Born into adversity: psychological distress in two birth cohorts of second-generation Irish children growing up in Britain

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ABSTRACT

Background Worldwide, the Irish diaspora experience health inequalities persisting across generations. The present study sought to establish the prevalence of psychological morbidity in the children of migrant parents from Ireland, and reasons for differences.

Methods Data from two British birth cohorts were used for analysis. Each surveyed 17 000 babies born in one week in 1958 and 1970 and followed up through childhood. Validated scales assessed psychological health.

Results Relative to the rest of the cohort, second-generation Irish children grew up in material hardship and showed greater psychological problems at ages 7, 11 (1958 cohort) and 16 (both cohorts). Adjusting for material adversity and maternal psychological distress markedly reduced differences. Relative to non-Irish parents, Irish-born parents were more likely to report chronic health problems (odds ratio [OR]: 1.29; 95% confidence interval [CI]: 1.08–1.54), and Irish-born mothers were more likely to be psychologically distressed (OR: 1.44; 95% CI: 1.13–1.84, when child was 10). Effect sizes diminished once material adversity was taken into account.

Conclusions Second-generation Irish children experienced high levels of psychological morbidity, but this was accounted for through adverse material circumstances in childhood and psychological distress in parents. Public health initiatives focusing on settlement experiences may reduce health inequalities in migrant children.

Keywords BCS70, Irish, migration, minority ethnic mental health, NCDS

Introduction

Research accounting for the intergenerational ‘transmission’ of health inequalities to second-generation ethnic minority groups remains scant, especially, as regards to the use of prospective data from birth cohorts. In particular, the role of migration and settlement in accounting for the transmission of health disadvantages from parent to child has been little described. Previous studies have reported differences in mental health among ethnic minority children and have however failed to assess potential aetiological mechanisms. Examining these mechanisms using a life-course informed perspective may help in understanding the social risks related to the environment, which migrant parents move into, and into which their children are raised. This is important as social and health disadvantages in childhood may continue to influence downstream adult health many years later and offers the possibility for early intervention.

Often excluded from discussions of ethnic minority health disparities, people of Irish descent constitute one of the largest ethnic minority groups living in Britain. Of note,
Irish people living in Britain experience elevated mortality and poorer self-rated health and limiting long-term illness, which has persisted into second and third generations, despite improvements in socioeconomic circumstances. Previous research on Irish-born and second-generation Irish people living in Britain has suggested that the prevalence of depression and suicidality are elevated compared with rates in Ireland and compared with non-migrant groups living in Britain.

Although controversial, it has been suggested that the poorer health of Irish-born migrants in Britain may be due to negative selection effects (‘unhealthy migrant selection effect’), with Ireland’s geographical proximity to Britain and shared language presenting fewer barriers to migration. For example, a working paper by Delaney et al., using data from England and Ireland, noted that Irish-born migrants to England, born in the periods spanning 1920–60, were of a shorter stature, lower educational attainment as well as were also more likely to report poorer self-rated health and have poorer mental health than age-matched Irish-born counterparts remaining in Ireland, and age-matched English-born counterparts living in England. As education and height may be taken as proxy indicators of pre-migration and/or childhood experiences, the authors of this report suggest that Irish migration at this time was driven by large differences in income between England and Ireland, such that people who were of a lower educational attainment and who, therefore, were more likely to have experienced childhood disadvantage themselves were more likely to have emigrated from the poorer regions of Ireland for work. The author’s analysis of health of Irish-born people living in England suggested that health inequalities persisted after adjustment for factors related to the post-migration settlement context. The authors note that this demographic picture shifted from the late 1970s when differences in mean income between the two countries had lessened, favouring more skilled Irish-born migrants with higher levels of education, representative of wider regions of Ireland, to migrate.

In addition, migration may be perceived as relatively straightforward, simple and/or temporary by Irish-born migrants; poorly planned migration may be associated with adverse health consequences, such as depression, particularly if post-migration factors such as social support are lacking. The health risks of informal migration in Irish-born migrants have been compared with other settings in Europe, where minimal legal restrictions to movement and low-cost travel predisposes to unplanned migration. This is associated with adverse health consequences. Even if selection effects at least partially accounted for the poorer health of Irish-born migrants to Britain, this would not explain the stark health inequalities, which have been consistently reported in second-generation Irish people; one would expect health inequalities to approximate to that of the receiving country, across generations. To date, there have been very few prospective studies which have examined the childhood experiences of second-generation ethnic minority children and experiences of settlement, which may account for potential health inequalities.

