

Supplementary Online Content

Alnæs D, Kaufmann T, Doan NT, et al. Association of heritable cognitive ability and psychopathology with white matter properties in children and adolescents. *JAMA Psychiatry*. Published online January 24, 2018. doi:10.1001/jamapsychiatry.2017.4277

eMethods.

eFigure 1. Distribution of Subject Weights for the 7 Clinical ICA Components, as well as the General Symptom Score (Mean ICA)

eFigure 2. Density Plots for Age, Gf, and Mean ICA

eFigure 3. LICA-01 Captures Spatially Global Brain Changes Across the Age Span

eFigure 4. Seed-based Probabilistic Tractography Confirm Involvement of UF

eFigure 5. Gf and Mean ICA Exhibit Independent Associations With LICA-09

eFigure 6. Impact of Image Quality on LICA-09 Associations

eFigure 7. Effects of Projection Distance on LICA-09 Subject Weights and its Clinical and Cognitive Associations

eFigure 8. Clinical Questionnaire Item Weights for Clinical IC2, 3, and 4 and Associations With LICA-09

eFigure 9. Distribution of rG Estimates Across Subsamples

eTable 1. List of Variables Included in the PCA to Compute the General Cognition Score (Gf)

eTable 2. List of the 129 Clinical Variables That Entered the Independent Component Analysis

This supplementary material has been provided by the authors to give readers additional information about their work.

eMethods

Sample recruitment and exclusion criteria: Recruitment procedures, sample characteristics as well as clinical, cognitive and imaging protocols are described in detail in Satterthwaite et al. (2014).¹ Briefly, 50,000 children and adolescents were recruited through primary care clinics for genotyping at the Center of Applied Genomics at the Children's Hospital of Philadelphia. A random sub-sample, after stratification of sex, age and ethnicity, were later contacted for recruitment in the PNC-study, and a total of 9428 were included and underwent comprehensive cognitive and clinical assessment. Of these, a random sub-sample, stratified by age and gender, were asked to participate in sub-sequent neuro-imaging, performed on a separate study day. Exclusion criteria were severe medical problems, impaired vision and hearing affecting ability to complete tasks in the scanner, and general MRI contraindication such as biomedical implants. The total MR-sample comprised 1,445 participants, and the participants included in the current study are from the first batch of participants made available.

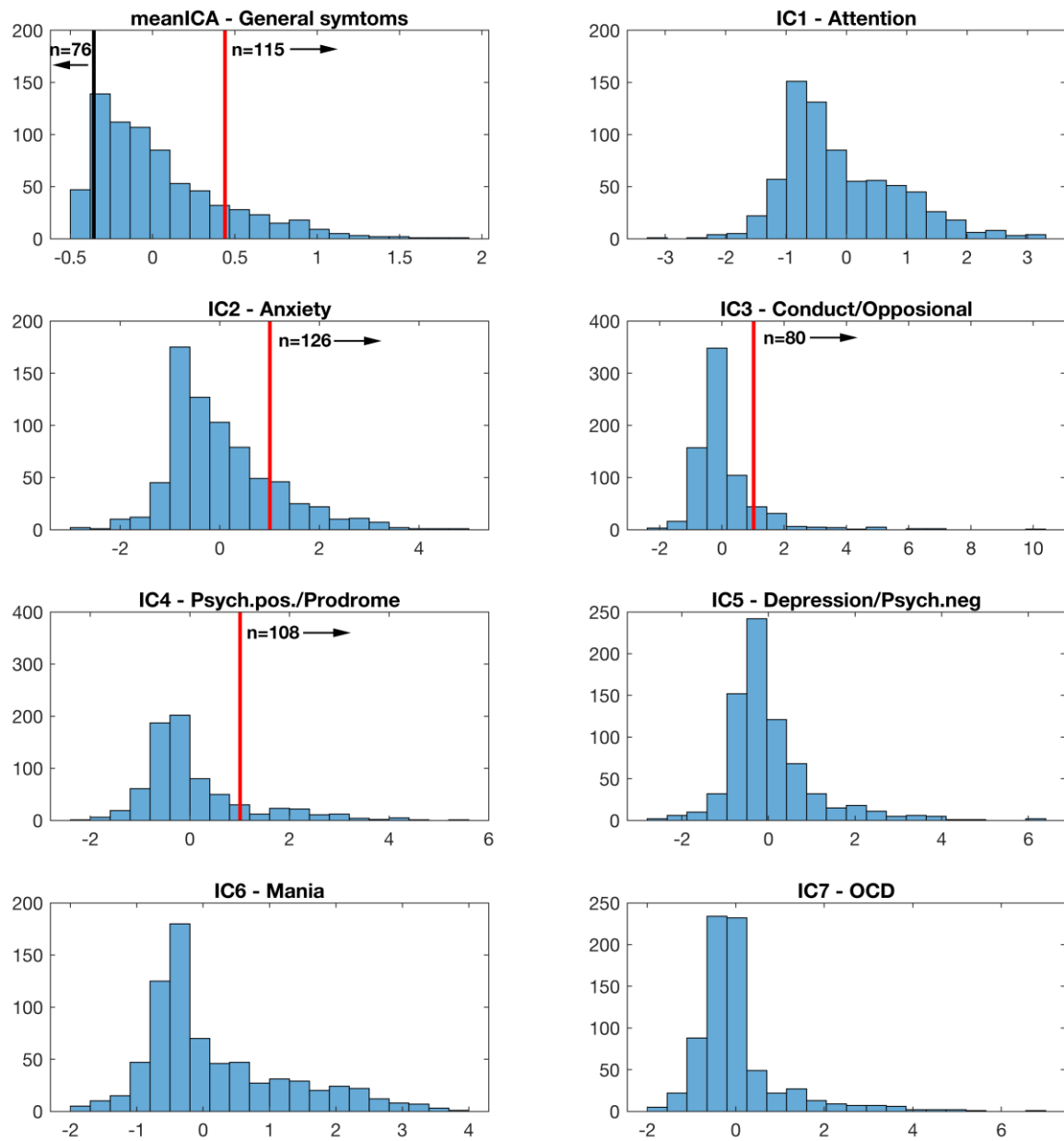
MRI Quality Assessment: tSNR was estimated using the same scripts and approach previously described for the PNC sample.² Out of the 839 datasets remaining after exclusion based on medical conditions, 91 individuals (10.8%) were excluded based on a tSNR cut-off of 5.7. We also performed several follow-up-analyses based on tSNR, motion (Supplementary Figure 6) as well as the entropy of the distribution of the principal diffusion directions (Supplementary Figure 7). The latter measure was calculated using DTIPrep,³ in order to capture vibration related artefacts in the data which may affect DTI metrics.^{4,5,6}

Genetic analysis: We included data from the following platforms: Illumina OmniExpress ($n = 1,241$), Illumina Human-610 Quad ($n = 1,895$), Illumina HumanHap-550-v1 ($n = 317$), Illumina HumanHap- 550-v3 ($n = 997$). The chip-genotyped SNPs overlapping across the platforms were extracted and used to form a data set to apply the following filters on: individuals with relatedness $> .05$ ($n=296$); removal of SNPs in the major histocompatibility complex (25:35 Mb region on chr6) and the inversion region of chr8 (7:13 Mb); SNPs with genotyping rate $< 99\%$, minor allele frequency $< 5\%$ and Hardy-Weinberg Equilibrium test p -value $< .0000001$; pairwise pruning of SNPs in linkage disequilibrium ($r^2 > 0.2$, window of 5,000, step of 500).

