IMPORTANCE  Psychotic experiences in early life are associated with neuropsychological impairment and the risk for later psychiatric disorders. Psychotic experiences are also prevalent in adults, but neuropsychological investigations spanning adulthood are limited, and confounding factors have not been examined rigorously.

OBJECTIVE  To characterize neuropsychological functioning in adults with psychotic experiences while adjusting for important sociodemographic characteristics and familial factors and investigating the effect of age.

DESIGN, SETTING, AND PARTICIPANTS  The South East London Community Health (SELCoH) study is a population-based household survey of physical and mental health in individuals 16 years or older conducted from June 1, 2008, to December 31, 2010, in 2 London boroughs. The study included 1698 participants from 1075 households. Data were analyzed from May 6, 2014, to April 22, 2015.

EXPOSURES  Psychotic experiences measured using the Psychosis Screening Questionnaire.

MAIN OUTCOMES AND MEASURES  Neuropsychological functioning measured using tests assessing verbal knowledge (Wechsler Test of Adult Reading), working memory (Spatial Delayed Response Task), memory (Visual Object Learning Task), and processing speed (digit symbol coding task). A composite IQ score of general cognitive ability was calculated.

RESULTS  A total of 1677 participants with a mean (SD) age of 40 (17) years were included in the analysis. Compared with the group without psychotic experiences, the 171 (9.7%) adults with psychotic experiences did not show a statistically significant impairment on mean (SD) measures of IQ (95.25 [16.58] vs 100.45 [14.77]; Cohen d, −0.22; P = .06) or processing speed (40.63 [13.06] vs 42.17 [13.79]; Cohen d, −0.03; P = .73) but were impaired on measures of verbal knowledge (31.36 [15.78] vs 38.83 [12.64]; Cohen d, −0.37; P = .003), working memory (20.97 [4.12] vs 22.51 [3.26]; Cohen d, −0.34; P = .005), and memory (43.80 [8.45] vs 46.53 [7.06]; Cohen d, −0.28; P = .01). Only participants 50 years and older with psychotic experiences showed medium to large impairments in neuropsychological functioning (mean [SD]) on measures of IQ (81.22 [15.97] vs 91.28 [14.31]; Cohen d, −0.70), verbal knowledge (28.31 [13.83] vs 38.51 [11.50]; Cohen d, −0.88), working memory (19.11 [4.77] vs 21.99 [3.42]; Cohen d, −0.82), and memory (39.17 [8.23] vs 44.09 [6.51]; Cohen d, −0.45) after adjusting for socioeconomic status, cannabis use, and common mental disorders. Medium impairments (mean [SD]) on measures of working memory (21.27 [3.64] vs 22.62 [2.97]; Cohen d, −0.45) and memory (44.32 [5.84] vs 46.91 [5.74]; Cohen d, −0.45) were seen in those aged 35 to 49 years and on a measure of verbal knowledge (30.81 [14.17] vs 37.60 [10.48]; Cohen d, −0.62) in those aged 16 to 24 years. First-degree relatives of adults with psychotic experiences showed a small impairment on a measure of verbal knowledge (34.71 [12.10] vs 38.63 [10.97]; Cohen d, −0.36; P = .02), and unrelated cohabitants showed no neuropsychological impairment.

CONCLUSIONS AND RELEVANCE  The profile of cognitive impairment in adults with psychotic experiences differed from that seen in adults with psychotic disorders, suggesting important differences between subclinical and clinical psychosis.
Schizophrenia has a lifetime prevalence of approximately 1% and combined psychotic disorders of approximately 3%. A substantial minority of the general population also reports subclinical psychotic experiences, with the World Health Organization World Mental Health Surveys reporting a lifetime prevalence of 5.8% worldwide and of 6.8%, 7.2%, and 3.2% in high-, middle-, and low-income countries, respectively. Evidence suggests that subclinical psychotic experiences may lie on a continuum with clinically significant psychotic symptoms and therefore be informative for research into the cause of psychotic illness. First, psychotic experiences and psychotic disorders share risk factors, including low IQ, childhood maltreatment, and stressful life events. Second, imaging studies report pathophysiologic overlaps between subclinical and clinical psychosis, including hypofrontality, frontotemporal disconnection, and deficits in gray and white matter. Finally, psychotic experiences in early life are associated with an increased risk for later psychotic illness and in adulthood with later hospitalization for a psychotic disorder. However, psychotic experiences are also associated with nonpsychotic psychiatric disorders, including anxiety, depression, and suicidal thoughts and behavior.

