Data Supplement for Kendler, The Structure of Psychiatric Science. Am J Psychiatry (doi: 10.1176/appi.ajp.2014.13111539)

Contents

Appendix 1

The 12 journals covered in the literature review are listed below. I did not include studies that examined treatment or predicted the clinical features or outcome of individuals who were already ill. I focused on the main finding in each article and identified the key predictor variables and the dependent measure. I did not attempt to verify that a strong causal case could be made for the predictor variables.

Acta Psychiatrica Scandinavica
American Journal of Psychiatry
Biological Psychiatry
British Journal of Psychiatry
JAMA Psychiatry
Journal of Nervous and Mental Disease
Journal of Abnormal Psychology
Journal of Affective Disorders
Molecular Psychiatry
Psychological Medicine
Schizophrenia Bulletin
Social Psychiatry and Psychiatric Epidemiology

Appendix 2

Summaries of Studies Examining the Etiology of Psychiatric Illness or Key Psychiatric Traits That Appeared in the First Four 2013 Issues of Twelve Representative Psychiatric and Psychology Journals

JP=JAMA Psychiatry; AJP=American Journal of Psychiatry; BJP=British Journal of Psychiatry; PM=Psychological Medicine; APS=Acta Psychiatrica Scandinavica; JAP=Journal of Abnormal Psychology; SB=Schizophrenia Bulletin; MP=Molecular Psychiatry; JAD=Journal of Affective Disorders; JNMD=Journal of Nervous and Mental Disease; SP=Social Psychiatry and Psychiatric Epidemiology. Biological Psychiatry had no relevant articles in their first 2013 issues.

First issue 2013

First Author	Journal	Key Predictors	Disorder/Trait of Interest	Study Number	Level(s)	Within or Between Levels	Results
Kubota (1)	JP	Thalamo-cortical connectivity in MRI	Schizophrenia	1	B3	Within	Reduced right thalamo-cortical connectivity
Georgiades (2)	JP	Autism traits	Autism Spectrum	2	B4/E2	Within	Autistic traits seen by 12 months of age in 19% of high risk siblings
Suzuki (3)	JP	Migroglia activation in brain assessed by PET	Autism Spectrum	3	B2	Within	Excess microglial activation in multiple brain regions in autism spectrum subjects
Ecker (4)	JP	Brain surface anatomy assessed by MRI	Autism Spectrum	4	B3	Within	Subjects with autism spectrum have significant differences in cortical volume, thickness and surface area.
Volk (5)	JP	Air pollution	Autism	5	E3	Within	Exposure to air pollution during pregnancy and 1st year of live associated with autism.

Kendler (6)	JP	Patterns of criteria endorsement between and within twin pairs	Conduct Disorder	6	B4, E2, E1	Between	DSM Criteria for CD reflect 2 genetic and 1 shared environmental liability factors.
Haghighi (7)	JP	Prenatal exposure to cigarette smoking, diet and amygdala volume	Obesity	7	E1, B5, B3	Between	Prenatal exposure to smoking increases fat preference and risk for obesity via structural variation in the amygdala
Zanarini (8)	AJP	Defense Mechanisms	Borderline Personality Disorder	8	P3	Within	Borderline patients had lower mature and higher immature defenses than other personality disorder patients.
Brambilla (9)	BJP	Hippocampal anatomy	Schizophrenia	9	B3	Within	Within schizophrenic subjects, shape deflation was associated with poorer clinical and social functioning.
Wojcik (10)	PM	Birth Weight	Depression	10	B5	Within	A weak association was observed between low birth weight and depression
Cents (11)	PM	Trajectories of Maternal Depressive Symptoms	Child Problem Behavior	11	E2, B4	Within	Maternal trajectories predicted child problem behaviors
Rawal (12)	PM	Reward Responsiveness	Depression	12	P1	Within	Abnormalities in reward processing predicted depression severity and onset in adolescence.
Sörberg (13)	PM	Cognitive Ability	Suicide	13	P1	Within	Low IQ predicted suicide and suicide attempt
Sareen (14)	PM	Adverse Childhood Experiences	Mood and anxiety disorders	14	E1	Within	Adverse childhood events were associated with mood and anxiety disorders.

Blair (15)	PM	Recruitment of frontal and parietal cortex and attention measures in presence of emotional distractors	Post-traumatic Stress Disorder	15	B3, P1	Between	Heightened emotional responsiveness in PTSD patients can interfere with attention mediated by poorer recruitment of key cortical regions.
Wynn (16)	PM	Event-related potentials and facial affect processing	Schizophrenia and bipolar illness	16	B3, P1	Between	Schizophrenia patients had lower emotion identification accuracy, smaller N170 accuracy and longer N170 latency.
Seidman (17)	PM	Neuropsychological performance at age 7 and family history	Schizophrenia and bipolar diagnosis in adulthood	17	P1,B4	Between	Premorbid neuropsychological defects are found in individuals who later develop schizophrenia especially in those with a positive family history.
Madre (18)	PM	fMRI during performance of a neuropsychological test (n-back)	Schizoaffective Disorder	18	B3, P1	Between	Schizoaffective patients showed a pattern of reduced frontal cortical activation and this persisted controlling for performance.
Liddle (19)	PM	Auditory detection task during fMRI	Schizophrenia and unaffected siblings	19	B3, P1, B4	Between	Inefficient cerebral cortical recruitment was a vulnerability marker for schizophrenia
Larrson (20)	PM	Patterns of criteria endorsement between and within twin pairs	ADHD	20	B4, E2, E1	Between	In adults, self-report ADHD symptoms are moderately heritable.