References:

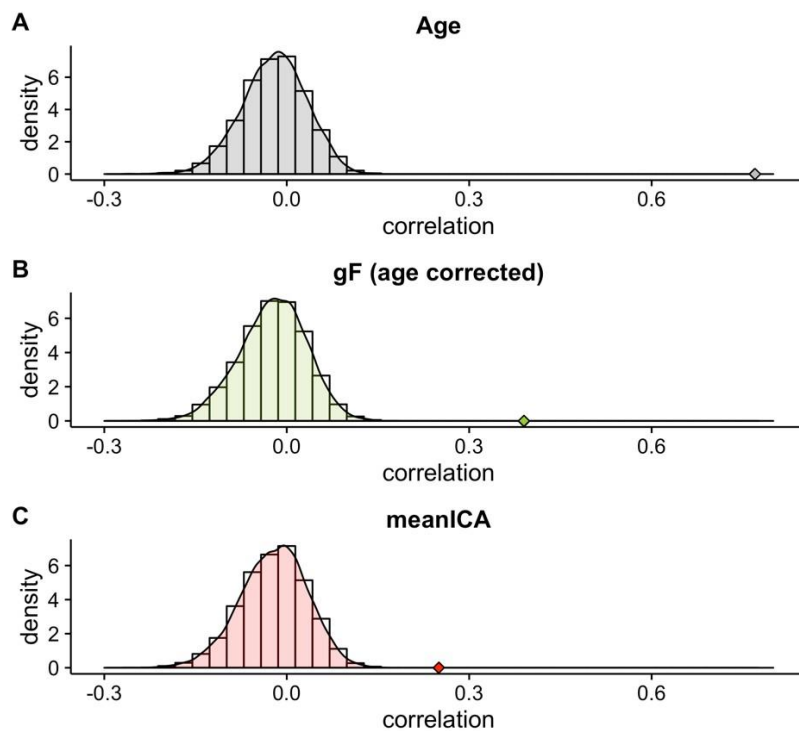
1. Satterthwaite TD, Elliott MA, Ruparel K, et al. Neuroimaging of the Philadelphia Neurodevelopmental Cohort. *NeuroImage*. 2014;86:544-553.
2. Roalf DR, Quarmley M, Elliott MA, et al. The impact of quality assurance assessment on diffusion tensor imaging outcomes in a large-scale population-based cohort. *NeuroImage*. 2016;125:903-919.
3. Oguz I, Farzinfar M, Matsui J, et al. DTIPrep: quality control of diffusion-weighted images. *Frontiers in Neuroinformatics*. 2014;8.
4. Solders SK, Carper RA, Müller R-A. White matter compromise in autism? Differentiating motion confounds from true differences in diffusion tensor imaging: White matter compromise in ASD. *Autism Research*. 2017.
5. Gallichan D, Scholz J, Bartsch A, Behrens TE, Robson MD, Miller KL. Addressing a systematic vibration artifact in diffusion-weighted MRI. *Human brain mapping*. 2009;31:193:202.
6. Berl MM, Walker L, Modi P, et al. Investigation of vibration-induced artifact in clinical diffusion-weighted imaging of pediatric subjects: Vibration Artifact in Clinical DWI. *Human brain mapping*. 2015;36(12):4745-4757.

eFigure 1. Distribution of Subject Weights for the 7 Clinical ICA Components, as well as the General Symptom Score (mean ICA)



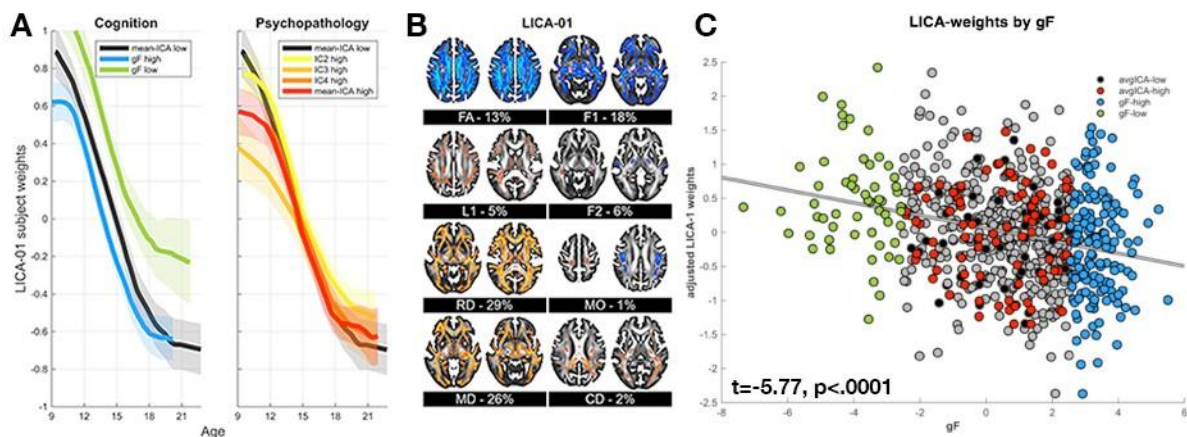
Extreme groups were formed for visualization purposes: the horizontal lines represent the cut-offs (± 1 sd) and the resulting sample-sizes for the groups, for mean-ICA, IC2, IC3 and IC4.

eFigure 2. Density Plots for Age, Gf, and Mean ICA



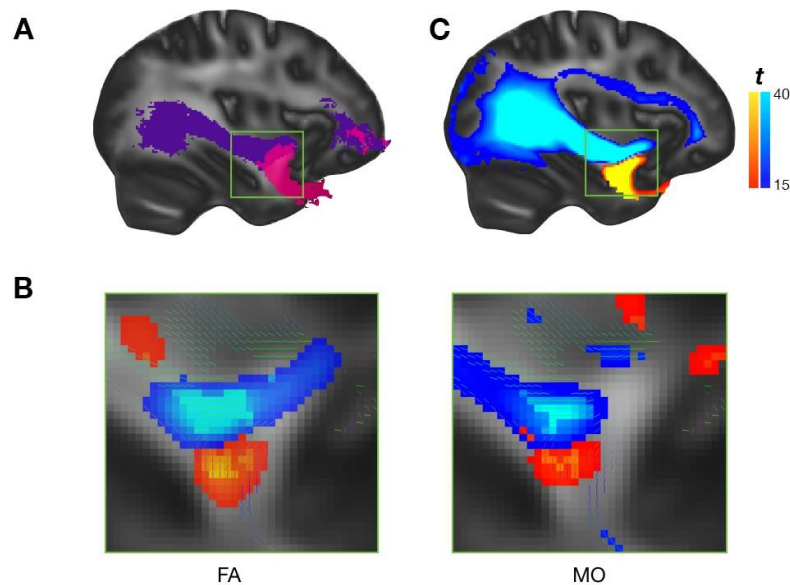
For each of the predicted traits (Age, Gf and mean-ICA) we performed 10,000 permutations to assess whether the correlation between true and predicted scores were above chance level. Density plots represent the permuted sampling distributions, diamonds indicate the observed correlations. For age and Gf none of the permuted values exceeded the observed correlations, while the permuted P value for mean ICA prediction was .0001 (2-tailed).

