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Ethnic differences in children's socioemotional difficulties: Findings from the Millennium Cohort Study

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ABSTRACT

This paper investigates ethnic differences in children's socioemotional difficulties and possible explanations for any observed inequalities. We used data collected from the fourth sweep of the Millennium Cohort Study when children were aged 7 years. We found that Pakistani, Bangladeshi, and Black Caribbean children had significantly more socioemotional difficulties than White children. These differences were partially explained by the relative socioeconomic disadvantage of their families. After accounting for maternal and family environment factors, the differences for Pakistani children remained unexplained. In contrast, Black African children were the only ethnic minority group to have significantly fewer socioemotional difficulties. We investigated the role of four indicators of socioeconomic position in explaining these differences and found equivalised household income had the strongest influence on socioemotional difficulties, and that socioeconomic position associations with socioemotional difficulties were less apparent among Pakistani and Bangladeshi children. The association between adverse economic conditions and socioemotional difficulties was partially mediated by maternal psychological distress. In conclusion, unexplained ethnic differences in socioemotional difficulties were seen, with a disadvantage among Pakistani children and an advantage among Black African children. Our results point to the need to address economic deprivation among ethnic minority groups to reduce children's socioemotional difficulties.

1. Introduction

Existing evidence shows ethnic variation for a variety of markers of health across the life course (Nazroo et al., 2007). Ethnic inequalities have been observed in the US (Jackson et al., 2004; Teitler et al., 2007), Canada (Wu and Schimmele, 2005), UK (Maynard and Harding, 2010a), Australia (Davis et al., 2010; Trewin and Madden, 2005), and elsewhere (Polednak, 1989). Such ethnic inequalities can be understood as a consequence of the characteristics of the ethnic group itself (typically considered in terms of culture or genetics) or as a consequence of the social and economic disadvantages faced by ethnic minority groups (Nazroo, 1998). A growing body of evidence points to the importance of social (racism and discrimination) and economic factors (Nazroo, 2003), and also to the importance of place where both deprivation and community (operationalized through a measure of ethnic density) are shown to be important and to operate in different directions (Becares and Nazroo, 2013).

Research has documented ethnic patterning in socioemotional difficulties during early childhood, or the period covering the first 8 years of age (UNICEF, 2012), in the US (Han et al., 2012) and UK (Platt, 2012) and adolescence in the UK (Maynard et al., 2007). Socioemotional difficulties are defined as social, emotional, and behavioural problems, including externalizing and internalizing behaviours (Goodman, 1997). Early childhood socioemotional difficulties are consequential for children's academic success and a number of outcomes in adulthood, including educational attainment, employment, and health inequalities (Duncan and Brooks-Gunn, 1997). Describing inequalities and the associated explanatory factors during early childhood is important given the links between socioemotional difficulties in childhood, adolescence, and adulthood (Nazroo, 1997), the benefits of early detection of problem behaviours, and intervention, on children's later life outcomes

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(Heckman et al., 2006), and the documented associations between socioemotional difficulties and children's achievement (Sabol and Pianta, 2012). Understanding ethnic differentials in the UK context might help to elucidate if observed patterns can be generalized to similar ethnic groups elsewhere.

Ethnic variations in children's socioemotional difficulties have been well documented but are decidedly mixed on the disadvantages or advantages conferred to ethnic minority children. Comparing externalizing behaviours among 4–5 year olds in four countries (Australia, Canada, the UK, and the US) found little difference in scores between ethnic minority children and their majority counterparts (Washbrook et al., 2012). One study suggested Australian ethnic minority children and adolescents had similar or fewer socioemotional difficulties than White children (Alati et al., 2003) but more recent evidence found ethnic minority 4–5 year old children had more emotional difficulties and peer problems but fewer conduct problems (Priest et al., 2012). US data, using a more detailed ethnic classification of 5 year old children, found fewer externalizing problems for Asian, Latino, and Mexican children, more externalizing problems for Black children, fewer internalizing problems for other Asians and Mexican children (Han et al., 2012), and more internalizing problems for Black and Latino children (Galindo and Fuller, 2010; Kang et al., 2014).

Documenting and explaining ethnic patterning of socioemotional difficulties in early childhood is under-researched in the UK context. Only one prior study has focused on examining ethnic differences in socioemotional difficulties in early childhood (among three year olds) (Platt, 2012). This showed that children from Indian and Pakistani-Bangladeshi families were at higher risk of difficulties, while children in Black African families had fewer difficulties. Other studies have focused on adolescents and suggested fewer socioemotional difficulties among most ethnic minority groups in the UK, for example Indian and Pakistani children (Astell-Burt et al., 2012; Fagg et al., 2006; Goodman et al., 2010), Bangladeshi (Astell-Burt et al., 2012; Stansfeld et al., 2004), and Black African and Black Caribbean (Astell-Burt et al., 2012; Fagg et al., 2006) adolescents compared to their White peers. However, studies on adolescents or using wide age ranges, for example 5–15 years, make it difficult to disentangle if more or fewer socioemotional difficulties emerge prior to adolescence or if any ethnic variation exists during early childhood. Given increased global migration and growing multicultural communities we need a clearer picture of the level of socioemotional difficulties and its associated risk factors among children across ethnic groups.

The association between socioeconomic position, such as income, education, or a multi-dimensional index, and children's socioemotional difficulties is equivocal (Davis et al., 2010; Reiss, 2013). For example, despite being the poorest ethnic group, some studies have suggested that Bangladeshi children have fewer socioemotional difficulties (Stansfeld et al., 2004), and some other studies find no association between material disadvantage and children's socioemotional difficulties (Fagg et al., 2006; Maynard et al., 2007). Studies tend to use 1 or 2 indicators of socioeconomic position (Gershoff et al., 2007) or combine measures of socioeconomic position into a composite measure (Maynard and Harding, 2010b). However, commonly used measures such as income, education, and occupation, should not be used interchangeably as they may influence children's health in different ways along different pathways (Geyer et al., 2006). Research that investigates the influence of diverse measures of socioeconomic position on children's socioemotional difficulties finds stronger associations for parental education and income than for family structure or employment (Davis et al., 2010). Examining the independent contribution of socioeconomic position on socioemotional difficulties aids conceptual clarity and can help prioritize and inform policy interventions and health promotion programs/policies.

Prior studies have investigated the influence of cultural and family factors to explain ethnic variation in children's socioemotional difficulties. Evidence from American literature suggests children of immigrant parents have fewer socioemotional difficulties than children of native born parents, despite the greater socioeconomic disadvantage of immigrant families (Degboe et al., 2012; Georgiades et al., 2007). A large number of studies have demonstrated perceived racism to be related to an increase in children's socioemotional difficulties (Kelly et al., 2013a; Priest et al., 2013). Further, a vast array of family factors, including maternal mental health, parenting styles, family activities, and family routines, have been shown to be key correlates of children's socioemotional difficulties (Hope et al., 2014; Kelly et al., 2013a; Kelly et al., 2013b; Kelly et al., 2011; Maynard and Harding, 2010a; Maynard and Harding, 2010b; Platt, 2012; Repetti et al., 2002).

In the UK context, the only prior study to have examined ethnic differences in socioemotional difficulties in early childhood used a limited set of explanatory factors (Platt, 2012) and other studies using British data have used data from specific geographic contexts (Astell-Burt et al., 2012; Stansfeld et al., 2004) making it difficult to extrapolate findings to the general population. Previous studies have used a single marker of socioeconomic position (Maynard and Harding, 2010b) or have not examined the influence of socioeconomic position during early childhood (Platt, 2012). It may well be that different measures of socioeconomic position elucidate different levels of social disadvantage between ethnic groups (Smith, 2000). The extent to which associations between family factors and children's socioemotional difficulties are moderated by ethnicity is unclear.

The present study builds on the emerging literature by examining ethnic differences in socioemotional difficulties among 7 year old children using a population based sample. First, we investigate ethnic differences in children's socioemotional difficulties. Second, we examine socioeconomic position, markers of cultural tradition, and a wide range of maternal and family environment factors which may explain any observed ethnic inequalities. Third, we examine the potential role of a broad set of mediators to understand the path between ethnicity and socioemotional difficulties. Finally, we examine whether associations between socioeconomic position, the most likely mediator, and children's socioemotional difficulties differ by ethnicity.

2. Data

2.1. Millennium Cohort Study (MCS)

The MCS is a nationally representative longitudinal study of children born in 19,244 households in the United Kingdom between 2000 and 2002. Families with children who were living in the UK at age 9 months were identified through the Department of Work and Pensions Child Benefit system (a universal benefit in the UK) and were selected on the basis of where the family was resident shortly after the time of birth (Plewis et al., 2004). The sample was clustered at the electoral ward (an administrative unit level) such that disadvantaged residential areas and areas with a high proportion of ethnic minority residents are over-represented. The main respondents are primarily mothers. The first interview was when cohort members were 9 months of age, and follow up sweeps were conducted at ages three, five, seven, and eleven years.