Lending support to this hypothesis is the small neuropsychological impairments seen in people with psychotic experiences. (Table 1 and eMethods and eFigure 1 in the Supplement report results of a meta-analysis of previous population studies of neuropsychological functioning and psychotic experiences). Neuropsychological impairment is a core feature of schizophrenia, it emerges early and remains relatively stable throughout the course of the illness. The most severe impairment is reported in processing speed, but deficits in episodic memory and working memory have been proposed as core features. A similar profile of impairment has been reported in people with psychotic experiences, but most of the studies have focused on child and adolescent samples, despite evidence that psychotic experiences are prevalent across the life course. Only 1 study in our meta-analysis investigated the neuropsychological correlates of psychotic experiences across adulthood and reported on a single cognitive domain. Moreover, previous studies have not adjusted for key sociodemographic confounders, whose importance is highlighted by the World Mental Health Surveys' finding of higher prevalences of psychotic experiences in middle- and high-income countries compared with low-income countries. Finally, the association between psychotic experiences and neuropsychological functioning may be confounded by shared familial factors.

In the present study we examined subclinical psychotic experiences and neuropsychological functioning in adults from an ethnically and sociodemographically diverse population. Our study was unique in examining the effects of (1) important confounders, including cannabis use and psychiatric morbidity, (2) age, and (3) confounding by familial factors on the association between psychotic experiences and neuropsychological functioning. We hypothesized that psychotic experiences would be associated with a profile of cognitive impairment similar, yet milder, to that of schizophrenia, characterized by specific deficits in processing speed and memory seen in the context of a generalized deficit.

### Methods

#### Sample

The South East London Community Health (SELCoH) study is a population-based household survey completed in 2010 in the London boroughs of Lambeth and Southwark. The aim was to provide prevalence estimates of mental and physical health symptoms in an ethnically and socioeconomically diverse, geographically defined, inner-city community. A random sample of households was identified using the Small User Postcode Address File (http://www.poweredbypaf.com/), which has nearly complete coverage of private households in the United Kingdom. Introductory letters were sent to households, which were visited up to 4 times at different times of the day and the week. When contact was made, written informed consent was sought from as many eligible (aged ≥16 years) members of the household as possible; all study participants provided written informed consent. Contact was established with 2070 private households, of which 1075 had at least 1 member interviewed, representing a 51.9% household participation rate. Of 2395 individuals eligible within the participating households, 1698 (72.0%) participated (a detailed description can be found in Hatch et al). This study was approved by the research ethics committee of King's College London.

#### Procedure

Data were collected using a computer-assisted interview schedule, which was piloted to establish reliability, validity, and feasibility. Data were collected from June 1, 2008, to December 31, 2010. Participants received £15 for participation.

#### Measures

**Psychotic Experiences**

The Psychosis Screening Questionnaire (PSQ) was used to measure psychotic experiences. The PSQ is an interviewer-administered questionnaire that assesses psychotic experiences in the preceding year and consists of 5 sections covering hypomania, thought disorder, paranoia, strange experiences, and hallucinations. Items on hypomania were discarded because the focus was on psychosis. Each section has an initial probe, followed by secondary question(s), which establish the quality of psychotic experiences. The PSQ has been validated in 2 national surveys in the United Kingdom. In this study, those participants who endorsed 1 or more secondary questions at the highest level on the PSQ were compared with those who did not (eTable 1 in the Supplement).

