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Parental Ethnic Identity and Child Test Scores*

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Abstract

We examine the relationship between parental ethnic identity and the test scores of ethnic minority children. We use standard survey measures of the strength of parental identity alongside validated cognitive test scores in a rich British cohort study. We show that children whose mothers report either an adoption or an active rejection of the majority identity tend to score lower in cognitive tests at age 7, compared with those children whose mothers report neutral feelings about the majority identity. We find no consistent differences

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Keywords: Ethnic identity, national identity, test scores, child development.

JEL classification numbers: I21, J13, J15.

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in test scores according to mothers' minority identity. Our findings provide no support for education or citizenship policies that promote the adoption of the majority identity or discourage the maintenance of separate identities in ethnic minority communities.

I. Introduction

In this paper, we examine the relationship between parental ethnic identity and the test scores of ethnic minority children. Existing work suggests that identity matters for a wide range of social and economic behaviours, including prosociality,[1] redistributive preferences,[2] and contributions to public goods.[3] Existing work on the specific case of ethnic identity suggests that it may also matter for a diverse set of issues, from consumption patterns[4] and housing tenure,[5] to political violence[6] and war.[7] As we discuss further below, ethnic identity has also been widely implicated in education and labour market outcomes for ethnic minority individuals. We extend this strand of existing work by examining the role of parental ethnic identity in the cognitive performance of young children.

This is important because early childhood circumstances and parental investment play a central role in the development of social and cognitive skills.[8] Skills acquired in the early years not only persist into later periods, but also affect the productivity of later learning.[9] Early experiences have therefore been linked to later outcomes in education, employment and health.[10] Unexplained ethnic disparities in such outcomes are also often attributed to experiences in the early years.[11] Factors that differentially affect the behaviour or social environment of ethnic minority parents are therefore of central interest for understanding ethnic disparities over life.[12] Parental ethnic identity could be particularly influential in this respect.

[1] Bernhard, Fehr and Fischbacher, 2006; Chen and Li, 2009.
[2] Costa i Font and Cowell, 2015.
[3] Benjamin, Choi and Fisher, 2016.
[4] Chiswick, 2009.
[5] Constant, Roberts and Zimmermann, 2009.
[6] Depetris-Chauvin, Durante and Campante, 2020.
[7] Jurajda and Kovač, 2020.
[8] Becker and Tomes, 1976; Becker, 1981.
[9] Cunha, Heckman and Lochner, 2006.
[10] Knudsen et al., 2006; Conti and Heckman, 2014.
[11] Carneiro, Heckman and Masterov, 2005.
[12] The distinct experiences of minority and majority children may partly reflect language difficulties (Schnepf, 2007; Bleakley and Chin, 2008; Casey and Dustmann, 2008), average differences in parental human capital endowments more generally (Djajić, 2003; Nielsen et al., 2003; Van Ours and Veenman, 2003; Colding, 2006; Algan et al., 2010; Belzil and Poinas, 2010; Cobb-Clark and Nguyen, 2012), family or neighbourhood poverty levels (Brooks-Gunn, Klebanov and Duncan, 1996; Aber et al., 1997; Bradley et al., 2001), or ethnic discrimination (Ford et al., 2013; Bécares, Nazroo and Kelly, 2015).

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A literature in economics now recognises identity as a key determinant of individual and group behaviour.[13] Much of this work follows the framework provided by Akerlof and Kranton (2000), who define identity as a person's 'sense of self', arising from their membership of different social categories.[14] These categories can be based on characteristics such as gender, language, ethnicity, and nationality, and each is associated with different behavioural norms. Adherence to or deviation from these norms shapes the rewards associated with different actions. Ethnic identity is an area of particular interest, as it relates to the social and economic integration of minority groups, and therefore to the functioning of society as a whole. It is also a domain in which individuals may hold more than one identity: minority group members may identify with the majority group, the minority group, or some combination of the two.[15]

Several studies have examined the determinants of minority identity,[16] but the central empirical question for economists working on this topic concerns how minority and majority identity shape labour market outcomes. There is evidence both from North America and from several European countries that a strong minority identity harms labour market prospects,[17] while there are also some indications that a strong majority identity can be beneficial in this regard, even when it is combined with a strong minority identity.[18] However, strong labour market implications have not been detected in every setting. Islam and Raschky (2015) find only small impacts of ethnic identity on labour market outcomes in Canada, while Casey and Dustmann (2010) find only weak associations in Germany.

Either rejection or acceptance of a minority or majority identity could be important for child development, and the expected sign of these relationships is uncertain. Parental investments and access to social resources could be improved by a strong parental majority identity, if majority affiliation is linked with stronger majority-group language skills, better knowledge of majority-group institutions, or a higher degree of cultural integration.[19] However, a strong parental minority identity may also improve child outcomes, if

[13] Akerlof, 1997; Akerlof and Kranton, 2002, 2005; Battu, Mwale and Zenou, 2007; Bénabou and Tirole, 2011; Bisin et al., 2011b, 2016; Kranton, 2016.

[14] Earlier contributions in sociology and social psychology have also been influential (e.g. Merton and Merton, 1968; Tajfel and Turner, 1979; Wetherell, 1996; Berry, 1997). Akerlof and Kranton (2002) provide a review of the earlier social scientific literature with a focus on education.

[15] Berry, 1997; Phinney et al., 2001.

[16] Dustmann, 1996; Zimmermann, Zimmermann and Constant, 2007; Constant and Zimmermann, 2008; Zimmermann et al., 2008; Constant, Gataullina and Zimmermann, 2009; Casey and Dustmann, 2010; Manning and Roy, 2010; Georgiadis and Manning, 2013; Masella, 2013; Campbell, 2019; Chiang, Liu and Wen, 2019; Depetris-Chauvin et al., 2020.

[17] Mason, 2004; Pendakur and Pendakur, 2005; Battu and Zenou, 2010; Bisin et al., 2011a.

[18] Constant, Gataullina and Zimmermann, 2006; Constant and Zimmermann, 2009; Nekby and Rödin, 2010; Drydakis, 2013.

[19] Schüller, 2015.

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affiliation with the minority group improves self-esteem by affirming heritage, or allows access to informal parenting support by signalling minority group commitment.[20] For example, Nekby, Rödin and Özcan (2009) examine tertiary education among young adults with immigrant backgrounds in Sweden. They find that men in their early twenties who report both minority and majority identities are more likely to complete tertiary education than others, although they find no such association for women. Schüller (2015) finds that immigrant children aged 10–14 years in Germany are more likely to be placed in the middle or upper tier of secondary education if their father reports a strong minority identity, or if their mother reports a strong majority identity.

Alternatively, a strong minority identity could lead to over-investment in ethnicity-specific human and social capital, leaving parents and children isolated from the resources of the majority society, and therefore harming the cognitive outcomes of minority children. By the same logic, a strong majority identity could isolate parents from the resources of the minority community. In either scenario, minority parents are facing a trade-off between access to social and economic resources in the minority and majority society. The existence of such a trade-off is suggested by theoretical and empirical results elsewhere. For example, Austen-Smith and Fryer (2005) and Fryer and Torelli (2010) suggest that high-school students from some minority backgrounds face a trade-off between peer acceptance and academic attainment. Battu et al. (2007) and Battu and Zenou (2010) suggest that minority adults face a trade-off between identifying with their minority group and labour market success.

The way we measure and model ethnic identity matters for how we understand these relationships. If a person's sense of their identity is multidimensional, it may be difficult to capture simply by asking them to answer a single survey question. While psychologists have traditionally used multiple-item inventories to capture ethnic identity in smaller samples,[21] the convention in economics has been to use the single binary or Likert-scale based measures of identity, which are available in larger surveys.[22] The simplicity of such one-dimensional measures has an intuitive appeal, and should yield easily interpretable results. However, this simplicity could come at a cost, if such measures are prone to error, or if the question is understood differently by people of different backgrounds.[23] In keeping with the economics literature, we use a Likert-scale based measure to capture ethnic identity in this paper but, below, we discuss some of the limitations that may be associated with such measures. The relationship between the strength of ethnic

[20] A literature in developmental psychology suggests that personal minority identity may be beneficial in education for adolescents (see Miller-Cotto and Byrnes, 2016, for a recent review).

[21] See, for example, Phinney (1992) and Phinney and Ong (2007).

[22] Exceptions include Bisin et al. (2011a), Constant, Gataullina and Zimmermann (2009) and Constant and Zimmermann (2008), who infer ethnic identity from other observed characteristics.

[23] Burton, Nandi and Platt, 2010; Nandi and Platt, 2012.

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identity and economic outcomes is also often assumed to be linear, although Fryer and Torelli (2010) suggest non-linearities in the relationship between minority peer acceptance and academic attainment. Therefore, we allow for non-linearities in our empirical model below.

The investigation of parental ethnic identity and child test scores is important for three reasons. First, as we note above, the early years are crucial for later development trajectories, and different experiences in the early years are often thought to be responsible for ethnic disparities later in life. It is therefore critical to understand the role of ethnic identity in outcomes at this age. Second, many developed countries have seen an increase in the size of ethnic minority populations in recent years, and the demographic profile of these populations is often young compared with that of the ethnic majority. For example, although only around 15 per cent of the overall population of England is from an ethnic minority background, minority children make up nearly a third of the current primary school population.[24] Close to half of the school-age population in the United States is from a minority background, compared to around 40 per cent of the country overall.[25] The future economies of such diverse societies will therefore be substantially shaped by the current educational performance of minority as well as majority children. A final reason for the importance of this topic relates directly to public policy. Several countries have responded to increased ethnic diversity by introducing education and citizenship policies that actively promote the majority identity,[26] while generally discouraging the maintenance of separate identities in ethnic minority communities.[27] The influence of parental ethnic identity on child development is therefore an active policy concern.

