Neighbourhood human capital and the development of children's emotional and behavioural problems: The mediating role of parenting and schools

Emily Midouhas *, Ye Kuang, Eirini Flouri [1]

Department of Psychology and Human Development, Institute of Education, University of London, London, UK

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ABSTRACT

This study examined how low neighbourhood human capital (measured by percentage of residents with no qualifications) may be related to trajectories of children's emotional and behavioural problems from early-to-middle childhood. It also assessed whether effects of neighbourhood human capital or its pathways were moderated by child nonverbal cognitive ability. Using data on 9850 children in England participating in the Millennium Cohort Study, we found that, after adjusting for key child and family background characteristics, the adverse effects of low neighbourhood human capital on hyperactivity and peer problems remained, and were fully attenuated by the achievement level of children's schools. The effect of low neighbourhood human capital on the change in conduct problems over time was robust. Moreover, higher nonverbal ability did not dampen the adverse impact of low neighbourhood human capital on the trajectory of conduct problems or that of low performing schools on hyperactivity and peer problems.

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1. Introduction

A fair amount of research has been carried out on the relationship between neighbourhood socio-economic status (SES) and children's emotional and behavioural problems, demonstrating mixed results. In US-based research, the presence of low-income neighbours has been related to more emotional and behavioural problems in children even when family income and other related parent/family characteristics (e.g., education level) are controlled (Leventhal and Brooks-Gunn, 2000). Recent UK-based research has found no effect of neighbourhood deprivation after area 'selection bias' had been reduced through similar adjustments (Flouri et al., 2010). The variation in these results may be due to the ways in which SES was measured, and to cross-country differences, as there are more extreme levels of deprivation in US than UK neighbourhoods (Friedrichs et al., 2003).

Individual human capital, normally considered a component of one's SES (Bradley and Corwyn, 2002), refers to nonmaterial assets or resources that accumulate due to education and training (Becker,

2009). Neighbourhood human capital (NHC), i.e., neighbourhood-level education, has been largely unexplored in the neighbourhood effects literature with regard to its influence on child emotional and behavioural problems. This literature usually incorporates the educational backgrounds of residents in composite measures of SES (Flouri et al., 2010; Leventhal and Brooks-Gunn, 2000). This approach makes it impossible to assess any unique NHC effects. In this paper, we examined the relationship of low NHC (measured as the percentage of adults with no qualifications) and the development of children's emotional and behavioural problems. We explored whether factors associated with children's problems and families' selection into areas, including family poverty and maternal social class, explained the effect of NHC.

The neighbourhood effects literature often differentiates between 'compositional' and 'contextual' factors (Wiggins et al., 2002). The former consist of the aggregation of individual resident characteristics (e.g., proportion of lone-parent families) reflecting 'selection' of families into neighbourhoods. Selection bias occurs when the mechanism sorting families into neighbourhoods is not independent from the outcome studied (Ginther et al., 2000). For example, in the case of NHC, families with lower income are more likely to both have children with more emotional and behavioural problems and move into areas with low human capital. Failure to account for such selection can lead to overstating or understating the influence of neighbourhoods.

Conversely, 'contextual' factors (e.g., social cohesion) are something beyond the sum of resident characteristics. However, some

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* Corresponding author. Tel.: +44 2076126279; fax: +44 2076126304.
E-mail address: e.midouhas@ioe.ac.uk (E. Midouhas).

researchers treat compositional factors as contextual (Flouri et al., 2010; McCulloch and Joshi, 2001; Sampson et al., 2008). Although technically a compositional factor, low NHC has been theorised to impact children through a 'low status' role model effect (Jencks and Mayer, 1990). Once family-level human capital has been accounted for, NHC may be perceived as a contextual factor.

In addition to the direct effect of low status adult role models, there may be indirect effects of neighbourhood SES on child outcomes through parental factors or 'parental mediation' (Galster, 2012). Neighbourhood conditions are theorised to influence the extent to which parents perceive threats in their community which, as a result, may influence their parenting (e.g., how much they monitor their child's behaviour) (Leventhal and Brooks-Gunn, 2000). Parenting may also be influenced by parents' hardships resulting from poor neighbourhood conditions or through collective neighbourhood 'cultures' of parenting. Residents in disadvantaged neighbourhoods are more likely to have less warm and harsher parenting styles (Odgers et al., 2012), which are associated with children's emotional and behavioural problems. There is a need for the neighbourhood effects literature to more explicitly examine these mechanisms (Small and Feldman, 2012). In this paper, we examined two parental mediators of NHC 'effects': (1) frequency of reading to the child as a proxy for parental involvement and (2) the quality of the home environment (i.e., home organisation). Patacchini and Zenou (2007) found that, even after selection, higher NHC was associated with more parental involvement. Also, the quality of the home environment has been found to mediate the impact of risky (i.e., less safe and socially cohesive) neighbourhoods on children's emotional problems (Greenberg et al., 1999), and the relationship between neighbourhood affluence and child behaviour (Klebanov et al., 1998).

