Supplementary Table 1: Summary of the included cohorts. Several of the cohorts are under ongoing data collection, thus the subject numbers provided in the reference publications may not match those in this article.

Cohort	Source	Comment	Reference (table specific numbering)
ABIDE1	http://fcon_1000.projects.nitrc.org/	Primary support for the work by Adriana Di Martino was provided by the NIMH (K23MH087770) and the Leon Levy Foundation. Primary support for the work by Michael P. Milham and the INDI team was provided by gifts from Joseph P. Healy and the Stavros Niarchos Foundation to the Child Mind Institute, as well as by an NIMH award to MPM (R03MH096321).	1
ABIDE2	http://fcon_1000.projects.nitrc.org/	Primary support for the work by Adriana Di Martino and her team was provided by the National Institute of Mental Health (NIMH 5R21MH107045). Primary support for the work by Michael P. Milham and his team provided by the National Institute of Mental Health (NIMH 5R21MH107045); Nathan S. Kline Institute of Psychiatric Research). Additional Support was provided by gifts from Joseph P. Healey, Phyllis Green and Randolph Cowen to the Child Mind Institute.	2
ABM	Authors	ABM was supported by the Research Council of Norway (grant number 229135) and Health South East Research Funding Agency (grant number 2015052)	3
ADDNEUROMED	Authors	AddNeuroMed consortium was led by Simon Lovestone, Bruno Vellas, Patrizia Mecocci, Magda Tsolaki, Iwona Kłoszewska, Hilkka Soininen. Their work was supported by InnoMed (Innovative Medicines in Europe), an integrated project funded by the European Union of the Sixth Framework program priority (FP6-2004- LIFESCIHEALTH-5)	4, 5
ADHD200	http://fcon_1000.projects.nitrc.org/	F. Xavier Castellanos, David Kennedy, Michael Milham, and Stewart Mostofsky are responsible for the initial conception of the ADHD-200 Consortium. Consortium steering committee includes Jan Buitelaar, F. Xavier Castellanos, Dan Dickstein, Damien Fair, David Kennedy, Beatriz Luna, Michael Milham (Project Coordinator), Stewart Mostofsky, and Julie Schweitzer. Data aggregation and organization was coordinated by the INDI team, which included Saroja Bangaru, David Gutman, Maarten Mennes, and Michael Milham. Web infrastructure and data storage were coordinated by Robert Buccigrossi, Albert Crowley, Christian Hasselgrove, David Kennedy, Kimberly Pohland, and Nina Preuss. The ADHD-200 Global Competition Coordinators were Damien Fair (Chair of Selection Committee, Editor in Chief for Global Competition Special issue) and Michael Milham	6, 7
ADHDWUE	Authors	Primary support for the study was provided by the German Research Foundation, grant number DFG KFO 125 1/2 and Pa566/7-3. KPL and his team are supported by the Deutsche Forschungsgemeinschaft (DFG: CRU 125, CRC TRR 58 A1/A5), European Community (EC: AGGRESSOTYPE FP7/No. 602805; Fritz Thyssen Foundation (No. 10.13.1185), ERA-Net NEURON/RESPOND, No. 01EW1602B, and 5-100 Russian Academic Excellence Project.	8, 9
ADNI1 ADNI2	http://adni.loni.usc.edu/ http://adni.loni.usc.edu/	Data used in the preparation of this article were obtained from the Alzheimer's Disease Neuroimaging Initiative (ADNI) database (adni.loni.usc.edu). The ADNI was launched in 2003 as a public-private partnership, led by Principal Investigator Michael W. Weiner, MD. The primary goal of ADNI has been to test whether serial magnetic resonance imaging (MRI), positron emission tomography (PET), other biological markers, and clinical and neuropsychological assessment can be combined to measure the progression of mild cognitive impairment (MCI) and early Alzheimer's disease (AD). For up-to-date information, see www.adni-info.org. Data collection and sharing for this project was funded by the Alzheimer's Disease Neuroimaging Initiative (ADNI) (National Institutes of Health Grant U01 AG024904) and DOD ADNI (Department of Defense award number W81XWH-12-2-0012). ADNI is funded by the National Institute on Aging, the National Institute of Biomedical Imaging and Bioengineering, and through generous contributions from the following: AbbVie, Alzheimer's Association; Alzheimer's Drug Discovery Foundation; Araclon Biotech; BioClinica, Inc.; Biogen; Bristol-Myers Squibb Company; CereSpir, Inc.; Cogstate; Eisai Inc.; Elan Pharmaceuticals, Inc.; Eli Lilly and Company; EuroImmun; F. Hoffmann-La Roche Ltd and its affiliated company Genentech, Inc.; Fujirebio; GE Healthcare; IXICO Ltd.; Janssen Alzheimer Immunotherapy Research & Development, LLC.; Johnson &	10, 11