Cho (21)	PM	Urine cotinine levels and continuous performance test variables	ADHD symptoms	21	B5, P1	Between	The association between nicotine exposure and ADHD symptoms is mediated by impairments in attention and inhibitory control.
Varghese (22)	APS	Mother-child resemblance	Delusion-like experiences	22	B4/E2	Within	Mother and child scores for delusion-like experiences were positively correlated.
Klein (23)	JAP	Multiple predictors in a community sample	Onset of MD	23	E1, B4, P4, B5	Between	Female gender, family history, childhood sexual abuse, prior anxiety disorder, poor physical health, and depressive symptoms predicted MD onset
Aderka (24)	JAP	Information Seeking	Social Anxiety Disorder	24	P1	Within	Individuals with SAD sought less information before making social rank ratings.
Timpano (25)	JAP	Self-control	Hoarding	25	P2	Within	Low levels of self-control were associated with greater hoarding symptoms.
Rodebaugh (26)	JAP	Interpersonal constraint	Generalized Social Anxiety	26	P2	Within	In an iterated prisoner's dilemma, individuals with generalized social anxiety disorder showed greater interpersonal constraint.
Felton (27)	JAP	Response styles, Stressors	Post-stress Rumination and Depression	27	P2,E1	Between	Pre-stress response styles predicted post-stress rumination and depression and interacted with stressors.

Wade (28)	JAP	Patterns of item endorsement between and within twin pairs over time	Weight and Shape concerns	28	B4,E2,E1	Between	Over adolescence, individual-specific environmental influences were largely age specific while shared environmental and genetic influences were largely stable.
Klump (29)	JAP	Level of ovarian hormones, negative affect	Emotional eating	29	B5,P4	Between	Controlling for negative affect, changes in ovarian hormones predicted emotional eating across the menstrual cycle
Brook (30)	JAP	Cognitive Empathy	Psychopathy	30	P1	Within	Psychopathy was inversely associated with empathic accuracy and the number of responses when rating the emotional states of others.
Sadeh (31)	JAP	5-HTTLPR and MAO-A polymorphisms and childhood Abuse	Psychopathy	31	B1, E1	Between	Psychopathy was predicted abuse and by both genetic variants with no interaction between them.
Bornovalova (32)	JAP	Sexual, emotional, and physical abuse in childhood in a cotwin control design	Borderline Personality Disorder	32	E1,E2 as exposure; B4/E2 to control confounding	Within	The association between childhood abuse and BPD traits was not causal, arising from common genetic influences
Heritage (33)	JAP	Response modulation using a lexical decision stop signal task and event-related potentials.	Psychopathic traits	33	B3, P1	Between	The impulsive antisocial psychopathy factor was related to poor behavioral performance and reduced processing of the stop signal.

De Sá Teixeira (34)	JAP	Perception and processing of motion	Schizophrenia	34	B3	Within	Compared to controls, schizophrenics demonstrated a lack of an effect of target's velocity upon the magnitude of Representational Momentum
Slutske (35)	JAP	Personality as measured in twins and cotwins	Disordered Gambling	35	B4	Within	Genetic influences in normal personality traits explained 40% of the genetic risk for disordered gambling.
Fusar-Poli (36)	SB	Density of striatal dopamine terminals as assessed by Positron Emission Tomography (PET)	Schizophrenia	36	B2	Within	Meta-analysis showed no evidence For altered density of striatal dopamine terminals in schizophrenia.
Beck (37)	SB	Dysfunctional attitudes and expectancies and psychiatric symptoms	Deficit Schizophrenia	37	P3, P4	Within	The deficit group scored significantly worse on measures of insight, emotion recognition, defeatist attitudes, and asocial beliefs but better on of depression, anxiety, and distress than the nondeficit group.
Fett (38)	SB	Cognitive tests and symptoms	Psychotic Symptoms	38	P1, P4, B4, E2	Between	Social cognitive performance was associated with disorganized/negative symptoms within patients and with subclinical disorganization in siblings.

Kantrowitz (39)	SB	Voice emotion recognition	Emotion Processing in Schizophrenia	39	P1	Within	The differential identification pattern for frequently modulated tones correlated with deficits in basic tone-matching ability, voice emotion recognition, and negative symptoms
Matthews (40)	SB	Gesture Imitation and working memory	Schizophrenia	40	P1	Within	Gesture imitation was impaired in schizophrenia, especially when the production of an imitation depended upon working memory
Marsman (41)	SB	Glutamate in vivo in brain assessed by magnetic resonance spectroscopy (MRS)	Schizophrenia	41	B2	Within	Meta-analysis showed that medial frontal region glutamate was decreased in schizophrenia.
Wong (42)	SB	Levels of mRNA expression of truncated brain-derived neurotrophic factor (BDNF) receptors in post-mortem brain	Schizophrenia	42	B1	Within	Significant increases in mRNA expression of two truncated receptor isoforms in people with schizophrenia
Jessen (43)	SB	Concentration of N-acetylaspartylglutamate (NAAG) assessed by proton MRS and neuropsychological functioning	Schizophrenia	43	B2, P1, P4	Between	NAAG was increased in schizophrenia patients and frontal levels were inversely correlated with negative and total symptoms and positively correlated with episodic memory.