We used data collected from the fourth sweep of interviews which were conducted through home visits when the cohort child was approximately 7 years of age. Interviews collected information about the child's socioemotional difficulties, socioeconomic position, demographic characteristics, home learning, family routines and psychosocial environment.

2.2. Socioemotional difficulties

During the interview, parents answered questions about their child's socioemotional behaviour using the Strengths and Difficulties Questionnaire (SDQ), age 4–15 year version (http://www.sdqinfom.com). Strengths of the SDQ are its psychometric properties, representation of children's socioemotional strengths and difficulties (Goodman, 2001), and its wide use in research examining ethnic differences (Platt, 2012). The questionnaire asks five questions in each of five domains: emotional symptoms, conduct problems, hyperactivity–inattention, peer problems, and prosocial behaviour. Each question is scored 0 (not at all true), 1 (partly true), or 2 (certainly true), with some questions reverse coded. Scores are summed across the first 4 domains to construct a total difficulties score, which was analysed as a continuous variable with higher values indicating increased difficulties. An externalizing behaviour score was created using scores from the conduct problems and hyperactivity–inattention scales and an internalizing behaviour score was created by summing emotional symptoms and peer problems scores. Teachers completed the SDQ on a subsample of children. Although not shown, we discuss sensitivity analyses using teacher-reported difficulties.

2.3. Ethnicity

Ethnic categories were constructed using mother's reports of her child's ethnicity and were based on census categories (Kelly et al., 2006b). The groups used for analysis were: White, Indian, Pakistani, Bangladeshi, Black Caribbean (including mixed White and Black Caribbean), Black African (including mixed White and Black African), and other. The 'other' group includes mixed ethnic groups and ethnic minority groups that could not be categorized into any of the otherwise defined groups.

These ethnic groups have distinct migration patterns to the UK. The primary wave of migration of Black Caribbeans and Indians to the UK occurred in the 1950s and 1960s, for Pakistanis the 1960s and 1970s, Bangladeshis the 1980s, and Black Africans the 1990s.

2.4. Demographic, cultural tradition, and socioeconomic position

Demographic characteristics were child's gender and age (centred at the mean of 7.23 years). Markers of cultural tradition (Kelly et al., 2006a) were a binary indicator of English as the primary language spoken at home and a categorical variable for maternal migration status (first, second, and third generation or more). Markers of socioeconomic position were equivalised continuous household income (logged) (Gravelle and Sutton, 2003; Hansen and Joshi, 2008), highest parental educational qualification (NVQ equivalence scale: NVQ5 Degree or higher, NVQ4 Diploma, NVQ3 A/AS levels, NVQ2 >4 GCSEs, NVQ1 <5 GCSEs, Overseas qualification, None), the Index of Multiple Deprivation (IMD) (Noble et al., 2004) in quintiles (as a marker of residential area deprivation), and mother's employment status (working full-time, working part-time, and not working). The IMD includes 7 dimensions of deprivation: income, employment, health, education, housing, environment, and crime. Each dimension is standardized and scores are exponentially transformed before being combined. Higher scores indicate greater deprivation.

2.5. Maternal and family environment factors

At the age 5 interview mothers were asked about their perception of racism in their residential area. Frequency of racist insults or attacks was categorized into a binary indicator (not at all/not very common vs. fairly/very common) (Kelly et al., 2013a). This measure can be considered a proxy for the type of neighbourhood children live in. Other questions asking about interpersonal experiences of racism were only asked of ethnic minority mothers and were not included in this analysis. Mothers' psychological distress was assessed at age 7 with the six-item version of the Kessler questionnaire (Kessler et al., 2002). Markers of the family environment were (Kelly et al., 2011): parental basic skills difficulties, measured at 9 months——a composite measure based on responses to questions to parents on ability to read a children's book, fill in forms and check change in a shop; discipline strategies at age 7—this was a composite score ($\alpha = 0.73$) of seven items taken from the Conflict Tactics Scale (Straus and Hamby, 1997) (How often do you do the following when child is 'naughty': Ignore, Smack, Shout, Send to bedroom/naughty chair, Take away treats, Tell off, Bribe); frequency of learning activities: reading to the child and helping with reading, writing, and maths; a marker of family routine, a dichotomous measure of regular bedtime on weekdays (always or usually vs. sometimes or never) (Kelly et al., 2013b). Finally, we developed a home environment scale to aid in the mediation portion of this analysis. This scale included parental basic skills difficulties, discipline strategies, frequency of learning activities, and regular bedtime. The scale ranges from 0 to 7 and higher scores indicate more disadvantage.

3. Methods

3.1. Sample

Child behaviour is moderated by multiple births and therefore we analysed data on singleton-born cohort members for whom mothers reported on their child's ethnicity and socioemotional difficulties, $n = 12{,}695$ (Hansen and Joshi, 2007). We excluded from our analysis children who were reported to have attention-deficit/hyperactivity disorder, autism, or Asperger's syndrome ($n = 330$). The analytic sample was 12,376 after multiply imputing missing values on explanatory factors due to item non-response. The rate of missingness was between 0 and 16 percent for explanatory factors, of which mother's report of racism in residential area had the highest rate of missingness (Appendix Table 1). Mothers of children who were missing data were more likely to have low income and lower educational attainment, more likely to live in deprived areas, and more likely to be unemployed, than those who had complete information on covariates (Appendix Table 2).

The imputation model included all explanatory factors, auxiliary variables measuring socio-demographic characteristics from previous interviews, and design variables to consider the clustered nature of the data. Using STATA, we applied Multiple Imputation (MI) techniques which account for uncertainty about missing values by imputing several values for each missing data point (Allison, 2002). Recent literature recommends imputing at least 20 datasets to reduce sampling error (StataCorp, 2011). We imputed 25 datasets, consolidated results from all imputations using Rubin's combination rules (Rubin, 2009), and excluded cases with imputed values on the dependent variables or on ethnicity. Multiple imputation supports findings from complete case analyses ($N = 7618$). The imputed estimates had smaller standard errors than complete case analyses, and the coefficients in the imputed analyses had the

same direction and significance as ones in complete case analyses. We present results from the imputed sample.

3.2. Analytical approach

In order to understand ethnic differences in children's socioemotional difficulties at age 7, we investigate the independent contribution of socioeconomic position, cultural tradition, and maternal and family environment factors (disaggregated into 3 separate domains) on socioemotional difficulties. All models adjust for age and gender. In the base model, we present initial estimates of ethnic differences. Then we assess the importance of explanatory factors by separately adjusting for 5 sets of covariates: Model 1 adjusts for markers of cultural tradition; Model 2 adjusts for socioeconomic position; Models 3–5 examine maternal and family environment factors in 3 separate domains: Model 3 adjusts for perceived racism; Model 4 adjusts for maternal psychological distress; Model 5 adjusts for markers of the family environment; Model 6 simultaneously controls for all covariates. We use ordinary least squares regressions and use the largest group (White children) as the reference group.

We test several mechanisms that may explain the relationship between ethnicity and children's socioemotional difficulties (Fig. 1), following recommended guidance in the mediation literature (Baron and Kenny, 1986). In order to clarify the path between ethnicity and socioemotional difficulties, we focus on the relationship between markers of socioeconomic position and socioemotional difficulties (Fig. 1a). Specifically, we test 3 pathways. Pathway A estimates whether socioeconomic position is significantly associated with the mediator. If pathway A is supported, we test Pathway B which estimates the relationship between the mediator and socioemotional difficulties. If Pathway B is supported, we test the independent association between socioeconomic position and socioemotional difficulties (Pathway C).

We also test a series of interactions using multivariate regressions. We investigate whether the link between socioeconomic position, a mediating factor, and socioemotional difficulties varies by ethnic group. It could be the case that all ethnic minorities have similar experiences due to social stratification, or, on the other hand, variation within and between ethnic groups could result in heterogeneous experiences of children's socioemotional difficulties due to economic diversity. We empirically test for moderation by interacting ethnicity with socioeconomic position (moderated pathway D, Fig. 1b), whether mediation pathways differ by ethnicity (moderated pathways E and F, Fig. 1c), and if the moderated pathway D is explained by the moderated pathways (if pathway G is non-significant).

All analyses use sample weights to adjust for unequal probability of being sampled and the stratified and clustered sample design.