**Neuropsychological Functioning**

Verbal knowledge was assessed using the Wechsler Test of Adult Reading (WTAR), working memory with the Spatial Delayed Response Task (SDRT), visual memory with the Visual Object Learning Task (VOLT), and processing speed with a digit symbol coding task (DSCT) (eTable 2 in the Supplement). Neuropsychological tests were administered using a...
computer as in previous schizophrenia and bipolar disorder studies in which impairments of expected effect sizes were shown.59-63 We calculated a general cognitive ability composite score as the first principal component of a factor analysis using all the neuropsychological tests administered.64 Scores were transformed to an IQ-like score with mean of 100 and SD of 15.

Table 1. Studies Investigating Neuropsychological Functioning and Psychotic Experiences

<table>
<thead>
<tr>
<th>Domain by Source</th>
<th>No. of Participants</th>
<th>Age at Measurement of Cognition, y</th>
<th>Age at Measurement of Psychotic Experiences, y</th>
<th>Rate of Psychotic Experiences, %</th>
<th>Effect Size, Cohen d</th>
</tr>
</thead>
<tbody>
<tr>
<td>IQ*</td>
<td>Polanczyk et al,4 2010 2127 5 12 5.9 −0.51</td>
<td>Kremen et al,15 1998 547 4 and 7 23 3.2 −0.61</td>
<td>Horwood et al,17 2008 6384 8 12 13.8 −0.08</td>
<td>Cannon et al,18 2002 789 3-11 11 14.7 −0.52</td>
<td>Pooled effect size NA NA NA NA −0.40</td>
</tr>
<tr>
<td>General cognitionb</td>
<td>Niarchou et al,19 2013 6784 8, 10, and 11 12 11.6 −0.05</td>
<td>Kelleher et al,20 2012 165 11-13 11-13 25.5 −0.03</td>
<td>Barnett et al,21 2012 2916 8, 11, and 15 53 22.3 −0.16</td>
<td>Gur et al,22 2014 4275 8-21 8-21 15.5 −0.42</td>
<td>Johns et al,5 2004 8520 16-74 16-74 5.5 −0.34</td>
</tr>
<tr>
<td>Pooled effect size</td>
<td>NA NA NA NA −0.19</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Processing speedc</td>
<td>Niarchou et al,19 2013 6784 8, 10, and 11 12 11.6 −0.13</td>
<td>Kelleher et al,20 2012 165 11-13 11-13 25.5 −0.30</td>
<td>Gur et al,22 2014 4275 8-21 8-21 15.5 −0.29</td>
<td>Henderson et al,23 1998 870 78 78 7.5 −0.24</td>
<td>Ostling et al,24 2004 245 85 85 14.3 −0.56</td>
</tr>
<tr>
<td>Pooled effect size</td>
<td>NA NA NA NA −0.20</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working memoryd</td>
<td>Niarchou et al,19 2013 6784 8, 10, and 11 12 11.6 −0.07</td>
<td>Kelleher et al,20 2012 165 11-13 11-13 25.5 −0.09</td>
<td>Gur et al,22 2014 4275 8-21 8-21 15.5 −0.29</td>
<td>Ostling et al,24 2004 245 85 85 14.3 −0.33</td>
<td>Pooled effect size NA NA NA NA −0.18</td>
</tr>
<tr>
<td>Memorye</td>
<td>Kelleher et al,20 2012 165 11-13 11-13 25.5 −0.18</td>
<td>Gur et al,22 2014 4275 8-21 8-21 15.5 −0.32</td>
<td>Ostling et al,24 2004 245 85 85 14.3 −0.29</td>
<td>Pooled effect size NA NA NA NA −0.31</td>
<td></td>
</tr>
</tbody>
</table>

Abbreviation: NA, not applicable.

