0.033 (0.004)	2.158 (0.623)
<i>Personality and Well-Being</i>						
Adventurousness						
Agreeableness		N/A†			N/A†	
Cognitive Empathy		N/A*†			N/A*	
Conscientiousness		N/A†			N/A†	
Delay Discounting		N/A*†			N/A*	
Extraversion	0.108 (0.097)	0.019 (0.003)	2.388 (1.085)	0.108 (0.090)	0.027 (0.003)	2.001 (0.827)
Left Out of Social Activity		N/A*			N/A*	
Life Satisfaction: Family	0.022 (0.102)	0.003 (0.001)	2.522 (6.717)	0.022 (0.110)	0.007 (0.002)	1.810 (5.320)
Life Satisfaction: Finance		N/A†		0.134 (0.094)	0.013 (0.002)	3.177 (1.161)
Life Satisfaction: Friends		N/A*			N/A*	
Life Satisfaction: Work		N/A†		0.044 (0.090)	0.010 (0.002)	2.113 (2.184)
Loneliness		N/A†		0.000 (0.000)	0.011 (0.002)	0.010 (0.001)
Morning Person		N/A*			N/A*†	
Narcissism		N/A*			N/A*†	
Neuroticism	0.167 (0.103)	0.028 (0.004)	2.422 (0.751)	0.167 (0.107)	0.021 (0.003)	2.803 (0.943)
Openness	0.120 (0.098)	0.011 (0.003)	3.236 (1.417)		N/A†	
Recharge by Socializing		N/A*†			N/A*†	
Religious Attendance	0.007 (0.072)	0.007 (0.002)	0.941 (5.936)	0.007 (0.08)	0.009 (0.002)	0.863 (5.741)
Religious Belief		N/A†			N/A†	
Risk Tolerance	0.000 (0.000)	0.000 (0.000)	0.056 (0.039)	0.000 (0.000)	0.0 (0.0)	0.055 (0.038)

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Subjective Well-Being	0.000 (0.000)	0.015 (0.003)	0.008 (0.001)	0.000 (0.000)	0.013 (0.002)	0.009 (0.001)
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Phenotype	UK Biobank - 3rd partition (UKB3)					
	Single-trait PGI			Multi-trait PGI		
	$h^2$	$R^2$	$\rho$	$h^2$	$R^2$	$\rho$
<i>Anthropometric</i>						
Body Mass Index (BMI)	0.258	0.130	1.409		N/A†	
Height	0.517 (0.008)	0.332 (0.002)	1.249 (0.009)		N/A†	
<i>Cognition and Education</i>						
Alzheimer's		N/A*†			N/A*†	
Childhood Reading		N/A*			N/A*†	
Cognitive Performance	0.221	0.078	1.677	0.221	0.095	1.528
Educational Attainment	0.221 (0.008)	0.106 (0.008)	1.448 (0.028)	0.221	0.125	1.327
Highest Math		N/A*			N/A*	
Self-Rated Math Ability		N/A*			N/A*	
<i>Fertility and Sexual Development</i>						
Age First Birth	0.089	0.012	2.779	0.089	0.060	1.213
Age First Menses (women)	0.242	0.087	1.666	0.242	0.086	1.679
Age Voice Deepened (men)						
Number Ever Born (men)		N/A†		0.041	0.006	2.587
Number Ever Born (women)	0.070	0.009	2.800	0.070	0.012	2.387
<i>Health and Health Behaviors</i>						
Alcohol Misuse	0.078	0.011	2.684	0.078	0.023	1.844
Allergy - Cat		N/A*†			N/A*	
Allergy - Dust		N/A*†			N/A*	
Allergy - Pollen		N/A*†			N/A*	
Asthma	0.067	0.016	2.039	0.067	0.019	1.860
Asthma/Eczema/Rhinitis	0.089	0.012	2.740	0.089	0.031	1.692

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Attention Deficit Hyperactivity Disorder (ADHD)		N/A*			N/A*	
Cannabis Use	0.084	0.012	2.597		N/A†	
Cigarettes per Day	0.099	0.021	2.182			
COPD		N/A†		0.022	0.006	1.894
Depressive Symptoms	0.072	0.019	1.940	0.072	0.024	1.721
Drinks per Week	0.068	0.016	2.078	0.068	0.017	1.984
Eczema		N/A†			N/A†	
Ever Smoker	0.104	0.042	1.576		N/A†	
Hayfever	0.084	0.022	1.951	0.084	0.027	1.760
Migraine	0.022	0.006	1.926		N/A†	
Nearsightedness	0.137	0.045	1.746		N/A†	
Physical Activity		N/A*			N/A*†	
Self-Rated Health	0.103	0.038	1.651	0.103	0.037	1.657
<i>Personality and Well-Being</i>						
Adventurousness						
Agreeableness		N/A*†			N/A*†	
Cognitive Empathy		N/A*†			N/A*	
Conscientiousness		N/A*†			N/A*†	
Delay Discounting		N/A*†			N/A*	
Extraversion		N/A*			N/A*	
Left Out of Social Activity		N/A*			N/A*	
Life Satisfaction: Family	0.065	0.007	3.157	0.065	0.011	2.382
Life Satisfaction: Finance		N/A†		0.063	0.015	2.056
Life Satisfaction: Friends	0.069 (0.018)	0.007 (0.001)	3.217 (0.428)	0.069	0.015	2.160
Life Satisfaction: Work		N/A†		0.069	0.010	2.661
Loneliness		N/A†		0.043	0.009	2.166
Morning Person	0.132	0.044	1.740		N/A†	
Narcissism		N/A*			N/A*†	
Neuroticism	0.113	0.025	2.115	0.113	0.035	1.796
Openness		N/A*			N/A*†	
Recharge by Socializing		N/A*†			N/A*†	

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Religious Attendance	0.047	0.010	2.160	0.047	0.014	1.800
Religious Belief		N/A*†			N/A*†	
Risk Tolerance	0.063	0.015	2.039	0.063	0.018	1.889
Subjective Well-Being	0.071	0.014	2.263	0.071	0.014	2.248

*Notes:* \*The phenotype is not available in the validation dataset. †Neither the single- nor multi-trait PGIs for the phenotype fulfills the criterion of expected out-of-sample incremental  $R^2 > 0.01$ . All phenotypes are residualized: As a general rule, if a single measurement in time was available, we residualized the phenotype on a second-degree polynomial in age, sex, and their interactions. If multiple measurements were available, we either did the same residualization in each wave and took the mean across waves or we took the maximum across waves and then residualized on birth year, sex, and their interactions (see Supplementary Table 5 for UKB3 and 12 for other datasets). Finally, we residualized both the resulting phenotypes and PGIs on 20 PCs. In the UKB analyses, we included an additional 20 principal components and 106 genotyping batch dummies.  $h^2$  was estimated using the final residualized phenotypes with GCTA for HRS and WLS, and with BOLT-REML for UKB3, after excluding related individuals. In HRS and WLS, the relatedness cutoff used was 0.025. In UKB3, we did not impose a relatedness cutoff since UKB3 does not include any pairs of more-than-fourth-degree-related individuals by construction, corresponding to a cutoff of 0.088 in GCTA.  $R^2$  is the variance explained in a simple regression of the residualized phenotype on the residualized PGI. Standard errors for  $R^2$ ,  $h^2$ , and  $\rho$  were estimated with a 100-block jackknife procedure. Due to computational constraints, we estimated standard errors for only three phenotypes in UKB3.

**Supplementary Table 5: UKB GWASs**

Phenotype	UKB data field(s)	Phenotype measure	Handling of repeated measures	N - UKB1	N - UKB2	N - UKB3
<i>Anthropometric</i>						
Body Mass Index (BMI)	23104	Body composition estimation by impedance measurement	Residualize within wave, then take mean	146,391	146,125	145,960
Height	50	Standing height was measured using a Seca 202 device	Residualize within wave, then take mean	148,430	148,316	148,308
<i>Cognition and Education</i>						
Cognitive Performance	20016, 20191	Unweighted sum of the number of correct answers given to the 13 fluid intelligence questions. Participants who did not answer all of the questions within the allotted 2 minute limit are scored as zero for each of the unattempted questions.	Residualize within wave, then take mean	80,611	71,604	72,841
Educational Attainment	6138	Years of education: 20 if "College or university degree", 13 if "Alevels/AS levels or equivalent", 10 if "Olevels/GCSEs or equivalent" or "CSEs or equivalent", 19 if "NVQ or HND or HNC or equivalent", 15 if "Other professional qualifications (e.g. nursing teaching)", 7 if "None of the above".	Maximum	147,466	147,314	147,311
<i>Fertility and Sexual Development</i>						
Age First Birth	2754, 3872	"How old were you when you had your FIRST child?" "How old were you when you had your child?"  Variable constructed as the minimum of the responses.	Minimum	67,401	64,756	64,658
Age First Menses (Women)	2714	"How old were you when your periods started?"	Mean	80,126	77,762	77,758
Number Ever Born (Men)	2405	"How many children have you fathered?"	Maximum	66,333	68,075	68,106
Number Ever Born (Women)	2734	"How many children have you given birth to? (Please include live births only)"	Maximum	81,881	79,971	79,992
<i>Health and Health Behaviors</i>						

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Alcohol Misuse	20403, 20405, 20407, 20408, 20409, 20411, 20412, 20413, 20414, 20416	<p>1) "How often do you have a drink containing alcohol?" "Never" = 0, "Monthly or less" = 1, "2 to 4 times a month" = 2, "2 to 3 times a week" = 3, "4 or more times a week" = 4</p> <p>2) "How many drinks containing alcohol do you have on a typical day when you are drinking?" "1 or 2" = 0, "3 or 4" = 1, "5 or 6" = 2, "7,8, or 9" = 3, "10 or more" = 4</p> <p>3) "How often do you have six or more drinks on one occasion?" "Never"=0, "Less than monthly"=1, "Monthly"=2, "Weekly"=3, "Daily or almost daily"=4</p> <p>4) "How often during the last year have you failed to do what was normally expected from you because of drinking?" "Never"=0, "Less than monthly"=1, "Monthly"=2, "Weekly"=3, "Daily or almost daily"=4</p> <p>5) "How often during the last year have you been unable to remember what happened the night before because you had been drinking?" "Never"=0, "Less than monthly"=1, "Monthly"=2, "Weekly"=3, "Daily or almost daily"=4</p> <p>6) "How often during the last year have you had a feeling of guilt or remorse after drinking?" "Never"=0, "Less than monthly"=1, "Monthly"=2, "Weekly"=3, "Daily or almost daily"=4</p> <p>7) "How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?" "Never"=0, "Less than monthly"=1, "Monthly"=2, "Weekly"=3, "Daily or almost daily"=4</p> <p>8) "How often during the last year have you found that you were not able to stop drinking once you had started?" "Never"=0, "Less than monthly"=1, "Monthly"=2, "Weekly"=3, "Daily or almost daily"=4</p> <p>9) "Have you or someone else been injured as a result of your drinking?" "No"=0, "Yes but not in the last year"=2, "Yes, during the last year"=4</p> <p>10) "Has a relative or friend or a doctor or another health worker been concerned about your drinking or suggested you cut down?" "No"=0, "Yes but not in the last year"=2, "Yes, during the last year"=4</p> <p>Variable constructed as the logarithm of the sum of answers to questions 1-10.</p>	N/A	51,126	39,825	40,709
Asthma	41202, 41204, 20002, 6152	<p>Set to 1 if respondent</p> <ul style="list-style-type: none"> <li>- has been diagnosed with Asthma (main or secondary ICD10 code equal to J450,J451, J458, J459 or J46), or</li> <li>- self-reported to have had asthma (non-cancer illness code equal to 1111 or selected asthma in data-field 6152);</li> </ul> <p>0 otherwise.</p>	Maximum	148,654	148,652	148,659
Asthma/Eczema/Hayfever		Set to 1 if Asthma=1 or Eczema=1 or Hayfever=1, 0 if all are equal to 0.	N/A	148,653	148,652	148,658
Cannabis Use	20453	<p>"Have you taken CANNABIS (marijuana, grass, hash, ganja, blow, draw, skunk, weed, spliff, dope), even if it was a long time ago?" "No", "Yes, 1-2 times", "Yes 3-10 times", "Yes, 11-100 times", "Yes, more than 100 times".</p> <p>Set to 0 if "No", 1 otherwise.</p>	N/A	55,872	43,628	44,612

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Cigarettes per Day	3456, 2887, 6183	<p>1) "About how many cigarettes do you smoke on average each day?"</p> <p>2) "About how many cigarettes did you smoke on average each day?"</p> <p>3) "About how many cigarettes did you smoke on average each day? (current cigar/pipe smokers)"</p> <p>Set to missing if less than 0 or greater than 100, to the mean of the three responses otherwise. Then converted to bins according to the following mapping: 1-5 -&gt; 1, 6-15 -&gt; 2, 16-25 -&gt; 3, 26-35 -&gt; 4, 36+ -&gt;5</p>	Mean	46,090	46,829	46,241
COPD	41202, 41204, 20002, 6152	Set to 1 if subject has been diagnosed with COPD (main or secondary ICD diagnosis is equal to J410, J411, J418, J42, J430, J431, J432, J438, J439, J440, J441, J448, J449, J982 or J983) or if subject self-reported to have had COPD (non-cancer illness code 1112), 0 otherwise.	Maximum	148,654	148,652	148,659
Depressive Symptoms	1920, 1930, 1940, 1950, 1960, 1970, 1980, 1990, 2000, 2010, 2020, 2030	<p>1) "Over the past two weeks, how often have you felt down, depressed or hopeless?"</p> <p>2) "Over the past two weeks, how often have you had little interest or pleasure in doing things?"</p> <p>3) "Over the past two weeks, how often have you felt tense, fidgety or restless?"</p> <p>4) "Over the past two weeks, how often have you felt tired or had little energy?"</p> <p>"Not at all"=1, "Several days"=2, "More than half the days"=3, "Nearly every day"=4, "Do not know"=missing, "Prefer not to answer"=missing</p> <p>Variable set to the sum of responses to the 4 questions if all are non-missing, to missing otherwise.</p>	Residualize within wave, then take mean	135,953	134,430	134,601
Drinks per Week	2050, 2060, 2070, 2080	<p>1) "In an average WEEK, how many glasses of RED wine would you drink? (There are six glasses in an average bottle)"</p> <p>2) "In an average WEEK, how many glasses of WHITE wine or champagne would you drink? (There are six glasses in an average bottle)"</p> <p>3) "In an average WEEK, how many pints of beer or cider would you drink? (Include bitter, lager, stout, ale, Guinness)"</p> <p>4) "In an average WEEK, how many measures of spirits or liqueurs would you drink? (there are 25 standard measures in a normal sized bottle; spirits include drinks such as whisky, gin, rum, vodka, brandy)"</p> <p>5) "In an average WEEK, how many glasses of fortified wine would you drink? (There are 12 glasses in an average bottle) (Fortified wines include drinks such as sherry, port, vermouth)"</p> <p>6) "In an average WEEK, how many glasses of other alcoholic drinks (such as alcopops) would you drink?"</p> <p>7)-12) Same questions as 1-6, but asked about average MONTH responses to 1-6, do the same with 7-12.</p> <p>Responses to 1-6 and 7-12 are summed up, the latter was converted to drinks per week by dividing by 4. The variable is set to the mean of the two sums.</p>	Residualize within wave, then take mean	129,476	127,976	128,102

Eczema	41202, 41204, 20002, 6152	Set to 1 if subject has been diagnosed with Eczema (main or secondary ICD diagnosis is equal to L20, L208 or J209) or if subject self-reported to have Eczema (non-cancer illness code 1452), 0 otherwise.	Maximum	146,934	146,635	146,608
Ever smoker	1239, 1249, 2644	1) "Do you smoke tobacco now?" "Yes, on most or all days"=1, "Only occasionally"=2, "No"=0 2) "In the past, how often have you smoked tobacco?" "Smoked on most or all days"=1, "Smoked occasionally"=2, "Just tried once or twice"=3, "I have never smoked"=4 3) "In your lifetime, have you smoked a total of at least 100 times?" Yes/No  Set to 1 if response to (1) or (2) = 1 or if response to (2) = 2 or 3 and response to (3) is "Yes"	Maximum	148,630	148,611	148,621
Hayfever	41202, 41204, 20002, 6152	Set to 1 if respondent - has been diagnosed with hayfever (main or secondary ICD10 code equal to J301, J302, J303 or J304, or - self-reported to have hayfever (non-cancer illness code equal to 1387 or selected "Hayfever, allergic rhinitis or eczema" in data-field 6152); 0 otherwise.	Maximum	148,653	148,652	148,658
Migraine	41202, 41204, 20002	Set to 1 if - subject has been diagnosed with migraine (main or secondary ICD10 code equal to G430, G431, G432, G433, G438, G439), or - self-reported to have migraines (non-cancer illness code equal to 1265); 0 otherwise.	Maximum	137,322	136,376	136,310
Nearsightedness	2207, 6147, 20262	1) "Do you wear glasses or contact lenses to correct your vision?" Yes/No 2) "Why were you prescribed glasses/contacts? (You can select more than one answer)"  Set to 1 if - myopia classification (data field 20262) is "highly myopic" or "moderate/low myopia" or - response to (1) is "Yes" and response to (2) is "short-sightedness" Set to 0 if - response to (1) is "No" or - response to (1) is "Yes" but response to (2) is not "short-sightedness" or - myopia status as defined above is missing and myopia classification is "non-myopic"	Maximum	71,789	51,874	52,400
Self-Rated Health	2178	"In general how would you rate your overall health?" "Excellent" = 1, "Good" = 2, "Fair" = 3, "Poor" = 4, "Do not know", "Prefer not to answer"  Reverse-coded as difference from 5. "Do not know" or "Prefer not to answer" set to missing.	Residualize within wave, then take mean	148,195	148,108	148,083

*Personality and Well-Being*

Life Satisfaction: Family	4559	<p>"In general how satisfied are you with your FAMILY RELATIONSHIPS?"            "Extremely happy" = 1, "Very happy" = 2, "Moderately happy" = 3,            "Moderately unhappy" = 4, "Very unhappy" = 5, "Extremely unhappy" = 6,            "Do not know", "Prefer not to answer"</p> <p>Variable reverse-coded as difference from 7. "Do not know" or "Prefer not to answer" set to missing.</p>	Residualize within wave, then take mean	61,756	52,967	53,590
Life Satisfaction: Finance	4581	<p>"In general how satisfied are you with your FINANCIAL SITUATION?"            "Extremely happy" = 1, "Very happy" = 2, "Moderately happy" = 3,            "Moderately unhappy" = 4, "Very unhappy" = 5, "Extremely unhappy" = 6,            "Do not know", "Prefer not to answer"</p> <p>Variable reverse-coded as difference from 7. "Do not know" or "Prefer not to answer" set to missing.</p>	Residualize within wave, then take mean	61,894	53,294	53,863
Life Satisfaction: Friends	4570	<p>"In general how satisfied are you with your FRIENDSHIPS?" "Extremely happy" = 1, "Very happy" = 2, "Moderately happy" = 3, "Moderately unhappy" = 4, "Very unhappy" = 5, "Extremely unhappy" = 6, "Do not know", "Prefer not to answer"</p> <p>Variable reverse-coded as difference from 7. "Do not know" or "Prefer not to answer" set to missing.</p>	Residualize within wave, then take mean	61,514	52,946	53,541
Life Satisfaction: Work	4537	<p>"In general how satisfied are you with the WORK that you do?" "Extremely happy" = 1, "Very happy" = 2, "Moderately happy" = 3, "Moderately unhappy" = 4, "Very unhappy" = 5, "Extremely unhappy" = 6, "Do not know", "Prefer not to answer", "I am not employed"</p> <p>Variable reverse-coded as difference from 7. "Do not know", "Prefer not to answer", "I am not employed" set to missing.</p>	Residualize within wave, then take mean	42,437	36,132	36,469
Loneliness	2020	<p>"Do you often feel lonely?" "Yes", "No", "Do not know", "Prefer not to answer"</p> <p>Set to 1 if "Yes", 0 if "No", missing if "Do not know" or "Prefer not to answer"</p>	Residualize within wave, then take mean	146,717	146,447	146,361
Morning Person	1180	<p>"Do you consider yourself to be..?"            "Definitely a morning person" = 1, "More a morning than evening person" = 2, "More an evening than a morning person" = 3, "Definitely an evening person" = 4, "Do not know", "Prefer not to answer".</p> <p>Reverse-coded as the difference from 5. "Do not know", "Prefer not to answer" set to missing</p>	Residualize within wave, then take mean	134,373	133,311	133,392

Neuroticism	20127	<p>Neuroticism summary score derived as the number of "Yes" answers across twelve questions:</p> <p>1) "Does your mood often go up and down?"</p> <p>2) "Do you ever feel 'just miserable' for no reason?"</p> <p>3) "Are you an irritable person?"</p> <p>4) "Are your feelings easily hurt?"</p> <p>5) "Do you often feel 'fed-up'?"</p> <p>6) "Would you call yourself a nervous person?"</p> <p>7) "Are you a worrier?" "Yes" = 1, "No" = 0</p> <p>8) "Would you call yourself tense or 'highly strung'?"</p> <p>9) "Do you worry too long after an embarrassing experience?"</p> <p>10) "Do you suffer from 'nerves'?"</p> <p>11) "Do you often feel lonely?"</p> <p>12) "Are you often troubled by feelings of guilt?"</p>	N/A	121,272	120,354	120,062
Religious Attendance	6160	<p>"Which of the following do you attend once a week or more often? (You can select more than one):"</p> <p>"Sports club or gym", "pub or social club", "religious group", "adult education class", "other group activity", "none of the above", "prefer not to answer".</p> <p>Set to missing if "prefer not to answer" was selected, to 1 if "religious group" was selected, 0 otherwise.</p>	Maximum	148,313	148,278	148,251
Risk Tolerance	2040	"Would you describe yourself as someone who takes risks?" Yes/No	Residualize within wave, then take mean	144,315	143,565	143,533
Subjective Well-Being	4526	<p>"In general how happy are you?"</p> <p>"Extremely happy" = 1, "Very happy" = 2, "Moderately happy" = 3, "Moderately unhappy" = 4, "Very unhappy" = 5, "Extremely unhappy" = 6, "Do not know", "Prefer not to answer".</p> <p>Reverse-coded as difference from 7. "Do not know", "Prefer not to answer" set to missing.</p>	Residualize within wave, then take mean	61,929	53,333	53,957

Notes: "UKB1", "UKB2" and "UKB3" are the three UKB partitions (see section "UKB GWAS" in Methods for details on partitioning). "Residualize" in column "Handling of repeated measures" refers to obtaining the standardized residuals from a regression of the variable on sex (unless the phenotype is sex-specific), a third degree polynomial in age at the time of measurement, and their interactions. After the phenotypes were constructed as in this table, they were additionally residualized on a third degree polynomial in birth year, sex and their interactions, 106 genotyping batch dummies, and the first 40 PCs within each partition before GWAS.

**Supplementary Table 6: 23andMe GWASs**

Phenotype	Phenotype Measure	Linear / Logistic	Covariates	N	Citation
<i>Cognition and Education</i>					
Childhood Reading	"At what age did you start to read?" "NA" / "under age 3" (=0) / "3 years old" (=1) / "4 years old" (=2) / "5 years old" (=3) / "6 years old" (=4) / "7 years old" (=5)	Linear	Sex, third degree polynomial in age and their interactions, 10 PC's, platform dummies	172,503	N/A
Educational Attainment	"What is the highest level of education you have completed?" (age ≥ 30)  "Less than high school" (=7) / "High school" (=13) / "Associate/vocational/some college" (=15) / "Bachelor degree" (=19) / "Master/Professional" (=20) / "Doctorate" (=22)	Linear	Sex, third degree polynomial in age and their interactions, 10 PC's, platform dummies	365,538	[1]
Highest Math	"Excluding statistics courses, what is the most advanced math class you have successfully completed?" "Pre-Algebra" (=1) / "Algebra" (=2) / "Geometry" (=3) / "Trigonometry" (=4) / "Pre-Calculus" (=5) / "Calculus" (=6) / "Vector Calculus" (=7) / "More than vector calculus" (=8) / "I'm not sure"	Linear	Sex, third degree polynomial in age and their interactions, 10 PC's, platform dummies	430,439	[1]
Self-Rated Math Ability	"How would you rate your mathematical ability?" "very poor" (=0) / "poor" (=1) / "about average" (=2) / "good" (=3) / "excellent" (=4) / "I'm not sure"	Linear	Sex, third degree polynomial in age and their interactions, 10 PC's, platform dummies	564,692	[1]
<i>Fertility and Sexual Development</i>					
Age First Birth	• "In what year (YYYY) was your baby born?" • "In what year (YYYY) was your first baby born?" The mother's birth year was subtracted from the baby's birth year. Illogical ages at birth (too young or too old) were removed.	Linear	Third degree polynomial in age and 5 PCs	9,370	[2]
Age First Menses (Women)	"How old were you when you had your first menstrual period?" "Under 8" (=0) / "8-9 years old" (=1) / "10-11 years old" (=2) / "12-13 years old" (=3) / "14-15 years old" (=4) / "16 years old or older" (=5) / "I'm not sure"	Linear	Age and 5 PCs	76,831	[3]
Age Voice Deepened (Men)	"How old were you when your voice began to crack/deepen?" "Under 9" (=0) / "9-10 years old" (=1) / "11-12 years old" (=2) / "13-14 years old" (=3) / "15-16 years old" (=4) / "17-18 years old" (=5) / "19 years old or older" (=6) / "I'm not sure"	Linear	Age and 5 PCs	55,871	[3]
<i>Health and Health Behaviors</i>					
Alcohol Misuse	Logarithm of 10-item AUDIT score. Participants were not administered AUDIT if they reported that they never drank alcohol	Linear	Age (inverse-normalized), sex, 5 PCs and platform dummies	19,407	[4]

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Allergy - Cat	<p>Pollen allergy</p> <ul style="list-style-type: none"> <li>• Cases were defined by a 'Yes' answer to (1a) and one or more of (2a), (2b) or (2c), as well as either a 'Yes' answer to the corresponding (3a), (3b) or (3c), or one or more of (7a), (7b), (7c), (7d), or (7e).</li> <li>• Controls were defined by a 'No' answer to (1a), or to all of (2a), (2b), and (2c).</li> </ul> <p>Cat allergy</p> <ul style="list-style-type: none"> <li>• Cases were defined by a 'Yes' answer to (1b) and (4a), as well as either a 'Yes' answer to either (5a), or one or more of (7a), (7b), (7c), (7d), or (7e).</li> <li>• Controls were defined by a 'No' answer to (1a), or to all of (2a), (2b), and (2c).</li> </ul>	Logistic	Age, sex, and 5 PCs	46,646	[5]
Allergy - Dust	<p>Dust mite allergy</p> <ul style="list-style-type: none"> <li>• Cases were defined by a 'Yes' answer to (1c), as well as either a 'Yes' answer to (6), or one or more of (7a), (7b), (7c), (7d), or (7e).</li> <li>• Controls were defined by a 'No' answer to (1c).</li> </ul> <p>Additional shared controls for all three allergy phenotypes were then identified, who (1) did not qualify as cases for any allergy phenotype; (2) either responded 'No' to both of (8a) and (8b), or to (9); and (3) had not responded 'Yes' to any of these questions. Finally, individuals who were classified as a case for at least one allergy phenotype were classified as controls for other allergy phenotypes for which they were not already classified as cases or controls.</p>	Logistic	Age, sex, and 5 PCs	46,646	[5]
Allergy - Pollen	<p>1) "Have you had an allergic reaction to any of the following items?" "Yes / No / I'm not sure"</p> <p>"Foods" / "(1a) Plants (including pollen)" / "(1b) Animals (mammals, birds, or insects)" / "(1c) Dust mites" / "Molds" / "Latex" / "Medicines" / "Vaccines" / "Something else"</p> <p>2) (conditional on 1a) "Have you had an allergic reaction to any of the following types of plants?" "Yes / No / I'm not sure"</p> <p>"(2a) Grasses" / "(2b) Trees" / "(2c) Weeds" / "Another plant"</p> <p>3) (conditional on 1a) "Have you had an allergy test administered by a medical professional which indicated that you are allergic to the following types of plants?" "Yes / No / I'm not sure"</p> <p>"(3a) Grasses" / "(3b) Trees" / "(3c) Weeds" / "Another plant"</p> <p>4) "Have you had an allergic reaction to any of the following types of animals?" "Yes / No / I'm not sure"</p> <p>"(4a) Cats" / "Dogs" / "Honeybees" / "Red ants" / "Yellow jackets" / "Wasps" / "Another animal"</p> <p>5) (conditional on 4) "Have you had an allergy test administered by a medical professional which indicated that you are allergic to the following types of animals?" "Yes / No / I'm not sure"</p> <p>"(5a) Cats" / "Dogs" / "Honeybees" / "Red ants" / "Yellow jackets" / "Wasps" / "Another animal"</p> <p>6) (conditional on 1c) "Have you had an allergy test administered by a medical professional which indicated that you are allergic to the following? Dust mites / Molds / Latex / Medicines / Vaccines / Something else" "Yes / No / I'm not sure"</p> <p>7) (Asked separately for each allergen conditional on 1, 2, and 4) "What type of reaction did you have after being exposed to [allergen]? Please</p>	Logistic	Age, sex, and 5 PCs	46,646	[5]

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check all that apply."

"Abdominal pain or vomiting" / "Diarrhea" / "(7a) Difficulty swallowing or difficulty speaking" / "Drop of blood pressure or passing out" / "(7b) Hives (red, itchy, or swollen skin)" / "(7c) Itching in your mouth" / "(7d) Itchy or runny nose" / "Nausea" / "(7e) Wheezing or asthma" / "None of the above"

8) "Have you ever been diagnosed by a doctor with one of the following types of allergies?" "Yes / No / I'm not sure"

"(8a) Seasonal allergies" / "Asthma" / "(8b) Environmental (but not seasonal) allergy" / "Food allergy" / "Drug allergy"

9) "Do you currently have allergies?" "Yes / No / I'm not sure"

Asthma/Eczema/Rhinitis	<p>Cases have any asthma, eczema, rhinitis; controls have none and no allergies. Asthma, eczema, and rhinitis cases are defined as follows:</p> <ul style="list-style-type: none"> <li>• Asthma: Combines reports of asthma diagnoses from five sources: 1) Your Health Profile Survey: "Have you ever been diagnosed or treated for any of the following conditions?" (Asthma: Yes, No, Don't Know) 2) Your Medical History Survey: "Have you ever been diagnosed by a doctor with any of the following types of allergies?" (Asthma: Yes, No, I don't know) 3) Allergies and Asthma Survey: "Have you ever had an asthma attack? (Yes, No, I'm not sure) 4) Asthma Survey: "Have you ever been diagnosed by a doctor with asthma or bronchial asthma?" (Yes, No, I'm not sure) 5) The Roots into the Future intake form Survey: "Have you ever been diagnosed or treated for any of the following conditions?" (Asthma: Yes, No, Don't Know). Yes/no responses from these questions were merged, with inconsistent responses scored as missing: cases have at least one positive response and no negative responses, and controls have at least one negative response and no positive responses.</li> <li>• Hayfever: Combines answers from three sources: 1) Asthma Survey: "Have you ever had any of the following? Please check all that apply: Allergic rhinitis (stuffed or dripping nose caused by allergies) (Yes, No) 2) Quick question used in Research snippet: "Have you ever been diagnosed with hay fever (allergic rhinitis)? (Yes, No, I am not sure) 3) Allergy Survey: A series of questions on allergy symptoms to grasses, trees, weeds, cats, dogs, dust mites and mold. An example one is worded as "What type of reaction did you have after being exposed to trees? Please check all that apply: Itchy or runny nose" (Yes, No). Yes/no responses from the above questions were merged, with inconsistent</li> </ul>	Logistic	Age, sex, and 5 PCs	135,538	[6]
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responses scored as missing: cases have at least one positive response and no negative responses and controls have at least one negative response and no positive responses.

