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Are UK immigrants selected on education, skills, health and social networks?

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CDP 03/21

- ▶ Are UK immigrants selected on education, skills, health and social networks?
- ▶ Renee Luthra and Lucinda Platt

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Are UK immigrants selected on education, skills, health and social networks?

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Abstract

It is assumed that not only will more highly educated migrants do better in the receiving country labour market, but also that those who are relatively more educated compared to their compatriots, that is who are ‘selected’, will bring additional forms of human and social capital associated with economic success. Given the lack of information on these traits in most datasets, this assumption has not yet been comprehensively tested. Combining information on usually unobserved labour market relevant skills and characteristics with measures of educational selection and labour market outcomes of the foreign born in the UK, we do not find that educational selection is systematically associated with better cognitive or non-cognitive skills, health or social network composition. For more elite migration streams, educational selectivity is *negatively* associated with skills. As a result, higher selection does not translate into better labour market outcomes net of education. We argue that while higher bars to migration may increase the absolute skill level of migrants, it may also exclude those with (usually unobserved) favourable labour market characteristics who lack social and financial capital, reinforcing transnational class reproduction rather than selecting for the brightest and the best.

Keywords: selectivity, immigration, migrant heterogeneity, labour market, employment wages, gender

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Introduction

The relevance of migrant selectivity to the outcomes of both migrants and their children is receiving increasing attention in the sociological literature. While it is broadly assumed that migrants are selected on both observable and unobservable characteristics, we still lack evidence on the extent of observed selection for many countries. Moreover, while claims for migrant selection and its significance for socioeconomic success are widespread, existing work, which finds both positive and more equivocal consequences of migrant educational selection (e.g. Ichou 2014; Engzell 2019), currently only infers the mechanisms driving the findings. Despite important developments in the field, we still lack a comprehensive theorisation of the mechanisms through which educational selection is expected to feed into observed outcomes and comprehensive tests of such mechanisms.

In this paper we therefore investigate the extent to which immigrants in the UK are selected. In line with recent calls in the literature (Feliciano 2020), we explicitly theorise the potential mechanisms linking educational selection, or relative rank position in country of origin, to economic outcomes. We then empirically evaluate the extent to which greater selectivity is associated with theorised mediators linking selection to labour market success, namely better mental and physical health, greater social capital and enhanced cognitive and non-cognitive skills. We do not find the expected positive association between educational selection and these traits and skills; moreover, we find that more elite immigrants display *negative* associations between selection and skills. Correspondingly, we also do not find any positive association between educational selection and labour market outcomes.

We argue that for countries with restrictive migration systems like the UK, the underlying assumption in positive selection hypotheses, namely a positive association between an observed position in a sending country status hierarchy (education) and unobserved characteristics such as cognitive and non-cognitive skills, may not necessarily

hold. Given immigration controls, where high minimal skills (qualifications and salary) thresholds are imposed on immigrants, they will, by definition be highly selected on such measures. However, while barriers to migration may result in more positive selection on characteristics which are readily observable by migration policy, it does not necessarily follow that they will simultaneously encourage positive selection on unobservables such as cognitive or non-cognitive skills. Indeed, those factors which facilitate migrant entry – particularly levels of qualifications to meet threshold requirements for work visas, financial resources or social networks to simplify other forms of migration – may not actually represent an observed return on unobserved characteristics of the individual but rather a reflection of an inherited social position in the sending country.

Given that, we would not necessarily expect selection to work identically across all migration channels. The degree to and direction in which immigrants' position in an observed distribution is correlated with unobserved advantages is expected to be associated with the extent to which migration is itself more or less challenging. If migration is so costly it is out of reach of all but those who have most resources and can best afford the risks we might, instead, expect a *negative* association between selection on observables such as education and unobservables such as risk tolerance and ambition that are associated with labour market success, among those from the most restricted migration streams. In such migration systems, those at the middle and bottom of the *observed* distribution are essentially barred from entry and only the most motivated and risk tolerant will still find a way to migrate. Those at the top of the distribution can, by contrast, use financial and social capital to buy entrance into the receiving country via investor or intra-company transfer routes or as international student visa holders. Conversely, while free movement might facilitate the migration of those with a wide range of characteristics not necessarily valued in the labour market, it may also open up options for those who are relatively selected on unobservables and who require less in the

way of resources or embedded networks to move to maximise their opportunities (Luthra, Platt and Salamónska 2018).

The rest of this paper is organised as follows. First we elaborate more precisely the mechanisms through which migrant educational selection may or may not impact labour market outcomes. Second we provide new evidence on selection among migrants to the UK, demonstrating that they are indeed positively selected on education. Importantly, we show that such selectivity is either not, or only weakly, associated with the characteristics theorised to link educational selection to labour market success. As a result, we can demonstrate not only that selection does not bring positive labour market returns for migrants; we can explain why that is the case. In so doing, we respond to Feliciano's (2020) injunction to researchers to directly link educational selectivity to immigrants' labour market outcomes. In addition, we show that the association between selectivity and the proposed mechanisms is more negative for those who approximate to global elites, and who are subject to high barriers to migration. We reflect on our findings, in light of the global competition for migrant talent and suggest some directions for future research.

2. Background and theory

Selection of Immigrants as a Pathway to Success

Migration imposes costs, financial, physical and psychological. For migration to be a sensible and successful strategy, migrants therefore tend to be selected – to a greater or lesser extent – on demographic and socioeconomic factors that enable them to migrate successfully, and which are, in turn, positively associated with labour market performance. Studies comparing migrants (or those intending to migrate) to non-migrants in their origin countries find that they have higher levels of educational attainment, better social networks and better health than their non-migrant counterparts (Migali and Scipioni 2019; Riosmena, Kuhn and Jochem

2017; Guveli et al. 2015; McKenzie and Rapoport 2010; Hamilton and Huang 2020). Studies of the receiving country labour market usually take into account this differential selection indirectly, by adjusting for different distributions of age, health or education when comparing the outcomes of immigrants of different origins or assessing inequality between immigrants and the native born. However, it is rare that both sources of information are examined together: that is, that the relative position of the immigrant in the *sending country* distribution is used as an additional factor above and beyond the absolute level of the characteristic (e.g. education) expected to determine labour market success.

There is now increasing theoretical recognition that this omission may have consequences for our understanding of the outcomes of immigrants and their descendants. A growing body of work (see Feliciano 2020 for a review) demonstrates how migrants differ from non-migrants on a range of characteristics (Migali and Scipioni 2019; Zuccotti, Ganzeboom and Guveli 2017; Bartram 2013; Impicciatore, Gabrielli and Paterno 2020), usually with the expectation that such selection will matter in terms of success in the receiving country. Chief among these differences is the level of educational qualifications, itself a strong predictor of positive economic outcomes nationally and globally. There is now some evidence that ranking in the educational distribution, or positive educational selectivity can help to account for the paradox of high achievement among some children of immigrants despite their parents' disadvantaged position in receiving societies (Feliciano and Lanuza 2017; van de Werfhorst and Heath 2019; Ichou 2014; though see Engzell 2019). Evidence for immigrants themselves is more equivocal (Feliciano 2020), although recent work from demographers convincingly link selection in both intra- and international mobility to a range of better outcomes for black immigrants and African Americans in the United States (Hamilton 2014), and economists have long used linked origin and destination data to demonstrate the positive selection of immigrants on economically salient characteristics by

inferring them from residuals in wage equations (e.g. Borjas 1987; Borjas, Kauppinen and Poutvaara 2019).

Despite these studies documenting a link between selection and better immigrant outcomes, there is only a very small, and inconclusive evidence base related to the actual mechanisms that are expected to explain this link. Even descriptive evidence on immigrant characteristics such as drive, motivation or class habitus, is thin on the ground, since these are much harder to measure. Those few studies that do exist provide us with little evidence supporting widely held assumptions of positive selection on these characteristics, while the economic literature inferring from residuals presents a similarly mixed picture. For instance, scholars failed to confirm selection of migrants on motivation or self-efficacy (Polavieja, Fernández-Reino and Ramos 2018; Ifatunji 2017). Bartram (2013) did not find an anticipated positive selection of immigrants in the Europe in terms of well-being. Spörlein and Kristen (2019) found that more selected migrants had poorer language proficiency on migration, though it did improve more rapidly over time. The time is ripe therefore for systematically considering the pathways through which educational selection might be expected to affect economic outcomes before testing the extent to which they apply in the specific case under consideration.

