The ‘p factor’:

One general psychopathology factor in the structure of psychiatric disorders?

Supplemental Tables

Supplemental Table 1. Assessment of symptoms of mental disorders in the Dunedin cohort at ages 18, 21, 26, 32, and 38 years. We assessed the following 11 disorder/symptoms: alcohol dependence, cannabis dependence, dependence on hard drugs, tobacco dependence, conduct disorder, major depression, generalized anxiety disorder, fears/phobias, obsessive compulsive disorder, mania, and positive and negative schizophrenia symptoms. Disorder/symptoms were assessed at ages 18, 21, 26, 32 and 38 years (not all disorders were assessed at every age, but each disorder was measured at least 3 times; missing assessments are depicted by gray space).

	Age 18	Age 21	Age 26	Age 32	Age 38	Example Symptoms
					Alcohol	
N	936	957	973	959	950	Tolerance
Mean	1.251	1.734	1.382	0.882	1.012	Withdrawal symptoms
SD	1.888	2.146	1.888	1.558	1.744	Unable to cut down
Range	0 - 9	0 - 9	0 - 9	0 - 9	0 - 9	Role interference
					Cannabis	
N	934	946	973	963	952	Tolerance
Mean	0.479	0.665	0.743	0.414	0.309	Withdrawal symptoms
SD	1.378	1.525	1.716	1.256	1.128	Unable to cut down
Range	0 - 9	0 - 9	0 - 9	0 - 9	0 - 9	Role interference
					Hard Drugs	
N			973	963	952	Tolerance
Mean			0.289	0.223	0.164	Withdrawal symptoms
SD			1.276	1.100	1.011	Unable to cut down
Range			0 - 9	0 - 9	0 - 9	Role interference
					Tobacco	
N		955	968		953	# cigarettes per day
Mean		0.910	0.925		0.776	Hard to refrain from smoking
SD		1.759	1.751		1.769	Hate to give up morning cigarette
Range		0 - 9	0 - 9		0 - 9	Smoke when sick
					Conduct Disorder	
N	934	957	975	966	947	Fighting
Mean	1.608	1.498	1.306	0.872	0.567	Steals (with and without confrontation)
SD	1.410	1.616	1.308	1.105	0.898	Lies, deceives
Range	0 - 7	0 - 9	0 - 8	0 - 7	0 - 7	Destroys property
					Major Depression	
N	935	957	973	963	951	Depressed mood
Mean	1.785	2.246	1.513	1.535	1.651	Sleep change
SD	2.782	3.065	2.925	2.928	2.945	Fatigue
Range	0 - 9	0 - 9	0 - 9	0 - 9	0 - 9	Weight or appetite change

Supplemental Table 1 (cont.). Assessment of symptoms of mental disorders in the Dunedin cohort at ages 18, 21, 26, 32, and 38 years. We assessed the following 11 disorder/symptoms: alcohol dependence, cannabis dependence, dependence on hard drugs, tobacco dependence, conduct disorder, major depression, generalized anxiety disorder, fears/phobias, obsessive compulsive disorder, mania, and positive and negative schizophrenia symptoms. Disorder/symptoms were assessed at ages 18, 21, 26, 32 and 38 years (not all disorders were assessed at every age, but each disorder was measured at least 3 times; missing assessments are depicted by gray space).

	Age 18	Age 21	Age 26	Age 32	Age 38	Example Symptoms
				Generalized Anxiety Disorder		
N	936	956	971	963	952	Restless or keyed up
Mean	1.175	1.050	0.723	0.911	0.782	Multiple worries
SD	1.839	1.858	1.792	1.944	1.947	Muscle tension
Range	0 - 7	0 - 7	0 - 7	0 - 7	0 - 7	Easily tired
				Fears / Phobias [a]		
N	936	957	973	963	952	Specific phobia
Mean	0.272	0.224	0.252	0.217	0.225	Social phobia
SD	0.572	0.543	0.575	0.545	0.558	Agoraphobia
Range	0 - 3	0 - 4	0 - 3	0 - 4	0 - 4	Panic disorder
				Obsessive - Compulsive Disorder		
N	935	946	971	963	947	Persistent thoughts of dirty hands/germs
Mean	0.453	0.341	0.364	0.418	0.238	Persistent thoughts of relatives hurt or killed
SD	0.721	0.756	0.911	0.896	0.725	Intrusive shameful thoughts
Range	0 - 3	0 - 7	0 - 8	0 - 8	0 - 9	Counting or touching
				Mania		
N			970	963	951	Grandiosity
Mean			0.267	0.225	0.395	Increased activity
SD			1.074	0.974	1.239	Racing thoughts
Range			0 - 7	0 - 7	0 - 7	Excessive pleasurable activities
				Schizophrenia		
N		953	969	963	951	Receiving special messages via TV or radio
Mean		0.267	0.530	0.584	0.537	Hearing things others could not
SD		0.843	1.390	1.554	1.586	Grooming neglected
Range		0 - 8	0 - 9	0 - 9	0 - 9	Emotionally flat

[a] Fears/phobias were assessed as the count of diagnoses for simple phobia, social phobia, agoraphobia and panic disorder that a study member reported in the assessment.

Note: Although some disorders were assessed with more than 9 symptoms, the computer program (MPlus v7.1) used to model the data (which were treated as ordinal) limited the number of categories to 10 (0-9 symptoms); individuals exhibiting more than 9 symptoms were collapsed into category 9.

Supplemental Table 2. Description of the correlates of disorder liabilities across the life course

Domain	Description
Personality functioning	
	At ages 26, 32, and 38 years, Study members nominated people "who knew them well." These informants were mailed questionnaires and asked to describe each Study member using a 25-item version of the Big Five Inventory measuring the personality traits of Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience (Benet-Martinez & John, 1998). We created cross-age composites for each of the traits.
Life impairment	
Suicide attempts	During standardized clinical interviews at ages 18, 21, 26, 32 and 38, study members were questioned about suicide attempts. Interviewers differentiated between suicide attempts and non-suicidal self-harm; here we study incidents accompanied by the intent to die, according to the Study member. All information was combined to create an overall variable of any attempted or completed suicide. (Information about completed suicides was initially obtained in the course of longitudinal tracking and checked against death records.) 12.9% of the cohort attempted suicide.
Psychiatric hospitalization in adulthood	Study members were interviewed with the Life History Calendar (Caspi et al., 1996) to assess periods of time, between ages 21-38 years, when they were treated as an inpatient for a psychiatric/substance condition. 7.3% of the cohort were hospitalized.
Duration of welfare benefits used in adulthood	We measured the length of time that Study members drew on government welfare benefits by conducting record linkage with the New Zealand Ministry of Social Development. Data on welfare benefit receipt were available from 1 January 1993, with this date marking the beginning of reliable electronic data capture in New Zealand, allowing us to measure duration of benefit use from ages 21-38 years. We obtained information about incident spells and monthly duration of the following New Zealand government benefits: Unemployed Benefit, Invalids Benefit, Sickness and Emergency Benefits, Domestic Purposes Benefit-Sole Parent and Emergency Maintenance Allowance, Training Benefit, Emergency Benefit (for those who do not usually meet entitlement conditions). Only one benefit can be received at any given time.