		Johnson Pharmaceutical Research & Development LLC.; Lumosity; Lundbeck; Merck & Co., Inc.; Meso Scale Diagnostics, LLC.; NeuroRx Research; Neurotrack Technologies; Novartis Pharmaceuticals Corporation; Pfizer Inc.; Piramal Imaging; Servier; Takeda Pharmaceutical Company; and Transition Therapeutics. The Canadian Institutes of Health Research is providing funds to support ADNI clinical sites in Canada. Private sector contributions are facilitated by the Foundation for the National Institutes of Health (www.fnih.org). The grantee organization is the Northern California Institute for Research and Education, and the study is coordinated by the Alzheimer's Therapeutic Research Institute at the University of Southern California. ADNI data are disseminated by the Laboratory for Neuro Imaging at the University of Southern California.	
BETULA	Authors	Betula was supported by a Wallenberg Scholar Grant (KAW).	12
CAMCAN	https://camcan-archive.mrc-cbu.cam.ac.uk/dataaccess/	Data collection and sharing for this project was provided by the Cambridge Centre for Ageing and Neuroscience (CamCAN). CamCAN funding was provided by the UK Biotechnology and Biological Sciences Research Council (grant number BB/H008217/1), together with support from the UK Medical Research Council and University of Cambridge, UK.	13, 14
CIMH	Authors	CIMH was supported by the Deutsche Forschungsgesellschaft (DFG, projects ZI1253/3-1, ZI1253/3-2, KI 576/14-2, ME 1591/6-2) and the European Community's Seventh Framework Programme (FP7/2007–2013) grant agreement #602450 (IMAGEMEND)	15, 16
CORR	http://fcon_1000.projects.nitrc.org/		17
DLBS	http://fcon_1000.projects.nitrc.org/		18
DS000030 (CNP)	https://openfmri.org/	DS* data sets were obtained from the OpenfMRI database.	19, 20
DS000115 (CCNMD)	https://openfmri.org/	*DS000030* work was supported by the Consortium for Neuropsychiatric Phenomics (NIH Roadmap for Medical Research grants UL1-DE019580, RL1MH083268, RL1MH083269, RL1DA024853, RL1MH083270, RL1LM009833, PL1MH083271, and PL1NS062410). *DS000115* was supported through NIH Grants P50 MH071616 and R01 MH56584. *DS000119* was supported by the National Institutes of Mental Health (NIMH RO1 MH067924). Enami Yasui provided assistance with data collection. *DS000171*: Trisha Patrician and Natalie Stroupe assisted with screening of participants. Allan Schmitt and Franklin Hunsinger collected the MR data.	21, 22
DS000119	https://openfmri.org/		23
DS000171	https://openfmri.org/		24
DS000202	https://openfmri.org/		25, 26
DS000222	https://openfmri.org/		27
HCP	https://www.humanconnectome.org/	Data were provided [in part] by the Human Connectome Project, MGH-USC Consortium (Principal Investigators: Bruce R. Rosen, Arthur W. Toga and Van Wedeen; U01MH093765) funded by the NIH Blueprint Initiative for Neuroscience Research grant; the National Institutes of Health grant P41EB015896; and the Instrumentation Grants S10RR023043, 1S10RR023401, 1S10RR019307.	28
HUBIN	Authors	This study was supported by the Swedish Research Council (2006-2992, 2006-986, K2007-62X-15077-04-1, 2008-2167, K2008-62P-20597-01-3. K2010-62X-15078-07-2, K2012-61X-15078-09-3, 2017-00949), the regional agreement on medical training and clinical research between Stockholm County Council and the Karolinska Institutet, the Knut and Alice Wallenberg Foundation, and the HUBIN project.	29