- Eczema: Combines answers from nine sources:

- 1) Your Medical History Survey: "Have you ever been diagnosed by a doctor with any of the following autoimmune conditions? (Eczema)" (Yes, No, I don't know)
- 2) The Roots into the Future intake form survey: "Has a doctor ever told you that you have any of these skin conditions? Please check all that apply." (Eczema, Keloids, Psoriasis, Other skin condition, I'm not sure, None of the above)
- 3) Allergies and Asthma survey: "Did you have any of the following problems as a child (age 17 or younger)? Eczema (atopic dermatitis)" (Yes, No, I'm not sure)
- 4) Asthma survey: "Have you ever had any of the following? Please check all that apply: Atopic dermatitis/Eczema (chronic itchy and scaly skin rashes caused by allergies)"
- 5) Question used in Allergies and Inflammatory Bowel Disease Community surveys: "Did you have any of these problems before you were 18 years old? Eczema (atopic dermatitis)" (Yes, No, I'm not sure)
- 6) Question used in Research snippet and Your Profile and Health History survey: "Have you ever been diagnosed with eczema?" (Yes, No, I'm not sure)
- 7) Your Health and Health History survey: Question 1: "What autoimmune diseases have you been diagnosed with? Please check all that apply: Eczema"; Question 2: "Have you ever been diagnosed or treated for any of the following conditions? An autoimmune disease (a disease in which your immune system attacks part of your body)" (Yes, No, I'm not sure)
- 8) Your Health and Health History survey: Question 1: "What skin conditions have you had? Please check all that apply. Eczema" (Yes, No, I'm not sure); Question 2: "Have you ever been diagnosed or treated for any of the following conditions? A skin condition"
- 9) Health Followup Survey: "In the last 2 years, have you been newly diagnosed with or started treatment for any of the following conditions? Eczema" (Yes, No, I'm not sure).

Answers to these questions were combined according to the following steps: Step 1, a combined phenotype is first assigned based on the first unambiguous response from the questions in sources 1 to 6: cases and controls are first assigned based on the question in "Your Medical History", then for individuals who were not classified, the subsequent questions in sources 2 to 6 are used in the given order. Step 2, another phenotype is assigned based on the two questions in source 7: cases answered "yes" to the first question and controls answered "no" to both questions. Step 3, a third phenotype is assigned based on the two questions in source 8: cases answered "yes" and controls answered "no" to both questions. Step 4, a fourth phenotype is assigned based on the one question in source 9: cases answered "yes" to the question and controls answered "no" to the question. The final eczema cases are defined as being "case" in at least one of the above four phenotypes, controls are defined as being "control" in at least one of the above four phenotypes. When discordant, we assume the 'case' answer is correct.

Attention Deficit Hyperactivity Disorder (ADHD)	<ul style="list-style-type: none"> <li>• "Have you ever been diagnosed by a doctor with any of the following psychiatric conditions: Attention deficit disorder (ADD) or Attention deficit hyperactivity disorder (ADHD)?" "Yes" / "No" / "I don't know".</li> <li>• "Have you ever been diagnosed with attention deficit disorder (ADD) or attention deficit hyperactive disorder (ADHD)?" "Yes" / "No" / "I'm not sure".</li> </ul> <p>Individuals who gave a positive response to these questions were classed as ADHD cases and controls were those who gave a negative response to these questions. Individuals with discordant responses were excluded.</p>	Logistic	Age, sex, and 4 PCs	62,380	[7]
Cannabis Use	Lifetime cannabis use based on the following question: "Have you ever in your life used the following: Marijuana?" (Yes/No)	Logistic	Age (inverse-normalized), sex, 5 PCs and platform dummies	22,771	[8]
Cigarettes per Day	Packs per day, in smokers, constructed by taking the first available response from the following questions: <ul style="list-style-type: none"> <li>• Smoking survey: "During the time that you regularly smoked, on average, how much did you smoke per day?" -- "Packs per day" (integer)</li> <li>• Tobacco survey, for current smokers: "On average, how many cigarettes do you currently smoke each day?" or for past smokers: "During the period of time before you quit smoking, how many cigarettes, on average, did you smoke each day?" (integer response, divided by 20)</li> <li>• Smoking survey: "During the time that you regularly smoked, on average, how much did you smoke per day?" -- "Cigarettes per day" (integer response, divided by 20)</li> <li>• Health habits survey, for current smokers: "How many cigarettes do you smoke per day?" or for past smokers: "How many cigarettes did you smoke per day?" (categorical response: &lt;10, 11-20, 21-30, 31-40, 41-50, 51+ were mapped to 0.25, 0.75, 1.25, 1.75, 2.25, 2.75 packs per day)</li> </ul>	Linear	Age, sex, 5 PCs, platform dummies, dummy for being a current smoker	76,186	[9]
Depressive Symptoms	<p>Q1) "Have you ever been diagnosed by a doctor with any of the following psychiatric conditions? - Depression" "Yes" / "No" / "I don't know"</p> <p>Q2) "Have you ever been diagnosed with clinical depression?" "Yes" / "No" / "I'm not sure"</p> <p>Q3) "Have you ever been diagnosed with or treated for any of the following conditions? - Depression" "Yes" / "No" / "I'm not sure"</p> <p>Q4) "In the last 2 years, have you been newly diagnosed with or started treatment for any of the following conditions? - Depression" "Yes" / "No" / "I'm not sure"</p> <p>Yes/No responses from Q1-Q3 were merged by returning the first non-missing value the questions in the listed order. Cases were defined as saying "Yes" to at least one of the questions, provided that the respondent did not say "No" to an earlier question. Controls are defined as having said "No" to at least one of the questions, provided that the respondent did not report having been diagnosed with depression to an earlier question. The derived case/control status was then merged with Q4 to define cases (when any response is a yes) and controls (when it is not a case and at least one response is control). Individuals with discordant responses were defined as cases.</p>	Logistic	Age, sex, and 5 PCs	307,354	[10]

Drinks per Week	The phenotype is based on responses to a single question in the Health Profile survey, "In the last two weeks, how many servings of alcohol did you drink each day? (1 serving equals 12 oz. of beer, 5 oz. of wine, or 1.5 oz. of hard alcohol)" with categorical responses "None" (=0), "Between 0 and 1" (=0.5), "1" (=1), "2" (=2), "3" (=3), "4" (=4), "5 or more" (=7). The values were then transformed by $f(x)=\log(x+e)$ .	Linear	Age, sex, 5 PCs and platform dummies	403,938	[9]
Ever Smoker	Ever tobacco user: either regular use or at least 100 cigarettes. Constructed by combining the available yes-no responses to the following questions, excluding participants who gave inconsistent answers: <ul style="list-style-type: none"> <li>• Health habits survey: "Have you ever regularly used tobacco?"</li> <li>• Health intake survey: "Have you ever smoked cigarettes on a regular basis?"</li> <li>• Smoking survey: "In your lifetime, have you smoked 100 or more cigarettes (5 packs)?"</li> <li>• Health Profile and various other surveys, as well as a stand-alone quick question: "Have you smoked at least 100 cigarettes in your entire life?"</li> </ul>	Logistic	Age, sex, 5 PCs and platform dummies	623,146	[9]
Physical Activity	The phenotype is based on a calculation of MET-minutes per week for various activities as a continuous trait, as described in the guidelines for data processing for the International Physical Activity Questionnaire (IPAQ). The short form of the IPAQ was deployed on the 23andMe website to 23andMe research participants. Participants were given the option to skip any question, and skipped questions were treated as missing values in calculating MET-minutes. MET-minutes were first log-transformed. Then, for each sex separately, age, age-squared, age-cubed, the first ten ancestry principal components, and genotyping platform were regressed out, and the residuals were quantile-normalized. Finally, results were combined across sexes.	Linear	Sex, third degree polynomial in age and their interactions, 10 PC's, platform dummies	265,934	N/A
Migraine	Migraine cases were defined as saying "Yes" or reporting migraines to at least one of the following questions: <ul style="list-style-type: none"> <li>• Headaches ("Has a doctor or other medical professional ever diagnosed you with migraines?")</li> <li>• Your Medical History ("Have you ever been diagnosed by a doctor with migraine headaches with aura?")</li> <li>• Your Medical History ("Have you ever been diagnosed by a doctor with migraine headaches without aura?")</li> <li>• Roots into the Future: Health History ("Has a doctor ever told you that you have any of these conditions? - Migraines")</li> <li>• Your Health Profile ("Have you ever been diagnosed or treated for any of the following conditions? - Migraines")</li> <li>• Research Snippet ("Have you ever suffered from migraines?")</li> <li>• Your Profile and Health History ("Have you ever been diagnosed with migraines?")</li> </ul> <p>Controls were defined as saying "No" or not reporting migraines to at least one of the questions above. Respondents with discordant answers were removed.</p>	Logistic	Age, sex, 5 PCs and platform dummies	283,985	[11]

Nearsightedness	<p>Nearsightedness cases are defined as having said "Yes" or checking nearsightedness to one of the following questions:</p> <ul style="list-style-type: none"> <li>• Your Medical History ("Have you ever been diagnosed by a doctor with nearsightedness (near objects are clear, far objects are blurry)?")</li> <li>• Research Snippets ("Are you nearsighted (near objects are clear, far objects are blurry)?")</li> <li>• Refractive Error ("What vision problems do you have? Please check all that apply." - "Nearsightedness (near objects are clear, far objects are blurry)")</li> <li>• Refractive Error ("Prior to your LASIK eye surgery, what vision problems did you have? Please check all that apply." - "Nearsightedness (near objects are clear, far objects are blurry)")</li> </ul> <p>Controls are defined as having said "No" or not checking nearsightedness to at least one of the questions above. Discordant answers are removed.</p>	Logistic	Age, sex, 5 PCs and platform dummies	191,843	[11]
Self-Rated Health	<p>"Would you say that in general your health is: .. "</p> <p>"poor" (=0) / "fair" (=1) / "good" (=2) / "very good" (=3) / "excellent" (=4)</p>	Linear	Sex, third degree polynomial in age and their interactions, 10 PC's, platform dummies	758,713	N/A
<i>Personality and Well-Being</i>					
Adventurousness	<p>"If forced to choose, would you consider yourself to be more cautious or more adventurous?"</p> <p>"very cautious" (=1) / "somewhat cautious" (=2) / "neither" (=3) / "somewhat adventurous" (=4) / "very adventurous" (=5) / "not sure")</p>	Linear	Sex, third degree polynomial in age and their interactions, 10 PC's, platform dummies	557,923	[12]
Agreeableness	<p>Scored using the 23andMe "Five Dimensions of Personality" survey as a quantitative trait.</p> <p>The following questions are scored positively:</p> <ul style="list-style-type: none"> <li>• "I am someone who is helpful and unselfish with others."</li> <li>• "I am someone who has a forgiving nature."</li> <li>• "I am someone who is generally trusting."</li> <li>• "I am someone who is considerate and kind to almost everyone."</li> <li>• "I am someone who likes to cooperate with others."</li> </ul> <p>The following questions are scored negatively:</p> <ul style="list-style-type: none"> <li>• "I am someone who tends to find fault with others."</li> <li>• "I am someone who starts quarrels with others."</li> <li>• "I am someone who can be cold and aloof."</li> <li>• "I am someone who is sometimes rude to others."</li> </ul> <p>Each question has five choices: strongly disagree, disagree a little, neither agree nor disagree, agree a little, or strongly agree, scored from 0 to 4.</p>	Linear	Age, sex, 5 PCs and platform dummies	59,176	[13]

Cognitive Empathy	<p>The “empathy” phenotype is scored using the “Empathy Quotient” survey. This questionnaire was developed by Dr. Simon Baron-Cohen and colleagues:</p> <p>Wheelwright, S. et al. Predicting Autism Spectrum Quotient (AQ) from the Systemizing Quotient-Revised (SQ-R) and Empathy Quotient (EQ). J. Brain Res. 1079: 47-56.</p> <p>The survey includes the 40 scored questions from the published survey, but omits the filler questions. Each question has four responses (strongly agree, slightly agree, slightly disagree, and strongly disagree). Each question can contribute up to 2 points towards a total score that ranges from 0 to 80.</p>	Linear	Age, sex, 5 PCs and platform dummies	46,861	[14]
Conscientiousness	<p>Scored using the 23andMe “Five Dimensions of Personality” survey as a quantitative trait.</p> <p>The following questions are scored positively:</p> <ul style="list-style-type: none"> <li>• “I am someone who does a thorough job.”</li> <li>• “I am someone who is a reliable worker.”</li> <li>• “I am someone who perseveres until the task is finished.”</li> <li>• “I am someone who does things efficiently.”</li> <li>• “I am someone who makes plans and follows through with them.”</li> </ul> <p>The following questions are scored negatively:</p> <ul style="list-style-type: none"> <li>• “I am someone who can be somewhat careless.”</li> <li>• “I am someone who tends to be disorganized.”</li> <li>• “I am someone who tends to be lazy.”</li> <li>• “I am someone who is easily distracted.”</li> </ul> <p>Each question has five choices: strongly disagree, disagree a little, neither agree nor disagree, agree a little, or strongly agree, scored from 0 to 4.</p>	Linear	Age, sex, 5 PCs and platform dummies	59,176	[13]
Delay Discounting	<p>Participants completed the online Monetary Choice Questionnaire (MCQ), a widely used 27-item measure of monetary delay discounting preferences. For each item, individuals were presented with a choice between a smaller immediate reward and larger delayed reward at one of three magnitudes (small, \$25–35; intermediate, \$50–60; large, \$75–85). The overall response pattern was used to infer temporal discounting functions (k) ranging from .00016–.2529, with larger values reflecting greater devaluation of delayed rewards (higher bias for immediate gratification). Values of k were obtained for the three reward magnitudes and were averaged to obtain the final dependent measure. In addition, three items were added to the 27-items that make up the MCQ that were intended to detect careless responding. Research participants who answered any of these items inappropriately were excluded. A log-10 transformation was applied to the final k measure.</p>	Linear	Age (inverse-normalized), sex, 5 PCs and platform dummies	23,217	[15]

Extraversion	<p>Scored using the 23andMe “Five Dimensions of Personality” survey as a quantitative trait.</p> <p>The following questions are scored positively:</p> <ul style="list-style-type: none"> <li>• “I am someone who is talkative.”</li> <li>• “I am someone who is full of energy.”</li> <li>• “I am someone who generates a lot of enthusiasm.”</li> <li>• “I am someone who has an assertive personality.”</li> <li>• “I am someone who is outgoing, sociable.”</li> </ul> <p>The following questions are scored negatively:</p> <ul style="list-style-type: none"> <li>• “I am someone who is reserved.”</li> <li>• “I am someone who tends to be quiet.”</li> <li>• “I am someone who is sometimes shy, inhibited.”</li> </ul> <p>Each question has five choices: strongly disagree, disagree a little, neither agree nor disagree, agree a little, or strongly agree, scored from 0 to 4.</p>	Linear	Age, sex, 5 PCs and platform dummies	59,225	[13]
Left Out of Social Activity	<p>How often do you feel left out of social activity?</p> <p>"always" (=0) / "most of the time" (=1) / "half of the time" (=2) / "some of the time" (=3) / "never" (=4)</p>	Linear	Sex, third degree polynomial in age and their interactions, 10 PC's, platform dummies	507,804	N/A
Morning Person	<p>The morning person phenotype is defined by two questions:</p> <ul style="list-style-type: none"> <li>• (Ten Things About You) "Are you naturally a night person or a morning person? (Night owl/Early bird/Neither)"</li> <li>• (Research Snippets) "Are you naturally a night person or a morning person? (Night person/Morning person/Neither/It depends/I'm not sure)"</li> </ul> <p>Cases answered "Early bird" or "Morning person", while controls answered "Night owl" or "Night person", to at least one of the two questions above. Individuals with discordant responses were removed from the analysis.</p>	Logistic	Age, sex, 5 PCs and platform dummies	91,967	[16]
Narcissism	<p>"How narcissistic (a narcissist is someone who is egotistical, self-focused, and vain) do you think that you are? "</p> <p>"completely" (=0) / "very" (=1) / "somewhat" (=2) / "a little" (=3) / "not at all" (=4)</p>	Linear	Age, sex, 5 PCs and platform dummies	452,535	N/A
Neuroticism	<p>Scored using the 23andMe “Five Dimensions of Personality” survey as a quantitative trait.</p> <p>The following questions are scored positively:</p> <ul style="list-style-type: none"> <li>• “I am someone who is depressed, often feels sad.”</li> <li>• “I am someone who can be tense.”</li> <li>• “I am someone who worries a lot.”</li> <li>• “I am someone who can be moody.”</li> <li>• “I am someone who gets nervous easily.”</li> </ul> <p>The following questions are scored negatively:</p> <ul style="list-style-type: none"> <li>• “I am someone who is relaxed, handles stress well.”</li> <li>• “I am someone who is emotionally stable, not easily upset.”</li> <li>• “I am someone who remains calm in tense situations.”</li> </ul> <p>Each question has five choices: strongly disagree, disagree a little, neither agree nor disagree, agree a little, or strongly agree, scored from 0 to 4.</p>	Linear	Age, sex, 5 PCs and platform dummies	59,206	[13]

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Openness	<p>Scored using the 23andMe “Five Dimensions of Personality” survey as a quantitative trait.</p> <p>The following questions are scored positively:</p> <ul style="list-style-type: none"> <li>•“I am someone who is original, comes up with new ideas”</li> <li>•“I am someone who is curious about many different things.”</li> <li>•“I am someone who is ingenious, a deep thinker.”</li> <li>•“I am someone who has an active imagination.”</li> <li>•“I am someone who is inventive.”</li> <li>•“I am someone who values artistic, aesthetic experiences.”</li> <li>•“I am someone who likes to reflect, play with ideas.”</li> <li>•“I am someone who appreciates art, music, or literature.”</li> </ul> <p>The following questions are scored negatively:</p> <ul style="list-style-type: none"> <li>•“I am someone who prefers work that is routine.”</li> <li>•“I am someone who has few artistic interests.”</li> </ul> <p>Each question has five choices: strongly disagree, disagree a little, neither agree nor disagree, agree a little, or strongly agree, scored from 0 to 4.</p>	Linear	Age, sex, 5 PCs and platform dummies	59,176	[13]
Religious Belief	<p>"How would you describe your religious beliefs?"</p> <p>"very religious" (=0) / "religious" (=1) / "somewhat religious" (=2) / "spiritual but not affiliated with an organized religion" (=3) / "agnostic" (=4) / "atheist" (=5) / other / not sure / declined )</p>	Linear	Sex, third degree polynomial in age and their interactions, 10 PCs, platform dummies	86,529	N/A
Recharge by Socializing	<p>"When you feel mentally drained, do you prefer to recharge your batteries by... "</p> <p>"spending time with friends or family" (=0) / "no strong preference either way" (=1) / "spending time alone" (=2) / "I'm not sure"</p>	Linear	Sex, third degree polynomial in age and their interactions, 10 PCs, platform dummies	476,144	N/A
Risk Tolerance	<p>"In general, people often face risks when making financial, career, or other life decisions. Overall, do you feel comfortable or uncomfortable taking risks?"</p> <p>"very comfortable taking risks" (=4) / "somewhat comfortable taking risks" (=3) / "neither comfortable nor uncomfortable taking risks" (=2) / "somewhat uncomfortable taking risks" (=1) / "very uncomfortable taking risks" (=0)</p>	Linear	Sex, third degree polynomial in age and their interactions, 10 PCs, platform dummies	969,309	N/A
Subjective Well-Being	<p>"How satisfied are you with your life?"</p> <p>"very dissatisfied" (=0) / "somewhat dissatisfied" (=1) / "neither" (=2) / "somewhat" (=3) / "very" (=4)</p>	Linear	Sex, third degree polynomial in age and their interactions, 10 PCs, platform dummies	728,752	N/A

*Notes:* "Linear/Logistic" refers to the type of regression used in the GWAS. "Covariates" refers to the covariates included in the GWAS. "Citation" is the original publication reporting the GWAS, if available. "N/A" under "Citation" means the GWAS has not been published before.

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**Supplementary Table 7. Description of SNP filtering for GWAS summary statistics**

Dataset	Phenotype	#SNPs before QC	#1 Missing values	#2 Invalid values	#3 MAF, imputation accuracy, HWE P-value, call rate	#4 SE ratio	#5 Non-autosomal marker/ INDEL	#6 Invalid or duplicated position / Allele mismatch	#SNPs after QC	$\lambda_{GC}$	N
23andMe	Adventurousness	11,957,025	0	0	3,335,129	0	942,130	470,599	7,209,167	1.61	557,923
	Age First Birth (women)	7,840,733	0	48	1,604,101	0	0	200,396	6,036,188	1.05	9,370
	Age First Menses (women)	13,735,807	0	0	5,476,142	27,044	887,962	408,487	6,936,172	1.07	76,831
	Age Voice Deepened (men)	13,736,028	0	0	5,471,407	24,975	890,748	408,616	6,940,282	1.03	55,871
	Agreeableness	13,735,615	0	0	5,477,159	26,949	887,940	408,414	6,935,153	1.03	59,176
	Alcohol Misuse	11,508,185	0	0	2,957,483	0	927,275	463,681	7,159,746	1.02	19,407
	Allergy - Cat	8,058,452	0	0	1,645,547	0	172,584	200,398	6,039,923	1.08	46,646
	Allergy - Dust	8,058,452	0	1	1,645,546	0	172,584	200,398	6,039,923	1.07	46,646
	Allergy - Pollen	8,058,452	0	0	1,645,547	0	172,584	200,398	6,039,923	1.08	46,646
	Asthma/Eczema/Rhinitis	13,758,236	0	0	5,496,431	0	890,951	411,013	6,959,841	1.22	135,538
	Attention Deficit Hyperactivity Disorder (ADHD)	19,023,435	109	0	10,728,327	210	896,316	414,697	6,983,776	1.04	62,380
	Cannabis Use	11,919,728	0	0	3,388,542	0	923,636	461,573	7,145,977	1.02	22,771
	Childhood Reading	11,957,025	0	0	3,339,035	0	941,602	470,407	7,205,981	1.19	172,503
	Cigarettes per Day	14,716,563	0	11,751	4,826,404	35	1,484,795	793,542	7,600,036	1.10	76,186
	Cognitive Empathy	12,039,492	0	0	3,780,762	0	890,492	411,119	6,957,119	1.08	46,861
	Conscientiousness	13,735,615	0	0	5,477,159	26,949	887,940	408,414	6,935,153	1.03	59,176
	Delay Discounting	11,508,194	0	0	2,957,396	0	927,323	463,658	7,159,817	1.03	23,217
	Depressive Symptoms	13,518,840	0	0	4,877,830	4	945,150	473,120	7,222,736	1.23	307,354
	Drinks per Week	14,716,563	0	11,752	4,823,423	32	1,485,324	793,764	7,602,268	1.22	403,938
	Ever Smoker	25,219,597	0	11,760	15,324,463	35	1,485,496	793,927	7,603,916	1.64	623,146
	Extraversion	13,735,615	0	0	5,477,100	26,947	887,947	408,404	6,935,217	1.06	59,225
	Highest Math	11,957,025	0	0	3,335,905	0	941,963	470,558	7,208,599	1.91	430,439
	Left out of Social Activity	11,957,025	0	0	3,335,478	0	942,062	470,587	7,208,898	1.41	507,804
	Migraine	13,763,073	0	0	5,497,853	0	891,453	411,092	6,962,675	1.26	283,985
	Morning Person	7,427,422	0	0	996,240	11	172,925	201,243	6,057,003	1.24	91,967

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Narcissism	11,957,025	0	0	3,335,829	0	942,012	470,571	7,208,613	1.29	452,535
Nearsightedness	13,762,925	0	0	5,499,559	0	891,226	411,065	6,961,075	1.36	191,843
Neuroticism	13,735,615	0	0	5,477,104	26,954	887,942	408,394	6,935,221	1.03	59,206
Openness	13,735,615	0	0	5,477,159	26,949	887,940	408,414	6,935,153	1.04	59,176
Physical Activity	13,181,731	0	9,446	4,372,534	0	1,241,315	645,697	6,912,739	1.25	265,934
Recharge by Socializing	11,957,025	0	0	3,335,490	0	942,091	470,585	7,208,859	1.27	476,144
Religious Belief	11,957,025	0	0	3,334,802	0	941,992	470,547	7,209,684	1.11	86,529
Risk Tolerance	13,297,644	0	9,462	4,425,658	0	1,245,147	649,449	6,967,928	1.52	969,309
Self-Rated Health	11,957,025	0	0	3,334,768	0	942,244	470,609	7,209,404	1.79	758,713
Self-Rated Math Ability	11,957,025	0	0	3,334,999	0	942,091	470,601	7,209,334	2.08	564,692
Subjective Well-Being	13,297,644	0	9,460	4,426,832	0	1,244,976	649,411	6,966,965	1.43	728,752

Age First Birth (women)	10,286,158	0	0	169,899	0	176,490	2,284,914	7,654,855	1.15	67,401
Age First Menses (women)	10,286,158	0	0	169,114	0	176,490	2,285,034	7,655,520	1.25	80,126
Alcohol Misuse	10,286,158	0	0	171,244	0	176,472	2,284,768	7,653,674	1.10	51,126
Asthma	10,286,158	0	0	169,019	0	176,492	2,285,023	7,655,624	1.10	148,654
Asthma/Eczema/Rhinitis	10,286,158	0	0	169,018	0	176,492	2,285,024	7,655,624	1.15	148,653
Body Mass Index (BMI)	10,286,158	0	0	169,071	0	176,495	2,284,999	7,655,593	1.49	146,391
Cannabis Use	10,286,158	0	0	170,698	0	176,482	2,284,808	7,654,170	1.10	55,872
Cigarettes per Day	10,286,158	0	0	171,767	0	176,464	2,284,566	7,653,361	1.05	46,090
Cognitive Performance	10,286,158	0	0	169,207	0	176,505	2,285,086	7,655,360	1.25	80,611
COPD	10,286,158	0	0	169,019	0	176,492	2,285,023	7,655,624	1.05	148,654
Depressive Symptoms	10,286,158	0	0	169,174	0	176,496	2,284,988	7,655,500	1.15	135,953
Drinks per Week	10,286,158	0	0	168,926	0	176,495	2,285,034	7,655,703	1.15	129,476
Eczema	10,286,158	0	0	169,097	0	176,492	2,285,012	7,655,557	1.05	146,934
Educational Attainment	10,286,158	0	0	169,017	0	176,490	2,285,021	7,655,630	1.31	147,466
Ever Smoker	10,286,158	0	0	169,053	0	176,490	2,285,018	7,655,597	1.25	148,630
Hayfever	10,286,158	0	0	169,018	0	176,492	2,285,024	7,655,624	1.15	148,653
Height	10,286,158	0	0	169,068	0	176,491	2,285,007	7,655,592	1.77	148,430
UKB1 Life Satisfaction: Family	10,286,158	0	0	170,109	0	176,495	2,284,945	7,654,609	1.10	61,756

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Life Satisfaction: Finance	10,286,158	0	0	170,168	0	176,495	2,284,977	7,654,518	1.05	61,894
Life Satisfaction: Friend	10,286,158	0	0	170,149	0	176,497	2,284,952	7,654,560	1.05	61,514
Life Satisfaction: Work	10,286,158	0	0	170,805	0	176,464	2,284,891	7,653,998	1.05	42,437
Loneliness	10,286,158	0	0	169,031	0	176,485	2,285,017	7,655,625	1.10	146,717
Migraine	10,286,158	0	0	169,341	0	176,495	2,284,975	7,655,347	1.05	137,322
Morning Person	10,286,158	0	0	168,953	0	176,488	2,285,013	7,655,704	1.25	134,373
Nearsightedness	10,286,158	0	0	169,836	0	176,501	2,284,930	7,654,891	1.15	71,789
Neuroticism	10,286,158	0	0	169,201	0	176,490	2,285,008	7,655,459	1.20	121,272
Number Ever Born (men)	10,286,158	0	0	170,560	0	176,465	2,284,706	7,654,427	1.05	66,333
Number Ever Born (women)	10,286,158	0	0	169,317	0	176,484	2,285,012	7,655,345	1.10	81,881
Religious Attendance	10,286,158	0	0	169,043	0	176,489	2,285,006	7,655,620	1.15	148,313
Risk Tolerance	10,286,158	0	0	169,031	0	176,495	2,285,008	7,655,624	1.10	144,315
Self-Rated Health	10,286,158	0	0	168,970	0	176,491	2,285,019	7,655,678	1.20	148,195
Subjective Well-Being	10,286,158	0	0	170,010	0	176,500	2,284,991	7,654,657	1.10	61,929
Age First Birth (women)	10,286,158	0	0	166,541	0	176,533	2,285,603	7,657,481	1.15	64,756
Age First Menses (women)	10,286,158	0	0	166,572	0	176,539	2,285,519	7,657,528	1.25	77,762
Alcohol Misuse	10,286,158	0	0	167,398	0	176,501	2,285,270	7,656,989	1.05	39,825
Asthma	10,286,158	0	0	165,172	0	176,552	2,285,689	7,658,745	1.10	148,652
Asthma/Eczema/Rhinitis	10,286,158	0	0	165,228	0	176,547	2,285,675	7,658,708	1.15	148,652
Body Mass Index (BMI)	10,286,158	0	0	165,252	0	176,553	2,285,687	7,658,666	1.43	146,125
Cannabis Use	10,286,158	0	0	166,527	0	176,506	2,285,463	7,657,662	1.05	43,628
Cigarettes per Day	10,286,158	0	0	168,626	0	176,510	2,285,103	7,655,919	1.05	46,829
Cognitive Performance	10,286,158	0	0	165,958	0	176,546	2,285,616	7,658,038	1.20	71,604
COPD	10,286,158	0	0	165,172	0	176,552	2,285,689	7,658,745	1.05	148,652
Depressive Symptoms	10,286,158	0	0	165,483	0	176,546	2,285,637	7,658,492	1.15	134,430
Drinks per Week	10,286,158	0	0	165,645	0	176,550	2,285,572	7,658,391	1.10	127,976
Eczema	10,286,158	0	0	165,334	0	176,555	2,285,672	7,658,597	1.05	146,635
Educational Attainment	10,286,158	0	0	165,266	0	176,550	2,285,670	7,658,672	1.31	147,314
Ever Smoker	10,286,158	0	0	165,165	0	176,552	2,285,685	7,658,756	1.20	148,611