Supplemental Table 2 (cont.). Description of the correlates of disorder liabilities across the life course

Domain	Description
Violence conviction in adulthood	We obtained records of Study members' court convictions at all courts in New Zealand and Australia by searching the central computer systems of the New Zealand Police. Convictions for violent crime included common assault, assault with intent to injure with weapon, robbery, robbery aggravated with firearm, manslaughter, rape, common assault domestic. 10.3% of the cohort was convicted of a violent crime.
Developmental histories	
Childhood socioeconomic status	The socioeconomic status of Study members was measured with a 6-point scale assessing parents' occupational status. The scale places each occupation into 1 of 6 categories (from 1 = unskilled laborer to 6 = professional) on the basis of educational levels and income associated with that occupation in the New Zealand census.
Family history of psychiatric disorders	Family histories were collected in 2003-2005, when the study members were 30-33 years of age, by interviewing the Study members as well as their parents. As previously described (Milne et al., 2008, 2009), family psychiatric history data were collected about each participant`s biological parents, grandparents, and siblings. Data on 7,856 family members of the Study members were used (average of 8.0 family members; range 3-16) to construct family histories, assessed by means of the Family History Screen (FHS) (Weismann et al., 2000) and supplemented with items to broaden coverage of substance-use disorders and psychosis. Each participant's family history of disorder was calculated as the proportion of members in the family with a positive history of disorder, taking into account genetic relatedness.
Childhood histories of psychiatric disorder	Childhood histories of psychiatric disorder were indexed using prospectively-ascertained information. Study members were assessed with the Diagnostic Interview Schedule for Children (DISC-C; Costello et al., 1982) at ages 11, 13, and 15 years. 20.1% of the Study members met DSM-III (American Psychiatric Association, 1980) diagnostic criteria for externalizing disorders (conduct disorder or attention-deficit/hyperactivity disorder) and 22.7% met diagnostic criteria for internalizing disorders (depression or anxiety disorders, including separation anxiety disorder, overanxious disorder, and the phobias) up to age 15 years.

Supplemental Table 2 (cont.). Description of the correlates of disorder liabilities across the life course

Domain	Description
Childhood maltreatment	As previously described (Caspi et al., 2002), the measure of childhood maltreatment up to age 11 includes evidence of (1) maternal rejection assessed at age 3 years by observational ratings of mothers' interaction with the study children, (2) harsh discipline assessed at ages 7 and 9 years by parental report of disciplinary behaviors, (3) 2 or more changes in the child's primary caregiver, and (4) physical abuse and (5) sexual abuse reported by study members once they reached adulthood. For each child, our cumulative index counts the number of maltreatment indicators during the first decade of life; 64.2% of children experienced no maltreatment, 26.7% experienced 1 indicator of maltreatment (hereinafter "probable" maltreatment), and 9.2% experienced 2 or more indicators of maltreatment ("definite" maltreatment).
Brain integrity (adulthood)	
Adult intelligence (IQ)	At age 38 years, the Wechsler Adult Intelligence Scale –IV (WAIS-IV) (Wechsler, 2008) was administered to study members individually according to standard protocol. We report the four index scores representing major components of intelligence: Verbal Comprehension, Perceptual Reasoning, Working Memory, and Processing Speed.
Executive function	We report three tests. (a) WMS-III Mental Control. This is a test of attention and working memory (Wechsler, 1997). It requires reciting the months of the year in backwards order, starting with December. (b) Trail making test B. This is a test of scanning and tracking, divided attention, and mental flexibility (Army Individual Battery, 1944). The test involves drawing lines to connect consecutively numbered and lettered circles, alternating between numbers and letters. (c) The Cambridge Neuropsychological Test Automated Battery (CANTAB; www.camcog.com) Rapid Visual Information Processing is a test of sustained attention and vigilance. A white box appears in the center of the computer screen, inside which digits, from 2 to 9, appear in a pseudo-random order, at the rate of 100 digits per minute. Subjects are requested to detect target sequences of digits (for example, 2-4-6, 3-5-7, 4-6-8) and to register responses using the press pad.

Supplemental Table 2 (cont.). Description of the correlates of disorder liabilities across the life course

Domain	Description
Memory	We report three tests. The Rey Auditory Verbal Learning is test of verbal learning and memory yielding two scores: (a) total recall and (b) delayed recall (Lezak 2004). The test involves a five-trial presentation of a 15-word list and a one-time presentation of an interference list. Four trials of the 15-word list were administered due to time constraints. Words are recalled immediately after each trial and later after a 25-30 minute delay. (c) CANTAB Visual Paired Associated Learning is a test of visual memory and new learning. Boxes are displayed on the screen and are opened in a random order. One or more of them will contain a pattern. The patterns are then displayed in the middle of the screen, one at a time, and the subject must touch the box where the pattern was originally located. If the subject makes an error, the patterns are re-presented to remind the subject of their locations. The difficulty level increases through the test. The number of patterns increases across eight stages (i.e., two 1-pattern stages, two 2-pattern stages, two 3-pattern stages, one 6-pattern stage, one 8-pattern stage), which challenges even very able subjects. For each stage, up to 10 trials are presented until all the patterns are located correctly.
Motor functions	We report three tests. (a) Grooved Pegboard is a test of manipulative dexterity, measuring performance speed in a fine motor task. It contains 25 holes with slots and pegs which have a key along one side. Pegs must be rotated to match the hole before they can be inserted. (b) One-legged balance required participants to stand with their eyes closed, feet together, clasping hands and then raise one foot. Timing stops when participants put the foot down or reach the 30-second time limit. Scores are based on the best of 3 trials. (c) CANTAB Reaction Time (5-choice Reaction Time) is divided into five stages, which require increasingly complex chains of responses. In each case, the subject must react as soon as a yellow dot appears. The subject must respond by lifting their finger from the press-pad and touching the yellow dot on the screen. In some stages the dot may appear in one of five locations.

Supplemental Table 2 (cont.). Description of the correlates of disorder liabilities across the life course

Domain	Description
Everyday cognitive impairment	At age 38, Study members nominated people "who knew them well." These informants were mailed questionnaires and asked to complete a checklist, including whether the study member had problems with attention and memory over the past year. The informant-reported cognitive problems scale consisted of seven items: “is easily distracted, gets sidetracked easily”, “can’t concentrate, mind wanders”, “tunes out instead of focusing”, “has difficulty organizing tasks that have many steps”, “has problems with memory”, “misplaces wallet, keys, eyeglasses, paperwork”, and “forgets to do errands, return calls, pay bills” (internal consistency reliability=.875).
Retinal microvasculature	As previously described (Shalev et al., 2013), at age 38 we took digital fundus photographs at the Research Unit after 5 minutes of dark adaptation. The same camera (Canon NMR-45 with a 20D SLR backing, Japan) was used for all photographs, thereby preventing artifactual variation from different cameras. Both the left and right eyes were photographed, and the two eyes were averaged. Retinal photographs were graded at the Singapore Eye Research Institute, National University of Singapore, using semi-automated computer software (Singapore I Vessel Assessment [SIVA], software version 3.0). Trained graders, masked to participant characteristics, used the SIVA program to measure the retinal vessel diameters according to a standardized protocol with high inter-grader reliability (Cheung et al., 2010). Caliber (or diameter) denotes the size of the lumen, which is the internal space of the vessel. Measurements were made for arterioles and venules where they passed through a region located 0.50-2.00 disk diameters from the optic disk margin. Vessel calibers were based on the six largest arterioles and venules passing though this region and were summarized as central retinal artery equivalent (CRAE) and central retinal vein equivalent (CRVE) using the revised Knudtson-Parr-Hubbard formula (Cheung et al., 2010; Knudtson et al., 2003). Arteriolar and venular calibers were normally distributed within our population-representative cohort. The mean arteriolar caliber was 137.33 measuring units (SD=10.84, Median=137.33, Range=105.66, 179.47), and the mean venular caliber was 196.16 measuring units (SD=14.81, Median = 195.42, Range=141.07, 245.68).