* IQ measures include Vocabulary and Block Design subtests of Wechsler Preschool and Primary Scale of Intelligence–Revised29 for Polanczyk et al4; Stanford-Binet Intelligence Scale (age 4 years)30 and Information, Vocabulary, Digit Span, Comprehension, Block Design, Picture Arrangement, and Coding subscales of Wechsler Intelligence Scale for Children (WISC) (age 7 years)31 for Kremen et al5; WISC III32 for Horwood et al17; and Peabody Picture Vocabulary Test (age 3 years).25 Stanford-Binet Intelligence Scale (age 5 years),26 and WISC (ages 7, 9, and 11 years)27 for Cannon et al18.

b General cognition measures include Picture Completion, Picture Arrangement, Block Design, and Object Assembly subtests of WISC III32 for Niarchou et al19; Wide Range Achievement Test 431 for Kelleher et al20; Picture Intelligence, Reading, Sentence Completion, and Vocabulary (age 8 years), Arithmetic, Reading, Vocabulary, Verbal, and Nonverbal IQ (age 11 years), and Maths, Reading, Verbal, and Nonverbal IQ (age 15 years) from AH4 Group Test of Intelligence33 for Barnett et al15; the Verbal Reasoning, Nonverbal Reasoning, and Spatial Processing subtests of the Computerized Neuropsychological Battery (CNB)32 for Gur et al22; and National Adult Reading Test34 for Johns et al5.

c Processing speed measures include Sky Search Task from Tests for Everyday Attention for Children36 and the Coding subtest of WISC III32 for Niarchou et al19; Symbol Coding and Category Fluency in Trail Making Test from MATRICS neurocognitive battery35 for Kelleher et al20; Symbol Letter Modalities Test37 for Henderson et al23; and Identical Forms Test38 for Ostling et al24.

d Working memory measures include Backward Digit Span and Arithmetic from WISC III32 for Niarchou et al19; Spatial Span and Letter Number Span of Wechsler Memory Scale from MATRICS neurocognitive battery35 for Kelleher et al20; Abstraction and Mental Flexibility and Attention and Working Memory subtests of CNB32 for Gur et al22; and Digit Span for Ostling et al24.

e Memory measures include Hopkins Verbal Learning Test from MATRICS neurocognitive battery35 for Kelleher et al20; Words, Faces, and Shapes subtests of CNB32 for Gur et al22; and Thurstone Picture Memory Test39 and Memory in Reality, Prose Recall, and Ten Word Memory Test40 for Ostling et al24.

Confounders

The interview established ethnicity, age, and occupation classified according to the Registrar General20 as professional (I), managerial/technical (II), skilled nonmanual (III-NM), skilled manual (III-M), semiskilled (IV), unskilled (V), and unclassified. Common mental disorders were assessed using the Revised Clinical Interview Schedule (CIS-R),66 which asks about
the following 14 symptom domains during the previous week: fatigue, sleep problems, irritability, worry, depression, depressive ideas, anxiety, obsessions, subjective memory and concentration, somatic symptoms, compulsions, phobias, physical health worries, and panic. A score of 18 or more indicates the presence of a common mental disorder. Good reliability and validity of the Revised Clinical Interview Schedule have been reported.\textsuperscript{66,67} Cannabis use in the past year was also reported. Ethnicity, occupation, cannabis use, and common mental disorders were correlated significantly with psychotic experiences and neuropsychological functioning, but minimally correlated with one another (eTable 3 in the Supplement). Interactions of group (participants with psychotic experiences or control participants) by confounder (ethnicity, occupation, cannabis use, and common mental disorders) with centered variables\textsuperscript{68} on all tests were not statistically significant except for the group by ethnicity interaction on IQ ($P = .03$).

**Familial Factors**

We investigated familial factors by dividing the cohabitants of participants with psychotic experiences into 2 groups. The first group included first-degree relatives (eg, biological child, biological sibling); the second, nongenetically related cohabitants (eg, spouse, nonbiological child).