Nielsen (44)	SB	Maternal infection during pregnancy and maternal and paternal infections in general	Schizophrenia	44	B5	Within	Increased risk in offspring is associated with prenatal infection specifically and parental infections generally.
Coughlin (45)	MP	Soluble superoxide dismutase-1 (SOD1) in cerebrospinal fluid	Schizophrenia	45	B5	Within	Reduction of soluble SOD1 in cerebrospinal fluid of patients with recent-onset schizophrenia
Melchior (46)	MP	Socioeconomic position	Depression	46	E2	Within	Long-term depression trajectories followed a socioeconomic gradient
Munkholm (47)	JAD	Cytokine levels	Bipolar Illness	47	B5	Within	In a meta-analysis, levels of several cytokines were elevated in manic patients versus controls or euthymic patients.
Zhou (48)	JAD	Population sex ratio	Depression	48	E3	Within	High male to female sex ratio was a robust predictor of depression in unmarried men.
Tomita (49)	JAD	Neighborhood-level social capital	Depression	49	E3, E1,E2	Within	Controlling for social class and education, low levels of social capital predicted high levels of depression.
Dudek (50)	JAD	Age at onset, treatment response, clinical course	Onset of mania in patients with depression	50	P4, B5	Between	Conversion to bipolar illness was predicted by early age at onset, poor treatment response and multiple prior episodes.
Hunt (51)	JAD	Duration of illness, stressful life events, history of suicide attempts	Suicide	51	P4, E1	Between	Suicide predicted by a short duration of illness, prior attempts and stressful life events.

Niu (52)	JAD	Diet	Depression	52	B5	Within	A tomato rich diet was associated with reduced risk for depression
Shankman (53)	JAD	Performance on an emotion recognition and an emotion acuity test	Pediatric bipolar illness	53	P1, P2	Within	Ill patients misidentified sad, fearful, and neutral faces more often than controls and this effect was mediated by irritability.
Zhang (54)	JNMD	Immigration-related factors	Anxiety, depression and suicidal ideation	54	E1, E2, E3	Within	US-born Chinese and those who immigrated to the US ≤ age 18 were at higher risk for depressive and anxiety disorders and suicidal ideation vs. their China-born counterparts.
Gilman (55)	SP	Financial strain and low income	Depressive symptoms and suicidal ideation	55	E1, E2	Within	Financial strain and low income were associated with both levels of depression and suicidal ideation.
Pan (56)	SP	Family income and psychiatric illness	Suicidal ideation	56	E2, P4	Between	An inverse association between family income and suicidal ideation was seen which was stronger in those with psychiatric illness.
Jarrın (57)	SP	Ethnic Density	Psychiatric “caseness”	57	E3	Within	No association was observed between ethnic density of Ecuadorians living in Spain and their risk for psychiatric illness.

Second issue 2013

First Author	Journal	Key Predictors	Disorder/Trait of Interest	Study Number	Level(s)	Within or Between Levels	Results
Abas (58)	JP	Outmigration of Children	Depression	58	E2	Within	Having all children out-migrate was associated with a lower risk of depression.
Kendler (59)	JP	Age differences and older-younger relationship in sibling pairs	Drug Abuse (DS)	59	E2	Within	Siblings closer in age were more similar is risk for DA. DA was more strongly transmitted from older→younger than younger→older siblings.
Ramanathan (60)	JP	Macroeconomic environment during infancy	Behavior Problems in Adolescence	60	E3	Within	Increasing unemployment rates at age 1 was associated with an increased risk for a range of externalizing behaviors during adolescence.
Wium-Andersen (61)	JP	CRP levels	Psychological distress and depression	61	B5	Within	Elevated levels of CRP were associated with increased risk for psychological distress and depression.
Ehlers (62)	AJP	Family, linkage and genetic association studies	Substance dependence in Native Americans	62	B2, B4	Within	Family, linkage and association studies all support the role of genetic factors in the etiology of substance dependence in this population.
Anglin (63)	BJP	Levels of vitamin D	Depression	63	B5	Within	Low vitamin D concentrations were associated with risk for depression.
Sellers (64)	BJP	Offspring of mothers with recurrent depression	New-onset psychopathology	64	B4,E2	Between	The number of co-occurring problems in mothers predicted new-onset offspring disorder
Matheson (65)	PM	Childhood adversity	schizophrenia	65	E1, E2	Within	In a meta-analysis, increased rate of childhood adversity was associated with risk for schizophrenia.

Khandaker (66)	PM	Prenatal maternal infection and maternal proinflammatory cytokines	Schizophrenia and associated MRI changes	66	E2, B3, B5	Between	Prenatal exposure to a range of infections and inflammatory responses increases risk for schizophrenia and was associated with brain abnormalities
Sarkar (67)	PM	Diffusion tensor magnetic resonance imaging tractography	Conduct Disorder	67	B3	Within	Individuals with conduct disorder had significant differences in the connectivity and maturation of the uncinate fasciculus.
Fournier (68)	PM	Implicit emotional faces task assessed by fMRI.	Major Depression	68	B3,P1	Between	Adults with MD showed significantly greater right-sided amygdala activity to angry and happy conditions than controls.
Morein-Zamir (69)	PM	Go/no go task	Obsessive-compulsive disorder (OCD)	69	P1	Within	Individuals with OCD showed reduced response control selectively under punishment conditions
Geerlings (70)	PM	Structural MRI scan	Major Depression	70	B3	Within	Current MD in elderly subjects was associated with widespread gray- and white-matter brain atrophy
Bianco (71)	PM	fMRI during implicit and explicit processing of facial stimuli and COMT genotype	Schizophrenia	71	B1, B3, P1	Between	Complex interactions seen between genetically determined dopamine signaling and risk for schizophrenia on prefrontal cortical activity during emotion processing
Breslau (72)	PM	Six predisposing familial or environmental risks and 4 levels of traumas	PTSD	72	B4, E1, E2, E3	Between	Predispositions increase the risk of PTSD following sexual assault as much as they do following less severe traumas.
Shankman (73)	JAP	sensitivity to threat measured by startle and to reward measured by frontal EEG asymmetry	Panic Disorder and Major Depression	73	B3	Within	Heightened sensitivity to threat was specific to panic disorder and reduced sensitivity to MD.
Pettit (74)	JAP	Parental history of MD and history of stressful life events	Recurrent MD	74	B4,E2	Between	Risk for recurrent MD arises from both familial risk and stressful life events after first onset.