Supplemental Table 2 (cont.). Description of the correlates of disorder liabilities across the life course

Domain	Description
Brain integrity (childhood)	
Preschool Brain Integrity Factor	We created a summary factor score via confirmatory factor analysis of five indicators of brain integrity assessed at age 3: neurological abnormalities, lack of control, receptive language, Peabody Picture Vocabulary Test, motor development (all described below). The model fit the data well, χ^2 (N = 1035, df = 5) = 6.459, p = .2641, CFI = .999, TLI = .997, RMSEA = .017. Factor scores were output and standardized to a Mean = 0 and SD = 1.
Neurologic abnormalities	At age 3 years, each child was examined by a pediatric neurologist for neurologic signs, including assessment of motility, passive movements, reflexes, facial musculature, strabismus, nystagmus, foot posture, and gait, based on procedures described by Touwen and Prechtl (1970).
Lack of control	At age 3, each study child participated in a testing session involving cognitive and motor tasks. The children were tested by examiners who had no knowledge of their behavioral history. Following the testing, each examiner rated the child's lack of control in the testing session, yielding a behavioral style factor, labeled Lack of Control (Caspi et al., 1995), which characterized children who were labile, had low frustration tolerance, lacked reserve, were resistant, restless, impulsive, required attention, and lacked persistence in reaching goals.
Receptive language	Receptive language was assessed at age 3 using the Reynell Developmental Language Scales (Reynell, 1969).
Peabody Picture Vocabulary Test	Intelligence was assessed at age 3 with the Peabody Picture Vocabulary test (Dunn, 1995).
Motor development	Motor development was assessed at age 3 years with the Bayley Motor Scales (Bayley, 1969).

Supplemental Table 2 (cont.). Description of the correlates of disorder liabilities across the life course

Domain	Description
Childhood intelligence (IQ)	Intelligence was assessed at age 5 with the Stanford-Binet Intelligence Scales (Terman & Merrill, 1960) The Wechsler Intelligence Scale for Children – Revised (WISC-R) (Wechsler, 1974) was administered at ages 7, 9, and 11 years. IQ scores for the three ages were averaged and standardized.
Self-control	As previously described (Moffitt et al., 2011), children's self-control during their first decade of life was measured using nine measures of self-control: observational ratings of children's lack of control (ages 3 and 5 years) and parent, teacher, and self-reports of impulsive aggression, hyperactivity, lack of persistence, inattention, and impulsivity (ages 5, 7, 9, and 11 years). The nine measures were positively and significantly correlated. Based on principal components analysis, the standardized measures were averaged into a single composite comprising multiple ages and informants, with strong internal reliability □ = 0.86.

Supplemental Table 3. Polychoric correlations between symptoms of mental disorders in the Dunedin cohort from ages 18-38

	Alcohol					Cannabis				
	Age 18	**Age 21**	**Age 26**	**Age 32**	**Age 38**	**Age 18**	**Age 21**	**Age 26**	**Age 32**	**Age 38**
Alcohol										
Age 18	--									
Age 21	0.510	--								
Age 26	0.344	0.494	--							
Age 32	0.300	0.313	0.427	--						
Age 38	0.292	0.313	0.387	0.466	--					
Cannabis										
Age 18	0.480	0.316	0.196	0.174	0.189	--				
Age 21	0.417	0.485	0.316	0.259	0.250	0.531	--			
Age 26	0.309	0.330	0.419	0.320	0.309	0.425	0.553	--		
Age 32	0.219	0.210	0.231	0.299	0.282	0.292	0.374	0.581	--	
Age 38	0.217	0.258	0.274	0.259	0.334	0.318	0.365	0.510	0.539	--
Hard Drugs										
Age 26	0.173	0.150	0.236	0.085	0.138	0.318	0.322	0.385	0.200	0.286
Age 32	0.228	0.144	0.195	0.319	0.249	0.307	0.276	0.359	0.330	0.293
Age 38	0.118	0.152	0.170	0.086	0.177	0.244	0.259	0.199	0.064	0.243
Tobacco										
Age 21	0.335	0.268	0.160	0.151	0.152	0.357	0.312	0.232	0.202	0.258
Age 26	0.255	0.220	0.224	0.191	0.230	0.267	0.310	0.339	0.275	0.337
Age 38	0.248	0.195	0.207	0.224	0.231	0.299	0.301	0.324	0.315	0.397
Conduct Disorder										
Age 18	0.484	0.405	0.328	0.271	0.261	0.487	0.455	0.420	0.289	0.324
Age 21	0.326	0.455	0.321	0.235	0.194	0.354	0.483	0.388	0.281	0.302
Age 26	0.279	0.286	0.381	0.255	0.260	0.286	0.363	0.435	0.281	0.317
Age 32	0.229	0.225	0.305	0.345	0.268	0.223	0.273	0.337	0.267	0.302
Age 38	0.203	0.216	0.262	0.220	0.300	0.245	0.231	0.268	0.216	0.249

Supplemental Table 3 (cont.). Polychoric correlations between symptoms of mental disorders in the Dunedin cohort from ages 18-38

	Alcohol					Cannabis				
	Age 18	**Age 21**	**Age 26**	**Age 32**	**Age 38**	**Age 18**	**Age 21**	**Age 26**	**Age 32**	**Age 38**
Major Depression										
Age 18	0.240	0.108	0.110	0.074	0.111	0.228	0.171	0.055	0.030	0.038
Age 21	0.155	0.227	0.126	0.103	0.087	0.132	0.190	0.071	0.003	0.052
Age 26	0.091	0.112	0.158	0.031	0.031	0.092	0.129	0.118	-0.002	0.023
Age 32	0.061	0.063	0.026	0.182	0.120	0.099	0.087	0.088	0.124	0.078
Age 38	0.141	0.114	0.090	0.089	0.228	0.109	0.161	0.131	0.068	0.175
Generalized Anxiety										
Age 18	0.214	0.132	0.054	0.086	0.098	0.145	0.133	0.030	0.027	0.031
Age 21	0.092	0.139	0.095	0.117	0.090	0.059	0.106	0.079	0.041	0.008
Age 26	0.142	0.084	0.129	0.099	0.080	0.182	0.153	0.202	0.114	0.117
Age 32	-0.002	0.011	0.028	0.112	0.036	0.063	0.031	-0.019	0.023	0.025
Age 38	0.091	0.071	0.009	0.057	0.094	0.044	0.068	0.023	0.028	0.099
Fear / Phobia										
Age 18	0.153	0.040	0.009	0.060	0.060	0.107	0.035	0.089	0.026	0.048
Age 21	0.112	0.094	0.077	0.086	0.020	0.093	0.058	0.051	0.047	0.068
Age 26	0.106	0.103	0.123	0.067	0.088	0.115	0.097	0.132	0.069	0.133
Age 32	0.024	0.040	0.019	0.057	0.032	0.020	-0.019	0.018	0.036	0.075
Age 38	-0.002	-0.004	0.002	0.011	0.035	0.020	0.004	0.019	0.010	0.068
Obsessive-Compulsive Disorder										
Age 18	0.188	0.091	0.126	0.095	0.074	0.122	0.075	0.055	0.046	0.048
Age 21	0.187	0.224	0.204	0.153	0.069	0.115	0.220	0.061	0.042	0.036
Age 26	0.152	0.199	0.185	0.121	0.094	0.197	0.171	0.189	0.099	0.118
Age 32	0.112	0.108	0.103	0.138	0.077	0.083	0.089	0.107	0.106	0.065
Age 38	0.100	0.069	0.131	0.029	0.060	0.085	0.055	0.109	0.054	0.164

