

Parental separation, loss and psychosis in different ethnic groups: a case-control study

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ABSTRACT

Background. Numerous studies have reported high rates of psychosis in the Black Caribbean and Black African populations in the UK. However, few studies have investigated the role of specific risk factors in different ethnic groups. We sought to investigate the relationship between long-term separation from, and death of, a parent before the age of 16 and risk of adult psychosis in different ethnic groups.

Method. All patients with a first episode of psychosis who made contact with psychiatric services in defined catchment areas in London and Nottingham, UK and a series of community controls were included in the AESOP (Aetiology and Ethnicity in Schizophrenia and Other Psychoses) study. Data relating to clinical and social variables, including parental separation and loss, were collected from patients and controls.

Results. Separation from, and death of, a parent before the age of 16 were both strongly associated with a two- to threefold increased risk of psychosis. The strength of these associations were similar for White British and Black Caribbean (but not Black African) subjects. Separation from (but not death of) a parent was more common among Black Caribbean controls than White British controls.

Conclusions. Early separation may have a greater impact in the Black Caribbean population, because it is more common, and may contribute to the excess of psychosis in this population.

INTRODUCTION

Numerous studies have reported high rates of schizophrenia and other psychoses in the Black Caribbean and Black African populations in the UK, between two and 14 times higher than for the White population (Sharpley *et al.* 2001; Cantor-Graae & Selten, 2005). A number of socio-environmental risk factors (e.g. racial discrimination, childhood disadvantage) have been

proposed as causes of the high rates (Sharpley *et al.* 2001), but there have been few empirical studies (Boydell *et al.* 2001; Mallett *et al.* 2002). Cooper (2005) has argued that particular attention should be paid to harmful experiences during childhood, and recent reports have suggested a general link between adult psychosis and early adversity (Bebbington *et al.* 2004; Wicks *et al.* 2005). The only study that we are aware of that has considered any early risk factors in different ethnic groups is a small study by Mallett *et al.* (2002). They found that long-term separation from parents during childhood was associated with an increased risk of psychosis in

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their Black Caribbean sample. Early parental separation and loss are strongly associated with other disorders, particularly depression (e.g. Harris *et al.* 1986). There have been only a few studies considering these variables in relation to psychosis (Parnas *et al.* 1985; Erlenmeyer-Kimling *et al.* 1991; Agid *et al.* 1999), and much of this research is methodologically limited (small samples, varying definitions of separation), making it difficult to draw any firm conclusions. The findings are sufficient, however, to suggest that the role of early separation and loss merits further study, both in general and in relation to ethnic differences in rates of psychosis. This is what we sought to do using data from a large multi-centre case-control study of first-episode psychosis, the AESOP (Aetiology and Ethnicity in Schizophrenia and Other Psychoses) study (Kirkbride *et al.* 2006).

We addressed two questions: (1) Is long-term (more than 1 year) separation from, or death of, a parent during childhood associated with an increased risk of adult psychosis? (2) Is long-term separation from, or death of, a parent during childhood a potential contributory cause of the high rates of psychosis among Black Caribbeans and Black Africans?

METHOD

Cases

The inclusion criteria for cases were: age 16–64 years; resident within defined catchment areas in south-east London and Nottingham; the presence of a first episode of psychosis [F20–F29, F30–F33 (psychotic codings) in ICD-10 (WHO, 1992*a*)] within the time frame of the study; and no previous contact with health services for psychosis. Exclusion criteria were: evidence of psychotic symptoms precipitated by an organic cause; and transient psychotic symptoms resulting from acute intoxication as defined by ICD-10.

Case-finding procedures were based on those used by the World Health Organization (WHO) in its multi-country studies of schizophrenia (Jablensky *et al.* 1992). A team of researchers regularly checked all points of potential contact with secondary health services in the catchment areas. All potential cases were screened for inclusion using the Screening Schedule for Psychosis (Jablensky *et al.* 1992). Each patient

meeting inclusion criteria was approached and informed consent sought. Case recruitment took place initially over 2 years. During the third year of the study, recruitment of Black Caribbean cases was continued to increase the number of these patients in the case-control arm of the study.