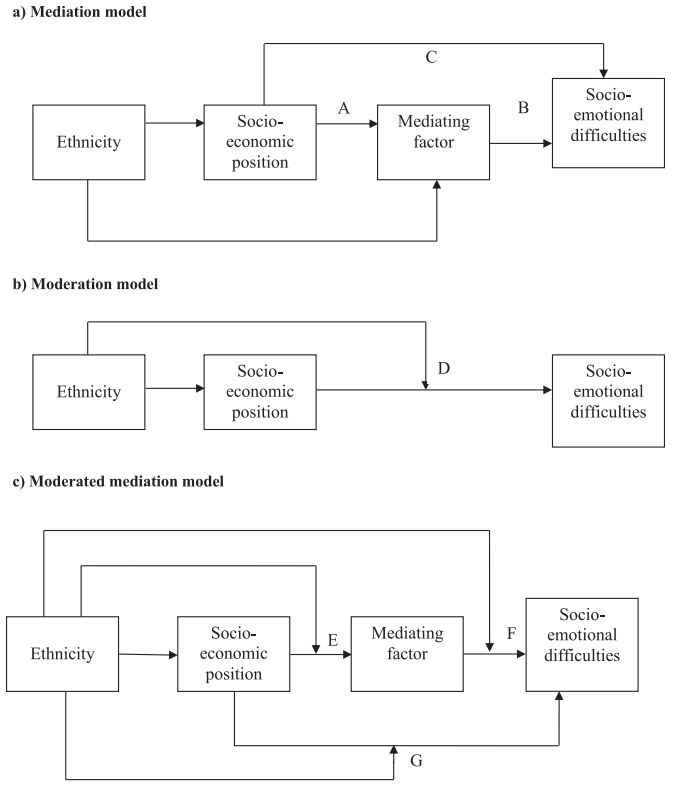

Fig. 1. Conceptual models linking ethnicity, socioeconomic position and socioemotional difficulties.

4. Results

Appendix Table 3 shows socioemotional difficulties scores and the distribution of explanatory factors by cohort member's ethnicity. Pakistani, Bangladeshi, and Black Caribbean children had higher total difficulties scores compared to White children. Pakistani and Black Caribbean children had the highest externalizing scores. Internalizing scores were highest among Pakistani, Bangladeshi, and Black Caribbean children. Although not shown, teacher ratings of total difficulties, externalizing, and internalizing scores reflected the same directionality as mother-reported difficulties.

Mothers of Pakistani, Bangladeshi, and Black African children had more socially disadvantaged profiles compared to White mothers. For example, they had lower levels of educational attainment, lived in the most deprived residential areas, had the lowest employment rates, and higher psychological distress scores. There was heterogeneity in the distribution of other explanatory factors by ethnicity. There were no meaningful ethnic differences in parental basic skills difficulties or discipline strategies, but mothers of Pakistani and Bangladeshi children were least likely to read to their children, mothers of Black African children were most likely to help their children with reading and writing and Black Caribbean children were most likely to have non-regular bedtimes.

Table 1 shows the relationship between children's total difficulties scores and ethnicity. Coefficients for explanatory factors included in the model at various steps are shown in Appendix Table 4. In the base model, Pakistani, Bangladeshi, and Black Caribbean children had significantly higher total difficulties scores (b: 2.4, SE = 0.3; b: 1.6, SE = 0.4; b: 1.7, SE = 0.3 respectively) than White children. Adjustment for markers of cultural tradition slightly attenuated the relationship among Bangladeshi children and amplified the relationship among Pakistani and Black Caribbean children (Model 1). Adjustment for socioeconomic position reduced the differences for Pakistani and Bangladeshi children to non-significance. The estimates for Black Caribbean children attenuated by nearly 50% but remained significant (Model 2). Adjustment for perceived racism slightly attenuated associations for Pakistani, Bangladeshi and Black Caribbean children (Model 3). Adjustment for maternal psychological distress scores attenuated the disadvantages for Pakistani, Bangladeshi, and Black Caribbean children (Model 4). Adjustment for markers of the family environment slightly attenuated associations for Pakistani and Black Caribbean children but had no effect on estimates for Bangladeshi

Table 1
Regression coefficients (SE) for total difficulties scores by child's ethnicity.

	Base model: Age and gender	Model 1: Base model + cultural tradition	Model 2: Base model + socioeconomic position	Model 3: Base model + racism	Model 4: Base model + mother's psychological distress	Model 5:Base model + family environment and routine	Model 6: All variables
Ethnicity							
Indian	−0.037 (0.39)	0.18 (0.44)	−0.033 (0.36)	−0.19 (0.36)	−0.10 (0.39)	0.19 (0.37)	0.21 (0.37)
Pakistani	2.43*** (0.33)	2.51*** (0.40)	0.52 (0.36)	2.31*** (0.32)	1.84*** (0.25)	2.20*** (0.31)	0.69* (0.31)
Bangladeshi	1.60*** (0.40)	1.40** (0.44)	−0.45 (0.38)	1.21** (0.43)	1.17** (0.42)	1.70*** (0.37)	−0.023 (0.46)
Black Caribbean	1.71*** (0.31)	2.05*** (0.35)	0.83* (0.34)	1.45*** (0.32)	1.27*** (0.34)	1.43*** (0.30)	0.61 (0.36)
Black African	−0.23 (0.42)	−0.032 (0.46)	−1.40*** (0.35)	−0.47 (0.41)	−0.53 (0.37)	−0.35 (0.38)	−1.29*** (0.35)
Other	−0.11 (0.42)	−0.061 (0.44)	−0.65 (0.34)	−0.38 (0.41)	−0.73 (0.38)	0.12 (0.41)	−0.70 (0.37)
N	12,376	12,376	12,376	12,376	12,376	12,376	12,376

Standard errors in parentheses.
***p < 0.001, **p < 0.01, *p < 0.05.
Notes: All models are adjusted for sample design with weights from MCS 4. Ethnicity is mother's report of cohort member's ethnicity. Sample excludes multiple births, children with ADHD/Autism/Asperger's syndrome, and cohort members for whom there is no data on socioemotional difficulties.

children (Model 5). The fully adjusted model showed a much smaller, but still statistically significant, disadvantage for Pakistani children (b: 0.7, SE = 0.3) while the disadvantages among Bangladeshi and Black Caribbean children became statistically non-significant (b: −0.02, SE = 0.5; b: 0.6, SE = 0.4) (Model 6). The only group to have significantly fewer total difficulties were Black African children (b: −1.3, SE = 0.4).

In additional analyses (Appendix Tables 5 and 6), we examined ethnic inequalities in children's externalizing and internalizing behaviours. Overall, children from ethnic minorities were more likely to have problem behaviours. For externalizing behaviour, Pakistani and Black Caribbean children had significantly higher externalizing scores and Black African children had lower scores than their White peers. Adjusting for socioeconomic position attenuated estimates to nonsignificance for Pakistani and Black Caribbean children. The advantage seen for Black African children remained in the fully adjusted model. For internalizing behaviour, Pakistani, Bangladeshi, and Black Caribbean children had significantly higher scores than White children. Adjusting for socioeconomic position attenuated associations for these children more than other sets of covariates, but significant disadvantages remained after adjusting for all explanatory factors.

We further investigated whether the influence of socioeconomic position on children's total difficulties scores was the same for each marker of socioeconomic position. In analyses not shown, we separately adjusted for equivalised income, educational attainment, IMD, and maternal employment. All four markers attenuated ethnic disadvantages in total difficulties, but equivalised income reduced estimates the most.

Table 2 presents coefficients from mediation tests for nine mechanisms. We focus on the pathway from socioeconomic position to total difficulties scores, because socioeconomic position attenuated ethnic disadvantages in total difficulties to nonsignificant levels. We present results for equivalised income as a marker of socioeconomic position as it was observed to reduce ethnic inequalities to a greater extent compared to other markers of socioeconomic position. In analyses not shown, the other 3 markers of socioeconomic position revealed similar results to the mediation analyses examining pathways from equivalised income.

Equivalised income was not associated with discipline strategies and helping with maths (Pathway A, Fig. 1a). Findings suggest that greater income was associated with fewer parental basic skills difficulties, lower odds of reading infrequently to the child, lower odds of helping with reading and writing, lower odds of having an non-regular bedtime, lower odds of perceived racism, and lower maternal psychological distress scores. The home environment scale indicates an advantage with increases in income. All of the aforementioned variables were significantly associated with total difficulties scores and thus were candidates as potential mediators (Pathway B, Fig. 1a). Of these potential mediators, maternal psychological distress attenuated the direct effect of income on total difficulties (Pathway C, Fig. 1a) to the greatest extent. Specifically, psychological distress accounted for about 25% of the relationship between equivalised income and total difficulties.