Supplemental Table 3 (cont.). Polychoric correlations between symptoms of mental disorders in the Dunedin cohort from ages 18-38

	Alcohol					Cannabis				
	Age 18	**Age 21**	**Age 26**	**Age 32**	**Age 38**	**Age 18**	**Age 21**	**Age 26**	**Age 32**	**Age 38**
Mania										
Age 26	0.111	0.191	0.244	0.158	0.176	0.158	0.228	0.201	0.156	0.142
Age 32	0.160	0.161	0.097	0.164	0.139	0.158	0.125	0.141	0.204	0.202
Age 38	0.213	0.146	0.187	0.173	0.137	0.182	0.168	0.183	0.109	0.196
Schizophrenia										
Age 21	0.235	0.253	0.171	0.088	0.054	0.309	0.314	0.120	0.079	0.075
Age 26	0.199	0.154	0.186	0.170	0.055	0.223	0.238	0.204	0.094	0.122
Age 32	0.183	0.078	0.077	0.199	0.026	0.161	0.211	0.140	0.071	0.093
Age 38	0.195	0.101	0.091	0.145	0.072	0.238	0.202	0.173	0.114	0.135

Supplemental Table 3 (cont.). Polychoric correlations between symptoms of mental disorders in the Dunedin cohort from ages 18-38

	Hard Drugs			Tobacco			Conduct Disorder				
	Age 26	**Age 32**	**Age 38**	**Age 21**	**Age 26**	**Age 38**	**Age 18**	**Age 21**	**Age 26**	**Age 32**	**Age 38**
Alcohol											
Age 18											
Age 21											
Age 26											
Age 32											
Age 38											
Cannabis											
Age 18											
Age 21											
Age 26											
Age 32											
Age 38											
Hard Drugs											
Age 26	--										
Age 32	0.472	--									
Age 38	0.376	0.285	--								
Tobacco											
Age 21	0.169	0.197	0.106	--							
Age 26	0.203	0.249	0.140	0.670	--						
Age 38	0.255	0.273	0.197	0.609	0.676	--					
Conduct Disorder											
Age 18	0.334	0.288	0.209	0.321	0.262	0.272	--				
Age 21	0.355	0.247	0.221	0.305	0.271	0.292	0.533	--			
Age 26	0.341	0.257	0.141	0.224	0.283	0.282	0.460	0.485	--		
Age 32	0.212	0.280	0.137	0.107	0.157	0.176	0.313	0.329	0.425	--	
Age 38	0.279	0.238	0.234	0.204	0.205	0.231	0.295	0.283	0.396	0.383	--

Supplemental Table 3 (cont.). Polychoric correlations between symptoms of mental disorders in the Dunedin cohort from ages 18-38

	Hard Drugs			Tobacco			Conduct Disorder				
	Age 26	Age 32	Age 38	Age 21	Age 26	Age 38	Age 18	Age 21	Age 26	Age 32	Age 38
Major Depression											
Age 18	0.028	0.009	0.023	0.210	0.160	0.182	0.159	0.105	0.103	0.071	0.055
Age 21	0.051	0.088	0.041	0.173	0.170	0.148	0.095	0.204	0.143	0.100	0.152
Age 26	0.081	0.034	0.043	0.083	0.109	0.055	0.094	0.110	0.160	0.106	0.110
Age 32	0.041	0.183	0.044	0.091	0.109	0.149	0.047	0.082	0.092	0.142	0.121
Age 38	0.107	0.128	0.214	0.154	0.193	0.190	0.075	0.100	0.162	0.087	0.213
Generalized Anxiety											
Age 18	0.039	0.027	0.009	0.122	0.127	0.136	0.156	0.141	0.082	0.042	0.049
Age 21	0.044	0.090	0.073	0.076	0.067	0.061	0.072	0.171	0.109	0.063	0.110
Age 26	0.069	0.056	0.091	0.103	0.172	0.130	0.150	0.133	0.193	0.169	0.176
Age 32	-0.048	0.075	0.041	0.067	0.108	0.119	-0.015	0.059	0.009	0.104	0.065
Age 38	0.026	0.085	0.160	0.061	0.102	0.143	0.002	0.064	0.080	0.075	0.151
Fear / Phobia											
Age 18	0.013	0.059	0.063	0.096	0.043	0.109	0.074	0.056	0.027	0.085	0.049
Age 21	0.004	0.089	0.004	0.128	0.106	0.094	0.065	0.088	0.033	0.061	0.088
Age 26	0.012	0.025	0.062	0.123	0.153	0.119	0.069	0.132	0.112	0.066	0.075
Age 32	-0.014	0.119	0.067	0.048	0.100	0.094	0.005	0.075	0.075	0.072	0.092
Age 38	-0.015	0.115	0.104	0.117	0.135	0.111	0.000	0.049	0.049	0.046	0.078
Obsessive-Compulsive Disorder											
Age 18	0.039	0.042	0.066	0.131	0.100	0.101	0.179	0.132	0.122	0.076	0.062
Age 21	0.049	0.125	0.105	0.210	0.173	0.167	0.151	0.220	0.175	0.113	0.098
Age 26	0.062	0.102	0.127	0.152	0.188	0.151	0.175	0.128	0.202	0.174	0.111
Age 32	0.066	0.136	0.114	0.083	0.108	0.135	0.078	0.094	0.088	0.186	0.088
Age 38	0.147	0.076	0.155	0.081	0.090	0.089	0.078	0.091	0.141	0.102	0.145

Supplemental Table 3 (cont.). Polychoric correlations between symptoms of mental disorders in the Dunedin cohort from ages 18-38

	Hard Drugs			Tobacco			Conduct Disorder				
	Age 26	**Age 32**	**Age 38**	**Age 21**	**Age 26**	**Age 38**	**Age 18**	**Age 21**	**Age 26**	**Age 32**	**Age 38**
Mania											
Age 26	0.071	0.112	0.245	0.150	0.186	0.164	0.111	0.166	0.174	0.186	0.192
Age 32	0.088	0.237	0.113	0.165	0.207	0.243	0.095	0.172	0.127	0.230	0.239
Age 38	0.186	0.323	0.241	0.145	0.170	0.174	0.188	0.175	0.237	0.179	0.213
Schizophrenia											
Age 21	0.095	0.058	0.123	0.223	0.224	0.221	0.217	0.266	0.225	0.206	0.163
Age 26	0.173	0.143	0.082	0.153	0.218	0.164	0.210	0.207	0.246	0.212	0.189
Age 32	0.119	0.159	0.085	0.153	0.229	0.179	0.142	0.138	0.211	0.193	0.169
Age 38	0.146	0.196	0.151	0.169	0.239	0.222	0.161	0.182	0.234	0.164	0.288