Controls

A random sample of population-based control subjects, aged 16–64 years, was recruited. The sampling procedure was adapted from that used by the Office of Population and Census Statistics Psychiatric Morbidity Survey (Jenkins & Meltzer, 1995). The small users Postal Address File (PAFile) was used as the sampling frame. For each case ascertained, 10 addresses within the same electoral ward were randomly generated from the PAFile. This ensured broad comparability between cases and controls by neighbourhood. Each address was contacted three times (morning, afternoon, evening); if an eligible control was not recruited the procedure was repeated with another set of 10 addresses. All adults in each household were invited to take part, and where more than one occupant was willing to participate, a modified Kish grid was used to randomly select one member of the household. To ensure that a sufficient number of Black Caribbean controls were recruited, we purposefully over-sampled this population by continuing recruitment for a longer period. The Psychosis Screening Questionnaire (Bebbington & Nayani, 1995) was administered to all eligible controls; if screened positive the subject was excluded.

Data collection

Separation and parental loss

We collected data relating to separation from, and death of, one or both parents before the age of 16 using the Medical Research Council (MRC) Sociodemographic Schedule, which elicits information regarding the age of separation or parental death, the reason for and length of separation, and the type of substitute care (Mallett *et al.* 2002). For the analyses, we defined long-term separation as a separation (not living in same household) from one or both parents for 1 year or more resulting from

family breakdown (parental separation or divorce, parents abandoned subject) before the age of 16.

Sociodemographic characteristics and ethnicity

Data on ethnicity, gender, age and social class were collected using the MRC Socio-demographic Schedule. Ethnicity was based on subject self-ascription using 2001 Census categories. In the analysis of separation and loss by ethnicity, we compared subjects from the three main ethnic groups comprising our sample: (1) White British, (2) Black Caribbean and (3) Black African. All subjects included in these analyses self-ascribed ethnicity. The Black Caribbean sample included both subjects born in the Caribbean and born in the UK to Caribbean parents. Likewise, the Black African sample included both subjects born in sub-Saharan Africa and born in the UK to sub-Saharan African parents. Where appropriate, we repeated analyses by place of birth to test for generational effects. Subjects of all other ethnicities, including those of mixed ethnicity, were excluded from these stratified analyses, primarily because the numbers were too small for meaningful analyses.

Diagnosis and parental history of mental illness

Symptom data were collected using the Schedules for Clinical Assessment in Neuropsychiatry (SCAN; WHO, 1992*b*). ICD-10 diagnoses were determined using the SCAN data on the basis of consensus meetings involving one of the AESOP study's Principal Investigators (J.L., R.M., P.J.) and other members of the research team. Full details can be found in Kirkbride *et al.* (2006).

Data on whether a parent had suffered from any mental illness, including psychosis, were collated from interviews with the study subject and case-notes (cases only) using the Family Interview for Genetic Studies. Information from interviews and case-notes was supplemented with data concerning the reason for separation or parental death, when the reason was parental mental illness.

Analysis

Unconditional logistic regression was used to analyse the relationship between parental separation and loss and case-control status, and to

test for interaction effects, while controlling for potential confounders. This was carried out for the full sample to investigate the first study question, and then stratified by ethnic group (White British, Black Caribbean and Black African only) to investigate the second study question. In relation to this second question, one of two patterns would be expected for parental separation or loss to be a potential cause of the high rates of psychosis in the Black Caribbean and Black African populations: either the effect of these variables would be stronger in the Black Caribbean and Black African groups or separation and/or loss would be more prevalent in these groups. In calculating odds ratios (ORs) for the full, non-stratified sample, we weighted the data to take account of the over-sampling of Black Caribbean controls. We assigned Black Caribbean controls a weight based on the proportion of Black Caribbeans in the populations of the two study catchment areas (estimated using 2001 Census data). All other controls and cases were assigned a weight of one. All analyses were conducted using STATA version 8 (Stata Corp., 2003).

RESULTS

Sample

We identified 469 cases during the study period, of whom 79 (17%) refused to participate or could not be contacted. Therefore, 390 (83%) cases were included in the case-control analyses. Those cases who were not included were more likely to have an initial diagnosis of non-affective psychosis than those included (86% *v.* 67%, $p < 0.01$); otherwise, there were no differences between the two groups in basic socio-demographic characteristics. During the same time period, 391 community controls were recruited. Table 1 compares the control sample with the population at risk by sex, age and ethnicity, and Table 2 shows basic descriptive data for the subjects included in the analyses.