Our main contribution is to show the relationship between parental ethnic identity and childhood outcomes using direct measures of cognitive development in young children. The two previous papers closest to our own, Schüller (2015) and Nekby et al. (2009), use broad measures of educational attainment, and do so in samples of older children and young adults, respectively. Our data allow us access to validated cognitive test scores at age 7, alongside measures of parental ethnic identity taken when the child is aged 5. We are also able to examine this topic in a new national context, in a country with a relatively large and heterogeneous ethnic minority population, and a recent history of relatively active policy promotion of the majority identity.[28]

[24]These figures come from the 2016 Annual Population Survey (www.nomisweb.co.uk) and the 2016 School Census (www.gov.uk/government/statistics/schools-pupils-and-their-characteristics-january-2016, accessed on 20 January 2019).

[25]Musu-Gillette et al., 2017.

[26]For example, Manning and Roy (2010) cite language requirements, 'citizenship' classes in schools, citizenship ceremonies, and tests of cultural knowledge for those seeking citizenship, as measures intended to promote the majority identity.

[27]Berry, 1974; Uberoi and McLean, 2007.

[28]Uberoi and McLean, 2007; Manning and Roy, 2010.

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Using an ethnic minority sample drawn from a rich UK cohort study, we examine the relationship between parental ethnic identity and children's test scores. We employ separate measures of parental minority and majority identity, alongside tests of children's cognitive functioning in three key domains. We show that children whose mothers report either an adoption or an active rejection of the majority identity tend to score lower in cognitive tests at age 7, compared with those children whose mothers report a neutral view of the majority identity. This result is driven by children from poor households, and by those from households who lack access to family support networks.

We suggest two interpretations of our findings. The first is that both maternal adoption and active rejection of the majority identity divert family resources away from investments more conducive to children's cognitive development. The second is that mothers adopt a position on the majority identity in response to challenging circumstances, which are also reflected in children's lower test scores. This second interpretation does not imply a direct relationship between parental ethnic identity and child test scores, but instead implies the presence of omitted variables in our empirical model. We also note that our estimates are sometimes imprecise and unstable across specifications, perhaps due to measurement error in the identity variables.

The paper is organised as follows. In Section II, we describe the data. In Section III, we present our empirical model and our main results. In Section IV, we explore the characteristics of the families driving our main results. Finally, in Section V, we summarise our findings and discuss implications.

II. Data

Our data come from the Millennium Cohort Study (MCS). The MCS follows around 19,000 children born in the UK between 2000 and 2001; of these, around 3,000 are from ethnic minority families.[29] The initial survey design oversamples families living in high poverty areas and areas with large ethnic minority populations.[30] Detailed information is collected on each cohort member, their families, and the home environment. We use only cohort members born in Great Britain (England, Scotland and Wales), as questions about ethnic identity are not asked in Northern Ireland.

Cohort members and their families are interviewed when the child is 9 months old, and then again when the child is aged 3, 5, 7, 11 and 14 years.

[29]The vast majority of cohort members are singletons, and, while the MCS does contain twins and triplets, we exclude these children from our sample.

[30]Oversampling of high poverty areas occurs throughout the UK, whereas oversampling of areas with large ethnic communities is confined to England, where ethnic minorities are disproportionately concentrated. Hence, our sample is mostly drawn from England, and our results should be extrapolated to the rest of Great Britain with caution.

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Data are collected through face-to-face interviews for generic information, and by a self-completion questionnaire for more sensitive topics. The main carer of each cohort member (the mother in 98 per cent of cases) provides information on the child and family setting, while both the main carer and father figure (if resident) provide more sensitive information via a self-completion questionnaire. Questions on ethnic identity are in the parents' self-completion questionnaire in the age 5 survey. We take the outcome and control variables from the age 7 survey, in order to remove any influence of contemporaneous child cognitive outcomes on parental identity. We restrict the sample to families that are present in both waves.

In our estimation sample, 20 per cent of cohort members do not live with their father, and among those that do, just 63 per cent have the necessary information supplied by fathers to carry out our analyses of paternal ethnic identity. Therefore, we use two samples: the first comprises the children of all ethnic minority mothers, which we use to analyse maternal identity, and the second comprises the children of ethnic minority mothers in couples with complete partner information, which we use to analyse both paternal and maternal ethnic identity. After excluding those with missing information on the outcome and family variables, our main sample is composed of 1,249 children, of whom 629 have two parents with complete information on the father.

1. Outcomes of interest

At age 7, cohort members are tested in three key domains of cognitive functioning: maths, spatial problem solving, and reading skills.[31] Proficiency in maths is determined using a shortened version of the 'National Foundation for Educational Research Progress in Maths' test, in which children perform calculations on a range of topics including numbers, shapes, measurement, and data handling. Spatial problem solving and reading skills are measured using the second edition of the 'British Ability Scales', through a pattern construction test (where children must replicate a design using patterned squares) and a word reading test (where children read words presented on a card).[32]

We consider these three test scores as separate outcomes. Parents may provide different inputs across the three areas. For example, some parents may prefer to play with puzzles, blocks and board games, which have been linked to higher levels of spatial ability,[33] while others may prefer to read with their children.[34] The three domains of cognitive functioning also have

[31] Additional measures of cognitive ability are available in subsequent waves of the MCS, but we use only those at age 7, in order to minimise the gap in time between measures of parental identity and test scores.

[32] Connelly (2013) provides a useful discussion of tests available in the MCS.

[33] Jirout and Newcombe, 2015.

[34] Hofferth, 2009.

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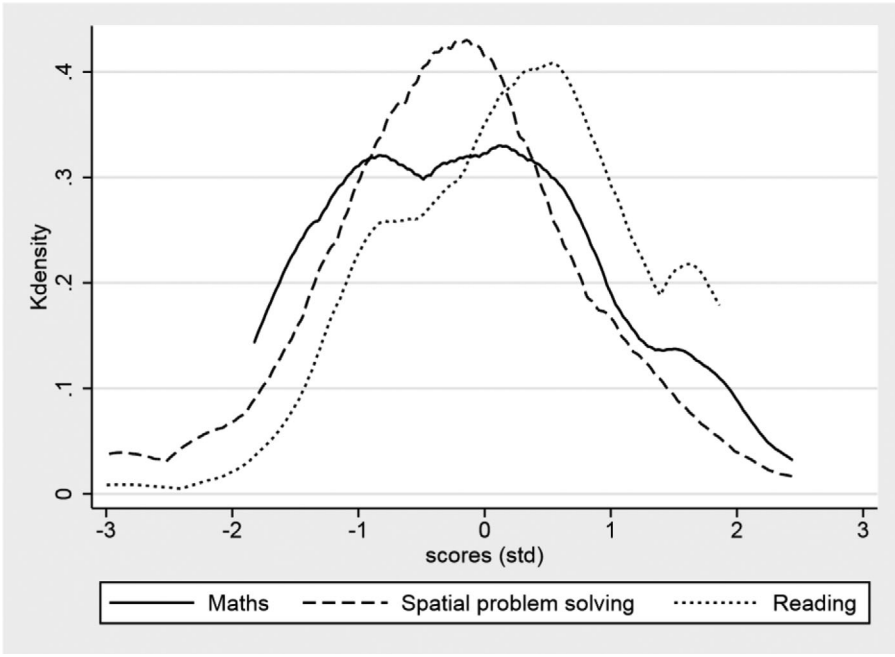
FIGURE 1

Outcome distribution by test.



Note: Standardised score distributions by test type. The scores have been standardised with respect to the entire sample (ethnic minority and majority children) at age 7.

distinct implications for subsequent educational and occupational choices. For example, students with high ability in maths and spatial problem solving are more likely to take 'STEM' (Science, Technology, Engineering, or Mathematics) subjects at degree level and beyond, while students with higher verbal ability are concentrated within the arts and humanities.[35] While maths and spatial problem solving abilities are highly correlated, spatial ability appears to play a role independently of maths in driving achievement in STEM subjects.[36]

We use the age-standardised versions of test scores available in the MCS, which take into account the extra time that older children within the cohort have had to develop their skills. For ease of interpretation and comparability, we standardise test scores in maths, spatial ability and reading by subtracting the mean and dividing by the standard deviation of test scores observed in the entire sample of MCS children. Figure 1 shows the distribution of

[35] Wai, Lubinski and Benbow, 2009; Uttal and Cohen, 2012.
[36] Wai et al., 2009.

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these standardised test scores for our sample of ethnic minority children. The distributions suggest that ethnic minority children perform slightly better than majority children in reading tests, and slightly worse in maths and spatial problem solving tests.

2. Measures of parental ethnic identity

We capture parental ethnic identity using two questions from the self-completion module of the MCS. Parents who indicate that they belong to any non-White ethnic minority group are asked to what extent they agree with the following statements: *In many ways I think of myself as British* and *In many ways I think of myself as [name of ethnic group]*.[37] Respondents may choose any one of six responses: (1) Strongly agree, (2) Agree, (3) Neither agree nor disagree, (4) Disagree, (5) Strongly disagree, or (6) Can't say. Battu and Zenou (2010) interpret these questions as addressing identification with a country, with a place, and its way of living.[38] Similar questions, which focus on the degree to which an individual values their ethnic origin and their sense of belonging to the adopted country, are used to measure ethnic identity in Islam and Raschky (2015), Nekby et al. (2009) and Schüller (2015). As we have noted above, such questions have the advantage of being widely available in large-scale data sets such as the MCS, and Likert response categories allow respondents to attach a weight to these two different aspects of their identity.[39] The main ethnic identity categories in the survey are also linked to geographical ancestry, which is thought to reduce the ambiguity of ethnic identity questions.[40] However, given the multidimensional nature of identity, answers may still be prone to measurement error. We return to this issue in our discussion of the results below.