eFigure 3. LICA-01 Captures Spatially Global Brain Changes Across the Age Span



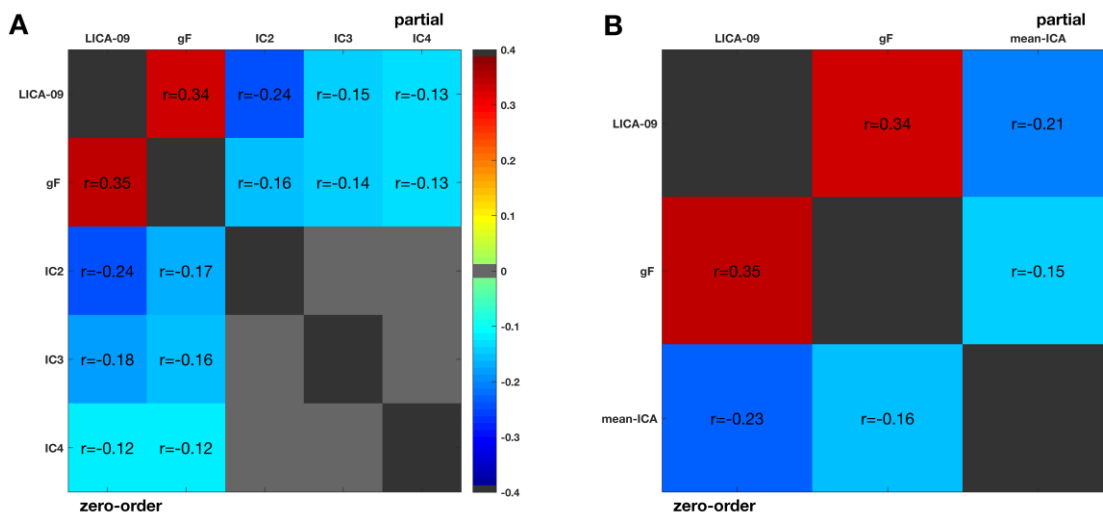
(A) Participant weights decrease as a function of age. **(B)** This indicates an increase predominantly in FA, f1, RD and MD (percentages represent the modality contributions to the LICA-component) during neurodevelopment. The pseudo-z modality skeleton-maps were thresholded at $|z| > 3$, and filled using `tbss_fill` for visualization. **(C)** A negative association between Gf and LICA-01 participant weights indicate higher FA, f1, RD and MD in high performing individuals.

eFigure 4. Seed-based Probabilistic Tractography Confirm Involvement of UF



(A) To confirm that the crossing fiber area in the insular region is indeed related to intersection of IFOF (purple) and UF (pink) fibers (left panel, MNI x-coordinate=35 mm), we performed a seed-based probabilistic whole-brain tractography from ROIs based on LICA-09 weights in this region. **(B)** The seeds were based on voxels showing a conjunction of changes in both FA and MO (thresholded at $|z|>3$), an approach previously reported as sensitive to crossing fiber regions. The cluster with negative LICA spatial weights (blue) represent the insular UF-region with increased FA and MO with higher symptom burden while the more inferior cluster with positive values (red) represent a more inferior part of the UF showing the opposite clinical pattern. **(C)** When contrasting their whole-brain connectivity densities, the former cluster shows higher connectivity probability with the IFOF while the latter shows higher connectivity probability with the UF.

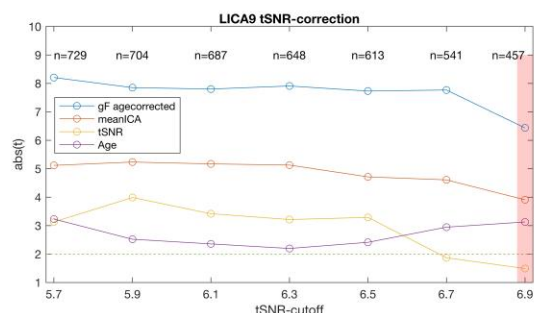
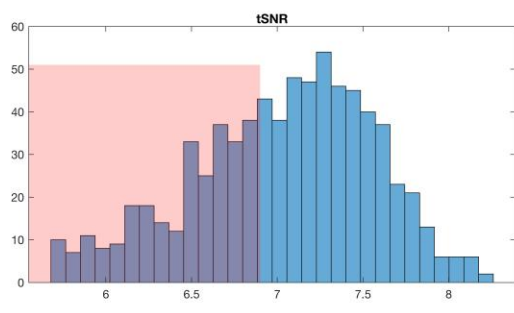
eFigure 5. Gf and Mean ICA Exhibit Independent Associations With LICA-09



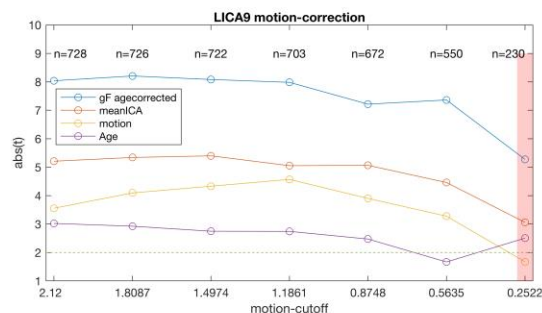
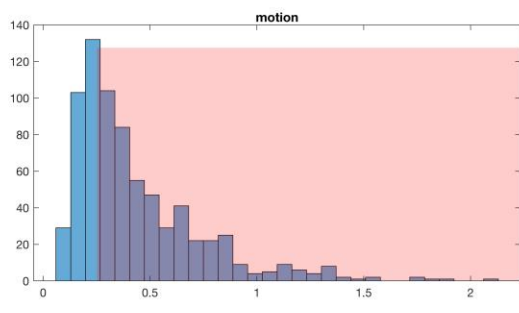
The full (below diagonal) and partial correlations (above, including adjustment for age, gender and tSNR) between LICA-09 participant weights, Gf, and (A) clinical IC2 (anxiety and harm avoidance), IC3 (norm violating behaviour) and IC4 (psychosis prodrome) scores, (B) mean-ICA score. Matrices thresholded at $p < .05$ (FWE, 10,000 permutations).