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UKB2	Hayfever	10,286,158	0	0	165,228	0	176,547	2,285,675	7,658,708	1.15	148,652
	Height	10,286,158	0	0	165,285	0	176,548	2,285,671	7,658,654	1.62	148,316
	Life Satisfaction: Family	10,286,158	0	0	167,327	0	176,544	2,285,438	7,656,849	1.05	52,967
	Life Satisfaction: Finance	10,286,158	0	0	167,243	0	176,543	2,285,454	7,656,918	1.05	53,294
	Life Satisfaction: Friend	10,286,158	0	0	167,285	0	176,537	2,285,461	7,656,875	1.05	52,946
	Life Satisfaction: Work	10,286,158	0	0	168,864	0	176,521	2,285,258	7,655,515	1.05	36,132
	Loneliness	10,286,158	0	0	165,168	0	176,547	2,285,694	7,658,749	1.10	146,447
	Migraine	10,286,158	0	0	165,706	0	176,549	2,285,615	7,658,288	1.05	136,376
	Morning Person	10,286,158	0	0	165,437	0	176,547	2,285,657	7,658,517	1.20	133,311
	Nearsightedness	10,286,158	0	0	167,268	0	176,536	2,285,464	7,656,890	1.10	51,874
	Neuroticism	10,286,158	0	0	165,634	0	176,550	2,285,641	7,658,333	1.20	120,354
	Number Ever Born (men)	10,286,158	0	0	166,676	0	176,537	2,285,410	7,657,535	1.05	68,075
	Number Ever Born (women)	10,286,158	0	0	165,970	0	176,529	2,285,644	7,658,015	1.05	79,971
	Religious Attendance	10,286,158	0	0	165,224	0	176,548	2,285,679	7,658,707	1.10	148,278
	Risk Tolerance	10,286,158	0	0	165,320	0	176,554	2,285,677	7,658,607	1.10	143,565
	Self-Rated Health	10,286,158	0	0	165,323	0	176,549	2,285,667	7,658,619	1.20	148,108
	Subjective Well-Being	10,286,158	0	0	167,436	0	176,534	2,285,460	7,656,728	1.05	53,333
	Age First Birth (women)	10,286,158	0	0	166,429	0	176,526	2,285,448	7,657,755	1.15	64,658
	Age First Menses (women)	10,286,158	0	0	165,572	0	176,549	2,285,606	7,658,431	1.20	77,758
	Alcohol Misuse	10,286,158	0	0	167,840	0	176,511	2,285,269	7,656,538	1.05	40,709
	Asthma	10,286,158	0	0	164,950	0	176,559	2,285,709	7,658,940	1.10	148,659
	Asthma/Eczema/Rhinitis	10,286,158	0	0	164,985	0	176,558	2,285,697	7,658,918	1.15	148,658
	Body Mass Index (BMI)	10,286,158	0	0	164,934	0	176,557	2,285,707	7,658,960	1.43	145,960
	Cannabis Use	10,286,158	0	0	167,429	0	176,532	2,285,314	7,656,883	1.05	44,612
	Cigarettes per Day	10,286,158	0	0	167,657	0	176,501	2,285,260	7,656,740	1.05	46,241
	Cognitive Performance	10,286,158	0	0	165,193	0	176,562	2,285,710	7,658,693	1.25	72,841
	COPD	10,286,158	0	0	164,950	0	176,559	2,285,709	7,658,940	1.05	148,659
	Depressive Symptoms	10,286,158	0	0	165,144	0	176,553	2,285,691	7,658,770	1.15	134,601
	Drinks per Week	10,286,158	0	0	165,301	0	176,553	2,285,661	7,658,643	1.15	128,102

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UKB3	Eczema	10,286,158	0	0	165,123	0	176,562	2,285,689	7,658,784	1.00	146,608
	Educational Attainment	10,286,158	0	0	164,950	0	176,556	2,285,725	7,658,927	1.31	147,311
	Ever Smoker	10,286,158	0	0	164,955	0	176,559	2,285,706	7,658,938	1.20	148,621
	Hayfever	10,286,158	0	0	164,985	0	176,558	2,285,697	7,658,918	1.15	148,658
	Height	10,286,158	0	0	164,939	0	176,562	2,285,702	7,658,955	1.69	148,308
	Life Satisfaction: Family	10,286,158	0	0	166,690	0	176,545	2,285,550	7,657,373	1.05	53,590
	Life Satisfaction: Finance	10,286,158	0	0	166,710	0	176,544	2,285,531	7,657,373	1.05	53,863
	Life Satisfaction: Friend	10,286,158	0	0	166,937	0	176,541	2,285,495	7,657,185	1.05	53,541
	Life Satisfaction: Work	10,286,158	0	0	168,540	0	176,531	2,285,208	7,655,879	1.05	36,469
	Loneliness	10,286,158	0	0	164,916	0	176,561	2,285,719	7,658,962	1.10	146,361
	Migraine	10,286,158	0	0	165,202	0	176,543	2,285,658	7,658,755	1.05	136,310
	Morning Person	10,286,158	0	0	164,687	0	176,564	2,285,748	7,659,159	1.25	133,392
	Nearsightedness	10,286,158	0	0	165,962	0	176,524	2,285,633	7,658,039	1.10	52,400
	Neuroticism	10,286,158	0	0	165,440	0	176,552	2,285,642	7,658,524	1.20	120,062
	Number Ever Born (men)	10,286,158	0	0	167,497	0	176,524	2,285,370	7,656,767	1.00	68,106
	Number Ever Born (women)	10,286,158	0	0	165,184	0	176,545	2,285,665	7,658,764	1.10	79,992
	Religious Attendance	10,286,158	0	0	165,025	0	176,560	2,285,709	7,658,864	1.10	148,251
	Risk Tolerance	10,286,158	0	0	165,047	0	176,564	2,285,705	7,658,842	1.10	143,533
	Self-Rated Health	10,286,158	0	0	164,933	0	176,554	2,285,716	7,658,955	1.20	148,083
	Subjective Well-Being	10,286,158	0	0	166,703	0	176,548	2,285,493	7,657,414	1.05	53,957
		0	0	0	0	0	0	0	0		
Barban <sup>1</sup>	Age First Birth (women)	2,470,751	0	0	73,289	0	0	13,205	2,384,257	1.19	241,781
Barban <sup>1</sup>	Number Ever Born (men)	2,470,428	0	0	72,948	0	0	13,211	2,384,269	1.04	92,935
Barban <sup>1</sup>	Number Ever Born (women)	2,471,847	0	0	74,132	0	0	13,230	2,384,485	1.06	211,595
Day <sup>2</sup>	Age First Menses (women)	9,433,364	36,871	4,181	1,728,834	50,532	0	86	7,612,860	1.52	252,514
De Moor <sup>3</sup>	Neuroticism	6,839,425	0	0	80,795	43,946	0	46	6,714,638	1.04	63,666
De Moor <sup>4</sup>	Openness	2,284,051	0	0	41,893	1,337	0	9	2,240,812	1.04	17,375
Demontis <sup>5</sup>	Attention Deficit Hyperactivity Disorder (ADHD)	6,511,289	0	0	56,307	3,268	123	153	6,451,438	1.22	55,374
Doherty <sup>6</sup>	Physical activity	9,770,928	0	0	181,805	0	1,108,656	813,616	7,666,851	1.20	91,105
Ferreira <sup>7</sup>	Asthma/Eczema/Rhinitis	8,307,659	0	0	0	9,312	590,516	364,754	7,343,077	1.17	242,569

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Furberg <sup>8</sup>	Cigarettes per Day	2,436,980	0	0	0	58,228	0	44	2,378,708	1.06	38,181
Furberg <sup>8</sup>	Ever Smoker	2,433,948	0	0	0	62,339	0	42	2,371,567	1.10	74,035
Howard <sup>9</sup>	Depressive Symptoms	8,090,799	0	0	706,194	316	0	4	7,384,285	1.38	500,199
Jones <sup>10</sup>	Morning Person	11,977,111	0	0	4,302,424	0	0	8,726	7,665,961	1.62	449,734
Kunkle <sup>11</sup>	Alzheimer's	9,336,310	0	0	1,680,907	44,172	0	93	7,611,138	1.08	63,836
Lee <sup>12</sup>	Educational Attainment	10,101,242	0	0	2,394,212	19,083	0	74	7,687,873	1.83	766,345
Lee <sup>12</sup>	Educational Attainment (excl Repository datasets sans UKB)	13,244,688	0	0	4,501,005	0	0	853,212	7,890,471	2.27	1,047,538
Lee <sup>12</sup>	Educational Attainment (excl UKB)	13,239,973	0	0	4,420,142	0	0	836,459	7,983,372	1.85	689,698
Lee <sup>12</sup>	Cognitive Performance	10,098,325	0	0	2,391,272	19,407	0	61	7,687,585	1.54	257,841
Linner <sup>13</sup>	Drinks per Week	11,514,936	0	0	3,734,890	59,071	0	0	7,720,975	1.35	414,343
Linner <sup>13</sup>	Ever Smoker	11,514,654	0	0	3,734,679	63,541	0	0	7,716,434	1.52	518,633
Linner <sup>13</sup>	Risk Tolerance	11,514,381	0	0	3,824,081	0	0	150	7,690,150	1.32	458,558
Liu <sup>14</sup>	Cigarettes per Day	12,003,613	0	0	4,202,387	44,557	0	6	7,756,663	1.17	263,954
Liu <sup>14</sup>	Drinks per Week	11,916,706	0	0	4,120,316	47,747	0	6	7,748,637	1.24	537,349
Liu <sup>14</sup>	Ever Smoker	11,802,365	0	0	4,059,652	50,301	0	6	7,692,406	1.37	632,802
Locke <sup>15</sup>	Body Mass Index (BMI)	2,554,637	54,674	0	82,081	1,878	0	22,566	2,393,438	1.08	322,154
Nagel <sup>16</sup>	Neuroticism	10,846,943	0	0	3,474,269	0	0	89	7,372,585	1.52	380,060
Neale Lab <sup>17</sup>	Asthma	13,791,467	1,674	0	4,135,621	0	1,313,202	724,298	7,616,672	1.22	361,141
Neale Lab <sup>17</sup>	Cannabis Use	13,791,467	4,966	0	4,132,329	0	1,313,202	724,298	7,616,672	1.15	117,911
Neale Lab <sup>17</sup>	COPD	13,791,467	6,232	0	4,131,063	0	1,313,202	724,298	7,616,672	1.01	91,787
Neale Lab <sup>17</sup>	Hayfever	13,791,467	1,675	0	4,135,620	0	1,313,202	724,298	7,616,672	1.28	360,527
Neale Lab <sup>17</sup>	Life Satisfaction: Family	13,791,467	4,879	0	4,132,416	0	1,313,202	724,298	7,616,672	1.11	118,818
Neale Lab <sup>17</sup>	Life Satisfaction: Finance	13,791,467	4,864	0	4,132,431	0	1,313,202	724,298	7,616,672	1.10	119,394
Neale Lab <sup>17</sup>	Life Satisfaction: Friend	13,791,467	4,892	0	4,132,403	0	1,313,202	724,298	7,616,672	1.11	118,649
Neale Lab <sup>17</sup>	Life Satisfaction: Work	13,791,467	6,696	0	4,130,599	0	1,313,202	724,298	7,616,672	1.06	82,190
Neale Lab <sup>17</sup>	Loneliness	13,791,467	1,694	0	4,135,601	0	1,313,202	724,298	7,616,672	1.20	355,583
Neale Lab <sup>17</sup>	Migraine	13,791,467	1,674	0	4,135,621	0	1,313,202	724,298	7,616,672	1.02	361,194
Neale Lab <sup>17</sup>	Nearsightedness	13,791,467	1,676	0	4,135,619	0	1,313,202	724,298	7,616,672	1.19	360,677
Neale Lab <sup>17</sup>	Number Ever Born (men)	13,791,467	3,884	0	4,133,411	0	1,313,202	724,298	7,616,672	1.09	165,492

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Neale Lab <sup>17</sup>	Number Ever Born (women)	13,791,467	3,101	0	4,134,194	0	1,313,202	724,298	7,616,672	1.15	193,953
Neale Lab <sup>17</sup>	Religious Attendance	13,791,467	1,683	0	4,135,612	0	1,313,202	724,298	7,616,672	1.25	360,063
Neale Lab <sup>17</sup>	Self-Rated Health	13,791,467	1,683	0	4,135,612	0	1,313,202	724,298	7,616,672	1.47	359,681
Neale Lab <sup>17</sup>	Subjective Well-Being	13,791,467	4,857	0	4,132,438	0	1,313,202	724,298	7,616,672	1.13	119,535
Okbay <sup>18</sup>	Depressive Symptoms	17,114,733	100,348	3,192	10,668,909	0	525,569	391,181	5,425,534	1.01	56,368
Okbay <sup>18</sup>	Subjective Well-Being (excl Repository datasets)	2,393,800	0	0	0	0	24,696	11,952	2,357,152	1.07	124,540
Okbay <sup>18</sup>	Subjective Well-Being	2,268,674	0	0	0	4	0	11,870	2,256,800	1.14	204,978
Okbay <sup>19</sup>	Educational Attainment	8,146,840	0	0	0	23,927	0	523,957	7,598,956	1.36	328,917
Perry <sup>20</sup>	Age First Menses (women)	2,441,815	11,201	1,714	0	5,351	0	24,425	2,399,124	1.31	132,989
Rietveld <sup>21</sup>	Educational Attainment	2,261,261	802	0	2,659	1,444	0	9	2,256,347	1.22	126,559
Savage <sup>22</sup>	Cognitive Performance	9,295,118	0	0	2,725,108	0	11,381	0	6,558,629	1.62	269,867
Stringer <sup>23</sup>	Cannabis Use	6,430,511	0	0	0	205,110	0	377,253	5,848,148	1.05	35,297
Trampush <sup>24</sup>	Cognitive Performance	8,040,130	0	0	137,311	14	0	34	7,902,771	1.11	35,298
Van den Berg <sup>25</sup>	Extraversion	6,281,407	0	0	15,641	57,354	0	20	6,208,392	1.05	63,030
Wood <sup>26</sup>	Height	2,550,858	3,577	0	90,703	3,185	0	25,040	2,428,353	2.00	253,280
Wray <sup>27</sup>	Depressive Symptoms (excl UKB)	9,874,289	0	0	1,212,689	2,800	711,046	509,940	7,437,814	1.16	230,241
Yengo <sup>28</sup>	Body Mass Index (BMI)	2,336,269	0	0	204	153	0	20	2,335,892	2.79	795,640
Yengo <sup>28</sup>	Height	2,334,001	0	0	204	141	0	2	2,333,654	3.61	709,706

Notes: "Missing values" and "Invalid values" refer to missing/invalid values for effect allele, other allele, effect allele frequency, Beta, SE, *P*-value or imputation accuracy. "MAF" refers to minor allele frequency. "HWE" refers to Hardy-Weinberg Equilibrium exact test. "SE ratio" refers to the ratio of reported standard errors to predicted standard errors. " $\lambda_{GC}$ " is the genomic inflation factor. The applied filters were as follows: MAF>0.01, imputation accuracy>0.70, HWE *P*-value>10<sup>-20</sup>, call rate>0.95 (for genotyped SNPs only), 0.5<SE-ratio<2.

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**Supplementary Table 8: Single-trait Input GWASs**

Phenotype	Code	Dataset(s)	N UKB	N 23andMe	N other	Total N	Overlapping Datasets	Repository Datasets Sumstats are Used for
<i>Anthropometric</i>								
Body Mass Index (BMI)	BMI1	UKB1, UKB2, UKB3, Locke et al.	438,476	N/A	322,154	760,630	EGCUT, STR, UKB1, UKB2, UKB3	AddHealth, Dunedin, ELSA, E-Risk, HRS, MCTFR, Texas Twins, WLS
	BMI2	UKB1, UKB2, UKB3	438,476	N/A	N/A	438,476	UKB1, UKB2, UKB3	EGCUT, STR
	BMI3	UKB2, UKB3, Locke et al.	292,085	N/A	322,154	614,239	EGCUT, STR, UKB2, UKB3	UKB1
	BMI4	UKB1, UKB3, Locke et al.	292,351	N/A	322,154	614,505	EGCUT, STR, UKB1, UKB3	UKB2
	BMI5	UKB1, UKB2, Locke et al.	292,516	N/A	322,154	614,670	EGCUT, STR, UKB1, UKB2	UKB3
Height	HEIGHT1	UKB1, UKB2, UKB3, Wood et al.	445,054	N/A	253,280	698,334	EGCUT, STR, UKB1, UKB2, UKB3	AddHealth, Dunedin, ELSA, E-Risk, HRS, MCTFR, Texas Twins, WLS
	HEIGHT2	UKB1, UKB2, UKB3	445,054	N/A	N/A	445,054	UKB1, UKB2, UKB3	EGCUT, STR
	HEIGHT3	UKB2, UKB3, Wood et al.	296,624	N/A	253,280	549,904	EGCUT, STR, UKB2, UKB3	UKB1
	HEIGHT4	UKB1, UKB3, Wood et al.	296,738	N/A	253,280	550,018	EGCUT, STR, UKB1, UKB3	UKB2
	HEIGHT5	UKB1, UKB2, Wood et al.	296,746	N/A	253,280	550,026	EGCUT, STR, UKB1, UKB2	UKB3
<i>Cognition and Education</i>								
Alzheimer's	ALZ1	Kunkle et al.	N/A	N/A	63,836	63,836	UKB	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR, Texas Twins, STR, WLS
Childhood Reading	READING1	23andMe	N/A	172,503	N/A	172,503	-	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR, Texas Twins, STR, WLS, UKB1, UKB2, UKB3
Cognitive Performance	CP1	UKB1, UKB2, UKB3, Trampush et al.	225,056	N/A	35,298	260,354	MCTFR, UKB1, UKB2, UKB3	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, Texas Twins, STR, WLS
	CP2	UKB1, UKB2, UKB3	225,056	N/A	N/A	225,056	UKB1, UKB2, UKB3	MCTFR
	CP3	UKB2, UKB3, Trampush et al.	144,445	N/A	35,298	179,743	MCTFR, UKB2, UKB3	UKB1
	CP4	UKB1, UKB3, Trampush et al.	153,452	N/A	35,298	188,750	MCTFR, UKB1, UKB3	UKB2
	CP5	UKB1, UKB2, Trampush et al.	152,215	N/A	35,298	187,513	MCTFR, UKB1, UKB2	UKB3

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Educational Attainment	EA1	23andMe, Lee et al. excl 23andMe, HRS, WLS, AH, MCTFR, ELSA, STR & EGCUT	N/A	365,536	682,002	1,047,538	UKB1, UKB2, UKB3	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR, Texas Twins, STR, WLS
	EA2	23andMe, UKB2, UKB3, Lee et al. excl UKB	294,625	365,536	324,162	984,323	UKB2, UKB3	UKB1
	EA3	23andMe, UKB1, UKB3, Lee et al. excl UKB	294,777	365,536	324,162	984,475	UKB1, UKB3	UKB2
	EA4	23andMe, UKB1, UKB2, Lee et al. excl UKB	294,780	365,536	324,162	984,478	UKB1, UKB2, UKB3	UKB3
Highest Math	HIGHMATH1	23andMe	N/A	430,439	N/A	430,439	-	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR, Texas Twins, STR, WLS, UKB1, UKB2, UKB3
Self-Rated Math Ability	SELF MATH1	23andMe	N/A	564,692	N/A	564,692	-	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR, Texas Twins, STR, WLS, UKB1, UKB2, UKB3
<i>Fertility and Sexual Development</i>								
Age First Birth	AFB1	23andMe, UKB1, UKB2, UKB3, Barban et al. excl 23andMe	196,815	9,370	241,781	447,966	EGCUT, MCTFR, STR, UKB1, UKB2, UKB3	AddHealth, Dunedin, ELSA, E-Risk, HRS, Texas Twins, WLS
	AFB2	23andMe, UKB1, UKB2, UKB3	196,815	9,370	N/A	206,185	UKB1, UKB2, UKB3	EGCUT, MCTFR, STR
	AFB3	23andMe, UKB2, UKB3	129,414	9,370	N/A	138,784	UKB2, UKB3	UKB1
	AFB4	23andMe, UKB1, UKB3	132,059	9,370	N/A	141,429	UKB1, UKB3	UKB2
	AFB5	23andMe, UKB1, UKB2	132,157	9,370	N/A	141,527	UKB1, UKB2	UKB3
Age First Menses (Women)	MENARCHE1	23andMe, Day et al. excl 23andMe	N/A	76,831	252,514	329,345	EGCUT, UKB1, UKB2, UKB3	AddHealth, Dunedin, ELSA, E-Risk, HRS, MCTFR, Texas Twins, WLS
	MENARCHE2	23andMe, UKB1, UKB2, UKB3	235,646	76,831	N/A	312,477	UKB1, UKB2, UKB3	EGCUT, STR
	MENARCHE3	23andMe, UKB2, UKB3, Perry et al.	155,520	76,831	132,989	365,340	EGCUT, STR, UKB2, UKB3	UKB1

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Age Voice Deepened (Men)	MENARCHE4	23andMe, UKB1, UKB3, Perry et al.	157,884	76,831	132,989	367,704	EGCUT, STR, UKB1, UKB3	UKB2
	MENARCHE5	23andMe, UKB1, UKB2, Perry et al.	157,888	76,831	132,989	367,708	EGCUT, STR, UKB1, UKB2	UKB3
	VOICEDEEP1	23andMe	N/A	55,871	N/A	55,871	-	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR , Texas Twins, STR, WLS, UKB1, UKB2, UKB3
	NEBmen1	UKB1, UKB2, UKB3, Barban et al. excl 23andMe	202,514	N/A	92,935	295,449	EGCUT, HRS, MCTFR, STR, UKB1, UKB2, UKB3	AddHealth, Dunedin, ELSA, E- Risk, Texas Twins, WLS
	NEBmen2	UKB1, UKB2, UKB3	202,514	N/A	N/A	202,514	UKB1, UKB2, UKB3	EGCUT, HRS, MCTFR, STR
Number Ever Born (Men)	NEBmen3	UKB2, UKB3	136,181	N/A	N/A	136,181	EGCUT, HRS, MCTFR, UKB2, UKB3	UKB1
	NEBmen4	UKB1, UKB3	134,439	N/A	N/A	134,439	EGCUT, HRS, MCTFR, UKB1, UKB3	UKB2
	NEBmen5	UKB1, UKB2	134,408	N/A	N/A	134,408	EGCUT, HRS, MCTFR, UKB1, UKB2	UKB3
	NEBwomen1	UKB1, UKB2, UKB3, Barban et al. excl 23andMe	241,844	N/A	211,595	453,439	EGCUT, HRS, MCTFR, STR, UKB1, UKB2, UKB3	AddHealth, Dunedin, ELSA, E- Risk, Texas Twins, WLS
	NEBwomen2	UKB1, UKB2, UKB3	241,844	N/A	N/A	241,844	UKB1, UKB2, UKB3	EGCUT, HRS, MCTFR, STR
Number Ever Born (Women)	NEBwomen3	UKB2, UKB3	159,963	N/A	N/A	159,963	EGCUT, HRS, MCTFR, UKB2, UKB3	UKB1
	NEBwomen4	UKB1, UKB3	161,873	N/A	N/A	161,873	EGCUT, HRS, MCTFR, UKB1, UKB3	UKB2
	NEBwomen5	UKB1, UKB2	161,852	N/A	N/A	161,852	EGCUT, HRS, MCTFR, UKB1, UKB2	UKB3
<i>Health and Health Behaviors</i>								
Alcohol Misuse	AUDIT1	23andMe, UKB1, UKB2, UKB3	131,660	19,407	N/A	151,067	-	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR , Texas Twins, STR, WLS
	AUDIT2	23andMe, UKB2, UKB3	80,534	19,407	N/A	99,941	UKB2, UKB3	UKB1
	AUDIT3	23andMe, UKB1, UKB3	91,835	19,407	N/A	111,242	UKB1, UKB3	UKB2
	AUDIT4	23andMe, UKB1, UKB2	90,951	19,407	N/A	110,358	UKB1, UKB2	UKB3

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Allergy - Cat	ALLERGYCAT1	23andMe	N/A	46,646	N/A	46,646	-	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR , Texas Twins, STR, WLS, UKB1, UKB2, UKB3
Allergy - Dust	ALLERGYDUST1	23andMe	N/A	46,646	N/A	46,646	-	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR , Texas Twins, STR, WLS, UKB1, UKB2, UKB3
Allergy - Pollen	ALLERGYPOLLEN1	23andMe	N/A	46,646	N/A	46,646	-	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR , Texas Twins, STR, WLS, UKB1, UKB2, UKB3
Asthma	ASTHMA1	UKB1, UKB2, UKB3	445,965	N/A	N/A	445,965	UKB1, UKB2, UKB3	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR , Texas Twins, STR, WLS
	ASTHMA2	UKB2, UKB3	297,311	N/A	N/A	297,311	UKB2, UKB3	UKB1
	ASTHMA3	UKB1, UKB3	297,313	N/A	N/A	297,313	UKB1, UKB3	UKB2
	ASTHMA4	UKB1, UKB2	297,306	N/A	N/A	297,306	UKB1, UKB2	UKB3
Asthma/Eczema/Rhinitis	ASTECZRHI1	23andMe, UKB1, UKB2, UKB3, Ferreira et al. excl 23andMe	445,963	135,538	242,569	824,070	UKB1, UKB2, UKB3, STR	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR , Texas Twins, WLS
	ASTECZRHI2	23andMe, UKB1, UKB2, UKB3	445,963	135,538	N/A	581,501	UKB1, UKB2, UKB3	STR
	ASTECZRHI3	23andMe, UKB2, UKB3	297,310	135,538	N/A	432,848	UKB2, UKB3	UKB1
	ASTECZRHI4	23andMe, UKB1, UKB3	297,311	135,538	N/A	432,849	UKB1, UKB3	UKB2
	ASTECZRHI5	23andMe, UKB1, UKB2	297,305	135,538	N/A	432,843	UKB1, UKB2	UKB3
Attention Deficit Hyperactivity Disorder (ADHD)	ADHD1	23andMe, Demontis et al. excl 23andMe	N/A	62,380	55,374	117,754	-	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR , Texas Twins, STR, WLS, UKB1, UKB2, UKB3
Cannabis Use	CANNABIS1	23andMe, UKB1, UKB2, UKB3, Stringer et al.	144,112	22,771	35,297	202,180	EGCUT, MCTFR, UKB	AddHealth, Dunedin, ELSA, E-Risk, HRS, Texas Twins, STR, WLS
	CANNABIS2	23andMe, UKB1, UKB2, UKB3	144,112	22,771	N/A	166,883	UKB1, UKB2, UKB3	EGCUT, MCTFR
	CANNABIS3	23andMe, UKB2, UKB3, Stringer et al.	88,240	22,771	35,297	146,308	EGCUT, MCTFR, UKB2, UKB3	UKB1
	CANNABIS4	23andMe, UKB1, UKB3, Stringer et al.	100,484	22,771	35,297	158,552	EGCUT, MCTFR, UKB1, UKB3	UKB2

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Cigarettes per day	CANNABIS5	23andMe, UKB1, UKB2, Stringer et al.	99,500	22,771	35,297	157,568	EGCUT, MCTFR, UKB1, UKB2	UKB3
	CPD1	23andMe, Liu et al. excl 23andMe	N/A	76,186	263,954	340,140	EGCUT, HRS, MCTFR, UKB1, UKB2, UKB3	AddHealth, Dunedin, ELSA, E-Risk, Texas Twins, STR, WLS
	CPD2	23andMe, UKB1, UKB2, UKB3, Furberg et al.	139,160	76,186	38,181	253,527	UKB1, UKB2, UKB3	EGCUT, HRS, MCTFR
	CPD3	23andMe, UKB2, UKB3, Furberg et al.	93,070	76,186	38,181	207,437	UKB2, UKB3	UKB1
	CPD4	23andMe, UKB1, UKB3, Furberg et al.	92,331	76,186	38,181	206,698	UKB1, UKB3	UKB2
COPD	CPD5	23andMe, UKB1, UKB2, Furberg et al.	92,919	76,186	38,181	207,286	UKB1, UKB2	UKB3
	COPD1	UKB1, UKB2, UKB3	445,965	N/A	N/A	445,965	UKB1, UKB2, UKB3	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR, Texas Twins, STR, WLS
	COPD2	UKB2, UKB3	297,311	N/A	N/A	297,311	UKB2, UKB3	UKB1
	COPD3	UKB1, UKB3	297,313	N/A	N/A	297,313	UKB1, UKB3	UKB2
	COPD4	UKB1, UKB2	297,306	N/A	N/A	297,306	UKB1, UKB2	UKB3
Depressive Symptoms	DEP1	23andMe, UKB1, UKB2, UKB3, PGC excl UKB and 23andMe	404,984	307,354	230,241	942,579	UKB1, UKB2, UKB3, STR	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR, Texas Twins, WLS
	DEP2	23andMe, UKB1, UKB2, UKB3, GERA	404,984	307,354	56,368	768,706	UKB1, UKB2, UKB3	STR
	DEP3	23andMe, UKB2, UKB3, PGC excl UKB and 23andMe	269,031	307,354	230,241	806,626	UKB2, UKB3, STR	UKB1
	DEP4	23andMe, UKB1, UKB3, PGC excl UKB and 23andMe	270,554	307,354	230,241	808,149	UKB1, UKB3, STR	UKB2
	DEP5	23andMe, UKB1, UKB2, PGC excl UKB and 23andMe	270,383	307,354	230,241	807,978	UKB1, UKB2, STR	UKB3
Drinks per week	DPW1	23andMe, Liu et al. excl 23andMe	N/A	403,938	537,349	941,287	EGCUT, HRS, MCTFR, UKB1, UKB2, UKB3	AddHealth, Dunedin, ELSA, E-Risk, Texas Twins, STR, WLS
	DPW2	23andMe, UKB1, UKB2, UKB3	385,554	403,938	N/A	789,492	UKB1, UKB2, UKB3	EGCUT, HRS, MCTFR

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Eczema	DPW3	23andMe, UKB2, UKB3	256,078	403,938	N/A	660,016	UKB2, UKB3	UKB1
	DPW4	23andMe, UKB1, UKB3	257,578	403,938	N/A	661,516	UKB1, UKB3	UKB2
	DPW5	23andMe, UKB1, UKB2	257,452	403,938	N/A	661,390	UKB1, UKB2	UKB3
	ECZEMA1	UKB1, UKB2, UKB3	440,177	N/A	N/A	440,177	UKB1, UKB2, UKB3	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR , STR, Texas Twins, WLS
	ECZEMA2	UKB2, UKB3	293,243	N/A	N/A	293,243	UKB2, UKB3	UKB1
	ECZEMA3	UKB1, UKB3	293,542	N/A	N/A	293,542	UKB1, UKB3	UKB2
	ECZEMA4	UKB1, UKB2	293,569	N/A	N/A	293,569	UKB1, UKB2	UKB3
Ever Smoker	EVERSMOKE1	23andMe, Liu et al. excl 23andMe	N/A	623,146	632,802	1,255,948	EGCUT, HRS, MCTFR, UKB1, UKB2, UKB3	AddHealth, Dunedin, ELSA, E-Risk, Texas Twins, STR, WLS
	EVERSMOKE2	23andMe, UKB1, UKB2, UKB3, Furberg et al.	445,862	623,146	74,035	1,143,043	UKB1, UKB2, UKB3	EGCUT, HRS, MCTFR
	EVERSMOKE3	23andMe, UKB2, UKB3, Furberg et al.	297,232	623,146	74,035	994,413	UKB2, UKB3	UKB1
	EVERSMOKE4	23andMe, UKB1, UKB3, Furberg et al.	297,251	623,146	74,035	994,432	UKB1, UKB3	UKB2
	EVERSMOKE5	23andMe, UKB1, UKB2, Furberg et al.	297,241	623,146	74,035	994,422	UKB1, UKB2	UKB3
Hayfever	HAYFEVER1	UKB1, UKB2, UKB3	445,963	N/A	N/A	445,963	UKB1, UKB2, UKB3	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR , Texas Twins, STR, WLS
	HAYFEVER2	UKB2, UKB3	297,310	N/A	N/A	297,310	UKB2, UKB3	UKB1
	HAYFEVER3	UKB1, UKB3	297,311	N/A	N/A	297,311	UKB1, UKB3	UKB2
	HAYFEVER4	UKB1, UKB2	297,305	N/A	N/A	297,305	UKB1, UKB2	UKB3
Migraine	MIGRAINE1	23andMe, UKB1, UKB2, UKB3	410,008	283,985	N/A	693,993	UKB1, UKB2, UKB3	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR , Texas Twins, STR, WLS
	MIGRAINE2	23andMe, UKB2, UKB3	272,686	283,985	N/A	556,671	UKB2, UKB3	UKB1
	MIGRAINE3	23andMe, UKB1, UKB3	273,632	283,985	N/A	557,617	UKB1, UKB3	UKB2
	MIGRAINE4	23andMe, UKB1, UKB2	273,698	283,985	N/A	557,683	UKB1, UKB2	UKB3
Nearsightedness	NEARSIGHTED1	23andMe, UKB1, UKB2, UKB3	176,063	191,843	N/A	367,906	UKB1, UKB2, UKB3	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR , Texas Twins, STR, WLS
	NEARSIGHTED2	23andMe, UKB2, UKB3	104,274	191,843	N/A	296,117	UKB2, UKB3	UKB1