Supplemental Table 3 (cont.). Polychoric correlations between symptoms of mental disorders in the Dunedin cohort from ages 18-38

	Major Depression					Generalized Anxiety				
	Age 18	**Age 21**	**Age 26**	**Age 32**	**Age 38**	**Age 18**	**Age 21**	**Age 26**	**Age 32**	**Age 38**
Major Depression										
Age 18	--									
Age 21	0.299	--								
Age 26	0.233	0.301	--							
Age 32	0.171	0.227	0.192	--						
Age 38	0.234	0.267	0.210	0.303	--					
Generalized Anxiety										
Age 18	0.450	0.270	0.200	0.120	0.154	--				
Age 21	0.285	0.448	0.204	0.196	0.206	0.299	--			
Age 26	0.158	0.202	0.367	0.182	0.217	0.163	0.212	--		
Age 32	0.134	0.194	0.171	0.484	0.280	0.132	0.190	0.164	--	
Age 38	0.157	0.221	0.126	0.237	0.454	0.201	0.207	0.136	0.261	--
Fear / Phobia										
Age 18	0.255	0.171	0.111	0.170	0.168	0.240	0.164	0.107	0.098	0.171
Age 21	0.243	0.289	0.129	0.194	0.179	0.157	0.273	0.138	0.192	0.158
Age 26	0.173	0.169	0.179	0.140	0.185	0.135	0.117	0.317	0.150	0.205
Age 32	0.148	0.206	0.082	0.305	0.205	0.120	0.162	0.160	0.331	0.288
Age 38	0.149	0.169	0.066	0.235	0.257	0.088	0.111	0.082	0.190	0.319
Obsessive-Compulsive Disorder										
Age 18	0.256	0.168	0.056	0.066	0.167	0.185	0.136	0.145	0.048	0.096
Age 21	0.198	0.303	0.105	0.223	0.162	0.162	0.308	0.169	0.181	0.108
Age 26	0.179	0.199	0.227	0.134	0.178	0.098	0.173	0.326	0.093	0.111
Age 32	0.135	0.231	0.149	0.333	0.189	0.069	0.157	0.149	0.328	0.208
Age 38	0.084	0.158	0.114	0.104	0.222	0.078	0.129	0.141	0.116	0.302

Supplemental Table 3 (cont.). Polychoric correlations between symptoms of mental disorders in the Dunedin cohort from ages 18-38

	Major Depression					Generalized Anxiety				
	Age 18	**Age 21**	**Age 26**	**Age 32**	**Age 38**	**Age 18**	**Age 21**	**Age 26**	**Age 32**	**Age 38**
Mania										
Age 26	0.117	0.203	0.209	0.178	0.273	0.051	0.200	0.277	0.213	0.168
Age 32	0.085	0.235	0.117	0.261	0.233	0.043	0.169	0.195	0.215	0.225
Age 38	0.183	0.194	0.173	0.235	0.253	0.108	0.159	0.136	0.169	0.199
Schizophrenia										
Age 21	0.181	0.297	0.175	0.186	0.148	0.124	0.218	0.167	0.197	0.105
Age 26	0.182	0.244	0.239	0.218	0.211	0.086	0.218	0.301	0.111	0.175
Age 32	0.122	0.226	0.156	0.312	0.210	0.043	0.190	0.224	0.240	0.205
Age 38	0.155	0.242	0.160	0.225	0.289	0.066	0.186	0.289	0.165	0.315

Supplemental Table 3 (cont.). Polychoric correlations between symptoms of mental disorders in the Dunedin cohort from ages 18-38

	Fear / Phobia					Obsessive-Compulsive Disorder				
	Age 18	**Age 21**	**Age 26**	**Age 32**	**Age 38**	**Age 18**	**Age 21**	**Age 26**	**Age 32**	**Age 38**
Fear / Phobia										
Age 18	--									
Age 21	0.353	--								
Age 26	0.213	0.279	--							
Age 32	0.218	0.252	0.362	--						
Age 38	0.190	0.294	0.290	0.368	--					
Obsessive-Compulsive Disorder										
Age 18	0.252	0.171	0.117	0.096	0.129	--				
Age 21	0.178	0.369	0.169	0.140	0.138	0.251	--			
Age 26	0.240	0.238	0.261	0.105	0.099	0.229	0.365	--		
Age 32	0.154	0.199	0.145	0.229	0.154	0.177	0.279	0.356	--	
Age 38	0.091	0.134	0.170	0.151	0.273	0.197	0.176	0.302	0.417	--
Mania										
Age 26	0.030	0.135	0.113	0.170	0.146	0.102	0.234	0.262	0.228	0.248
Age 32	0.074	0.218	0.131	0.211	0.159	0.095	0.206	0.193	0.264	0.165
Age 38	0.155	0.159	0.106	0.149	0.150	0.146	0.203	0.180	0.214	0.218
Schizophrenia										
Age 21	0.078	0.270	0.161	0.122	0.113	0.145	0.515	0.295	0.203	0.122
Age 26	0.066	0.181	0.255	0.151	0.140	0.162	0.284	0.383	0.273	0.264
Age 32	0.023	0.180	0.148	0.197	0.147	0.094	0.260	0.201	0.318	0.169
Age 38	0.090	0.220	0.220	0.198	0.304	0.137	0.232	0.265	0.214	0.343

Supplemental Table 3 (cont.). Polychoric correlations between symptoms of mental disorders in the Dunedin cohort from ages 18-38

	Mania			Schizophrenia			
	Age 26	**Age 32**	**Age 38**	**Age 21**	**Age 26**	**Age 32**	**Age 38**
Mania							
Age 26	--						
Age 32	0.416	--					
Age 38	0.241	0.325	--				
Schizophrenia							
Age 21	0.247	0.258	0.167	--			
Age 26	0.256	0.226	0.272	0.443	--		
Age 32	0.167	0.270	0.240	0.373	0.574	--	
Age 38	0.316	0.279	0.401	0.379	0.587	0.545	--

Supplemental Table 4. Model-estimated thresholds mapping symptoms of mental disorders onto the normal distribution