Table 3 shows a series of interaction models to help understand (i) the extent to which the relationship between equivalised income and total difficulties scores varies by ethnic group and (ii) whether the pathways from equivalised income to total difficulties scores are moderated by ethnic group. Ethnicity moderated the relationship of equivalised income with total difficulties: Socioeconomic advantage was associated with fewer difficulties but this advantage was attenuated for Pakistani and Bangladeshi children (Table 3, pathway D, Fig. 1b). We next investigate where the moderation takes place along the pathway to total difficulties. First we assess if the relationship between equivalised income and maternal psychological distress is moderated by ethnicity (Table 3; pathway E, Fig. 1c). The interaction terms significantly added to model fit, with significant and borderline significant terms for Bangladeshi and Pakistani mothers, respectively. The interaction for Pakistani and Bangladeshi mothers, in combination with the main effect on income, indicates no relationship between income and mothers' psychological distress for these groups. Second, we add the interaction between ethnicity and mothers' psychological distress (Table 3; Pathway F, Fig. 1c) to the previous model to assess whether there is moderated mediation of the pathway from maternal psychological distress. The interaction terms taken as a whole were not significant although there is weak evidence that Indian children of mothers with higher psychological distress scores had more difficulties. In regressions not shown, adjusting for extended household structure (resident grandparents and other adults in the household) did not attenuate these moderated effects. Finally, we assess whether there is still an interaction between ethnicity and equivalised income on children's total difficulties scores after including the moderated mediation effects (Table 3; Pathway G, Fig. 1c). We find that the interactions between ethnicity and income were no longer statistically significant, suggesting the relationship between equivalised household income and children's total difficulties is explained by

Table 2
Test of mediation from income to total difficulties scores.

	Parental basic skills difficulties	Discipline strategies	Read to child…		Help with reading	Help with writing	Help with maths	Never or sometimes has a regular bedtime	Racism in area is fairly/very common	Maternal psychological distress	Home environment scale
			Once/twice a week	Monthly or less							
Pathway A (Mediator regressed on equivalised income)											
Logged equivalised income (continuous)	−0.097*** (0.017)	−0.049 (0.062)	0.72*** (0.67–0.78)	0.64*** (0.58–0.71)	0.77*** (0.72–0.84)	0.82*** (0.77–0.87)	0.96 (0.90–1.02)	0.63*** (0.57–0.70)	0.48*** (0.42–0.55)	−1.16*** (0.065)	−0.29*** (0.023)
Pathway B (Total difficulties scores regressed on mediator)											
Mediator	0.36*** (0.084)	0.51*** (0.015)	0.93*** (0.13)	1.79*** (0.23)	1.06*** (0.12)	0.89*** (0.12)	0.39*** (0.11)	1.81*** (0.24)	2.88*** (0.29)	0.48*** (0.018)	0.93*** (0.036)
Pathway C (Total difficulties scores regressed on equivalised income and mediator)											
Logged equivalised income (continuous)	−1.88*** (0.072)	−1.86*** (0.071)	−1.81*** (0.073)		−1.84*** (0.072)	−1.85*** (0.073)		−1.83*** (0.072)	−1.78*** (0.071)	−1.40*** (0.068)	−1.65*** (0.071)
Mediator	None	0.25*** (0.073)	0.61*** (0.12)	1.34*** (0.23)	0.80*** (0.11)	0.68*** (0.11)		1.32*** (0.22)	2.11*** (0.28)	0.42*** (0.018)	0.80*** (0.034)
% Effect mediated										25.5	12.2

Notes: ***p < 0.001, **p < 0.01, *p < 0.05. Parent's basic skills difficulties, discipline strategies, and maternal psychological distress are coded as higher scores indicating more problems. Estimates for the frequency of learning activities, having a non-regular bedtime, and perceived racism are odds ratios. Home environment scale is comprised of parental basic skills difficulties, discipline strategies, frequency of learning activities, and regular bedtime. Scale ranges from 0 to 7 and higher scores indicate more disadvantage.

the moderated pathways to maternal psychological distress, specifically the moderated relationship between income and maternal psychological distress.

5. Discussion

In this study we used population based data to document ethnic differences in children's socioemotional difficulties at 7 years of age and to investigate the factors that influence observed inequalities. We showed that Pakistani, Bangladeshi, and Black Caribbean children appeared to have more socioemotional difficulties than White children. These differences were largely explained by the relative socioeconomic disadvantage of their families. Potential markers of ethnic disadvantage such as experienced racism, maternal psychological distress and markers of the family environment—reduced the observed inequality in total difficulties for Pakistani children by nearly two-thirds. Accounting for potential explanatory factors, as operationalized here, revealed an advantage for Black African children. Of the markers of socioeconomic position explored in analyses, we found equivalised income to largely explain ethnic disadvantages in total difficulties scores, and that the relationship between poor economic conditions and total difficulties was partially mediated by maternal psychological distress. There was modest evidence for moderation by ethnicity – the associations between equivalised income and total difficulties scores were less apparent among Pakistani and Bangladeshi children. One interpretation of these findings is that there is less variation in family income among Pakistani and Bangladeshi families given that two-thirds of Pakistani and nearly 90% of Bangladeshi families are in the bottom income tertile (Nazroo and Williams, 2006). Additionally, we find that increases in income are not as beneficial for Pakistani and Bangladeshi children's socioemotional difficulties, because such increases do not benefit the psychological wellbeing of mothers of Pakistani and Bangladeshi children. The weak evidence of ethnic moderation of the relationship between equivalised income and children's total difficulties scores is explained by the moderated pathway to maternal psychological distress. In our conceptual framework, we assessed concurrent associations between equivalised income and mothers' psychological wellbeing. It could be the case that increases in economic wellbeing for mothers of Pakistani and Bangladeshi children are more beneficial to such mothers' psychological distress in the long run.

The only other study, in the UK context, that examined ethnic differences in socioemotional difficulties in early childhood reported disadvantage for Pakistani and Bangladeshi (as an aggregated group) and Indian 3 year olds (Platt, 2012). In our study, examining Pakistani and Bangladeshi children separately revealed important differences between these groups, and we found by age 7 that Indian children were no different compared with their white peers. We found that Black African 7 year olds had fewer socioemotional difficulties compared with their white counterparts, a finding in common with several studies of adolescents (Astell-Burt et al., 2012; Fagg et al., 2006; Maynard et al., 2007). The Black African advantage is not surprising given their advantage appears after adjusting for markers of socioeconomic position; over one-half of mothers of Black African children have at least NVQ4 education and nearly one-third of Black African mothers are employed full-time, and these markers have been shown elsewhere to correlate with fewer socioemotional difficulties (Han et al., 2012; McMunn et al., 2011). International studies report mixed evidence on ethnic patterning of socioemotional difficulties (Priest et al., 2012; Washbrook et al., 2012). Given the heterogeneity in migration and residential patterns of

Table 3
Tests of moderated mediation by ethnicity from income to total difficulties scores.

	Pathway D: TDS regressed on income, ethnicity, and interactions	Pathway E. Maternal psychological distress regressed on income, ethnicity, and interactions	Pathways F & G. TDS regressed on income, ethnicity, income and ethnicity interactions, maternal psychological distress and psychological distress and ethnicity interactions
Log equivalised income	−1.93*** (0.078)	−1.13*** (0.051)	−1.35*** (0.066)
Ethnicity			
Indian	−0.050 (0.39)	0.30 (0.21)	−0.24 (0.35)
Pakistani	1.56*** (0.42)	0.91*** (0.26)	1.08** (0.37)
Bangladeshi	1.37* (0.63)	1.14** (0.44)	1.73* (0.69)
Black Caribbean	1.24** (0.39)	0.40 (0.25)	0.93* (0.38)
Black African	−1.16*** (0.32)	0.090 (0.28)	−0.88* (0.40)
Other	−0.54 (0.35)	1.20*** (0.25)	0.0088 (0.41)
Income × Ethnicity			
Indian × income	0.72 (0.55)	0.24 (0.29)	0.39 (0.37)
Pakistani × income	0.76* (0.35)	0.57 (0.30)	0.41 (0.34)
Bangladeshi × income	1.83** (0.60)	1.24* (0.51)	1.02 (0.63)
Black Caribbean × income	0.84 (0.48)	−0.44 (0.31)	0.59 (0.40)
Black African × income	−0.21 (0.48)	−0.010 (0.33)	0.39 (0.41)
Other × income	0.15 (0.42)	−0.33 (0.33)	0.33 (0.41)
Mother's psychological distress	–	–	0.42*** (0.012)
Psychological distress × ethnicity			
Indian × psychological distress	–	–	0.14* (0.069)
Pakistani × psychological distress	–	–	0.0058 (0.056)
Bangladeshi × psychological distress	–	–	−0.10 (0.11)
Black Caribbean × psychological distress	–	–	−0.033 (0.063)
Black African × psychological distress	–	–	−0.039 (0.074)
Other × psychological distress	–	–	−0.078 (0.070)
Chi-sq: Wald Test of ethnicity interactions (*p*-value)	3.55 (0.002)	2.33 (0.03)	1.18 (0.31)
N	12,376	12,376	12,376

Notes: ***p < 0.001, **p < 0.01, *p < 0.05. All estimates are weighted with MCS 4 weights. Log equivalised income is centred on the mean (9.3). TDS: Total difficulties score.

ethnic minority groups, contextualizing our results in the global context is tenuous at best.