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Physical Activity	NEARSIGHTED3	23andMe, UKB1, UKB3	124,189	191,843	N/A	316,032	UKB1, UKB3	UKB2
	NEARSIGHTED4	23andMe, UKB1, UKB2	123,663	191,843	N/A	315,506	UKB1, UKB2	UKB3
	ACTIVITY1	23andMe, Doherty et al.	N/A	265,934	91,105	357,039	UKB1, UKB2, UKB3	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR , Texas Twins, STR, WLS
	ACTIVITY2	23andMe	N/A	265,934	N/A	265,934	-	UKB1, UKB2, UKB3
	SELFHEALTH1	23andMe, UKB1, UKB2, UKB3	444,386	758,713	N/A	1,203,099	UKB1, UKB2, UKB3	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR , Texas Twins, STR, WLS
Self-Rated Health	SELFHEALTH2	23andMe, UKB2, UKB3	296,191	758,713	N/A	1,054,904	UKB2, UKB3	UKB1
	SELFHEALTH3	23andMe, UKB1, UKB3	296,278	758,713	N/A	1,054,991	UKB1, UKB3	UKB2
	SELFHEALTH4	23andMe, UKB1, UKB2	296,303	758,713	N/A	1,055,016	UKB1, UKB2	UKB3
<i>Personality and Well-Being</i>								
Adventurousness	ADVENTURE1	23andMe	N/A	557,923	N/A	557,923	-	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR , Texas Twins, STR, WLS, UKB1, UKB2, UKB3
Agreeableness	AGREE1	23andMe	N/A	59,176	N/A	59,176	-	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR , Texas Twins, STR, WLS, UKB1, UKB2, UKB3
Cognitive Empathy	COGEMP1	23andMe	N/A	46,861	N/A	46,861	-	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR , Texas Twins, STR, WLS, UKB1, UKB2, UKB3
Conscientiousness	CONSC1	23andMe	N/A	59,176	N/A	59,176	-	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR , Texas Twins, STR, WLS, UKB1, UKB2, UKB3
Delay Discounting	DELAYDISC1	23andMe	N/A	23,217	N/A	23,217	-	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR , Texas Twins, STR, WLS, UKB1, UKB2, UKB3
Extraversion	EXTRA1	23andMe, Van den Berg et al.	N/A	59,225	63,030	122,255	EGCUT, MCTFR, STR	AddHealth, Dunedin, ELSA, E-Risk, HRS , Texas Twins, WLS, UKB1, UKB2, UKB3
	EXTRA2	23andMe	N/A	59,225	N/A	59,225	-	EGCUT, MCTFR, STR
Left out of Social Activity	LEFTOUT1	23andMe	N/A	507,804	N/A	507,804	-	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR , Texas Twins, STR, WLS, UKB1, UKB2, UKB3
Life Satisfaction: Family	FAMSAT1	UKB1, UKB2, UKB3	168,313	N/A	N/A	168,313	UKB1, UKB2, UKB3	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR , Texas Twins, STR, WLS

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	FAMSAT2	UKB2, UKB3	106,557	N/A	N/A	106,557	UKB2, UKB3	UKB1
	FAMSAT3	UKB1, UKB3	115,346	N/A	N/A	115,346	UKB1, UKB3	UKB2
	FAMSAT4	UKB1, UKB2	114,723	N/A	N/A	114,723	UKB1, UKB2	UKB3
	FINSAT1	UKB1, UKB2, UKB3	169,051	N/A	N/A	169,051	UKB1, UKB2, UKB3	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR , Texas Twins, STR, WLS
Life Satisfaction: Finance	FINSAT2	UKB2, UKB3	107,157	N/A	N/A	107,157	UKB2, UKB3	UKB1
	FINSAT3	UKB1, UKB3	115,757	N/A	N/A	115,757	UKB1, UKB3	UKB2
	FINSAT4	UKB1, UKB2	115,188	N/A	N/A	115,188	UKB1, UKB2	UKB3
	FRIENDSAT1	UKB1, UKB2, UKB3	168,001	N/A	N/A	168,001	UKB1, UKB2, UKB3	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR , Texas Twins, STR, WLS
Life Satisfaction: Friends	FRIENDSAT2	UKB2, UKB3	106,487	N/A	N/A	106,487	UKB2, UKB3	UKB1
	FRIENDSAT3	UKB1, UKB3	115,055	N/A	N/A	115,055	UKB1, UKB3	UKB2
	FRIENDSAT4	UKB1, UKB2	114,460	N/A	N/A	114,460	UKB1, UKB2	UKB3
	WORKSAT1	UKB1, UKB2, UKB3	115,038	N/A	N/A	115,038	UKB1, UKB2, UKB3	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR , Texas Twins, STR, WLS
Life Satisfaction: Work	WORKSAT2	UKB2, UKB3	72,601	N/A	N/A	72,601	UKB2, UKB3	UKB1
	WORKSAT3	UKB1, UKB3	78,906	N/A	N/A	78,906	UKB1, UKB3	UKB2
	WORKSAT4	UKB1, UKB2	78,569	N/A	N/A	78,569	UKB1, UKB2	UKB3
	LONELY1	UKB1, UKB2, UKB3	439,525	N/A	N/A	439,525	UKB1, UKB2, UKB3	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR , Texas Twins, STR, WLS
Loneliness	LONELY2	UKB2, UKB3	292,808	N/A	N/A	292,808	UKB2, UKB3	UKB1
	LONELY3	UKB1, UKB3	293,078	N/A	N/A	293,078	UKB1, UKB3	UKB2
	LONELY4	UKB1, UKB2	293,164	N/A	N/A	293,164	UKB1, UKB2	UKB3
	MORNING1	23andMe, UKB1, UKB2, UKB3	401,076	91,967	N/A	493,043	UKB1, UKB2, UKB3	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR , Texas Twins, STR, WLS
Morning Person	MORNING2	23andMe, UKB2, UKB3	266,703	91,967	N/A	358,670	UKB2, UKB3	UKB1
	MORNING3	23andMe, UKB1, UKB3	267,765	91,967	N/A	359,732	UKB1, UKB3	UKB2
	MORNING4	23andMe, UKB1, UKB2	267,684	91,967	N/A	359,651	UKB1, UKB2	UKB3
	NARCIS1	23andMe	N/A	452,535	N/A	452,535	-	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR , Texas Twins, STR, WLS, UKB1, UKB2, UKB3
Neuroticism	NEURO1	23andMe, UKB1, UKB2, UKB3, de Moor et al. (2015)	361,688	59,206	63,666	484,560	EGCUT, MCTFR, STR, UKB1, UKB2, UKB3	AddHealth, Dunedin, ELSA, E-Risk, HRS, Texas Twins, WLS

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Openness	NEURO2	23andMe, UKB1, UKB2, UKB3	361,688	59,206	N/A	420,894	UKB1, UKB2, UKB3	EGCUT, MCTFR, STR
	NEURO3	23andMe, UKB2, UKB3, de Moor et al. (2015)	240,416	59,206	63,666	363,288	EGCUT, MCTFR, STR, UKB2, UKB3	UKB1
	NEURO4	23andMe, UKB1, UKB3, de Moor et al. (2015)	241,334	59,206	63,666	364,206	EGCUT, MCTFR, STR, UKB1, UKB3	UKB2
	NEURO5	23andMe, UKB1, UKB2, de Moor et al. (2015)	241,626	59,206	63,666	364,498	EGCUT, MCTFR, STR, UKB1, UKB2	UKB3
	OPEN1	23andMe, de Moor et al. (2012)	N/A	59,176	17,375	76,551	-	AddHealth, Dunedin, ELSA, E-Risk, HRS, MCTFR , Texas Twins, STR, WLS, UKB1, UKB2, UKB3
	OPEN2	23andMe	N/A	59,176	N/A	59,176	-	EGCUT
	RELIGATT1	UKB1, UKB2, UKB3	444,842	N/A	N/A	444,842	UKB1, UKB2, UKB3	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR , Texas Twins, STR, WLS
	RELIGATT2	UKB2, UKB3	296,529	N/A	N/A	296,529	UKB2, UKB3	UKB1
	RELIGATT3	UKB1, UKB3	296,564	N/A	N/A	296,564	UKB1, UKB3	UKB2
	RELIGATT4	UKB1, UKB2	296,591	N/A	N/A	296,591	UKB1, UKB2	UKB3
	RECHARGE1	23andMe	N/A	476,144	N/A	476,144	-	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR , Texas Twins, STR, WLS, UKB1, UKB2, UKB3
	RELIGBLF1	23andMe	N/A	86,529	N/A	86,529	-	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR , Texas Twins, STR, WLS, UKB1, UKB2, UKB3
	RISK1	23andMe, Linner et al. excl <23andMe, STR>	N/A	969,309	458,558	1,427,867	UKB1, UKB2, UKB3	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR , Texas Twins, STR, WLS
	RISK2	23andMe, UKB2, UKB3	287,098	969,309	N/A	1,256,407	UKB2, UKB3	UKB1
	RISK3	23andMe, UKB1, UKB3	287,848	969,309	N/A	1,257,157	UKB1, UKB3	UKB2
	RISK4	23andMe, UKB1, UKB2	287,880	969,309	N/A	1,257,189	UKB1, UKB2	UKB3
Subjective Well-Being	SWB1	23andMe, UKB1, UKB2, UKB3, Okbay et al. excl <23andMe, UKB, HRS, WLS, AH, MCTFR, ELSA,	169,219	728,752	124,539	1,022,510	UKB1, UKB2, UKB3	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR , Texas Twins, STR, WLS

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	STR & EGCUT>						
SWB2	23andMe, UKB2, UKB3, Okbay et al. excl <23andMe, UKB, HRS, WLS, AH, MCTFR, ELSA, STR & EGCUT> 23andMe, UKB1, UKB3, Okbay et al. excl <23andMe, UKB, HRS, WLS, AH, MCTFR, ELSA, STR & EGCUT> 23andMe, UKB1, UKB2, 23andMe, Okbay et al. excl <23andMe, UKB, HRS, WLS, AH, MCTFR, ELSA, STR & EGCUT>	107,290	728,752	124,539	960,581	UKB2, UKB3	UKB1
SWB3	23andMe, UKB1, UKB3, Okbay et al. excl <23andMe, UKB, HRS, WLS, AH, MCTFR, ELSA, STR & EGCUT> 23andMe, UKB1, UKB2, 23andMe, Okbay et al. excl <23andMe, UKB, HRS, WLS, AH, MCTFR, ELSA, STR & EGCUT>	115,886	728,752	124,539	969,177	UKB1, UKB3	UKB2
SWB4	23andMe, UKB1, UKB2, 23andMe, Okbay et al. excl <23andMe, UKB, HRS, WLS, AH, MCTFR, ELSA, STR & EGCUT>	115,262	728,752	124,539	968,553	UKB1, UKB2	UKB3

*Notes:* The "Dataset(s)" column indicates the datasets whose summary statistics were used. "Total *N*" refers to the sum of sample sizes of the UKB, 23andMe and other GWAS that were meta-analyzed. For Age First Birth, Number Ever Born (Men), Number Ever Born (Women) and Asthma/Eczema/Rhinitis, the publicly available summary statistics include the first release of UK Biobank (UKB). Therefore, there is sample overlap between our UKB GWAS and publicly available summary statistics and the effective sample sizes for these GWASs are less than Total *N*. "Overlapping datasets" refers to the overlapping datasets between the GWAS sample and Repository datasets. "Repository Datasets Sumstats are Used for" indicates which Repository datasets a GWAS was used for when constructing the PGIs. Dataset abbreviations: National Longitudinal Study of Adolescent to Adult Health (AddHealth), Dunedin Multidisciplinary Health and Development Study (Dunedin), Environmental Risk (E-Risk) Longitudinal Twin Study, English Longitudinal Study of Ageing (ELSA), Estonian Genome Center, University of Tartu (EGCUT), Health and Retirement Study (HRS), Minnesota Center for Twin and Family Research (MCTFR), Swedish Twin Registry (STR), Texas Twin Project (Texas Twins), UK Biobank (UKB; UKB1-3 refer to the three UKB partitions - see section "UKB GWAS" in Methods for details on the partitioning), Wisconsin Longitudinal Study (WLS).

**Supplementary Table 9: Genetic Correlations**

	<b>Adventurousness</b>	<b>Age First Birth</b>	<b>Age First Menses</b>	<b>Age Voice Deepened</b>	<b>Agreeableness</b>	<b>Alcohol Misuse</b>
<b>Adventurousness</b>	1	-0.0317	0.1268	0.1355	0.0382	0.2845
<b>Age First Birth</b>	-0.0317	1	0.1583	0.2316	-0.004	0.1157
<b>Age First Menses</b>	0.1268	0.1583	1	0.722	-0.0091	0.0467
<b>Age Voice Deepened</b>	0.1355	0.2316	0.722	1	-0.023	0.106
<b>Agreeableness</b>	0.0382	-0.004	-0.0091	-0.023	1	-0.1136
<b>Alcohol Misuse</b>	0.2845	0.1157	0.0467	0.106	-0.1136	1
<b>Allergy - Cat</b>	-0.0285	-0.0865	-0.0229	0.049	0.0041	-0.0955
<b>Allergy - Dust</b>	-0.0326	-0.0795	-0.0883	-0.0562	0.0382	-0.0821
<b>Allergy - Pollen</b>	-0.0665	-0.1064	-0.0219	0.0104	0.0106	-0.1778
<b>Alzheimer's</b>	0.0194	-0.08	0.0509	0.2001	0.0376	-0.0414
<b>Asthma</b>	0.0267	-0.236	-0.0638	-0.0508	0.0523	-0.0384
<b>Asthma/Eczema/Rhinitis</b>	-0.0424	-0.011	-0.0348	0.006	-0.0044	-0.0766
<b>Attention Deficit Hyperactivity Disorder (ADHD)</b>	0.2686	-0.6147	-0.0486	-0.128	-0.1505	0.0657
<b>Body Mass Index (BMI)</b>	-0.0196	-0.3783	-0.3297	-0.2989	0.0133	-0.0355
<b>Cannabis Use</b>	0.4251	0.1578	0.0775	0.123	-0.0262	0.4223
<b>Childhood Reading</b>	-0.1742	0.0596	-0.0247	-0.029	0.1014	-0.0342
<b>Cigarettes per Day</b>	0.0062	-0.3946	-0.0855	-0.1034	-0.2106	0.0007
<b>Cognitive Empathy</b>	0.0984	-0.0621	-0.0279	-0.0361	0.6639	-0.053
<b>Cognitive Performance</b>	-0.0686	0.4771	-0.0152	0.0283	-0.1765	0.1184
<b>Conscientiousness</b>	-0.0977	-0.0951	0.0004	-0.0778	0.2383	-0.2726
<b>COPD</b>	0.0908	-0.6305	-0.1032	-0.2439	-0.0571	0.0384
<b>Delay Discounting</b>	-0.0956	-0.5931	-0.1034	-0.0827	0.0252	-0.1658
<b>Depressive Symptoms</b>	-0.119	-0.3749	-0.1139	-0.1732	-0.2343	0.0225
<b>Drinks per Week</b>	0.2909	0.0184	0.0957	0.1054	0.0022	0.9294
<b>Eczema</b>	-0.1553	0.2232	-0.0436	-0.0011	0.0603	0.0342
<b>Educational Attainment</b>	0.0995	0.758	0.0547	0.1521	-0.0484	0.1349
<b>Ever Smoker</b>	0.2245	-0.4686	0.0003	-0.0595	-0.0725	0.375
<b>Extraversion</b>	0.5496	-0.1183	0.0132	0.0106	0.2302	0.1349
<b>Hayfever</b>	-0.0516	0.1594	0.0018	0.0615	-0.0066	-0.0816
<b>Height</b>	0.0033	0.2028	0.1256	0.0807	0.0031	0.0298
<b>Highest Math</b>	0.0571	0.6083	0.0624	0.167	-0.0928	0.0813

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<b>Left Out of Social Activity</b>	0.3544	0.068	0.0995	0.1219	0.3492	0.1428
<b>Life Satisfaction: Family</b>	-0.0309	-0.0447	0.0481	0.0185	0.5542	-0.029
<b>Life Satisfaction: Finance</b>	-0.0219	0.4383	0.0787	0.0719	0.0932	0.0102
<b>Life Satisfaction: Friend</b>	0.1213	-0.1399	0.0642	-0.0014	0.5836	-0.0519
<b>Life Satisfaction: Work</b>	0.1821	-0.035	0.0458	-0.0536	0.3083	0.0287
<b>Loneliness</b>	-0.0823	-0.3301	-0.0952	-0.0756	-0.3075	-0.0771
<b>Migraine</b>	-0.0725	-0.1716	0.0127	-0.0922	0.031	-0.2346
<b>Morning Person</b>	-0.022	-0.1114	-0.0172	-0.0052	0.0453	-0.1132
<b>Narcissism</b>	-0.2558	-0.1787	-0.0528	-0.0584	0.4712	-0.2975
<b>Nearsightedness</b>	-0.1425	0.189	-0.0113	-0.0072	-0.1113	0.0228
<b>Neuroticism</b>	-0.3088	-0.1939	-0.028	-0.0512	-0.3364	0.0168
<b>Number Ever Born (men)</b>	0.3166	-0.6369	-0.0283	-0.0543	0.1907	0.051
<b>Number Ever Born (women)</b>	0.1634	-0.6448	0.0323	-0.0332	0.1287	0.0309
<b>Openness</b>	0.3856	0.0932	-0.052	0.1106	0.1016	0.0698
<b>Physical Activity</b>	0.3082	0.2675	0.127	0.1227	0.1082	0.1048
<b>Recharge by Socializing</b>	0.3753	-0.0716	0.0003	0.0699	0.3705	0.1194
<b>Religious Attendance</b>	-0.1281	0.5092	-0.0343	-0.0102	0.218	0.0166
<b>Religious Belief</b>	0.159	0.1841	0.1213	0.2146	-0.2368	0.1702
<b>Risk Tolerance</b>	0.8347	-0.0683	0.0657	0.1155	-0.0078	0.1873
<b>Self-Rated Health</b>	0.2235	0.5599	0.2137	0.2582	0.1026	0.0965
<b>Self-Rated Math Ability</b>	0.0797	0.2819	0.024	0.1013	-0.0789	0.0554
<b>Subjective Well-Being</b>	0.2725	0.1903	0.1238	0.1261	0.4657	0.0279

	<b>Allergy - Cat</b>	<b>Allergy - Dust</b>	<b>Allergy - Pollen</b>	<b>Alzheimer's</b>	<b>Asthma</b>	<b>Asthma/Eczema/Rhinitis</b>
<b>Adventurousness</b>	-0.0285	-0.0326	-0.0665	0.0194	0.027	-0.0424
<b>Age First Birth</b>	-0.0865	-0.0795	-0.1064	-0.08	-0.236	-0.011
<b>Age First Menses</b>	-0.0229	-0.0883	-0.0219	0.0509	-0.064	-0.0348
<b>Age Voice Deepened</b>	0.049	-0.0562	0.0104	0.2001	-0.051	0.006
<b>Agreeableness</b>	0.0041	0.0382	0.0106	0.0376	0.052	-0.0044
<b>Alcohol Misuse</b>	-0.0955	-0.0821	-0.1778	-0.0414	-0.038	-0.0766
<b>Allergy - Cat</b>	1	0.9541	0.9142	-0.1506	0.715	0.9441
<b>Allergy - Dust</b>	0.9541	1	0.9268	-0.1037	0.706	0.9069
<b>Allergy - Pollen</b>	0.9142	0.9268	1	-0.1162	0.628	0.8728

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<b>Alzheimer's</b>	-0.1506	-0.1037	-0.1162	1	-0.071	-0.0721
<b>Asthma</b>	0.7147	0.7059	0.6275	-0.0707	1	0.8349
<b>Asthma/Eczema/Rhinitis</b>	0.9441	0.9069	0.8728	-0.0721	0.835	1
<b>Attention Deficit Hyperactivity Disorder (ADHD)</b>	0.046	0.1574	0.0931	0.0945	0.267	0.0827
<b>Body Mass Index (BMI)</b>	0.0444	0.0899	0.0247	-0.0282	0.19	0.0473
<b>Cannabis Use</b>	0.0309	0.0688	-0.0267	-0.1604	0.083	0.0507
<b>Childhood Reading</b>	-0.0423	-0.0381	-0.083	0.2089	-0.076	-0.0545
<b>Cigarettes per Day</b>	0.0513	0.0674	0.0144	0.0183	0.149	0.0272
<b>Cognitive Empathy</b>	0.0486	0.0487	-0.0118	0.0558	0.021	-0.0346
<b>Cognitive Performance</b>	0.0162	0.0219	0.0359	-0.2856	-0.047	0.0766
<b>Conscientiousness</b>	0.0314	-0.0242	0.0142	-0.0015	-0.037	-0.0685
<b>COPD</b>	0.2024	0.2959	0.1443	-0.028	0.544	0.2788
<b>Delay Discounting</b>	0.0283	-0.0349	0.2132	-0.0156	0.076	-0.0372
<b>Depressive Symptoms</b>	0.1135	0.1922	0.1626	0.0078	0.239	0.1879
<b>Drinks per Week</b>	-0.1487	-0.1491	-0.192	0.0686	-0.047	-0.0942
<b>Eczema</b>	0.143	0.2388	0.2893	-0.0385	0.43	0.6067
<b>Educational Attainment</b>	-0.0283	-0.0256	-0.0293	-0.2028	-0.105	0.0789
<b>Ever Smoker</b>	0.036	0.0544	0.025	-0.0158	0.138	-0.0036
<b>Extraversion</b>	0.0391	0.0379	-0.0178	-0.0065	0.105	0.0116
<b>Hayfever</b>	0.9043	0.8401	0.8333	-0.0256	0.648	0.9479
<b>Height</b>	-0.0601	-0.0894	-0.0602	-0.1284	-0.077	-0.029
<b>Highest Math</b>	-0.0347	-0.0862	-0.064	-0.1992	-0.098	0.0291
<b>Left Out of Social Activity</b>	-0.042	-0.0789	-0.0852	0.039	-0.098	-0.1161
<b>Life Satisfaction: Family</b>	0.0482	-0.0773	0.0353	0.06	-0.039	-0.1069
<b>Life Satisfaction: Finance</b>	-0.1225	-0.1889	-0.0984	-0.1349	-0.245	-0.1265
<b>Life Satisfaction: Friend</b>	0.0449	0.0064	0.026	0.0839	0.013	-0.0774
<b>Life Satisfaction: Work</b>	0.0087	-0.1157	-0.0744	0.0601	-0.022	-0.0469
<b>Loneliness</b>	-0.0336	0.0942	0.0407	0.0929	0.188	0.095
<b>Migraine</b>	0.1383	0.1932	0.1863	-0.0487	0.111	0.1183
<b>Morning Person</b>	-0.0764	-0.0719	-0.0413	0.0396	-0.005	-0.0667
<b>Narcissism</b>	0.0844	0.0541	0.0767	0.076	0.042	-0.0029
<b>Nearsightedness</b>	-0.0188	0.0163	0.0227	-0.1162	0.021	0.0445
<b>Neuroticism</b>	0.0223	0.0794	0.0726	0.1029	0.095	0.0977

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<b>Number Ever Born (men)</b>	0.0952	0.1582	-0.0233	-0.098	0.163	0.0033
<b>Number Ever Born (women)</b>	0.0795	0.0698	0.043	0.1095	0.149	0.033
<b>Openness</b>	0.1546	0.168	0.11	-0.0302	0.085	0.1411
<b>Physical Activity</b>	-0.0111	-0.0396	-0.0873	0.0652	-0.063	-0.0097
<b>Recharge by Socializing</b>	-0.0329	-0.0674	-0.132	0.0967	0.024	-0.0678
<b>Religious Attendance</b>	-0.0287	-0.0355	0.032	-0.1522	-0.04	0.0847
<b>Religious Belief</b>	0.0293	-0.0586	-0.0246	-0.0352	-0.104	-0.0272
<b>Risk Tolerance</b>	-0.0449	-0.0085	-0.0679	-0.0209	0.012	-0.046
<b>Self-Rated Health</b>	-0.1825	-0.2349	-0.2096	0.0408	-0.309	-0.1822
<b>Self-Rated Math Ability</b>	-0.0015	-0.0382	-0.0371	-0.1915	-0.018	0.045
<b>Subjective Well-Being</b>	-0.069	-0.1601	-0.1134	0.0201	-0.136	-0.1375

	<b>Attention Deficit Hyperactivity Disorder (ADHD)</b>	<b>Body Mass Index (BMI)</b>	<b>Cannabis Use</b>	<b>Childhood Reading</b>	<b>Cigarettes per Day</b>	<b>Cognitive Empathy</b>
<b>Adventurousness</b>	0.2686	-0.0196	0.4251	-0.1742	0.0062	0.0984
<b>Age First Birth</b>	-0.6147	-0.3783	0.1578	0.0596	-0.3946	-0.0621
<b>Age First Menses</b>	-0.0486	-0.3297	0.0775	-0.0247	-0.0855	-0.0279
<b>Age Voice Deepened</b>	-0.128	-0.2989	0.123	-0.029	-0.1034	-0.0361
<b>Agreeableness</b>	-0.1505	0.0133	-0.0262	0.1014	-0.2106	0.6639
<b>Alcohol Misuse</b>	0.0657	-0.0355	0.4223	-0.0342	0.0007	-0.053
<b>Allergy - Cat</b>	0.046	0.0444	0.0309	-0.0423	0.0513	0.0486
<b>Allergy - Dust</b>	0.1574	0.0899	0.0688	-0.0381	0.0674	0.0487
<b>Allergy - Pollen</b>	0.0931	0.0247	-0.0267	-0.083	0.0144	-0.0118
<b>Alzheimer's</b>	0.0945	-0.0282	-0.1604	0.2089	0.0183	0.0558
<b>Asthma</b>	0.2666	0.1904	0.083	-0.076	0.1491	0.0212
<b>Asthma/Eczema/Rhinitis</b>	0.0827	0.0473	0.0507	-0.0545	0.0272	-0.0346
<b>Attention Deficit Hyperactivity Disorder (ADHD)</b>	1	0.3351	0.214	-0.1055	0.427	-0.0566
<b>Body Mass Index (BMI)</b>	0.3351	1	-0.1138	-0.0777	0.3115	0.0079
<b>Cannabis Use</b>	0.214	-0.1138	1	-0.0578	-0.0876	0.0283
<b>Childhood Reading</b>	-0.1055	-0.0777	-0.0578	1	-0.0969	0.0885
<b>Cigarettes per Day</b>	0.427	0.3115	-0.0876	-0.0969	1	-0.1063
<b>Cognitive Empathy</b>	-0.0566	0.0079	0.0283	0.0885	-0.1063	1
<b>Cognitive Performance</b>	-0.3551	-0.1406	0.1651	-0.3876	-0.0699	-0.2506

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<b>Conscientiousness</b>	-0.1683	-0.069	-0.4783	-0.0371	-0.1678	0.3509
<b>COPD</b>	0.6489	0.3602	0.0975	-0.1241	0.557	0.1649
<b>Delay Discounting</b>	0.3906	0.2953	-0.118	-0.0987	0.113	0.2458
<b>Depressive Symptoms</b>	0.5207	0.1938	0.1173	-0.1274	0.3099	-0.0066
<b>Drinks per Week</b>	0.1245	-0.0423	0.3984	-0.0227	-0.0029	0.0305
<b>Eczema</b>	-0.0427	-0.0413	0.081	0.0222	0.0679	-0.0697
<b>Educational Attainment</b>	-0.5069	-0.2957	0.2524	-0.1153	-0.2718	-0.0969
<b>Ever Smoker</b>	0.5805	0.2024	0.5561	-0.1729	0.2791	0.0799
<b>Extraversion</b>	0.2776	0.1298	0.1318	-0.1686	-3.27E-05	0.3692
<b>Hayfever</b>	-0.0579	-0.0728	0.0647	-0.0251	-0.089	-0.0689
<b>Height</b>	-0.0617	-0.1122	0.0453	-0.0333	-0.0283	0.0406
<b>Highest Math</b>	-0.4899	-0.1871	0.0126	-0.1704	-0.1673	-0.2816
<b>Left Out of Social Activity</b>	-0.0711	-0.0896	0.0662	-0.0219	-0.2029	0.5038
<b>Life Satisfaction: Family</b>	-0.09	0.0187	-0.2715	0.0952	-0.0991	0.3014
<b>Life Satisfaction: Finance</b>	-0.3634	-0.2613	-0.1533	0.1589	-0.2375	0.0081
<b>Life Satisfaction: Friend</b>	0.074	0.0818	-0.1714	0.0642	-0.0697	0.3986
<b>Life Satisfaction: Work</b>	-0.0138	0.0248	-0.0743	-0.0109	-0.0503	0.2041
<b>Loneliness</b>	0.3992	0.2407	0.0007	-0.156	0.2348	-0.123
<b>Migraine</b>	0.2075	0.0022	-0.0818	-0.1576	0.1265	0.0342
<b>Morning Person</b>	0.0129	0.008	-0.1997	0.0396	-0.0069	0.0609
<b>Narcissism</b>	-0.0905	0.1665	-0.4645	0.0686	0.0075	0.1537
<b>Nearsightedness</b>	-0.1899	-0.0733	0.0371	-0.0668	-0.0674	-0.0678
<b>Neuroticism</b>	0.2438	0.0058	-0.048	-0.0056	0.1365	-0.0355
<b>Number Ever Born (men)</b>	0.4858	0.2331	0.0538	-0.0699	0.1408	0.1779
<b>Number Ever Born (women)</b>	0.3465	0.136	-0.0154	0.0674	0.161	0.1167
<b>Openness</b>	0.0837	0.054	0.3788	-0.2345	-0.0555	0.205
<b>Physical Activity</b>	-0.1453	-0.3404	0.1365	-0.0346	-0.2353	0.1852
<b>Recharge by Socializing</b>	0.1533	0.0928	-0.0099	-0.0612	-0.0698	0.2628
<b>Religious Attendance</b>	-0.3864	-0.1922	-0.0802	0.0711	-0.1878	0.0359
<b>Religious Belief</b>	-0.0959	-0.1714	0.417	-0.239	0.0214	-0.2222
<b>Risk Tolerance</b>	0.2331	0.0718	0.3015	-0.2589	0.0778	0.1139
<b>Self-Rated Health</b>	-0.4826	-0.5398	0.1026	0.0567	-0.4455	0.0714
<b>Self-Rated Math Ability</b>	-0.2757	-0.0178	-0.1058	-0.2341	-0.0134	-0.2356
<b>Subjective Well-Being</b>	-0.2775	-0.1318	-0.0878	0.0217	-0.1942	0.2717