Figure 2 presents the distribution of responses to the minority and majority identity questions in the MCS, where the size of each circle represents the frequency of responses in each combination of identities. 'Can't say' has been combined with 'Neither agree nor disagree'. Although some of the other response categories contain low frequencies, we keep them separate in

[37]Respondents have usually indicated their ethnic group in an earlier wave of the MCS. They may choose from 16 ethnic categories if they live in England, 17 categories if they live in Wales, and 14 categories if they live in Scotland. The categories are based on the 2001 census. For England, the categories are: 'White - British'; 'White - Irish'; 'Any other White background'; 'Mixed - White and Black Caribbean'; 'Mixed - White and Black African'; 'Mixed - White and Asian'; 'Any other mixed background'; 'Asian/Asian British - Indian'; 'Asian/Asian British - Pakistani'; 'Asian/Asian British - Bangladeshi'; 'Any other Asian background'; 'Black/Black British - Caribbean'; 'Black/Black British - African'; 'Any other Black background'; 'Chinese'; 'Any other background'.

[38]Battu and Zenou (2010) use a different survey (the Fourth National Survey of Ethnic Minorities) where the same question appears.

[39]Burton et al., 2010.

[40]Burton et al., 2010.

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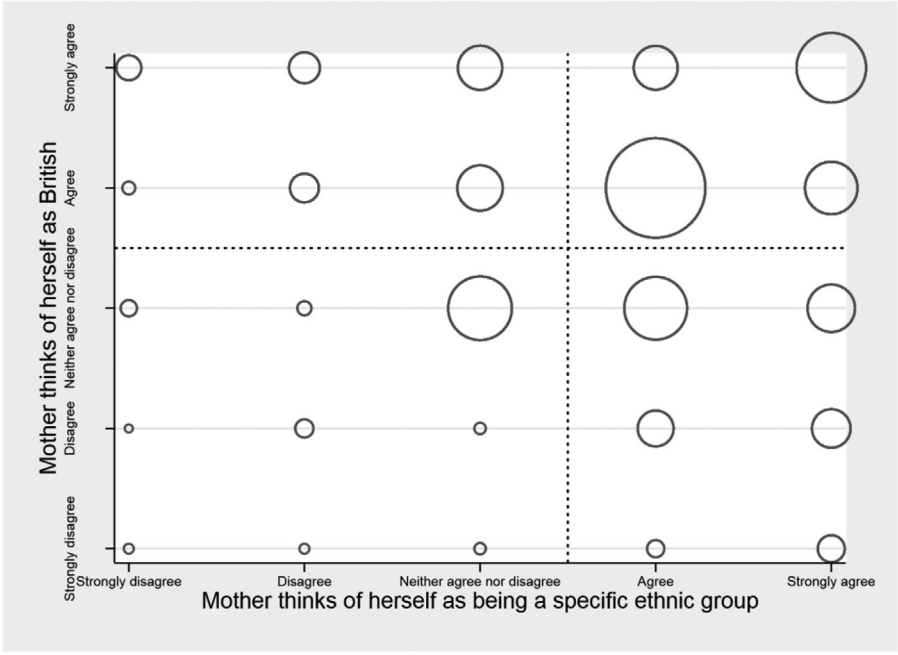
FIGURE 2

Minority and majority identity combinations, relative prevalence (Likert scale).



Note: Circle sizes are proportional to the number of mothers reporting both categories for minority and majority identity. Frequencies range from 298 mothers who 'Agree' to both the minority and majority statements, and 2 mothers who 'Disagree' to the majority statement and 'Strongly disagree' to the minority statement. The horizontal dashed line separates those in the 'Agree' and 'Strongly agree' categories for both minority and majority identities.

our analysis. We find evidence of non-linearities in the relationship between these parental identity responses and children's cognitive outcomes, and if we aggregate responses into larger categories these non-linearities are sometimes disguised. We therefore accept the limitations associated with smaller cell sizes. Around 40 per cent of ethnic minority mothers 'Agree' with the majority identity statement, and a quarter 'Strongly agree'. 42 per cent 'Agree' with the minority identity statement and nearly a third (29 per cent) 'Strongly agree'. Responses are relatively concentrated in the top-right quadrant, where respondents express some level of agreement with both the minority and majority identity statements. Nearly a quarter (24 per cent) 'Agree' with both statements and 12 per cent 'Strongly agree' with both.

Summary statistics for all parental identity categories in both samples are presented in Table A.1 in the online Appendix. Levels of minority and majority

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identity are similar for mothers in the two samples, and fathers' levels of identity are similar to mothers, except that fathers are less likely to 'Neither agree nor disagree' with the majority identity statement (18 per cent versus 26 per cent of mothers), and more likely to be in the 'Strongly disagree' category (30 per cent versus 22 per cent of mothers).

3. Other controls

A key concern when introducing control variables in this type of analysis is that parental ethnic identity could determine many of the household characteristics observed. For example, although parental employment status and educational attainment may be important in shaping parental inputs and the quality of the learning environment at home,[41] several studies cited above suggest that education and employment may be influenced by ethnic identity. We therefore start with a conservative specification that controls only for the gender of the child and the ethnicity of the mother. These variables are plausibly exogenous to parental ethnic identity, and may partly explain differences in cognitive test scores. Gender and ethnic differences in attainment emerge as early as the foundation stage of primary education.[42]

We next introduce controls that may partially be influenced by parental ethnic identity but are also important for children's cognitive development. We label these variables our 'main controls'. These include whether the mother is foreign born, whether she is a single parent, a quadratic term for her age at the time the child was born, and a linear term in the number of siblings in the household. Mothers who are born abroad often have different formative experiences, which may in turn influence their own parenting styles. Children of young mothers and those in single parent households typically fare worse than other children in both cognitive and behavioural development.[43] Siblings may negatively affect child development as a result of increased competition for material resources and parental attention[44] but may also have a positive influence on social, emotional and cognitive development.[45] In this expanded specification, we also control for cases where the child lives in a two-parent household, but the father did not respond to the identity questions in the MCS, and cases where the father responded as the main parent.

Finally, we control for the household socio-economic circumstances most likely to be influenced by parental ethnic identity. We label these 'additional controls'. These include parental education and employment status, household

[41] Ruhm, 2004; Todd and Wolpin, 2007; Bettinger, Hægeland and Rege, 2014.
[42] Mensah and Kiernan, 2010; Wilson, Burgess and Briggs, 2011.
[43] Dunifon and Kowaleski-Jones, 2002; Hawkes and Joshi, 2012.
[44] Black, Devereux and Salvanes, 2005.
[45] de La Rochebrochard and Joshi, 2013.

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TABLE 1

Summary statistics

	(1) *All mothers*		(2) *Mothers in couples*	
Gender and ethnicity				
Girl	0.51	(0.50)	0.51	(0.50)
Mother Indian	0.22	(0.42)	0.33	(0.47)
Mother Pakistani or Bangladeshi	0.35	(0.48)	0.34	(0.47)
Mother Black African or Black Caribbean	0.24	(0.43)	0.17	(0.38)
Main controls				
Mother's age at birth	28.28	(5.76)	28.51	(5.42)
Single mother household	0.20	(0.40)	0.00	(0.00)
Couple with incomplete father information	0.29	(0.46)	0.00	(0.00)
Father is main respondent	0.03	(0.17)	0.06	(0.23)
Number of siblings	1.55	(1.12)	1.56	(1.03)
Foreign-born mother	0.45	(0.50)	0.50	(0.50)
Foreign-born mother missing	0.16	(0.37)	0.14	(0.35)
Additional controls				
Mother, low qualification	0.39	(0.49)	0.36	(0.48)
Mother, qualification from abroad	0.08	(0.27)	0.09	(0.29)
Father, low qualification	0.20	(0.40)	0.24	(0.43)
Father, qualification from abroad	0.09	(0.29)	0.14	(0.35)
Non-working mother	0.58	(0.49)	0.54	(0.50)
Non-working father	0.09	(0.29)	0.10	(0.30)
Family faces financial constraints	0.26	(0.44)	0.18	(0.39)
Family materially deprived	0.46	(0.50)	0.38	(0.49)
Family in housing poverty	0.55	(0.50)	0.46	(0.50)
Family below poverty line	0.51	(0.50)	0.39	(0.49)
Family living in deprived area	0.49	(0.50)	0.40	(0.49)
Mother has family networks	0.51	(0.50)	0.52	(0.50)
Mother has friendship networks	0.70	(0.46)	0.72	(0.45)
Foreign language spoken at home	0.42	(0.49)	0.46	(0.50)
N	1,249		629	

Note: Sample means and standard deviations (in parentheses).

and neighbourhood deprivation, access to family and friendship networks in the local area, and whether a foreign language is the main language spoken at home. We explore heterogeneity in the impact of parental ethnic identity across several of these dimensions below.

Table 1 shows summary statistics for the outcome variables, the 'main controls', and the 'additional controls'. The table has a column for each of the two samples used in our analysis: the 'All mothers' sample and the 'Mothers in couples' sample. These samples differ in ethnic composition, and in the economic situation of households. The sample restricted to mothers in

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TABLE 2

Summary statistics for test scores by maternal majority and minority identity

	(1) *Majority identity*		(2) *Minority identity*	
Strongly disagree				
Maths score	0.288	(1.012)	−0.023	(1.059)
Spatial problem solving score	0.002	(0.871)	0.103	(0.793)
Reading score	0.439	(0.974)	0.289	(1.075)
N	42		37	
Disagree				
Maths score	−0.205	(1.185)	−0.167	(0.950)
Spatial problem solving score	−0.521	(1.278)	−0.317	(0.992)
Reading score	0.267	(0.938)	0.133	(0.859)
N	100		73	
Neither agree nor disagree				
Maths score	0.022	(1.088)	−0.107	(1.077)
Spatial problem solving score	−0.228	(1.029)	−0.264	(1.045)
Reading score	0.316	(0.956)	0.251	(0.989)
N	323		252	
Agree				
Maths score	−0.186	(0.976)	−0.123	(1.027)
Spatial problem solving score	−0.241	(0.976)	−0.265	(1.085)
Reading score	0.196	(0.992)	0.256	(0.973)
N	473		523	
Strongly agree				
Maths score	−0.104	(1.043)	−0.048	(1.071)
Spatial problem solving score	−0.287	(1.001)	−0.288	(0.935)
Reading score	0.228	(0.939)	0.257	(0.950)
N	311		364	

Note: Sample means and standard deviations (in parentheses). Outcome variables are standardised to have mean 0 and standard deviation of 1 within the main (i.e. majority and minority) MCS sample.

couples with complete partner information has a higher proportion reporting their ethnicity as Indian, and a higher proportion born abroad. Families in this sample are also less likely to be deprived or to live in deprived neighbourhoods. There is no difference across the two samples in the mother's age at the birth of the child, whether or not a foreign language is the main language spoken at home, or in the number of siblings.

