

Supporting data

Table S1. Description of cognitive tests

Cognitive domain	Cognitive test	Description
Processing speed	Coding	This test involved copying shapes that match to different numbers as quickly as possible within a designated time limit.
	Sky Search	For this task, children were presented with pairs of identical and non-identical spaceships and asked to circle the pairs of identical ones as quickly as possible. A selective attention score was derived from this task which reflects the time taken (in secs) for the task, divided by the number of spaceships pairs correctly circled, adjusted for motor speed. Motor speed was the time taken for the task when the task was repeated with the non-identical spaceships removed.
Attention/vigilance	Opposite Worlds	This is a 'Stroop-Like' task; children were shown a total of 24 numbers in succession. They were asked to read the numbers out loud as quickly as possible and they were asked to call out 'two' when they reach number 1 and 'one' when they reach number 2. As a score for this task was the time taken to make the response.
Working memory	Backwards Digit Span	For this task, children were asked to repeat lists of digits of increasing lengths in reverse order.
	Arithmetic	This task comprises of timed orally administered arithmetic questions which are presented in story format.
	Counting Span Task	For this task, a number of red and blue dots were shown on a white screen and children were asked to count the red dots out loud. After each set of screens children recalled the number of dots presented on each screen within each set. At the start, children were shown two practice sets of two screens, followed by

		three sets of two, three, four and five screens. The main outcome score for this task was a span score reflecting the number of correctly recalled sets, weighted by the number of screens within each set.
Reasoning and problem solving	Picture Completion	For this task, children had to point out what is missing from each of a series of incomplete pictures that were arranged in order of difficulty.
	Picture Arrangement	This task involved the ordering of pictures into meaningful stories within a specific time limit and with increasing difficulty. A high score reflected both speeded response and accuracy.
	Block Design	For this task, children were shown specific patterns of blocks and asked to copy them using real blocks. Patterns were presented in order of difficulty. A high score reflected both speeded response and accuracy.
	Object Assembly	This involved putting together puzzles within a constrained time limit. Puzzles were presented with increasing difficulty. A high score reflected both speeded response and accuracy.

Table S2. Psychotic experiences at age 12 in relation to individual tests before and after adjustment for confounders

Cognitive domain	Test	Age	n	Non-adjusted OR		Adjusted OR ^a		Adjusted OR ^b	
				(95%CI)		(95%)		(95% CI)	
Processing speed	Coding	8	4861	1.31	(1.18- 1.44)	1.33	(1.20- 1.47)	1.27	(1.14- 1.40)
	Sky Search	8	4651	1.20	(1.07- 1.35)	1.21	(1.07- 1.37)	1.16	(1.03- 1.31)
Working memory	Backwards digit span	8	4767	1.09	(0.99- 1.19)	1.08	(0.97- 1.18)	1.03	(0.94- 1.12)
	Arithmetic	8	4836	1.18	(1.08- 1.28)	1.15	(1.04- 1.25)	1.10	(0.99- 1.21)
Reasoning and problem solving	Picture completion	8	4842	1.04	(0.95- 1.14)	1.02	(0.93- 1.12)	1.00	(0.91- 1.09)
	Picture arrangement	8	4817	0.98	(0.89- 1.06)	0.96	(0.89- 1.05)	0.95	(0.87- 1.04)
	Block design	8	4825	1.10	(1.01- 1.21)	1.06	(0.97- 1.18)	1.03	(0.94- 1.14)
	Object assembly	8	4601	1.10	(1.01- 1.21)	1.08	(0.98- 1.19)	1.05	(0.96- 1.16)

Abbreviations: CI, confidence interval; OR, odds ratio.

^a adjusted for gender, maternal education.

^b adjusted for gender, maternal education, and total difficulties.