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	<b>Cognitive Performance</b>	<b>Conscientiousness</b>	<b>COPD</b>	<b>Delay Discounting</b>	<b>Depressive Symptoms</b>	<b>Drinks per Week</b>
<b>Adventurousness</b>	-0.0686	-0.0977	0.091	-0.0956	-0.119	0.2909
<b>Age First Birth</b>	0.4771	-0.0951	-0.631	-0.5931	-0.3749	0.0184
<b>Age First Menses</b>	-0.0152	0.0004	-0.103	-0.1034	-0.1139	0.0957
<b>Age Voice Deepened</b>	0.0283	-0.0778	-0.244	-0.0827	-0.1732	0.1054
<b>Agreeableness</b>	-0.1765	0.2383	-0.057	0.0252	-0.2343	0.0022
<b>Alcohol Misuse</b>	0.1184	-0.2726	0.038	-0.1658	0.0225	0.9294
<b>Allergy - Cat</b>	0.0162	0.0314	0.202	0.0283	0.1135	-0.1487
<b>Allergy - Dust</b>	0.0219	-0.0242	0.296	-0.0349	0.1922	-0.1491
<b>Allergy - Pollen</b>	0.0359	0.0142	0.144	0.2132	0.1626	-0.192
<b>Alzheimer's</b>	-0.2856	-0.0015	-0.028	-0.0156	0.0078	0.0686
<b>Asthma</b>	-0.0466	-0.0371	0.544	0.0763	0.2385	-0.0474
<b>Asthma/Eczema/Rhinitis</b>	0.0766	-0.0685	0.279	-0.0372	0.1879	-0.0942
<b>Attention Deficit Hyperactivity Disorder (ADHD)</b>	-0.3551	-0.1683	0.649	0.3906	0.5207	0.1245
<b>Body Mass Index (BMI)</b>	-0.1406	-0.069	0.36	0.2953	0.1938	-0.0423
<b>Cannabis Use</b>	0.1651	-0.4783	0.098	-0.118	0.1173	0.3984
<b>Childhood Reading</b>	-0.3876	-0.0371	-0.124	-0.0987	-0.1274	-0.0227
<b>Cigarettes per Day</b>	-0.0699	-0.1678	0.557	0.113	0.3099	-0.0029
<b>Cognitive Empathy</b>	-0.2506	0.3509	0.165	0.2458	-0.0066	0.0305
<b>Cognitive Performance</b>	1	-0.2781	-0.322	-0.3535	-0.1312	-0.0204
<b>Conscientiousness</b>	-0.2781	1	0.019	0.1336	-0.2472	-0.1531
<b>COPD</b>	-0.3219	0.0193	1	0.3598	0.5006	0.1056
<b>Delay Discounting</b>	-0.3535	0.1336	0.36	1	0.2977	0.0179
<b>Depressive Symptoms</b>	-0.1312	-0.2472	0.501	0.2977	1	-0.0169
<b>Drinks per Week</b>	-0.0204	-0.1531	0.106	0.0179	-0.0169	1
<b>Eczema</b>	0.1441	-0.0788	0.063	-0.3065	0.0876	-0.0385
<b>Educational Attainment</b>	0.6662	-0.0979	-0.509	-0.6376	-0.2487	0.0174
<b>Ever Smoker</b>	-0.1669	-0.2374	0.57	0.3534	0.3266	0.3771
<b>Extraversion</b>	-0.1268	0.1285	0.12	0.1177	-0.1138	0.2336
<b>Hayfever</b>	0.1594	-0.1301	0.058	-0.136	0.0744	-0.0884
<b>Height</b>	0.1421	-0.0107	-0.1	-0.0813	-0.0559	-0.0166

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<b>Highest Math</b>	0.6379	0.0049	-0.4	-0.6304	-0.3036	-0.0574
<b>Left Out of Social Activity</b>	-0.1616	0.3458	-0.087	0.0639	-0.5398	0.1934
<b>Life Satisfaction: Family</b>	-0.0937	0.2421	-0.077	0.165	-0.5047	0.018
<b>Life Satisfaction: Finance</b>	0.2886	0.2414	-0.504	-0.5005	-0.5666	-0.0255
<b>Life Satisfaction: Friend</b>	-0.212	0.3434	0.03	0.2916	-0.4202	0.0534
<b>Life Satisfaction: Work</b>	0.0035	0.3176	-0.192	0.2129	-0.4612	0.0838
<b>Loneliness</b>	-0.1824	-0.1294	0.432	0.2487	0.7764	-0.0708
<b>Migraine</b>	-0.0112	0.0254	0.185	0.0287	0.2964	-0.1814
<b>Morning Person</b>	-0.1289	0.204	-0.007	0.1244	-0.1188	-0.0614
<b>Narcissism</b>	-0.2591	0.3715	0.067	0.2329	-0.0762	-0.2381
<b>Nearsightedness</b>	0.2385	-0.0594	-0.144	-0.0633	-0.0088	-0.0543
<b>Neuroticism</b>	-0.1532	-0.1919	0.243	0.1939	0.7692	-0.0154
<b>Number Ever Born (men)</b>	-0.2314	0.0231	0.437	0.1862	0.1195	0.0774
<b>Number Ever Born (women)</b>	-0.2578	-0.0402	0.271	0.1469	0.1618	0.0435
<b>Openness</b>	0.1607	-0.2419	0.035	-0.1184	0.1512	0.0183
<b>Physical Activity</b>	0.0239	0.2753	-0.223	-0.302	-0.2589	0.1127
<b>Recharge by Socializing</b>	-0.1297	0.1789	0.014	0.0516	-0.3143	0.1287
<b>Religious Attendance</b>	0.4402	-0.0128	-0.368	-0.4302	-0.1564	-0.1085
<b>Religious Belief</b>	0.3962	-0.3263	-0.144	-0.4222	-0.0373	0.0538
<b>Risk Tolerance</b>	-0.033	0.0183	0.131	-0.0456	-0.0996	0.2162
<b>Self-Rated Health</b>	0.2528	0.2257	-0.637	-0.3314	-0.6138	0.1151
<b>Self-Rated Math Ability</b>	0.6011	0.0931	-0.18	-0.5755	-0.2208	-0.0756
<b>Subjective Well-Being</b>	0.0963	0.3405	-0.34	-0.1437	-0.7763	0.0668

	<b>Eczema</b>	<b>Educational Attainment</b>	<b>Ever Smoker</b>	<b>Extraversion</b>	<b>Hayfever</b>	<b>Height</b>
<b>Adventurousness</b>	-0.155	0.0995	0.2245	0.5496	-0.0516	0.003
<b>Age First Birth</b>	0.223	0.758	-0.4686	-0.1183	0.1594	0.203
<b>Age First Menses</b>	-0.044	0.0547	0.0003	0.0132	0.0018	0.126
<b>Age Voice Deepened</b>	-0.001	0.1521	-0.0595	0.0106	0.0615	0.081
<b>Agreeableness</b>	0.06	-0.0484	-0.0725	0.2302	-0.0066	0.003
<b>Alcohol Misuse</b>	0.034	0.1349	0.375	0.1349	-0.0816	0.03
<b>Allergy - Cat</b>	0.143	-0.0283	0.036	0.0391	0.9043	-0.06
<b>Allergy - Dust</b>	0.239	-0.0256	0.0544	0.0379	0.8401	-0.089

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<b>Allergy - Pollen</b>	0.289	-0.0293	0.025	-0.0178	0.8333	-0.06
<b>Alzheimer's</b>	-0.039	-0.2028	-0.0158	-0.0065	-0.0256	-0.128
<b>Asthma</b>	0.43	-0.1048	0.1377	0.1049	0.6479	-0.077
<b>Asthma/Eczema/Rhinitis</b>	0.607	0.0789	-0.0036	0.0116	0.9479	-0.029
<b>Attention Deficit Hyperactivity Disorder (ADHD)</b>	-0.043	-0.5069	0.5805	0.2776	-0.0579	-0.062
<b>Body Mass Index (BMI)</b>	-0.041	-0.2957	0.2024	0.1298	-0.0728	-0.112
<b>Cannabis Use</b>	0.081	0.2524	0.5561	0.1318	0.0647	0.045
<b>Childhood Reading</b>	0.022	-0.1153	-0.1729	-0.1686	-0.0251	-0.033
<b>Cigarettes per Day</b>	0.068	-0.2718	0.2791	-3.27E-05	-0.089	-0.028
<b>Cognitive Empathy</b>	-0.07	-0.0969	0.0799	0.3692	-0.0689	0.041
<b>Cognitive Performance</b>	0.144	0.6662	-0.1669	-0.1268	0.1594	0.142
<b>Conscientiousness</b>	-0.079	-0.0979	-0.2374	0.1285	-0.1301	-0.011
<b>COPD</b>	0.063	-0.5088	0.5704	0.1204	0.0584	-0.1
<b>Delay Discounting</b>	-0.307	-0.6376	0.3534	0.1177	-0.136	-0.081
<b>Depressive Symptoms</b>	0.088	-0.2487	0.3266	-0.1138	0.0744	-0.056
<b>Drinks per Week</b>	-0.039	0.0174	0.3771	0.2336	-0.0884	-0.017
<b>Eczema</b>	1	0.2206	-0.0384	-0.0567	0.6077	0.041
<b>Educational Attainment</b>	0.221	1	-0.3795	0.0081	0.2217	0.165
<b>Ever Smoker</b>	-0.038	-0.3795	1	0.228	-0.1028	-0.024
<b>Extraversion</b>	-0.057	0.0081	0.228	1	-0.0417	-0.017
<b>Hayfever</b>	0.608	0.2217	-0.1028	-0.0417	1	5E-04
<b>Height</b>	0.041	0.1649	-0.0243	-0.0172	0.0005	1
<b>Highest Math</b>	0.185	0.8098	-0.4271	-0.0487	0.15	0.122
<b>Left Out of Social Activity</b>	-0.148	-0.0118	0.0269	0.6179	-0.1021	0.021
<b>Life Satisfaction: Family</b>	-0.105	-0.1375	-0.066	0.1515	-0.1182	0.014
<b>Life Satisfaction: Finance</b>	0.005	0.3942	-0.3326	0.1087	-0.0464	0.106
<b>Life Satisfaction: Friend</b>	-0.093	-0.2589	0.0712	0.3672	-0.125	-0.032
<b>Life Satisfaction: Work</b>	-0.008	0.0092	-0.0266	0.3843	-0.0729	0.031
<b>Loneliness</b>	0.026	-0.3071	0.2127	-0.1254	0.0091	-0.082
<b>Migraine</b>	0.078	-0.1074	0.0618	0.0186	0.0728	-0.05
<b>Morning Person</b>	-0.037	-0.0938	-0.0612	0.0657	-0.0966	-0.005
<b>Narcissism</b>	-0.044	-0.3407	-0.1413	-0.208	-0.0413	-0.06
<b>Nearsightedness</b>	-0.007	0.236	-0.1152	-0.1547	0.073	0.039

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<b>Neuroticism</b>	0.118	-0.2103	0.1615	-0.2451	0.0535	-0.065
<b>Number Ever Born (men)</b>	-0.119	-0.3144	0.3346	0.3311	-0.0886	-0.015
<b>Number Ever Born (women)</b>	-0.051	-0.3201	0.227	0.1185	-0.045	-0.09
<b>Openness</b>	0.106	0.3295	0.1392	0.3227	0.1216	0.017
<b>Physical Activity</b>	0.006	0.3249	-0.1536	0.2076	0.0813	-0.002
<b>Recharge by Socializing</b>	-0.061	-0.0609	0.0131	0.5591	-0.1044	-0.043
<b>Religious Attendance</b>	0.197	0.6383	-0.3766	0.0081	0.1647	0.094
<b>Religious Belief</b>	0.159	0.2893	0.079	-0.1785	0.0634	0.018
<b>Risk Tolerance</b>	-0.109	0.109	0.1963	0.5399	-0.0565	0.033
<b>Self-Rated Health</b>	-0.038	0.4996	-0.3073	0.1249	-0.028	0.091
<b>Self-Rated Math Ability</b>	0.154	0.5079	-0.2441	0.0335	0.1072	0.07
<b>Subjective Well-Being</b>	-0.158	0.1875	-0.1906	0.3742	-0.0914	0.051

	<b>Highest Math</b>	<b>Left Out of Social Activity</b>	<b>Life Satisfaction: Family</b>	<b>Life Satisfaction: Finance</b>	<b>Life Satisfaction: Friend</b>	<b>Life Satisfaction: Work</b>
<b>Adventurousness</b>	0.0571	0.3544	-0.0309	-0.0219	0.1213	0.1821
<b>Age First Birth</b>	0.6083	0.068	-0.0447	0.4383	-0.1399	-0.035
<b>Age First Menses</b>	0.0624	0.0995	0.0481	0.0787	0.0642	0.0458
<b>Age Voice Deepened</b>	0.167	0.1219	0.0185	0.0719	-0.0014	-0.0536
<b>Agreeableness</b>	-0.0928	0.3492	0.5542	0.0932	0.5836	0.3083
<b>Alcohol Misuse</b>	0.0813	0.1428	-0.029	0.0102	-0.0519	0.0287
<b>Allergy - Cat</b>	-0.0347	-0.042	0.0482	-0.1225	0.0449	0.0087
<b>Allergy - Dust</b>	-0.0862	-0.0789	-0.0773	-0.1889	0.0064	-0.1157
<b>Allergy - Pollen</b>	-0.064	-0.0852	0.0353	-0.0984	0.026	-0.0744
<b>Alzheimer's</b>	-0.1992	0.039	0.06	-0.1349	0.0839	0.0601
<b>Asthma</b>	-0.0983	-0.0982	-0.0389	-0.2447	0.013	-0.0221
<b>Asthma/Eczema/Rhinitis</b>	0.0291	-0.1161	-0.1069	-0.1265	-0.0774	-0.0469
<b>Attention Deficit Hyperactivity Disorder (ADHD)</b>	-0.4899	-0.0711	-0.09	-0.3634	0.074	-0.0138
<b>Body Mass Index (BMI)</b>	-0.1871	-0.0896	0.0187	-0.2613	0.0818	0.0248
<b>Cannabis Use</b>	0.0126	0.0662	-0.2715	-0.1533	-0.1714	-0.0743
<b>Childhood Reading</b>	-0.1704	-0.0219	0.0952	0.1589	0.0642	-0.0109
<b>Cigarettes per Day</b>	-0.1673	-0.2029	-0.0991	-0.2375	-0.0697	-0.0503
<b>Cognitive Empathy</b>	-0.2816	0.5038	0.3014	0.0081	0.3986	0.2041

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<b>Cognitive Performance</b>	0.6379	-0.1616	-0.0937	0.2886	-0.212	0.0035
<b>Conscientiousness</b>	0.0049	0.3458	0.2421	0.2414	0.3434	0.3176
<b>COPD</b>	-0.3999	-0.0869	-0.077	-0.5041	0.0296	-0.1918
<b>Delay Discounting</b>	-0.6304	0.0639	0.165	-0.5005	0.2916	0.2129
<b>Depressive Symptoms</b>	-0.3036	-0.5398	-0.5047	-0.5666	-0.4202	-0.4612
<b>Drinks per Week</b>	-0.0574	0.1934	0.018	-0.0255	0.0534	0.0838
<b>Eczema</b>	0.1846	-0.1478	-0.1048	0.005	-0.0934	-0.0081
<b>Educational Attainment</b>	0.8098	-0.0118	-0.1375	0.3942	-0.2589	0.0092
<b>Ever Smoker</b>	-0.4271	0.0269	-0.066	-0.3326	0.0712	-0.0266
<b>Extraversion</b>	-0.0487	0.6179	0.1515	0.1087	0.3672	0.3843
<b>Hayfever</b>	0.15	-0.1021	-0.1182	-0.0464	-0.125	-0.0729
<b>Height</b>	0.122	0.0205	0.0143	0.1056	-0.032	0.0307
<b>Highest Math</b>	1	-0.0282	-0.0696	0.4104	-0.1807	0.0511
<b>Left Out of Social Activity</b>	-0.0282	1	0.5174	0.318	0.6885	0.4613
<b>Life Satisfaction: Family</b>	-0.0696	0.5174	1	0.4025	0.8556	0.6364
<b>Life Satisfaction: Finance</b>	0.4104	0.318	0.4025	1	0.3509	0.5969
<b>Life Satisfaction: Friend</b>	-0.1807	0.6885	0.8556	0.3509	1	0.6799
<b>Life Satisfaction: Work</b>	0.0511	0.4613	0.6364	0.5969	0.6799	1
<b>Loneliness</b>	-0.2945	-0.6069	-0.5901	-0.6129	-0.5639	-0.5203
<b>Migraine</b>	-0.0703	-0.1433	-0.0493	-0.1835	-0.0645	-0.0502
<b>Morning Person</b>	-0.0826	0.1436	0.1114	0.0823	0.0908	0.1292
<b>Narcissism</b>	-0.1835	0.0461	0.2779	-0.0433	0.3216	0.0649
<b>Nearsightedness</b>	0.205	-0.1335	-0.0505	0.0396	-0.0853	-0.0586
<b>Neuroticism</b>	-0.2633	-0.5229	-0.418	-0.3995	-0.4113	-0.4964
<b>Number Ever Born (men)</b>	-0.2482	0.1509	0.1004	-0.1858	0.1527	0.236
<b>Number Ever Born (women)</b>	-0.2665	0.0189	0.1246	-0.1462	0.1047	0.1298
<b>Openness</b>	0.1089	-0.0075	-0.1586	-0.1768	-0.169	0.0359
<b>Physical Activity</b>	0.2289	0.2757	0.0008	0.1772	0.0072	0.0866
<b>Recharge by Socializing</b>	0.0038	0.48	0.368	0.1241	0.3893	0.308
<b>Religious Attendance</b>	0.4652	-0.0591	0.1348	0.3295	-0.0179	0.151
<b>Religious Belief</b>	0.2613	-0.2059	-0.2877	0.0461	-0.2734	-0.1711
<b>Risk Tolerance</b>	0.0856	0.3356	-0.0632	-0.0098	0.0785	0.2909
<b>Self-Rated Health</b>	0.3934	0.3714	0.2327	0.6138	0.1835	0.323
<b>Self-Rated Math Ability</b>	0.8441	-0.0102	0.0019	0.3251	-0.0821	0.1311

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<b>Subjective Well-Being</b>	0.2088	0.6913	0.6888	0.6275	0.6919	0.7769
	<b>Loneliness</b>	<b>Migraine</b>	<b>Morning Person</b>	<b>Narcissism</b>	<b>Nearsightedness</b>	<b>Neuroticism</b>
<b>Adventurousness</b>	-0.0823	-0.073	-0.022	-0.2558	-0.1425	-0.3088
<b>Age First Birth</b>	-0.3301	-0.172	-0.1114	-0.1787	0.189	-0.1939
<b>Age First Menses</b>	-0.0952	0.0127	-0.0172	-0.0528	-0.0113	-0.028
<b>Age Voice Deepened</b>	-0.0756	-0.092	-0.0052	-0.0584	-0.0072	-0.0512
<b>Agreeableness</b>	-0.3075	0.031	0.0453	0.4712	-0.1113	-0.3364
<b>Alcohol Misuse</b>	-0.0771	-0.235	-0.1132	-0.2975	0.0228	0.0168
<b>Allergy - Cat</b>	-0.0336	0.1383	-0.0764	0.0844	-0.0188	0.0223
<b>Allergy - Dust</b>	0.0942	0.1932	-0.0719	0.0541	0.0163	0.0794
<b>Allergy - Pollen</b>	0.0407	0.1863	-0.0413	0.0767	0.0227	0.0726
<b>Alzheimer's</b>	0.0929	-0.049	0.0396	0.076	-0.1162	0.1029
<b>Asthma</b>	0.1875	0.1113	-0.0045	0.0422	0.0212	0.0948
<b>Asthma/Eczema/Rhinitis</b>	0.095	0.1183	-0.0667	-0.0029	0.0445	0.0977
<b>Attention Deficit Hyperactivity Disorder (ADHD)</b>	0.3992	0.2075	0.0129	-0.0905	-0.1899	0.2438
<b>Body Mass Index (BMI)</b>	0.2407	0.0022	0.008	0.1665	-0.0733	0.0058
<b>Cannabis Use</b>	0.0007	-0.082	-0.1997	-0.4645	0.0371	-0.048
<b>Childhood Reading</b>	-0.156	-0.158	0.0396	0.0686	-0.0668	-0.0056
<b>Cigarettes per Day</b>	0.2348	0.1265	-0.0069	0.0075	-0.0674	0.1365
<b>Cognitive Empathy</b>	-0.123	0.0342	0.0609	0.1537	-0.0678	-0.0355
<b>Cognitive Performance</b>	-0.1824	-0.011	-0.1289	-0.2591	0.2385	-0.1532
<b>Conscientiousness</b>	-0.1294	0.0254	0.204	0.3715	-0.0594	-0.1919
<b>COPD</b>	0.4318	0.1854	-0.0073	0.0666	-0.1439	0.2427
<b>Delay Discounting</b>	0.2487	0.0287	0.1244	0.2329	-0.0633	0.1939
<b>Depressive Symptoms</b>	0.7764	0.2964	-0.1188	-0.0762	-0.0088	0.7692
<b>Drinks per Week</b>	-0.0708	-0.181	-0.0614	-0.2381	-0.0543	-0.0154
<b>Eczema</b>	0.0259	0.078	-0.0373	-0.0437	-0.0068	0.1175
<b>Educational Attainment</b>	-0.3071	-0.107	-0.0938	-0.3407	0.236	-0.2103
<b>Ever Smoker</b>	0.2127	0.0618	-0.0612	-0.1413	-0.1152	0.1615
<b>Extraversion</b>	-0.1254	0.0186	0.0657	-0.208	-0.1547	-0.2451
<b>Hayfever</b>	0.0091	0.0728	-0.0966	-0.0413	0.073	0.0535

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<b>Height</b>	-0.0824	-0.05	-0.0048	-0.0595	0.0387	-0.0645
<b>Highest Math</b>	-0.2945	-0.07	-0.0826	-0.1835	0.205	-0.2633
<b>Left Out of Social Activity</b>	-0.6069	-0.143	0.1436	0.0461	-0.1335	-0.5229
<b>Life Satisfaction: Family</b>	-0.5901	-0.049	0.1114	0.2779	-0.0505	-0.418
<b>Life Satisfaction: Finance</b>	-0.6129	-0.184	0.0823	-0.0433	0.0396	-0.3995
<b>Life Satisfaction: Friend</b>	-0.5639	-0.065	0.0908	0.3216	-0.0853	-0.4113
<b>Life Satisfaction: Work</b>	-0.5203	-0.05	0.1292	0.0649	-0.0586	-0.4964
<b>Loneliness</b>	1	0.1545	-0.0583	-0.0352	-0.0595	0.7347
<b>Migraine</b>	0.1545	1	-0.0348	0.0569	-0.0045	0.1831
<b>Morning Person</b>	-0.0583	-0.035	1	0.0794	-0.0172	-0.0267
<b>Narcissism</b>	-0.0352	0.0569	0.0794	1	-0.0684	-0.1329
<b>Nearsightedness</b>	-0.0595	-0.005	-0.0172	-0.0684	1	0.0103
<b>Neuroticism</b>	0.7347	0.1831	-0.0267	-0.1329	0.0103	1
<b>Number Ever Born (men)</b>	0.1147	0.019	0.1121	-0.0087	-0.1944	-0.0517
<b>Number Ever Born (women)</b>	0.1198	0.0672	0.0258	0.0543	-0.1803	0.0605
<b>Openness</b>	0.0418	0.0853	-0.1782	-0.2779	0.0658	-0.0498
<b>Physical Activity</b>	-0.2081	-0.119	0.1953	-0.1444	0.0149	-0.1106
<b>Recharge by Socializing</b>	-0.2397	-0.063	0.0561	0.0823	-0.161	-0.2863
<b>Religious Attendance</b>	-0.2935	-0.047	0.0233	-0.1403	0.1514	-0.0771
<b>Religious Belief</b>	-0.0664	-0.016	-0.1514	-0.258	0.0657	-0.1574
<b>Risk Tolerance</b>	-0.059	-0.051	0.0408	-0.3066	-0.0946	-0.3387
<b>Self-Rated Health</b>	-0.5156	-0.25	0.0767	-0.2021	0.0485	-0.3989
<b>Self-Rated Math Ability</b>	-0.1952	-0.025	-0.0503	-0.0903	0.1076	-0.2552
<b>Subjective Well-Being</b>	-0.7854	-0.185	0.189	0.0543	-0.017	-0.7013

	<b>Number Ever Born (men)</b>	<b>Number Ever Born (women)</b>	<b>Openness</b>	<b>Physical Activity</b>	<b>Recharge by Socializing</b>	<b>Religious Attendance</b>
<b>Adventurousness</b>	0.3166	0.1634	0.3856	0.3082	0.3753	-0.1281
<b>Age First Birth</b>	-0.6369	-0.6448	0.0932	0.2675	-0.0716	0.5092
<b>Age First Menses</b>	-0.0283	0.0323	-0.052	0.127	0.0003	-0.0343
<b>Age Voice Deepened</b>	-0.0543	-0.0332	0.1106	0.1227	0.0699	-0.0102
<b>Agreeableness</b>	0.1907	0.1287	0.1016	0.1082	0.3705	0.218
<b>Alcohol Misuse</b>	0.051	0.0309	0.0698	0.1048	0.1194	0.0166
<b>Allergy - Cat</b>	0.0952	0.0795	0.1546	-0.0111	-0.0329	-0.0287

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<b>Allergy - Dust</b>	0.1582	0.0698	0.168	-0.0396	-0.0674	-0.0355
<b>Allergy - Pollen</b>	-0.0233	0.043	0.11	-0.0873	-0.132	0.032
<b>Alzheimer's</b>	-0.098	0.1095	-0.0302	0.0652	0.0967	-0.1522
<b>Asthma</b>	0.1632	0.1491	0.0852	-0.0634	0.0244	-0.04
<b>Asthma/Eczema/Rhinitis</b>	0.0033	0.033	0.1411	-0.0097	-0.0678	0.0847
<b>Attention Deficit Hyperactivity Disorder (ADHD)</b>	0.4858	0.3465	0.0837	-0.1453	0.1533	-0.3864
<b>Body Mass Index (BMI)</b>	0.2331	0.136	0.054	-0.3404	0.0928	-0.1922
<b>Cannabis Use</b>	0.0538	-0.0154	0.3788	0.1365	-0.0099	-0.0802
<b>Childhood Reading</b>	-0.0699	0.0674	-0.2345	-0.0346	-0.0612	0.0711
<b>Cigarettes per Day</b>	0.1408	0.161	-0.0555	-0.2353	-0.0698	-0.1878
<b>Cognitive Empathy</b>	0.1779	0.1167	0.205	0.1852	0.2628	0.0359
<b>Cognitive Performance</b>	-0.2314	-0.2578	0.1607	0.0239	-0.1297	0.4402
<b>Conscientiousness</b>	0.0231	-0.0402	-0.2419	0.2753	0.1789	-0.0128
<b>COPD</b>	0.4374	0.2713	0.0348	-0.2225	0.014	-0.3679
<b>Delay Discounting</b>	0.1862	0.1469	-0.1184	-0.302	0.0516	-0.4302
<b>Depressive Symptoms</b>	0.1195	0.1618	0.1512	-0.2589	-0.3143	-0.1564
<b>Drinks per Week</b>	0.0774	0.0435	0.0183	0.1127	0.1287	-0.1085
<b>Eczema</b>	-0.1186	-0.051	0.1061	0.0057	-0.0607	0.1971
<b>Educational Attainment</b>	-0.3144	-0.3201	0.3295	0.3249	-0.0609	0.6383
<b>Ever Smoker</b>	0.3346	0.227	0.1392	-0.1536	0.0131	-0.3766
<b>Extraversion</b>	0.3311	0.1185	0.3227	0.2076	0.5591	0.0081
<b>Hayfever</b>	-0.0886	-0.045	0.1216	0.0813	-0.1044	0.1647
<b>Height</b>	-0.0145	-0.0897	0.0171	-0.0021	-0.0427	0.0936
<b>Highest Math</b>	-0.2482	-0.2665	0.1089	0.2289	0.0038	0.4652
<b>Left Out of Social Activity</b>	0.1509	0.0189	-0.0075	0.2757	0.48	-0.0591
<b>Life Satisfaction: Family</b>	0.1004	0.1246	-0.1586	0.0008	0.368	0.1348
<b>Life Satisfaction: Finance</b>	-0.1858	-0.1462	-0.1768	0.1772	0.1241	0.3295
<b>Life Satisfaction: Friend</b>	0.1527	0.1047	-0.169	0.0072	0.3893	-0.0179
<b>Life Satisfaction: Work</b>	0.236	0.1298	0.0359	0.0866	0.308	0.151
<b>Loneliness</b>	0.1147	0.1198	0.0418	-0.2081	-0.2397	-0.2935
<b>Migraine</b>	0.019	0.0672	0.0853	-0.1191	-0.0629	-0.0466
<b>Morning Person</b>	0.1121	0.0258	-0.1782	0.1953	0.0561	0.0233
<b>Narcissism</b>	-0.0087	0.0543	-0.2779	-0.1444	0.0823	-0.1403

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<b>Nearsightedness</b>	-0.1944	-0.1803	0.0658	0.0149	-0.161	0.1514
<b>Neuroticism</b>	-0.0517	0.0605	-0.0498	-0.1106	-0.2863	-0.0771
<b>Number Ever Born (men)</b>	1	0.7766	0.0465	-0.062	0.2925	-0.1379
<b>Number Ever Born (women)</b>	0.7766	1	-0.0293	-0.106	0.1561	-0.1334
<b>Openness</b>	0.0465	-0.0293	1	0.1582	0.0728	0.1647
<b>Physical Activity</b>	-0.062	-0.106	0.1582	1	0.152	0.1538
<b>Recharge by Socializing</b>	0.2925	0.1561	0.0728	0.152	1	0.0236
<b>Religious Attendance</b>	-0.1379	-0.1334	0.1647	0.1538	0.0236	1
<b>Religious Belief</b>	-0.2672	-0.2474	0.1534	0.0099	-0.2661	-0.2615
<b>Risk Tolerance</b>	0.3529	0.1605	0.3973	0.1997	0.253	-0.1251
<b>Self-Rated Health</b>	-0.1735	-0.1687	0.0395	0.5212	0.1332	0.3073
<b>Self-Rated Math Ability</b>	-0.0377	-0.064	0.0635	0.0926	0.0708	0.2961
<b>Subjective Well-Being</b>	0.1323	0.0267	-0.0144	0.2449	0.4035	0.1962

	<b>Religious Belief</b>	<b>Risk Tolerance</b>	<b>Self-Rated Health</b>	<b>Self-Rated Math Ability</b>	<b>Subjective Well-Being</b>
<b>Adventurousness</b>	0.159	0.835	0.2235	0.0797	0.2725
<b>Age First Birth</b>	0.1841	-0.068	0.5599	0.2819	0.1903
<b>Age First Menses</b>	0.1213	0.066	0.2137	0.024	0.1238
<b>Age Voice Deepened</b>	0.2146	0.116	0.2582	0.1013	0.1261
<b>Agreeableness</b>	-0.2368	-0.008	0.1026	-0.0789	0.4657
<b>Alcohol Misuse</b>	0.1702	0.187	0.0965	0.0554	0.0279
<b>Allergy - Cat</b>	0.0293	-0.045	-0.1825	-0.0015	-0.069
<b>Allergy - Dust</b>	-0.0586	-0.009	-0.2349	-0.0382	-0.1601
<b>Allergy - Pollen</b>	-0.0246	-0.068	-0.2096	-0.0371	-0.1134
<b>Alzheimer's</b>	-0.0352	-0.021	0.0408	-0.1915	0.0201
<b>Asthma</b>	-0.1044	0.012	-0.3087	-0.0175	-0.1363
<b>Asthma/Eczema/Rhinitis</b>	-0.0272	-0.046	-0.1822	0.045	-0.1375
<b>Attention Deficit Hyperactivity Disorder (ADHD)</b>	-0.0959	0.233	-0.4826	-0.2757	-0.2775
<b>Body Mass Index (BMI)</b>	-0.1714	0.072	-0.5398	-0.0178	-0.1318
<b>Cannabis Use</b>	0.417	0.302	0.1026	-0.1058	-0.0878
<b>Childhood Reading</b>	-0.239	-0.259	0.0567	-0.2341	0.0217
<b>Cigarettes per Day</b>	0.0214	0.078	-0.4455	-0.0134	-0.1942