Table 2 shows summary statistics for all outcome variables by each maternal majority and minority identity category, and the number of respondents in each category. As we saw in Figure 2, the biggest response categories, for both majority and minority identity, are 'Agree' and 'Strongly

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agree', and the category with the least number of respondents is 'Strongly disagree'. The mean test scores in maths, spatial problem solving and reading do not show a clear pattern for majority and minority identity across all five responses in the Likert scale. However, the 'Majority identity' column does give a broad preview of the main finding of the paper – that children of mothers who either 'Agree' or 'Disagree' with the majority identity statement tend to do worse in cognitive tests than those in the 'Neither agree nor disagree' category. We examine this pattern in more detail in the next section.

For completeness, summary statistics for controls across all parental minority and majority identity categories are presented in Tables A.2 and A.3 in the online Appendix. There are a few statistically significant differences in characteristics across the categories of majority identity; for example, there are more Pakistani and Bangladeshi mothers who respond 'Agree' and 'Strongly agree' relative to 'Neither agree or disagree' and there are fewer Black African or Caribbean mothers who respond 'Disagree' and 'Strongly disagree' relative to 'Neither agree or disagree'. For most of the other variables, there are few statistically significant differences across categories of the majority or minority identity.

III. Empirical model and results

1. Empirical model

To examine the relationship between parental ethnic identity and cognitive test scores in ethnic minority children, we estimate the following equation using ordinary least squares (OLS):

$$Y_{it} = \alpha + \sum_{j=1}^{4} \beta_j 1 * [\textit{Mother majority identity}_{it-1} = j] + \sum_{j=1}^{4} \gamma_j 1 * [\textit{Mother minority identity}_{it-1} = j] + \delta X_{it} + \varepsilon_{it}. \quad (1)$$

Here, Y_{it} denotes the relevant test score (maths, spatial problem solving, or reading) of child i at time t (age 7), $\textit{Mother majority identity}_{it-1}$ represents a series of dummies that take a value of 1 if maternal majority identity falls in category j, and $\textit{Mother minority identity}_{it-1}$ represents maternal minority identity at $t - 1$ (age 5) in a similar manner. The four categories are 'Strongly disagree', 'Disagree', 'Agree' and 'Strongly agree', and our omitted category is 'Neither agree nor disagree'. Hence, β_j measures the difference in performance on each test (in standard deviations) between children whose mothers report a majority identity in category j and those whose mothers report

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that they 'Neither agree nor disagree' with the identity statement. γ_j represents the same for minority identity. We extend this specification to include the father's majority and minority identity for our sample of couples. In all cases, X_{it} is the vector of control variables discussed above, and ε_{it} is a random, normally distributed error term.

2. Main results

Table 3 presents our baseline results for the association between maternal identity and child test scores in maths, spatial problem solving and reading, across three groups of three columns. Results in the first column of each group (columns 1, 4 and 7) come from regressions including only controls for the gender of the child and ethnicity of the mother, while the second column in each group (columns 2, 5 and 8) shows results from regressions including other demographic controls, as discussed above and listed as 'main controls' in Table 1. The final column in each group (columns 3, 6 and 9) shows results from regressions including 'additional controls' as discussed above, and also in Table 1. All of these results use the full sample of mothers.

Our results indicate that children of mothers who either 'Agree' or 'Disagree' that they hold a majority identity tend to perform worse than those in the neutral category across all three tests, although the differences are not always statistically significant. Test scores in maths and spatial problem solving are 0.224 and 0.286 lower in the 'Disagree' group than in the neutral category after introducing all controls, and those in maths and reading are 0.213 and 0.126 lower in the 'Agree' group than in the neutral category. These negative estimates are of a similar size to those linked with the family being below the poverty line, and are larger than the estimates linked with living in material deprivation and in housing poverty (results showing the maths estimates for the full set of control variables are presented in Table A.4 in the online Appendix). Other estimates across the majority identity panel are generally of the same sign but not statistically significant.

The exceptional estimates in the majority identity panel are those associated with the 'Strongly disagree' category, which are positive but insignificantly different from the neutral category. This category is also an exception in the minority identity panel, where no estimates are statistically significant except for those who 'Strongly disagree' that they hold a minority identity, and then only in one of the three cognitive tests. This group who 'Strongly disagree' scores 0.315 standard deviations higher than the neutral category in spatial problem solving. However, the 'Strongly disagree' category is small for both the majority and minority identity questions, with 42 and 37 respondents giving these responses, respectively (see Table 2). Therefore, we do not weight these estimates heavily in our interpretation of our results overall.

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TABLE 3

Association between maternal identity and child test scores: baseline results (OLS)

	(1) *Maths*	(2) *Maths*	(3) *Maths*	(4) *Spatial*	(5) *Spatial*	(6) *Spatial*	(7) *Reading*	(8) *Reading*	(9) *Reading*
Majority identity									
Strongly disagree	0.261	0.230	0.229	0.190	0.168	0.131	0.148	0.090	0.048
	(0.172)	(0.179)	(0.179)	(0.147)	(0.149)	(0.149)	(0.162)	(0.166)	(0.163)
Disagree	−0.217*	−0.222*	−0.224*	−0.275**	−0.280**	−0.286**	−0.030	−0.074	−0.069
	(0.130)	(0.130)	(0.130)	(0.136)	(0.138)	(0.137)	(0.108)	(0.105)	(0.104)
Agree	−0.182**	−0.200***	−0.213***	−0.013	−0.027	−0.053	−0.131*	−0.122*	−0.126*
	(0.077)	(0.076)	(0.076)	(0.075)	(0.075)	(0.075)	(0.073)	(0.072)	(0.071)
Strongly agree	−0.103	−0.119	−0.120	−0.089	−0.087	−0.097	−0.086	−0.054	−0.051
	(0.088)	(0.087)	(0.086)	(0.083)	(0.084)	(0.084)	(0.079)	(0.079)	(0.078)
Minority identity									
Strongly disagree	0.062	0.012	0.045	0.351**	0.300**	0.315**	0.049	−0.006	0.006
	(0.182)	(0.182)	(0.177)	(0.143)	(0.143)	(0.144)	(0.186)	(0.184)	(0.179)
Disagree	0.007	0.031	0.034	−0.028	0.015	0.038	−0.079	−0.052	−0.061
	(0.137)	(0.136)	(0.137)	(0.134)	(0.134)	(0.134)	(0.119)	(0.116)	(0.116)
Agree	0.061	0.052	0.070	0.010	0.012	0.030	0.028	−0.004	0.004
	(0.083)	(0.082)	(0.081)	(0.083)	(0.083)	(0.082)	(0.078)	(0.076)	(0.076)
Strongly agree	0.056	0.067	0.085	0.014	0.025	0.037	0.009	−0.006	−0.002
	(0.089)	(0.088)	(0.087)	(0.084)	(0.084)	(0.084)	(0.084)	(0.083)	(0.082)
Gender and ethnicity	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Main controls	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Additional controls	No	No	Yes	No	No	Yes	No	No	Yes
N	1,249	1,249	1,249	1,249	1,249	1,249	1,249	1,249	1,249

Note: Standard errors in parentheses. Sample: all mothers. Base category for identity: Neither agree nor disagree. *$p < 0.1$, **$p < 0.05$, ***$p < 0.01$.

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Results for the sample with information on father's identity are presented in Table A.5 in the online Appendix. Note that the sample size shrinks substantially here, as not all families in the MCS have fathers present, and not all fathers who are present fill out the 'self-completion' part of the survey in which the identity questions appear. The negative coefficients associated with mothers who 'Disagree' or 'Agree' that they hold a majority identity remain in maths and spatial problem solving, although they cease to be statistically distinct from the neutral category. There is a large and statistically significant negative association between fathers who 'Disagree' that they have a minority identity and test scores in maths, and a positive association between fathers who 'Agree' that they hold a minority identity and test scores in spatial problem solving. These results are intriguing as, compared with our baseline results, they are more consistent with some results elsewhere in the literature.[46] However, given the mixed results and small sample size, we leave analysis of the father's ethnic identity here, and in subsequent analysis focus on the larger sample containing all mothers.

The distinct cultures and immigration histories of different ethnic minority groups may affect the relationship between parental ethnic identity and children's cognitive development. Given small sample sizes for different minority groups across the five response categories, we split the sample to compare estimates for the children of Black African and Caribbean mothers, Indian mothers and Pakistani/Bangladeshi mothers (Table 4).[47] This exercise reveals that the negative associations we observe between maternal agreement or disagreement with the majority identity statement and cognitive test scores appear to be driven mostly by children of mothers from Black African and Caribbean backgrounds, and to some extent those from Pakistani and Bangladeshi backgrounds. This is an interesting result, given that language is often seen as an important factor linking ethnicity and identity,[48] and yet Black African and Caribbean mothers are the mostly likely of these minority groups to speak English as their main language at home. However, again, the cell sizes are small, so we give this result less weight than our main results.[49]

Our baseline results suggest that there are systematic differences in test scores between children whose mothers 'take a position' on the majority identity, and children of mothers who report more neutral feelings towards it. This implies that it is taking a stance on the majority identity, rather than the stance taken, that matters for child outcomes, where both acceptance and rejection of the majority identity are negatively associated with test scores. While no other paper has found a similar result for 'taking a stand' on majority

[46] See, for example, Schüller (2015).
[47] Specifications interacting ethnic identity with each ethnic group indicator give similar results.
[48] Schüller, 2015.
[49] Splitting the sample by gender does not reveal any substantial differences between boys and girls.