Separation and parental death

Compared with controls, cases were approximately three times more likely to have experienced a long-term separation from one or both parents before the age of 16 [OR 3.36, 95% confidence interval (CI) 2.41–4.70], and approximately three times more likely to have had

Table 1. Basic characteristics of the control sample compared with the population at risk

	London		Nottingham	
	Population at risk (<i>n</i> = 282 788) <i>n</i> (%)	Controls (<i>n</i> = 183) <i>n</i> (%)	Population at risk (<i>n</i> = 404 206) <i>n</i> (%)	Controls (<i>n</i> = 208) <i>n</i> (%)
Sex				
Male	138 598 (49.0)	67 (36.6)	201 410 (49.8)	94 (45.2)
Female	144 190 (51.0)	116 (63.4)	201 796 (50.2)	114 (54.8)
Age (yr)				
16–19	17 518 (6.2)	8 (4.4)	33 438 (8.3)	17 (8.2)
20–29	81 448 (28.9)	51 (27.9)	90 844 (22.5)	51 (24.5)
30–39	87 238 (30.1)	67 (36.6)	97 235 (24.1)	50 (24.0)
40–49	50 920 (18.0)	29 (15.9)	79 735 (19.7)	35 (16.8)
50–64	45 664 (16.1)	28 (15.3)	102 954 (25.5)	55 (26.4)
Ethnic group				
White British	144 345 (51.0)	76 (41.5)	356 858 (88.3)	169 (81.3)
Other White	37 583 (13.3)	28 (15.3)	12 996 (3.2)	9 (4.3)
Asian (All)	12 041 (4.3)	3 (1.7)	15 522 (3.9)	4 (2.0)
Black Caribbean ^a	30 887 (10.9)	50 (27.3)	7368 (1.8)	22 (10.6)
Black African	35 996 (12.7)	20 (10.9)	1362 (0.3)	0 (0.0)
Other (All)	21 936 (7.7)	6 (3.5)	10 100 (2.4)	4 (2.0)

^a These data confirm the over-sampling of Black Caribbean controls in both centres.

Table 2. Basic sociodemographic characteristics by case-control status

	Controls (<i>n</i> = 391)	Cases (<i>n</i> = 390)	<i>t</i>	df	<i>p</i>
Ag (yr)					
Mean	37.3	30.5	8.20	779	<0.001
S.D.	12.5	10.8			
	<i>n</i> (%)	<i>n</i> (%)	χ^2	df	<i>p</i>
Sex					
Male	161 (41.2)	218 (55.9)	16.94	1	<0.001
Female	230 (58.8)	172 (44.1)			
Ethnicity					
White British	245 (62.7)	177 (45.4)	39.17	5	<0.001
Other White	37 (9.5)	27 (6.9)			
Black Caribbean	72 (18.4)	95 (24.4)			
Black African	20 (5.1)	41 (10.5)			
Asian (all)	7 (1.8)	21 (5.4)			
Other	10 (2.5)	29 (7.4)			
Parental social class ^a					
i, ii	113 (32.9)	76 (30.4)	0.41	2	0.813
iii(m), iii(nm)	150 (43.6)	112 (44.8)			
iv, v	81 (23.5)	62 (22.8)			
Parental mental illness ^b					
Any	11 (2.8)	74 (20.3)	57.67	1	<0.001
None	380 (97.2)	291 (79.7)			
Diagnosis					
Non-affective psychosis	—	263 (67.4)	—	—	—
Affective psychosis	—	127 (32.6)	—	—	—

^a Missing values: 187 (24%).

^b Missing values: 25 (3%).

a parent die before the age of 16 (OR 3.19, 95% CI 1.62–6.26) (Table 3).

The odds were elevated whether the separation or death involved father, mother or both parents. These findings held, with some attenuation, when the ORs were adjusted for study centre, age, sex, ethnicity and parental mental illness (Table 3). The relationship between both separation and loss and non-affective psychosis was slightly stronger than that between separation and loss and affective psychosis (Table 3). There was no evidence that the effect of separation or parental death varied by age or gender (data not shown).