eFigure 6. Impact of Image Quality on LICA-09 Associations

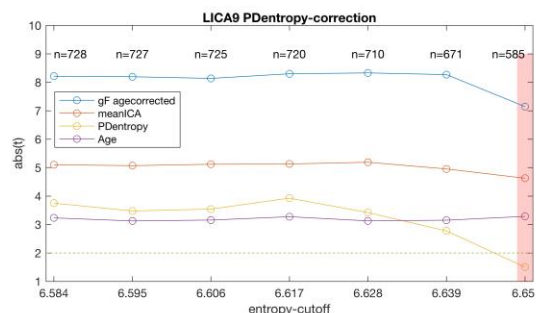
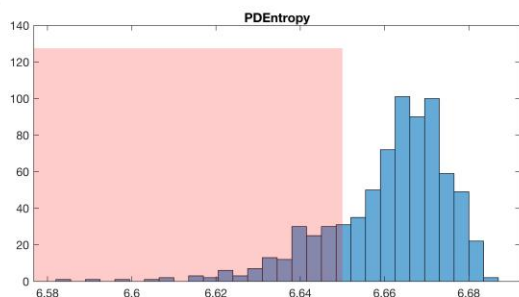
A



B

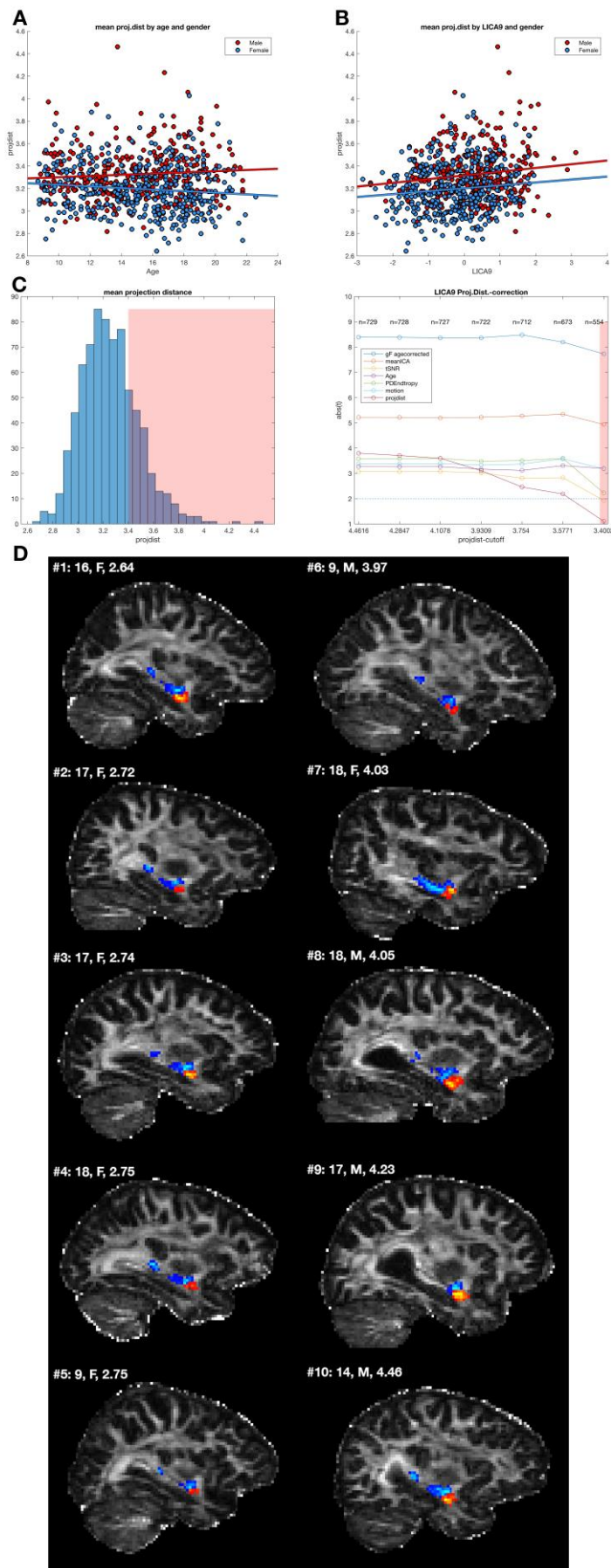


C



We reran the univariate models for LICA-09 associations with step-wise exclusion of participants with poorer image quality, based on (A) tSNR, (B) motion and (C) entropy of the principal-direction distribution. The shaded area in the histograms represent the extreme part of the distribution which was excluded at the final step when the QC-metric no longer showed any association with LICA-09, and the line plot shows the absolute t-values for Gf, mean ICA and age at each exclusion-step, with the shaded area representing the final cut-off step. The yellow line represents absolute t-value of the QC-metric, and the sample sizes are reported for each step.

eFigure 7. Effects of Projection Distance on LICA-09 Subject Weights and its Clinical and Cognitive Associations

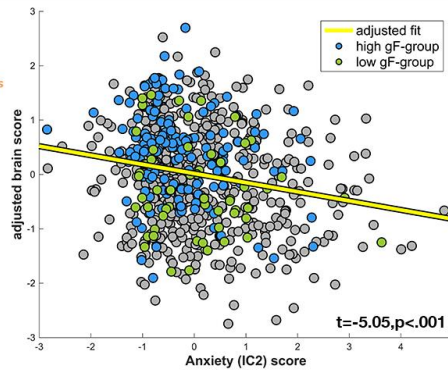


(A) The correlation between projection distance and age for the full sample was not significant ($r=-.04$), but there was a significant effect of sex ($t=8$, higher distance in males) and an interaction between age and sex ($t=2.5$). Analysing each sex separately revealed a small negative association with age for females ($t=-2.2$), and a small positive association for males ($t=1.4$). Thus, the interaction is driven by increasing differences in distance between males and females with age, primarily through a decrease in distance for females. **(B)** There was a significant negative association between projection distance and LICA-09 participant weights ($t=5.5$), however there was no interaction with sex ($t=0.3$). The next steps taken to account for projection distances on the associations between LICA-09 and mean ICA/Gf therefore take the main effect of projection distance into account without further considerations of sex-interactions. **(C)** We iteratively re-estimated the LICA-09-model with increasingly strict projection distance cut-offs. The plot shows the absolute t-score for the association with Gf and mean ICA at each cut-off, covarying for gender, age, as well as QC-indices. At the last step (shaded area), projection distance no longer had a significant associated with LICA-09 weights, while effects of both Gf and mean ICA was retained. The associations between LICA-09 and the clinical and cognitive scores were not altered in any degree by iteratively decreasing the projection distance cut-off, further corroborating the robustness of the reported effects. **(D)** FA/MO conjunction maps, which formed the basis of the follow-up tractography masks, for the participants with the five highest and five lowest skeleton projection distances. The conjunction-map was calculated using the group-level LICA-09 pseudo-z maps in skeleton space, and then de-projected back each participant's native diffusion space before fiber tracking. In absence of any systematic bias, differences in projection distances should reflect that the sampled voxels projected to the group-level skeleton in fact originates in the same anatomical region, despite normal variation in brain size and anatomy, which seems to be the case for LICA-09 in the insular region of the uncinate.

eFigure 8. Clinical Questionnaire Item Weights for Clinical IC2, 3, and 4 and Associations With LICA-09