Thus, we sought to establish the prevalence of psychological morbidity in second-generation Irish children born in Britain, using two prospective birth cohorts, the National Childhood Development Survey (NCDS), and the 1970 Birth Cohort (BCS70). We sought to assess whether any differences in psychological health might be accounted for either through adversity related to settlement, or through poorer parental health. We assessed parental health through contemporaneous measures, it was not possible in this dataset to assess the pre-migration health of Irish-born parents.

We tested the following hypotheses:

(i) Children of Irish-born migrants are more likely to have a higher prevalence of psychological distress, relative to that of non-migrant parents.
(ii) An excess in psychological morbidity in children of Irish-born parents compared with non-Irish parents is explained by parental social and health inequalities.

Methods

Sample

The cohorts comprised 17,000 children born in England, Scotland or Wales, over 1 week in 1958 (NCDS) and 1970 (BCS70), respectively. BCS70 included children born in Northern Ireland. We excluded this group as they were not followed up in the later sweeps of the cohort. We restricted the study samples to include children of parents who were born in Britain, Ireland or Northern Ireland, and excluded children not born in Britain. At ages 11 and 16 of the NCDS, and at birth in the BCS70, parents reported their country of birth. Cohort members with one or both parents reporting that they were born in Ireland or Northern Ireland were classified as second-generation Irish. In NCDS, excluding non-responders, kappa assessing the reliability of parental responses to this question between the two sweeps was 0.97.

Measures

Social inequality

In the NCDS, at ages 7, 11 and 16, and in the BCS70 at age 5, parents reported if they had sole access to household amenities (indoor toilet, bathroom and hot water) or lived in
overcrowded housing (1+persons/room). In NCDS (ages 7, 11 and 16), parents were asked to report if they had experienced serious financial hardship in the previous year. In NCDS (age 7), parents were asked if they had faced family housing difficulties within the previous year. At ages 11 and 16, parents were asked if their child received free school meals.

Within the BCS70, at ages 5, 10 and 16, parents reported if they owned a car or van. Parents were also asked if they had damp in their housing, and if their child received free school meals (age 10) or if the family could afford to heat their entire home during the winter (age 16). A social rating of neighbourhoods (‘well to do/affluent’ versus ‘average’/‘poor’/‘rural’) was taken at age 5, judged by interviewers. Parents in the BCS70 were asked about neighbourhood characteristics (age 10) and whether or not they lived in social housing (age 16).

**Parental health**

In the NCDS, parents were asked to report parental chronic health problems when cohort members were aged 11 and 16. In the BCS70, at ages 5, 10 and 16, mothers answered questions from the self-rated 24-item Rutter Malaise inventory, which assesses mental health. The scale has adequate reliability, with comparable results across gender and socio-economic position. At age 5, mothers could answer each item with a ‘yes’ or ‘no’ response (yielding a maximum score of 24). At age 10, a visual analogue scale ranging from 0 to 100 was used. At age 16, a three-point Likert scale (maximum score: 48) was used. To aid comparability across sweeps, summed scores were dichotomized; the top fifth of each distribution was taken as indicating ‘moderate’/‘severe’ psychological disturbances in the parent.

**Cohort members’ psychological health**

In the NCDS, when cohort members were 7 and 11 teachers rated their psychological health using the Bristol Social Adjustment Guide; at age 16, the teacher-rated Rutter-B was used. Both instruments have been well validated. Teachers rated statements regarding the child’s behaviour and emotional adjustment by endorsing items on a Likert scale. In the BCS70, when cohort members were 5, 10 and 16, their parents rated emotional or behavioural problems, using the Rutter-A, which have good inter-rater and test–retest reliability. Questions were rated using a Likert scale, at ages 5 and 16. At age 10, a visual analogue scale was used. Summed scores on each scale resulted in a continuous measure.

**Statistical analysis**

Analyses were conducted in STATA-IC 10.1. In main models, parental migration history was the independent variable with child’s psychological symptom count as the dependent variable. Wald tests assessed strengths of association.

**Data reduction in material hardship through principal components analysis**

Principal components analysis (PCA), specifying one component, was used to extract latent constructs for material adversity. Prior to factor analysis, the Kaiser–Meyer–Olkin measure of sampling adequacy was found to be adequate. Values for the Kaiser–Meyer–Olkin measure of sampling adequacy range from 0 to 1, values closer to 1 are preferred and values of 0.6 are at the lower limit of acceptable. Bartlett’s test of sphericity tests the null hypothesis that variables are uncorrelated. Bartlett’s test rejected sphericity. In the NCDS, at ages 7, 11 and 16, following PCA, the first component accounted for 42, 40 and 40% of the total variance, respectively. In the BCS70, at ages 5, 10 and 16, the first component accounted for 38, 45 and 43% of the variance, respectively. The weights for each material hardship indicator were used to generate a composite hardship index for each of the sweeps in the two cohorts.