HUNT	https://www.ntnu.edu/hunt	The HUNT Study is a collaboration between HUNT Research Centre, Faculty of Medicine and Health Sciences, Norwegian University of Science and Technology (NTNU), Nord-Trøndelag County Council, Central Norway Regional Health Authority, and the Norwegian Institute of Public Health. HUNT-MRI and the genetic analysis were funded by grants from the Liaison Committee between the Central Norway Regional Health Authority and NTNU to principal investigator Asta Håberg, and the Norwegian National Advisory Unit for functional MRI. We thank the HUNT MRI participants, MRI technicians and the Department of Diagnostic Imaging at Levanger Hospital, Professor Lars Jacob Stovner (NTNU) and the administrative staff at HUNT.	30, 31
IXI	http://brain-development.org/ixi-dataset/		32
KASP	Authors	KaSP was supported by grants from the Swedish Medical Research Council (SE: 2009-7053; 2013-2838; SC: 523-2014-3467), the Swedish Brain Foundation, Åhlén-siftelsen, Svenska Läkaresällskapet, Petrus och Augusta Hedlunds Stiftelse, Torsten Söderbergs Stiftelse, the AstraZeneca-Karolinska Institutet Joint Research Program in Translational Science, Söderbergs Königska Stiftelse, Professor Bror Gadelius Minne, Knut och Alice Wallenbergs stiftelse, Stockholm County Council (ALF and PPG), Centre for Psychiatry Research, KID-funding from the Karolinska Institutet.	33, 34

MALTOSLO	Authors	The study was funded by the South-Eastern Norway Regional Health Authority (2015-2015078), Oslo University Hospital, a research grant from Mrs. Throne-Holst, and the Ebbe Frøland foundation.	35, 36
NCNG	Authors	The sample collection was supported by grants from the Bergen Research Foundation and the University of Bergen, the Dr Einar Martens Fund, the K.G. Jebsen Foundation, the Research Council of Norway, to SLH, VMS, AJL, and TE. The authors thank Dr. Eike Wehling for recruiting participants in Bergen, and Professor Jonn-Terje Geitung and Haraldplass Deaconess Hospital for access to the MRI facility. Additional support by RCN grants 177458/V50 and 231286/F20.	37
NIMAGE	Authors	This project was supported by grants from National Institutes of Health (grant R01MH62873 to SV Faraone) for initial sample recruitment, and from NWO Large Investment (grant 1750102007010 to JK Buitelaar), NWO Brain & Cognition (grant 433-09-242 to JK Buitelaar), ZonMW Grant 60-60600-97-193, and grants from Radboud University Medical Center, University Medical Center Groningen, Accare, and VU University Amsterdam for subsequent assessment waves. NeuroIMAGE also receives funding from the European Community's Seventh Framework Programme (FP7/2007 – 2013) under grant agreements n° 602805 (Aggressotype), n° 278948 (TACTICS), and n° 602450 (IMAGEMEND), and from the European Community's Horizon 2020 Programme (H2020/2014 – 2020) under grant agreements n° 643051 (MiND) and n° 667302 (CoCA).	38
NORCOG	Authors	The Norwegian register of persons assessed for cognitive symptoms (NorCog) includes clinical, imaging and biological data from memory clinics in Norway (https://www.aldringoghelse.no/norkog/). The register is owned by Oslo University Hospital and administered by Norwegian National Advisory Unit on Ageing and Health.	39
OASIS	http://www.oasis-brains.org/	The study was supported by grants P50 AG05681, P01 AG03991, R01 AG021910, P50 MH071616, U24 RR021382, R01 MH56584.	40, 41
PING	http://pingstudy.ucsd.edu/	Data used in the preparation of this article were obtained from the Pediatric Imaging, Neurocognition and Genetics (PING) Study database (www.chd.ucsd.edu/research/ping-study.html, now shared through the NIMH Data Archive (NDA)). PING was a multisite, cross-sectional study that recruited more than 1,700 participants aged 3 to 20 years. The study was supported by award number RC2DA029475 from the National Institute on Drug Abuse with additional support for data sharing provided by the Eunice Kennedy Shriver National Institute of Child Health & Human Development under award number R01HD061414. A list of participating sites and study investigators can be found at https://ping-dataportal.ucsd.edu/sharing/Authors10222012.pdf. PING investigators designed and implemented the study and/or provided data but did not necessarily participate in analysis or writing of this report. This publication is solely the responsibility of the authors and does not necessarily represent the views of the National Institutes of Health or PING investigators	42