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TABLE 4

Association between maternal identity and child test scores: ethnicity (OLS)

	Black			*Indian*			*Pakistani/Bangladeshi*		
	(1) *Maths*	(2) *Spatial*	(3) *Reading*	(4) *Maths*	(5) *Spatial*	(6) *Reading*	(7) *Maths*	(8) *Spatial*	(9) *Reading*
Majority identity									
Strongly disagree	0.314	0.262	0.232	−0.099	0.038	0.122	0.443	0.137	0.275
	(0.347)	(0.281)	(0.305)	(0.516)	(0.240)	(0.300)	(0.318)	(0.337)	(0.353)
Disagree	−0.641***	−0.522**	−0.336	−0.012	−0.092	0.235	−0.439**	−0.505**	0.010
	(0.238)	(0.252)	(0.216)	(0.331)	(0.322)	(0.230)	(0.196)	(0.211)	(0.179)
Agree	−0.493***	0.047	−0.304**	−0.143	−0.073	0.045	−0.131	−0.157	−0.098
	(0.144)	(0.129)	(0.145)	(0.173)	(0.157)	(0.155)	(0.138)	(0.142)	(0.124)
Strongly agree	−0.173	−0.108	−0.349**	−0.176	0.063	0.273*	−0.069	−0.194	0.056
	(0.170)	(0.172)	(0.145)	(0.190)	(0.177)	(0.154)	(0.158)	(0.158)	(0.149)
Minority identity									
Strongly disagree	0.020	0.054	0.220	−0.662	0.233	0.140	−0.026	0.364	−0.330
	(0.386)	(0.293)	(0.357)	(0.407)	(0.345)	(0.453)	(0.313)	(0.312)	(0.332)
Disagree	0.295	0.330	0.048	−1.021***	−0.078	−0.383	0.189	−0.143	−0.047
	(0.241)	(0.234)	(0.211)	(0.326)	(0.248)	(0.331)	(0.230)	(0.231)	(0.171)
Agree	0.249	−0.075	0.088	0.008	0.024	−0.170	−0.054	0.108	−0.101
	(0.178)	(0.172)	(0.172)	(0.201)	(0.184)	(0.174)	(0.134)	(0.138)	(0.124)
Strongly agree	0.160	0.009	0.178	0.173	−0.052	−0.215	−0.024	0.268*	−0.127
	(0.182)	(0.173)	(0.178)	(0.205)	(0.181)	(0.175)	(0.149)	(0.145)	(0.149)
Gender and ethnicity	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Main controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Additional controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	303	303	303	280	280	280	443	443	443

Note: Standard errors in parentheses. Sample: all mothers. Base category for identity: Neither agree nor disagree. *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

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identity, there are contrasting results in the literature, with a strong minority identity having positive or negative implications in different national contexts and in different areas of economic life.

Given the surprising nature of this result, we suggest two possible interpretations. The first is that both parental adoption and active rejection of the majority identity genuinely affect children's test scores in a negative way. 'Taking a position' on the majority identity could divert household resources from activities that are more beneficial to a child's academic development, or it could plausibly affect access to social support from family and friends. The second interpretation we suggest is that mothers adopt a position on the majority identity as a source of self-worth in response to challenging circumstances. This 'protective' role of identity has been emphasised in some of the sociological and social psychological literature in this area.[50] In our analysis, such challenging circumstances may drive both maternal adoption of a position on the majority identity, and children's lower test scores. This is therefore essentially an 'omitted variables' explanation for our result. We explore the evidence for these competing explanations in the next section.

IV. Potential channels

1. The role of parental investments

One reason for the negative association that we observe between maternal acceptance or rejection of the majority identity and child test scores could be differences in access to or use of productive inputs. 'Taking a position' on the majority identity could divert household resources away from the most productive parental investments. We examine this possibility by estimating latent factor scores based on parental investments measured when the child is aged 5, two years prior to the cognitive tests we use as outcomes.[51]

The MCS has detailed information on parental involvement with children, and we use this information to model parental investment as three different latent factors.[52] The first factor combines information on activities that parents undertake, which are directly related to schoolwork, and include information on how often parents help their children with reading, writing, maths, or painting. The second factor relates to the range of activities that parents carry out with their children, and the routines they establish. This includes how often they read to their children or take trips to the library, and whether they impose regular bedtimes, or monitor television watching. The third factor relates to parenting styles, and includes information on the frequency with which parents

[50] See, for example, Phinney et al. (2001), Rumbaut (1994) and Tajfel and Turner (1979).
[51] Dickerson and Popli (2016) take a similar approach.
[52] For a full discussion of modelling parental investment, see Hernández-Alava and Popli (2017).

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TABLE 5

Association between parental identity and parental investments, and association between parental identity and child test scores

	(1) *PI1*	(2) *PI2*	(3) *PI3*	(4) *Maths*	(5) *Spatial*	(6) *Reading*
Majority identity						
Strongly disagree	0.204	0.774**	−0.145	0.181	0.107	−0.009
	(0.198)	(0.309)	(0.179)	(0.179)	(0.150)	(0.163)
Disagree	−0.039	0.048	−0.200	−0.224*	−0.288**	−0.071
	(0.148)	(0.198)	(0.137)	(0.129)	(0.135)	(0.103)
Agree	0.108	−0.047	0.086	−0.209***	−0.049	−0.120*
	(0.088)	(0.135)	(0.092)	(0.074)	(0.073)	(0.069)
Strongly agree	0.149	0.117	0.105	−0.124	−0.097	−0.054
	(0.101)	(0.153)	(0.104)	(0.084)	(0.083)	(0.076)
Minority identity						
Strongly disagree	0.026	0.133	0.043	0.036	0.311**	−0.003
	(0.216)	(0.311)	(0.243)	(0.175)	(0.142)	(0.171)
Disagree	0.029	−0.020	0.034	0.040	0.042	−0.055
	(0.153)	(0.232)	(0.164)	(0.133)	(0.131)	(0.114)
Agree	−0.141	−0.210	−0.136	0.082	0.034	0.016
	(0.094)	(0.153)	(0.099)	(0.079)	(0.081)	(0.074)
Strongly agree	0.048	−0.307*	−0.082	0.106	0.048	0.024
	(0.103)	(0.164)	(0.105)	(0.086)	(0.083)	(0.080)
Parental investments						
PI1				−0.025	−0.025	−0.037
				(0.035)	(0.034)	(0.032)
PI2				0.206***	0.101*	0.234***
				(0.055)	(0.054)	(0.053)
PI3				0.015	−0.004	0.011
				(0.034)	(0.033)	(0.031)
N	1,249	1,249	1,242	1,249	1,249	1,249

Note: Standard errors in parentheses. Sample: all mothers. Base category for identity: Neither agree nor disagree. All controls used. *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$. See Section IV for details of the empirical model. See Section III and Table 1 for details of the main control variables. The three latent factor scores capturing parental investment are referred to as PI1, PI2 and PI3. PI1 includes how often parents help their children with reading, writing, maths or painting; PI2 includes how often parents read to their children or take trips to the library, and whether they impose regular bedtimes or monitor television watching. PI3 includes the frequency with which parents smack, 'tell off', or shout at their children (PI3 is reverse coded).

smack, 'tell off', or shout at their children. We treat these final three actions as parental disinvestment, and code accordingly. We standardise the three latent factor score to have a mean of zero and standard deviation of 1, and regress each of them on our measures of identity and main control variables.

Results in columns 1–3 of Table 5 provide little evidence to suggest that ethnic identity influences parental investment. The only significant coefficients

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we find are associated with the second latent factor. Mothers who report that they 'Strongly disagree' with the majority identity invest more in their children's non-school activities and provide a more structured routine for their children. As we have noted, these mothers are very small in number. However, mothers who 'Strongly agree' with the minority identity provide less investment for their children along this dimension. It therefore seems unlikely that direct parental provision of inputs is a mechanism linking maternal identity with lower child test scores.

When we include these latent factor scores as controls in our baseline model (columns 4–6), the only significant association we find is with the second latent factor. Children with mothers who engage in more out-of-school activities, and provide a structured routine, do significantly better in all three test scores. The estimated association with test scores and this particular latent factor is around the same size of that found in Hernández-Alava and Popli (2017), who use MCS data with both ethnic minority and majority children. Our estimates of interest do not change when we add these controls. While we cannot rule out the possibility that parental ethnic identity has an influence on parental investment, these results suggest it is not a decisive mechanism. Of course, it is possible that identity still affects household resource deployment more generally, and we therefore turn to examine household resources directly.

2. The role of poverty

If 'taking a position' on the majority identity diverts household resources from more productive activities, or affects access to social support, the relationship between maternal identity and children's cognitive outcomes could be mediated by the economic circumstances of the household. Families experiencing hardship may be more vulnerable to any negative effects of parental identity in these areas. Difficult economic circumstances within the household could also cause mothers to adopt a position on the majority identity, as well as lowering child test scores, which would be consistent with an alternative explanation of the relationship we observe. We therefore investigate the association between maternal identity and child test scores by income poverty.

Households are classified as income poor if their household equivalised income is below 60 per cent of contemporaneous median household equivalised income before housing costs, according to the most widely used definition in the UK (from the Child Poverty Act, 2010). Ethnic minority households are much more likely to be below the poverty line than majority households, and just over 50 per cent of our sample is classified as income poor. There is also substantial variation across ethnic minority groups. For example, 75 per cent of Pakistani or Bangladeshi households are classified as income poor, compared to 30 per cent of Indian households.