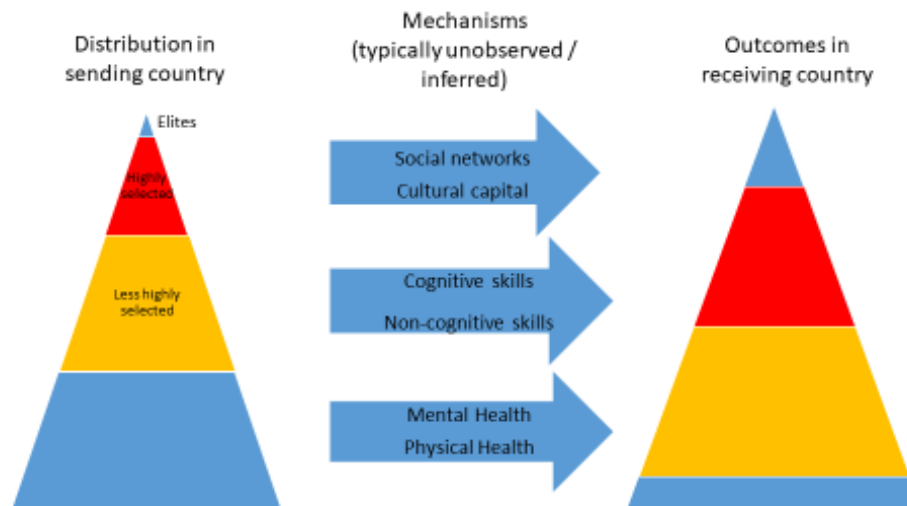
There are three potential mechanisms through which educational selection can provide positive labour market returns for migrants over and above their achieved levels of qualifications (see Figure 1). First, those who are more selected educationally are assumed to have a higher social status in line with their position in the educational hierarchy of their country of origin, and higher than their educational level would imply when they migrate to a country with higher levels of schooling and educational attainment (Feliciano 2020). Such higher social status brings social and cultural capital that act as resources following migration. Migrants would therefore have the aspirations associated with their ‘educational

class', would be able to signal their cultural capital, and would be able to leverage the resources that could be obtained through their social capital. This argument has been made most explicitly – and potentially makes most sense in relation to – the attainment of the second generation. It has been argued that relative educational success of the second generation is consistent with migrant parents who have themselves attained relatively well in the origin country, independent of what they achieved on migration, fostering the educational aspirations, commitment and development of their children (e.g. Feliciano 2020; Ichou 2014; Feliciano and Lanuza 2017). It could plausibly be expected to apply to the first generation as well as they would still bring with them the relative benefits of their social status. If greater selectivity is assumed to represent a higher social position in the country of origin, a positive association between placement at the higher end of the sending country educational distribution and immigrants' and their children's outcomes can be understood simply as social reproduction across international borders (Beaverstock 2012).

However, to the extent that it is not the very top of the educational distribution who are migrating – by definition selection may imply middling absolute levels of qualification – this argument is perhaps less convincing. Engzell (2019) for example, shows that higher selectivity fosters higher educational aspirations among children, but that lower absolute levels of education (and migrant status) render it harder to translate these into educational performance (see also Engzell and Ichou 2019). In addition, a context in which a large share of the population has only primary school education or less, does not necessarily imply that those who stay on in school somewhat longer are of high(er) social status. Being highly selected on the basis of having completed secondary school where it is not common, may imply resilience and determination, but does not necessarily imply high social standing or extensive cultural capital. For example, Guveli et al. (2015) studied 'pioneer migrants' from sending regions of Turkey and found that compared to those in the regions who did not

migrate, they were relatively educationally selected. But this did not bring with it ample resources or social status. Moreover, while they were educationally selected, the jobs they occupied in the country of origin did not reflect their educational level. Comparably, Ambrosini and Peri (2012) showed that migrants were those with lower returns to qualifications at origin. This is concordant with an incentive to migrate and to betterment. However, it does not indicate that they had unobserved characteristics or resources associated with ‘success’. At the same time, as the numbers of those attaining tertiary qualifications expands worldwide (Roser and Ortiz-Ospina 2013), attaining a university degree does not necessarily imply membership of an elite as it might once have done (Luthra and Platt 2016).

Figure 1 Theoretical mechanisms driving the association between educational selection and economic outcomes



Whether or not educationally selected migrants possess greater social class networks and social status, they may still be advantaged in terms of the cognitive and non-cognitive skills that have fostered their higher rank position. This brings us to the second potential mechanism according to which those who are selected on education will also be selected on

cognitive skills and on other unobservable characteristics such as drive, motivation etc. that have helped them reach higher levels of attainment. For the former, we know that cognitive skills promote educational attainment in general, and there is some evidence that immigrants may be further selected in terms of intelligence quotient (IQ) test scores when migrating internally (Bütikofer and Peri 2017). Following the literature, we group the latter together under the term ‘non-cognitive skills’ (Gutman and Schoon 2013). Non-cognitive skills can be conceptualised as personality itself (Brunello and Schlotter 2011), and personality traits such as openness and extraversion have been associated with wage premia, while agreeableness and neuroticism have been associated with penalties in the labour market (e.g. Nandi and Nicoletti 2014). Regardless of how we characterise these ‘non-cognitive skills’, research demonstrates that they predict more variation in labour market performance than qualifications alone (Heckman and Rubenstein 2001; Heckman, Stizrud and Urzua 2006). They are often empirically captured as the residual gain in e.g. wages once taking account of cognitive skills or educational attainment. While the very fact of migrating is often seen to be indicative of greater determination and openness to experience, the argument would be that this will be greater among those who are more educationally selected: partly because the development of such non-cognitive skills is to some extent socially patterned (Heckman and Rubenstein 2001); partly because non-cognitive skills promote educational attainment (Cunha and Heckman 2008), and partly because if migrants have managed to attain a level of education that is distinctively higher than their compatriots then this is likely to imply high levels of determination, or at least staying power.

However, as we noted, the limited evidence currently provides little direct support for the contention that migrants are positively selected in such ways. The measures considered in extant research are, however, limited and may not be capturing the critical drivers of (selected) migrant success. While migrants migrate for ‘a better life’ (Zuccotti et al. 2017),

and tend to be more optimistic (Cebolla-Boada and Soysal 2018), this does not necessarily imply that this endows them with the skills necessary for success (cf. Engzell 2019). At the same time, we might still expect relatively more positive unobservable skills and resources among those for whom migration is more challenging and who are less reliant upon, or who dissociate themselves from, community networks and resources which can smooth migration and arrival (Bolt, Özüekren and Phillips 2010; McKenzie and Rapoport 2010), but which may not support ‘success’.

Finally, we might anticipate that not only are migrants selected in their health (e.g. Hamilton 2015; Riosmena et al. 2017), but that those who are more educationally selected – who have demonstrated the ability to attain a level of education that is higher up the distribution than the majority of their co-nationals – should be more positively selected than those who have not. The relationship between health and educational attainment emerges at a very young age and through this pathway goes on to explain some of the association between health and labour market success (Jackson 2015). Longitudinal studies demonstrate a direct effect between adolescent physical health and schooling but also show mediation through psychosocial and mental health (Haas and Fosse 2008), meaning that we would expect a positive association between educational selection and both mental and physical health. Ichou and Wallace (2019) have demonstrated for France that educational selectivity and health selection are indeed associated. On the other hand, research into the immigrant health paradox shows that health gains decline over time – a phenomenon in part related to *negative* labour market experiences, as well as other stressors (Luthra, Nandi and Benzeval 2020).

In sum, while the majority of the empirical literature assumes that observed selection and receiving country outcomes falls along one or more of these causal pathways, there is currently no work which empirically evaluates them all. In this paper, we draw on the range of measures uniquely available in our data to examine whether there is a link between

educational selection and indicators of the causal pathways outlined above, specifically measures of: a) social networks; b) cognitive skills, c) personality, and d) health. We test whether the evidence supports the following hypotheses:

H1a: Educational selection is positively associated with more diverse and higher class social networks;

H1b: Educational selection is positively associated with cognitive ability;

H1c: Educational selection is positively associated with non-cognitive traits associated with wage premia such as extraversion and openness, and negatively associated with those associated with wage penalties such as agreeableness and neuroticism;

H1d: Educational selection is positively associated with mental and physical health.

Beyond these direct measures, we also allow for heterogeneity. This allows us to gain greater purchase on the nature of the mechanisms that are theoretically expected to link educational selection to labour market success. Theoretically, there are good arguments why associations between educational selection and these four mechanisms might differ by parental class background, educational attainment and policy regime. Neglecting such heterogeneity empirically might therefore disguise underlying relationships and account for the mixed findings observed to date.

Heterogeneity in the selection -mechanisms link

The extent to which educational selectivity delivers labour market returns via these pathways depends in part on our understanding of how the individual's position in the distribution has been attained. The current literature assumes that those who are more selected come from more advantaged family backgrounds (Feliciano 2020). Thus there is an assumed congruence between position in country of origin, relative educational attainment and expectations of labour market success for oneself and one's children (Ichou 2014; Engzell 2019). If this is the

case, then social and cultural capital (and non-cognitive skills) that are associated with more advantaged social backgrounds, might indeed be correlated with educational selection. Given the known associations between social position and health, we would also expect those from advantaged social backgrounds to enjoy better health. In such a case, we would expect to see a relationship between educational selection and these mediators primarily for those with more advantaged parents, since that would represent a continuity in transnational class position (Beaverstock 2012).