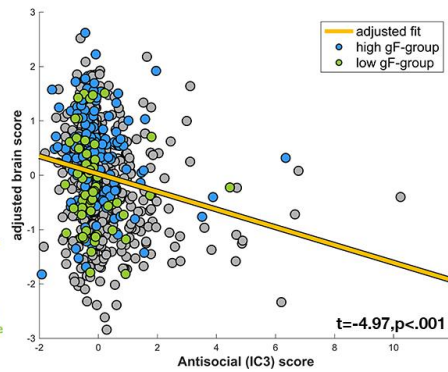
TOP 20 Items loading on clinical IC2

- [SOC] Felt afraid or uncomfortable acting/performing/sport, giving talk/speech
- [SOC] Afraid/uncomfortable doing something in front of a group like speaking in class
- [SOC] Afraid/uncomfortable when center of attention, concerned something embarrassing might happen
- [SOC] Afraid/uncomfortable/shy meeting new people/parties, or eating/drinking/working in front of others
- [SOC] Afraid/uncomfortable talking on phone or with people your age you don't know very well
- [AGR] Been very nervous or afraid of going over bridges or through tunnels
- [PHB] Been very nervous or afraid of flying or airplanes
- [PHB] Been very nervous or afraid of storms, thunder, or lightning
- [PHB] Been very nervous or afraid of being in really high places, e.g. roof/tall building
- [AGR] Been very nervous or afraid of traveling away from home
- [PHB] Been very nervous or afraid of animals or bugs, like dogs, snakes, or spiders
- [AGR] Been very nervous or afraid of traveling by yourself
- [SEP] Been very upset and worried about going to be away from home/parents
- [AGR] Been very nervous or afraid of being in crowds, e.g. classroom/cafe/restaurant/theater
- [AGR] Been very nervous or afraid of using public transportation
- [SEP] Wanted to stay home from school or not go to other places e.g. sleep-overs without parents
- [PHB] Been very nervous or afraid of closed spaces, like elevators/closets
- [PHB] Been very nervous or afraid of doctors, needles, or blood
- [AGR] Been very nervous or afraid of going to public places, e.g. store/mall
- [SEP] Scared to be alone in your room or need a parent to stay with you while you fell asleep



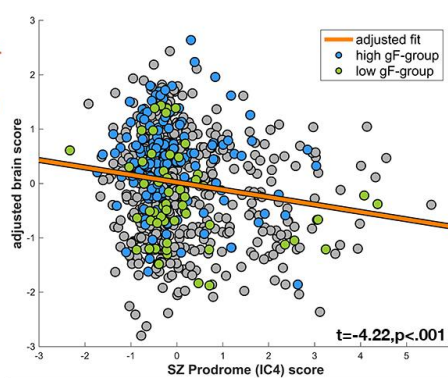
TOP 20 Items loading on clinical IC3

- [CDD] Did you ever attack someone to steal from them
- [CDD] Did you ever threaten someone
- [CDD] Set fires, break into cars, or destroy someone's property on purpose
- [CDD] Hurt someone with a weapon e.g. bat/brick/knife/bottle/gun.
- [CDD] Did you ever hold someone up
- [CDD] Skip school, stay out later than allowed, run away from home overnight.
- [CDD] Hit/threaten/scared someone younger, start physical fights
- [CDD] Been physically cruel to an animal or person
- [PTD] Have you ever been threatened with a weapon
- [PTD] Have you ever been attacked by somebody or badly beaten
- [CDD] Done things that got you into trouble with adults, e.g. lying/stealing
- [CDD] Do you have a probation officer / been on probation
- [ODD] Gotten in trouble for getting even by hurting or telling lies about someone or messing up their things
- [PTD] Have you ever seen or heard somebody get killed or get hurt very badly or die?
- [ODD] Gotten in trouble with adults for refusing to do what they told or for breaking rules
- [ODD] Annoy other people on purpose or blame other people for your mistakes
- [PTD] Been in a situation where you thought you or someone close to you was going to be killed/badly hurt
- [ODD] Gotten into trouble with adults eg. by losing temper, arguing, talking back, being grouchy or irritable
- [PTD] Have you ever been in a bad accident?
- [ODD] Often irritable or grouchy, or often angry because you thought that things were unfair



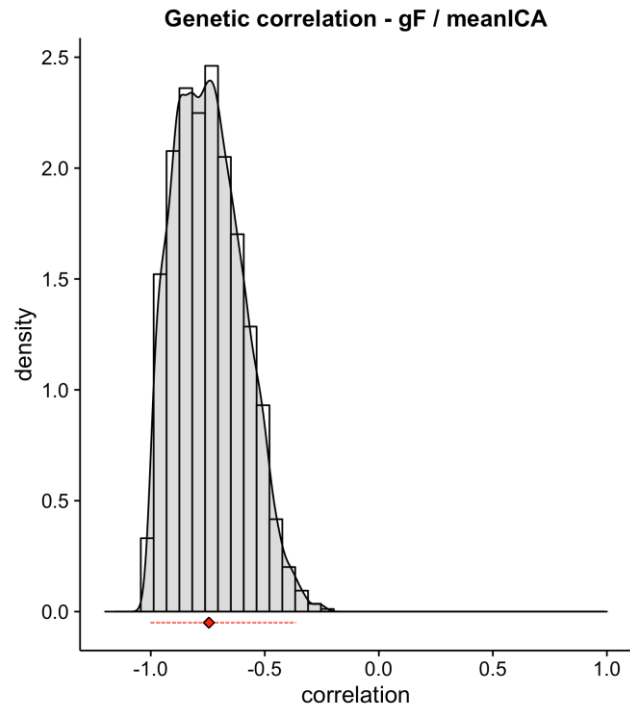
TOP 20 Items loading on clinical IC4

- [SIP] I believe that I have special natural or supernatural gifts beyond my talents and natural strengths.
- [SIP] Hearing faint or clear sounds of people or a person mumbling or talking when there is no one near me.
- [SIP] Felt there could possibly be something interrupting/controlling my thoughts, feelings, or actions.
- [SIP] I think I might feel like my mind is "playing tricks" on me.
- [SIP] May get confused at times whether something I experience/perceive is real or part of my imagination
- [SIP] I think that I might be able to predict the future.
- [SIP] Thought that it might be possible that others can read my mind, or that I can read others' minds
- [SIP] I have had the experience of doing something differently because of my superstitions.
- [SIP] I think that I may hear my own thoughts being said out loud.
- [SIP] I think that I have felt that there are odd or unusual things going on that I can't explain.
- [SIP] I wonder if people may be planning to hurt me or even may be about to hurt me.
- [SIP] I have been concerned that I might be "going crazy."
- [PSY] Have you ever heard voices when no one was there
- [PSY] Have you ever seen visions or seen things which other people could not see
- [PSY] Strange feelings in your body like things were crawling on you or someone touching you
- [SIP] CHANGES IN SPEECH, DISORGANIZED COMMUNICATION, TANGENTIAL SPEECH: Severity Scale
- [SIP] EXPRESSION OF EMOTION: Severity Scale
- [PSY] Has there ever been anything unusual about the way things smelled or felt or looked
- [PSY] Have you ever smelled strange odors other people could not smell?
- [SIP] AVOLITION: Severity Scale