**Data Analysis**

Data were analyzed from May 6, 2014, to April 22, 2015. Analyses were completed in STATA software (version 13; StataCorp). Appropriate survey commands (svy) were used to generate robust SEs. All analyses of SELCoH data accounted for prevalence of psychotic experiences, defined as positive responses to all secondary questions in 1 or more categories on the PSQ,\textsuperscript{5} included 171 participants (9.7%), which is consistent with previous reports of prevalence.\textsuperscript{1,2} The 1-year weighted prevalence of psychotic experiences, defined as positive responses to all secondary questions in 1 or more categories on the PSQ,\textsuperscript{5} included 171 participants (9.7%), which is consistent with findings from the World Health Survey.\textsuperscript{72}

The group with psychotic experiences was more likely to be of a minority ethnic background, have a lower occupational status, have used cannabis in the past year, and have a common mental disorder (eTable 4 in the Supplement). Age differences in prevalence were not statistically significant.

**Association of Psychotic Experiences With Neuropsychological Deficits**

Table 2 shows the relationship between psychotic experiences and neuropsychological performance before and after adjusting for confounders. The IQ impairment did not reach statistical significance when adjusting for confounders ($\beta = -3.78; t_{1261} = -1.91; P = .06; Cohen d = -0.22$). However, significant impairments were seen in the WTAR ($\beta = -4.21; t_{1347} = -3.02; P = .003; Cohen d = -0.37$), SDRT ($\beta = -1.15; t_{1385} = -2.84; P = .005; Cohen d = -0.34$), VOLT ($\beta = -1.94; t_{1455} = -2.59; P = .01; Cohen d = -0.28$), and VOLT delay ($\beta = -0.66; t_{1431} = -2.37; P = .02; Cohen d = -0.24$) scores. Impairments in the WTAR and SDRT scores remained statistically significant after correcting for multiple comparisons. No statistically significant impairment in the DSCT score was seen before or after adjusting for confounders.

We performed an exploratory analysis of the association between each psychotic experience (thought insertion, paranoia, strange experiences, and hallucinations) and neuropsychological performance. All experiences were associated with...
cognitive impairment, but effect sizes varied (eTable 5 in the Supplement). The frequency of individual symptoms did not allow stratification by age.

**Association Between Neuropsychological Functioning and Psychotic Experiences Stratified by Age**

Previous studies have used samples consisting mostly of children and adolescents or of older adults, but inspection of Table 1 suggests that the association between psychotic experiences and neuropsychological functioning may differ by age. Figure 1 shows an overall age-associated cognitive decline in both groups but also a difference in the severity of neuropsychological impairment associated with psychotic experiences at different ages. We found significant group-by-age interactions for all neuropsychological measures, including IQ (P = .006), WTAR (P = .01), SDRT (P = .03), VOLT (P = .001), VOLT delay (P = .02), and DSCT (P = .01) scores when adjusting for confounders.

After stratifying by age group and adjusting for confounders, group differences in mean (SD) IQ (81.22 [15.97] vs 91.28 [14.31]; Cohen d = −0.70), WTAR (28.31 [13.83] vs 38.51 [11.50]; Cohen d = −0.88), SDRT (19.11 [4.77] vs 21.99 [3.42]; Cohen d = −0.82), VOLT (39.17 [8.23] vs 44.09 [6.51]; Cohen d = −0.45), and VOLT delay (13.09 [2.74] vs 14.34 [2.40]; Cohen d = −0.52) were significant in participants with psychotic experiences 50 years and older (Figure 2). Medium impairments in SDRT (21.27 [3.64] vs 22.62 [2.97]; Cohen d = −0.45) and VOLT (44.32 [5.84] vs 46.91 [5.74]; Cohen d = −0.45) were also found in participants aged 35 to 49 years with psychotic experiences and a medium impairment (30.81 [14.17] vs 37.60 [10.48]; Cohen d = −0.62) and a medium advantage (44.80 [6.61] vs 38.63 [8.43]; Cohen d = 0.74) in WTAR scores in those aged 16 to 24 and 25 to 34 years, respectively. All other impairments in those younger than 50 years were small.

Sensitivity analysis using a different cutoff for the presence of psychotic experiences70,71 produced similar results (Figure 2 in the Supplement). Adjusting additionally for educational level (eTable 6 and eFigure 3 in the Supplement) also produced similar results.