We probed these findings further to investigate the effects of length of separation beyond 1 year, age of separation and parental death, and who provided subsequent care (if separation or death involved both parents). None of these variables, however, appeared to have an additional effect. Table 4 shows that, of the subjects separated, cases were not more likely than controls to have been separated earlier or for longer, nor were they more likely to have been cared for outside of the extended family.

Separation, parental death and ethnicity

The associations between both separation and parental death and case-control status held, and were broadly similar, for White British and

Table 3. Long-term aberrant separation from, and death of, a parent (or parents) before the age of 16

Separation, death	Controls (n = 391) n (%)	Cases (n = 390) (%)	Unadjusted OR ^a	95% CI	Adjusted OR ^{a,b}	95% CI
None	297 (76.0)	200 (51.3)	1.00	—	1.00	—
Separation ^{c,d}	80 (20.4)	160 (41.0)	3.36**	2.41–4.70	2.45**	1.66–3.59
Father only	45 (11.5)	95 (24.4)	3.56**	2.35–5.38	2.60**	1.62–4.18
Mother only	10 (2.5)	16 (4.1)	2.55**	1.11–5.85	1.90	0.80–4.50
Both parents	25 (6.4)	49 (12.6)	3.36**	1.96–5.76	2.26**	1.18–4.34
Parental death ^{c,d}	14 (3.6)	30 (7.7)	3.19**	1.62–6.26	3.06**	1.34–7.00
Father only	9 (2.3)	15 (3.8)	2.63*	1.10–6.32	1.65	0.53–5.10
Mother only	2 (0.5)	9 (2.3)	6.05*	1.29–28.35	12.31**	2.15–70.51
Both parents	3 (0.7)	6 (1.6)	2.69	0.66–10.90	1.73	0.33–8.95

OR, Odds ratio; CI, confidence interval.

^a ORs calculated using weighted data.^b Adjusted for: study centre, age, sex, ethnicity and parental history of mental illness.^c By study centreLondon Separation versus None Unadjusted OR^a 3.28** (2.06–5.24)Nottingham Separation versus None Unadjusted OR^a 3.38** (2.09–5.48)London Parental death versus None Unadjusted OR^a 2.69* (1.05–6.86)Nottingham Parental death versus None Unadjusted OR^a 3.75** (1.42–9.96)^d By diagnosisNon-affective Separation versus None Unadjusted OR^a 4.07** (2.83–5.85)Affective Separation versus None Unadjusted OR^a 2.24** (1.41–3.55)Non-affective Parental death versus None Unadjusted OR^a 3.63** (1.76–7.47)Affective Parental death versus None Unadjusted OR^a 2.48* (1.02–6.03)* $p < 0.05$, ** $p < 0.01$.

Table 4. Age, length and consequences of separation or parental death by case-control status

Separation, death	Controls (n = 94) n (%)	Cases (n = 190) n (%)	χ^2	df	p
Age at separation (first), death ^a					
0–5 years	52 (55.3)	89 (52.0)	0.66	2	0.72
6–10 years	22 (23.2)	38 (22.2)			
11–15 years	20 (21.1)	44 (25.7)			
Carer after separation, death (both only) ^b					
Relatives, family friends	12 (50.0)	22 (53.7)	0.08	1	0.78
Social services, adoption	12 (50.0)	19 (46.3)			
Length of separation (longest)					
1–2 years	9 (11.2)	17 (10.7)	1.26	2	0.53
2–4 years	7 (8.8)	22 (13.8)			
4+ years	64 (80.0)	121 (75.5)			

Missing values: ^a19, ^b18.

Black Caribbean subjects (Table 5). That is, within both groups, there was approximately a two- to threefold increase in separations from one or both parents and in parental deaths among cases compared with controls, findings that again broadly held after adjusting for potential confounders. There was no evidence that the effect of separation or loss varied by place of birth. When considered by whether separation was from mother, father or both parents, the adjusted OR (aOR) for separation from

father was greater in the Black Caribbean sample (aOR 4.73, 95% CI 1.82–12.32) than in the White British sample (aOR 2.23, 95% CI 1.20–4.16); however, an interaction term for Black Caribbean ethnicity and separation from father was non-significant ($p = 0.46$). For Black African subjects, the estimated ORs for separation and parental death are lower than for the other ethnic groups, although the small number of Black Africans in the sample means these findings should be treated cautiously.