	Threshold #								
	1	2	3	4	5	6	7	8	9
Alcohol									
Age 18	0.072	0.539	0.905	1.156	1.434	1.675	1.882	2.118	2.385
Age 21	-0.202	0.237	0.577	0.908	1.169	1.388	1.707	1.959	2.310
Age 26	-0.061	0.432	0.793	1.105	1.377	1.693	1.984	2.187	2.355
Age 32	0.282	0.826	1.197	1.477	1.675	1.909	2.181	2.350	2.638
Age 38	0.264	0.700	1.076	1.351	1.564	1.751	1.974	2.177	2.494
Cannabis									
Age 18	1.014	1.219	1.418	1.583	1.822	2.069	2.170	2.488	2.857
Age 21	0.751	0.987	1.221	1.447	1.680	1.954	2.269	2.492	2.861
Age 26	0.738	0.964	1.184	1.390	1.533	1.738	2.003	2.187	2.643
Age 32	1.043	1.283	1.527	1.733	1.979	2.129	2.243	2.639	--
Age 38	1.248	1.497	1.672	1.790	2.013	2.178	2.347	2.635	3.076
Hard Drugs									
Age 26	1.439	1.612	1.750	1.840	1.931	2.022	2.109	2.187	2.447
Age 32	1.570	1.710	1.835	1.910	2.038	2.155	2.312	2.395	2.563
Age 38	1.740	1.922	2.055	2.077	2.151	2.207	2.272	2.391	2.440
Tobacco									
Age 21	0.606	0.762	0.947	1.194	1.459	1.832	2.152	2.636	3.077
Age 26	0.589	0.751	0.920	1.166	1.466	1.824	2.314	2.737	3.081
Age 38	0.840	0.922	1.045	1.215	1.466	1.803	2.125	2.391	2.559
Conduct Disorder									
Age 18	-0.781	0.124	0.845	1.303	1.612	1.966	3.070	--	--
Age 21	-0.428	0.253	0.814	1.195	1.567	1.892	2.180	2.561	3.077
Age 26	-0.502	0.375	1.011	1.586	1.967	2.160	2.503	3.083	--
Age 32	-0.065	0.799	1.366	1.896	2.244	2.640	2.867	--	--
Age 38	0.313	1.107	1.842	2.148	2.557	3.074	--	--	--
Major Depression									
Age 18	0.409	0.439	0.535	0.647	0.819	0.967	1.231	1.593	2.047
Age 21	0.247	0.291	0.360	0.439	0.598	0.778	1.026	1.355	1.819
Age 26	0.748	0.755	0.769	0.808	0.851	0.948	1.081	1.338	1.869
Age 32	0.720	0.730	0.761	0.786	0.844	0.961	1.122	1.352	1.745
Age 38	0.615	0.647	0.680	0.734	0.798	0.936	1.105	1.371	1.789
Generalized Anxiety									
Age 18	0.358	0.505	0.747	1.034	1.390	1.756	2.385	--	--
Age 21	0.512	0.635	0.854	1.113	1.328	1.718	2.079	--	--
Age 26	0.983	1.022	1.103	1.220	1.396	1.602	1.965	--	--
Age 32	0.789	0.859	0.965	1.108	1.243	1.503	1.944	--	--
Age 38	1.018	1.031	1.082	1.166	1.289	1.428	1.764	--	--

Supplemental Table 4 (cont.). Model-estimated thresholds mapping symptoms of mental disorders onto the normal distribution

	Threshold #								
	1	2	3	4	5	6	7	8	9
Fears / Phobias									
Age 18	0.786	1.653	2.433	--	--	--	--	--	--
Age 21	0.953	1.674	2.561	3.077	--	--	--	--	--
Age 26	0.870	1.662	2.280	--	--	--	--	--	--
Age 32	0.961	1.795	2.312	2.866	--	--	--	--	--
Age 38	0.954	1.705	2.440	2.732	--	--	--	--	--
Obsessive-Compulsive Disorder									
Age 18	0.418	1.309	2.047	--	--	--	--	--	--
Age 21	0.734	1.470	1.991	2.305	2.730	3.074	--	--	--
Age 26	0.792	1.431	1.839	2.063	2.315	2.502	2.738	3.081	--
Age 32	0.661	1.320	1.699	2.155	2.563	2.735	3.079	--	--
Age 38	1.037	1.669	2.075	2.306	2.634	2.730	3.074	--	--
Mania									
Age 26	1.460	1.548	1.630	1.773	1.930	2.245	2.565	--	--
Age 32	1.536	1.607	1.710	1.864	2.018	2.312	2.866	--	--
Age 38	1.202	1.276	1.449	1.620	1.844	2.150	2.558	--	--
Schizophrenia									
Age 21	1.068	1.556	1.906	2.151	2.308	2.495	2.863	3.076	--
Age 26	0.823	1.171	1.423	1.670	1.882	2.084	2.185	2.354	2.446
Age 32	0.804	1.173	1.385	1.617	1.795	1.895	2.038	2.105	2.243
Age 38	1.008	1.230	1.371	1.564	1.693	1.830	2.013	2.150	2.307

Supplemental Table 5. The structure of psychopathology: Model fit statistics, standardized factor loadings, and factor correlations from three different models. Panel A shows model fit statistics for three different models: the Correlated-Factors Model; the revised Hierarchical (BiFactor) Model, and the 1-Factor Model. Panel B shows the standardized factor loadings of the measured variables on the 11 disorder/symptom latent traits and the 11 disorder/symptom latent traits on the higher-order factors in the Correlated-Factors Model, the revised Hierarchical (BiFactor) Model, (not highlighted) and the 1-Factor Model (highlighted). Panel C shows the standardized factor loadings of the measured variables on the 5 age-specific method factors. Panel D shows the correlations between the higher-order factors in the Correlated-Factors Model and the revised Hierarchical (BiFactor) Model (there are no such correlations to estimate in the 1-Factor Model).

	Correlated Factors (Model A)	Hierarchical / BiFactor (Model B')	1-Factor (Model C)
	Panel A: Model Fit		
WLSMV Chi-Square	1737.159	1652.586	3404.568
Degrees of Freedom	1018	1012	1021
Comparative Fit Index (CFI)	0.962	0.966	0.875
Tucker-Lewis Index (TLI)	0.958	0.963	0.862
Root Mean Square Error of Approximation (RMSEA) with 90% Confidence Interval	0.027 (0.024, 0.029)	0.025 (0.023, 0.027)	0.048 (0.047, 0.050)

Supplemental Table 5 (cont.). The structure of psychopathology: Model fit statistics, standardized factor loadings, and factor correlations from three different models. Panel A shows model fit statistics for three different models: the Correlated-Factors Model; the revised Hierarchical (BiFactor) Model, and the 1-Factor Model. Panel B shows the standardized factor loadings of the measured variables on the 11 disorder/symptom latent traits (not highlighted) and the 11 disorder/symptom latent traits on the higher-order factors in the Correlated-Factors Model, the revised Hierarchical (BiFactor) Model, and the 1-Factor Model (highlighted). Panel C shows the standardized factor loadings of the measured variables on the 5 age-specific method factors. Panel D shows the correlations between the higher-order factors in the Correlated-Factors Model and the revised Hierarchical (BiFactor) Model (there are no such correlations to estimate in the 1-Factor Model).

	Panel B: Standardized Factor Loadings							
	Correlated Factors (Model A)				Hierarchical / BiFactor (Model B')			1-Factor (Model C)	
		Externalizing	Internalizing	Thought Disorder		Externalizing	Internalizing	"p"		"p"
Alcohol		**0.733**				**0.626**		**0.397**		**0.698**
Age 18	0.726				0.728				0.714	
Age 21	0.702				0.702				0.722	
Age 26	0.704				0.702				0.707	
Age 32	0.694				0.692				0.683	
Age 38	0.623				0.625				0.618	
Cannabis		**0.885**				**0.811**		**0.455**		**0.825**
Age 18	0.806				0.805				0.794	
Age 21	0.843				0.843				0.864	
Age 26	0.853				0.853				0.853	
Age 32	0.822				0.823				0.806	
Age 38	0.837				0.837				0.840	
Hard Drugs		**0.839**				**0.709**		**0.452**		**0.812**
Age 26	0.853				0.853				0.842	
Age 32	0.874				0.872				0.874	
Age 38	0.743				0.744				0.761	

Supplemental Table 5 (cont.). The structure of psychopathology: Model fit statistics, standardized factor loadings, and factor correlations from three different models. Panel A shows model fit statistics for three different models: the Correlated-Factors Model; the revised Hierarchical (BiFactor) Model, and the 1-Factor Model. Panel B shows the standardized factor loadings of the measured variables on the 11 disorder/symptom latent traits (not highlighted) and the 11 disorder/symptom latent traits on the higher-order factors in the Correlated-Factors Model, the revised Hierarchical (BiFactor) Model, and the 1-Factor Model (highlighted). Panel C shows the standardized factor loadings of the measured variables on the 5 age-specific method factors. Panel D shows the correlations between the higher-order factors in the Correlated-Factors Model and the revised Hierarchical (BiFactor) Model (there are no such correlations to estimate in the 1-Factor Model).