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<b>Cognitive Empathy</b>	-0.2222	0.114	0.0714	-0.2356	0.2717
<b>Cognitive Performance</b>	0.3962	-0.033	0.2528	0.6011	0.0963
<b>Conscientiousness</b>	-0.3263	0.018	0.2257	0.0931	0.3405
<b>COPD</b>	-0.1438	0.131	-0.6372	-0.1803	-0.3397
<b>Delay Discounting</b>	-0.4222	-0.046	-0.3314	-0.5755	-0.1437
<b>Depressive Symptoms</b>	-0.0373	-0.1	-0.6138	-0.2208	-0.7763
<b>Drinks per Week</b>	0.0538	0.216	0.1151	-0.0756	0.0668
<b>Eczema</b>	0.1586	-0.109	-0.0376	0.1542	-0.1579
<b>Educational Attainment</b>	0.2893	0.109	0.4996	0.5079	0.1875
<b>Ever Smoker</b>	0.079	0.196	-0.3073	-0.2441	-0.1906
<b>Extraversion</b>	-0.1785	0.54	0.1249	0.0335	0.3742
<b>Hayfever</b>	0.0634	-0.057	-0.028	0.1072	-0.0914
<b>Height</b>	0.0175	0.033	0.0909	0.0696	0.0514
<b>Highest Math</b>	0.2613	0.086	0.3934	0.8441	0.2088
<b>Left Out of Social Activity</b>	-0.2059	0.336	0.3714	-0.0102	0.6913
<b>Life Satisfaction: Family</b>	-0.2877	-0.063	0.2327	0.0019	0.6888
<b>Life Satisfaction: Finance</b>	0.0461	-0.01	0.6138	0.3251	0.6275
<b>Life Satisfaction: Friend</b>	-0.2734	0.079	0.1835	-0.0821	0.6919
<b>Life Satisfaction: Work</b>	-0.1711	0.291	0.323	0.1311	0.7769
<b>Loneliness</b>	-0.0664	-0.059	-0.5156	-0.1952	-0.7854
<b>Migraine</b>	-0.0163	-0.051	-0.2503	-0.0246	-0.185
<b>Morning Person</b>	-0.1514	0.041	0.0767	-0.0503	0.189
<b>Narcissism</b>	-0.258	-0.307	-0.2021	-0.0903	0.0543
<b>Nearsightedness</b>	0.0657	-0.095	0.0485	0.1076	-0.017
<b>Neuroticism</b>	-0.1574	-0.339	-0.3989	-0.2552	-0.7013
<b>Number Ever Born (men)</b>	-0.2672	0.353	-0.1735	-0.0377	0.1323
<b>Number Ever Born (women)</b>	-0.2474	0.161	-0.1687	-0.064	0.0267
<b>Openness</b>	0.1534	0.397	0.0395	0.0635	-0.0144
<b>Physical Activity</b>	0.0099	0.2	0.5212	0.0926	0.2449
<b>Recharge by Socializing</b>	-0.2661	0.253	0.1332	0.0708	0.4035
<b>Religious Attendance</b>	-0.2615	-0.125	0.3073	0.2961	0.1962
<b>Religious Belief</b>	1	0.117	0.1388	0.146	-0.1496
<b>Risk Tolerance</b>	0.1166	1	0.1553	0.1753	0.2825
<b>Self-Rated Health</b>	0.1388	0.155	1	0.2133	0.5826

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<b>Self-Rated Math Ability</b>	0.146	0.175	0.2133	1	0.2244
<b>Subjective Well-Being</b>	-0.1496	0.283	0.5826	0.2244	1

**Supplementary Table 10: Multi-trait Input GWASs**

Phenotype	Code	Input files	MTAG weight factors (mean across SNPs)	GWAS- equivalent <i>N</i>	Overlapping Datasets	Repository Datasets Sumstats are Used For
<i>Anthropometric</i>						
Body Mass Index (BMI)	No Supplementary Phenotypes					
Height	No Supplementary Phenotypes					
<i>Cognition and Education</i>						
Alzheimer's	No Supplementary Phenotypes					
Childhood Reading	No Supplementary Phenotypes					
	CP_multi1	CP1, SELFMATH1, HIGHMATH1, EA1	1.371, 1.045, 1.988, 0.933	343,411	MCTFR, UKB1, UKB2, UKB3	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, Texas Twins, STR, WLS
Cognitive Performance	CP_multi2	CP2, SELFMATH1, HIGHMATH1, EA1	1.389, 1.043, 1.988, 0.932	319,426	UKB1, UKB2, UKB3	MCTFR
	CP_multi3	CP3, SELFMATH1, HIGHMATH1, EA2	1.34, 1.04, 1.914, 0.952	325,757	MCTFR, UKB2, UKB3	UKB1
	CP_multi4	CP4, SELFMATH1, HIGHMATH1, EA3	1.426, 1.039, 1.956, 0.931	280,536	MCTFR, UKB1, UKB3	UKB2
	CP_multi5	CP5, SELFMATH1, HIGHMATH1, EA4	1.455, 1.037, 1.952, 0.931	276,546	MCTFR, UKB1, UKB2	UKB3
	EA_multi1	EA1, RELIGATT1, HIGHMATH1, DELAYDISC1, CP1, AFB1	0.943, 0.963, 1.61, -0.559, 1.244, 4.935	1,295,788	EGCUT, MTCFR, STR, UKB1, UKB2, UKB3	AddHealth, Dunedin, ELSA, E- Risk, HRS, Texas Twins, WLS
Educational Attainment	EA_multi2	EA1, RELIGATT1, HIGHMATH1, DELAYDISC1, CP1, AFB2	0.947, 0.98, 1.63, -0.581, 1.25, 5.339	1,285,118	MCTFR, UKB1, UKB2, UKB3	EGCUT, STR
	EA_multi3	EA1, RELIGATT1, HIGHMATH1, DELAYDISC1, CP2, AFB2	0.945, 0.979, 1.629, -0.591, 1.26, 5.327	1,274,332	UKB1, UKB2, UKB3	MCTFR
	EA_multi4	EA2, RELIGATT2, HIGHMATH1, DELAYDISC1, CP3, AFB3	0.961, 0.969, 1.549, -0.56, 1.205, 5.447	890,477	UKB2, UKB3	UKB1
	EA_multi5	EA3, RELIGATT3, HIGHMATH1, DELAYDISC1, CP4, AFB4	0.939, 0.976, 1.601, -0.574, 1.272, 5.652	1,031,896	UKB1, UKB3	UKB2
	EA_multi6	EA4, RELIGATT4, HIGHMATH1, DELAYDISC1, CP5, AFB5	0.938, 0.958, 1.591, -0.59, 1.296, 5.748	1,021,361	UKB1, UKB2	UKB3
	HIGHMATH_multi1	HIGHMATH1, SELFMATH1, EA1, DELAYDISC1, CP1, AFB1	1.898, 1.028, 0.884, -0.66, 1.359, 3.904	801,291	EGCUT, MTCFR, STR, UKB1, UKB2, UKB3	AddHealth, Dunedin, ELSA, E- Risk, HRS, Texas Twins, WLS
Highest Math						

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	HIGHMATH_multi2	HIGHMATH1, SELF MATH1, EA1, DELAYDISC1, CP1, AFB2	1.914, 1.031, 0.892, -0.664, 1.364, 4.313	798,292	MCTFR, UKB1, UKB2, UKB3	EGCUT, STR
	HIGHMATH_multi3	HIGHMATH1, SELF MATH1, EA1, DELAYDISC1, CP2, AFB2	1.913, 1.03, 0.892, -0.675, 1.381, 4.3,	792,638	UKB1, UKB2, UKB3	MCTFR
	HIGHMATH_multi4	HIGHMATH1, SELF MATH1, EA2, DELAYDISC1, CP3, AFB3	1.859, 1.025, 0.916, -0.649, 1.341, 4.391	780,348	UKB2, UKB3	UKB1
	HIGHMATH_multi5	HIGHMATH1, SELF MATH1, EA3, DELAYDISC1, CP4, AFB4	1.899, 1.024, 0.895, -0.689, 1.421, 4.593	781,919	UKB1, UKB3	UKB2
	HIGHMATH_multi6	HIGHMATH1, SELF MATH1, EA4, DELAYDISC1, CP5, AFB5	1.893, 1.02, 0.895, -0.694, 1.449, 4.759	775,017	UKB1, UKB2	UKB3
	SELF MATH_multi1	SELF MATH1, HIGHMATH1, CP1	0.984, 1.554, 1.134	663,024	MCTFR, UKB1, UKB2, UKB3	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, Texas Twins, STR, WLS
Self-Rated Math Ability	SELF MATH_multi2	SELF MATH1, HIGHMATH1, CP2	0.979, 1.546, 1.149	659,883	UKB1, UKB2, UKB3	MCTFR
	SELF MATH_multi3	SELF MATH1, HIGHMATH1, CP3	0.982, 1.552, 1.123	650,789	MCTFR, UKB2, UKB3	UKB1
	SELF MATH_multi4	SELF MATH1, HIGHMATH1, CP4	0.976, 1.534, 1.166	651,300	MCTFR, UKB1, UKB3	UKB2
	SELF MATH_multi5	SELF MATH1, HIGHMATH1, CP5	0.973, 1.526, 1.183	651,499	MCTFR, UKB1, UKB2	UKB3
<i>Fertility and Sexual Development</i>						
	AFB_multi1	AFB1, NEBwomen1, NEBmen1, HIGHMATH1, EA1, COPD1, ADHD1	1.005, 0.681, 0.724, 1.361, 0.798, 0.187, 0.712	373,210	EGCUT, HRS, MTCFR, STR, UKB1, UKB2, UKB3	AddHealth, Dunedin, ELSA, E-Risk, Texas Twins, WLS
	AFB_multi2	AFB1, NEBwomen2, NEBmen2, HIGHMATH1, EA1, COPD1, ADHD1	1.217, 0.606, 0.736, 1.376, 0.795, 0.179, 0.653	368,216	EGCUT, MTCFR, STR, UKB1, UKB2, UKB3	HRS
	AFB_multi3	AFB2, NEBwomen2, NEBmen2, HIGHMATH1, EA1, COPD1, ADHD1	1.501, 0.618, 0.768, 1.397, 0.796, 0.187, 0.675	401,553	UKB1, UKB2, UKB3	EGCUT, MCTFR, STR
Age First Birth	AFB_multi4	AFB3, NEBwomen3, NEBmen3, HIGHMATH1, EA2, COPD2, ADHD1	2.393, 0.519, 0.504, 1.35, 0.821, 0.091, 0.235	348,688	UKB2, UKB3	UKB1
	AFB_multi5	AFB4, NEBwomen4, NEBmen4, HIGHMATH1, EA3, COPD3, ADHD1	2.047, 0.474, 0.619, 1.387, 0.81, 0.063, 0.312	363,754	UKB1, UKB3	UKB2
	AFB_multi6	AFB5, NEBwomen5, NEBmen5, HIGHMATH1, EA4, COPD4, ADHD1	2.466, 0.464, 0.654, 1.41, 0.824, 0.101, 0.31,	344,886	UKB1, UKB2	UKB3
	MENARCHE_multi1	MENARCHE1, VOICEDEEP1	1.032, 1.02,	319,522	EGCUT, STR, UKB1, UKB2, UKB3	AddHealth, Dunedin, ELSA, E-Risk, HRS, MCTFR, Texas Twins, WLS
	MENARCHE_multi2	MENARCHE2, VOICEDEEP1	1.029, 0.981	348,628	UKB1, UKB2, UKB3	EGCUT, STR

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Age Voice Deepened (Men)	MENARCHE_multi3	MENARCHE3, VOICEDEEP1	1.028, 0.992	362,332	EGCUT, STR, UKB2, UKB3	UKB1
	MENARCHE_multi4	MENARCHE4, VOICEDEEP1	1.028, 1.006	357,650	EGCUT, STR, UKB1, UKB3	UKB2
	MENARCHE_multi5	MENARCHE5, VOICEDEEP1	1.027, 1.006	363,164	EGCUT, STR, UKB1, UKB2	UKB3
	VOICEDEEP_multi1	VOICEDEEP1, MENARCHE1	1.02, 1.032	294,997	EGCUT, STR, UKB1, UKB2, UKB3	AddHealth, Dunedin, ELSA, E-Risk, HRS, MCTFR, Texas Twins, WLS
	VOICEDEEP_multi2	VOICEDEEP1, MENARCHE2	0.981, 1.029	328,635	UKB1, UKB2, UKB3	EGCUT, STR
	VOICEDEEP_multi3	VOICEDEEP1, MENARCHE3	0.992, 1.028	312,592	EGCUT, STR, UKB2, UKB3	UKB1
	VOICEDEEP_multi4	VOICEDEEP1, MENARCHE4	1.006, 1.028	298,734	EGCUT, STR, UKB1, UKB3	UKB2
	VOICEDEEP_multi5	VOICEDEEP1, MENARCHE5	1.006, 1.027	300,891	EGCUT, STR, UKB1, UKB2	UKB3
	NEBmen_multi1	NEBmen1, NEBwomen1, AFB1	0.677, 0.774, -1.929	593,761	EGCUT, HRS, MCTFR, STR, UKB1, UKB2, UKB3	AddHealth, Dunedin, ELSA, E-Risk, Texas Twins, WLS
	NEBmen_multi2	NEBmen2, NEBwomen2, AFB1	0.68, 0.728, -1.67,	488,255	EGCUT, MCTFR, STR, UKB1, UKB2, UKB3	HRS
Number Ever Born (Men)	NEBmen_multi3	NEBmen2, NEBwomen2, AFB2	0.762, 0.795, -2.286	442,521	UKB1, UKB2, UKB3	EGCUT, MCTFR, STR
	NEBmen_multi4	NEBmen3, NEBwomen3, AFB3	0.724, 0.735, -2.172	278,826	UKB2, UKB3	UKB1
	NEBmen_multi5	NEBmen4, NEBwomen4, AFB4	0.68, 0.758, -2.588	302,705	UKB1, UKB3	UKB2
	NEBmen_multi6	NEBmen5, NEBwomen5, AFB5	0.745, 0.804, -2.207	332,134	UKB1, UKB2	UKB3
	NEBwomen_multi1	NEBwomen1, NEBmen1, AFB1	0.774, 0.677, -1.929	497,396	EGCUT, HRS, MCTFR, STR, UKB1, UKB2, UKB3	AddHealth, Dunedin, ELSA, E-Risk, Texas Twins, WLS
	NEBwomen_multi2	NEBwomen2, NEBmen2, AFB1	0.728, 0.68, -1.67,	464,712	EGCUT, MCTFR, STR, UKB1, UKB2, UKB3	HRS
Number Ever Born (Women)	NEBwomen_multi3	NEBwomen2, NEBmen2, AFB2	0.795, 0.762, -2.286	426,500	UKB1, UKB2, UKB3	EGCUT, MCTFR, STR
	NEBwomen_multi4	NEBwomen3, NEBmen3, AFB3	0.735, 0.724, -2.172	305,599	UKB2, UKB3	UKB1
	NEBwomen_multi5	NEBwomen4, NEBmen4, AFB4	0.758, 0.68, -2.588	300,126	UKB1, UKB3	UKB2
	NEBwomen_multi6	NEBwomen5, NEBmen5, AFB5	0.804, 0.745, -2.207	267,457	UKB1, UKB2	UKB3
<i>Health and Health Behaviors</i>						
Alcohol Misuse	AUDIT_multi1	AUDIT1, DPW1	1.489, 0.956	371,019	EGCUT, HRS, MCTFR, UKB1, UKB2, UKB3	AddHealth, Dunedin, ELSA, E-

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						Risk, STR, Texas Twins, WLS
	AUDIT_multi2	AUDIT1, DPW2	1.507, 0.944	303,040	UKB1, UKB2, UKB3	EGCUT, HRS, MCTFR
	AUDIT_multi3	AUDIT2, DPW3	1.52, 0.956	207,942	UKB2, UKB3	UKB1
	AUDIT_multi4	AUDIT3, DPW4	1.482, 0.953	217,617	UKB1, UKB3	UKB2
	AUDIT_multi5	AUDIT4, DPW5	1.531, 0.951	202,190	UKB1, UKB2	UKB3
	ALLERGYCAT_multi1	ALLERGYCAT1, HAYFEVER1, ASTHMA1, ASTECZRHI1, ALLERGYPOLLEN1, ALLERGYDUST1	2.039, 0.725, 0.751, 1.501, 1.862, 1.851	369,269	STR, UKB1, UKB2, UKB3	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR, Texas Twins, WLS
	ALLERGYCAT_multi2	ALLERGYCAT1, HAYFEVER1, ASTHMA1, ASTECZRHI2, ALLERGYPOLLEN1, ALLERGYDUST1	2.524, 0.817, 0.862, 1.613, 2.056, 2.052	308,012	UKB1, UKB2, UKB3	STR
Allergy - Cat	ALLERGYCAT_multi3	ALLERGYCAT1, HAYFEVER2, ASTHMA2, ASTECZRHI3, ALLERGYPOLLEN1, ALLERGYDUST1	2.371, 0.767, 0.814, 1.549, 1.864, 1.921	240,564	UKB2, UKB3	UKB1
	ALLERGYCAT_multi4	ALLERGYCAT1, HAYFEVER3, ASTHMA3, ASTECZRHI4, ALLERGYPOLLEN1, ALLERGYDUST1	2.285, 0.763, 0.811, 1.495, 1.747, 1.868	244,537	UKB1, UKB3	UKB2
	ALLERGYCAT_multi5	ALLERGYCAT1, HAYFEVER4, ASTHMA4, ASTECZRHI5, ALLERGYPOLLEN1, ALLERGYDUST1	2.246, 0.747, 0.785, 1.5, 1.888, 1.845	251,744	UKB1, UKB2	UKB3
	ALLERGYDUST_multi1	ALLERGYDUST1, ALLERGYCAT1, HAYFEVER1, ASTHMA1, ASTECZRHI1, ALLERGYPOLLEN1	1.851, 2.039, 0.725, 0.751, 1.501, 1.862	354,597	STR, UKB1, UKB2, UKB3	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR, Texas Twins, WLS
	ALLERGYDUST_multi2	ALLERGYDUST1, ALLERGYCAT1, HAYFEVER1, ASTHMA1, ASTECZRHI2, ALLERGYPOLLEN1	2.052, 2.524, 0.817, 0.862, 1.613, 2.056	329,372	UKB1, UKB2, UKB3	STR
Allergy - Dust	ALLERGYDUST_multi3	ALLERGYDUST1, ALLERGYCAT1, HAYFEVER2, ASTHMA2, ASTECZRHI3, ALLERGYPOLLEN1	1.921, 2.371, 0.767, 0.814, 1.549, 1.864	263,390	UKB2, UKB3	UKB1
	ALLERGYDUST_multi4	ALLERGYDUST1, ALLERGYCAT1, HAYFEVER3, ASTHMA3, ASTECZRHI4, ALLERGYPOLLEN1	1.868, 2.285, 0.763, 0.811, 1.495, 1.747	287,783	UKB1, UKB3	UKB2
	ALLERGYDUST_multi5	ALLERGYDUST1, ALLERGYCAT1, HAYFEVER4, ASTHMA4, ASTECZRHI5, ALLERGYPOLLEN1	1.845, 2.246, 0.747, 0.785, 1.5, 1.888	264,637	UKB1, UKB2	UKB3

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Allergy - Pollen	ALLERGYPOLLEN_multi1	ALLERGYPOLLEN1, ALLERGYCAT1, HAYFEVER1, ASTHMA1, ASTECZRHI1, ALLERGYDUST1	1.862, 2.039, 0.725, 0.751, 1.501, 1.851	249,285	STR, UKB1, UKB2, UKB3	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR, Texas Twins, WLS
	ALLERGYPOLLEN_multi2	ALLERGYPOLLEN1, ALLERGYCAT1, HAYFEVER1, ASTHMA1, ASTECZRHI2, ALLERGYDUST1	2.056, 2.524, 0.817, 0.862, 1.613, 2.052	237,512	UKB1, UKB2, UKB3	STR
	ALLERGYPOLLEN_multi3	ALLERGYPOLLEN1, ALLERGYCAT1, HAYFEVER2, ASTHMA2, ASTECZRHI3, ALLERGYDUST1	1.864, 2.371, 0.767, 0.814, 1.549, 1.921	197,701	UKB2, UKB3	UKB1
	ALLERGYPOLLEN_multi4	ALLERGYPOLLEN1, ALLERGYCAT1, HAYFEVER3, ASTHMA3, ASTECZRHI4, ALLERGYDUST1	1.747, 2.285, 0.763, 0.811, 1.495, 1.868	184,834	UKB1, UKB3	UKB2
	ALLERGYPOLLEN_multi5	ALLERGYPOLLEN1, ALLERGYCAT1, HAYFEVER4, ASTHMA4, ASTECZRHI5, ALLERGYDUST1	1.888, 2.246, 0.747, 0.785, 1.5, 1.845	213,818	UKB1, UKB2	UKB3
Asthma	ASTHMA_multi1	ASTHMA1, ALLERGYCAT1, HAYFEVER1, ASTECZRHI1, ALLERGYPOLLEN1, ALLERGYDUST1	0.751, 2.039, 0.725, 1.501, 1.862, 1.851	560,248	STR, UKB1, UKB2, UKB3	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR, Texas Twins, WLS
	ASTHMA_multi2	ASTHMA1, ALLERGYCAT1, HAYFEVER1, ASTECZRHI2, ALLERGYPOLLEN1, ALLERGYDUST1	0.862, 2.524, 0.817, 1.613, 2.056, 2.052	520,527	UKB1, UKB2, UKB3	STR
	ASTHMA_multi3	ASTHMA2, ALLERGYCAT1, HAYFEVER2, ASTECZRHI3, ALLERGYPOLLEN1, ALLERGYDUST1	0.814, 2.371, 0.767, 1.549, 1.864, 1.921	393,826	UKB2, UKB3	UKB1
	ASTHMA_multi4	ASTHMA3, ALLERGYCAT1, HAYFEVER3, ASTECZRHI4, ALLERGYPOLLEN1, ALLERGYDUST1	0.811, 2.285, 0.763, 1.495, 1.747, 1.868	388,728	UKB1, UKB3	UKB2
	ASTHMA_multi5	ASTHMA4, ALLERGYCAT1, HAYFEVER4, ASTECZRHI5, ALLERGYPOLLEN1, ALLERGYDUST1	0.785, 2.246, 0.747, 1.5, 1.888, 1.845	379,837	UKB1, UKB2	UKB3
Asthma/Eczema/Rhinitis	ASTECZRHI_multi1	ASTECZRHI1, ALLERGYCAT1, HAYFEVER1, ECZEMA1, ASTHMA1, ALLERGYPOLLEN1, ALLERGYDUST1	1.255, 1.594, 0.818, 0.629, 0.823, 1.648, 1.595	925,868	STR, UKB1, UKB2, UKB3	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR, Texas Twins, WLS
	ASTECZRHI_multi2	ASTECZRHI2, ALLERGYCAT1, HAYFEVER1, ECZEMA1, ASTHMA1, ALLERGYPOLLEN1, ALLERGYDUST1	1.518, 1.871, 0.82, 0.652, 0.868, 1.639, 1.602	908,482	UKB1, UKB2, UKB3	STR

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Attention Deficit Hyperactivity Disorder (ADHD)	ASTECZRHI_multi3	ASTECZRHI3, ALLERGYCAT1, HAYFEVER2, ECZEMA2, ASTHMA2, ALLERGYPOLLEN1, ALLERGYDUST1	1.254, 1.862, 0.834, 0.608, 0.885, 1.71, 1.75,	665,618	UKB2, UKB3	UKB1
	ASTECZRHI_multi4	ASTECZRHI4, ALLERGYCAT1, HAYFEVER3, ECZEMA3, ASTHMA3, ALLERGYPOLLEN1, ALLERGYDUST1	1.386, 1.851, 0.792, 0.598, 0.806, 1.393, 1.575	692,070	UKB1, UKB3	UKB2
	ASTECZRHI_multi5	ASTECZRHI5, ALLERGYCAT1, HAYFEVER4, ECZEMA4, ASTHMA4, ALLERGYPOLLEN1, ALLERGYDUST1	1.333, 1.829, 0.815, 0.544, 0.847, 1.674, 1.509	674,376	UKB1, UKB2	UKB3
	ADHD_multi1	ADHD1, COPD1, AFB1	1.429, 0.43, -1.656	760,838	EGCUT, MCTFR, STR, UKB1, UKB2, UKB3	AddHealth, Dunedin, ELSA, E-Risk, HRS, Texas Twins, WLS
	ADHD_multi2	ADHD1, COPD1, AFB2	1.57, 0.477, -2.297	707,236	UKB1, UKB2, UKB3	EGCUT, MTCFR, STR
	ADHD_multi3	ADHD1, COPD2, AFB3	1.363, 0.473, -2.04,	617,457	UKB2, UKB3	UKB1
	ADHD_multi4	ADHD1, COPD3, AFB4	1.341, 0.407, -2.738	670,265	UKB1, UKB3	UKB2
	ADHD_multi5	ADHD1, COPD4, AFB5	1.41, 0.464, -2.407	607,396	UKB1, UKB2	UKB3
	Cannabis Use	No Supplementary Phenotypes				
	Cigarettes per Day	No Supplementary Phenotypes				
	COPD_multi1	COPD1, SELFHEALTH1, AFB1, ADHD1	-0.069, 0.878, 2.628, -0.039	1,869,820	EGCUT, MCTFR, STR, UKB1, UKB2, UKB3	AddHealth, Dunedin, ELSA, E-Risk, HRS, Texas Twins, WLS
	COPD_multi2	COPD1, SELFHEALTH1, AFB2, ADHD1	-0.075, 0.876, 3.061, -0.054	1,775,512	UKB1, UKB2, UKB3	EGCUT, MTCFR, STR
	COPD_multi3	COPD2, SELFHEALTH2, AFB3, ADHD1	-0.199, 0.889, 3.892, -0.313	1,098,491	UKB2, UKB3	UKB1
	COPD_multi4	COPD3, SELFHEALTH3, AFB4, ADHD1	-0.189, 0.886, 3.479, -0.204	1,737,852	UKB1, UKB3	UKB2
	COPD_multi5	COPD4, SELFHEALTH4, AFB5, ADHD1	-0.114, 0.898, 3.909, -0.318	1,212,626	UKB1, UKB2	UKB3
Depressive Symptoms	DEP_multi1	DEP1, SWB1, NEURO1, LONELY1, SELFHEALTH1	-0.379, 0.58, -1.655, -0.124, 0.953	1,306,090	EGCUT, MCTFR, STR, UKB1, UKB2, UKB3	AddHealth, Dunedin, ELSA, E-Risk, HRS, Texas Twins, WLS
	DEP_multi2	DEP1, SWB1, NEURO2, LONELY1, SELFHEALTH1	-0.414, 0.581, -1.67, -0.139, 0.951	1,310,580	STR, UKB1, UKB2, UKB3	EGCUT, MCTFR
	DEP_multi3	DEP2, SWB1, NEURO2, LONELY1, SELFHEALTH1	-0.558, 0.592, -1.822, -0.153, 0.962	1,287,512	UKB1, UKB2, UKB3	STR
	DEP_multi4	DEP3, SWB2, NEURO3, LONELY2, SELFHEALTH2	-0.514, 0.627, -2.375, -0.213, 0.969	1,109,582	EGCUT, MCTFR, STR, UKB2, UKB3	UKB1
	DEP_multi5	DEP4, SWB3, NEURO4, LONELY3, SELFHEALTH3	-0.507, 0.615, -2.409, -0.274, 0.964	1,108,040	EGCUT, MCTFR, STR, UKB1, UKB3	UKB2
	DEP_multi6	DEP5, SWB4, NEURO5, LONELY4, SELFHEALTH4	-0.442, 0.616, -2.194, -0.246, 0.961	1,102,427	EGCUT, MCTFR, STR, UKB1, UKB2	UKB3

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Drinks per Week	DPW_multi1	DPW1, AUDIT1	0.956, 1.489	617,315	EGCUT, HRS, MCTFR, UKB1, UKB2, UKB3	AddHealth, Dunedin, ELSA, E-Risk, STR, Texas Twins, WLS
	DPW_multi2	DPW2, AUDIT1	0.944, 1.507	460,115	UKB1, UKB2, UKB3	EGCUT, HRS, MCTFR
	DPW_multi3	DPW3, AUDIT2	0.956, 1.52,	326,245	UKB2, UKB3	UKB1
	DPW_multi4	DPW4, AUDIT3	0.953, 1.482	324,862	UKB1, UKB3	UKB2
	DPW_multi5	DPW5, AUDIT4	0.951, 1.531	305,910	UKB1, UKB2	UKB3
Eczema	ECZEMA_multi1	ECZEMA1, ASTECZRHI1, HAYFEVER1	0.559, 1.09, 0.677	1,208,292	STR, UKB1, UKB2, UKB3	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR, Texas Twins, WLS
	ECZEMA_multi2	ECZEMA1, ASTECZRHI2, HAYFEVER1	0.592, 1.113, 0.702	1,096,709	UKB1, UKB2, UKB3	STR
	ECZEMA_multi3	ECZEMA2, ASTECZRHI3, HAYFEVER2	0.506, 1.105, 0.616	826,026	UKB2, UKB3	UKB1
	ECZEMA_multi4	ECZEMA3, ASTECZRHI4, HAYFEVER3	0.58, 1.097, 0.671	897,946	UKB1, UKB3	UKB2
	ECZEMA_multi5	ECZEMA4, ASTECZRHI5, HAYFEVER4	0.443, 1.118, 0.687	1,079,205	UKB1, UKB2	UKB3
Ever Smoker	No Supplementary Phenotypes					
	HAYFEVER_multi1	HAYFEVER1, ASTHMA1, ASTECZRHI1, ALLERGYPOLLEN1, ALLERGYDUST1, ALLERGYCAT1, ECZEMA1	0.818, 0.823, 1.255, 1.648, 1.595, 1.594, 0.629	284,236	STR, UKB1, UKB2, UKB3	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR, Texas Twins, WLS
	HAYFEVER_multi2	HAYFEVER1, ASTHMA1, ASTECZRHI2, ALLERGYPOLLEN1, ALLERGYDUST1, ALLERGYCAT1, ECZEMA1	0.82, 0.868, 1.518, 1.639, 1.602, 1.871, 0.652	268,166	UKB1, UKB2, UKB3	STR
	HAYFEVER_multi3	HAYFEVER2, ASTHMA2, ASTECZRHI3, ALLERGYPOLLEN1, ALLERGYDUST1, ALLERGYCAT1, ECZEMA2	0.834, 0.885, 1.254, 1.71, 1.75, 1.862, 0.608	201,906	UKB2, UKB3	UKB1
	HAYFEVER_multi4	HAYFEVER3, ASTHMA3, ASTECZRHI4, ALLERGYPOLLEN1, ALLERGYDUST1, ALLERGYCAT1, ECZEMA3	0.792, 0.806, 1.386, 1.393, 1.575, 1.851, 0.598	204,343	UKB1, UKB3	UKB2
Hayfever	HAYFEVER_multi5	HAYFEVER4, ASTHMA4, ASTECZRHI5, ALLERGYPOLLEN1, ALLERGYDUST1, ALLERGYCAT1, ECZEMA4	0.815, 0.847, 1.333, 1.674, 1.509, 1.829, 0.544	202,282	UKB1, UKB2	UKB3
	No Supplementary Phenotypes					
	No Supplementary Phenotypes					
	No Supplementary Phenotypes					
	No Supplementary Phenotypes					
Migraine	No Supplementary Phenotypes					