Table 5. Long-term aberrant separation from, and death of, a parent (or parents) before the age of 16, by ethnicity

Separation, death	Controls <i>n</i> (%)	Cases <i>n</i> (%)	Unadjusted OR	95% CI	Adjusted OR ^a	95% CI
White British	(<i>n</i> =245)	(<i>n</i> =177)				
None	193 (78.8)	92 (52.0)	1.00	—	1.00	—
Separation	45 (18.4)	72 (40.7)	3.36**	2.15–5.25	2.30**	1.38–3.86
Father only	28 (11.4)	41 (23.2)	3.07**	1.79–5.28	2.23*	1.20–4.16
Mother only	6 (2.4)	8 (4.5)	2.80	0.94–8.30	1.83	0.54–6.27
Both parents	11 (4.5)	23 (13.0)	4.39**	2.05–9.38	2.71*	1.15–6.39
Parental death	7 (2.9)	13 (7.3)	3.90**	1.50–10.09	4.00**	1.41–11.32
Black Caribbean	(<i>n</i> =72)	(<i>n</i> =95)				
None	48 (66.7)	39 (41.1)	1.00	—	1.00	—
Separation	22 (30.6)	50 (52.6)	2.78**	1.45–5.39	2.92**	1.36–6.28
Father only	11 (15.3)	31 (32.6)	3.47**	1.55–7.78	4.73**	1.82–12.32
Mother only	3 (4.2)	4 (4.2)	1.64	0.35–7.77	0.36	0.05–2.79
Both parents	8 (11.1)	15 (15.8)	2.31	0.89–6.01	2.37	0.74–7.64
Parental death	2 (2.8)	6 (6.3)	3.69	0.71–19.32	4.71	0.72–30.91
Black African	(<i>n</i> =20)	(<i>n</i> =41)				
None	14 (70.0)	23 (56.1)	1.00	—	1.00	—
Separation	3 (15.0)	10 (24.4)	2.02	0.48–8.66	1.47	0.27–7.93
Father only	1 (5.0)	4 (9.8)	—	—	—	—
Mother only	0 (0.0)	2 (4.9)	—	—	—	—
Both parents	2 (10.0)	4 (9.8)	—	—	—	—
Parental death	3 (15.0)	8 (19.5)	1.62	0.37–7.16	1.62	0.27–9.85

OR, Odds ratio; CI, confidence interval.

^a Adjusted for study centre, age, sex and parental mental illness.* $p < 0.05$, ** $p < 0.01$.

Although there was no evidence that the effect of separation was stronger among Black Caribbeans, there was evidence that all separations were more common in the Black Caribbean population, particularly separation from father only. While numbers were small, this was not the case for parental deaths. Considering controls only, 31% ($n=22$) of Black Caribbean subjects had experienced a long-term separation from at least one parent during childhood compared with 18% ($n=45$) of White British subjects ($\chi^2=4.98$, $p=0.03$).

Population attributable risk and ethnicity

Using the aORs, we calculated the population attributable risk fractions (PAF) for separation from parents. Overall, the PAF for separation from parents was 22.8%. For the White British population it was 19.3%, compared with 37.0% for the Black Caribbean population. Considering separation from father only, the PAF for the White British population was 12.3%, compared with 36.3% for the Black Caribbean population, this difference being a function of the higher prevalence of separations

from fathers in the Black Caribbean control subjects and the higher aOR for separation from father.

DISCUSSION

This is the largest case-control study to date to investigate risk factors for psychosis in different ethnic groups, and the first to be conducted simultaneously in two UK centres. Two important findings have emerged. First, we found strong evidence that cases were over two times more likely than controls to have experienced long-term separation and to have had a parent die before they were aged 16, independent of a number of potential confounders. Second, while we found broadly similar ORs for White British and Black Caribbean (but not Black African) subjects, there was a greater prevalence of separations (but not parental deaths) in the Black Caribbean than the White British control sample. This suggests that separation from parents may have a more significant impact in the Black Caribbean population on rates of adult psychosis (reflected in the much greater

PAFs, particularly when separations from father alone are considered).