PNC	https://www.med.upenn.edu	Support for the collection of the data sets was provided by grant RC2MH089983 awarded to R. Gur and RC2MH089924 awarded to H. Hakonarson	43, 44
RSI-MS	Authors	Data collection in this MS cohort was supported by the South-Eastern Norway Regional Health Authority project 39569, Research Council of Norway grant 240102 and 240102, Oslo MS Society, Odd Fellow's Society for MS research. Healthy controls were sampled from the TOP study (same scanner).	45
SALD	http://fcon_1000.projects.nitrc.org/		46
SCHIZCONNECT1	http://schizconnect.org/	Data used in preparation of this article were obtained from the SchizConnect (http://schizconnect.org) database. As such, the investigators within SchizConnect contributed to the design and implementation of SchizConnect and/or provided data but did not participate in analysis or writing of this report. Data collection and sharing for this project was funded by NIMH cooperative agreement 1U01 MH097435 *SCHIZCONNECT1* comprised BrainGluSchi, COBRE and MCIC samples (COINS). *SCHIZCONNECT2* comprised NUSDAST and NUNDA samples. Duplicate subjects in different sources were excluded. The respective samples were supported by the following grants: *BrainGluSchi*: NIMH R01MH084898-01A1. *COBRE*: 5P20RR021938 /P20GM103472 from the NIH to Dr. Vince Calhoun. *MCIC*: Department of Energy under Award Number DE-FG02-08ER64581. *NUSDAST*: NIMH Grant 1R01 MH084803. *NUNDA*: MH056584.	47-52
SCHIZCONNECT2	http://schizconnect.org/		

SCORE	Authors	This work was supported by the Swiss National Science Foundation (grant No. 119382)	53, 54
SLIM	http://fcon_1000.projects.nitrc.org/	Support was provided by grant numbers 31271087; 31470981; 31571137, 31500885, SWU1509383, SWU1509451, cstc2015jcyjA10106, 151023, 2015M572423, 2015M580767, Xm2015037, 14JJD880009	55, 56
STROKEMRI/ MOT	Authors	Supported by the Research Council of Norway (249795, 248238), the South-Eastern Norway Regional Health Authority (2014097, 2015044, 2015073, 2016083), and the Norwegian ExtraFoundation for Health and Rehabilitation (2015/FO5146).	57
TOP	Authors	The work was funded by the Research Council of Norway (213837, 223273, 204966/F20, 213694, 229129, 249795/F20, 248778), the South-Eastern Norway Regional Health Authority (2013-123, 2014-097, 2015-073, #2017-112) and Stiftelsen Kristian Gerhard Jebsen.	58-61
UBA	Authors	European Community‘s Seventh Framework Programme (FP7/2007–2013) grant agreement #602450 (IMAGEMEND)	62
UKBB	https://www.ukbiobank.ac.uk/	This research has been conducted using the UK Biobank Resource (access code 27412). All subjects with a primary or secondary ICD-10 diagnosis with a mental or neurological disorder were excluded prior to analysis and the remaining subjects included as healthy controls.	63
UNIBA	Authors	This work was supported by a “Capitale Umano ad Alta Qualificazione” grant by Fondazione Con Il Sud awarded to Alessandro Bertolino and by a Hoffmann-La Roche Collaboration Grant awarded to Giulio Pergola. This project has received funding from the European Union Seventh Framework Programme for research, technological development and demonstration under grant agreement no. 602450 (IMAGEMEND). This paper reflects only the author's views and the European Union is not liable for any use that may be made of the information contained therein.	64

Supplementary Table 3: Summary of scanner protocols for each cohort.