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TABLE 6

Association between maternal identity and child test scores for non-poor and poor mothers (OLS)

	Non–poor			*Poor*		
	(1) *Maths*	(2) *Spatial*	(3) *Reading*	(4) *Maths*	(5) *Spatial*	(6) *Reading*
Majority identity						
Strongly disagree	0.126	0.370**	−0.082	0.654**	0.050	0.290
	(0.219)	(0.155)	(0.203)	(0.297)	(0.291)	(0.281)
Disagree	−0.127	0.008	−0.093	−0.327*	−0.558***	−0.040
	(0.206)	(0.214)	(0.155)	(0.171)	(0.164)	(0.148)
Agree	−0.146	0.090	−0.059	−0.280***	−0.166	−0.176*
	(0.111)	(0.101)	(0.097)	(0.104)	(0.109)	(0.105)
Strongly agree	0.032	0.048	−0.052	−0.234**	−0.192	−0.041
	(0.131)	(0.120)	(0.109)	(0.119)	(0.118)	(0.116)
Minority identity						
Strongly disagree	0.140	0.190	0.054	−0.058	0.524**	0.033
	(0.221)	(0.162)	(0.215)	(0.278)	(0.266)	(0.320)
Disagree	0.065	0.001	−0.005	0.051	0.106	−0.121
	(0.205)	(0.181)	(0.168)	(0.187)	(0.185)	(0.168)
Agree	0.211*	0.140	0.110	−0.026	−0.007	−0.084
	(0.117)	(0.112)	(0.104)	(0.117)	(0.117)	(0.114)
Strongly agree	0.102	−0.104	0.101	0.113	0.224*	−0.074
	(0.124)	(0.112)	(0.110)	(0.127)	(0.122)	(0.127)
Gender and ethnicity	Yes	Yes	Yes	Yes	Yes	Yes
Main controls	Yes	Yes	Yes	Yes	Yes	Yes
Additional controls	Yes	Yes	Yes	Yes	Yes	Yes
N	611	611	611	638	638	638

Note: Standard errors in parentheses. Sample: all mothers. Base category for identity: Neither agree nor disagree. *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

We present results for families above and below the poverty line in Table 6. These results show that the negative association between those who 'Agree' or 'Disagree' with the majority identity and child test scores is largely driven by children in poor families. For example, in maths, children in poor families where the mother agrees with the majority identity statement score 0.280 standard deviations below children of 'neutral' mothers in poor families, and those whose mothers disagree score 0.327 standard deviations below children of 'neutral' mothers in poor families. These differences are statistically significant. Among non-poor families, the equivalent coefficients are also negative, but much smaller in magnitude, and imprecisely estimated. Although we cannot reject the null of no difference in test score gaps across poor and non-poor families, these results are at least indicative of an inter-relationship

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between parental identity and income poverty. We observe a similar pattern of results for reading and spatial problem solving test scores.[53]

3. The role of family networks

Our results so far suggest that household poverty is important in shaping the association between maternal identity and child test scores. The absence or availability of local family networks may also be linked to resource constraints. Such networks can provide various resources to parents, including direct provision of financial resources,[54] or emotional and social support.[55] Families may share useful information, such as how to navigate the health, welfare or education system, or provide a springboard for accessing wider community networks. Such networks may also enable parents to diversify limited resources between different types of investments. Without access to local family networks, parents are excluded from any such additional resources and the opportunity to diversify. A lack of family networks could also represent the kind of difficult circumstances that would push mothers to adopt a position on the majority identity, which would be consistent with the alternative interpretation of our main results.

We investigate the role of family networks using responses to the question 'Do you have other friends and family in the area?'.[56] Parents may respond 'Yes, friends', 'Yes, family', 'Yes, both' or 'No'. We use those that indicate 'Yes, family' and 'Yes, both' to represent family networks. According to this definition, just over 50 per cent of households in the sample have family who live locally. This varies by ethnicity, with two-thirds of Pakistani or Bangladeshi households living close to family, compared to 40 per cent of Black or Mixed heritage households.

We present results by access to local family networks in Table 7. These results suggest that the negative association between acceptance or rejection of the majority identity and child test scores is largely driven by households that do not have access to local family networks. Within this group, children of mothers who 'Disagree' with the majority statement score 0.343 standard deviations lower in maths and 0.389 lower in spatial problem solving, and children of mothers who 'Agree' score 0.245 lower in maths. The estimates for those who have access to family networks are smaller and imprecisely

[53] We have also examined whether this heterogeneity by family poverty reflects the impact of neighbourhood poverty, through such factors as peer groups or school quality. We find no clear results.

[54] Angelucci et al., 2010.

[55] Burchinal, Follmer and Bryant, 1996; Bradley and Corwyn, 2002; Green, Furrer and McAllister, 2007; Stepick and Dutton Stepick, 2010; Haller, Portes and Lynch, 2011; Serrano-Villar, Huang and Calzada, 2017.

[56] Parents are first asked 'Are you friends with other parents in the area?' followed by the question about family and friends. We have also examined the role of friendship networks but find little evidence that this matters for shaping the effect of parental identity.

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TABLE 7

Association between maternal identity and child test scores for mothers with and without family networks (OLS)

	Has family networks			*No family networks*		
	(1) *Maths*	(2) *Spatial*	(3) *Reading*	(4) *Maths*	(5) *Spatial*	(6) *Reading*
Majority identity						
Strongly disagree	0.051	0.192	0.353	0.391*	0.063	−0.140
	(0.259)	(0.258)	(0.220)	(0.235)	(0.193)	(0.221)
Disagree	−0.150	−0.200	−0.145	−0.343**	−0.389**	−0.075
	(0.206)	(0.207)	(0.148)	(0.169)	(0.181)	(0.147)
Agree	−0.170	0.011	−0.108	−0.245**	−0.102	−0.119
	(0.108)	(0.112)	(0.095)	(0.109)	(0.103)	(0.105)
Strongly agree	0.046	−0.051	0.141	−0.307**	−0.129	−0.268**
	(0.124)	(0.123)	(0.110)	(0.123)	(0.115)	(0.112)
Minority identity						
Strongly disagree	0.088	0.369	0.226	0.064	0.253	−0.084
	(0.288)	(0.252)	(0.263)	(0.230)	(0.178)	(0.252)
Disagree	0.124	−0.044	0.040	−0.080	0.143	−0.141
	(0.172)	(0.182)	(0.153)	(0.218)	(0.203)	(0.187)
Agree	0.011	−0.024	0.032	0.146	0.085	−0.001
	(0.113)	(0.120)	(0.102)	(0.118)	(0.115)	(0.114)
Strongly agree	0.152	0.062	0.106	0.050	0.025	−0.030
	(0.125)	(0.123)	(0.114)	(0.124)	(0.117)	(0.121)
Gender and ethnicity	Yes	Yes	Yes	Yes	Yes	Yes
Main controls	Yes	Yes	Yes	Yes	Yes	Yes
Additional controls	Yes	Yes	Yes	Yes	Yes	Yes
N	640	640	640	609	609	609

Note: Standard errors in parentheses. Sample: all mothers. Base category for identity: Neither agree nor disagree. *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

estimated. Because almost half of mothers without family networks are not income poor, this finding is not simply a reflection of material poverty, and may reflect the broader constraints that having family in the local area can help to alleviate. Interestingly, access to family networks appears to have little independent association with test scores, operating only by modulating the associations with maternal majority identity (see Table A.4).

V. Discussion

In this paper, we examine the relationship between parental ethnic identity and test scores in ethnic minority children. We employ separate measures of parental minority and majority identity, alongside tests of children's cognitive

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functioning in three key domains. We show that children whose mothers report either an adoption or an active rejection of the majority identity tend to score lower in cognitive tests at age 7, compared with those children whose mothers report neutral feelings about the majority identity. The results are driven by children from poor households, and by those from households who lack access to local family support networks. We find no consistent differences in test scores according to the mother's minority identity.

While the overall character of these results is unusual, there has also been some variation in results elsewhere in the literature. Earlier studies generally find the majority identity to be beneficial to labour market outcomes for immigrants and ethnic minority individuals, while a minority identity is often found to be detrimental. However, two papers[57] find only weak effects of ethnic identity on labour market outcomes, and two other studies[58] suggest that the strength of both minority and majority identity can be beneficial for educational outcomes in some national settings. We could perhaps draw some parallels with papers suggesting that negative labour market outcomes are associated with rejection of the majority identity,[59] and those suggesting that positive educational outcomes are associated with lower group acceptance.[60] However, we do not know of another paper that shows both acceptance and rejection of the majority identity to have negative implications for labour market or educational outcomes. Therefore, we suggest two interpretations for our results.

The first possible interpretation of these results is that 'taking a position' on the majority identity somehow diverts family social or economic resources away from investments that would be more conducive to children's cognitive development. In this interpretation, both accepting and actively rejecting the majority identity commits resources to less optimal activities. These activities need not be the same for those who 'Agree' and those who 'Disagree' with the majority identity statement – indeed they seem likely to be very different – but they must share the characteristic that they are less productive for child development than the alternatives. This first interpretation would be consistent with some patterns of heterogeneity that we observe in the data: for example, that the result is driven largely by poor households and by those households that lack access to local family networks. Our examination of parental investment behaviour does not find differences by maternal identity in our measures of this particular activity, but identity could affect household resource deployment more generally. If this interpretation is correct, then parental identity should be a matter of interest when considering the formation

[57]Casey and Dustmann, 2010; Islam and Raschky, 2015.
[58]Nekby et al., 2009; Schüller, 2015.
[59]Battu et al., 2007; Battu and Zenou, 2010.
[60]Fryer and Torelli, 2010.

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of cognitive skills in early childhood, particularly in relation to ethnic minority children. However, given the unusual nature of these results, we are necessarily cautious in drawing strong policy conclusions.

A second interpretation of our result is that mothers adopt a position on the majority identity as a source of self-worth in response to challenging circumstances, in line with the view of identity as a 'protective' device.[61] These difficulties are then also reflected in children's lower test scores. This interpretation is also consistent with the patterns of heterogeneity we observe in the data, as both household poverty and lack of access to local family networks could constitute the kind of challenging circumstances that would lead a mother to take a position on the majority identity. This interpretation does not imply a genuine relationship between parental ethnic identity and child test scores, but implies that the result is driven by omitted variables, influencing both parental identity and child outcomes. Ultimately, we cannot distinguish between these two competing explanations for why taking a stance on the majority identity matters in these circumstances.