Methodological issues

The use of ethnicity as a variable in epidemiological research has been criticized on a number of grounds (Bhopal, 1997). One of the main issues is that the ethnic categories used are often crude and group people of widely differing social, cultural and religious backgrounds together, such that the meaning of observed associations is often unclear. We determined ethnicity by subject self-ascrption, and we retained the original ethnic categories for our analyses. Nevertheless, within each of the main ethnic groups considered (White British, Black Caribbean, Black African), there is still significant heterogeneity, and this is an important caveat in interpreting our findings. It is noteworthy that our findings concerning the Black African group are less clear than for the Black Caribbean group. This may be due to the smaller number of Black Africans in our sample, but it may also reflect the even greater social and cultural diversity of this population in the UK.

We attempted to recruit a sample of controls representative of the population from which cases were drawn, and comparisons with census data show that we achieved this with regard to age and ethnicity (after accounting for the over-sampling of Black Caribbeans). There were, however, proportionately more women in the control sample than in the general population. To investigate whether this affected our findings, we repeated all analyses stratified by gender, and included gender as a potential confounder in all multivariable analyses. The association between separation from, and loss of, a parent and psychosis remained. Perhaps more pertinent is the question of whether the prevalence of separations and parental deaths in the control sample was representative of that in the population. There is no direct way of assessing this. However, one crude proxy indicator is the number of single-parent households, and census data have consistently shown lone-parent households to be more common in the Black Caribbean population – in the 1991 Census 27% of people of Black Caribbean origin or heritage were living in single-parent households, compared with around 10% of the general population (Murphy, 1996).

We relied on retrospective recall to determine the exposure status (separated, parent died) of cases and controls. This is a particular issue in studies of psychosis as the effects of the illness may impact on recall. The potential for this to bias the results was limited by our use of a first-episode sample, in which the effects of long-standing psychosis are least marked. The exposures of interest, moreover, are major events with long-term consequences, such that it is reasonable to expect generally accurate recall; these are not easily forgotten events.

It remains possible that the observed associations between psychosis and parental separation and loss are confounded by other factors, particularly socio-economic status. With regard to parental socio-economic status we did not have full data on the sample to fully adjust for this in the analyses, and this is a notable limitation. Similar to Agid *et al.* (1999), we found it difficult to obtain reliable information on social class at birth; subjects often could not be specific enough. However, the data that were available suggested that there were no differences between cases and controls in the social class of parents at birth (see Table 2). Our measure of parental mental illness, moreover, may have been relatively insensitive. Finally, while the number of subjects in our study was large and allowed robust estimates of main effects, the power to detect interaction effects was lower. However, none of our tests for effect modification by ethnicity were close to being significant at the 0.05 level.

Comparisons with previous research

Separation and parental death

The limited previous research has produced equivocal findings. Some reports have found an association between parental death or separation and psychosis, especially very early loss or separation (Parnas *et al.* 1985), and others have not (Erlenmeyer-Kimling *et al.* 1991). These studies have, however, been methodologically diverse and this may explain the varied findings. For example, the upper and lower age limits within which separation or loss occurred have varied. The most recent and methodologically robust study reported findings similar in some respects to ours (Agid *et al.* 1999). Agid *et al.* (1999) found that permanent separation from,

or death of, one or both parents was associated with a more than threefold increased risk of schizophrenia (but not bipolar disorder). Other recent research has found an increased risk of psychosis in those who lived in a single-parent household during childhood (Wicks *et al.* 2005) and in those who spent time in institutional care (Bebbington *et al.* 2004).

Separation, parental death and ethnicity

Our study supports the suggestion of Mallett *et al.* (2002) that early family breakdown may be of importance in understanding the excess rates of psychosis in the Black Caribbean population. While the potential importance of the early environment has been raised by a number of commentators (Cooper, 2005), we are aware of no other studies that have directly investigated this. It is noteworthy that the patterns found in the Black Caribbean sample were not evident in the Black African sample. This emphasizes the point that it should not be assumed that factors increasing rates of psychosis in one ethnic group will be the same in other groups.