On the other hand, for those from a less advantaged social position, relatively high rank position in educational attainment may have been reached ‘against the odds’ and thus be indicative of exceptional individual abilities. For example, migrants who are more educationally selected may have completed secondary school *despite* coming from a poor family, rather than *because* they came from a relatively advantaged one. Drawing on the literature of primary and secondary effects of social class on educational attainment (Jackson et al 2007), we would expect these migrants to be particularly favoured in terms of cognitive and non-cognitive skills that facilitated their attainment and that would also benefit them in the migration process (and possibly in the migration decision as well), in the absence of family resources. That is, the perseverance to continue relatively longer in education from a disadvantaged family background may imply both cognitive ability and higher levels of motivation, determination and longer time horizons. The traits that took those from lower status family backgrounds both up the educational ladder and to a new country should then also serve them in the destination country labour market, even if they have fewer social and cultural resources. We might therefore expect any positive association between selection and cognitive and non-cognitive skills to be more in evidence for those from less advantaged origins.

H2a: the relationship between selection and social networks / cultural capital and health is greater for those from more advantaged backgrounds;

H2b: the relationship between selection and cognitive and non-cognitive skills is greater for those with less advantaged backgrounds.

This argument raises the important, but hard to answer question of who actually migrates and who stays put, and the potential role of family background in this calculus, and the implications for patterns of selection. Clearly, even if migrants are *on average* educationally selected, among those within each segment of the educational distribution, there will be those who do and those who do not migrate. As education expands, those who come from more advantaged family backgrounds will increasingly gain higher levels of education, through processes of maximally maintained inequality Raftery and Hout 1993.

This will serve them more or less well in the labour market, depending on how far structures of rewards track qualifications, as well as the extent to which they are attaining relative to others in their social class group. On migration, as well as challenges translating their educational credentials into equivalents, they may reap less benefit from nationally-bounded networks and resources deriving from their social standing in the country of origin.

Motivation to migrate therefore will depend on migration offering compensatory returns.

While those who are truly at the very top of the educational distribution are likely to find their way to valuable rewards, and those who are in elite positions will be able to merge into the global elite (Anand and Segal 2017; Luthra and Platt 2016), others may gain better compensation for their skills and family background in the country of origin, particularly if they want to retain that social status (Breen and Goldthorpe 1997; Ambrosini and Peri 2012).

It has typically been argued that the ability to translate skills into higher returns is exactly what migration offers, and it is this assumption that underpins analyses of wage returns of movers and stayers (e.g. Borjas et al. 2019). However, such returns are

theoretically and empirically identified for highly qualified migrants moving to high-inequality high earning contexts (Borjas 1987, Parey et al. 2017). The attractiveness of more flexible, higher inequality destinations for skilled migrants is thus well attested in the literature, but it is less clear how such motivations apply to those in privileged positions in already unequal countries. Rosso (2019) for instance suggests that non-cognitive skills – as represented by residuals – are negatively associated with migration propensity among those with high levels of qualifications from more unequal countries. An alternative argument is that it is those who, albeit having benefited from educational expansion, are less high-attaining than their social class peers, who may see benefits to migration to amplify their resource portfolio (Luthra and Platt 2016). It remains an outstanding question, therefore, whether selection is more or less associated with positive characteristics for those with tertiary qualifications compared to those with lower levels of absolute education.

H3a: Selection is more positively associated with characteristics that lead to labour market success among those with a tertiary education, as they will be motivated to migrate for better returns to them;

H3b: Selection is less positively associated with the characteristics that lead to labour market success among those with a tertiary education, as those who are in a stronger position will be able to obtain returns without migration.

A specific case of H3b arises in the case of migration for education itself. Educational outcomes that are the basis of evaluating selection are usually assumed to be prior to the migration decision. Yet increasingly those with the resources to do so are migrating *for* study. While many return after study, a substantial share remain. Such international students are also likely to combine those who migrate as ‘elites’ with a more heterogeneous category evaluating the benefits of education abroad as compared to that at home (Luthra and Platt 2016). The expansion of supply of and demand for education in countries such as the UK will

thus shape the extent to which migrants are observed to be educationally selected. However, since educational selection is based on assumptions about the distribution in the country of origin, post-migration educational attainment complicates the definition of selection; and it may also be associated with rather different relationships to labour market returns.

The levels of resources to facilitate student migration will also be more easily forthcoming across those in more advantaged social class positions, and require less explicit motivation. At the same time, aversion to status loss may motivate those with the relevant resources to use them to capitalise on opportunities in the destination country setting. This again implies that we need to consider the class background of immigrants to evaluate selection mechanisms, something which has not formed part of the existing body of literature. The arguments above imply that it is important to consider those with tertiary education separately as it is these who are most likely to have developed the social and cultural capital necessary to elite social status. Since tertiary education may form part of the migration aims and process itself, it is also plausible that we need to estimate how selection operates for those who migrated for study specifically. Again, while the relationship between study as a reason for migration and labour market success has been acknowledged in the literature (Luthra and Platt 2016, 2017; Zwysen 2019) it has not been empirically assessed in relation to selection.

H3c: Selection is less positively associated with the traits that lead to labour market success among those with a UK credential, as their educational position follows migration and is not directly linked to economic migration motives.

Migration Regime

Finally, we consider potential heterogeneity by migration regime. Like most western European countries, the UK has seen major shifts in migration policies, comprising a turn

away from post-colonial and labour migration in the 1970s, a period of family reunification and humanitarian migration in the 1980s and 1990s, followed by more explicit selection on skills and potential earning capacity in the 2000s. Increasingly stringent controls on immigration from outside the EU¹ ('third country nationals' or TCN) coincided with the extension of free movement to new EU members from the early 2000s. As a result, more recent immigrant TCNs tend to show higher levels of qualifications, with rates of tertiary educated among migrants to the UK now outstripping the rates among the UK-born (Dustmann and Frattini 2011). Those immigrants who enjoy free movement, namely EU and Irish immigrants to the UK, also have higher skill levels on average than the British born (ONS, 2011), even if not as high as those from TCNs.

Although both more recent TCNs and free movement immigrants currently have higher levels of absolute education than earlier migration streams and native British, it is not known to what degree they are positively *selected*. On the one hand, for EU, Irish, and earlier cohorts from commonwealth countries who enjoyed relatively unrestricted access to the UK, we may not observe the same positive educational selection currently observed in other immigrant receiving countries that do not experience free movement. On the other hand, for TCNs, the cost of travel to the UK and the risk of initial settlement, especially given the much higher relative cost of living compared to most of the world, is likely to be a major barrier to movement. Moreover, in recent decades, the UK – much like the rest of the EU – has implemented much more stringent rules for migration for third country nationals, including those moving for family reunification. The UK currently maintains an overarching policy targeted to high skilled workers and students, restricting access to family reunification and asylum seekers, and essentially closing the borders to TCNs for those with less than a tertiary degree without family ties in Britain. At the same time visa fees and the bureaucratic

¹ Or technically the European Economic Area (EEA) and Switzerland.

costs of migration have skyrocketed (Burnett and Chebe 2020). These substantial costs to migration should increase the observed selection of immigrants, as only those third country migrants with higher skills and financial resources – as well as potentially expected higher returns – can migrate to the UK.

Above and beyond the actual degree of observed selection, however, is the possibility of differences in terms of the association of this selection with the characteristics that are expected to confer labour market success. As noted, a key assumption to the positive selection hypotheses is that placement at the top of the educational distribution is associated with *both* individual merit *and* favourable class habitus. Hypotheses 2 and 3 already suggest the possibility of heterogeneity across these two dimensions. We suggest here that migration regime may present a further source of heterogeneity in the link between educational selection and skills and habitus. Due to high financial costs of migration and stringent migration restrictions, as is the case for TCNs in the UK, family resources likely become a determining factor for securing a work or student visa. Those who climbed the educational ladder but lack the resources necessary to fund a risky international move are likely to be underrepresented among immigrants to the UK. For immigrants who enjoy free movement, where the costs of migration are very low, this is less likely to be the case.

H4a: The association between educational selection and cognitive and non-cognitive skills is stronger where immigrants experience free movement

H4b: The association between educational selection and class habitus (social networks) and health is stronger where immigrants do not experience free movement.

Data and measures

Data

We use two datasets for this paper. The first, *Understanding Society*: the UK Household Longitudinal Study (University of Essex 2019a, b) is a large, nationally representative panel study of the UK that started in 2009/10, with annual follow up of all study members. Adults (age 16+) are interviewed each year along with all new household members, and those who have become 16 in since the last interview. The study comprises a general population sample, supplemented by an ethnic minority boost (Lynn 2009; Berthoud et al. 2009). As a result, the study provides excellent coverage of the wide range of sending countries, arrival cohorts, and migration regimes in the UK. These country-cohorts differ in their absolute levels of qualifications and in degree of educational selection, offering the heterogeneity necessary to evaluate educational selection and its consequences, as well as variation in the selection-mechanism links. With a large sample size of adult immigrants, a general core questionnaire combined with rotating and specific ethnicity- and immigrant-related content, the study provides a particularly good resource for analysis of ethnicity and immigration (Platt et al. 2020). It is the only dataset we are aware of that includes rich migration-specific information with measures of cognitive and non-cognitive skills, social networks and health status for a large sample of immigrants from an extremely diverse range of origins.