Bagge (75)	JAP	Negative Life Events	Suicide Attempt	75	E1	Within	Individuals were at increased risk of attempting suicide soon after a negative life event.
Endrass (76)	JAP	Electrophysiological correlates of feedback processing	Obsessive–compulsive disorder (OCD)	76	B3	Within	OCD patients were impaired in specific aspects of feedback learning and flexible behavioral adjustments.
Olatunji (77)	JAP	Emotional attentional blink task with combat-related threat distracters	PTSD	77	P1	Within	PTSD subjects displayed an attentional bias toward combat related stimuli
Culbert (78)	JAP	Prenatal testosterone exposure assessed indirectly via sex of cotwin	Disordered eating attitudes	78	B5	Within	During puberty, females from opposite-sex twin pairs exhibited lower disordered eating attitudes than females from same-sex twin pairs
Racine (79)	JAP	Negative Urgency	Dysregulated eating	79	P2, B4, E1	Between	Negative urgency predicted dysregulated eating and most of this association was due to genetic covariation.
Baskin-Sommers (80)	JAP	Emotion modulated startle and late positive potential (LPP)	Psychopathy	80	B3	Within	Psychopathic individuals displayed a deficit in emotion modulated startle to novel pictures, but differences in LPP during familial picture.
Strauss (81)	JAP	Emotional Attentional Blink paradigm	Schizophrenia with high and low negative symptoms	81	B3	Within	Emotional stimuli have a bottom-up competitive advantage in low negative patients and controls but not in high negative symptom patients.
Keane (82)	JAP	The depth inversion illusion (DII)	Schizophrenia	82	P1	Within	Schizophrenia patients experienced fewer DIIs with a variety of object types and viewing conditions
Clark (83)	JAP	Bubbles Facial Emotion Perception Task	Schizophrenia	83	P1	Within	Evidence for aberrant patterns of visual facial information usage in schizophrenia
Alderson (84)	JAP	Working memory	ADHD in Adults	84	P1	Within	Central executive and phonological storage/rehearsal were both impaired in adults with ADHD

Petersen (85)	JAP	Language subtests of standardized achievement instruments	Inattentive-hyperactive and externalizing problems	85	P1	Within	Language ability predicted development of I Inattentive-hyperactive and externalizing problems
Bledsoe (86)	JAP	Brain cortical thickness in cingulate cortex Stroop Inhibition test	ADHD	86	B3, P1	Between	Significant cortical thinning of the right rostral anterior cingulate cortex in children with ADHD but no cortical thickness association with inhibitory control.
Wilbertz (87)	JAP	Delay aversion in fMRI with behavioral measures of delay discounting and delay frustration	ADHD	87	B3, P1,P4	Between	Evidence for an exacerbated negative emotional state during the anticipation and processing of delay in ADHD
Stefanis (88)	SB	ERBB4 single nucleotide polymorphisms	verbal working memory (VWM), trait schizotypy, and psychotic experiences	88	B1	Within	ERBB4 variants were associated in a general population sample with VWM and psychotic experiences.
Kuhn (89)	SB	Meta-analysis - Resting-State Brain Activity assessed by fMRI	Schizophrenia and Depression	89	B3	Within	Hypoactivation in ventromedial prefrontal cortex (vmPFC), hippocampus, cingulate cortex, and the precuneus, and hyperactivation in lingual gyrus in schizophrenia. Hyperactivation in vmPFC, ventral striatum, and thalamus and hypoactivation in postcentral gyrus, fusi-form gyrus, and insula in depression.
Chen (90)	SB	Striatal dopamine transporter (DAT) availability assessed by SPECT	Schizophrenia	90	B2	Within	No significant differences in DAT levels in drug naïve schizophrenic patients versus controls in this study or in a meta-analysis.
Wong (91)	SB	Level of NPAS3 mRNA and MiR-17 in post-mortem brain	Schizophrenia	91	B1	Within	In prefrontal cortex in schizophrenia patients, elevations were found in miR-17 expression but not levels of NPAS3 mRNA.
Wiener (92)	SB	Principal components of heritability (PCH) derived from 9 neurocognitive domains	Schizophrenia and their relatives	92	P1, B4	Between	The first PCH, indexing largely spatial processing and emotion recognition, was highly heritable and genetically correlated with schizophrenia.

Constantino (93)	MP	Resemblance in full and half siblings	Autism	93	B4	Within	Heritability of autism estimated to equal ~ 0.60.
Crowley (94)	MP	Deep sequencing of 10 candidate genes	Schizophrenia	94	B1	Within	Classical schizophrenia candidate genes do not harbor uncommon coding region variations of etiological importance.
Rucker (95)	MP	Large, rare copy number variants (CNVs)	Major Depression	95	B1	Within	Excess rates of CNVs in patients with recurrent major depression.
Gale (96)	MP	Intelligence	Bipolar Illness	96	P2	Within	Risk for bipolar illness increased with lower IQ except in those with no comorbidity where there was a "J-shaped" distribution.
Chen (97)	MP	SNP variants in a case-control GWAS design	Bipolar Illness	97	B1	Within	Identification of three new putative risk genes for bipolar illness: TRANK1, LMAN2L and PTGFR.
Fillman (98)	MP	Neuroimmune mRNA expression levels in dorso-lateral prefrontal cortex	Schizophrenia	98	B1	Within	Changes seen in expression levels in the inflammatory response pathway in 40% of individuals with schizophrenia.
Mistry (99)	MP	Genome wide mRNA expression levels in postmortem brain	Schizophrenia	99	B1	Within	Analyses across seven independent studies showed evidence for 39 genes that are upregulated in schizophrenia and 86 that are downregulated.
Lu (100)	MP	Targeted-association analysis of 476 haplotype blocks in families with Autism Spectrum Disorder	Nonverbal communication	100	B1	Within	Strongest association seen in introns to a Nerve Growth Factor gene
Christakou (101)	MP	fMRI during a vigilance task with increasing attentional load.	ADHD and autism spectrum disorder (ASD)	101	B3, P1	Between	ADHD and ASD boys have both shared and disorder specific abnormalities in brain function during sustained attention.