		Panel B: Standardized Factor Loadings							
		Correlated Factors (Model A)			Hierarchical / BiFactor (Model B')			1-Factor (Model C)	
		Externalizing	Internalizing	Thought Disorder	Externalizing	Internalizing	"p"		"p"
Tobacco		**0.668**			**0.420**		**0.504**		**0.658**
Age 21	0.854			0.852				0.855	
Age 26	0.900			0.902				0.895	
Age 38	0.893			0.893				0.899	
Conduct Disorder		**0.909**			**0.691**		**0.557**		**0.865**
Age 18	0.724			0.723				0.693	
Age 21	0.703			0.703				0.722	
Age 26	0.676			0.676				0.687	
Age 32	0.577			0.577				0.574	
Age 38	0.555			0.557				0.563	
Major Depression			**0.972**			**0.340**	**0.835**		**0.643**
Age 18	0.546			0.548				0.533	
Age 21	0.649			0.651				0.627	
Age 26	0.508			0.508				0.527	
Age 32	0.587			0.581				0.562	
Age 38	0.650			0.653				0.694	
Generalized Anxiety			**0.934**			**0.497**	**0.812**		**0.600**
Age 18	0.452			0.449				0.454	
Age 21	0.578			0.573				0.555	
Age 26	0.629			0.626				0.707	
Age 32	0.507			0.511				0.456	
Age 38	0.585			0.592				0.560	

Supplemental Table 5 (cont.). The structure of psychopathology: Model fit statistics, standardized factor loadings, and factor correlations from three different models. Panel A shows model fit statistics for three different models: the Correlated-Factors Model; the revised Hierarchical (BiFactor) Model, and the 1-Factor Model. Panel B shows the standardized factor loadings of the measured variables on the 11 disorder/symptom latent traits (not highlighted) and the 11 disorder/symptom latent traits on the higher-order factors in the Correlated-Factors Model, the revised Hierarchical (BiFactor) Model, and the 1-Factor Model (highlighted). Panel C shows the standardized factor loadings of the measured variables on the 5 age-specific method factors. Panel D shows the correlations between the higher-order factors in the Correlated-Factors Model and the revised Hierarchical (BiFactor) Model (there are no such correlations to estimate in the 1-Factor Model).

		Panel B: Standardized Factor Loadings							
		Correlated Factors (Model A)			Hierarchical / BiFactor (Model B')			1-Factor (Model C)	
		Externalizing	Internalizing	Thought Disorder	Externalizing	Internalizing	"p"		"p"
Fears / Phobias			**0.704**			**0.441**	**0.623**		**0.420**
Age 18	0.613				0.611			0.594	
Age 21	0.751				0.750			0.725	
Age 26	0.725				0.718			0.787	
Age 32	0.690				0.696			0.678	
Age 38	0.635				0.643			0.617	
Obsessive-Compulsive Disorder				**0.726**			**0.725**		**0.578**
Age 18	0.488				0.487			0.474	
Age 21	0.708				0.710			0.733	
Age 26	0.726				0.727			0.757	
Age 32	0.688				0.686			0.673	
Age 38	0.706				0.706			0.674	
Mania				**0.982**			**0.973**		**0.817**
Age 26	0.751				0.750			0.757	
Age 32	0.774				0.775			0.773	
Age 38	0.729				0.729			0.725	
Schizophrenia				**0.826**			**0.819**		**0.685**
Age 21	0.763				0.765			0.808	
Age 26	0.805				0.801			0.822	
Age 32	0.742				0.741			0.734	
Age 38	0.843				0.846			0.804	

Supplemental Table 5 (cont.). The structure of psychopathology: Model fit statistics, standardized factor loadings, and factor correlations from three different models. Panel A shows model fit statistics for three different models: the Correlated-Factors Model; the revised Hierarchical (BiFactor) Model, and the 1-Factor Model. Panel B shows the standardized factor loadings of the measured variables on the 11 disorder/symptom latent traits (not highlighted) and the 11 disorder/symptom latent traits on the higher-order factors in the Correlated-Factors Model, the revised Hierarchical (BiFactor) Model, and the 1-Factor Model (highlighted). Panel C shows the standardized factor loadings of the measured variables on the 5 age-specific method factors. Panel D shows the correlations between the higher-order factors in the Correlated-Factors Model and the revised Hierarchical (BiFactor) Model (there are no such correlations to estimate in the 1-Factor Model).

	Panel C: Standardized Factor Loadings						
	Correlated Factors (Model A)			Hierarchical / BiFactor (Model B')			1-Factor (Model C)
		Externalizing	Internalizing	Thought Disorder	Externalizing	Internalizing	"p"	"p"
Age 18								
Alcohol 18	0.474				0.472			0.410
Cannabis 18	0.401				0.400			0.365
Conduct Disorder 18	0.335				0.323			0.305
Major Depression 18	0.525				0.526			0.584
Generalized Anxiety 18	0.477				0.503			0.552
Fears/Phobias 18	0.277				0.292			0.382
Obsessive-Compulsive Disorder 18	0.288				0.289			0.339
Age 21								
Alcohol 21	0.343				0.363			0.017
Cannabis 21	0.308				0.341			-0.063
Tobacco 21	0.201				0.132			0.021
Conduct Disorder 21	0.332				0.317			0.014
Major Depression 21	0.358				0.349			0.573
Generalized Anxiety 21	0.270				0.290			0.528
Fears/Phobias 21	0.290				0.293			0.569
Obsessive-Compulsive Disorder 21	0.488				0.476			0.590
Schizophrenia 21	0.487				0.478			0.464

Supplemental Table 5 (cont.). The structure of psychopathology: Model fit statistics, standardized factor loadings, and factor correlations from three different models. Panel A shows model fit statistics for three different models: the Correlated-Factors Model; the revised Hierarchical (BiFactor) Model, and the 1-Factor Model. Panel B shows the standardized factor loadings of the measured variables on the 11 disorder/symptom latent traits (not highlighted) and the 11 disorder/symptom latent traits on the higher-order factors in the Correlated-Factors Model, the revised Hierarchical (BiFactor) Model, and the 1-Factor Model (highlighted). Panel C shows the standardized factor loadings of the measured variables on the 5 age-specific method factors. Panel D shows the correlations between the higher-order factors in the Correlated-Factors Model and the revised Hierarchical (BiFactor) Model (there are no such correlations to estimate in the 1-Factor Model).