This paper uses data from the third wave of *Understanding Society* (2011/12); this is the only wave which contains measures of all of the mechanisms we hypothesize link educational selection and labour market outcomes. The sample is restricted to adults age 25-65 who immigrated to the UK at the age of at least 18. This includes those who arrived from 1967-2010. We further exclude those in full-time education. Within this sample, rates of missingness across our variables range from 5% to 13%, with the exception of the personality measures, which were captured using a self-completion module that achieved a 9 percentage point lower response than the main interview (Scott and Jessop 2013), and are missing for 28% of our analytic sample. We therefore created 20 imputed datasets using multiple

imputation with chained equations (White, Royston and Wood 2011), separately for men and women. Our complete analytical sample size is 2,734 deriving from 107 origin countries.

Since *Understanding Society* is a complex stratified survey, to adjust for differential probabilities of selection and the clustered sampling design, we include design weights and account for sampling strata at both the imputation and estimation stages of our analysis.

Weighted regression models designed for use with multiple imputed data are used in all analysis employing the [MI] mi suite in Stata 15. The second dataset is the current version of the Barro-Lee (2013) dataset, which provides international data on educational attainment distributions from 1950 to 2010 in 146 countries. Compiling data from UNESCO, Eurostat, and censuses and population surveys from around the world, the Barro-Lee dataset contains the distribution of educational attainment in the adult population by gender and five-year age group in six categories (no formal education, incomplete primary, complete primary, lower secondary, upper secondary, and tertiary education). We use distributions from the 2010 observation year to match the year educational qualifications were initially collected for our *Understanding Society* sample.

Measures

Educational selection

Educational selection is measured following the procedure described in Ichou (2014). As a first step, we use information collected in waves 1 and 3 of *Understanding Society* regarding certification and school leaving age to code immigrants' educational attainment into seven categories:

- a) Complete tertiary: those with a University degree (BA, BSc or equivalent) or higher degree (MA, MSc, PhD, MA)

- b) Incomplete tertiary: professional qualifications obtained after 18 that include higher level vocational training, a nursing or teaching qualification that implies post-secondary training that is not University. For those with ‘other qualifications’ we also include in this category respondents who left school aged between 19 and 50, as well as those who are at least 18 and are still in higher or further education.
- c) Completed secondary: those with secondary qualifications obtained at the age of 15 or older, including A-levels, GCSEs, O-levels, and vocational certifications such as ONC/OND and BTEC. For those with ‘other qualifications’ we also include in this category respondents who left school between 15 and 18.
- d) Incomplete secondary: those who remained in school until at least age 12, have other forms of qualification (including key skills and entry level skills), and are not otherwise accounted for.
- e) Complete primary: those who report being in school to age 10, as well as those who report leaving school between 10 and 14 and are missing information on or have no qualifications.
- f) Incomplete primary: those who left education before age 10 but at least the age of 7 and report no qualifications
- g) No formal schooling: those who report never going to school in a separate question, or who report an age below 7 as their school leaving age.

These categories match the educational categories contained in the Barro-Lee dataset. In our second step, we match each immigrant in *Understanding Society* with the distribution of educational attainment of individuals of the same sex, country of birth, and five-year age group. We then compute the percentage of people of the same country of origin, sex, and age group who have a lower level of educational attainment, plus half the percentage of people with the same level of education. This measure potentially runs from 0-100 and can be

interpreted as immigrant's position in the sending country educational distribution, with higher scores being more positively selected.

Selection mechanisms

Since the primary goal of this paper is to understand the potential mechanisms through which educational selection may go on to influence immigrant labour market outcomes, we have identified multiple indicators of the mechanisms in Figure 1: social class and cultural capital, cognitive and non-cognitive skills, and mental and physical health.

Social Class and cultural capital

Social class background of the immigrant is directly measured as the educational attainment of the immigrant's highest- educated parent. We include categories for whether the highest educated parent a) did not attend school, b) left school with no qualifications, c) left with some qualifications, d) left with some post-secondary school credentials, or e) had a university degree or more. We include this as a direct measure of the background privilege of the migrant, as well as a moderator in the relationship between educational selectivity and the other mediators. As we describe further below, this moderation analysis allows us to consider whether the effect of educational selectivity varies depending on whether it represents a reproduction of privilege (i.e. applies only to those with higher social class origin) or unexpected achievement (in which case we would expect it to have a closer association with non-cognitive skills among those with lower social class origins).

We also include various measures of social network composition collected in wave 3. These are based on question which asked about the compositional characteristics of friends, with four response categories: all, more than half, about half, less than half. These characteristics included the share of friends that: are of the same race or ethnicity, have a job,

live in the local area, are family members. We dichotomise the variable to distinguish between all or more than half having the characteristic (coded 1) compared to about half or less than half (0). Those who report 'don't know' or spontaneously responded to the first question with 'I have no friends' (2% of sample) are coded 0. We interpret those who have more friends in a job, to have stronger social networks and thus to be an indicator of positive selection. Having more friends of the same ethnicity, who are family members and from the same area are indicative of more embedded social ties that are expected to be negatively associated with selection and the bridging ties that help secure labour market opportunities.

Cognitive and Non-Cognitive Skills

Cognitive Skills

We use two cognitive skills measures gathered from all adult respondents during the main stage wave 3 interview (McFall 2013). Both of these measures were chosen based on previous studies which demonstrate that these short tests are sufficiently correlated with more comprehensive and established tests of cognitive ability (Lang et al. 2007). The first measure is a test of semantic and category verbal fluency. Respondents were asked to list as many animals as they could in a period of 60 seconds starting from the first animal. This variable counts how many correct answers, i.e. genuine, non-duplicate animals, the respondent listed, with a range from 0 to 41. The second measure tests practical, numerical problem solving. Respondents were presented with three initial problems to solve. If not all three initial problems were solved correctly, they would get one further problem, which would be the end of the task. If respondents solved the initial three problems correctly, they were also presented with a fourth problem; but respondents who got all four problems correct were presented with a further problem. This measure is a simple count of the number of problems a respondent solved correctly ranging from 0-5.

Non-cognitive skills

As discussed, the generic term of non-cognitive skills contains a range of personality characteristics understood to be associated with favourable labour market outcomes net of realised educational attainment (Heckman and Rubenstein 2001; Gutmann and Schoon 2013). While *Understanding Society* does not contain inventories of e.g. grit or self-efficacy, it does collect the short form of the Big 5 Personality inventory. This short-form suite of questions measures conscientiousness, agreeableness, openness to experience, neuroticism, and extraversion, with a set of 3 questions for each trait, with responses on a scale from 1-7. Responses are reverse-coded as applicable and then summed and averaged across the three items. Values for each trait thus range from 1-7. Conscientiousness, openness to experience, and extraversion have been consistently shown to be positively associated with labour market outcomes; in contrast, neuroticism and agreeableness are negatively associated (Nandi and Nicoletti 2014). These personality traits can be conceived as skills or behaviours which can be taught (Carneiro, Crawford and Goodman 2007). We therefore examine the association between educational selection and each personality trait to determine whether these non-cognitive traits are associated with selection in the expected direction.

Mental and Physical Health

We measured mental health by the 12-item General Health Questionnaire (GHQ) module (Goldberg 1978). This is a measure of psychological distress incorporating both anxiety and depression. The Likert-type responses are recoded so that higher scores indicate more stress and anxiety, and then summed, with a maximum score of 36. We included this as a continuous variable to capture the full breadth of mental health experiences in the population.

Since its introduction in 1978, the GHQ has been widely tested for validity and reliability (Jackson 2007), including for inter-ethnic comparisons (Bowe 2017).

We measure physical health with the general self-rated health question ‘In general, would you say your health is... excellent, very good, good, fair or poor?’, a well validated and widely used measure with a strong correlation with mortality, even in models with socioeconomic controls (DelSalvo et al. 2006).

Moderators of the educational selection-mechanism link

As outlined above, we anticipate that any association between educational selection and the respective mechanisms may vary according to specific respondent characteristics, namely, social origins, tertiary qualifications and whether or not UK-educated, and migration regime.

We measure social origins by dichotomizing our measure of parental education (see social class and cultural capital above), defining an elite background as one where the highest educated parent had a tertiary degree. The respondent’s own level of education is also distinguished as tertiary qualified (1) if the respondent has a university degree or equivalent, or not (0). An additional dummy indicates if the qualification was obtained in the UK.

Migration regime is coded 1 if the immigrant migrated under free movement, that is, if they were from one of the original EU15 countries and migrated after 1992, or from one of the A8 EU expansion countries and migrated after 2004, or are from the Republic of Ireland.