There are, moreover, marked differences between previous studies and the current analyses which make it difficult to compare findings in the UK too. First, prior work has examined children aged 11 years or older (Astell-Burt et al., 2012; Maynard and Harding, 2010a; Maynard and Harding, 2010b) or used wide age ranges, such as 5–16 years of age (Goodman et al., 2010). Second, studies finding evidence of fewer socioemotional difficulties among ethnic minority children and adolescents use contextually specific data, for example, data on children in London schools (Astell-Burt et al., 2012) or in specific English cities (Dogra et al., 2013), thus making it difficult to extrapolate such findings to the general population. Third, many other studies have used adolescent self-reports of socioemotional difficulties (Maynard et al., 2007; Stansfeld et al., 2004), whilst we have used mother reports. That fewer socioemotional difficulties among ethnic minority adolescents is, with the exception of the Black African group, not seen in younger children suggests possible lines of investigation. The factors representing socioeconomic position, cultural tradition, and maternal and family circumstances investigated in the present study may operate differently across the early life course. Future research should examine the longitudinal trajectory of socioemotional difficulties during early childhood and potential variations in reports of socioemotional difficulties by mothers, teachers, and children.

The literature on the link between economic circumstances and children's socioemotional difficulties is decidedly mixed. There is evidence that disadvantaged socioeconomic position is associated with more socioemotional difficulties, using data on children of mixed age ranges (Costello et al., 2003) or focussing on early childhood (Duncan and Brooks-Gunn, 1997), whereas some studies do not report any significant association between material disadvantage and socioemotional difficulties among adolescents (Fagg et al., 2006; Maynard et al., 2007). One study finds fewer socioemotional difficulties among Bangladeshi adolescents, despite being the most economically disadvantaged (Stansfeld et al., 2004). One explanation for the disparate findings on socioeconomic position is that compared with childhood (and adulthood), adolescence is a period of relative health equality (West, 1997) and it is hypothesized that school and peer influences overcome family effects on health (West* et al., 2004). In contrast, socioeconomic position is hypothesized to be more salient for younger children, because adverse economic conditions may limit parents' abilities to provide enriching materials and experiences (Duncan and Brooks-Gunn, 1997), which are beneficial to children's development (McLoyd, 1998), or may compromise parents' psychosocial resources and disrupt parent–child interactions (Conger and Conger, 2002). In addition to the difference in the life course period of analysis, comparing our results to previous studies is difficult because research operationalizes socioeconomic position using various methods, for example receipt of free school meals (Stansfeld et al., 2004) or a consumption based measure (Maynard et al., 2007), and there is evidence that different markers of socioeconomic position may not be equally representative of social disadvantage across ethnic minorities (Nazroo, 1998). Additionally, adolescent self-reports of family economic circumstances may not accurately depict household level economic wellbeing (Maynard et al., 2007). Evidence using multidimensional or composite measures of socioeconomic position may be problematic if there is residual socioeconomic confounding. Studies using multiple indices of socioeconomic circumstances corroborate our results (Amone-P'Olak et al., 2009; Davis et al., 2010).

There are multiple mechanisms through which socioeconomic disadvantage could influence children's socioemotional difficulties. These include inequities in goods and services, parents' health behaviours, and living in deprived neighbourhoods (Atzaba-Poria et al., 2004; Evans, 2004). Of the mechanisms operationalized here, maternal psychological distress partially mediated the relationship between poor economic conditions and socioemotional difficulties, a finding supported by work from elsewhere linking maternal psychological wellbeing and adverse child behaviour (Hope et al., 2014; Kiernan and Mensah, 2009). This is perhaps not surprising given the array of family processes influencing child development (Bronfenbrenner and Morris, 2006). Poor maternal mental health may lead to unfavourable parent–child interactions and parenting behaviours (Smith, 2004), which in turn may influence socioemotional difficulties (Kelly et al., 2011).

This study is not without limitations. We used a cross-sectional design and this precludes the temporal ordering of socioeconomic position, family environmental factors, and children's socioemotional difficulties. For example, it could be the case that socioemotional difficulties prevent parents from taking up employment or contribute to reduced working hours and lead to the development of poor mental health for themselves (Amone-P'Olak et al., 2009). Future research should investigate causal mechanisms to understand the processes linking family level mediators, material circumstances, and socioemotional difficulties among ethnic minorities. The SDQ is a validated tool (Goodman, 2001), but it has been suggested this screening questionnaire is not as sensitive to socioemotional difficulties among ethnic minorities (Maynard et al., 2007). Additionally, mothers' report of SDQ may be subject to response bias. For example, mothers who are depressed may rate their children as having more socioemotional difficulties than a non-depressed mother. We used teacher reported difficulties to validate our descriptive results and found agreement between informants. Lastly, we lacked information on potentially important variables, such as the physical environment, social networks, and ethnic composition of neighbourhoods (Bécares et al., 2012), which may provide community support, positive peer influences, or family support as potential buffers against the negative effects of social and economic disadvantage.

6. Conclusion

Our work adds to the growing body of literature on ethnic patterning of children's socioemotional difficulties. We identified poor economic conditions and maternal mental health as modifiable markers for socioemotional difficulties in children. Interventions can reduce children's socioemotional difficulties and relieve maternal distress (Jones et al., 2007). Multidimensional approaches combining clinical engagement, improved detection, and culturally appropriate responses to depression (Prady and Kiernan, 2013) alongside national policies and programs to circumvent the progression of poor mental health can help mitigate disadvantages among ethnic minorities. Given that early childhood behaviour problems are linked to later life educational attainment and academic success (Currie and Stabile, 2007), future work should consider a longitudinal view of the relationships between socioemotional difficulties and family environmental factors in order to inform policymakers about areas for intervention.

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Appendix

Appendix Table 1
Rate of missingness for all explanatory factors (in percent).

Child characteristics	
Age	0.0
Gender	0.0
Cultural tradition factors	
Language spoken at home is primarily English	0.0
Migrant generation	8.4
Socioeconomic position	
Logged Equivalised Income	10.4
Highest parental education	0.0
Area deprivation	1.5
Maternal employment	3.9
Experienced racism	16.4
Psychological distress	2.1
Parental basic skills difficulties	2.9
Discipline strategies	5.0
Frequency of learning activities	
Frequency reading to child	0.0
Help with reading	0.2
Help with writing	0.2
Help with math	0.2
Always/usually has regular bedtimes	0.00

Note: Sample excludes multiple births. The figures are based on 12,376 mothers in the MCS 4 for whom cohort members' ethnicity and child socioemotional difficulties is observed. All percents are unweighted.

Appendix Table 2
Socio-economic characteristics of complete case sample compared with sample with missing data (in percent).

	Complete case ($n = 7618$)	Missing covariates ($n = 4758$)
Socioeconomic position		
Equivalised family income (mean)	15843.0	13271.6***
Highest parental educational attainment		
None	4.3	8.9***
Overseas	1.4	2.5***
NVQ1	4.0	5.6***
NVQ2	21.3	23.3*
NVQ3	17.0	15.4*
NVQ4	38.6	32.0***
NVQ5	13.4	12.4
Area deprivation		
Bottom quintile	20.3	30.5***
Second quintile	20.5	22.1*
Third quintile	18.3	17.5
Fourth quintile	18.3	14.6***
Fifth quintile	22.5	15.2***
Mother's employment		
Full-time	24.3	20.5***
Part-time	42.8	33.3***
Not working	32.9	46.3***

Note: ***$p < 0.001$; **$p < 0.01$; *$p < 0.05$ for t-statistics testing mean differences between complete case sample and sample with missing information. Sample is exclusive to cohort members with mother reported data on child's ethnicity and socioemotional difficulties but excludes multiple births and cohort members who were reported to have attention-deficit/hyperactivity disorder, Autism, or Asperger's syndrome. All figures are unweighted.

Appendix Table 3
Distribution of socioemotional difficulties scores and explanatory factors by ethnicity.