LICA-09 is associated with a wide range of clinical symptoms. Three of the clinical ICA-components showed an association with LICA-09 participant weights. Left panels shows the 20 highest loading clinical questionnaire items for clinical IC2 (anxiety and harm avoidance), IC3 (antisocial and norm violating behavior) and IC4 (psychosis prodrome and psychosis positive symptoms). Warm colors represent higher weights. Questionnaire item text is abbreviated, full information in eTable 2. Right panel displays the LICA-09 participant weights regressed against the clinical ICA scores, adjusted for age, gender and tSNR.

eFigure 9. Distribution of rG Estimates Across Subsamples



Estimate of the genetic correlation (r_G) between Gf and mean-ICA-scores was derived using resampling by drawing 6000 random subsamples ($n=2,746$) from the full sample ($n=2,945$), without replacement. The density plot shows the distribution of r_G -estimates across sub-samples. The mean genetic correlation (r_G) was $r=-.74$, $s.e.=.15$ and the 99% CI was $[-1, -.36]$, indicated by the red diamond and line, respectively.

eTable 1. List of Variables Included in the PCA to Compute the General Cognition Score (Gf)

dbGaP Study Accession	Variable name	Description	Name of test
phv00194764.v1.p1	padt_pc	Percent Correct Responses for All Test Trials, by genus	The Penn Age Differentiation Test
phv00194776.v1.p1	pfmt_ifac_tot	Total Correct Responses for All Test Trials	The Penn Face Memory Test
phv00194780.v1.p1	peit_cr	Total Correct Responses for All Test Trials, by genus	Penn Emotion Identification Test
phv00194802.v1.p1	pwm_t_kiwrdr_tot	Total Correct Responses for All Test Trials	Penn Word Memory Test
phv00194806.v1.p1	pvrt_cr	Total Correct Responses for All Test Trials, by genus	Penn Verbal Reasoning Test
phv00194823.v1.p1	pedt_pc	Percent of Correct Responses for All Test Trials, by genus	Penn Emotion Differentiation Test
phv00194831.v1.p1	mp_mp2rtcr	Median Response Time for Correct Mouse Click Responses	Penn Motor Praxis task
phv00194837.v1.p1	pmat_pc	Percent of Correct Responses for All Test Trials, by genus	Penn Matrix Reasoning Test
phv00194845.v1.p1	tap_tot	Sum of Mean of Tap Responses for Dominant Hand Trials and Mean of Tap Responses of Non-Dominant Hand Trials	Finger Tapping Test
phv00194848.v1.p1	volt_svt	Total Correct Responses for All Test Trial	Visual Object Learning Test
phv00194864.v1.p1	lnb_mcr	Number of Correct Responses to for 1-Back and 2-Back Trials	Letter N-Back Test
phv00194879.v1.p1	pcet_cat	Number of Categories Achieved	Penn Conditional Exclusion Test
phv00194880.v1.p1	pcet_acc2	Calculated Accuracy Measure	Penn Conditional Exclusion Test
phv00194892.v1.p1	pcpt_t_tp	Total of Correct Responses to Number Trials (TP) and Letter Trials (TP)	Penn Continuous Performance Test
phv00194893.v1.p1	pcpt_t_tprt	Median Response Time for Correct Responses to Number Trials (TP) and Letter Trials (TP)	Penn Continuous Performance Test
phv00194900.v1.p1	plot_pc	Percent Correct Responses for All Test Trials, by genus	Penn Line Orientation Test
phv00194903.v1.p1	wrat_cr_raw	WRAT: Wide Range Assessment Test 4 Total Raw Score	Wide Range Assessment Test (Reading/IQ)

eTable 2. List of the 129 Clinical Variables That Entered the Independent Component Analysis

dbGaP Study Accession	Variable name	Item question
phv00194007.v1.p1	INT_TYPE	AP=Adult Proband (ages 18 and up); MP= Middle Proband (ages 11-17); MI=Middle Informant; YPI= Young Proband Informant (for ages 8-10)
Attention Deficit Disorder (ADD)		
phv00194008.v1.p1	ADD011	Did you often have trouble paying attention or keeping your mind on your school, work, chores, or other activities that you were doing?
phv00194009.v1.p1	ADD012	Did you often have problems following instructions and often fail to finish school, work, or other things you meant to get done?
phv00194010.v1.p1	ADD013	Did you often dislike, avoid, or put off school or homework (or any other activity requiring concentration)
phv00194011.v1.p1	ADD014	Did you often lose things you needed for school or projects at home (assignments or books) or make careless mistakes in school work or other activities?
phv00194012.v1.p1	ADD015	Did you often have trouble making plans, doing things that had to be done in a certain kind of order, or that had a lot of different steps?
phv00194013.v1.p1	ADD016	Did you often have people tell you that you did not seem to be listening when they spoke to you or that you were daydreaming?
phv00194017.v1.p1	ADD020	Did you often have difficulty sitting still for more than a few minutes at a time, even after being asked to stay seated, or did you often fidget with your hands or feet or wiggle in your seat or were you "always on the go"?
phv00194018.v1.p1	ADD021	Did you often blurt out answers to other people's questions before they finished speaking or interrupt people abruptly?
phv00194019.v1.p1	ADD022	Did you often join other people's conversations or have trouble waiting your turn (e.g., waiting in line, waiting for a teacher to call on you in class)?
Agoraphobia (AGR)		
phv00194035.v1.p1	AGR001	Have you ever been very nervous or afraid of: being in crowds (for example, a classroom, cafeteria, restaurant, or movie theater)?
phv00194036.v1.p1	AGR002	Have you ever been very nervous or afraid of: going to public places (such as a store or shopping mall)?
phv00194037.v1.p1	AGR003	Have you ever been very nervous or afraid of: being in an open field?
phv00194038.v1.p1	AGR004	Have you ever been very nervous or afraid of: going over bridges or through tunnels?
phv00194039.v1.p1	AGR005	Have you ever been very nervous or afraid of: traveling by yourself?
phv00194040.v1.p1	AGR006	Have you ever been very nervous or afraid of: traveling away from home?
phv00194041.v1.p1	AGR007	Have you ever been very nervous or afraid of: traveling in a car?
phv00194042.v1.p1	AGR008	Have you ever been very nervous or afraid of: using public transportation like a bus or SEPTA?
Conduct disorder (CDD)		
phv00194062.v1.p1	CDD001	Was there ever a time when you often did things that got you into trouble with adults like lying or stealing (something worth more than \$5, from family, others, or stores)?
phv00194064.v1.p1	CDD002	Did you ever skip school, stay out at night later than you were supposed to (more than 2 hours), or run away from home overnight?
phv00194066.v1.p1	CDD003	Did you ever set fires, break into cars, or destroy someone else's property on purpose?
phv00194067.v1.p1	CDD004	Do you have a probation officer or have you ever been on probation?
phv00194068.v1.p1	CDD005	Did you often bully others (hitting, threatening or scaring someone who was younger or smaller), threaten or frighten someone on purpose, or often start physical fights with others?
phv00194069.v1.p1	CDD006	Have you ever been physically cruel to an animal or person (on purpose)?
phv00194070.v1.p1	CDD007	Did you ever: try to hurt someone with a weapon (a bat, brick, broken bottle, knife, or gun)?
phv00194071.v1.p1	CDD008	Did you ever: threatensomeone?
phv00194072.v1.p1	CDD009	Conduct Disorder: Did you ever: hold someone up?
phv00194073.v1.p1	CDD010	Conduct Disorder: Did you ever: attack someone to steal from them?
phv00194074.v1.p1	CDD011	Did you ever: trick or threaten someone into having sex with you, or did anyone ever accuse you of making them do something sexual?
Depression (DEP)		
phv00194091.v1.p1	DEP001	Has there ever been a time when you felt sad or depressed most of the time?
phv00194092.v1.p1	DEP002	Has there ever been a time when you cried a lot, or felt like crying?
phv00194094.v1.p1	DEP004	Has there ever been a time when you felt grouchy, irritable or in a bad mood most of the time; even little things would make you mad?
phv00194096.v1.p1	DEP006	Has there ever been a time when nothing was fun for you and you just weren't interested in anything?
Eating disorder (EAT)		
phv00194133.v1.p1	EAT001	Was there ever a time when you felt really fat or heavy, but other people said that you were too thin?
phv00194139.v1.p1	EAT007	Has there been a time when your eating was out of control - you'd eat a large amount of food in a short period of time and could not stop yourself?
Generalized anxiety (GAD)		
phv00194149.v1.p1	GAD001	Have you ever been a worrier?
phv00194150.v1.p1	GAD002	Did you worry a lot more than most children/people your age?
Mania/Hypomania (MAN)		
phv00194185.v1.p1	MAN001	Have there been times when you were much more active, excited or energetic than usual, had problems sitting still, or needed to move around a lot?
phv00194186.v1.p1	MAN002	Has there ever been a time when you felt so full of energy that you couldn't stop doing things and didn't get tired?
phv00194187.v1.p1	MAN003	Has there ever been a time when you felt like you hardly needed sleep?
phv00194188.v1.p1	MAN004	Have there been times when you kept talking a lot, couldn't stop talking, talked faster than usual, had thoughts faster than usual, or had so many ideas in your head that you could hardly keep track of them?
phv00194189.v1.p1	MAN005	Have you ever had a time when you felt much more happy or excited than you usually do when there was nothing special going on?
phv00194190.v1.p1	MAN006	Have you ever had a time when you felt like you could do almost anything?
phv00194191.v1.p1	MAN007	Has there ever been a time when you felt unusually grouchy, cranky, or irritable; when the smallest things would make you really mad?
Obsessive compulsive disorder (OCD)		
phv00194390.v1.p1	OCD001	Have you ever been bothered by thoughts that don't make sense to you, that come over and over again and won't go away, such as concern with harming others/self?