Labour market variables

We first establish the extent to which the mechanisms posited above are associated with educational selection and, in some cases, moderate the relationship between selection and posited mechanisms. In order to establish whether these mechanisms do indeed reflect the link between educational selection and economic outcomes, in our final analysis we test

whether the relationship between educational selection and labour market outcomes is consistent with our findings for the mechanisms. We use three measures of labour market outcomes:

Employed: a dichotomous variable of whether the individual was in work the previous week, as opposed to being out of the labour market or unemployed.

Logged Monthly Earnings: this measure is restricted only to those with positive monthly earnings, logged to better approximate a normal distribution.

Professional / managerial occupation: this measure is restricted only to those who have ever had a job. We construct a dichotomous variable that takes the value of 1 if the current or last job held was at levels 1-2 of the eight category condensed version of the National Statistics Socio-economic Classification (NS-SeC): an employer in a large establishment, higher managerial, and lower management and professional occupations.²

Controls

To adjust for potential confounders in the association between educational selection and mechanisms on the one hand and labour market outcomes on the other, we include a set of relevant controls in our multivariate analyses. These are:

Migration related: we include dummies for: whether English was spoken as first language/in childhood; immigrant arrival cohort (pre-1981, 81-91, 91-96, 96-2003, 2004-2008, 2008-2016); and migration regime, coded as described above.

Socioeconomic: We control for absolute level of qualifications, using collapsed measures from the Barro-Lee categories (due to small numbers in the lowest educational categories),

² For more details please see <http://www.ons.gov.uk/ons/guide-method/classifications/current-standard-classifications/soc2010/index.html>

namely, completed primary school or less, some secondary schooling, completed secondary, some tertiary schooling, and completed tertiary or more. Completed tertiary, versus any other qualification is also used as a moderator, as described above. Similarly, we control for social origins, measured as highest parental education as well as whether qualifications were obtained in the UK (both described above).

For labour market outcomes only we also control for: number of children in household (0, 1, 2, 3+), marital status (single, married, divorced/separated/widowed), and, for earnings only, hours worked.

In models testing moderators where sample sizes do not allow for separate analysis for men and women, we also control for sex.

We provide full descriptive statistics of all measures for men and women in the Appendix, Table A1.

Analytical Strategy

We first present a description of the extent of educational selection across our sample, by cohort and migration regime. We then test first in bivariate analysis and then in multivariate models the relationship between educational selection and each of our theorised mechanisms in turn, with separate models for men and women. In subsequent analysis, we test the hypotheses that these mechanisms are moderated by migrant characteristics by estimating separate multivariate models for: higher and lower social origins; tertiary qualifications versus lower; UK degree versus not; and free movement versus subject to immigration control. For these models we do not separate men and women to preserve sample size. For ease of interpretation we present the results from these analysis of moderation graphically,

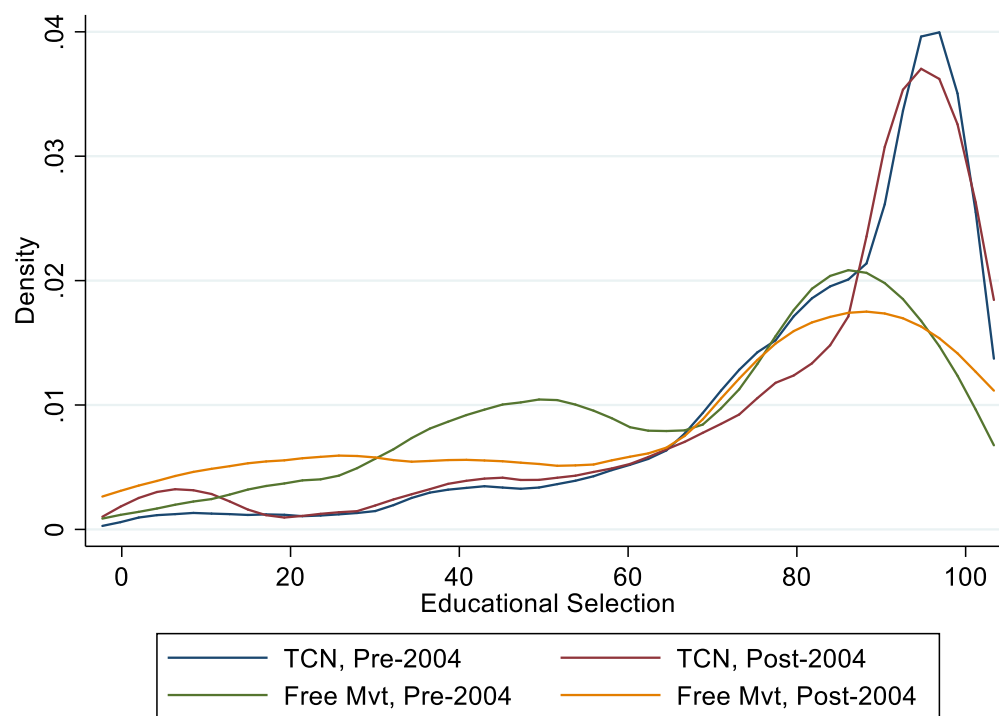
using `coefplot` (Jann 2014). In our final analysis, we estimate models of labour market outcomes regressed on educational selection and controls, to identify the extent to which our findings for the relationships between selection and mechanisms are consistent with actual labour market outcomes of more and less selected immigrants.

Results

Educational selection in the sample

We first describe the extent of educational selection across our sample. As to be expected from an island nation with a restrictive migration policy, the current stock of foreign born in the UK is on average positively selected, with a mean educational selection score of 77 for both men and women by 2011/12. When we examine how selection co-varies with migration regime and time of arrival in Figure 2 below, we see that even though migrants arriving under free movement are consistently less positively selected than those from third countries, the bulk of the distributions, for both pre- and post-2004 migration streams, are well above a score of 50. For all cohorts and both migration regimes, the average immigrant to the UK is more highly educated than the average sending country resident of the same age and sex. The bulk of the sample arrived between the late 1990s and 2008, and includes immigrants from 107 different countries who are found both in *Understanding Society* and the Barro-Lee Dataset.

Figure 2: Educational selection by age and cohort



Source: Understanding Society Wave 3 and Barrow-Lee 2013 dataset.

Turning to other aspects of our sample (see Appendix Table A1), in terms of demographics, our sample is weighted more heavily towards women, with 1,572 women and 1,162 men in the imputed datasets. At an average age of 42, immigrant men are about a year older on average than immigrant women, and are more likely to be married and less likely to be divorced, with both men and women having an average of one child in the household. When we look at socioeconomic characteristics, the high proportion of those with a university credential matches the positive selection scores: nearly half of the foreign born men and women have completed tertiary education, with less than one in eight with less than a secondary credential. Nearly one in five have a UK degree, and one in four spoke English as a child. The proportion who have never had a job is also very low, although only 64% of women, and 83% of men, who have ever worked are currently in work in wave 3 of the survey.

The high degree of selection and absolute education is mirrored in privileged parental backgrounds: fully half of the sample has a parent with at least some post-secondary qualification. It is also reflected in the high proportion, over 40%, of professional jobs for those employed. However, this privileged position is not necessarily reflected in our measures of interest in the ways we might expect. The average social networks of the foreign born in our sample are somewhat closed, with nearly two thirds of the sample reporting friendships circles where at least half are of the same ethnicity, and, particularly for women, have high proportions that are not working (cf. Luthra and Platt 2016,17). Cognitive test scores for verbal ability are higher for women than for men while the reverse is the case for numerical tests scores. Scores for all the big 5 personality traits are somewhat higher for women than for men.

Selection mechanisms: Bivariate and Multivariate Associations with educational selection

We first present bivariate associations between educational selection and each of the mechanisms proposed in Figure 1. For our continuous measures, we present a correlation matrix in Table 1 which summarises the correlation between educational selection, cognitive and non-cognitive skills, and self-reported physical and mental health. As the social network variables are dichotomous and thus not appropriate to use in a correlation matrix, we provide instead the mean levels of the selection score for women and men for the different social network measures in Table 2.