Fandiño-Losada (102)	JAD	Serotonin transporter polymorphism and loss of partner in last year	Depression	102	B1, E1	Between	Those with the low activity transporter variants were at increased risk for depression given partner loss.
Christensen (103)	JAD	Self-reported levels of burdensomeness and belongingness.	Suicidal Ideation	103	P2	Within	Interactions were found between perceived burdensomeness and thwarted belongingness predicted suicidal ideation.
Hayakawa (104)	JAD	Voxel-based morphometry of the brain gray matter and diffusion tensor imaging (DTI) of white matter.	Depressive symptoms	104	B3	Within	Gray matter volume reduction and white matter integrity change in specific frontal brain regions may be associated with depressive symptoms in women
Langås (105)	JAD	Presence or absence of drug abuse associated with onset	Depression	105	B5	Within	Independent episodes were clinically distinct and generally more severe than drug abuse related episodes.
Mathell (106)	JNMD	Emotional Intelligence	Borderline Personality Disorder (BPD)	106	P2	Within	Patients with BPD had deficits in their ability to understand, whereas no differences emerged with respect to their ability to perceive, use, and regulate emotions.
Schienle (107)	JNMD	Trait Disgust	Borderline Personality Disorder (BPD)	107	P2	Within	Patients with BPD reported elevated levels of trait disgust, especially for the area of self-disgust.
Kaess (108)	JNMD	Personality	Borderline Personality Disorder (BPD)	108	P2	Within	BPD patients demonstrated higher novelty seeking and harm avoidance but higher levels of reward dependence.
Krause-Utz (109)	JNMD	Self-report impulsivity and response inhibition before and after an experimental stress induction	Borderline Personality Disorder (BPD)	109	P1, P2, E1	Between	BPD patients demonstrated a stress-dependent increase of state impulsivity and impaired response inhibition.
Sullivan (110)	JNMD	Prior psychiatric illness and exposure to hurricane Katrina	New onset psychiatric disorder	110	P4, E1	Between	The odds of developing a new psychiatric disorder after exposure were 6.8 times greater in those with a preexisting illness.

Pinto-Meza (111)	SP	Social inequalities and place of residence	Psychiatric disorder	111	E1, E2, E3	Within	Unemployment, disability, lower education, urban living and residing in Northern Ireland, Portugal and Belgium are associated with risk for mental disorders.
Luitel (112)	SP	Exposure to conflict in Nepalese civil war	Depression, anxiety and PTSD.	112	E3	Within	Those experiencing negative effects of the conflict were at higher risk for depression, anxiety and PTSD.
Amstadter (113)	SP	Trauma exposure.	Symptoms of PTSD	113	E1	Within	In a civilian population, type and number of traumatic events experiences were related to the probability of having symptoms of PTSD.
Winterrowd (114)	SP	Deviance of friends	Suicidal ideation	114	E1	Within	Suicidal ideation in adolescence was prospectively predicted by deviancy level of friends.
Colman (115)	SP	Childhood trauma and recent stress	Depression and heavy drinking	115	E1, E2	Within	Childhood trauma increases risk for depression and heavy drinking. Trauma may moderate the effect of stress on depression.
Sung (116)	SP	Mean ambient temperature of a township	Bipolar disorder	116	E3	Within	Increased risks of bipolar disorder admissions associated with the increasing temperature.

No relevant articles in Acta Psychiatric Scand 2/13 issue.

Third issue 2013

First Author	Journal	Key Predictors	Disorder/Trait of Interest	Study Number	Level(s)	Within or Between Levels	Results
MacCabe (117)	JP	Verbal, spatial, and inductive ability at ages 13 and 18.	Psychosis	117	P1	Within	A decline in cognitive performance in adolescence and young adulthood was associated with increased risk for psychosis in adulthood
Guha (118)	JP	Copy number variants	Schizophrenia	118	B1	Within	A deletion at distal 16p11.2 was associated with risk for schizophrenia.
Steiner (119)	JP	NMDA-R antibodies measured in blood	Schizophrenia, MD and borderline PD	119	B5	Within	Acutely ill patients with schizophrenia showed demonstrated an increased prevalence of NMDA-R antibodies
Croarkin (120)	JP	TMS cortical excitability and inhibition	Major depression in children and adolescents	120	B3	Within	Major depression in children and adolescents is associated with increased intracortical facilitation
Chang (121)	JP	Patterns of symptom endorsement between and within twin pairs over time	Symptoms of attention problems	121	B4,E1	Between	Attention problems were highly heritable in childhood, adolescence, and early adulthood.
Nelson (122)	JP	Candidate gene single-nucleotide polymorphisms	Heroin dependence	122	B1	Within	Significant associations found with SNPs in a set of genes on chromosome 11: NCAM1, TTC12, ANKK1, DRD2
Baller (123)	AJP	PET and fMRI studies	Premenstrual dysphoric disorder (PMDD)	123	B3	Within	PMDD patients showing greater prefrontal activation than comparison subjects.
White (124)	AJP	Decision making and fMRI	Disruptive Behavior Disorders	124	B3, P1	Between	Affected youths showed altered use of expected value information within the ventromedial prefrontal cortex and anterior insula.