**Association Between Neuropsychological Functioning and Psychotic Experiences by Familial Factors**

Characteristics of each group are shown in eTable 7 in the Supplement. Exploratory analyses (eFigure 4 in the Supplement) suggested that WTAR performance was the most and VOLT performance was the least familial. First-degree relatives of probands were impaired on the WTAR score (β = −3.93; l_1347 = −2.33; P = .02; Cohen d = −0.36) after adjusting for confounders (Figure 3). Nongenetically related cohabitants did not show statistically significant neuropsychological deficits.

**Discussion**

This study provides evidence that subclinical psychotic experiences are associated with mild neuropsychological impairment in adults. The magnitude of impairment in specific domains suggests impaired verbal and memory functions but spared processing speed. Only older adults with psychotic experiences showed medium to large impairments in working memory and memory when adjusting for sociodemographic factors, psychiatric morbidity, and cannabis use. First-degree relatives of probands also had a significant verbal impairment, but not a significant memory impairment. Our findings introduce new knowledge and propose new hypotheses regarding the neuropsychology of psychotic experiences in adults.

Our results are in line with those of the National Survey of Psychiatric Morbidity in Great Britain,5 which reported a small verbal IQ deficit in adults reporting psychotic experiences. Although not directly comparable to those from other previous studies, which have mostly focused on younger or older samples,19,20,23,24 the adjusted effect sizes we report...
closely approximate the pooled effect sizes in our meta-analytic summary (Table 1). Adjustment for confounders attenuated the processing speed deficit, suggesting that the significant processing speed deficits reported in children and adolescents with psychotic experiences may be partly confounded. Alternatively, the cause of processing speed defi-
cits associated with psychotic experiences may differ between adolescence and adulthood. Indeed, a recent study that used a dimensional categorization of psychotic experiences also did not find differences in processing speed between adults with low and high levels of psychotic experiences.

Our findings highlight similarities, but also differences, between neuropsychological dysfunction associated with psychotic experiences vs disorders. Meta-analyses have shown the most severe cognitive impairment in schizophrenia to be in processing speed. We found only a weak association between psychotic experiences and DSCT performance. The discrepancy between a substantial processing speed impairment in psychotic disorder and a negligible impairment in psychotic experiences suggests that clinical psychosis is associated with increased abnormality in processing speed. Our findings add to a growing body of literature that challenges psychotic experiences as a subclinical phenotype of psychosis. Identification of factors associated with psychotic experiences that predict transition to psychotic disorder is needed if they are to be useful in the etiologic investigation of psychosis. Neuropsychological impairment, in processing speed specifically, may be one factor. Individuals with psychotic experiences and processing speed deficits may be at risk for psychosis, and this combination of risk factors warrants further longitudinal study.

This study was the first, to our knowledge, to investigate the effect of age on neuropsychological impairment associated with psychotic experiences in adults. Some studies suggest that these experiences are most prevalent in adolescence and old age, whereas meta-analyses have not found significant age differences. In our sample, prevalence of psychotic experiences was greatest in the youngest group but remained sizable in the other age groups (eTable 4 in the Supplement). Only older adults showed medium to large deficits in IQ, verbal knowledge, working memory, and memory after adjustment for multiple demographic and psychosocial factors. Medium impairments in working memory and memory were seen in the group aged 35 to 49 years and in verbal knowledge in the group aged 16 to 24 years. These findings highlight the heterogeneity of extended phenotypic expression associated with psychotic experiences throughout adulthood. Etiologic pathways to subclinical psychotic experiences and neuropsychological dysfunction may be age dependent (eFigure 5 in the Supplement). In young adults with psychotic experiences, neuropsychological impairment may signal a risk for general psychiatric disorders, possibly owing to psychosocial stress and/or substance use; however, in older adults, neuropsychological impairment may indicate vulnerability to accelerated cognitive aging. A faster trajectory of cognitive decline for patients with Alzheimer disease with concurrent delusions and hallucinations has been reported. Accelerated shrinkage of prefrontal and hippocampal regions seen in normal aging may lead to disrupted dopamine release and psychotic phenomena but also to more rapid cognitive decline.