Table 1: correlation matrix: educational selection and cognitive, non-cognitive and health measures

Men (N=1162)										
	ES	CV	CN	A	C	E	N	O	GHQ	GH
Educational selection	1.00									
Cognitive Verbal	.13	1.00								
Cognitive numeric	.16	.56	1.00							
Agreeableness	.10	.07	.03	1.00						
Conscientiousness	.07	.19	.20	.44	1.00					
Extraversion	.05	.04	.03	.18	.21	1.00				
Neuroticism	-.04	.02	.03	-.17	-.22	-.10	1.00			
Openness	.14	.27	.26	.36	.39	.20	-.07	1.00		
GHQ Score	-.04	-.05	-.12	-.12	-.21	-.16	.38	-.16	1.00	
General Health	-.11	-.21	-.21	-.06	-.18	-.13	.26	-.16	.39	1.00

Women (N=1572)										
	ES	CV	CN	A	C	E	N	O	GHQ	GH
Educational selection	1.00									
Cognitive verbal	.05	1.00								
Cognitive numeric	.11	.58	1.00							
Agreeableness	.05	.12	.11	1.00						
Conscientiousness	.06	.09	.08	.37	1.00					
Extraversion	-.02	.21	.17	.14	.19	1.00				
Neuroticism	-.06	.09	.02	-.09	-.14	-.12	1.00			
Openness	.07	.21	.19	.27	.33	.29	-.12	1.00		
GHQ Score	.01	.00	-.09	-.13	-.26	-.12	.47	-.13	1.00	
General Health	-.01	-.09	-.10	-.08	-.16	-.11	.28	-.19	.36	1.00

Source: *Understanding Society* Wave 3 and Barrow-Lee 2013 dataset

Table 2: Mean levels of selection scores for social network measures

		Women	Men
Friends of same ethnic group	Less than half	78.66	77.69
	More than half	75.56	76.32
Friends have a job	Less than half	76.79	73.79
	More than half	76.57	77.37
Friends are family members	Less than half	76.63	77.63
	More than half	76.66	72.24
Friends live in local area	Less than half	78.37	77.49
	More than half	72.35	74.89

Source: *Understanding Society* Wave 3 and Barrow-Lee 2013 dataset

Focusing on the first column of the correlation matrix (Table 1), we see for women, there is essentially no correlation between educational selection and cognitive and non-cognitive skills or mental or physical health. The only correlation coefficient that exceeds 0.1

is the relationship between educational selection and numerical cognitive ability. For men, there is a weak correlation between educational selection and cognitive ability, as well as between educational selection and two personality traits: agreeableness, a trait generally associated with worse labour market outcomes, and openness, a trait positively associated with labour market outcomes (Nandi and Nicoletti 2014). For men, educational selection is also weakly associated with better physical health (a negative correlation here denotes better physical and mental health).

Our finding of only a very weak or non-existent correlation at even the bivariate level is counter to our main set of hypotheses relating to selection mechanisms H1a-H1d, and contradicts the expectations of much of the theoretical work on educational selectivity. Looking across the correlation matrices, however, we see evidence that these measures are otherwise performing as we would expect: both cognitive ability measures are strongly positively correlated with one another, for instance, for men and for women. We see a substantial positive correlation between mental and physical health, as we would anticipate, and similarly that neuroticism has a negative correlation with agreeableness, conscientiousness and extraversion, as we would expect from the existing literature (Nandi and Nicoletti 2014).

Turning to the relationship between selection and social network composition as presented in Table 2, we see that men and women who have more friends who live outside their local area, and men who have more friends who are not family, are more positively selected, on average, as we would expect. That is, we would expect those who are more selected to have less geographically constrained and socially embedded social ties (Lin 1999). By the same token we also expected a more ethnically diverse network for those who are more positively selected; however, we do not see this. We also expected those more highly selected to have greater levels of employment in their social networks, but this only

holds for men. In sum, at the bivariate level, educational selection has only a weak or non-existent relationship with skills and health, and a limited association with social networks of immigrants to the UK. It is moreover unlikely that unobserved suppressor variables are the result of this non-finding; if anything at the very least the positive association between *absolute* measures of socioeconomic attainment and relative educational selection should drive a bivariate relationship between educational selectivity and skills, health and social network, as all three are generally positively associated with absolute levels of education or social class background. To explore this further, we next discuss the results of multivariate models shown in Table 3.

Table 3: Results of multivariate models of associations between selection and proposed mechanisms

	Men									
	Model 1		Model 2		Model 3		Model 4		Model 5	
	Coef	SE	Coef	SE	Coef	SE	Coef	SE	Coef	SE
Cognitive: verbal	0.051**	0.011	0.047**	0.011	0.008	0.017	0.016	0.017	0.033*	0.017
Cognitive: numeric	0.009**	0.002	0.009**	0.002	0.001	0.003	0.002	0.003	0.005	0.003
Openness	0.009**	0.003	0.009**	0.003	0.001	0.004	0.002	0.004	0.003	0.004
Extraversion	0.003	0.002	0.003	0.002	0.005	0.003	0.005+	0.003	0.006+	0.003
Conscientiousness	0.004+	0.002	0.003	0.002	0.001	0.003	0.001	0.003	0.002	0.003
Agreeableness	0.006**	0.002	0.005*	0.002	0.009**	0.003	0.009**	0.003	0.009**	0.003
Neuroticism	-0.003	0.003	-0.002	0.003	-0.003	0.004	-0.003	0.004	-0.002	0.004
Friends same ethnicity	-0.002	0.003	-0.002	0.004	-0.001	0.005	0.001	0.005	0.003	0.006
Friends: have job	0.005	0.005	0.006	0.005	-0.001	0.007	0	0.007	-0.005	0.008
Friends: family	-0.008+	0.004	-0.007	0.004	-0.002	0.007	-0.001	0.007	-0.001	0.007
Friends same area	-0.004	0.003	-0.003	0.003	0.008	0.006	0.008	0.006	0.005	0.006
General health	-0.004*	0.002	-0.004*	0.002	0.001	0.003	0.001	0.003	0	0.003
GHQ	0	0.01	-0.001	0.01	0.013	0.016	0.012	0.017	0.012	0.017
	Women									
	Model 1		Model 2		Model 3		Model 4		Model 5	
	Coef	SE	Coef	SE	Coef	SE	Coef	SE	Coef	SE
Cognitive: verbal	0.011	0.009	0.016+	0.009	-0.063**	0.011	-0.057**	0.011	-0.047**	0.011
Cognitive: numeric	0.005**	0.002	0.005**	0.002	-0.011**	0.002	-0.011**	0.002	-0.008**	0.002
Openness	0.004*	0.002	0.005*	0.002	-0.003	0.002	-0.002	0.002	-0.002	0.003
Extraversion	0.001	0.002	0.001	0.002	-0.006**	0.002	-0.006**	0.002	-0.005*	0.002
Conscientiousness	0.002	0.002	0.003	0.002	0	0.002	0.001	0.002	0.002	0.002
Agreeableness	0.001	0.002	0.001	0.002	0.002	0.002	0.003	0.002	0.003	0.002
Neuroticism	-0.003+	0.002	-0.003	0.002	-0.003	0.002	-0.003	0.002	-0.003	0.003
Friends same ethnicity	-0.005+	0.003	-0.005+	0.003	-0.005	0.004	-0.005	0.004	-0.002	0.004
Friends: have job	0.001	0.003	0.001	0.003	-0.013**	0.004	-0.013**	0.004	-0.010*	0.004
Friends: family	-0.001	0.004	-0.001	0.004	0.006	0.005	0.006	0.005	0.003	0.005
Friends same area	-0.009**	0.003	-0.010**	0.003	-0.002	0.004	-0.003	0.004	-0.005	0.004
General health	-0.002	0.001	-0.003+	0.001	0.005**	0.002	0.004*	0.002	0.004+	0.002

GHQ	-0.006	0.008	-0.008	0.008	0.009	0.01	0.006	0.01	0.003	0.011
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Source: *Understanding Society* Wave 3. Model 1 controls for age; Model 2 adds arrival cohort and whether English is first language; Model 3 adds absolute level of education; Model 4 adds parental education; and Model 5 adds migration regime.

In terms of skills, with all potential confounders controlled, for women there is a negative association between selection and verbal and numerical skills, but a positive association with extraversion. For men, conversely, there is a positive association between educational selection and verbal skills, but a positive association with agreeableness, a trait associated with poorer labour market outcomes. In terms of social networks, women who are more positively selected are slightly less likely to have a friendship network that is majority employed; for men there are no associations with social network measures. Finally, for health, with all confounders controlled there is no association between educational selection and mental or physical health for either men or women. Thus, controlling for potential confounders does little to alter the general finding that educational selection is not positively associated with mechanisms that lead to labour market success: we therefore cannot confidently reject the null hypotheses for H1a-H1d that selection is not linked to relevant mechanisms associated with labour market success.

Potential variation in the selection – mechanism link

Our findings to this point suggest little *average* association of educational selection with relevant mechanisms of immigrant success. It is possible, however, that this conceals heterogeneity in the association by social class background, educational attainment, or migration regime as anticipated in hypotheses H2-H4. To assess this possibility, we estimate a further set of multivariate models including all controls as in model 5 above, for each mechanism. However, in this case we split the samples to allow the effect of educational selection and the control variables to differ across each of the hypothesized sources of heterogeneity.