Finally, we note that our estimates are sometimes imprecise and unstable across specifications, perhaps due to measurement error in the identity variables. Having a richer measure of identity, derived from several identity-related questions, would go some way to addressing concerns about measurement error. Unfortunately, we do not have a way of testing such measurement questions with these data, so we leave this observation to be developed in future work.[62] However, we regard this as a potentially important issue in the literature on the economics of identity, which predominantly relies on the kind of one-dimensional survey measures we use in this paper. If null or unusual results using such measures are less likely to reach publication stage, the literature may have given us an inaccurate perception of the reliability of these measures, or the range of possible outcomes they can produce.

We noted in the introduction to this paper that the governments of several countries have responded to increased ethnic diversity by introducing education and citizenship policies that actively promote the majority identity, while discouraging the maintenance of separate minority identities. Neither of the two suggested interpretations of our results provides support for such policies. At best, it is unclear from these results whether promoting the majority identity will have an impact on children's outcomes. Better measurement, and a better understanding of the mechanisms through which parental ethnic identity shapes childhood outcomes, is necessary to fully comprehend the impact of these policies on ethnic minority children. However, public resources are still invested in the promotion of the majority identity.

[61] Tajfel and Turner, 1979; Rumbaut, 1994; Phinney et al., 2001.

[62] Nandi and Platt (2012) explore such measurement difficulties in relation to the newer 'Understanding Society' data set in the UK.

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Given what we know about the importance of material conditions in the early years, other issues, such as the high levels of income poverty observed in some ethnic minority groups, may be a more pressing policy concern.

Supporting information

Additional supporting information may be found online in the Supporting Information section at the end of the article.

- Appendix

References

Aber, J. L., Bennett, N. G., Conley, D. C. and Li, J. (1997), 'The effects of poverty on child health and development', *Annual Review of Public Health*, vol. 18, pp. 463–83.

Akerlof, G. A. (1997), 'Social distance and social decisions', *Econometrica*, vol. 65, pp. 1005–27.

— and Kranton, R. E. (2000), 'Economics and identity', *Quarterly Journal of Economics*, vol.115, pp.715–53.

— and — (2002), 'Identity and schooling: some lessons for the economics of education', *Journal of Economic Literature*, vol. 40, pp. 1167–201.

— and — (2005), 'Identity and the economics of organizations', *Journal of Economic Perspectives*, vol. 19, no. 1, pp. 9–32.

Algan, Y., Dustmann, C., Glitz, A. and Manning, A. (2010), 'The economic situation of first and second-generation immigrants in France, Germany and the United Kingdom', *Economic Journal*, vol. 120, no. 542, pp. F4–F30.

Angelucci, M., De Giorgi, G., Rangel, M. A. and Rasul, I. (2010), 'Family networks and school enrolment: Evidence from a randomized social experiment', *Journal of Public Economics*, vol. 94, pp. 197–221.

Austen-Smith, D. and Fryer, R. G. (2005), 'An economic analysis of 'acting white'', *Quarterly Journal of Economics*, vol. 120, pp. 551–83.

Battu, H., Mwale, M. and Zenou, Y. (2007), 'Oppositional identities and the labor market', *Journal of Population Economics*, vol. 20, pp. 643–67.

— and Zenou, Y. (2010), 'Oppositional identities and employment for ethnic minorities: evidence from England', *Economic Journal*, vol. 120, no. 542, pp. F52–F71.

Bécares, L., Nazroo, J. and Kelly, Y. (2015), 'A longitudinal examination of maternal, family, and area-level experiences of racism on children's socioemotional development: patterns and possible explanations', *Social Science & Medicine*, vol. 142, pp. 128–35.

Becker, G. S. (1981), *A Treatise on the Family*, Cambridge, MA: Harvard University Press.

— and Tomes, N. (1976), 'Child endowments and the quantity and quality of children', *Journal of Political Economy*, vol. 84, no. 4, Part 2, S143–S162.

Belzil, C. and Poinas, F. (2010), 'Education and early career outcomes of second-generation immigrants in France', *Labour Economics*, vol. 17, pp. 101–10.

Bénabou, R. and Tirole, J. (2011), 'Identity, morals, and taboos: beliefs as assets', *Quarterly Journal of Economics*, vol. 126, pp. 805–55.

Benjamin, D. J., Choi, J. J. and Fisher, G. (2016), 'Religious identity and economic behavior', *Review of Economics and Statistics*, vol. 98, pp. 617–37.

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Bernhard, H., Fehr, E. and Fischbacher, U. (2006), 'Group affiliation and altruistic norm enforcement', *American Economic Review*, vol. 96, no. 2, pp. 217–21.
Berry, J. W. (1974), 'Psychological aspects of cultural pluralism: unity and identity reconsidered', *Topics in Culture Learning*, vol. 2, pp. 17–22.
— (1997), 'Immigration, acculturation, and adaptation', *Applied Psychology: An International Review*, vol. 46, pp. 5–34.
Bettinger, E., Hægeland, T. and Rege, M. (2014), 'Home with mom: the effects of stay-at-home parents on children's long-run educational outcomes', *Journal of Labor Economics*, vol. 32, pp. 443–67.
Bisin, A., Patacchini, E., Verdier, T. and Zenou, Y. (2011a), 'Ethnic identity and labour market outcomes of immigrants in Europe', *Economic Policy*, vol. 26, no. 65, pp. 57–92.
—, —, — and — (2011b), 'Formation and persistence of oppositional identities', *European Economic Review*, vol. 55, pp. 1046–71.
—, —, — and — (2016), 'Bend it like Beckham: ethnic identity and integration', *European Economic Review*, vol. 90, pp. 146–64.
Black, S. E., Devereux, P. J. and Salvanes, K. G. (2005), 'The more the merrier? The effect of family size and birth order on children's education', *Quarterly Journal of Economics*, vol. 120, pp. 669–700.
Bleakley, H. and Chin, A. (2008), 'What holds back the second generation? The intergenerational transmission of language human capital among immigrants', *Journal of Human Resources*, vol. 43, pp. 267–98.
Bradley, R. H. and Corwyn, R. F. (2002), 'Socioeconomic status and child development', *Annual Review of Psychology*, vol. 53, pp. 371–99.
—, —, McAdoo, H. P. and García Coll, C. (2001), 'The home environments of children in the United States I: variations by age, ethnicity, and poverty status', *Child Development*, vol. 72, pp. 1844–67.
Brooks-Gunn, J., Klebanov, P. K. and Duncan, G. J. (1996), 'Ethnic differences in children's intelligence test scores: role of economic deprivation, home environment, and maternal characteristics', *Child Development*, vol. 67, pp. 396–408.
Burchinal, M. R., Follmer, A. and Bryant, D. M. (1996), 'The relations of maternal social support and family structure with maternal responsiveness and child outcomes among African American families', *Developmental Psychology*, vol. 32, pp. 1073–83.
Burton, J., Nandi, A. and Platt, L. (2010), 'Measuring ethnicity: challenges and opportunities for survey research', *Ethnic and Racial Studies*, vol. 33, pp. 1332–49.
Campbell, S. (2019), 'National identity among economic and non-economic immigrants', *Review of Economics of the Household*, vol. 17, pp. 411–38.
Carneiro, P., Heckman, J. J. and Masterov, D. V. (2005), 'Labor market discrimination and racial differences in premarket factors', *Journal of Law and Economics*, vol. 48, pp. 1–39.
Casey, T. and Dustmann, C. (2008), 'Intergenerational transmission of language capital and economic outcomes', *Journal of Human Resources*, vol. 43, pp. 660–87.
— and — (2010), 'Immigrants' identity, economic outcomes and the transmission of identity across generations', *Economic Journal*, vol. 120, no. 542, pp. F31–F51.
Chen, Y. and Li, S. X. (2009), 'Group identity and social preferences', *American Economic Review*, vol. 99, no. 1, pp. 431–57.
Chiang, C-F., Liu, J-T. and Wen, T-W. (2019), 'National identity under economic integration', *Journal of Population Economics*, vol. 32, pp. 351–67.
Chiswick, C. U. (2009), 'The economic determinants of ethnic assimilation', *Journal of Population Economics*, vol. 22, pp. 859–80.
Cobb-Clark, D. A. and Nguyen, T.-H. (2012), 'Educational attainment across generations: the role of immigration background', *Economic Record*, vol. 88, no. 283, pp. 554–75.