	White	Indian	Pakistani	Bangladeshi	Black Caribbean	Black African	Other
Socio-emotional wellbeing							
Total difficulties [0–33]	7.2	7.2	9.6*	8.7*	8.9*	6.9	7.1
Externalizing problems (0–20)	4.7	4.4	5.6*	4.7	5.5*	4.0*	4.0*
Internalizing problems (0–19)	2.6	2.8	4.0*	4.1*	3.4*	2.9	3.1*
Explanatory factors							
Child age (years)	7.2	7.3	7.2	7.3	7.2	7.3	7.3
Child is male	50.7	55.9	48.1	44.8	53.2	48.5	47.6
Migration status							
1st generation	4.2	50.5*	57.0*	91.2*	11.2*	65.8*	51.6*
2nd generation	1.4	40.0*	37.8*	7.3*	37.3*	18.5*	8.7*
3rd generation	94.3	9.5*	5.2*	1.6*	51.5*	15.7*	39.7*
Language spoken at home is mostly English	99.2	66.2*	50.2*	31.9*	99.0	76.2*	75.8*
Equivalised family income	15751.6	16154.7	8464.3*	8027.8*	11060.8	10864.8	13377.7
Highest parental educational attainment							
None	5.4	5.0	18.9*	20.7*	8.5	14.0*	9.6
Overseas	1.2	3.0*	7.8*	8.2*	0.7	7.2*	6.0*
NVQ1	5.1	3.9	6.6	4.8	5.7	2.8*	3.0
NVQ2	24.1	12.9*	23.2	26.8	26.4	11.4*	13.8*
NVQ3	16.4	15.2	12.9	12.6*	15.9	13.0	12.3
NVQ4	36.2	37.4	21.3*	17.2*	34.0	28.2*	35.4
NVQ5	11.6	22.6*	9.4	9.6	8.8	23.4*	19.9*
Area deprivation							
Bottom quintile	17.7	18.8	55.6*	69.5*	38.5*	56.9*	25.4
Second quintile	18.7	23.6	19.1	13.8	28.8*	15.8	23.8
Third quintile	20.3	19.5	10.9*	7.4*	13.1*	13.6*	16.9
Fourth quintile	20.2	16.3	7.7*	2.6*	12.4*	10.5*	20.3
Fifth quintile	23.1	21.9	6.7*	6.7*	7.2*	3.1*	13.6*
Mother's employment							
Full-time	21.1	26.5*	6.5*	4.3*	27.5	34.7*	29.5*
Part-time	43.1	36.0*	12.7*	12.9*	29.9*	16.9*	25.9*
Not working	35.7	37.5	80.7*	82.8*	42.6*	48.4*	44.7*
Racism in area is fairly/very common	6.1	11.7*	10.2*	19.9*	15.6*	14.7*	15.7*
Mother's psychological distress, K6 score (0–24)	3.0	3.2	4.3*	3.9*	4.0*	3.7	4.3*
Parental basic skills difficulties (0–6)	0.3	0.3	0.5*	0.5	0.1*	0.5	0.2
Discipline strategies (0–28)	10.8	9.9*	10.4	9.7*	10.8	10.3	9.7*
Frequency of learning activities							
Read to child…							
Everyday/several times a week	70.2	61.9*	55.2*	53.6*	63.5	66.8	63.0
Once/twice a week	20.8	27.3	28.8*	26.3	26.0	22.6	21.7
Monthly or less	9.0	10.8	16.0*	20.2*	10.6	10.5	15.2*
Help with reading	65.6	75.5*	75.2*	73.5*	76.2*	79.6*	74.1*
Help with writing	62.4	72.2*	74.6*	71.4	72.6*	78.7*	72.8*
Help with math	52.8	70.3*	69.9*	73.5*	68.3*	71.6*	65.0*
Always or usually has a regular bed-time	91.8	87.8	87.4*	89.2	82.8*	84.9*	14.0*
N	10,618	326	472	165	276	253	266

Notes: All means are weighted with MCS 4 analytic weights. Sample is exclusive to cohort members with mother reported data on ethnicity and socioemotional difficulties, but excludes multiple births and cohort members who were reported to have attention-deficit/hyperactivity disorder, Autism, or Asperger's syndrome. Sample sizes are unweighted. Weighted regressions identified significant differences in socioemotional wellbeing and explanatory factors.
*$p < 0.05$.

Appendix Table 4
Regression coefficients (SE) for total difficulties scores by child's ethnicity.

	Base model: Age and gender	Model 1: Base model + cultural tradition	Model 2: Base model + socioeconomic position	Model 3: Base model + racism	Model 4: Base model + mother's psychological distress	Model 5:Base model + family environment and routine	Model 6: All variables
Ethnicity							
Indian	−0.037 (0.39)	0.18 (0.44)	−0.033 (0.36)	−0.19 (0.36)	−0.10 (0.39)	0.19 (0.37)	0.21 (0.37)
Pakistani	2.43*** (0.33)	2.51*** (0.40)	0.52 (0.36)	2.31*** (0.32)	1.84*** (0.25)	2.20*** (0.31)	0.69* (0.31)
Bangladeshi	1.60*** (0.40)	1.40** (0.44)	−0.45 (0.38)	1.21** (0.43)	1.17** (0.42)	1.70*** (0.37)	−0.023 (0.46)
Black Caribbean	1.71*** (0.31)	2.05*** (0.35)	0.83* (0.34)	1.45*** (0.32)	1.27*** (0.34)	1.43*** (0.30)	0.61 (0.36)
Black African	−0.23 (0.42)	−0.032 (0.46)	−1.40*** (0.35)	−0.47 (0.41)	−0.53 (0.37)	−0.35 (0.38)	−1.29*** (0.35)
Other	−0.11 (0.42)	−0.061 (0.44)	−0.65 (0.34)	−0.38 (0.41)	−0.73 (0.38)	0.12 (0.41)	−0.70 (0.37)
Explanatory factors							
Child age (years)	−0.67** (0.23)	−0.67** (0.23)	−0.73*** (0.21)	−0.66** (0.23)	−0.82*** (0.21)	−0.62** (0.21)	−0.71*** (0.19)
Child is male	1.02*** (0.11)	1.02*** (0.11)	1.03*** (0.100)	1.00*** (0.11)	1.01*** (0.10)	0.59*** (0.10)	0.64*** (0.095)
Migration status							
1st generation		−0.44 (0.25)					−0.084 (0.21)
2nd generation		−0.85** (0.30)					−0.24 (0.27)
Language spoken at home is not mostly English		0.93** (0.30)					0.16 (0.24)
Logged equivalized income (continuous)			−0.99*** (0.092)				−0.71*** (0.082)
Highest parental educational attainment							
None			2.49*** (0.31)				1.97*** (0.25)
Overseas			2.52*** (0.49)				2.27*** (0.44)
NVQ1			1.84*** (0.34)				1.60*** (0.30)
NVQ2			0.87*** (0.18)				0.76*** (0.16)
NVQ3			0.34 (0.18)				0.30 (0.16)
NVQ4			0.055 (0.14)				0.11 (0.12)
Area deprivation							
Bottom quintile			1.24*** (0.22)				0.88*** (0.19)
Second quintile			0.95*** (0.19)				0.79*** (0.17)
Third quintile			0.38* (0.17)				0.29 (0.16)
Fourth quintile			0.53*** (0.15)				0.56*** (0.14)
Mother's employment							
Part-time			−0.39** (0.13)				−0.45*** (0.12)
Not working			0.54*** (0.15)				0.17 (0.14)
Racism in area is fairly/very common				2.79*** (0.29)			1.20*** (0.25)
Maternal psychological distress					0.48*** (0.017)		0.29*** (0.016)
Parental basic skills difficulties						0.32*** (0.071)	0.13** (0.050)
Discipline strategies						0.49*** (0.014)	0.44*** (0.013)
Home learning environment							
Read to child…							
Once/twice a week						0.61*** (0.12)	0.17 (0.11)
Monthly or less						1.61*** (0.20)	0.71*** (0.18)
No help with reading						−0.83*** (0.12)	−0.40*** (0.11)
No help with writing						−0.48*** (0.14)	−0.26* (0.12)
No help with math						0.10 (0.13)	−0.10 (0.12)
Never/sometimes has a regular bed-time						1.57*** (0.20)	0.84*** (0.18)
N	12,376	12,376	12,376	12,376	12,376	12,376	12,376

Standard errors in parentheses.
***p < 0.001, **p < 0.01, *p < 0.05.
Notes: All models are adjusted for sample design with weights from MCS 4. Ethnicity is mother's report of cohort member's ethnicity. Sample excludes multiple births, children with ADHD/Autism/Asperger's syndrome, and cohort members for whom there is no data on socioemotional difficulties.

Appendix Table 5
Regression coefficients (SE) for externalizing behaviour scores by child's ethnicity.