**Analysis of health and psychological morbidity**

Binary outcomes (maternal psychological morbidity and parental chronic illness and death) were modelled using multivariable logistic regression. For the variable ‘total childhood psychological symptom count’, examination of the summed distribution of symptoms indicated over-dispersion, with right skew; therefore, negative binomial regression with and without zero inflation was used for analysis. The underlying assumption of zero-inflated negative binomial regression is that the population comprises two groups, one which is ‘certain zero’ and the other in which members have symptom counts ≥0. The probability that an observed zero is part of the ‘certain zero’ part is modelled with a logistic regression, and the part of the model where counts ≥0 is modelled with a negative binomial regression approach. Derived coefficients were exponentiated, leading to a ‘count ratio’ (CR) with 95% confidence intervals. Migration history and cohort member’s gender were entered into the zero-inflation parts of the model. Residuals of the two models (negative binomial regression versus negative binomial regression with zero inflation) were compared using fit statistics, which included the Bayesian Information Criterion, Akaike Information Criterion, log-likelihood and Vuong tests.
Results

Demographic information
Six per cent of participants were second-generation Irish in both cohorts. Fifty-two per cent of both cohorts were males. In the NCDS, cohort members were missing information on parental origins due to not being present at the sweeps when this question was asked (ages 11 and 16; \( n = 2038 \)), or being present but not responding (\( n = 1003 \)). Of the 3041 cohort members missing this information, 27% (\( n = 835 \)) had died, and 20% (\( n = 603 \)) had emigrated, at age 16. Reasons for non-response were equivalent between second-generation Irish cohort members and the rest of the sample (Supplementary data, Table S1). Children missing information on parental country of birth were more likely to return incomplete information in general, as these children were missing due to attrition (Supplementary data, Table S2).

In the BCS70, 737 children were missing information on parents’ country of birth, of whom the majority (97%) were not present at baseline, when this question was asked (Supplementary data, Table S1). In the BCS70, second-generation Irish cohort members were more likely to be missing information at Sweeps 1–3 due to ‘refusal’ or ‘other’ reasons (Supplementary data, Table S1). In the BCS70, children missing information on parental origins were similar to children not missing this information with respect to gender, but were more likely to return incomplete information for social class at birth, and tenure at age 5 (Supplementary data, Table S3). At age 16, there was a similar tenure profile in children missing information on parental origins and children not missing this information (Supplementary data, Table S3).

Response rates for the NCDS were good, with 83% of living cohort members providing data at age 16. Response rates, at age 16, in the BCS70, were reduced by the national teachers’ strike and was 69% of those children who were still alive.

Indicators of childhood adversity
Table 1 summarizes that, at each sweep in both cohorts, second-generation Irish children grew up under conditions of marked material adversity compared with British non-migrant children. Mean scores on the composite hardship variable, derived through PCA, were also greater in Irish children (Supplementary data, Table S4).

Parental health
In the NCDS, Irish-born parents were more likely to report a chronic health condition, when their child was aged 11 or 16 (Table 2). This difference was reduced, and strengths of associations diminished, when material adversity indicators were taken into account. In the BCS70, there was strong evidence to suggest that Irish-born mothers were more likely to be psychologically distressed when their child was 5 or 10 years with a suggestion for increased risk at age 16 also (Table 2). When indicators for material hardship were taken into account, this excess risk was reduced and the strength of associations diminished.

Mental health in childhood
Table 3 displays the CR for psychological symptom scores in second-generation Irish children, relative to non-Irish children, in both cohorts. After adjusting for gender, second-generation Irish children had a higher psychological symptom count at ages 5 and 11 in the NCDS, and at age 16 in both cohorts. No interactions with gender were noted.

Does childhood material adversity or parental morbidity account for excess psychological morbidity in second-generation Irish children?
Table 4 displays the differences in psychological symptom counts in Irish compared with non-Irish children, after adjusting for covariates, in the NCDS. Adjusting for material hardship reduced the excess psychological symptom CR in Irish children, at ages 7 and 16.

At age 11 in the NCDS, accounting for variables from birth, contemporaneous material hardship or poorer parental health did not change the coefficient for association greatly (results available from author on request).

In the BCS70, after adjusting for maternal psychological distress, covariates from birth and material hardship, second-generation Irish children had a psychological symptom count 0.78 times less than non-Irish children (95% CI: 0.62–1.00; Table 4).