We also explored children's schools as a possible third mechanism by which NHC impacts children's emotional/behavioural adjustment. Leventhal and Brooks-Gunn's (2000) institutional resources theory of neighbourhood effects suggests that learning activities in institutions in the community, such as schools, libraries and museums, offer ways for parents to stimulate learning and healthy development in their children. Their norms/ collective efficacy model also sees such resources as contributing to the supervision and monitoring of children. Finally, school rather than neighbourhood composition may explain 'area effects' (Owens, 2010). For example, attending school with high achieving students may expose less advantaged students to norms not only about achievement but also behaviour (Gaviria and Raphael, 2001). School achievement was the third mediator we examined.

2. The present study

In this paper, we examined the relationships between low NHC, our mediators (i.e., reading to the child, home organisation, and school-level achievement), and the development of children's emotional and behavioural problems at age 3, 5 and 7 in a large cohort sample of children in England. Not all children exposed to risk such as low NHC respond by having poor adjustment; some children demonstrate better than expected outcomes (i.e., resilience). Cognitive ability has been associated with resilience in children exposed to neighbourhood risk (Flouri et al., 2012). We therefore assessed the role of nonverbal ability as a protective factor for low NHC or its pathways, if the latter were found to explain the NHC effect. We examined nonverbal rather than verbal ability given its relative stability over time (van Soelen et al., 2011). Being less amenable to environmental influences, nonverbal ability would be more likely to moderate than mediate the effects of low NHC or its pathways.

3. Method

3.1. Sample

The Millennium Cohort Study (MCS) (www.cls.ioe.ac.uk/mcs) is a longitudinal survey of children born in the UK during 2000–2002. MCS was designed to over-represent areas with high proportions of ethnic minorities in England, areas of high child poverty, and the three smaller UK countries. The MCS sample is disproportionately stratified by country, and then type of electoral ward[2]. Sweeps 1–4 took place when children were around 9 months, and 3, 5, and 7 years, respectively. We analysed data from Sweeps 2–4 using records for one child per family (the first-born where there were twins or triplets). Our analytic sample comprised children with a score for emotional and behavioural problems in at least one of Sweeps 2–4 ($n=9850$), out of all children starting out in England at Sweep 2 ($n=10,086$). We included children in England only because our school achievement measure was only available for schools in England.

3.2. Measures

The following were measured at all three time-points unless otherwise specified.

Low neighbourhood human capital (NHC) was measured with 2001 UK census data on the percentage of residents with no academic, vocational, or professional qualifications in the neighbourhood (Lower layer Super Output Area [LSOA]). LSOAs across England were banded into quintiles based on the percentages of residents with no qualifications. Emotional and behavioural problems were measured by the parent-reported scores on four scales of the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997): conduct problems ($\alpha=.55-.68$ across sweeps), emotional symptoms ($\alpha=.50-.65$), hyperactivity ($\alpha=.71-.78$), and peer problems ($\alpha=.47-.58$). Reading to the child was assessed with one item (on a 6-point scale) measuring how frequently the parent reads to/with the child. Home organisation was measured with an item (on a 6-point scale) measuring to what extent the parent thought their home was organised. School achievement was measured as the achievement of schools attended by MCS children at around age 5. This was assessed with the school-level Key Stage 1 (KS1)[3] average point scores of state-maintained schools collected during the January 2006 census, obtained from the Schools Data Unit at the Department for Education. The KS1 data were banded into deciles based on all schools. KS1 assessments are not administered to pupils until the end of year 2 of school; therefore these KS1 data apply to a different cohort of children than the MCS children. However, we chose to measure the achievement of schools attended by MCS children at around age 5 to align with our measurement of the NHC main effect at age 5. The child-level variables were gender, ethnicity and nonverbal ability. Nonverbal ability was measured at age 5 by the Picture Similarities subscale of the British Ability Scales (Elliot et al., 1996), assessing children's nonverbal reasoning. Family structure was two-parent family or not. Maternal social class was measured with the mother's highest NS-SEC (National Statistics Socio-Economic Classification) by age 7 of the child. Residential instability was a binary indicator of

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[2] Electoral wards are the key building block of UK electoral geography (http://www.ons.gov.uk/ons/guide-method/geography/beginner-s-guide/administrative/england/electoral-wards-divisions/index.html).

[3] Key stages are stages of the state education system in England. KS1 applies to ages 5–7 (years 1–2). Children are assessed in English, Maths, and Science at the end of KS1. KS1 data are only available for state-maintained schools, and therefore these data were missing for those MCS children not attending state schools (around 8% of our sample).