	Base model: Age and gender	Model 1: Base model + cultural tradition	Model 2: Base model + socioeconomic position	Model 3: Base model + racism	Model 4: Base model + mother's psychological distress	Model 5:Base model + family environment and routine	Model 6: All variables
Ethnicity							
Indian	−0.29 (0.22)	−0.058 (0.28)	−0.28 (0.23)	−0.37 (0.22)	−0.33 (0.22)	−0.089 (0.20)	0.022 (0.24)
Pakistani	0.97*** (0.18)	1.16*** (0.23)	−0.13 (0.21)	0.91*** (0.18)	0.66*** (0.16)	0.85*** (0.17)	0.093 (0.19)
Bangladeshi	0.085 (0.22)	0.19 (0.26)	−1.11*** (0.20)	−0.12 (0.24)	−0.14 (0.24)	0.21 (0.22)	−0.62* (0.27)
Black Caribbean	0.87*** (0.24)	1.07*** (0.26)	0.35 (0.28)	0.73** (0.24)	0.64* (0.27)	0.69** (0.24)	0.23 (0.28)
Black African	−0.62* (0.29)	−0.39 (0.32)	−1.30*** (0.27)	−0.74* (0.29)	−0.77** (0.27)	−0.65* (0.26)	−1.13*** (0.26)
Other	−0.62* (0.25)	−0.49 (0.27)	−0.91*** (0.23)	−0.76** (0.25)	−0.94*** (0.24)	−0.39 (0.25)	−0.73** (0.24)
N	12,376	12,376	12,376	12,376	12,376	12,376	12,376

Standard errors in parentheses.
***p < 0.001, **p < 0.01, *p < 0.05.
Notes: All models are adjusted for sample design with weights from MCS 4. Ethnicity is mother's report of cohort member's ethnicity. Sample excludes multiple births, children with ADHD/Autism/Asperger's syndrome, and cohort members for whom there is no data on socioemotional difficulties.

Appendix Table 6
Regression coefficients (SE) for internalizing behaviour scores by child's ethnicity.

	Base model: Age and gender	Model 1: Base model + cultural tradition	Model 2: Base model + socioeconomic position	Model 3: Base model + racism	Model 4: Base model + mother's psychological distress	Model 5:Base model + family environment and routine	Model 6: All variables
Ethnicity							
Indian	0.25 (0.25)	0.24 (0.26)	0.24 (0.23)	0.18 (0.23)	0.22 (0.25)	0.28 (0.25)	0.19 (0.24)
Pakistani	1.46*** (0.18)	1.35*** (0.23)	0.65*** (0.19)	1.40*** (0.18)	1.18*** (0.14)	1.36*** (0.18)	0.60** (0.19)
Bangladeshi	1.51*** (0.26)	1.21*** (0.27)	0.67* (0.26)	1.33*** (0.26)	1.31*** (0.25)	1.49*** (0.25)	0.59* (0.28)
Black Caribbean	0.84*** (0.18)	0.98*** (0.20)	0.49** (0.17)	0.71*** (0.19)	0.63*** (0.17)	0.74*** (0.17)	0.38* (0.19)
Black African	0.38 (0.20)	0.36 (0.22)	−0.092 (0.18)	0.27 (0.20)	0.24 (0.18)	0.30 (0.20)	−0.16 (0.19)
Other	0.50* (0.23)	0.43 (0.23)	0.27 (0.18)	0.38 (0.22)	0.21 (0.20)	0.51* (0.22)	0.030 (0.20)
N	12,376	12,376	12,376	12,376	12,376	12,376	12,376

Standard errors in parentheses.
***p < 0.001, **p < 0.01, *p < 0.05.
Notes: All models are adjusted for sample design with weights from MCS 4. Ethnicity is mother's report of cohort member's ethnicity. Sample excludes multiple births, children with ADHD/Autism/Asperger's syndrome, and cohort members for whom there is no data on socioemotional difficulties.

References

Alati, R., Najman, J.M., Shuttlewood, G.J., Williams, G.M., Bor, W., 2003. Changes in mental health status amongst children of migrants to Australia: a longitudinal study. Sociol. Health Illn. 25, 866–888.

Allison, P.D., 2002. Missing data: quantitative applications in the social sciences. Br. J. Math. Stat. Psychol. 55, 193–196.

Amone-P'Olak, K., Burger, H., Ormel, J., Huisman, M., Verhulst, F.C., Oldehinkel, A.J., 2009. Socioeconomic position and mental health problems in pre-and early-adolescents. Soc. Psychiatry Psychiatr. Epidemiol. 44, 231–238.

Astell-Burt, T., Maynard, M.J., Lenguerrand, E., Harding, S., 2012. Racism, ethnic density and psychological well-being through adolescence: evidence from the determinants of adolescent social well-being and health longitudinal study. Ethn. Health 17, 71–87.

Atzaba-Poria, N., Pike, A., Deater-Deckard, K., 2004. Do risk factors for problem behaviour act in a cumulative manner? An examination of ethnic minority and majority children through an ecological perspective. J. Child Psychol. Psychiatry 45, 707–718.

Baron, R.M., Kenny, D.A., 1986. The moderator–mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations. J. Pers. Soc. Psychol. 51, 1173.

Becares, L., Nazroo, J., 2013. Social capital, ethnic density and mental health among ethnic minority people in England: a mixed-methods study. Ethn. Health 18, 544–562.

Bécares, L., Shaw, R., Nazroo, J., Stafford, M., Albor, C., Atkin, K., et al., 2012. Ethnic density effects on physical morbidity, mortality, and health behaviors: a systematic review of the literature. Am. J. Public Health 102, e33–e66.

Bronfenbrenner, U., Morris, P.A., 2006. The Bioecological Model of Human Development. In: Handbook of Child Psychology.

Conger, R.D., Conger, K.J., 2002. Resilience in Midwestern families: selected findings from the first decade of a prospective, longitudinal study. J. Marriage Fam. 64, 361–373.

Costello, E.J., Compton, S.N., Keeler, G., Angold, A., 2003. Relationships between poverty and psychopathology: a natural experiment. JAMA 290, 2023–2029.

Currie, J., Stabile, M., 2007. Mental Health in Childhood and Human Capital. The Problems of Disadvantaged Youth: an Economic Perspective. University of Chicago Press, pp. 115–148.

Davis, E., Sawyer, M.G., Lo, S.K., Priest, N., Wake, M., 2010. Socioeconomic risk factors for mental health problems in 4–5-year-old children: Australian population study. Acad. Pediatr. 10, 41–47.

Degboe, A., BeLue, R., Hillemeier, M., 2012. Parental immigrant status and adolescent mental health in the United States: do racial/ethnic differences exist? Child Adolesc. Ment. Health 17, 209–215.

Dogra, N., Svirydzenka, N., Dugard, P., Singh, S.P., Vostanis, P., 2013. Characteristics and rates of mental health problems among Indian and White adolescents in two English cities. Br. J. Psychiatry 203, 44–50.

Duncan, G.J., Brooks-Gunn, J., 1997. Consequences of Growing up Poor. Russell Sage Foundation.

Evans, G.W., 2004. The environment of childhood poverty. Am. Psychol. 59, 77.

Fagg, J., Curtis, S., Stansfeld, S., Congdon, P., 2006. Psychological distress among adolescents, and its relationship to individual, family and area characteristics in East London. Soc. Sci. Med. 63, 636–648.

Galindo, C., Fuller, B., 2010. The social competence of Latino kindergartners and growth in mathematical understanding. Dev. Psychol. 46, 579.

Georgiades, K., Boyle, M.H., Duku, E., 2007. Contextual influences on children's mental health and school performance: the moderating effects of family immigrant status. Child. Dev. 78, 1572–1591.

Gershoff, E.T., Aber, J.L., Raver, C.C., Lennon, M.C., 2007. Income is not enough: incorporating material hardship into models of income associations with parenting and child development. Child. Dev. 78, 70–95.

Geyer, S., Hemström, Ö., Peter, R., Vågerö, D., 2006. Education, income, and occupational class cannot be used interchangeably in social epidemiology. Empirical evidence against a common practice. J. Epidemiol. Community Health 60, 804–810.

Goodman, A., Patel, V., Leon, D.A., 2010. Why do British Indian children have an apparent mental health advantage? J. Child Psychol. Psychiatry 51, 1171–1183.

Goodman, R., 1997. The strengths and difficulties Questionnaire: a research note. J. Child Psychol. Psychiatry 38, 581–586.