Discussion
Main findings
We analysed data from two nationally representative British birth cohorts, covering the first 16 years of children’s lives. In both cohorts, second-generation Irish children grew up under conditions of marked material adversity, compared with children without a parental history of migration. In the NCDS, Irish children had poorer psychological health at ages 7, 11 and 16 compared with that in the rest of the cohort. In the BCS70, Irish children had both emotional and behavioural problems at age 16.
Table 1 Childhood adversity in second-generation Irish children relative to the rest of the cohort; 1958 and 1970 British birth cohorts

| Age 7                                      | 1958 Birth cohort (N = 13 724) | x², P-value | 1970 Birth cohort (N = 14 854) | x², P-value |
|--------------------------------------------|--------------------------------|-------------|--------------------------------|-------------|
| Country of birth of parent                 |                                |             | Country of birth of parent     |             |
| England, Scotland, Wales                  | n, %                           |             | England, Scotland, Ireland    | n, %         |
|                                              | 9535, 82                       | 23.42, < 0.001 | 10 372, 95                     | 6.74, 0.009 |
| None or shared useª                        | 2047, 18                       |             | 495, 5                         |              |
| Missing                                    | 1351                           |             | 3155, 23                       |              |
| Overcrowding                               |                                 |             |                                 |              |
| < 1 person/room                            | 6576, 59                       | 91.16, < 0.001 | 9245, 84                       | 50.34, < 0.001 |
| > 1 person/room                            | 4646, 41                       |             | 1788, 16                       |              |
| Missing                                    | 1711, 13                       |             | 2989, 21                       |              |
| Family financial difficulties              |                                 |             |                                 |              |
| No                                         | 9628, 92                       | 65.74, < 0.001 | 7978, 71                       | 38.45, < 0.001 |
| Yes                                        | 822, 8                         |             | 3189, 29                       |              |
| Missing                                    | 2483, 19                       |             | 2855, 20                       |              |
| Family housing difficulties                |                                 |             |                                 |              |
| No                                         | 10 296, 93                     | 70.90, < 0.001 | 2585, 18                       | 179.85, < 0.001 |
| Yes                                        | 763, 7                         |             | 7588, 54                       |              |
| Missing                                    | 1874, 14                       |             | 654, 5                         |              |
| Age 10                                     |                                 |             |                                 |              |
| Ownership of van or car                    |                                 |             |                                 |              |
| Yes                                        | 8415, 76                       | 97.03, < 0.001 | 2965, 21                       | 97.03, < 0.001 |
| No                                         | 2642, 24                       |             | 328, 39                        |              |
| Missing                                    | 2963, 21                       |             |                                 |              |
| Neighbourhood characteristics              |                                 |             |                                 |              |
| Village/rural                              | 7134, 65                       | 100.42, < 0.001 | 3925, 35                       |              |
| Council/Urban/Other                         | 3925, 35                       |             | 3925, 35                       |              |
| Missing                                    | 2963, 21                       |             | 2963, 21                       |              |