By including cohabitants of participants with psychotic experiences, we explored potential mechanisms behind the association between psychotic experiences and cognition. First-degree relatives were significantly impaired on verbal knowledge, whereas unrelated cohabitants showed no impairment. Our findings suggest that a complex interplay of genetic, biological, and psychosocial factors lies behind the association between psychotic experiences and neuropsychological impairment. This pattern of verbal knowledge impairment suggests common genetic and/or family environmental factors. On the other hand, unimpaired memory functions in both groups of cohabitants support biological and/or psychosocial effects of psychotic experiences on memory consistent with a causal effect.

Although we hypothesize that sociodemographic factors, cannabis use, and common mental disorders are confounders, they could also be mediators or moderators. Media tion and confounding are identical statistically but can be distinguished conceptually. Changes associated with the hypothalamic-pituitary-adrenal axis may be one area of investigation because the hypothalamic-pituitary-adrenal axis has been associated with all of these factors and with psychosis and cognition. Shared genetic factors could be another area of investigation. Examining interactions between multiple risk factors is important because complex multifactorial traits are likely to result from such interactions, and future studies with large samples are required for such investigations.

The present study has a number of strengths. It is the first, to our knowledge, to use a large, heterogeneous, representative sample drawn from an urban community to investigate the effect of age and familial factors on the association between psychotic experiences and neuropsychological functioning while adjusting for important confounders. Nevertheless, several methodologic limitations require consideration. First, the 51.9% household participation rate was high, but we were not able to characterize nonresponders on demographic variables and rule out possible bias owing to nonparticipation. However, the sample was representative of the local population on most sociodemographic characteristics.
Second, psychotic experiences are fairly common in old age, presumably owing to neurodegenerative processes,\(^8\) and we could not exclude participants with dementia. However, most of the participants in the oldest category were aged 50 to 65 years, when dementia is rare.\(^8\)\(^8\) and medium to large impairments in IQ, WTAR, SDRT, and VOLT scores (Cohen’s \(d > 0.50\) for all) remained when we excluded participants older than 65 years. Third, interpretation of effect sizes generally depends on the assumption of normality, which held true for all tasks except the WTAR, meaning that effect sizes in verbal knowledge may have been underestimated.

Moreover, those participants with poorer neuropsychological functioning may have been more likely to endorse psychotic experiences, and yet the association was not present at all ages or in all domains. We cannot infer from the current cross-sectional data that psychotic experiences lead to deficits in neuropsychological functioning. Another plausible explanation is that psychotic experiences and neuropsychological functioning are manifestations of common underlying processes.\(^8\)\(^9\)\(^6\) Finally, the timing and history of psychotic experiences cannot be established from the PSQ, meaning that some psychotic experiences may be long-standing. The present data provide valuable insight into potential pathways to adult psychopathologic disorders, but future longitudinal studies that are able to disentangle their temporal sequence and to determine whether these findings also apply to lifetime psychotic experiences are needed.

Conclusions

The profile of cognitive impairment in adults with psychotic experiences differed from that found in psychotic disorders. Our findings highlight the importance of considering age, familial factors, and the psychosocial context in neuropsychological studies of psychotic experiences.

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Author Contributions: Ms Mollon had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis. Study concept and design: David, Morgan, Glahn, Hatch, Hotopf, Reichenberg. Acquisition, analysis, or interpretation of data: Mollon, David, Morgan, Frissa, Pilecka, Hatch, Hotopf, Reichenberg. Drafting of the manuscript: Mollon, David, Reichenberg. Critical revision of the manuscript for important intellectual content: All authors. Statistical analysis: Mollon, Glahn, Pilecka, Reichenberg. Obtained funding: David, Hatch, Hotopf. Administrative, technical, or material support: David, Morgan, Frissa, Glahn, Hatch, Hotopf. Study supervision: David, Morgan, Reichenberg.

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