Rai (125)	BJP	Socioeconomic factors at the country and individual level.	Depression	125	E1, E2, E3	Within	Both individual-level and country level measures of SES impacted on risk for depression.
Vrshek-Schallhorn (126)	PM	Cortisol awakening response (CAR) and stressful life events	Depression	126	B5, E1	Between	CAR prospectively predicts episodes of major depression independent of stressful life events.
Cisler (127)	PM	Resting state fMRI	History of early life stress (ELS) and/or depression	127	B3, E1	Between	Differences in network topology were seen specific to ELS exposure and to resiliency versus susceptibility to the depressogenic effects of ELS.
Plant (128)	PM	Maternal child maltreatment, offspring mal-treatment and exposure to depression in utero	Antisocial behavior and depression	128	B5, E1, E2	Between	Interactions were seen between maternal and offspring maltreatment and in utero exposure to depression in predicting offspring antisocial behavior.
Keilp (129)	PM	Neuropsychological functions	Suicide attempt	129	P1	Within	Deficits in attention control, memory and working memory were associated with suicidal behavior
Delvecchio (130)	PM	fMRI studies of facial affect	Schizophrenia (SZ)and Bipolar Disorder (BD)	130	B3	Within	BD patients show overactivation in subcortical regions and underactivation in prefrontal regions. SZ patients show over-activation within visual processing regions and reduced engagement of facial affect processing.
Brambilla (131)	PM	Incentive decision making in the Iowa Gambling Task	Schizophrenia (SZ)and Bipolar Disorder (BD)	131	P1	Within	Associative learning underlying expectancies was disrupted in SZ. BD was associated with increased incentive salience of gains.
Ljung (132)	PM	Parental schizophrenia	Offspring suicide	132	E1, E2, B4	Between	Suicide risk in offspring was similar in genetically different relationships, suggesting an environmental mechanism.
Dean (133)	PM	Facial affect processing MRI imaging.	First episode psychosis and siblings	133	B3, B4, P1	Between	Speed of facial affect processing and cortico-limbic grey matter variation was disrupted in FEP patients and their relatives.

Pinheiro (134)	PM	Event-related potential (ERP) correlates of emotional prosody processing	Schizophrenia	134	P1	Within	Abnormalities in prosody processing occurred in SZ at the three stages and are enhanced in a semantic content condition.
Boydell (135)	APS	Unemployment and ethnicity	Psychosis	135	B4, E1, E3	Between	Both unemployment and being of color increased risk for psychosis but no interaction was seen between them.
Mogg (136)	JAP	Panic Disorder in Mother	Attentional bias	136	B4, P1, E2	Between	An attentional threat bias was seen in daughters of mothers with panic disorder.
Weinberg (137)	JAP	Error-related negativity (ERN) in event related potentials.	Generalized anxiety disorder	137	B3	Within	The GAD group had larger ERN and this was not seen in those comorbid with MD.
Buu (138)	JAP	Gender, age at drinking, delinquency and specific symptoms	Alcohol Dependence	138	P4	Within	Onset of AD was best predicted by continued use despite having persistent interpersonal problems and tolerance.
Rose (139)	SB	Nine risk genes for SZ	Imaging and neurocognitive studies of SZ.	139	B1,B3, P1	Between	In a meta-analysis, imaging studies reported larger effect sizes than cognitive investigations.
Lin (140)	SB	Wisconsin Card Sorting Test (WCST)	Relatives of patients with SZ	140	B4, P1, E2	Between	Some WCST deficits were seen in certain relative groups. WCST itself was only modestly familial.
Plomp (141)	SB	Visual processing and evoked EEG responses	Schizophrenia	141	B3, P1	Between	Patients showed reduced visual discrimination accuracy and deficits in certain evoked EEG responses.
Lee (142)	SB	Facial Affect Recognition	Schizophrenia	142	P1,E1	Between	With situational context provided, no deficit was seen in patients with schizophrenia.
Zhao (143)	SB	Rare CNVs and common SNPs at 15q11.2	Schizophrenia	143	B1	Within	Both rare deletions and common variants at 15q11.2 were associated with schizophrenia.

Aleksic (144)	SB	Variants in VAV3 gene and structural MRI	Schizophrenia	144	B1, B3	Within	Both rare and common variants in VAV3 may be related to risk for schizophrenia and one variant impacts on temporal volume in schizophrenia patients
Ramaekers (145)	MP	Serum folate receptor autoantibodies	Autism	145	B5	Within	Serum folate receptor autoantibodies were more common in patients with autism
Gamazon (146)	MP	Functional effects of genetic risk variants in human cerebellum	Bipolar Illness	146	B1, B2	Within	Among susceptibility variants, an excess impacted on mRNA expression and DNA methylation
Frye (147)	MP	Cerebral folate receptor autoantibodies	Autism Spectrum Disorder	147	B5	Within	Folate receptor autoantibodies in serum and CSF were more common in patients with autism
Perales (148)	SP	Child adversities	First onset of psychiatric disorders	148	E1, E2	Within	Childhood adversities were associated with onset of psychiatric disorders
Leach (149)	SP	Relationship quality	Symptoms of anxiety and depression	149	E1	Within	Relationship quality mediated the association between relationship status and symptoms.
Yang (150)	SP	News coverage of suicides	Suicides	150	E3	Within	Media reporting of suicide was syn-chronized with increased suicide deaths
Raudino (151)	SP	Conduct disorder in parents	Conduct disorder in Offspring	151	B4, E2	Between	Clear evidence was seen for intergenerational continuity in conduct problems mediated in part by parenting.
Fischer-Kern (152)	JNMD	Mentalization	Major Depression	152	P3	Within	Patients with depression were impaired in their ability to identify and interpret mental states of the self and others.
Chen (153)	JAD	Allergic rhinitis	Major Depression	153	B5	Within	Adolescents with allergic rhinitis had a higher prevalence of major depression at follow-up.