Continued
| Country of birth of parent | 1958 Birth cohort (N = 13 724) | x², P-value | BCS70 (N = 14 854) | x², P-value |
|----------------------------|--------------------------------|-------------|---------------------|-------------|
|                             | n | % | n | % |                             | n | % | n | % |
| **Serious financial hardship in the last year** | | | | | **Damp in housing** | | | | |
| No | 10 196 | 89 | 553 | 84 | 20.57, <0.001 | No | 9179 | 82 | 402 | 78 | 6.85, 0.009 |
| Yes | 1231 | 11 | 109 | 16 | Missing | Yes | 1798 | 18 | 115 | 22 |
| Missing | 1506 | 12 | 129 | 16 | Missing | Yes | 2865 | 20 | 315 | 38 |
| **Free school meals** | | | | | **Damp in housing** | | | | |
| No | 10 284 | 90 | 564 | 83 | 34.83 <0.001 | No | 9463 | 85 | 383 | 75 | 34.94, <0.001 |
| Yes | 1113 | 10 | 114 | 17 | Missing | Yes | 1678 | 15 | 126 | 25 |
| Missing | 1536 | 12 | 113 | 14 | Missing | Yes | 2881 | 21 | 323 | 39 |
| **Access to household amenities** | | | | | **Ownership of van or car** | | | | |
| Sole use of alla | 9179 | 94 | 527 | 94 | 0.00, 0.996 | No | 1171 | 16 | 61 | 24 | 11.83, 0.001 |
| None or shared usea | 609 | 6 | 35 | 6 | Missing | Yes | 6060 | 84 | 189 | 76 |
| Missing | 3145 | 24 | 229 | 29 | Missing | Yes | 6791 | 48 | 582 | 70 |
| **Overcrowding** | | | | | **Resident in council flat** | | | | |
| <1 person/room | 6813 | 70 | 294 | 52 | 77.12, <0.001 | No | 3675 | 84 | 120 | 77 | 5.48, 0.019 |
| >1 person/room | 2981 | 30 | 272 | 48 | Missing | Yes | 702 | 16 | 36 | 23 |
| Missing | 3139 | 24 | 225 | 28 | Missing | Yes | 9645 | 69 | 676 | 81 |
| **Serious financial hardship over the last year** | | | | | **Damp in housing** | | | | |
| No | 8729 | 90 | 461 | 82 | 34.35, <0.001 | No | 6564 | 90 | 229 | 90 | 0.08, 0.777 |
| Yes | 949 | 10 | 98 | 18 | Missing | Yes | 702 | 10 | 26 | 10 |
| Missing | 3255 | 25 | 232 | 29 | Missing | Yes | 6756 | 48 | 577 | 69 |
| **Free school meals** | | | | | **Proportion of home family can afford to heat in winter** | | | | |
| No | 8869 | 91 | 469 | 83 | 40.13 <0.001 | Proportion of house | 5288 | 67 | 167 | 59 | 9.21, 0.002 |
| Yes | 911 | 9 | 99 | 17 | Proportion of whole house | 2556 | 33 | 117 | 41 |
| Missing | 3153 | 24 | 223 | 28 | Missing | 6178 | 44 | 548 | 66 |

*Household amenities were: indoor bathroom, indoor toilet and hot water.
### Table 2 Parental health

| NCDS (1958 British birth cohort) (chronic illness in either parent when child aged 11 or 16) |  |
|---|---|
| **Both parents born in** | **Irish-born parents** | **Model 1** Association with chronic illness in Irish-born parents relative to parents in the rest of cohort | **Model 2** Association with chronic illness in Irish-born parents relative to parents in the rest of cohort, adjusted for hardship |
| **n** | **%** | **n** | **%** | **OR** | **95% CI** | **P-value** | **OR** | **95% CI** | **P-value** |
| No chronic illness | 9077 | 79 | 517 | 74 | Non-Irish parents | 1.00 | Ref. | Non-Irish | 1.00 | Ref. |
| One or more chronic illness | 2359 | 21 | 177 | 26 | Irish-born parents | 1.35 | 1.08–1.70 | 0.01 | Irish-born parents | 1.09 | 0.86–1.38 | 0.48 |
| Missing data | 1497 | 97 | 97 | 97 | | | | Hardship, 11<sup>b</sup> | 1.33 | 1.25–1.42 | <0.001 (trend) |
|  |  |  |  |  | Non-Irish parents | 1.09 | 0.86–1.38 | 0.48 | Irish-born parents | 1.09 | 0.86–1.38 | 0.48 |

| BC570 (1970 British birth cohort) (maternal psychological health, when child aged 5, 10 and 16) |  |
|---|---|
| **Both parents born in** | **Irish-born parents** | **Model 1** Associations with psychological distress in Irish-born mothers relative to mothers in the rest of cohort | **Model 2** Associations with psychological distress in Irish-born mothers relative to mothers in the rest of cohort, adjusted for hardship |
| **n** | **%** | **n** | **%** | **OR** | **95% CI** | **P-value** | **OR** | **95% CI** | **P-value** |
| Age 5 (1975) |  |  |  |  |  |  |  |  |  |
| Mother not distressed | 7241 | 83 | 316 | 77 | Non-Irish mother | 1.00 | Ref. | Non-Irish mother | 1.00 | Ref. |
| Mother psychologically distressed<sup>a</sup> | 1508 | 17 | 97 | 23 | Irish-born mother | 1.43 | 1.12–1.83 | <0.001 | Irish-born mother | 1.23 | 0.95–1.58 | 0.11 |
| Missing data | 5273 | 419 |  |  | Non-Irish mother | 1.00 | Ref. | Non-Irish mother | 1.00 | Ref. |
|  |  |  |  |  | Irish-born mother | 1.43 | 1.11–1.83 | 0.01 | Irish-born mother | 1.13 | 0.88–1.47 | 0.34 |