	Panel C: Standardized Factor Loadings							
	Correlated Factors (Model A)			Hierarchical / BiFactor (Model B')			1-Factor (Model C)	
		Externalizing	Internalizing	Thought Disorder		Externalizing	Internalizing	"p"		"p"
Age 26										
Alcohol 26	0.229				0.264				-0.050	
Cannabis 26	0.198				0.260				-0.181	
Hard Drugs 26	0.074				0.111				-0.303	
Tobacco 26	0.163				0.062				-0.019	
Conduct Disorder 26	0.277				0.263				-0.047	
Major Depression 26	0.388				0.385				0.509	
Generalized Anxiety 26	0.538				0.541				0.638	
Fears/Phobias 26	0.282				0.275				0.452	
Obsessive-Compulsive Disorder 26	0.348				0.329				0.446	
Mania 26	0.170				0.177				0.338	
Schizophrenia 26	0.286				0.287				0.393	
Age 32										
Alcohol 32	0.139				0.167				-0.055	
Cannabis 32	-0.059				-0.009				-0.229	
Hard Drugs 32	0.272				0.324				-0.055	
Conduct Disorder 32	0.215				0.198				0.021	
Major Depression 32	0.576				0.601				0.689	
Generalized Anxiety 32	0.573				0.569				0.708	
Fears/Phobias 32	0.343				0.321				0.531	
Obsessive-Compulsive Disorder 32	0.376				0.363				0.478	
Mania 32	0.234				0.231				0.393	
Schizophrenia 32	0.247				0.243				0.376	

Supplemental Table 5 (cont.). The structure of psychopathology: Model fit statistics, standardized factor loadings, and factor correlations from three different models. Panel A shows model fit statistics for three different models: the Correlated-Factors Model; the revised Hierarchical (BiFactor) Model, and the 1-Factor Model. Panel B shows the standardized factor loadings of the measured variables on the 11 disorder/symptom latent traits (not highlighted) and the 11 disorder/symptom latent traits on the higher-order factors in the Correlated-Factors Model, the revised Hierarchical (BiFactor) Model, and the 1-Factor Model (highlighted). Panel C shows the standardized factor loadings of the measured variables on the 5 age-specific method factors. Panel D shows the correlations between the higher-order factors in the Correlated-Factors Model and the revised Hierarchical (BiFactor) Model (there are no such correlations to estimate in the 1-Factor Model).

Panel C: Standardized Factor Loadings

	Correlated Factors (Model A)			Hierarchical / BiFactor (Model B')			1-Factor (Model C)	
		Externalizing	Internalizing	Thought Disorder	Externalizing	Internalizing	"p"	"p"
Age 38								
Alcohol 38	0.099				0.130			-0.160
Cannabis 38	0.178				0.211			-0.176
Hard Drugs 38	0.427				0.473			0.017
Tobacco 38	0.269				0.177			-0.027
Conduct Disorder 38	0.250				0.235			0.027
Major Depression 38	0.557				0.566			0.522
Generalized Anxiety 38	0.532				0.536			0.739
Fears / Phobias 38	0.295				0.271			0.528
Obsessive-Compulsive Disorder 38	0.202				0.184			0.471
Mania 38	0.145				0.137			0.325
Schizophrenia 38	0.212				0.179			0.494

Panel D: Factor Correlations

	Correlated Factors (Model A)			Hierarchical / BiFactor (Model B')	
		Internalizing	Thought Disorder		Internalizing
	Externalizing	**0.328**	**0.577**	Externalizing	**-0.471**
	Internalizing		**0.849**		

Supplemental Table 6. Variable and Factor Score R^2 for 3 models for describing the structure of psychopathology

	Correlated Factors (Model A)	Hierarchical / BiFactor (Model B')	1-Factor (Model C)
Measured Variables			
Alcohol			
Age 18	0.752	0.752	0.678
Age 21	0.611	0.625	0.521
Age 26	0.548	0.563	0.502
Age 32	0.500	0.507	0.470
Age 38	0.399	0.408	0.408
Cannabis			
Age 18	0.810	0.809	0.763
Age 21	0.805	0.827	0.751
Age 26	0.767	0.795	0.761
Age 32	0.680	0.677	0.702
Age 38	0.732	0.746	0.737
Hard Drugs			
Age 26	0.733	0.740	0.801
Age 32	0.837	0.866	0.766
Age 38	0.734	0.778	0.579
Tobacco			
Age 21	0.771	0.744	0.731
Age 26	0.837	0.817	0.802
Age 38	0.869	0.829	0.809
Conduct Disorder			
Age 18	0.637	0.627	0.573
Age 21	0.605	0.595	0.522
Age 26	0.534	0.527	0.474
Age 32	0.379	0.372	0.330
Age 38	0.370	0.365	0.318
Major Depression			
Age 18	0.574	0.577	0.625
Age 21	0.550	0.545	0.720
Age 26	0.409	0.406	0.537
Age 32	0.677	0.699	0.791
Age 38	0.733	0.747	0.754

Supplemental Table 6 (cont.). Variable and Factor Score R^2 for 3 models for describing the structure of psychopathology

	Correlated Factors (Model A)	Hierarchical / BiFactor (Model B')	1-Factor (Model C)
Generalized Anxiety			
Age 18	0.432	0.454	0.511
Age 21	0.407	0.412	0.586
Age 26	0.684	0.685	0.907
Age 32	0.585	0.585	0.709
Age 38	0.626	0.637	0.859
Fears / Phobias			
Age 18	0.452	0.458	0.499
Age 21	0.648	0.648	0.849
Age 26	0.606	0.591	0.824
Age 32	0.594	0.587	0.742
Age 38	0.491	0.487	0.660
Obsessive-Compulsive Disorder			
Age 18	0.321	0.321	0.340
Age 21	0.739	0.731	0.885
Age 26	0.649	0.638	0.771
Age 32	0.615	0.602	0.681
Age 38	0.539	0.532	0.676
Mania			
Age 26	0.593	0.593	0.687
Age 32	0.653	0.655	0.752
Age 38	0.553	0.550	0.630
Schizophrenia			
Age 21	0.820	0.814	0.868
Age 26	0.729	0.724	0.830
Age 32	0.611	0.608	0.680
Age 38	0.756	0.748	0.890

Supplemental Table 6 (cont.). Variable and Factor Score R^2 for 3 models for describing the structure of psychopathology

	Correlated Factors (Model A)	Hierarchical / BiFactor (Model B')	1-Factor (Model C)
Factor Scores			
Alcohol	0.537	0.550	0.487
Cannabis	0.782	0.865	0.681
Hard Drugs	0.703	0.707	0.660
Tobacco	0.447	0.430	0.433
Conduct Disorder	0.826	0.788	0.748
Major Depression	0.944	0.813	0.413
Generalized Anxiety	0.872	0.907	0.360
Fears / Phobias	0.496	0.582	0.177
Obsessive-Compulsive Disorder	0.526	0.525	0.334
Mania	0.965	0.946	0.668
Schizophrenia	0.682	0.671	0.469

Supplemental Table 7. Correlations between factor scores output from the Correlated Factors and Hierarchical Models

	Hierarchical / BiFactor (Model B')		
	Externalizing	Internalizing	"p"
Correlated Factors (Model A)			
Externalizing	0.844	-0.566	0.639
Internalizing	-0.166	0.461	0.917
Thought Disorder	0.146	0.075	0.997

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