First, to test for a moderating effect of parental class background, we compare the educational selection coefficients from separate models for those with and without a parent

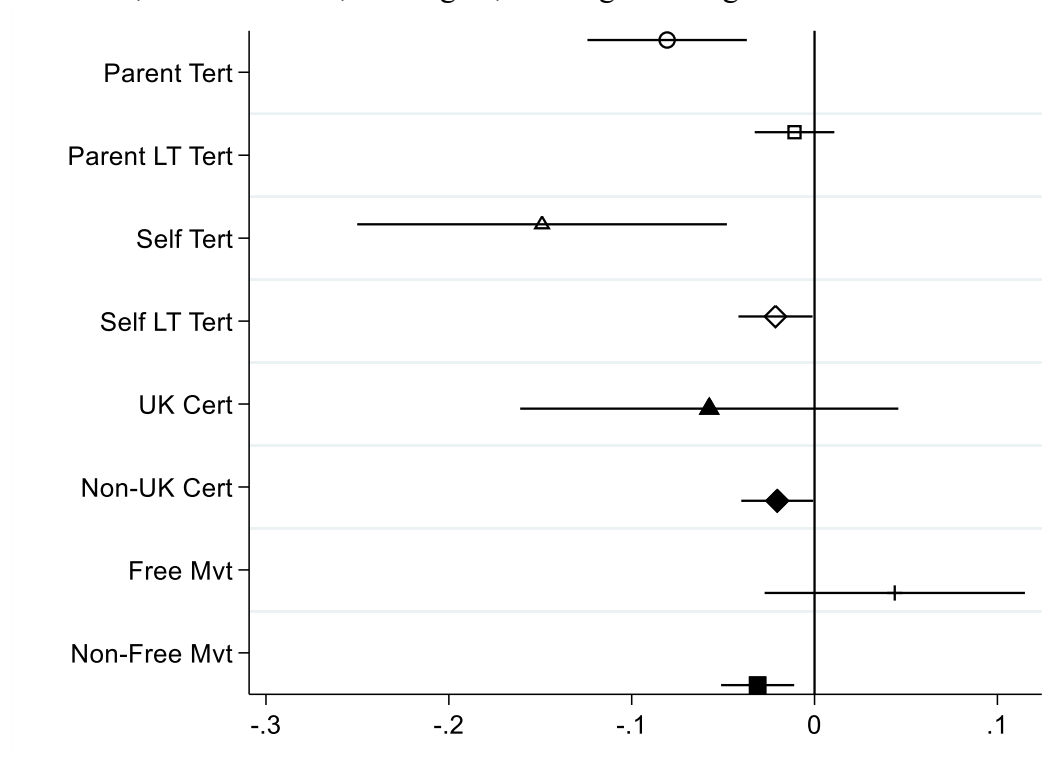
with a post-secondary degree. Next, we compare models for those immigrants who themselves have a tertiary degree versus those who do not. We examine whether a UK credential moderates the impact of educational selection by splitting the sample according to this criterion. Finally, we examine those who experienced free movement vs all others to examine the moderating effect of migration regime. We present the associations graphically to indicate for which moderators the effects of selection, as estimated with seemingly unrelated regression, are statistically different from one another. We illustrate the results for cognitive and non-cognitive skills in Figures 3-9. For concision, those for social networks and health, which show little variation, are provided in the Appendix, Figures A1-A6. As is evident from the Figures, the majority of the coefficients for educational selection do not differ across the subpopulations compared. Nevertheless, some findings that are relevant to our hypotheses do emerge.

Cognitive skills

Beginning with cognitive skills, consistent with H2b, H3b and H4a, we see clear evidence of *stronger* negative selectivity among more elite migrants (Figures 3 and 4). For those with advantaged social origins, the association between educational selection and verbal ability is more strongly negative than for those whose highest educated parent had less than a tertiary degree; the difference in terms of numerical ability is not statistically significant but the sign is also negative. Similarly, those immigrants who have a tertiary degree also experience a more negative association between selection and both verbal and numerical ability. For those who had to overcome the barriers of migration controls, a passage often requiring substantial familial social or financial capital, the relationship between selection and cognitive skills is similarly more negative. We find, however, no support for H4c: having a UK credential does

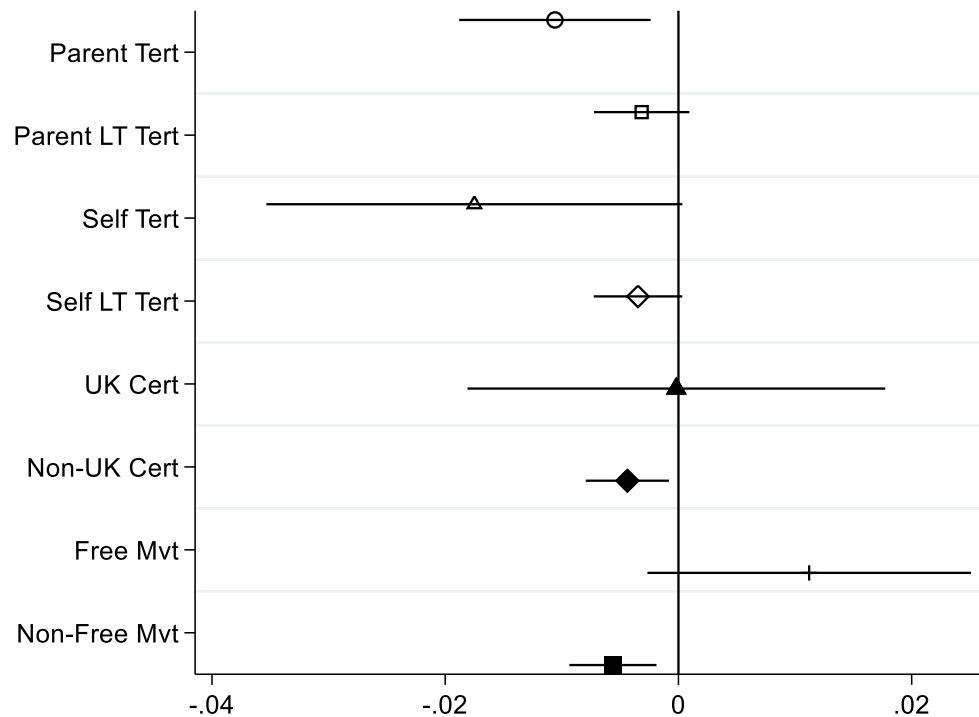
not moderate the relationship between educational selection and cognitive ability, or indeed any other mechanism.

Figure 3: The relationship between educational selection and verbal ability, by parental education, own education, UK degree, and migration regime



All estimates adjust for: age, arrival cohort, English as first language, and except where it they are the basis of the split sample, absolute level of education, parental background and migration regime.

Figure 4: The relationship between educational selection and numerical skills, by parental education, own education, UK degree, and migration regime



All estimates adjust for: age, arrival cohort, English as first language, and except where it they are the basis of the split sample, absolute level of education, parental background and migration regime.

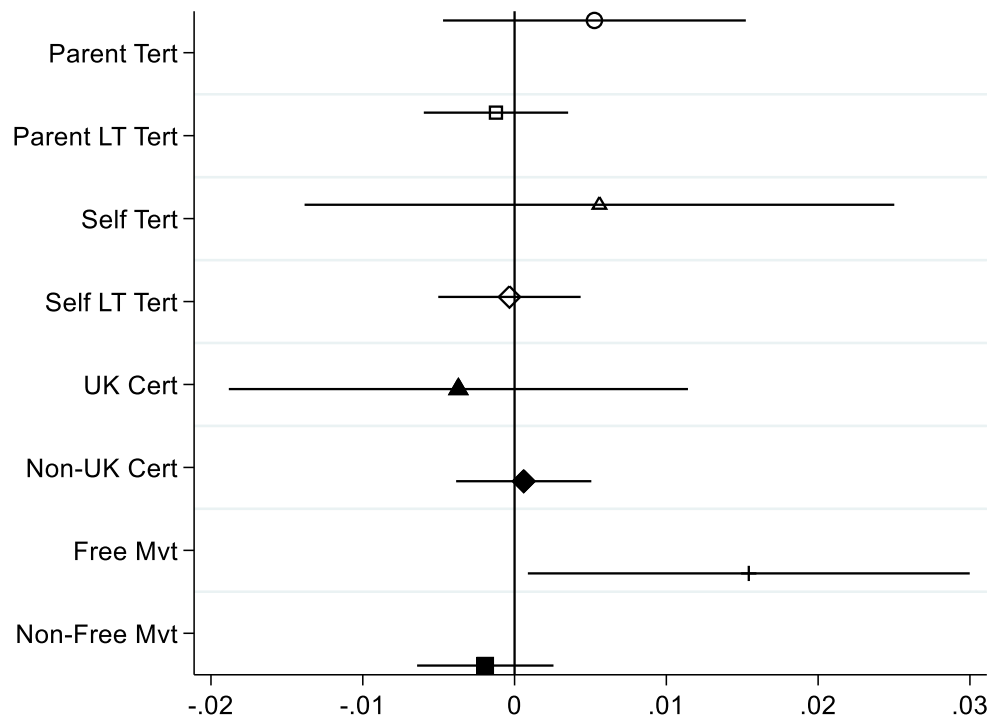
Non-cognitive skills

Both migration regime and a university degree moderate the relationship between educational selection and non-cognitive skills, but not in an entirely consistent way. Those with a university degree have a more positive association between educational selection and agreeableness, a trait associated with worse labour market outcomes, and a more negative association between educational selection and extraversion, a trait associated with more positive labour market outcomes. This is consistent with our expectation that those with more resources will be less positively selected on non-cognitive skills (H3b). However, those with a university degree also show a more beneficial relationship between educational selection and neuroticism and conscientiousness, leading to a more mixed picture.