| Age 10 (1980) |  |  |  |  |  |  |  |  |  |
| Mother not distressed | 6646 | 81 | 269 | 75 | Non-Irish mother | 1.00 | Ref. | Non-Irish mother | 1.00 | Ref. |
| Mother psychologically distressed<sup>a</sup> | 1556 | 19 | 91 | 25 | Irish-born mother | 1.43 | 1.11–1.83 | 0.01 | Irish-born mother | 1.13 | 0.88–1.47 | 0.34 |
| Missing data | 5820 | 472 |  |  | Non-Irish mother | 1.00 | Ref. | Non-Irish mother | 1.00 | Ref. |
|  |  |  |  |  | Irish-born mother | 1.43 | 1.11–1.83 | 0.01 | Irish-born mother | 1.13 | 0.88–1.47 | 0.34 |

| Age 16 (1986) |  |  |  |  |  |  |  |  |  |
| Mother not distressed | 4780 | 83 | 153 | 80 | Non-Irish mother | 1.00 | Ref. | Non-Irish mother | 1.00 | Ref. |
| Mother psychologically distressed<sup>a</sup> | 975 | 17 | 38 | 20 | Irish-born mother | 1.53 | 0.86–2.74 | 0.15 | Irish-born mother | 1.46 | 0.80–2.64 | 0.21 |
| Missing data | 8267 | 641 |  |  | Non-Irish mother | 1.00 | Ref. | Non-Irish mother | 1.00 | Ref. |
|  |  |  |  |  | Irish-born mother | 1.53 | 0.86–2.74 | 0.15 | Irish-born mother | 1.46 | 0.80–2.64 | 0.21 |

<sup>a</sup>Rutter Malaise inventory scores in top 20th centile.

<sup>b</sup>Per SD increase in composite hardship indicator.
hardship as putative mediating factors. Although the few studies had directly examined parental health or material mental health profile, relative to white British children. Very health and some groups experiencing a more disadvantaged picture of heterogeneity in the contemporary prevalence of mental health conditions in ethnic minority children growing up in Britain, with some groups experiencing better mental health in this group.

What is already known and what this study adds

The findings implicate important risk factors for migration and childhood mental health, observed in two nationally representative birth cohorts separated by more than a decade. A recent systematic review indicated a complex picture of heterogeneity in the contemporary prevalence of mental health conditions in ethnic minority children growing up in Britain, with some groups experiencing better mental health and some groups experiencing a more disadvantaged mental health profile, relative to white British children. Very few studies had directly examined parental health or material hardship as putative mediating factors. Although the context of Irish migration to Britain has changed over the last 50 years, future research could assess if these risk factors are still relevant to second-generation Irish children growing up in Britain today, or if these factors have salience for the mental health of other second-generation ethnic minority children living in Britain.

Previous studies have shown that Irish-born adults living in Britain have an elevated prevalence of mental health problems, associated with unplanned migration and poorer social support. The findings from the present study indicate that second-generation Irish children also experienced an elevated prevalence of mental health problems; however, these mental health problems were mediated by the poorer psychological health of their mothers. Of note, material hardship mediated mental health problems in both Irish children and in their mothers, as well as chronic health problems in Irish-born parents. This suggests possible points for intervention, in the post-migration settlement context, which may be of benefit to migrant families.

The finding at age 16 that mental health in Irish children was better than the rest of the BCS70, after adjusting for maternal mental health and material hardship, has also been noted for other ethnic minority groups. The main difference in the present study and previous work was that this was observed only ‘after’ taking into account for maternal mental health and material hardship, and not ‘in spite of’ living in socially disadvantaged circumstances.

Childhood mental health may act as a distal risk factor for adult common mental disorders. As it is known that Irish people living in Britain suffer an elevated prevalence of common mental disorders in adulthood, the findings from the present study hint at potential life-course mechanisms for the ‘intergenerational transmission’ of poorer mental health in this group.

Strengths and limitations

A strength of the dataset derives from its prospective design, with detailed, regular assessment of contemporaneous social circumstances experienced by cohort members as they grew up, together with the use of validated instruments to assess psychological health. Most measures were prospective and, therefore, less prone to measurement error. An exception was for the ‘parental migration history’ question, which retrospectively asked after the country of birth of parents. It is reassuring that kappa assessing the reliability of responses to this question, over two consecutive sweeps, was high.