Cohort	**Contains data used in test samples**	**Number of scanners/ protocols included**	**Parameters**	**Reference** (table specific numbering)
ABIDE1	ASD	20	http://fcon_1000.projects.nitrc.org/indi/abide/scan_params/	1
ABIDE2	ASD	16		2
ABM	MDD	2	Philips 3T Ingenia: TR=3000ms, TE=3.61ms, FA=8° (2x same scanner and protocol, except for sagittal phase-encoding vs. axial phase encoding)	3
ADDNEUROMED	DEM, MCI	6	GE 1.5T: TR=8.59, TE=3.8, FA=8° GE 1.5T: TR=10.4, TE=4.09, FA=9° GE 1.5T: TR=10.2, TE=4.1, FA=8° GE 1.5T: TR=10.2, TE=4.1, FA=8° Siemens 1.5T: TR=2400, TE=3.5, FA=8° Picker 1.5T: TR=13, TE=3, FA=20°	4, 5
ADHD200	ADHD	6	Philips 1.5 T Gyroscan: TR=8ms, TE=3.76ms, FA=8°; Siemens 3T Allegra: TR=2530ms, TE=3.25ms, FA=8°; Siemens 3T Trio: TR=2300ms, TE=3.58ms, 10°; Siemens 3T Trio: TR=1700ms, TE=3.92ms, FA=12° Siemens 3T Trio: TR=2100ms, TE=3.43ms, FA=8° Siemens 3T Trio: TR=2400ms, TE=3.08ms, FA=8°	6, 7
ADHDWUE	ADHD	1	Siemens 1.5T Avanto: TR=2250ms, TE=3.93ms, FA=8°	8, 9
ADNI1	DEM, MCI	54	http://adni.loni.usc.edu/methods/mri-tool/mri-analysis/	10, 11
ADNI2	DEM, MCI	53		
BETULA	-	1	GE 3T: TR=8.2ms, TE=3.2ms, FA=12°	12
CAMCAN	-	1	Siemens 3T Trio: TR=2250ms, TE=2.99ms, FA=9°	13, 14
CIMH	SZ	1	Siemens 3T Trio: TR=1570ms, TE=2.75ms, FA=15°	15, 16
CORR	-	34	http://fcon_1000.projects.nitrc.org/indi/CoRR/html/_static/scan_parameters/	17
DLBS	-	1	Philips 3T: TR=8.135ms, TE=3.7ms, FA=18°	18
DS000030 (CNP)	BD, SZ, ADHD	2	Siemens 3T Trio: TR=1900ms, TE=2.26ms, FA=12°	19, 20
DS000119		1	Siemens 3T Allegra: TR=1570ms, TE=3.04ms, FA=8°	23
DS000171	MDD	1	Siemens 3T Skyra: TR=2300ms, TE=2.01ms, FA=9°	24
DS000202	-	1	Philips 3T Achieva: TR=7.6ms, TE=3.7ms, FA=8°	25, 26
DS000222	-	1	Siemens 3T Trio: TR=1550ms, TE=2.34ms, FA=9°	27

HCP	-	1	Customized 3T scanner: TR=2400ms, TE=2.14, FA=8°	28
HUBIN	SZ	1	GE 1.5 T signa Echo-speed: TR=24ms, TE=6.0ms, FA=35°	29
HUNT	-	1	GE 1.5T Signa HDx: TR=10.2ms, TE=4.1ms, FA=10°	30, 31
IXI	-	3	Philips 3T: TR=9.6ms, TE=4.6ms, FA=8° Philips 1.5T: TR=9.8ms, TE=4.6ms, FA=8° GE 1.5T: TR=6.0ms, TE=2.5ms	32