Early adversity, ethnicity and psychosis

The question remains of how early parental separation or loss impacts on individuals to increase risk. In the wider literature, the debate has centred on the question of whether the separation or loss event itself is important or whether these are more markers for family discord and disadvantage both before and after separation or loss. Both may be relevant. The experience of separation or loss, for example, may have significant lasting consequences, particularly in terms of forming secure and stable attachments in adult life. Certainly, such processes have been linked to the development of adult depression (Sloman *et al.* 2003; Gilbert, 2006). It is also clear that parental separation and loss are associated with a range of adverse early experiences, including family conflict, socio-economic disadvantage and neglect and abuse (Rutter, 2006). This further ties in with recent research suggesting that there may be a link between early childhood trauma and adult psychosis (Read *et al.* 2005). It may be, then, that both parental separation and loss are most usefully considered as risk indicators, signalling exposure to a range of unpleasant experiences

that increase vulnerability to psychosis and other mental disorders. The transformation of this vulnerability into specific forms of disorder will depend on interactions with a range of other factors, including adult adversity and genetic risk (Rutter, 2006). The credibility of the suggestion that such experiences are of aetiological importance in psychosis is enhanced by research showing that early adversity, including deprived rearing environments and abuse, can have lasting effects on brain development (Teicher *et al.* 2003).

That the effects of parental separation and loss were similar in White and Black Caribbean subjects is particularly noteworthy. If separation from parents, particularly fathers, is, as some authors have suggested (Littlewood & Lipsedge, 1982), common in the Caribbean, the question is raised, why are rates of psychosis higher in the Caribbean? The explanation may lie in the different social and cultural contexts. In the Caribbean, where separations are common and frequently planned, with children often moving to live with extended family, the impact on development may be limited. When separations are less common overall, and there are fewer compensatory structures (e.g. extended family support), the consequences may be more severe, as in the UK, where there is clear evidence that family break-up is associated with a range of subsequent adverse outcomes (Rutter, 2006).

When considered as a marker for adverse early circumstances, the higher prevalence of separations in the Black Caribbean population provides a further indication of the relative disadvantage experienced by this population in the UK (Modood *et al.* 1997). It may be that there is a vicious cycle in which chronic underlying socio-economic adversity and discrimination affects family life in such a way as to increase the risk of family breakdown, which further impacts on socio-economic resources and increases the risk of a range of adverse outcomes, including psychosis. Our findings, therefore, provide some support for the suggestion that at least part of the ethnic differences in rates of psychosis may have roots in early adversity. The challenge for future research is to more fully unpick these processes and how they interact with other factors to increase the risk of psychosis.

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DECLARATION OF INTEREST

None.