In the NCDS, the question on parental origins was asked when children were aged 11 or 16. We could not ascertain
Table 4  Psychological symptoms in second-generation Irish children relative to the rest of cohort; 1958 and 1970 British birth cohorts

|                      | 1958 Birth cohort | Model 1 |          |          |          | Model 2 |          |          |          | Model 3 |          |          |
|----------------------|-------------------|---------|----------|----------|----------|---------|----------|----------|----------|---------|----------|----------|
|                      | CR^a  | 95% Cl  | P-value  | CR^a  | 95% Cl  | P-value  | CR^a  | 95% Cl  | P-value  |
| Migration history    |        |         |          |        |         |          |        |         |          |
| Non-Irish            | 1.00   | Ref.    |          | 1.00   | Ref.    |          | 1.00   | Ref.    |          |
| Second-generation Irish | 1.10   | 1.00 – 1.21 | 0.04 | 1.05   | 0.96 – 1.15 | 0.29 | 1.05   | 0.96 – 1.15 | 0.29 |
| Gender               |        |         |          |        |         |          |        |         |          |
| Male                 | 1.00   | Ref.    |          | 1.00   | Ref.    |          | 1.00   | Ref.    |          |
| Female               | 0.72   | 0.69 – 0.75 | <0.001 | 0.71   | 0.69 – 0.74 | <0.001 | 0.71   | 0.69 – 0.74 | <0.001 |
| Mother’s age         |        |         |          |        |         |          |        |         |          |
| Years                | 0.99   | 0.99 – 1.00 | <0.001 (trend) | 1.00   | 0.99 – 1.00 | 0.01 (trend) | 1.00   | 0.99 – 1.00 | 0.01 (trend) |
| Mother’s education   |        |         |          |        |         |          |        |         |          |
| Left school after 15 | 1.00   | Ref.    |          | 1.00   | Ref.    |          | 1.00   | Ref.    |          |
| Left school before 15| 1.16   | 1.10 – 1.22 | <0.001 | 1.12   | 1.06 – 1.18 | <0.001 | 1.12   | 1.06 – 1.18 | <0.001 |
| Father’s social class|        |         |          |        |         |          |        |         |          |
| Non-manual           | 1.00   | Ref.    |          | 1.00   | Ref.    |          | 1.00   | Ref.    |          |
| Manual               | 1.22   | 1.16 – 1.28 | <0.001 | 0.86   | 0.82 – 0.90 | <0.001 | 0.86   | 0.82 – 0.90 | <0.001 |
| Contemporaneous hardship |        |         |          |        |         |          |        |         |          |
| Hardship, 7^b        | 1.13   | 1.10 – 1.15 | <0.001 (trend) | 1.19   | 1.03 – 1.36 | 0.01 | 1.19   | 1.03 – 1.36 | 0.01 |
| Age 16 (1974); N = 7363 |        |         |          |        |         |          |        |         |          |
| migration history    |        |         |          |        |         |          |        |         |          |
| Non-Irish            | 1.00   | Ref.    |          | 1.00   | Ref.    |          | 1.00   | Ref.    |          |
| Second-generation Irish | 1.22   | 1.06 – 1.40 | 0.01 | 1.07   | 0.93 – 1.22 | 0.36 | 1.19   | 1.03 – 1.36 | 0.01 |
| Gender               |        |         |          |        |         |          |        |         |          |
| Male                 | 1.00   | Ref.    |          | 1.00   | Ref.    |          | 1.00   | Ref.    |          |
| Female               | 0.80   | 0.75 – 0.85 | <0.001 | 0.80   | 0.75 – 0.85 | <0.001 | 0.80   | 0.75 – 0.85 | <0.001 |
| Mother’s age         |        |         |          |        |         |          |        |         |          |
| Years                | 0.99   | 0.99 – 1.00 | <0.001 (trend) | 0.99   | 0.99 – 1.00 | 0.04 (trend) | 0.99   | 0.98 – 0.99 | <0.001 (trend) |
| Mother’s education   |        |         |          |        |         |          |        |         |          |
| Left school after 15 | 1.00   | Ref.    |          | 1.00   | Ref.    |          | 1.00   | Ref.    |          |
| Left school before 15| 1.44   | 1.33 – 1.55 | <0.001 | 1.33   | 1.23 – 1.44 | <0.001 | 1.42   | 1.31 – 1.53 | <0.001 |
| Father’s social class|        |         |          |        |         |          |        |         |          |
| Non-manual           | 1.00   | Ref.    |          | 1.00   | Ref.    |          | 1.00   | Ref.    |          |
| Manual               | 1.46   | 1.35 – 1.57 | <0.001 | 1.35   | 1.25 – 1.45 | <0.001 | 1.44   | 1.34 – 1.55 | <0.001 |