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Nearsightedness	No Supplementary Phenotypes					
Physical Activity	No Supplementary Phenotypes					
	SELFHEALTH_multi1	SELFHEALTH1, FINSAT1, COPD1, DEP1	0.825, 0.769, -0.099, 0.094	1,250,433	STR, UKB1, UKB2, UKB3	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR, Texas Twins, WLS
Self-Rated Health	SELFHEALTH_multi2	SELFHEALTH1, FINSAT1, COPD1, DEP2	0.861, 0.816, -0.043, -0.006	1,239,514	UKB1, UKB2, UKB3	STR
	SELFHEALTH_multi3	SELFHEALTH2, FINSAT2, COPD2, DEP3	0.832, 0.725, -0.283, -0.012	1,102,330	STR, UKB2, UKB3	UKB1
	SELFHEALTH_multi4	SELFHEALTH3, FINSAT3, COPD3, DEP4	0.831, 0.834, -0.224, 0.013	1,110,898	STR, UKB1, UKB3	UKB2
	SELFHEALTH_multi5	SELFHEALTH4, FINSAT4, COPD4, DEP5	0.849, 0.917, -0.102, 0.028	1,074,591	STR, UKB1, UKB2	UKB3
<i>Personality and Well-Being</i>						
	ADVENTURE_multi1	ADVENTURE1, RISK1	1.334, 0.927	800,552	UKB1, UKB2, UKB3	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR, STR, Texas Twins, WLS
Adventurousness	ADVENTURE_multi2	ADVENTURE1, RISK2	1.304, 0.923	750,297	UKB2, UKB3	UKB1
	ADVENTURE_multi3	ADVENTURE1, RISK3	1.301, 0.925	754,173	UKB1, UKB3	UKB2
	ADVENTURE_multi4	ADVENTURE1, RISK4	1.302, 0.929	759,541	UKB1, UKB2	UKB3
	AGREE_multi1	AGREE1, COGEMP1				AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR, STR, Texas Twins, UKB1, UKB2, UKB3, WLS
Agreeableness			0.903, 1.664	68,286	-	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR, STR, Texas Twins, UKB1, UKB2, UKB3, WLS
	COGEMP_multi1	COGEMP1, AGREE1				AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR, STR, Texas Twins, UKB1, UKB2, UKB3, WLS
Cognitive Empathy			1.664, 0.903	55,982	-	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR, STR, Texas Twins, UKB1, UKB2, UKB3, WLS
Conscientiousness	No Supplementary Phenotypes					
	DELAYDISC_multi1	DELAYDISC1, HIGHMATH1, EA1	-0.589, 1.644, 0.929	445,313	UKB1, UKB2, UKB3	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR, STR, Texas Twins, WLS
Delay Discounting	DELAYDISC_multi2	DELAYDISC1, HIGHMATH1, EA2	-0.555, 1.54, 0.937	405,997	UKB2, UKB3	UKB1
	DELAYDISC_multi3	DELAYDISC1, HIGHMATH1, EA3	-0.588, 1.598, 0.923	436,039	UKB1, UKB3	UKB2

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Extraversion	DELAYDISC_multi4	DELAYDISC1, HIGHMATH1, EA4	-0.586, 1.598, 0.925	413,162	UKB1, UKB2	UKB3
	EXTRA_multi1	EXTRA1, LEFTOUT1	9.09, 0.884	111,464	EGCUT, MCTFR, STR	AddHealth, Dunedin, ELSA, E-Risk, HRS, Texas Twins, UKB1, UKB2, UKB3, WLS
	EXTRA_multi2	EXTRA2, LEFTOUT1	10.206, 0.909	95,214	-	EGCUT, MCTFR, STR
Left out of Social Activity	LEFTOUT_multi1	LEFTOUT1, SWB1, LONELY1, FRIENDSAT1, EXTRA1	0.828, 0.713, -0.321, 1.127, 12.561	801,505	EGCUT, MCTFR, STR, UKB1, UKB2, UKB3	AddHealth, Dunedin, ELSA, E-Risk, HRS, Texas Twins, WLS
	LEFTOUT_multi2	LEFTOUT1, SWB1, LONELY1, FRIENDSAT1, EXTRA2	0.854, 0.722, -0.32, 1.145, 14.119	780,236	UKB1, UKB2, UKB3	EGCUT, MCTFR, STR
	LEFTOUT_multi3	LEFTOUT1, SWB2, LONELY2, FRIENDSAT2, EXTRA1	0.885, 0.797, -0.447, 1.169, 11.859	743,070	EGCUT, MCTFR, STR, UKB2, UKB3	UKB1
	LEFTOUT_multi4	LEFTOUT1, SWB3, LONELY3, FRIENDSAT3, EXTRA1	0.873, 0.783, -0.524, 1.205, 12.154	771,829	EGCUT, MCTFR, STR, UKB1, UKB3	UKB2
	LEFTOUT_multi5	LEFTOUT1, SWB4, LONELY4, FRIENDSAT4, EXTRA1	0.863, 0.782, -0.546, 1.294, 11.357	780,108	EGCUT, MCTFR, STR, UKB1, UKB2	UKB3
Life Satisfaction: Family	FAMSAT_multi1	FAMSAT1, WORKSAT1, SWB1, FRIENDSAT1	1.456, 0.977, 1.02, 1.411	289,950	UKB1, UKB2, UKB3	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR, STR, Texas Twins, WLS
	FAMSAT_multi2	FAMSAT2, WORKSAT2, SWB2, FRIENDSAT2	1.364, 1.178, 1.014, 1.423	317,137	UKB2, UKB3	UKB1
	FAMSAT_multi3	FAMSAT3, WORKSAT3, SWB3, FRIENDSAT3	1.457, 1.057, 1.015, 1.515	251,982	UKB1, UKB3	UKB2
	FAMSAT_multi4	FAMSAT4, WORKSAT4, SWB4, FRIENDSAT4	1.53, 1.062, 1.011, 1.519	255,459	UKB1, UKB2	UKB3
	FINSAT_multi1	FINSAT1, SWB1, SELFHEALTH1, LONELY1	1.116, 0.797, 1.038, -0.391	491,335	UKB1, UKB2, UKB3	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR, STR, Texas Twins, WLS
Life Satisfaction: Finance	FINSAT_multi2	FINSAT2, SWB2, SELFHEALTH2, LONELY2	1.133, 0.884, 1.059, -0.519	464,815	UKB2, UKB3	UKB1
	FINSAT_multi3	FINSAT3, SWB3, SELFHEALTH3, LONELY3	1.275, 0.863, 1.052, -0.565	401,769	UKB1, UKB3	UKB2
	FINSAT_multi4	FINSAT4, SWB4, SELFHEALTH4, LONELY4	1.159, 0.86, 1.052, -0.598	489,882	UKB1, UKB2	UKB3
	FRIENDSAT_multi1	FRIENDSAT1, WORKSAT1, SWB1, LEFTOUT1, FAMSAT1	1.418, 1.028, 1.074, 1.151, 1.541	401,682	UKB1, UKB2, UKB3	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR, STR, Texas Twins, WLS
Life Satisfaction: Friends	FRIENDSAT_multi2	FRIENDSAT2, WORKSAT2, SWB2, LEFTOUT1, FAMSAT2	1.383, 1.239, 1.078, 1.148, 1.444	385,287	UKB2, UKB3	UKB1

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Life Satisfaction: Work	FRIENDSAT_multi3	FRIENDSAT3, WORKSAT3, SWB3, LEFTOUT1, FAMSAT3	1.5, 1.124, 1.074, 1.149, 1.535	332,568	UKB1, UKB3	UKB2
	FRIENDSAT_multi4	FRIENDSAT4, WORKSAT4, SWB4, LEFTOUT1, FAMSAT4	1.525, 1.127, 1.073, 1.137, 1.621	336,077	UKB1, UKB2	UKB3
	WORKSAT_multi1	WORKSAT1, SWB1, FRIENDSAT1, FAMSAT1	0.977, 1.02, 1.411, 1.456	702,208	UKB1, UKB2, UKB3	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR, STR, Texas Twins, WLS
	WORKSAT_multi2	WORKSAT2, SWB2, FRIENDSAT2, FAMSAT2	1.178, 1.014, 1.423, 1.364	367,350	UKB2, UKB3	UKB1
	WORKSAT_multi3	WORKSAT3, SWB3, FRIENDSAT3, FAMSAT3	1.057, 1.015, 1.515, 1.457	584,511	UKB1, UKB3	UKB2
	WORKSAT_multi4	WORKSAT4, SWB4, FRIENDSAT4, FAMSAT4	1.062, 1.011, 1.519, 1.53,	571,238	UKB1, UKB2	UKB3
	LONELY_multi1	LONELY1, SWB1, NEURO1, LEFTOUT1, FINSAT1, DEP1	-0.113, 0.528, -2.059, 0.766, 0.539, -0.073	1,170,314	EGCUT, MCTFR, STR, UKB1, UKB2, UKB3	AddHealth, Dunedin, ELSA, E-Risk, HRS, Texas Twins, WLS
	LONELY_multi2	LONELY1, SWB1, NEURO2, LEFTOUT1, FINSAT1, DEP1	-0.125, 0.527, -2.124, 0.764, 0.537, -0.101	1,170,443	STR, UKB1, UKB2, UKB3	EGCUT, MCTFR
	LONELY_multi3	LONELY1, SWB1, NEURO2, LEFTOUT1, FINSAT1, DEP2	-0.139, 0.541, -2.054, 0.79, 0.497, -0.233	1,104,814	UKB1, UKB2, UKB3	STR
	LONELY_multi4	LONELY2, SWB2, NEURO3, LEFTOUT1, FINSAT2, DEP3	-0.201, 0.572, -2.74, 0.804, 0.614, -0.222	1,113,568	EGCUT, MCTFR, STR, UKB2, UKB3	UKB1
Loneliness	LONELY_multi5	LONELY3, SWB3, NEURO4, LEFTOUT1, FINSAT3, DEP4	-0.25, 0.563, -2.881, 0.805, 0.742, -0.216	953,826	EGCUT, MCTFR, STR, UKB1, UKB3	UKB2
	LONELY_multi6	LONELY4, SWB4, NEURO5, LEFTOUT1, FINSAT4, DEP5	-0.254, 0.57, -2.699, 0.796, 0.585, -0.183	1,138,142	EGCUT, MCTFR, STR, UKB1, UKB2	UKB3
	No Supplementary Phenotypes					
	No Supplementary Phenotypes					
	NEURO_multi1	NEURO1, DEP1, SWB1, LONELY1	-1.52, 0.065, 0.418, 0.021	480,371	EGCUT, MCTFR, STR, UKB1, UKB2, UKB3	AddHealth, Dunedin, ELSA, E-Risk, HRS, Texas Twins, WLS
	NEURO_multi2	NEURO2, DEP1, SWB1, LONELY1	-1.587, 0.041, 0.418, 0.01,	481,752	STR, UKB1, UKB2, UKB3	EGCUT, MCTFR
Neuroticism	NEURO_multi3	NEURO2, DEP2, SWB1, LONELY1	-1.615, -0.079, 0.433, -0.004	467,712	UKB1, UKB2, UKB3	STR
	NEURO_multi4	NEURO3, DEP3, SWB2, LONELY2	-2.13, -0.082, 0.461, -0.065	386,172	EGCUT, MCTFR, STR, UKB2, UKB3	UKB1
	NEURO_multi5	NEURO4, DEP4, SWB3, LONELY3	-2.125, -0.078, 0.452, -0.123	370,308	EGCUT, MCTFR, STR, UKB1, UKB3	UKB2
	NEURO_multi6	NEURO5, DEP5, SWB4, LONELY4	-2.018, -0.029, 0.454, -0.109	386,454	EGCUT, MCTFR, STR, UKB1, UKB2	UKB3
	No Supplementary Phenotypes					
Openness	No Supplementary Phenotypes					

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	RELIGATT_multil	RELIGATT1, EA1	1.017, 1.055	792,789	UKB1, UKB2, UKB3	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR, STR, Texas Twins, WLS
Religious Attendance	RELIGATT_multi2	RELIGATT2, EA2	1.004, 1.042	587,863	UKB2, UKB3	UKB1
	RELIGATT_multi3	RELIGATT3, EA3	1.002, 1.04,	662,654	UKB1, UKB3	UKB2
	RELIGATT_multi4	RELIGATT4, EA4	1.008, 1.042	631,820	UKB1, UKB2	UKB3
	No Supplementary Phenotypes					
Recharge by Socializing Religious Belief	No Supplementary Phenotypes					
	RISK_multi1	RISK1, ADVENTURE1	0.927, 1.334	1,752,580	UKB1, UKB2, UKB3	AddHealth, Dunedin, EGCUT, ELSA, E-Risk, HRS, MCTFR, STR, Texas Twins, WLS
Risk Tolerance	RISK_multi2	RISK2, ADVENTURE1	0.923, 1.304	1,555,978	UKB2, UKB3	UKB1
	RISK_multi3	RISK3, ADVENTURE1	0.925, 1.301	1,570,579	UKB1, UKB3	UKB2
	RISK_multi4	RISK4, ADVENTURE1	0.929, 1.302	1,605,185	UKB1, UKB2	UKB3
	SWB_multi1	SWB1, WORKSAT1, NEURO1, LONELY1, LEFTOUT1, FRIENDSAT1, FINSAT1, FAMSAT1, DEP1	0.539, 0.751, -1.857, -0.109, 0.778, 1.046, 0.468, 0.837, -0.017	1,618,616	EGCUT, MCTFR, STR, UKB1, UKB2, UKB3	AddHealth, Dunedin, ELSA, E-Risk, HRS, Texas Twins, WLS
Subjective Well-Being	SWB_multi2	SWB1, WORKSAT1, NEURO2, LONELY1, LEFTOUT1, FRIENDSAT1, FINSAT1, FAMSAT1, DEP1	0.537, 0.77, -1.907, -0.118, 0.777, 1.04, 0.466, 0.853, -0.044	1,607,789	STR, UKB1, UKB2, UKB3	EGCUT, MCTFR
	SWB_multi3	SWB1, WORKSAT1, NEURO2, LONELY1, LEFTOUT1, FRIENDSAT1, FINSAT1, FAMSAT1, DEP2	0.549, 0.774, -1.835, -0.131, 0.806, 1.046, 0.411, 0.845, -0.155	1,576,498	UKB1, UKB2, UKB3	STR
	SWB_multi4	SWB2, WORKSAT2, NEURO3, LONELY2, LEFTOUT1, FRIENDSAT2, FINSAT2, FAMSAT2, DEP3	0.569, 0.902, -2.502, -0.19, 0.811, 1.084, 0.515, 0.747, -0.169	1,454,186	EGCUT, MCTFR, STR, UKB2, UKB3	UKB1
	SWB_multi5	SWB3, WORKSAT3, NEURO4, LONELY3, LEFTOUT1, FRIENDSAT3, FINSAT3, FAMSAT3, DEP4	0.567, 0.925, -2.664, -0.237, 0.818, 1.181, 0.704, 0.984, -0.168	1,481,496	EGCUT, MCTFR, STR, UKB1, UKB3	UKB2
	SWB_multi6	SWB4, WORKSAT4, NEURO5, LONELY4, LEFTOUT1, FRIENDSAT4, FINSAT4, FAMSAT4, DEP5	0.575, 0.791, -2.541, -0.251, 0.808, 1.142, 0.522, 0.961, -0.141	1,507,756	EGCUT, MCTFR, STR, UKB1, UKB2	UKB3

*Notes:* The "Input file(s)" column indicates the single-trait MTAG results that were included in the multi-trait MTAG analyses (see Supplementary Table 8). "MTAG weight factors" are the average weight factors assigned to each input file in the MTAG analyses. "GWAS-equivalent N" refers to the GWAS-equivalent sample size as reported by the MTAG software. "Overlapping datasets" refers to the overlapping datasets between the MTAG output and Repository datasets. "Repository Datasets Sumstats are Used for" indicates which Repository datasets the MTAG results were used for when constructing the multi-trait PGIs. A row is marked "No Supplementary Phenotypes" if no multitrait MTAG analysis was run for a phenotype because the phenotype had no supplementary phenotypes. Dataset abbreviations: National Longitudinal Study of Adolescent to Adult Health (AddHealth), Dunedin Multidisciplinary Health and Development Study (Dunedin), Environmental Risk (E-Risk) Longitudinal Twin Study, English Longitudinal Study of Ageing (ELSA), Estonian Genome Center, University of Tartu (EGCUT), Health and Retirement Study (HRS), Minnesota Center for Twin and

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Family Research (MCTFR), Swedish Twin Registry (STR), Texas Twin Project (Texas Twins), UK Biobank (UKB; UKB1-3 refer to the three UKB partitions - see section "UKB GWAS" in Methods for details on the partitioning), Wisconsin Longitudinal Study (WLS).

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**Supplementary Table 11: Dataset details**

Dataset	Subsample	Full name	Dataset profile	N	Genotyping platform	SNP level exclusions				Subject level exclusions	
						MAF	Call rate	HWE P-value	Other exclusions	Call rate	Other exclusions
Add Health	N/A	National Longitudinal Study of Adolescent to Adult Health	[1]	5,689	Illumina Omni 1.1 and 2.5	0.01	0.98	10 <sup>-5</sup>	1) Allele mismatch with reference panel 2) ID mismatch with reference panel 3) Palindromic SNPs with MAF>0.4 4) Duplicates	0.95 (per chromosome)	1) Genetic-ancestry outliers 2) Sex mismatch 3) Duplicates 4) Autosomal Hetero/Homozygosity Outliers
Dunedin	N/A	Dunedin Multidisciplinary Health and Development Study	[2]	887	Illumina HumanOmni Express 12 BeadChip	0.01	0.95	10 <sup>-5</sup>	1) Allele mismatch with reference panel 2) ID mismatch with reference panel 3) Palindromic SNPs with MAF>0.4 4) Duplicates	0.95 (per chromosome)	1) Autosomal hetero/homozygosity outliers (plink $F < -0.03$ or $F > 0.03$ )
EGCUT	N/A	Estonian Genome Center, University of Tartu	[3]	51,719	Illumina HumanCoreExome, OmniExpress, Global Screening Array	0.01	0.95	10 <sup>-5</sup>	-	0.95	1) Genetic-ancestry outliers 2) Sex mismatch 3) Duplicates 4) Autosomal Hetero/Homozygosity Outliers
ELSA	N/A	English Longitudinal Study of Ageing	[4]	7,310	Illumina Omni 2.5–8	0.01	0.98	10 <sup>-5</sup>	1) Allele mismatch with reference panel 2) ID mismatch with reference panel 3) Palindromic SNPs with MAF>0.4 4) Duplicates	0.95	1) Genetic-ancestry outliers 2) Sex mismatch 3) Duplicates 4) Autosomal Hetero/Homozygosity Outliers
E-Risk	N/A	Environmental Risk Longitudinal Twin Study	N/A	2,316		0.01	0.95	10 <sup>-5</sup>	1) Allele mismatch with reference panel 2) ID mismatch with reference panel 3) Palindromic SNPs with MAF>0.4 4) Duplicates	0.95 (per chromosome)	1) Autosomal hetero/homozygosity outliers (plink $F < -0.03$ or $F > 0.03$ ) 2) Genetic ancestry outliers (plink $Z < -5$ )

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HRS	N/A	Health and Retirement Study	[5]	12,090	HumanOmni2.5-4v1, HumanOmni2.5-8v1, HumanOmni2.5-8v1.1	-	0.98	10 <sup>-4</sup>	-	0.98	1) Chromosomal anomalies 2) First-degree relatives
MCTFR	N/A	Minnesota Center for Twin and Family Research	[6]	7,654	Illumina 660W-Quad	0.001	0.95	-	1) Palindromic SNPs with MAF>0.4 2) ID mismatch with reference panel	-	-
STR	Twingene	Swedish Twin Registry	[7],[8]	9,775	Illumina Human Omni Express	0.01	0.98	10 <sup>-5</sup>	1) Allele mismatch with reference panel 2) ID mismatch with reference panel 3) Palindromic SNPs with MAF>0.4 4) Duplicates	0.95 (per chromosome)	1) Sex mismatch 2) Autosomal hetero/homozygosity outliers (plink $F < -0.03$ or $F > 0.05$ 3) Genetic ancestry outliers (plink $Z < -5$ )
	SALTY & CATSS		[7],[8]	17,319	Illumina HumanCoreExome 550K array	0.0001	0.98	10 <sup>-5</sup>	1) Allele mismatch with reference panel 2) ID mismatch with reference panel 3) Palindromic SNPs with MAF>0.4 4) Duplicates	0.95 (per chromosome)	1) Sex mismatch 2) Autosomal hetero/homozygosity outliers (plink $F < -0.04$ or $F > 0.03$ 3) Genetic ancestry outliers (plink $Z < -5$ )
	YATSS & STAGE		[7],[8]	10,978	Illumina Global Screening 650K	0.001	0.98	10 <sup>-5</sup>	1) Allele mismatch with reference panel 2) ID mismatch with reference panel 3) Palindromic SNPs with MAF>0.4 4) Duplicates 5) ID mismatch between YATSS and STAGE	0.95 (per chromosome)	1) Sex mismatch 2) Autosomal hetero/homozygosity outliers (plink $F < -0.03$ or $F > 0.03$ 3) Genetic ancestry outliers (plink $Z < -5$ )
TexasTwins	N/A	Texas Twin Project	[9]	556	Infinium PsychArray-24 BeadChip	-	0.98	-	-	0.98	1) Sex mismatch 2) Restricted to self-reported non-Hispanic European ancestries

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UKB	N/A	UK Biobank (Full Release)	[10]	445,985	UK BiLEVE Axiom Array and Applied Biosystems UK Biobank Axiom Array	See [10]				See [10]	
WLS	N/A	Wisconsin Longitudinal Study	[11]	8,949	Illumina HumanOmniExpress BeadChip	0.01	0.98	10 <sup>-5</sup>	1) Allele mismatch with reference panel 2) ID mismatch with reference panel 3) Palindromic SNPs with MAF>0.4 4) Duplicates	0.95	1) Genetic-ancestry outliers 2) Sex mismatch 3) Duplicates 4) Autosomal Hetero/Homozygosity Outliers

Dataset	Subsample	Full name	Dataset profile	N	Imputation software and reference panel			
					Software	Reference panel	Release	Sample
Add Health	N/A	National Longitudinal Study of Adolescent to Adult Health	[1]	5,689	Michigan Server/Minimac3	HRC	1.1	All
Dunedin	N/A	Dunedin Multidisciplinary Health and Development Study	[2]	887	Michigan Server/Minimac3	HRC	1.1	All
EGCUT	N/A	Estonian Genome Center, University of Tartu	[3]	51,719	BEAGLE v2.1.2	Estonian WGS Reference	Mitt et al, EJHG 2017	Eur
ELSA	N/A	English Longitudinal Study of Ageing	[4]	7,310	Michigan Server/Minimac3	HRC	1.1	All
E-Risk	N/A	Environmental Risk Longitudinal Twin Study	N/A	2,316	Michigan Server/Minimac3	HRC	1.1	All
HRS	N/A	Health and Retirement Study	[5]	12,090	Minimac3	1000 Genomes p3v5	Oct-14	All

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MCTFR	N/A	Minnesota Center for Twin and Family Research	[6]	7,654	Michigan Server/Minimac3	HRC	1.1	All
	Twingene		[7],[8]	9,775	Michigan Server/Minimac3	HRC	1.1	All
	SALTY & CATSS		[7],[8]	17,319	Michigan Server/Minimac3	HRC	1.1	All
STR		Swedish Twin Registry						
	YATSS & STAGE		[7],[8]	10,978	Michigan Server/Minimac3	HRC	1.1	All
TexasTwins	N/A	Texas Twin Project	[9]	556	Michigan Server/Minimac3	HRC	1.1	All
UKB	N/A	UK Biobank (Full Release)	[10]	445,985	IMPUTE4	HRC2.0 for primary imputation, UK10K + 1000 Genomes Phase 3 for remaining sites		All
WLS	N/A	Wisconsin Longitudinal Study	[11]	8,949	Michigan Server/Minimac3	HRC	1.1	All

*Notes:* "Call rate" under SNP-level quality controls refers to the minimum percentage of successfully genotyped SNPs required for the SNP to be included in the set of genotyped SNPs. "Call rate" under subject-level exclusions is the minimum fraction of SNPs successfully genotyped in order for the subject to be retained in the sample. "HWE": Hardy-Weinberg equilibrium. "MAF": Minor allele frequency.

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**Supplementary Table 12: Validation dataset phenotype descriptions**

Phenotype	Health and Retirement Study (HRS)		Wisconsin Longitudinal Study (WLS)	
	Phenotype measure	Handling of repeated measures	Phenotype measure	Handling of repeated measures
<i>Anthropometric</i>				
Body Mass Index (BMI)	Body Mass Index=kg/m2	Residualize within wave, then take mean	Body Mass Index=kg/m2	Residualize within wave, then take mean
Height	Height in meters	Mean	Height in meters	Mean
<i>Cognition and Education</i>				
Alzheimer's	N/A*†		N/A*†	
Childhood Reading	N/A*		N/A*	
Cognitive Performance	N/A*		Preferred measure of raw Henmon-Nelson test score.	N/A
Educational Attainment	Years of education completed	N/A	Summary of equivalent years of regular education based on highest degree.	Maximum
Highest Math	N/A*		N/A*	
Self-Rated Math Ability	N/A*		N/A*	
<i>Fertility and Sexual Development</i>				
Age First Birth	N/A*		Age at the birth of the first child.	Most recent
Age First Menses (women)	N/A*		"How old were you when you first started menstruating?"	Mean
Age Voice Deepened (men)	N/A*		N/A*	
Number Ever Born (Men)	Number of children ever fathered/given birth to	N/A	Total number of children ever reported since 1975.	N/A
Number Ever Born (Women)	Number of children ever fathered/given birth to	N/A	Total number of children ever reported since 1975.	N/A
<i>Health and Health Behaviors</i>				
Alcohol Misuse	1) "In your entire life, have you had at least 12 drinks of any type of alcoholic beverage?" Yes/ No 2) "Do you ever drink any alcoholic beverages such as beer, wine, or liquor?" 3) "In the last three months, on average, how many days per week have you had any alcohol to drink?" Response mapped to 0 if [0,1], to 1 if >1. 4) "In the last three months, on the days you drink, about how many drinks do	Residualize within wave, then take mean	1) "Have you ever drunk alcoholic beverages such as beer, wine, liquor, or mixed alcoholic drinks?" Yes/No 2) "During the last month on how many days did you drink any alcoholic beverages such as beer, wine, liquor, or mixed alcoholic drinks?" Response mapped to 0 if [0,4], to 1 if >4 3) "What is the average number of drinks you had on the days you consumed any alcoholic beverages such as beer, wine,	Residualize within wave, then take mean

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Allergy - Cat

N/A\*

Allergy - Dust

N/A\*

you have?" Response mapped to 0 if [0-4], to 1 if >4.  
 5) "In the last three months, on how many days have you had four or more drinks on one occasion?" Response mapped to 0 if [0-3], 1 if >3.  
 6) "Have you ever taken a drink first thing in the morning to steady your nerves or get rid of a hangover?" Yes (1), No (0)  
 7) "Have you ever felt bad or guilty about drinking?" Yes (1), No (0)  
 8) "Have you ever felt that you should cut down on drinking?" Yes (1), No (0)  
 9) "Have people ever annoyed you by criticizing your drinking?" Yes (1), No (0)  
 Set to 0 if responded "No" to (1) or (2).  
 Otherwise, set to the mean of (3)-(9).

liquor, or mixed alcoholic drinks in the past month?" Response mapped to 0 if [0,4], to 1 if >4.  
 4) "Number of times you had 5 or more drinks on the same occasion during the last month." Response mapped to 0 if [0,1], to 1 if >1.  
 5) "Have you ever felt bad or guilty about drinking? Yes (1) / No (0)  
 6) i) "Have you ever gone to anyone for help about drinking?" ii) "If you have ever gone to anyone for help about drinking, was that about your drinking or someone else's drinking?" Response mapped to 1 if answer to (i) is "Yes" and answer to (ii) is "Respondent" or "Respondent and someone else", 0 otherwise  
 8) "Has your drinking ever caused a problem at work?" Yes (1) / No (0)  
 9) "Has your drinking ever created problems between yourself and spouse, children, parents, or other near relatives?" Yes (1) / No (0)  
 Set to missing if more than 4 questions are missing. Set to 0 if responded "No" to (1). Otherwise, set to the mean of (2)-(9).

(i) "Has a medical professional ever said that you have allergies?" N/A  
 (ii) "What type of allergies do you have? - First response."

Set to missing if (i) is missing or response to (ii) is "Multiple types". Set to 1 if response to (ii) is "Animal"

(i) "Has a medical professional ever said that you have allergies?" N/A  
 (ii) "What type of allergies do you have? - First response."