phv00194391.v1.p1	OCD002	Have you ever been bothered by thoughts that don't make sense to you, that come over and over again and won't go away, such as pictures of violent things?
phv00194392.v1.p1	OCD003	Have you ever been bothered by thoughts that don't make sense to you, that come over and over again and won't go away, such as thoughts about contamination/germs/illness?
phv00194393.v1.p1	OCD004	Have you ever been bothered by thoughts that don't make sense to you, that come over and over again and won't go away, such as fear that you would do something/say something bad without intending to?
phv00194394.v1.p1	OCD005	Have you ever been bothered by thoughts that don't make sense to you, that come over and over again and won't go away, such as feelings that bad things that happened were your fault?
phv00194395.v1.p1	OCD006	Have you ever been bothered by thoughts that don't make sense to you, that come over and over again and won't go away, such as forbidden/bad thoughts?
phv00194396.v1.p1	OCD007	Have you ever been bothered by thoughts that don't make sense to you, that come over and over again and won't go away, such as need for symmetry/exactness?
phv00194397.v1.p1	OCD008	Have you ever been bothered by thoughts that don't make sense to you, that come over and over again and won't go away, such as religious thoughts?
phv00194400.v1.p1	OCD011	Have you ever had to do something over and over again - that would have made you feel really nervous if you couldn't do it, like: cleaning or washing (for example, your hands, house)?
phv00194401.v1.p1	OCD012	Have you ever had to do something over and over again - that would have made you feel really nervous if you couldn't do it, like: counting?
phv00194402.v1.p1	OCD013	Have you ever had to do something over and over again - that would have made you feel really nervous if you couldn't do it, like: checking (for example, doors, locks, ovens)?
phv00194403.v1.p1	OCD014	Have you ever had to do something over and over again - that would have made you feel really nervous if you couldn't do it, like: getting dressed over and over again?
phv00194404.v1.p1	OCD015	Have you ever had to do something over and over again - that would have made you feel really nervous if you couldn't do it, like: going in and out a door over and over again?
phv00194405.v1.p1	OCD016	Have you ever had to do something over and over again - that would have made you feel really nervous if you couldn't do it, like: ordering or arranging things?
phv00194406.v1.p1	OCD017	Have you ever had to do something over and over again - that would have made you feel really nervous if you couldn't do it, like: doing things over and over again at bedtime, like arranging the pillows, sheets, or other things?
phv00194407.v1.p1	OCD018	Have you ever saved up so many things that people complained or they got in the way
phv00194408.v1.p1	OCD019	Do you feel the need to do things just right (like they have to be perfect)?

Oppositional defiant disorder (ODD)

phv00194431.v1.p1	ODD001	Was there a time when you often did things that got you into trouble with adults such as losing your temper, arguing with or talking back to adults, or being grouchy or irritable with them?
phv00194432.v1.p1	ODD002	Was there a time when you often got into trouble with adults for refusing to do what they told you to do or for breaking rules at home/school?
phv00194434.v1.p1	ODD003	Did you often annoy other people on purpose or blame other people for your mistakes (excluding siblings)?
phv00194436.v1.p1	ODD005	Did you ever get into trouble for getting even with other people by doing things to hurt them, telling lies about them, or messing up their things?
phv00194437.v1.p1	ODD006	Were you often irritable or grouchy, or did you often get angry because you thought that things were unfair?

Panic disorder (PAN)

phv00194448.v1.p1	PAN001	Have you ever had an attack like this?
phv00194449.v1.p1	PAN003	Has there ever been a time when all of a sudden you felt very, very scared or uncomfortable - and your chest hurt, you couldn't catch your breath, your heart beat very fast, you felt very shaky, and sweaty/tingly/numb in your hands or feet?
phv00194450.v1.p1	PAN004	Has there ever been a time when all of a sudden, you felt that you were losing control, something terrible was going to happen, that you were going crazy, or going to die?

Specific phobia (PHB)

phv00194468.v1.p1	PHB001	have you ever been very nervous or afraid of animals or bugs, like dogs, snakes, or spiders?
phv00194469.v1.p1	PHB002	have you ever been very nervous or afraid of being in really high places, like a roof or tall building?
phv00194470.v1.p1	PHB003	have you ever been very nervous or afraid of water or situations involving water, such as a swimming pool, lake, or ocean?
phv00194471.v1.p1	PHB004	have you ever been very nervous or afraid of storms, thunder, or lightning?
phv00194472.v1.p1	PHB005	have you ever been very nervous or afraid of doctors, needles, or blood?
phv00194473.v1.p1	PHB006	have you ever been very nervous or afraid of closed spaces, like elevators or closets?
phv00194474.v1.p1	PHB007	have you ever been very nervous or afraid of flying or airplanes?
phv00194475.v1.p1	PHB008	have you ever been very nervous or afraid of any other things or situations?