Table S3. Correlations between the same cognitive domains at different ages

Cognitive domain		Correlation coefficient (r)
Processing speed	(age 8)	
	(age 11)	0.43
Attention	(age 8)	
	(age 11)	0.58
Working memory	(age 8)	
	(age 10)	0.58

Supplemental data (SA1)

Assessment of psychotic experiences

The interviewers were psychology graduates that were trained by experienced child and general psychiatrists and SCAN trainers. There were regular training sessions as well as monthly workshops to discuss complex cases. The interviewers had to reach 95% rating agreement in two gold-standard interview videotapes prepared by the psychiatrists. All interviews were audio-recorded and each interview was also rated by a second independent interviewer. 3% of the cohort that were invited back for a second interview after two weeks of the initial interview was examined for test-retest reliability. The PLIKSi is based on the psychosis section of the Diagnostic Interview Schedule-Children (DISC-IV)(1), the Schedule for Affective Disorders and Schizophrenia for School-Age children (K-SADS)(2) and the Schedules for Clinical Assessment in Neuropsychiatry version 2.0 (SCAN – Version 2.0) (3), with slight modifications after piloting. It comprises of 12 core questions regarding the three main domains of positive symptoms: hallucinations (auditory, and visual), delusions (being spied on, persecutory, thoughts being read, reference, control, grandiose ability, not otherwise specified) and experiences of thought interference (thought broadcasting, thought insertion, thought withdrawal). If the child answered 'yes' or 'maybe' to any of these questions, the interviewer was then allowed to use additional probe questions in order to rate whether the concept was definitely present, suspected as present or not present. Questions were also included to clarify that symptoms were not attributable to hypnagogic and hypnopompic states, fever or substance use. The time frame of the symptoms was the last six months. We excluded those symptoms that were attributable to sleep, fever and substance use effects.

Supplemental References (SR1)

1. Shaffer D, Fisher P, Lucas CP, Dulcan MK, Schwab-Stone ME. NIMH Diagnostic Interview Schedule for Children Version IV (NIMH DISC-IV): description, differences from previous versions, and reliability of some common diagnoses. *J Am Acad Child Adolesc Psychiatry*. 2000 Jan 2000;39(1):28-38.
2. Puig-Antich J, Chambers W. *Schedule for Affective Disorders and Schizophrenia for School-Age Children (KIDDIE-SADS)*. New York, New York State Psychiatric Institute: Biometrics Research; 1978.
3. Sheitman BB, Murray MG, Snyder JA, et al. IQ scores of treatment-resistant schizophrenia patients before and after the onset of the illness. *Schizophrenia research*. 2000;46(2-3):203-207.

Supplemental data (SA2)

Missing data

Children who did not attend the PLIKSi interview at age 12 were more likely to perform worse in all the cognitive domains; processing speed at age 8 (mean [SD], -0.11 [1.0] vs. 0.03 [1.0]; $p < 0.001$), attention at age 8 (-0.01 [0.7] vs. 0.05 [0.6]; $p = 0.004$), working memory at age 8 (-0.12 [1.0] vs. 0.03 [1.0]; $p < 0.001$), reasoning and problem solving at age 8 (-0.18 [1.0] vs. 0.05 [1.0]; $p < 0.001$), working memory at age 10 (-0.11 [1.0] vs. 0.02 [1.0]; $p < 0.001$), processing speed at age 11 (-0.01 [0.8] vs. 0.07 [0.8]; $p = 0.004$) and attention at age 11 (-0.09 [1.0] vs. 0.01 [1.0]; $p = 0.006$).

As a sensitivity analysis we used imputation analysis with chained equations(4, 5) to determine whether attrition of the cohort has biased the observed associations. Missing data was imputed for the outcomes and confounders. Fifty two measures were included in the imputation model including variables associated with both cognition and psychotic symptoms, such as Strengths and Difficulties Questionnaire (SDQ)(6) measures at ages 4, 8 and 12 and Short Moods and Feelings Questionnaire (SMFQ)(7) at ages 9 and 12 as well as variables relating to parental sociodemographic characteristics that are related to missingness such as parental educational qualifications, financial difficulties and house crowding indices. Fifty datasets were imputed.

Supplemental References (SR2)

1. Royston P. Multiple imputation of missing values. *Stata Journal*. 2004;4(3):14.
2. Royston P. Multiple imputation of missing values: update of ice. *Stata Journal* 5. 2005:9.
3. Goodman R. The Strengths and Difficulties Questionnaire: a research note. *J Child Psychol Psychiatry*. 1997 Jul 1997;38(5):581-586.
4. Angold A, Costello EJ, Messer SC, Pickles A. Development of a short questionnaire for use in epidemiological studies of depression in children and adolescents *International Journal of Methods in Psychiatric Research*. 1995;5(4):12.