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Colding, B. (2006), 'A dynamic analysis of educational progression of children of immigrants', *Labour Economics*, vol. 13, pp. 479–92.
Connelly, R. (2013), *Millennium Cohort Study Data Note: Interpreting Test Scores*, Centre for Longitudinal Studies.
Constant, A. F., Gataullina, L. and Zimmermann, K. F. (2006), Gender, ethnic identity and work, Institute of Labor Economics (IZA), Discussion Paper no. 2420.
—, — and — (2009), 'Ethnosizing immigrants', *Journal of Economic Behavior & Organization*, vol. 69, pp. 274–87.
—, Roberts, R. and — (2009), 'Ethnic identity and immigrant homeownership', *Urban Studies*, vol. 46, pp. 1879–98.
— and Zimmermann, K. F. (2008), 'Measuring ethnic identity and its impact on economic behavior', *Journal of the European Economic Association*, vol. 6, no. 2–3, pp. 424–33.
— and — (2009), 'Work and money: payoffs by ethnic identity and gender', in A. F. Constant, K. Tatsiramos and K. F. Zimmermann, eds, *Ethnicity and Labor Market Outcomes*, Bingley: Emerald Group Publishing, pp. 3–30.
Conti, G. and Heckman, J. J. (2014), 'Economics of child well-being', in A. Ben-Arieh, F. Casas, I. Frønes and J. E. Korbin, eds, *Handbook of Child Well-Being: Theories, Methods and Policies in Global Perspective*, Berlin: Springer, pp. 363–401.
Costa i Font, J. and Cowell, F. (2015), 'Social identity and redistributive preferences: A survey', *Journal of Economic Surveys*, vol. 29, pp. 357–74.
Cunha, F., Heckman, J. J. and Lochner, L. (2006), 'Interpreting the evidence on life cycle skill formation', in E. Hanushek and F. Welch, eds, *Handbook of the Economics of Education*, vol. 1, Amsterdam: Elsevier, chapter 12, pp. 697–812.
de La Rochebrochard, E. and Joshi, H. (2013), 'Siblings and child development', *Longitudinal and Life Course Studies* vol. 4, pp. 276–87.
Depetris-Chauvin, E., Durante, R. and Campante, F. R. (2020), 'Building nations through shared experiences: evidence from African football', *American Economic Review*, vol. 110, no. 5, pp. 1572–1602.
Dickerson, A. and Popli, G. K. (2016), 'Persistent poverty and children's cognitive development: Evidence from the UK Millennium Cohort Study', *Journal of the Royal Statistical Society: Series A (Statistics in Society)*, vol. 179, pp. 535–58.
Djajić, S. (2003), 'Assimilation of immigrants: implications for human capital accumulation of the second generation', *Journal of Population Economics*, vol. 16, pp. 831–45.
Drydakis, N. (2013), 'The effect of ethnic identity on the employment of immigrants', *Review of Economics of the Household*, vol. 11, pp. 285–308.
Dunifon, R. and Kowaleski-Jones, L. (2002), 'Who's in the house? Race differences in cohabitation, single parenthood, and child development', *Child Development*, vol. 73, pp. 1249–64.
Dustmann, C. (1996), 'The social assimilation of immigrants', *Journal of Population Economics*, vol. 9, pp. 37–54.
Ford, K. R., Hurd, N. M., Jagers, R. J. and Sellers, R. M. (2013), 'Caregiver experiences of discrimination and African American adolescents' psychological health over time', *Child Development*, vol. 84, pp. 485–99.
Fryer, R. G. and Torelli, P. (2010), 'An empirical analysis of 'acting white'', *Journal of Public Economics*, vol. 94, pp. 380–96.
Georgiadis, A. and Manning, A. (2013), 'One nation under a groove? Understanding national identity', *Journal of Economic Behavior & Organization*, vol. 93, pp. 166–85.
Green, B. L., Furrer, C. and McAllister, C. (2007), 'How do relationships support parenting? Effects of attachment style and social support on parenting behavior in an at-risk population', *American Journal of Community Psychology*, vol. 40, pp. 96–108.

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Haller, W., Portes, A. and Lynch, S. M. (2011), 'Dreams fulfilled, dreams shattered: determinants of segmented assimilation in the second generation', *Social Forces*, vol. 89, pp. 733–62.
Hawkes, D. and Joshi, H. (2012), 'Age at motherhood and child development: evidence from the UK Millennium Cohort', *National Institute Economic Review*, vol. 222, pp. R52–R66.
Hernández-Alava, M. and Popli, G. (2017), 'Children's development and parental input: evidence from the UK Millennium Cohort Study', *Demography*, vol. 54, pp. 485–511.
Hofferth, S. L. (2009), 'Changes in American children's time–1997 to 2003', *Electronic International Journal of Time Use Research*, vol. 6, pp. 26–47.
Islam, A. and Raschky, P. A. (2015), 'Genetic distance, immigrants' identity, and labor market outcomes', *Journal of Population Economics*, vol. 28, pp. 845–68.
Jirout, J. J. and Newcombe, N. S. (2015), 'Building blocks for developing spatial skills', *Psychological Science*, vol. 26, pp. 302–10.
Jurajda, Š. and Kovač, D. (2020), 'Names and behavior in a war', *Journal of Population Economics*, forthcoming.
Knudsen, E. I., Heckman, J. J., Cameron, J. L. and Shonkoff, J. P. (2006), 'Economic, neurobiological, and behavioral perspectives on building America's future workforce', *Proceedings of the National Academy of Sciences*, vol. 103, no. 27, pp. 10155–62.
Kranton, R. E. (2016), 'Identity economics 2016: where do social distinctions and norms come from?', *American Economic Review: Papers and Proceedings*, vol. 106, no. 5, pp. 405–09.
Manning, A. and Roy, S. (2010), 'Culture clash or culture club? National identity in Britain', *Economic Journal*, vol. 120, no. 542, pp. F72–F100.
Masella, P. (2013), 'National identity and ethnic diversity', *Journal of Population Economics*, vol. 26, pp. 437–54.
Mason, P. L. (2004), 'Annual income, hourly wages, and identity among Mexican-Americans and other Latinos', *Industrial Relations: A Journal of Economy and Society*, vol. 43, pp. 817–34.
Mensah, F. K. and Kiernan, K. E. (2010), 'Gender differences in educational attainment: influences of the family environment', *British Educational Research Journal*, vol. 36, pp. 239–60.
Merton, R. K. and Merton, R. K. (1968), *Social Theory and Social Structure*, New York: Simon and Schuster.
Miller-Cotto, D. and Byrnes, J. P. (2016), 'Ethnic/racial identity and academic achievement: a meta-analytic review', *Developmental Review*, vol. 41, pp. 51–70.
Musu-Gillette, L., de Brey, C., McFarland, J., Hussar, W., Sonnenberg, W. and Wilkinson-Flicker, S. (2017), *Status and Trends in the Education of Racial and Ethnic Groups 2017*, US Department of Education, National Centre for Education Statistics.
Nandi, A. and Platt, L. (2012), 'Developing ethnic identity questions for understanding society', *Longitudinal and Life Course Studies*, vol. 3, pp. 80–100.
Nekby, L. and Rödin, M. (2010), 'Acculturation identity and employment among second and middle generation immigrants', *Journal of Economic Psychology*, vol. 31, pp. 35–50.
—, — and Özcan, G. (2009), 'Acculturation identity and higher education: is there a trade-off between ethnic identity and education?', *International Migration Review*, vol. 43, 938–73.
Nielsen, H. S., Rosholm, M., Smith, N. and Husted, L. (2003), 'The school-to-work transition of 2nd generation immigrants in Denmark', *Journal of Population Economics*, vol. 16, pp. 755–86.
Pendakur, K. and Pendakur, R. (2005), *Ethnic Identity and the Labour Market*, Burnaby, BC: Vancouver Centre of Excellence.

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Phinney, J. S. (1992), 'The multigroup ethnic identity measure: a new scale for use with diverse groups', *Journal of Adolescent Research*, vol. 7, pp. 156–76.
—, Horenczyk, G., Liebkind, K. and Vedder, P. (2001), 'Ethnic identity, immigration, and well-being: an interactional perspective', *Journal of Social Issues*, vol. 57, pp. 493–510.
— and Ong, A. D. (2007), 'Conceptualization and measurement of ethnic identity: current status and future directions', *Journal of Counseling Psychology*, vol. 54, p. 271.
Ruhm, C. J. (2004), 'Parental employment and child cognitive development', *Journal of Human Resources*, vol. 39, pp. 155–92.
Rumbaut, R. G. (1994), 'The crucible within: ethnic identity, self-esteem, and segmented assimilation among children of immigrants', *International Migration Review*, vol. 28, pp. 748–94.
Schnepf, S. V. (2007), 'Immigrants' educational disadvantage: an examination across ten countries and three surveys', *Journal of Population Economics*, vol. 20, pp. 527–45.
Schüller, S. (2015), 'Parental ethnic identity and educational attainment of second-generation immigrants', *Journal of Population Economics*, vol. 28, pp. 965–1004.
Serrano-Villar, M., Huang, K-Y. and Calzada, E. J. (2017), 'Social support, parenting, and social emotional development in young Mexican and Dominican American children', *Child Psychiatry & Human Development*, vol. 48, pp. 597–609.
Stepick, A. and Dutton Stepick, C. (2010), 'The complexities and confusions of segmented assimilation', *Ethnic and Racial Studies*, vol. 33, pp. 1149–67.
Tajfel, H. and Turner, J. C. (1979), 'An integrative theory of intergroup conflict', in W. Austin and S. Worchel, eds, *The Social Psychology of Intergroup Relations*, Belmont, CA: Brooks Cole Publishing, chapter 3, pp. 33–47.
Todd, P. E. and Wolpin, K. I. (2007), 'The production of cognitive achievement in children: home, school, and racial test score gaps', *Journal of Human Capital*, vol. 1, pp. 91–136.
Uberoi, V. and McLean, I. (2007), 'Britishness: A role for the state?', *Political Quarterly*, vol. 78, no. s1, pp. 41–53.
Uttal, D. H. and Cohen, C. A. (2012), 'Spatial thinking and STEM education: when, why and how?', in B. H. Ross, ed., *Psychology of Learning and Motivation*, vol. 57, New York: Academic Press, chapter 4, pp. 147–81.
Van Ours, J. C. and Veenman, J. (2003), 'The educational attainment of second-generation immigrants in the Netherlands', *Journal of Population Economics*, vol. 16, pp. 739–53.
Wai, J., Lubinski, D. and Benbow, C. P. (2009), 'Spatial ability for STEM domains: aligning over 50 years of cumulative psychological knowledge solidifies its importance', *Journal of Educational Psychology*, vol. 101, pp. 817–35.
Wetherell, M. (1996), 'Group conflict and the social psychology of racism', in M. Wetherell, ed., *Identities, Groups, and Social Issues*, vol. 1, New York: SAGE, chapter 4, pp. 175–238.
Wilson, D., Burgess, S. and Briggs, A. (2011), 'The dynamics of school attainment of England's ethnic minorities', *Journal of Population Economics*, vol. 24, pp. 681–700.
Zimmermann, L., Gataullina, L., Constant, A. and Zimmermann, K. F. (2008), 'Human capital and ethnic self-identification of immigrants', *Economics Letters*, vol. 98, pp. 235–39.
—, Zimmermann, K. F. and — (2007), 'Ethnic self-identification of first-generation immigrants', *International Migration Review*, vol. 41, pp. 769–81.

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