Psychosis (PSY)

phv00194490.v1.p1	PSY001	Have you ever heard voices when no one was there?
phv00194507.v1.p1	PSY020	Has there ever been anything unusual about the way things smelled or felt or looked?
phv00194518.v1.p1	PSY029	Have you ever seen visions or seen things which other people could not see?
phv00194531.v1.p1	PSY050	Have you ever smelled strange odors other people could not smell?
phv00194539.v1.p1	PSY060	Have you ever had strange feelings in your body like things were crawling on you or someone touching you and nothing or no one was there?
phv00194546.v1.p1	PSY071	Have you ever believed in things and later found out they weren't true, like people being out to get you, or talking about you behind your back, or controlling what you do or think?

Post-traumatic stress (PTD)

phv00194609.v1.p1	PTD001	Have you ever been in a flood or a tornado or an earthquake or a hurricane or some other natural disaster where you thought you were going to die or be seriously hurt?
phv00194610.v1.p1	PTD002	Have you ever been in a situation where you thought you or someone close to you was going to be killed or be hurt very badly (e.g. family violence)?
phv00194611.v1.p1	PTD003	Have you ever been attacked by somebody or badly beaten?
phv00194612.v1.p1	PTD004	Have you ever been very upset by someone forcing you to do something sexual?
phv00194614.v1.p1	PTD006	Have you ever been threatened with a weapon?
phv00194615.v1.p1	PTD007	Have you ever been in a bad accident?
phv00194616.v1.p1	PTD008	Other than television or at the movies, have you ever seen or heard somebody get killed or get hurt very badly or die?
phv00194617.v1.p1	PTD009	Have you ever been very upset by seeing a dead body or by seeing pictures of the dead body of somebody you knew well?

General probes (SCR)

phv00194639.v1.p1	SCR001	Have you ever talked to a counselor, psychologist, social worker, psychiatrist or some other professional about your feelings or problems with your mood or behaviors?
phv00194644.v1.p1	SCR006	Are you currently taking medication because of your emotions and/or behaviors?
phv00194645.v1.p1	SCR007	Have you ever had to go to a hospital and stay overnight because of problems with your mood, feelings, or how you were acting?

Separation anxiety (SEP)

phv00194654.v1.p1	SEP500	Since you were 5 years old, has there ever been a time when you had a lot of worries about your (attachment figures) and were very upset or got sick (for example, felt sick to your stomach, headaches, thrown-up) when you were away from him/her?
phv00194656.v1.p1	SEP508	Has there ever been a time when you wanted to stay home from school or not go to other places (for example, sleep-overs) without your (attachment figures)?
phv00194657.v1.p1	SEP509	When you knew that you were going to be away from home or (attachment figure(s)), did you get very upset and worry (e.g., when you learned (attachment figure(s)) were going on an upcoming trip or night out)?
phv00194658.v1.p1	SEP510	Did you ever worry/have bad dreams about something terrible happening to you or your (attachment figures) so that you would not see them again?
phv00194659.v1.p1	SEP511	Were you scared to be alone in your room (or any place in your house) or did you need your (attachment figure(s)) to stay with you while you fell asleep?

Structural interview for prodromal symptoms (SIP)

phv00194672.v1.p1	SIP001	TROUBLE WITH FOCUS AND ATTENTION Severity Scale
phv00194674.v1.p1	SIP003	I think that I have felt that there are odd or unusual things going on that I can't explain.
phv00194675.v1.p1	SIP004	I think that I might be able to predict the future.
phv00194676.v1.p1	SIP005	I may have felt that there could possibly be something interrupting or controlling my thoughts, feelings, or actions.
phv00194677.v1.p1	SIP006	I have had the experience of doing something differently because of my superstitions.
phv00194678.v1.p1	SIP007	I think I may get confused at times whether something I experience or perceive may be real or may be just part of my imagination or dreams.
phv00194679.v1.p1	SIP008	I have thought that it might be possible that other people can read my mind, or that I can read others' minds
phv00194680.v1.p1	SIP009	I wonder if people may be planning to hurt me or even may be about to hurt me.
phv00194681.v1.p1	SIP010	I believe that I have special natural or supernatural gifts beyond my talents and natural strengths.
phv00194682.v1.p1	SIP011	I think I might feel like my mind is "playing tricks" on me.
phv00194683.v1.p1	SIP012	I have had the experience of hearing faint or clear sounds of people or a person mumbling or talking when there is no one near me.
phv00194684.v1.p1	SIP013	I think that I may hear my own thoughts being said out loud.
phv00194685.v1.p1	SIP014	I have been concerned that I might be "going crazy."
phv00194698.v1.p1	SIP027	Do people ever tell you that they can't understand you?
phv00194699.v1.p1	SIP028	Do people ever seem to have difficulty understanding you?
phv00194700.v1.p1	SIP030	Changes in speech, disorganized communication, tangential speech Severity Scale
phv00194702.v1.p1	SIP032	Do you ever feel a loss of sense of self or feel disconnected from yourself or your life?
phv00194703.v1.p1	SIP033	Has anyone pointed out to you that you are less emotional or connected to people than you used to be?
phv00194704.v1.p1	SIP035	Changes in perception of self, others, or the world in general: Severity Scale
phv00194706.v1.p1	SIP037	EXPRESSION OF EMOTION: Severity Scale
phv00194707.v1.p1	SIP038	Within the past 6 months, are you having a harder time getting your work or schoolwork done?
phv00194708.v1.p1	SIP039	Within the past 6 months, are you having a harder time getting normal activities done?
phv00194709.v1.p1	SIP041	Occupational Functioning Severity Scale
phv00194711.v1.p1	SIP043	Avolition Severity Scale

Social Anxiety (SOC)

phv00194713.v1.p1	SOC001	was there ever a time in your life when you felt afraid or uncomfortable or really, really shy with people, like meeting new people, going to parties, or eating or drinking, writing or doing homework in front of others?
phv00194714.v1.p1	SOC002	was there ever a time in your life when you felt afraid or uncomfortable talking on the telephone or with people your own age who you don't know very well?
phv00194715.v1.p1	SOC003	was there ever a time in your life when you felt afraid or uncomfortable when you had to do something in front of a group of people, like speaking in class?
phv00194716.v1.p1	SOC004	was there ever a time in your life when you felt afraid or uncomfortable acting, performing, giving a talk/speech, playing a sport or doing a musical performance, or taking an important test or exam (even though you studied enough)?
phv00194717.v1.p1	SOC005	was there ever a time in your life when you felt afraid or uncomfortable because you were the center of attention and were concerned something embarrassing might happen and you felt very afraid or felt uncomfortable?

Depression (DEP)

phv00194734.v1.p1	SUI001	Have you ever thought a lot about death or dying?
phv00194735.v1.p1	SUI002	Have you ever thought about killing yourself?