Goodman, R., 2001. Psychometric properties of the strengths and difficulties questionnaire. J. Am. Acad. Child Adolesc. Psychiatry 40, 1337–1345.
Gravelle, H., Sutton, M., 2003. Income related inequalities in self assessed health in Britain: 1979–1995. J. Epidemiol. Community Health 57, 125–129.
Han, W.-J., Lee, R., Waldfogel, J., 2012. School readiness among children of immigrants in the US: evidence from a large national birth cohort study. Child. Youth Serv. Rev. 34, 771–782.
Hansen, K., Joshi, H., 2007. Millennium Cohort Study Second Survey: a User's Guide to Initial Findings.
Hansen, K., Joshi, H., 2008. Millennium Cohort Study Third Survey: a User's Guide to Initial Findings. Centre for Longitudinal Studies, Institute of Education, University of London.
Heckman, J.J., Stixrud, J., Urzua, S., 2006. The Effects of Cognitive and Noncognitive Abilities on Labor Market Outcomes and Social Behavior. National Bureau of Economic Research.
Hope, S., Pearce, A., Whitehead, M., Law, C., 2014. Family employment and child socioemotional behaviour: longitudinal findings from the UK Millennium Cohort Study. J. Epidemiol. Community Health 68 (10), 950–957 jech-2013–203673.
Jackson, J.S., Torres, M., Caldwell, C.H., Neighbors, H.W., Nesse, R.M., Taylor, R.J., et al., 2004. The National Survey of American Life: a study of racial, ethnic and cultural influences on mental disorders and mental health. Int. J. Methods Psychiatr. Res. 13, 196–207.
Jones, K., Daley, D., Hutchings, J., Bywater, T., Eames, C., 2007. Efficacy of the incredible years basic parent training programme as an early intervention for children with conduct problems and ADHD. Child Care Health Dev. 33, 749–756.
Kang, H.S., Haddad, E., Chen, C., Greenberger, E., 2014. Limited English proficiency and socioemotional well-being among Asian and Hispanic children from immigrant families. Early Educ. Dev. 25, 915–931.
Kelly, Y., Becares, L., Nazroo, J., 2013a. Associations between maternal experiences of racism and early child health and development: findings from the UK Millennium Cohort Study. J. Epidemiol. Community health 67, 35–41.
Kelly, Y., Kelly, A., Sacker, A., 2013b. Changes in bedtime schedules and behavioral difficulties in 7 year old children. Pediatrics 132 (5), e1184–e1193.
Kelly, Y., Sacker, A., Del Bono, E., Francesconi, M., Marmot, M., 2011. What role for the home learning environment and parenting in reducing the socioeconomic gradient in child development? Findings from the Millennium Cohort Study. Arch. Dis. Child. 96, 832–837.
Kelly, Y., Sacker, A., Schoon, I., Nazroo, J., 2006a. Ethnic differences in achievement of developmental milestones by 9 months of age: the Millennium Cohort Study. Dev. Med. Child Neurol. 48, 825–830.
Kelly, Y.J., Watt, R.G., Nazroo, J.Y., 2006b. Racial/ethnic differences in breastfeeding initiation and continuation in the United Kingdom and comparison with findings in the United States. Pediatrics 118, e1428–e1435.
Kessler, R.C., Andrews, G., Colpe, L.J., Hiripi, E., Mroczek, D.K., Normand, S.-L.T., et al., 2002. Short screening scales to monitor population prevalences and trends in non-specific psychological distress. Psychol. Med. 32, 959–976.
Kiernan, K.E., Mensah, F.K., 2009. Poverty, maternal depression, family status and children's cognitive and behavioural development in early childhood: a longitudinal study. J. Soc. Policy 38, 569–588.
Maynard, M., Harding, S., 2010a. Perceived parenting and psychological well-being in UK ethnic minority adolescents. Child Care Health Dev. 36, 630–638.
Maynard, M.J., Harding, S., 2010b. Ethnic differences in psychological well-being in adolescence in the context of time spent in family activities. Soc. Psychiatry Psychiatr. Epidemiol. 45, 115–123.
Maynard, M.J., Harding, S., Minnis, H., 2007. Psychological well-being in Black Caribbean, Black African, and white adolescents in the UK Medical Research Council DASH study. Soc. Psychiatry Psychiatr. Epidemiol. 42, 759–769.
McLoyd, V.C., 1998. Socioeconomic disadvantage and child development. Am. Psychol. 53, 185.
McMunn, A., Kelly, Y., Cable, N., Bartley, M., 2011. Maternal employment and child socio-emotional behaviour in the UK: longitudinal evidence from the UK Millennium Cohort Study. J. Epidemiol. Community health 66 (7) jech. 2010.109553.
Nazroo, J., Jackson, J., Karlsen, S., Torres, M., 2007. The Black diaspora and health inequalities in the US and England: does where you go and how you get there make a difference? Sociol. Health Illn. 29, 811–830.
Nazroo, J.Y., 1997. Ethnicity and Mental Health: Findings from a National Community Survey. PSI.
Nazroo, J.Y., 1998. Genetic, cultural or socio-economic vulnerability? Explaining ethnic inequalities in health. Sociol. Health Illn. 20, 710–730.
Nazroo, J.Y., 2003. The structuring of ethnic inequalities in health: economic position, racial discrimination, and racism. Am. J. Public Health 93, 277–284.
Nazroo, J.Y., Williams, D.R., 2006. The social determination of ethnic/racial inequalities in health. Soc. Determ. Health 2, 238–266.
Noble, M., Wright, G., Dibben, C., Smith, G., McLennan, D., Anttila, C., et al., 2004. The English Indices of Deprivation (Revised). Wetherby Office of the Deputy Prime Minister Publications.
Platt, L., 2012. How do children of mixed partnerships fare in the United Kingdom? Understanding the implications for children of parental ethnic Homogamy and Heterogamy. Ann. Am. Acad. Polit. Soc. Sci. 643, 239–266.
Plewis, I., Calderwood, L., Hawkes, D., Hughes, G., Joshi, H., 2004. Millennium Cohort Study: Technical Report on Sampling. Institute of Education, University of London, London, p. 16.
Polednak, A.P., 1989. Racial and Ethnic Differences in Disease. Oxford University Press.
Prady, S., Kiernan, K., 2013. The effect of post-natal mental distress amongst Indian and Pakistani mothers living in England on children's behavioural outcomes. Child Care Health Dev. 39, 710–721.
Priest, N., Baxter, J., Hayes, L., 2012. Social and emotional outcomes of Australian children from Indigenous and culturally and linguistically diverse backgrounds. Aust. N. Z. J. Public Health 36, 183–190.
Priest, N., Paradies, Y., Trenerry, B., Truong, M., Karlsen, S., Kelly, Y., 2013. A systematic review of studies examining the relationship between reported racism and health and wellbeing for children and young people. Soc. Sci. Med. 95, 115–127.
Reiss, F., 2013. Socioeconomic inequalities and mental health problems in children and adolescents: a systematic review. Soc. Sci. Med. 90, 24–31.
Repetti, R.L., Taylor, S.E., Seeman, T.E., 2002. Risky families: family social environments and the mental and physical health of offspring. Psychol. Bull. 128, 330.
Rubin, D.B., 2009. Multiple Imputation for Nonresponse in Surveys. Wiley. Com.
Sabol, T.J., Pianta, R.C., 2012. Patterns of school readiness forecast achievement and socioemotional development at the end of elementary school. Child. Dev. 83, 282–299.
Smith, G.D., 2000. Learning to live with complexity: ethnicity, socioeconomic position, and health in Britain and the United States. Am. J. Public Health 90, 1694.
Smith, M., 2004. Parental mental health: disruptions to parenting and outcomes for children. Child Fam. Soc. Work 9, 3–11.
Stansfeld, S.A., Haines, M.M., Head, J.A., Bhui, K., Viner, R., Taylor, S.J., et al., 2004. Ethnicity, social deprivation and psychological distress in adolescents school-based epidemiological study in east London. Br. J. Psychiatry 185, 233–238.
StataCorp, 2011. Stata: Release 12. StataCorp LP, College Station, TX.
Straus, M.A., Hamby, S.L., 1997. Measuring Physical and Psychological Maltreatment of Children with the Conflict Tactics Scales. In: Out of Darkness: Contemporary Perspectives on Family Violence, pp. 119–135.
Teitler, J.O., Reichman, N.E., Nepomnyaschy, L., Martinson, M., 2007. A cross-national comparison of racial and ethnic disparities in low birth weight in the United States and England. Pediatrics 120, e1182–e1189.
Trewin, D., Madden, R., 2005. The Health and Welfare of Australia's Aboriginal and Torres Strait Islander Peoples. Australian Bureau of Statistics, Canberra.
UNICEF, 2012. Inequalities in Early Childhood Development: What the Data Say-evidence from the Multiple Indicator Cluster Surveys. UNICEF, New York.
Washbrook, E., Waldfogel, J., Bradbury, B., Corak, M., Ghanghro, A.A., 2012. The development of young children of immigrants in Australia, Canada, the United Kingdom, and the United States. Child. Dev. 83, 1591–1607.
West, P., 1997. Health inequalities in the early years: is there equalisation in youth? Soc. Sci. Med. 44, 833–858.
West*, P., Sweeting, H., Leyland, A., 2004. School effects on pupils' health behaviours: evidence in support of the health promoting school. Res. Pap. Educ. 19, 261–291.
Wu, Z., Schimmele, C.M., 2005. Racial/ethnic variation in functional and self-reported health. Am. J. Public Health 95, 710.