Set to missing if (i) is missing or response to (ii) is "Multiple types". Set to 1 if response to (ii) is "Dust"

Allergy - Pollen		N/A*	(i) "Has a medical professional ever said that you have allergies?" (ii) "What type of allergies do you have? - First response."	N/A
Asthma	"Before you were 16 years old, did you have any of the following childhood diseases: Asthma?"	Maximum	Set to missing if (i) is missing or response to (ii) is "Multiple types". Set to 1 if response to (ii) is "Dust"  "Has a medical professional ever said you have asthma?" Yes / No	Maximum
Asthma/Eczema/Rhinitis		N/A*	Set to 1 if responded affirmatively to either question: - "Has a medical professional ever said you have asthma?" - "What type of allergies do you have? - First response. [Hayfever]"	Maximum
Attention Deficit Hyperactivity Disorder (ADHD)	Set to the mean of the following 18 questions if there are at least 10 non-missing responses, missing otherwise. 1) "We would now like to ask you about symptoms that people commonly report as adults. First, do you often find it difficult to sustain your attention on tasks?" 2) "Do you often fail to give close attention to detail, or do you make careless mistakes in your work or during other activities?" 3) "Does it often seem like you are not listening when you are spoken to directly?" 4) "Do you often fail to follow through on instructions and do you often fail to finish jobs or meet obligations?" 5) "Do you find it difficult to organize tasks or activities?" 6) "Do you often avoid tasks that require sustained mental attention?" 7) "Do you often lose things that are needed for tasks or activities?" 8) "Are you often distracted by external stimuli, that is, things going on around you?" 9) "Are you often forgetful during daily activities?" 10) "Do you often move your hands or feet in a restless manner, or do you fidget in a chair?" 11) "Do you often stand up in situations where the expectation is that you should remain in your seat?" 12) "Do you often feel restless?" 13) "Do you often find it difficult to engage	N/A	"Has the selected non-normative child ever been diagnosed with Attention Deficit Disorder or Attention Deficit Hyperactivity Disorder (ADD/ADHD)?" (0) No (1) Yes	N/A

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	in leisure activities quietly?" 14) "Are you often on the go, or do you often act as if "driven by a motor?"" 15) "Do you often talk excessively?" 16) "Do you often give an answer before questions have been completed?" 17) "Do you often find it difficult to await your turn?" 18) "Do you often interrupt the activities of others, or intrude on others?"			
Cannabis Use	N/A*		N/A*	
Cigarettes per Day	"About how many cigarettes or packs do you usually smoke in a day now?"	Residualize within wave, then take mean	"On average, how many packs of cigarettes do you smoke a day?" Set to missing if > 10 or respondent smokes pipes/cigars.	Residualize within wave, then take mean
COPD	"Not including asthma, has a doctor ever told you that you have chronic lung disease such as chronic bronchitis or emphysema?"	Maximum	"Has a medical professional ever said you have bronchitis or emphysema?" Yes/No	Maximum
Depressive Symptoms	Probability of MDD caseness based on the CIDI-SF major depression module	Residualize within wave, then take mean	Summary score for psychological distress/depression, Modified CES-D.	Residualize within wave, then take mean
Drinks per Week	Product of the answers to the following questions: (i) "In the last three months, on average, how many days per week have you had any alcohol to drink? (For example, beer, wine, or any drink containing liquor.)" (ii) "In the last three months, on the days you drink, about how many drinks do you have?"	Residualize within wave, then take mean	(i) "During the last month on how many days did you drink any alcoholic beverages such as beer, wine, liquor, or mixed alcoholic drinks?" (ii) "What is the average number of drinks you had on the days you consumed any alcoholic beverages such as beer, wine, liquor, or mixed alcoholic drinks in the past month?"  First question was converted to days drinking per week. Phenotype was set to the product of the two questions.	Residualize within wave, then take mean
Eczema	N/A*†		N/A*†	
Ever Smoker	(i) "Have you ever smoked cigarettes?" Yes/No (ii) "Do you smoke cigarettes now" Yes/No  Set to 1 if response to either question is Yes, 0 otherwise	Maximum	"Have you ever smoked cigarettes regularly in your entire life?" Yes / No	Maximum



Hayfever	N/A*	(i) "Has a medical professional ever said that you have allergies?" (ii) "What type of allergies do you have? - First response."  Set to missing if (i) is missing or response to (ii) is "Multiple types". Set to 1 if response to (ii) is "Hayfever"	N/A	
Migraine	N/A*		N/A*	
Nearsightedness	N/A*		N/A*	
Physical Activity	(i) "We would like to know the type and amount of physical activity involved in your daily life. How often do you take part in sports or activities that are vigorous, such as running or jogging, swimming, cycling, aerobics or gym workout, tennis, or digging with a spade or shovel?" (ii) "And how often do you take part in sports or activities that are moderately energetic such as, gardening, cleaning the car, walking at a moderate pace, dancing, floor or stretching exercises:?" (iii) And how often do you take part in sports or activities that are mildly energetic, such as vacuuming, laundry, home repairs?"  Response categories mapped to following values: More than once a week -> 3 Once a week -> 1 One to three times a month -> 0.5 Hardly ever or never? -> 0 Then converted to MET equivalents as: (i)*8 + (ii)*4 + (iii)*2	Residualize within wave, then take mean	(i) (1993) "How often do you participate in light physical activity such as walking, dancing, gardening, golfing, bowling, etc.?" (ii) (2004, 2011) "During the past year, how many hours per month did you do light physical activities that you do with others, such as walking with friends, bowling, playing softball or other team sports with light activity?" (iii) (2004, 2011) "During the past year, about how many hours per month did you spend doing light physical activities that you do alone, such as light housework, gardening, or walking by yourself?" (iv) (1993) "How often do you participate in vigorous physical exercise or sports such as aerobics, running, swimming, bicycling, etc.?" (v) (2004, 2011) "During the past year, about how many hours per month did you spend doing vigorous physical activities that you do with others, such as jogging, swimming, biking, or going to the gym with friends or playing team sports?" (vi) (2004, 2011) "During the past year, about how many hours per month did you spend doing vigorous physical activities that you do alone, such as jogging, swimming, biking, or going to the gym by yourself?"  In 1993, response categories were mapped to numeric values as following to get hour per month equivalents: Three of more times per week -> 15 Once or twice per week -> 6 About one to three times per month -> 2 Less than once per month -> 0.5	Residualize within wave, then take mean

Self-Rated Health	"Please think about your life and situation RIGHT NOW. HOW SATISFIED ARE YOU WITH... (Mark X) one box for each line.) Your health?" (1) Completely satisfied (2) Very satisfied (3) Somewhat satisfied (4) Not very satisfied (5) Not at all satisfied	Residualize within wave, then take mean	In 2004 and 2011, light exercise hours was set to the sum of (ii) and (iii), heavy exercise hours was set to the sum of (v) and (vi).  The phenotype was set to MET equivalents as 2 * light exercise hours + 8 * heavy exercise hours "How would you rate your health at the present time?" (1) Very poor (2) Poor (3) Fair (4) Good (5) Excellent	Residualize within wave, then take mean
<i>Personality and Well-Being</i>				
Adventurousness	"Please indicate how well each of the following describes you. (Mark (X) one box for each line.) Adventurous" (1) A lot (2) Some (3) A little (4) Not at all	Residualize within wave, then take mean		N/A*
Agreeableness		N/A†		N/A†
Cognitive Empathy		N/A*		N/A*
Delay Discounting		N/A*		N/A*
Extraversion	"Please indicate how well each of the following describes you : (i) Outgoing, (ii) Friendly, (iii) Lively, (iv) Active, (v) Talkative" (1) A lot (2) Some (3) A little (4) Not at all  Average of the 4 items, set to missing if more than 2 are missing.	Residualize within wave, then take mean	Summary score for extraversion, mean imputed for missing components.  "To what extent do you agree that you see yourself as someone who: (i) is talkative, (ii) is reserved, (iii) is fully of energy, (iv) tends to be quiet, (v) sometimes shy or inhibited, (vi) generates a lot of enthusiasm" (1) Agree strongly (2) Agree moderately (3) Agree slightly (4) Disagree slightly (5) Disagree moderately (6) Disagree strongly	Residualize within wave, then take mean
Left Out of Social Activity		N/A*		N/A*

Life Satisfaction: Family	"Please think about your life and situation RIGHT NOW. HOW SATISFIED ARE YOU WITH...Your family life?" (1) Completely satisfied (2) Very satisfied (3) Somewhat satisfied (4) Not very satisfied (5) Not at all satisfied	Residualize within wave, then take mean	"How would you rate your family success?" (1) Not at all successful (2) Not very successful (3) Somewhat successful (4) Very successful	N/A
Life Satisfaction: Finance	"Please think about your life and situation RIGHT NOW. HOW SATISFIED ARE YOU WITH...Your present financial situation?" (1) Completely satisfied (2) Very satisfied (3) Somewhat satisfied (4) Not very satisfied (5) Not at all satisfied	Residualize within wave, then take mean	"To what extent are you satisfied with your present financial situation?" (1) Not at all (2) Not very (3) Somewhat (4) Very (5) Completely	Residualize within wave, then take mean
Life Satisfaction: Friends	"Please think about your life and situation RIGHT NOW. HOW SATISFIED ARE YOU WITH...Your friendships?" (1) Completely satisfied (2) Very satisfied (3) Somewhat satisfied (4) Not very satisfied (5) Not at all satisfied	N/A		N/A*
Life Satisfaction: Work	Please say how much you agree or disagree with each of the following statements. (Mark (X) one box for each line.) All things considered, I am satisfied with my job. (1) Strongly disagree (2) Disagree (3) Agree (4) Strongly agree	N/A	"All things considered, how satisfied were you with your job as a whole, were you very satisfied?" (1) Very satisfied (2) Fairly satisfied (3) Somewhat dissatisfied (4) Very dissatisfied	Residualize within wave, then take mean
Loneliness	"Now think about the past week and the feelings you have experienced. Please tell me if each of the following was true for you much of the time during the past week.) (Much of the time during the past week...) You felt lonely. (Would you say yes or no?)"	Residualize within wave, then take mean	"On how many days during the past week did you feel lonely?"	Residualize within wave, then take mean
Morning Person		N/A*		N/A*
Narcissism		N/A*		N/A*

Neuroticism	<p>"Please indicate how well each of the following describes you. (Mark (X) one box for each line.) : (i) Moody, (ii) Worrying, (iii) Nervous, (iv) Calm"</p> <p>(1) A lot (2) Some (3) A little (4) Not at all</p> <p>Average of the 4 items after reverse-coding (iv), set to missing if more than 2 are missing.</p>	Residualize within wave, then take mean	<p>Summary score for neuroticism, mean imputed for missing components.</p> <p>"To what extent do you agree that you see yourself as someone who: (i) can be tense, (ii) is emotionally stable and not easily upset, (iii) worries a lot, (iv) remains calm in tense situations, (v) gets nervous easily"</p> <p>(1) Agree strongly (2) Agree moderately (3) Agree slightly (4) Disagree slightly (5) Disagree moderately (6) Disagree strongly</p>	Residualize within wave, then take mean
Openness	<p>"Please indicate how well each of the following describes you. (Mark (X) one box for each line.) : (i) Creative, (ii) Imaginative, (iii) Intelligent, (iv) Curious, (v) Broad-minded (vi) Sophisticated (vii) Adventurous"</p> <p>(1) A lot (2) Some (3) A little (4) Not at all</p> <p>Average of the 7 items, set to missing if more than 3 are missing.</p>	Residualize within wave, then take mean	<p>Summary score for openness, mean imputed for missing components.</p> <p>"To what extent do you agree that you see yourself as someone who (i) prefers the conventional and traditional (ii) prefers work that is routine and simple (iii) values artistic, aesthetic experiences (iv) has an active imagination (v) wants things to be simple and clear-cut (vi) is sophisticated in art, music or literature"</p> <p>(1) Agree strongly (2) Agree moderately (3) Agree slightly (4) Disagree slightly (5) Disagree moderately (6) Disagree strongly</p>	Residualize within wave, then take mean
Religious Attendance	<p>"About how often have you attended religious services during the past year?"</p> <p>(1) More than once a week (2) Once a week (3) Two or three times a month (4) One or more times a year (5) Not at all</p>	Residualize within wave, then take mean	<p>"How often did you attend religious service last year?"</p> <p>(1) One time per week (2) Two or three times per month (3) One time per month (4) A few times per year (5) Less than a few times per year, Never</p>	Residualize within wave, then take mean
Religious Belief	N/A†		N/A†	

Risk Tolerance	<p>Set using the following four levels from income gamble questions, listed from least to most risk-averse:</p> <p>(1) "Would take a job with even chances of doubling income or cutting it in half."  (2) "Would take a job with even chances of doubling income or cutting it by a third."  (3) "Would take a job with even chances of doubling income or cutting it 20%."  (4) "Would take or stay in the job that guaranteed current income given any of the above alternatives."</p>	Residualize within wave, then take mean	<p>The percentage of risk-averse choices a person made in response to the following 21 questions:</p> <p>Would you rather have a 100% chance of getting \$5 OR a 50% chance of getting \$[5, 7, 9, 11, 13, 15, 19] and a 50% chance of getting \$0?</p> <p>Would you rather have a 100% chance of getting \$9 OR a 50% chance of getting \$[11, 15, 17, 19, 21, 25, 29] and a 50% chance of getting \$0?</p> <p>Would you rather have a 100% chance of getting \$11 OR a 50% chance of getting \$[15, 19, 21, 23, 25, 29, 33] and a 50% chance of getting \$0?</p>	Residualize within wave, then take mean
Subjective Well-Being	<p>Positive affect (PA) and life satisfaction (LS) measures described below were first residualized within each wave on a second degree polynomial in age, sex and their interactions and then the residuals were averaged across waves. Subjective well-being was set to the sum of standardized PA and LS residuals if both are non-missing.</p> <p>PA: Mean of the following items if there are less than 7 missing responses. Set to missing otherwise.  "During the past 30 days, TO WHAT DEGREE DID YOU FEEL... (i) Determined? (ii) Enthusiastic? (iii) Active? (iv) Proud? (v) Interested? (vi) Happy? (vii) Attentive? (viii) Content? (ix) Inspired? (x) Hopeful? (xi) Alert? (xii) Calm? (xiii) Excited?"  (1) Not at all  (2) A little  (3) Moderately  (4) Quite a bit  (5) Very much</p> <p>LS: Mean of the following items if there are less than 3 missing responses. Set to missing otherwise.  "Please say how much you agree or disagree with the following statements:  (i) In most ways my life is close to ideal  (ii) The conditions of my life are excellent. (iii) I am satisfied with my life.</p>	Explained under "Phenotype Measure"	<p>Mean of the responses to the following to questions:</p> <p>(i) "On how many days during the past week did you feel happy?"  (ii) "On how many days during the past week did you enjoy life?"</p> <p>(0) Zero Days  (1) One Day  (2) Two Days  (3) Three Days  (4) Four Days  (5) Five Days  (6) Six Days  (7) Seven Days</p>	Residualize within wave, then take mean

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(iv) So far, I have gotten the important things I want in life. (v) If I could live my life again, I would change almost nothing.  
 (1) Strongly disagree  
 (2) Somewhat disagree  
 (3) Slightly disagree  
 (4) Neither agree or disagree  
 (5) Slightly agree  
 (6) Somewhat agree  
 (7) Strongly agree

Phenotype	Dunedin Multidisciplinary Health and Development Study		Environmental Risk (E-Risk) Longitudinal Twin Study	
	Phenotype measure	Handling of repeated measures	Phenotype measure	Handling of repeated measures
<i>Anthropometric</i>				
Body Mass Index (BMI)	Body Mass Index=kg/m2	N/A	Body Mass Index=kg/m2	N/A
Height	Height in meters	N/A	Height in meters	N/A
<i>Cognition and Education</i>				
Alzheimer's	N/A*†		N/A*†	
Childhood Reading	The Burt Word Reading Test was administered to Study members at age 7. The test consists of 100 words, presented in increasing order of difficulty.	N/A	Children's reading was individually tested at age 7 years using the Test of Word Reading Efficiency (TOWRE)	N/A
Cognitive Performance	The Wechsler Adult Intelligence Scale-IV (WAIS-IV) (Wechsler, 2008) was administered to Study members individually at age 38 according to standard protocol.	N/A	Three subtests (Information, Digit Symbol Coding and Matrix Reasoning) of the Wechsler Adult Intelligence Scale-IV (WAIS-IV) (Wechsler, 2008) were administered individually to Study members at age 18. IQ scores were prorated from these subtests, according to standard protocol.	N/A
Educational Attainment	Highest degree completed by a Dunedin Study member through the time of the age-38 assessment.	Maximum	N/A*	
Highest Math	N/A*		N/A*	
Self-Rated Math Ability	N/A*		N/A*	
<i>Fertility and Sexual Development</i>				

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Age First Birth	Study members were interviewed using a month-to-month Life History Calendar at each assessment age, up to age 38 years, to provide information about socio-demographic information, including: Age at first birth.	N/A		N/A*
Age First Menses (women)	Study members reported the age at which they had their first period	N/A	Study members reported the age at which they had their first period	N/A
Age Voice Deepened (men)		N/A*		N/A*
Number Ever Born (Men)	Study members were interviewed using a month-to-month Life History Calendar at each assessment age, up to age 38 years, to provide information about socio-demographic information, including: Number of children ever born.	Maximum		N/A*
Number Ever Born (Women)	Study members were interviewed using a month-to-month Life History Calendar at each assessment age, up to age 38 years, to provide information about socio-demographic information, including: Number of children ever born.	Maximum		N/A*
<i>Health and Health Behaviors</i>				
Alcohol Misuse	Symptom counts of DSM5 Alcohol Use Disorder were assessed via private structured interviews using the Diagnostic Interview Schedule at age 38.	N/A	Symptom counts of DSM5 Alcohol Use Disorder were assessed via private structured interviews using the Diagnostic Interview Schedule at age 18.	N/A
Allergy - Cat	At age 21, study members were administered skinprick tests for 12 common allergens: house dust mite ( <i>Dermatophagoides pteronyssinus</i> ) (Bencard, UK), grass, cat, dog, horse, kapok, wool, <i>Aspergillus fumigatus</i> , <i>alternaria</i> , <i>penicillium</i> , <i>cladosporium</i> , and cockroach (Hollister Stier, US). As in previous reports (Sears et al., 1989; <a href="https://pubmed.ncbi.nlm.nih.gov/2758355/">https://pubmed.ncbi.nlm.nih.gov/2758355/</a> ), allergy was defined as one or more positive skin test with a maximum weal diameter of at least 2mm greater than that produced by the diluent control.	N/A		N/A*
Allergy - Dust				N/A*
Allergy - Pollen				N/A*

Asthma	Asthma status was assessed at from standardized interviews of Study members (or their mothers if the participant was younger than 13 years) done by pulmonary specialists.	Maximum	Study members were asked "Since age 12, have you been told by a doctor that you have asthma?"	N/A
Asthma/Eczema/Rhinitis	Defined as having ever had asthma, eczema, or hay fever at any time during follow-up.	Maximum	Defined as positive responses to having ever had asthma, eczema, or hay fever since age 12.	N/A
Attention Deficit Hyperactivity Disorder (ADHD)	We used the Dunedin Study's group of children diagnosed with ADHD at ages 11, 13, or 15 years. Symptoms were ascertained using the Diagnostic Interview Schedule for Children-Child Version at ages 11 and 13 administered by a child psychiatrist and at age 15 by trained clinical interviewers. Research diagnoses followed DSM-III. We considered participants to have a diagnosis of childhood ADHD if they met criteria at ages 11, 13, or 15. years.	Maximum	We used the E-Risk Study's group of children diagnosed with ADHD at ages 5, 7, 10, or 12 years. We ascertained childhood ADHD diagnoses on the basis of mother and teacher reports of 18 symptoms of inattention and hyperactivity–impulsivity. Research diagnoses followed DSM-IV. We considered participants to have a diagnosis if they met criteria at ages 5, 7, 10 or 12.	Maximum
Cannabis Use	We used data from assessments at ages 15, 18, 21, 26, 32, and 38 when Study members reported if they had used cannabis.	Maximum	At age 18 Study members reported if they had ever used cannabis.	N/A
Cigarettes per Day	Study members completed structured interviews about smoking behavior, including reporting the number of cigarettes smoked per day	N/A		N/A*
COPD	Spirometry was performed at age 38 before and after 200 mcg salbutamol inhaled via large-volume spacer. The best FEV1 and FVC values from three acceptable and reproducible maneuvers were used. We report results for post-bronchodilator FEV1/FVC ratio (M=79.95, SD=6.46) after 200 mg salbutamol. Airflow limitation (chronic obstructive pulmonary disease; COPD) was defined as FEV1/FVC ratio < 0.70.	N/A		N/A*
Depressive Symptoms	Symptom counts of depression were assessed via private structured interviews using the Diagnostic Interview Schedule at age 38.	N/A	Symptom counts of depression were assessed via private structured interviews using the Diagnostic Interview Schedule at age 18.	N/A
Drinks per Week	At age 38 years, Study members reported the number of drinks per day that they consumed, on average, in the past year.	N/A	At age 18, Study members reported the number of drinks per day that they consumed, on average, in the past year.	N/A
Eczema		N/A†		N/A†

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Ever Smoker	We recorded if the study member (age 38) reported smoking at least occasionally, at any point in their life.	N/A	We recorded if the study member (age 18) reported smoking at least occasionally, at any point in their life.	N/A
Hayfever	Allergies were examined by self reports. Study members were asked questions about possible allergies: "Have you ever had hay fever?"	Maximum	Study members were asked, "Do you have any nasal allergies, including hayfever?"	N/A
Migraine	Study members were asked if, in the previous 12 months, they had experienced headaches lasting from 30 minutes to 7 days. A positive answer to this gate question led to a series of questions concerning headache pain characteristics and symptoms abstracted from the International Headache Society classification. In accord with the society recommendations, Study members were excluded if they had had head or neck injury in close temporal proximity to the onset of headache symptoms.	Maximum		N/A*
Nearsightedness		N/A*		N/A*
Physical Activity	We measured study members' adulthood leisure-time physical activity level from data collected during structured interviews with Study members when they were aged 32 and 38 years. Trained interviewers guided study members through reporting the different types of physically demanding activities they engaged in during an average week and an average weekend. Study members then indicated number of minutes spent doing each activity at a moderate or more strenuous level of difficulty. Time spent on each activity was converted to metabolic equivalent (MET) units. Moderate intensity activity was given a weight of 4; hard activity was given a weight of 6; and very hard activity was given a weight of 10. We summed weekday and weekend METs from moderate or more strenuous leisure activities to calculate physical activity levels at age 38 years.	N/A	Study members completed the Stanford Brief Activity Survey (SBAS) at age 18. The SBAS assesses the usual amount and intensity of physical activity that a person performs throughout the day during the past year.	N/A

Self-Rated Health	At age 38, study members rated their health: (1) Poor (2) Fair (3) Good (4) Very good (5) Excellent	N/A		N/A*
<i>Personality and Well-Being</i>				
Adventurousness		N/A*		N/A*
Agreeableness		N/A†		N/A†
Cognitive Empathy		N/A*		N/A*
Delay Discounting		N/A*		N/A*
Extraversion	At ages 26, 32 and 38, Study members nominated up to three people "who knew them well." These informants were mailed questionnaires and asked to describe each Study member using a 25-item version of the Big Five Inventory measuring the personality traits of Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience.	Mean	At ages 5 and 7, Study members nominated two people "who knew them well." These informants were provided with questionnaires and asked to describe each participant using a 25-item version of the Big Five Inventory measuring the personality traits of Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience. The majority of informant reports were provided by parents and co-twins.	Mean
Left Out of Social Activity	Study members were asked "How often do you feel left out?" Response options were 0 'hardly ever,' 1 'some of the time', 2 'often'.	N/A	Study members were asked "How often do you feel left out?" Response options were 0 'hardly ever,' 1 'some of the time', 2 'often'.	N/A
Life Satisfaction: Family	At age 38, Study members were asked "How happy are you with your relationship?" (0) Not happy (1) Somewhat happy (2) Very happy	N/A		N/A*
Life Satisfaction: Finance		N/A*		N/A*
Life Satisfaction: Friends		N/A*		N/A*
Life Satisfaction: Work	At age 38, Study members were asked "All in all, how satisfied are you with your job?" (0) Not satisfied (1) Somewhat satisfied (2) Very satisfied	N/A		N/A*

Loneliness	At age 38, study members responded to 4 items on the UCLA Loneliness Scale. Items included "How often do you feel... you lack companionship/ isolated from others/left out/alone?"	N/A	At age 18, Study members responded to 4 items on the UCLA Loneliness Scale. Items included "How often do you feel... you lack companionship/ isolated from others/left out/alone?"	N/A
Morning Person	At age 38, Study members completed the Horne-Ostberg Morningness-Eveningness Score (MEQ), which asks respondents to identify themselves as one of the following: "Definitely a morning person" "More morning than evening" "Neither or don't know" "More evening than morning" "Definitely an evening person".	N/A	N/A*	
Narcissism		N/A*	N/A*	
Neuroticism	At ages 26, 32 and 38, Study members nominated up to three people "who knew them well." These informants were mailed questionnaires and asked to describe each Study member using a 25-item version of the Big Five Inventory measuring the personality traits of Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience.	Mean	At ages 5 and 7, Study members nominated two people "who knew them well." These informants were provided with questionnaires and asked to describe each participant using a 25-item version of the Big Five Inventory measuring the personality traits of Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience. The majority of informant reports were provided by parents and co-twins.	Mean
Openness	At ages 26, 32 and 38, Study members nominated up to three people "who knew them well." These informants were mailed questionnaires and asked to describe each Study member using a 25-item version of the Big Five Inventory measuring the personality traits of Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience.	Mean	At ages 5 and 7, Study members nominated two people "who knew them well." These informants were provided with questionnaires and asked to describe each participant using a 25-item version of the Big Five Inventory measuring the personality traits of Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience. The majority of informant reports were provided by parents and co-twins.	Mean
Religious Attendance		N/A*	N/A*	
Religious Belief		N/A*†	N/A*†	
Risk Tolerance	At age 45, Study members were asked "How would you describe yourself: Are you generally willing to take risks or do you try to avoid taking risks?" 0 'avoid risks' to 10 'very willing'.	N/A	N/A*	

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Subjective Well-Being	Study members completed the Satisfaction with Life scale. Responses (where 0 indicated “strongly disagree” and 4 indicated “strongly agree”) to the 5-item Satisfaction with Life Scale were summed to create a score ranging from 0 (lowest satisfaction) to 20 (high satisfaction). Items included: “In most ways my life is close to ideal”, “The conditions of my life are excellent”, “I am satisfied with my life”, “So far I have gotten the important things I want in life”, “If I could live my life over, I would change almost nothing”.	N/A	Study members completed the Satisfaction with Life scale. Responses (where 0 indicated “strongly disagree” and 4 indicated “strongly agree”) to the 5-item Satisfaction with Life Scale were summed to create a score ranging from 0 (lowest satisfaction) to 20 (high satisfaction). Items included: “In most ways my life is close to ideal”, “The conditions of my life are excellent”, “I am satisfied with my life”, “So far I have gotten the important things I want in life”, “If I could live my life over, I would change almost nothing”.	N/A
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*Notes:* \*The phenotype is not available in the validation dataset. †Neither the single- nor multi-trait PGIs for the phenotype fulfills the criterion of expected out-of-sample incremental  $R^2 > 0.01$ . "Residualize" in column "Handling of repeated measures" refers to obtaining the standardized residuals from a regression of the variable on sex (unless the phenotype is sex-specific), a second-degree polynomial in age at the time of measurement, and their interactions. If the "Handling of repeated measures" column is "N/A" (no repeated measures) or "Maximum", the phenotype was residualized on sex, a second-degree polynomial in birth year, and their interactions.

**Supplementary Table 13: Publicly available input GWAS used to make PGI for the comparison analyses**

Phenotype	Code	Study	N	Validation Dataset				
				HRS	WLS	Dunedin	E-Risk	UKB3
Anthropometric								
Body Mass Index (BMI)	BMI_Yengo	Yengo et al. <sup>1</sup>	795,640	X	X	X	X	
	BMI_Locke	Locke et al. <sup>2</sup>	322,154					X
Height	HEIGHT_Yengo	Yengo et al. <sup>1</sup>	709,706	X	X	X	X	
	HEIGHT_Wood	Wood et al. <sup>3</sup>	253,280					X
Cognition and Education								
Alzheimer's					N/A†‡			
Childhood Reading					N/A*			
Cognitive Performance	CP_Savage	Savage et al. <sup>4</sup>	269,867		X	X	X	
	CP_Trampush	Trampush et al. <sup>5</sup>	35,298	N/A†				X
Educational Attainment	EA_Lee	Lee et al. <sup>6</sup>	766,345			X		
	EA_Okbay	Okbay et al. <sup>7</sup>	328,917	N/A*	X		N/A†	
	EA_Rietveld	Rietveld et al. <sup>8</sup>	126,559					X
Highest Math					N/A*†			
Self-Rated Math Ability					N/A*†			
Fertility and Sexual Development								
Age First Birth	AFB_Barban	Barban et al. <sup>9</sup>	241,781	N/A*	X	X	X	N/A*
Age First Menses (Women)	MENARCHE_Day	Day et al. <sup>10</sup>	252,514		X			
	MENARCHE_Perry	Perry et al. <sup>11</sup>	132,989	N/A†		N/A†	N/A†	X
Age Voice Deepened (Men)					N/A*†			
Number Ever Born (Men)	NEBmen_Neale	Neale Lab <sup>12</sup>	165,492	X	X	X	X	N/A*
Number Ever Born (Women)	NEBwomen_Barban	Barban et al. <sup>9</sup>	211,595		X	X	X	N/A*
	NEBwomen_Neale	Neale Lab <sup>12</sup>	193,953	X				
Health and Health Behaviors								

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Alcohol Misuse								N/A*
Allergy - Cat								N/A*
Allergy - Dust								N/A*
Allergy - Pollen								N/A*
Asthma	ASTHMA_Neale	Neale Lab <sup>12</sup>	361,141	X	X	X	X	N/A*
Asthma/Eczema/Rhinitis	ASTECZRHI_Ferreira	Ferreira et al. <sup>13</sup>	242,569	N/A†	X	X	X	N/A*
Attention Deficit Hyperactivity Disorder (ADHD)	ADHD_Demontis	Demontis et al. <sup>14</sup>	55,374	X	X	N/A†	N/A†	N/A†
Cannabis Use	CANNABIS_Stringer	Stringer et al. <sup>15</sup>	35,297	N/A†	N/A†	N/A†	N/A†	X
Cigarettes per day	CPD_Liu	Liu et al. <sup>16</sup>	263,954		X	X	N/A†	
	CPD_Furberg	Furberg et al. <sup>17</sup>	38,181	X				X
COPD	COPD_Neale	Neale Lab <sup>12</sup>	91,787	X	X	X	X	N/A*
Depressive Symptoms	DEP_Howard	Howard et al. <sup>18</sup>	500,199	X	X	X	X	
	DEP_WraySansUKB	Wray et al. <sup>19</sup>	230,241					X
Drinks per week	DPW_Liu	Liu et al. <sup>16</sup>	537,349		X	X	X	N/A*
	DPW_Linner	Linner et al. <sup>20</sup>	414,343	X				
Eczema				N/A*‡				
Ever Smoker	EVERSMOKE_Liu	Liu et al. <sup>16</sup>	632,802		X	X	X	
	EVERSMOKE_Linner	Linner et al. <sup>20</sup>	518,633	X				
	EVERSMOKE_Furberg	Furberg et al. <sup>17</sup>	74,035					X
Hayfever	HAYFEVER_Neale	Neale Lab <sup>12</sup>	360,527	N/A†	X	X	N/A†	N/A*
Migraine	MIGRAINE_Neale	Neale Lab <sup>12</sup>	361,194	N/A†	N/A†	X	N/A†	N/A*
Nearsightedness	NEARSIGHTED_Neale	Neale Lab <sup>12</sup>	360,677	N/A†	N/A†	N/A†	N/A†	N/A*
Physical Activity	ACTIVITY_Doherty	Doherty et al. <sup>21</sup>	91,105	X	X	X	X	N/A*
Self-Rated Health	SELFHEALTH_Neale	Neale Lab <sup>12</sup>	359,681	X	X	X	N/A†	N/A*
<i>Personality and Well-Being</i>								
Adventurousness								N/A*
Agreeableness								N/A‡
Cognitive Empathy								N/A*†
Conscientiousness								N/A‡

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Delay Discounting				N/A*†				
Extraversion	EXTRA_vandenBerg	Van den Berg et al. <sup>22</sup>	63,030	X	X	X	X	N/A†
Left out of Social Activity				N/A*				
Life Satisfaction: Family	FAMSAT_Neale	Neale Lab <sup>12</sup>	118,818	X	X		N/A†	N/A*
Life Satisfaction: Finance	FINSAT_Neale	Neale Lab <sup>12</sup>	119,394	X	X	N/A†	N/A†	N/A*
Life Satisfaction: Friends	FRIENDSAT_Neale	Neale Lab <sup>12</sup>	118,649	X	X	N/A†	N/A†	N/A*
Life Satisfaction: Work	WORKSAT_Neale	Neale Lab <sup>12</sup>	82,190	X	X	X	N/A†	N/A*
Loneliness	LONELY_Neale	Neale Lab <sup>12</sup>	355,583	X	X	X	X	N/A*
Morning Person	MORNING_Jones	Jones et al. <sup>23</sup>	449,734	N/A†	N/A†	X	N/A†	N/A*
Narcissism				N/A*†				
Neuroticism	NEURO_Nagel	Nagel et al. <sup>24</sup>	380,060	X	X	X	X	
	NEURO_deMoor	De Moor et al. <sup>25</sup>	63,666					X
Openness	OPEN_deMoor	De Moor et al. <sup>26</sup>	17,375	X	X	X	X	N/A†
Religious Attendance	RELIGATT_Neale	Neale Lab <sup>12</sup>	360,063	X	X	N/A†	N/A†	N/A*
Recharge by Socializing				N/A*†‡				
Religious Belief				N/A*†				
Risk Tolerance	RISK_Linner	Linner et al. <sup>20</sup>	466,571	X	X	X	N/A†	N/A*
Subjective Well-Being	SWB_Okbay	Okbay et al. <sup>27</sup>	204,978		X	X	X	
	SWB_Neale	Neale Lab <sup>12</sup>	119,535	X				N/A*

*Notes:* \*No publicly available GWAS non-overlapping with the dataset. †The phenotype is not available in the dataset. ‡Neither the single- nor multi-trait PGI for the phenotype fulfills the criterion of expected out-of-sample incremental  $R^2 > 0.01$ . Dataset abbreviations: Dunedin Multidisciplinary Health and Development Study (Dunedin), Environmental Risk (E-Risk) Longitudinal Twin Study, Health and Retirement Study (HRS), UK Biobank (UKB; UKB3 refers to the third UKB partition - see section "UKB GWAS" in Methods for details on the partitioning), Wisconsin Longitudinal Study (WLS).

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