KASP	PSYMIX, SZ	1	GE 3T Discovery MR750: TR=7.91ms, TE=3.06ms, FA=12°	33, 34
MALTOSLO	BD	1	Philips 3T Achieva: TR=8.4ms, TE=2.3ms, FA=7°	35, 36
NCNG	-	3	Siemens 1.5T Sonata: TR=2730ms, TE=3.43ms, FA=7° Siements 1.5T Avanto: TR=2400ms, TE=3.61ms, FA=8° GE 1.5T Signa: TR=9.5ms, TE=3.1ms, FA=7°	37
NIMAGE	ADHD	2	Siemens 1.5T Sonata: TR= 2730ms, TE=2.95ms, FA=7° Siemens 1.5T Avanto: TR= 2730ms, TE=2.95ms, FA=7°	38
NORCOG	DEM, MCI	3	GE 3T Signa HDxT: TR=7.8ms, TE=2.956ms, FA=12° (one subset with HNS coil, one subset with 8HRBRAIN coil) GE 3T Discovery GE750: TR=8.16ms, TE=3.18ms, FA=12°	39
OASIS	DEM, MCI	1	Siemens 1.5T Vision: TR=9.7ms, TE=4ms, FA=10°	40, 41
PING	-	11	http://pingstudy.ucsd.edu/resources/neuroimaging-cores.html	42
PNC	-	1	Siemens 3T Trio: TR=1810ms, TE=3.51ms, FA=9°	43, 44
SALD	-	1	Siemens 3T Trio: TR=1900ms, TE=2.52ms, FA=9°	46
SCHIZCONNECT1 (BrainGluSchi, COBRE, MCIC)	SZ	5	Siemens 3T Trio: 2530ms, TE=TE = 1.64, 3.5, 5.36, 7.22, 9.08ms, FA=7° Siemens 1.5T Sonata: TR=12ms, TE=4.76, FA=20° Siemens 3T SMS Trio: TR=2530ms, TE=3.81ms, FA=7° Siemens 1.5T Avanto: TR=12ms, TE=4.76ms, FA=20°	47-52
SCHIZCONNECT2 (NUNDA, NUSDAST)	SZ	2	Siemens 3T Trio: TR=2400ms, TE=3.16ms, FA=8° Siemens 1.5T Vision: TR=9.7ms, TE=4ms, FA=10°	
SCORE	PSYMIX, SZRISK	1	Siemens 1.5T Vision: TR=9.7ms, TE=4ms, FA=12°	53, 54
SLIM	-	1	Siemens 3T Trio: TR=1900ms, TE=2.52ms, FA=9°	55, 56
STROKEMRI/ MOT	-	2	GE 3T Signa HDxT: TR=7.8ms, TE=2.956ms, FA=12° GE 3T Discovery GE750: TR=8.16ms, TE=3.18ms, FA=12°	57
TOP/ RSI-MS	MS, BD, PSYMIX, SZ, SZRISK	4	Siemens 1.5T Sonata: TR=2730ms, TE=3.93ms, FA=7° GE 3T Signa HDxT: TR=7.8ms, TE=2.956ms, FA=12° (one subset with HNS coil, one subset with 8HRBRAIN coil) GE 3T Discovery GE750: TR=8.16ms, TE=3.18ms, FA=12°	45, 58-61
UBA	-	1	Siemens 3T Verio: TR=2000ms, TE=3.37ms, FA=8°	62

UKBB	-	3	Siemens 3T Skyra: TR=2000ms, TE=2.01ms, FA=8° (3 identical scanning sites)	[63]
UNIBA	SZ	1	GE 3T Signa: TR=25ms, TE=3ms, FA=6°	[64]

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