Pannekoek (154)	JAD	Resting-state functional connectivity (RSFC) in fMRI	Panic Disorder	154	B3	Within	Altered RSFC found in panic disorder patients between areas involved in emotion regulation.
Dasgupta (155)	JAD	Social support, husband violence and alcohol use	Depression	155	E1, E2	Within	High levels of social support protected against depression even in the setting of partner violence and alcohol abuse
Fisher (156)	JAD	Childhood stress and serotonin trans-porter poly-morphism (5-HTTLPR)	Depression	156	B1, E1	Between	An interaction was seen between certain classes of childhood stressors and 5-HTTLPR genotype in the prediction of depression.
Xu (157)	JAD	Gender and SNPs in the SEZ6L gene	Bipolar illness	157	B1, B5	Within	Genetic variants in the SEZ6L gene were associated with bipolar illness in females but not in males.

For JAP, no third issue in 2013 yet available, so used last issue in 2012. TMS=transcranial magnetic stimulation.

Fourth issue 2013

First Author	Journal	Key Predictors	Disorder/Trait of Interest	Study Number	Level(s)	Within or Between Levels	Results
Cantor-Graae (158)	JP	Migration	Psychiatric disorders	158	E1, E2	Within	All categories of foreign migration were associated with increased risk for at least 1 psychiatric disorder.
Copeland (159)	JP	Bullies and victims of bullying	Psychiatric disorders in adolescence and adulthood	159	E1	Within	Both being bullied and being a bully were associated with increased risk for a range of psychiatric disorders.
James (160)	JP	Neural networks as assessed by magneto-encephalography	PTSD	160	B3	Within	Neural modulation involving decorrelation of neural networks distinguished resilient veterans from those with PTSD
Wald (161)	JP	Threat vigilance, combat exposure and serotonin transporter genotype	Post-combat PTSD	161	P1, B1, E1	Between	Combat exposure interacted with threat-related attention and genotype to predict PTSD.
Asami (162)	JP	Grey matter as assessed by MRI	Schizotypal Personality Disorder (SPD)	162	B3	Within	Men with SPD showed global and widespread smaller regional grey matter volume.
Pearson (163)	AJP	Maternal Depressive Cognitive Styles	Offspring Depressive Cognitive Styles	163	B4, E2	Between	A positive association was observed between maternal and offspring cognitive styles.
Kendler (164)	AJP	Age at first regular smoking	Nicotine Dependence	164	B4, E2, E1	Between	Controlling for shared environment and genetics, early onset of smoking increased nicotine dependence in adulthood.
Abel (165)	AJP	Fetal Growth Pattern	Autism Spectrum Disorder (ASD)	165	B5	Within	ASD risk was increased in infants both very small and large for gestational age.
Miller (166)	AJP	Traumatic Brain Injury	Drug dependence	166	B5, E1	Between	Dependence to alcohol and nicotine were increased in those exposed to Traumatic Brain Injury.

Collip (167)	BJP	Childhood trauma, FKBP5 SNP genotype	Psychotic symptoms	167	B1, E1, E2	Between	An interaction was seen between childhood trauma exposure and FKBP5 SNPs in risk for psychotic symptoms
Drislane (168)	PM	P3 event-related potential response to noise probes.	Psychopathy	168	B3	Within	Psychopaths showed significantly smaller amplitude of P3 response to noise probes
Salum (169)	PM	Threat related attention bias	Pediatric psychiatric disorders	169	P1	Within	In distress-related disorders, high internalizing symptoms predicted vigilance towards threat. In fear disorders, the opposite was seen.
Cohen-Woods (170)	PM	Molecular Genetics	Major Depression	170	B1	Within	This review paper examines the modest progress to date identifying specific molecular genetic variants predisposing to depression.
Bar (171)	APS	Heat pain thresholds and fMRI	Anorexia	171	B3, P1	Between	Increased heat pain thresholds were observed in anorexia patients along with stronger activation of the ipsilateral pons.
Sadeh (172)	JAP	Anger, gender and history of sexual abuse	Suicide Attempt	172	P4, E1	Between	Facets of anger differentially predicted suicide attempts as a function of gender and sexual victimization history.
Gorman Bozorgpour (173)	JAP	Go/no-go choice reaction time task and readiness potentials	ADHD	173	B3, P1	Between	Adults with ADHD exhibited weaker central preparation to respond to stimuli requiring a motor response and prompting response inhibition.
Ficks (174)	JAP	Low birth weight	ADHD	174	B5	Within	A negative associations between birth weight and ADHD and general externalizing symptoms also seen within twin pairs.
Mann (175)	JAP	Reaction time to a computerized monetary response conflict task	Schizophrenia	175	P1	Within	Schizophrenia patients showed a significantly smaller incentive context effect than controls.
Martin (176)	JAP	Affective Interference Task	Schizophrenia	176	P1	Within	Decrease in attention to affective information in schizophrenia.