Continued
| Table 4 Continued |

| 1958 Birth cohort | Model 1 | | Model 2 | | Model 3 | |
|---|---|---|---|---|---|
| | CR<sup>a</sup> | 95% CI | P-value | CR<sup>a</sup> | 95% CI | P-value | CR<sup>a</sup> | 95% CI | P-value |
| Contemporaneous hardship | | | | | | | | | |
| Hardship, 16<sup>b</sup> | | | | | | | 1.27 | 1.23 – 1.31 | <0.001 (trend) |
| Parental chronic illness | | | | | | | | | |
| None | 1.00 | Ref. | | | | | 1.33 | 1.24 – 1.44 | <0.001 |
| Illness | | | | | | | | | |
| BCS70 Age 16 (1986); N = 2464 | | | | | | | | | |
| Migration history | | | | | | | | | |
| Non-Irish | 1.00 | Ref. | 1.00 | Ref. | 1.00 | Ref. |
| Second-generation Irish | 0.87 | 0.68 – 1.10 | 0.24 | 0.85 | 0.67 – 1.09 | 0.20 | 0.78 | 0.62 – 1.00 | 0.05 |
| Gender | | | | | | | | | |
| Male | 1.00 | Ref. | 1.00 | Ref. | 1.00 | Ref. |
| Female | 0.99 | 0.91 – 1.06 | 0.73 | 0.99 | 0.91 – 1.06 | 0.71 | 0.97 | 0.90 – 1.05 | 0.47 |
| Mother’s age | | | | | | | | | |
| Years | 0.99 | 0.99 – 1.00 | 0.02 (trend) | 0.99 | 0.98 – 1.00 | 0.02 (trend) | 0.99 | 0.98 – 1.00 | <0.001 (trend) |
| Mother’s education | | | | | | | | | |
| Left school after 15 | 1.00 | Ref. | 1.00 | Ref. | 1.00 | Ref. |
| Left school before 15 | 1.06 | 0.99 – 1.15 | 0.10 | 1.04 | 0.96 – 1.12 | 0.34 | 1.02 | 0.95 – 1.10 | 0.52 |
| Father’s social class | | | | | | | | | |
| Non-manual | 1.00 | Ref. | 1.00 | Ref. | 1.00 | Ref. |
| Manual | 1.22 | 1.13 – 1.32 | <0.001 | 1.17 | 1.08 – 1.26 | <0.001 | 1.20 | 1.11 – 1.29 | <0.001 |
| Contemporaneous hardship | | | | | | | | | |
| Hardship, 7<sup>b</sup> | | | | | | | 1.10 | 1.06 – 1.14 | <0.001 (trend) |
| Maternal mental health | | | | | | | | | |
| Mother not distressed | | | | | | | 1.64 | 1.49 – 1.80 | <0.001 |
| Psychologically distressed | | | | | | | | | |

Model 1: adjusted for gender, covariates from birth (mother’s age, education, father’s social class); Model 2: adjusted for gender, covariates from birth (mother’s age, education, father’s social class) and contemporaneous material hardship; Model 3: adjusted for gender, covariates from birth (mother’s age, education, father’s social class) and parental chronic health or maternal mental health.

<sup>a</sup>CR of psychological symptoms.

<sup>b</sup>Per SD increase in composite hardship variable.
the parental origins of cohort members already lost to follow-up by this point. Conversely, although the question on parental origins was asked at birth in the BCS70, a slightly larger proportion of Irish respondents refused participation at the later sweeps of the survey. We cannot know how this may have biased overall findings, although it is likely that this would have weakened effects. A further concern relates to the age 16 sweep of the BCS70, where a large proportion of data were missing due to the teacher’s strike, that year. This loss of information may have impacted on the power to detect differences in the sample—however, despite this, second-generation Irish children continued to show social and mental health inequalities compared with the rest of the cohort at this age. The use of two cohorts, suggesting relatively consistent results across time, lends support to the notion that mechanisms underlying missing data have not overly impacted on overall conclusions.

Measures for parental health prior to migration were not available, and it was not possible to assess whether mental health problems in the parents were a consequence of adversity related to settlement, or alternatively, factors pre-dating migration. A social rating of neighbourhoods was taken at age 5 in the BCS70. Although assessed by an independent observer, as this was a subjective measure, this would have been a weaker assessment of area-level disadvantage, compared with measures commonly in use today such as the Index of Multiple Deprivation.

A further limitation of the present study related to the period effects from using data with its origins in the late 1950s and early 1970s. As the cohorts were nationally representative of children born in Britain, a degree of generalizability to other children born at this time could be inferred, and the findings may implicate important risk factors for migration and childhood mental health. However, the circumstances surrounding migration and settlement of Irish families to Britain have been changed markedly over the last 50 years, and so one should use a degree of caution in extrapolating the findings outside of this context.

Supplementary data

Supplementary data are available at Journal of Public Health online.

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