REFERENCES

- Agid, O., Shapira, B., Zislin, J., Ritsner, M., Hanin, B., Murad, H., Troudart, T., Bloch, M., Heresco-Levy, U. & Lerer, B. (1999). Environment and vulnerability to major psychiatric illness: a case control study of early parental loss in major depression, bipolar disorder and schizophrenia. *Molecular Psychiatry* **4**, 163–172.
- Bebbington, P., Bhugra, D., Singleton, N., Farrell, M., Jenkins, R., Lewis, G. & Meltzer, H. (2004). Psychosis, victimisation and childhood disadvantage: evidence from the second British National Survey of Psychiatric Morbidity. *British Journal of Psychiatry* **185**, 220–226.
- Bebbington, P. & Nayani, T. (1995). The Psychosis Screening Questionnaire. *International Journal of Methods in Psychiatric Research* **5**, 11–20.
- Bhopal, R. (1997). Is research into ethnicity and health racist, unsound or important science? *British Medical Journal* **314**, 1751.
- Boydell, J., van Os, J., McKenzie, K., Allardyce, J., Goel, R., McCreadie, R. G. & Murray, R. (2001). Incidence of schizophrenia in ethnic minorities in London: ecological study into interactions with environment. *British Medical Journal* **323**, 1336–1338.
- Cantor-Graae, E. & Selten, J. P. (2005). Schizophrenia and migration: a meta-analysis and review. *American Journal of Psychiatry* **162**, 12–24.
- Cooper, B. (2005). Immigration and schizophrenia: the social causation hypothesis revisited. *British Journal of Psychiatry* **186**, 361–363.
- Erlenmeyer-Kimling, L., Rock, D., Squires-Wheeler, E. & Roberts, S. (1991). Early life precursors of psychiatric outcomes in adulthood in subjects at risk for schizophrenia or affective disorders. *Psychiatry Research* **39**, 239–256.
- Gilbert, P. (2006). Evolution and depression: issues and implications. *Psychological Medicine* **36**, 287–297.
- Harris, T., Brown, G. & Bifulco, A. (1986). Loss of parent in childhood and adult psychiatric disorder: the role of lack of adequate parental care. *Psychological Medicine* **16**, 641–659.
- Jablensky, A., Sartorius, N., Ernberg, G., Anker, M., Korten, A., Cooper, J. A., Day, R. & Bertlesen, A. (1992). Schizophrenia: manifestations, incidence and course in different cultures. A World Health Organisation ten-country study. *Psychological Medicine, Monograph Supplement* **20**, 1–97.
- Jenkins, R. & Meltzer, H. (1995). The National Psychiatric Morbidity Survey in Great Britain. *Social Psychiatry and Psychiatric Epidemiology* **30**, 1–4.
- Kirkbride, J., Fearon, P., Morgan, C., Dazzan, P., Morgan, K., Tarrant, J., Lloyd, T., Holloway, J., Hutchinson, G., Leff, J., Mallett, R., Harrison, G., Murray, R. & Jones, P. (2006). Heterogeneity in incidence rates of schizophrenia and other psychotic syndromes: findings from the 3-center AeSOP study. *Archives of General Psychiatry* **63**, 250–258.
- Littlewood, R. & Lipsedge, M. (1982). *Aliens and Alienists* (1st edn). Pelican: London.
- Mallett, R., Leff, J., Bhugra, D., Pang, D. & Zhao, J. H. (2002). Social environment, ethnicity and schizophrenia. *Social Psychiatry and Psychiatric Epidemiology* **37**, 329–335.
- Modood, T., Berthoud, R., Lakey, J., Nazroo, J., Smith, P., Virdee, S. & Beishon, S. (1997). *Ethnic Minorities in Britain: Diversity and Disadvantage*. Policy Studies Institute: London.
- Murphy, M. (1996). Household and family structures among ethnic minority groups. In *Ethnicity in the 1991 Census: Demographic Characteristics of the Ethnic Minority Population* (ed. D. Coleman and J. Salt), pp. 213–242. HMSO: London.
- Parnas, J., Teasdale, T. W. & Schulsinger, H. (1985). Institutional rearing and diagnostic outcome in children of schizophrenic mothers. A prospective high-risk study. *Archives of General Psychiatry* **42**, 762–769.
- Read, J., van Os, J., Morrison, A. P. & Ross, C. A. (2005). Childhood trauma, psychosis and schizophrenia: a literature review with theoretical and clinical implications. *Acta Psychiatrica Scandinavica* **112**, 330–350.
- Rutter, M. (2006). *Genes and Behaviour: Nature–Nurture Interplay Explained*. Blackwell Publishing: Oxford.
- Sharpley, M., Hutchinson, G., McKenzie, K. & Murray, R. (2001). Understanding the excess of psychosis among the African-Caribbean population in England. *British Journal of Psychiatry* **178** (Suppl. 40), s60–s68.
- Slooman, L., Gilbert, P. & Hasey, G. (2003). Evolved mechanisms in depression: the role and interaction of attachment and social rank in depression. *Journal of Affective Disorders* **74**, 107–121.
- Stata Corp. (2003). *STATA Statistical Software, Release 8*. Stata Corporation: College Station, TX.
- Teicher, M. H., Andersen, S. L., Polcari, A., Anderson, C. M., Navalta, C. P. & Kim, D. M. (2003). The neurobiological consequences of early stress and childhood maltreatment. *Neuroscience and Biobehavioural Reviews* **27**, 33–44.
- WHO (1992a). *The ICD-10 Classification of Mental and Behavioural Disorders* (10th edn). World Health Organization: Geneva.
- WHO (1992b). *Schedules for the Clinical Assessment of Neuropsychiatry*. World Health Organization: Geneva.
- Wicks, S., Hjern, A., Gunnell, D., Lewis, G. & Dalman, C. (2005). Social adversity in childhood and the risk of developing psychosis: a national cohort study. *American Journal of Psychiatry* **162**, 1652–1657.