Nelson (177)	JAP	Family history, startle potentiation and frontal EEG asymmetry	Major Depression and Panic Disorder (PD)	177	B4, E2, B3, P1	Between	Startle potentiation was associated with family history of PD and frontal EEG asymmetry was associated with family history of MDD
Kashdan (178)	JAP	Daily face-to-face social interactions	Social Anxiety Disorder	178	P4	Within	Individuals with SAD experienced weaker positive emotions and greater experiential avoidance
Pineles (179)	JAP	Psychophysiologic reactivity and emotional responses to script driven imagery	PTSD	179	P1, P4	Within	Trauma-related psychophysiologic reactivity was the best predictor of PTSD diagnosis
Sung (180)	JAP	Two category-fluency tasks	Bipolar Illness	180	P1	Within	Patients with bipolar disorder produced less coherent and fewer category clusters.
Smesny (181)	SB	epidermal lipid profiles	Schizophrenia	181	B5	Within	Differences in specific peripheral sphingolipids in cases versus controls.
Roberts (182)	SB	eye movement abnormalities during reading	Schizophrenia	182	B3,B4	Within	Eye movement abnormalities during reading were seen in both schizophrenic patients and their first-degree relatives.
Cascella (183)	SB	Transglutaminase 6 Antibodies in Sera	Schizophrenia	183	B5	Within	Schizophrenic patients demonstrated a higher prevalence of tTG6 antibodies.
Sponheim (184)	SB	Backward masking	Schizophrenia	184	B4, P1	Between	Patients with schizophrenia and their relatives displayed abnormalities in backward masking.
Lungu (185)	SB	fMRI findings in the Cerebellum	Schizophrenia	185	B3	Within	A meta-analysis found frequent abnormalities with hypoactivation especially common.

Major Depressive Disorder Working Group (186)	MP	Genome wide association studies	Major Depression	186	B1	Within	This mega-analysis was unable to identify replicable molecular genetic risk variants for depression.
Mota (187)	MP	DRD2 and DRD4 genotypes	Alcohol Dependence	187	B1	Within	An interaction was seen between variants in the two genes and risk for alcohol dependence.
Nielssen (188)	SP	Migration	Psychosis	188	E3	Within	Those born in Oceania were at an increased risk of psychiatric hospitalization for psychotic illness.
Salazar (189)	SP	Types of experienced trauma	PTSD	189	E1	Within	The types of trauma associated with the highest probability of PTSD were rape, torture, being a victim of terrorists, and molestation.
Ranta (190)	SP	Direct and relational peer victimization	Social Phobia (SP)	190	E1	Within	Direct victimization and SP have a bidirectional association among boys, while among girls relational victimization increases the risk of subsequent SP.
Lukaschek (191)	SP	Types of experienced trauma	PTSD	191	E1	Within	Events with an elevated risk for PTSD were: accidents, assault, war experiences, severe illness and interpersonal conflicts
Balzan (192)	JNMD	Computerized versions of the ‘‘fertilizer’’ illusory correlation task	Schizophrenia	192	P1	Within	Individuals with schizophrenia were more susceptible to illusory correlations and illusions of control.
McGirr (193)	JAD	Wisconsin Card Sorting Task in Relatives	Suicide	193	B4, P1, E2	Between	First-degree relatives of suicide completers made more perseverative errors and had a lower level of conceptual responses .
Robillard (194)	JAD	Sleep phase delay detected by actigraphy	Unipolar and bipolar mood disorder	194	B5	Within	An elevated rate of delayed sleep phase was found for both bipolar and unipolar patients.

MacMaster (195)	JAD	Corpus callosal morphology	Adolescent depression	195	B3	Within	The genu of the corpus callosum area was smaller in patients with major depression.
Oglesby (196)	JAD	Intolerance of uncertainty	Hoarding Behaviors	196	P3	Within	Intolerance of uncertainty significantly predicted hoarding severity.
Lee (197)	JAD	Genome-wide SNP matters	Seasonal mania	197	B1	Within	Genetic variants in the NF1A gene may predispose to a seasonal pattern of bipolar disorder.

For JAP, no fourth issue in 2013 yet available, so used third issue in 2013.

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Appendix 3

I here outline three examples of potential problems with incommensurability in the field of psychiatry. First, let's take the term "depression." In lower level biological studies, the episodic clinical syndrome of major depression is typically the object of study. Subjects may be ill or they may be in remission but they have had the syndromal disorder at some point in their lives. In psychological and epidemiological studies of depression, depressive symptom scales are commonly used. These describe current depressive symptoms, typically among community residents (or undergraduate students in psychology classes) few of whom have a clinical level of dysfunction. Many studies have examined the relationship between these two concepts of "depression" (1, 2). While correlated, they are far from the same thing. This terminological muddle can make inter-level collaborative research on "depression" challenging.

Second, confusion is caused by the way the word "environment" is used in different research traditions. Genetic epidemiologists use the term to define all non-genetic factors which either make individuals brought up in the same family similar (aka "family environment") or different (aka "unique" environment). This has been called the "effective" environment (3). Most epidemiologists and developmentalists study specific "objective" features of the environment (e.g. poverty, parental behavior, stressful events). This becomes a problem because not all "objective" aspects of the environment are "effective." For example, all members of a family might be subject to the same "objective" stressor such as a flood but because of individual differences, the "effective" impact of that event might differ substantially. Furthermore, some of the "effective" environment may not be objective and instead represents the unmeasurable stochastic effects of development.

Third, the state versus trait question can bedevil cross-level research efforts. A neuropsychologist comes to a geneticist very enthusiastic about a collaborative study of anxiety. He has developed a great measure and describes the high sensitivity and specificity he has achieved in studying anxiety disorder patients. Then the geneticist asks if he has studied patients when they are well to demonstrate that he is measuring the kind of stable trait that she wants to use in her gene finding study. There is an awkward silence. "No," the neuropsychologist says, "I am interested in state changes reflecting anxiety not trait effects." The planned collaboration begins to evaporate even though they both want to study "anxiety."

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