For those experiencing free movement, we observe more positive relationships with non-cognitive skills, including extraversion and openness. This is consistent with the hypothesis that high barriers to migration may obstruct rather than enable those with positive

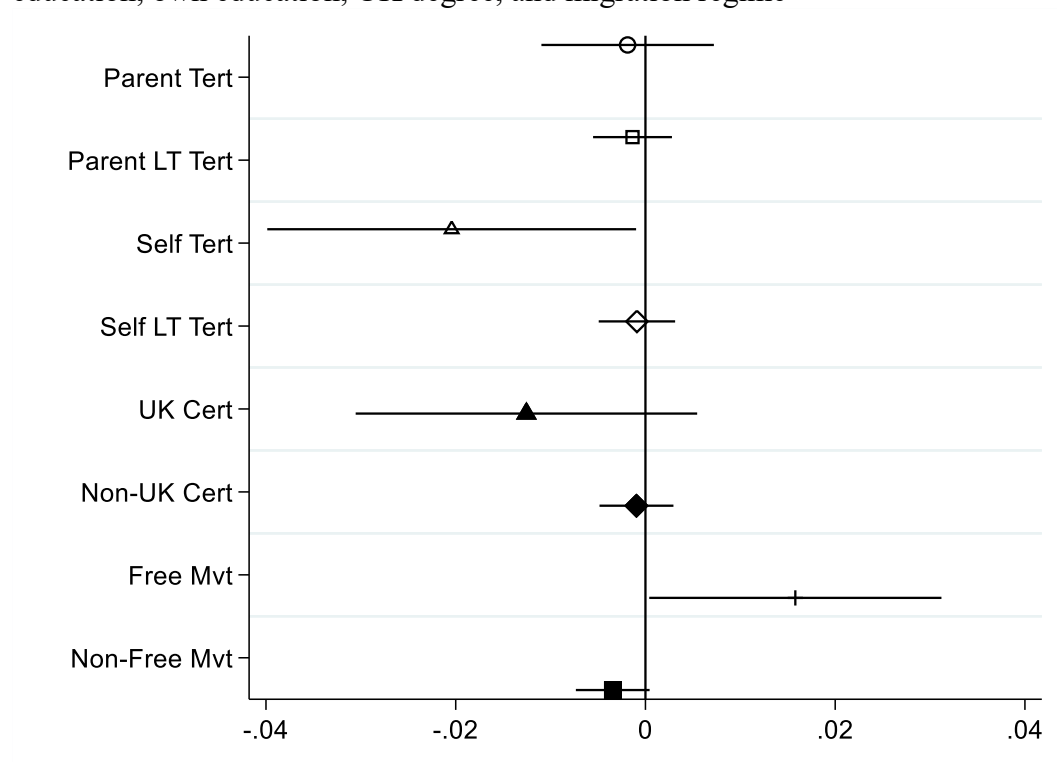
non-cognitive skills from migrating, net of other characteristics, while free movement is more enabling for those with such characteristics, since they are not primarily dependent on being well-resourced in other ways (H4a).

Figure 5: The relationship between educational selection and Openness, by parental education, own education, UK degree, and migration regime



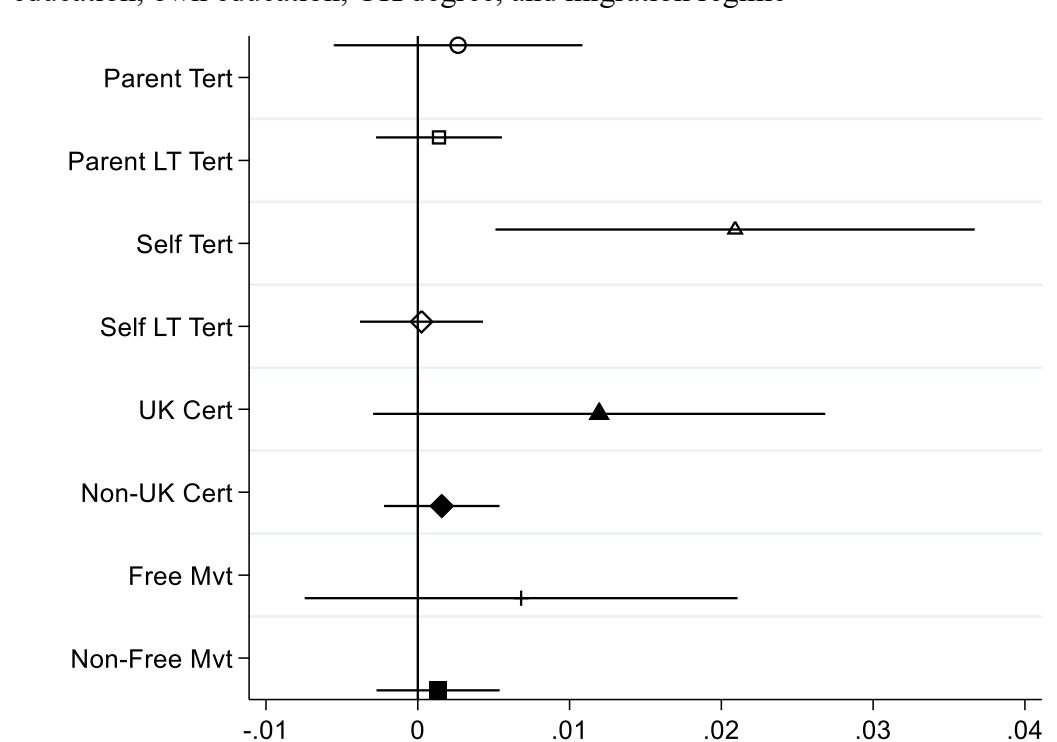
Source: Understanding Society Wave 3. All estimates adjust for: age, arrival cohort, English as first language, and except where it they are the basis of the split sample, absolute level of education, parental background and migration regime.

Figure 6: The relationship between educational selection and Extraversion, by parental education, own education, UK degree, and migration regime



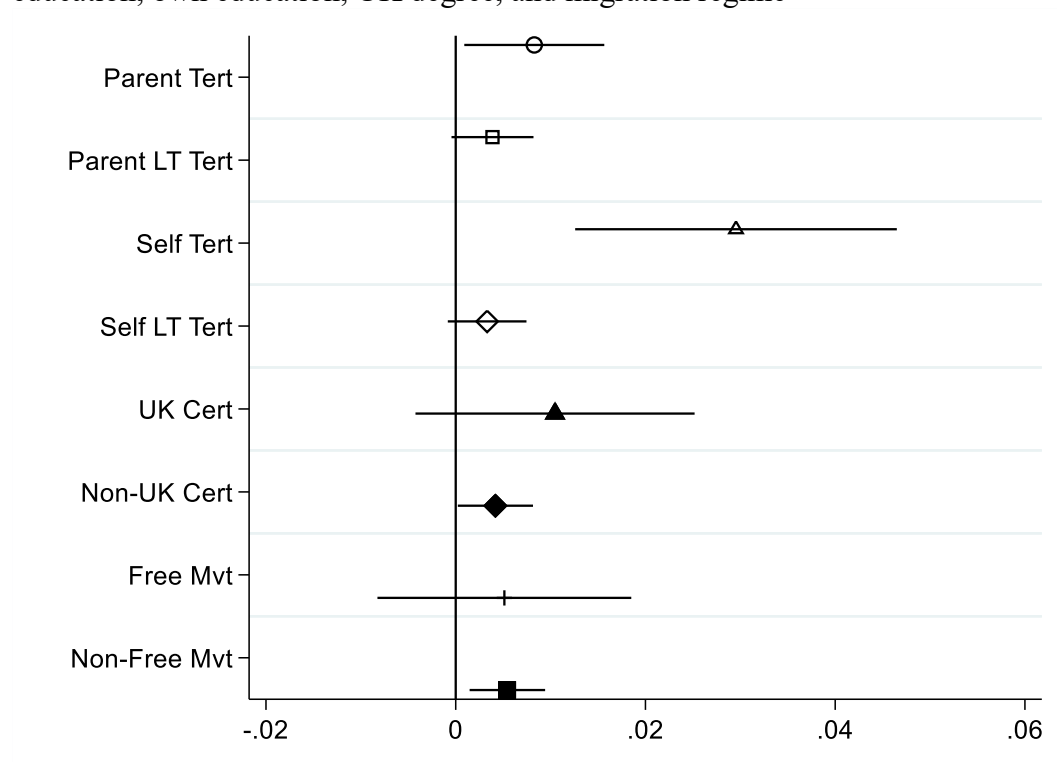
All estimates adjust for: age, arrival cohort, English as first language, and except where it they are the basis of the split sample, absolute level of education, parental background and migration regime.

Figure 7: The relationship between educational selection and Conscientiousness, by parental education, own education, UK degree, and migration regime



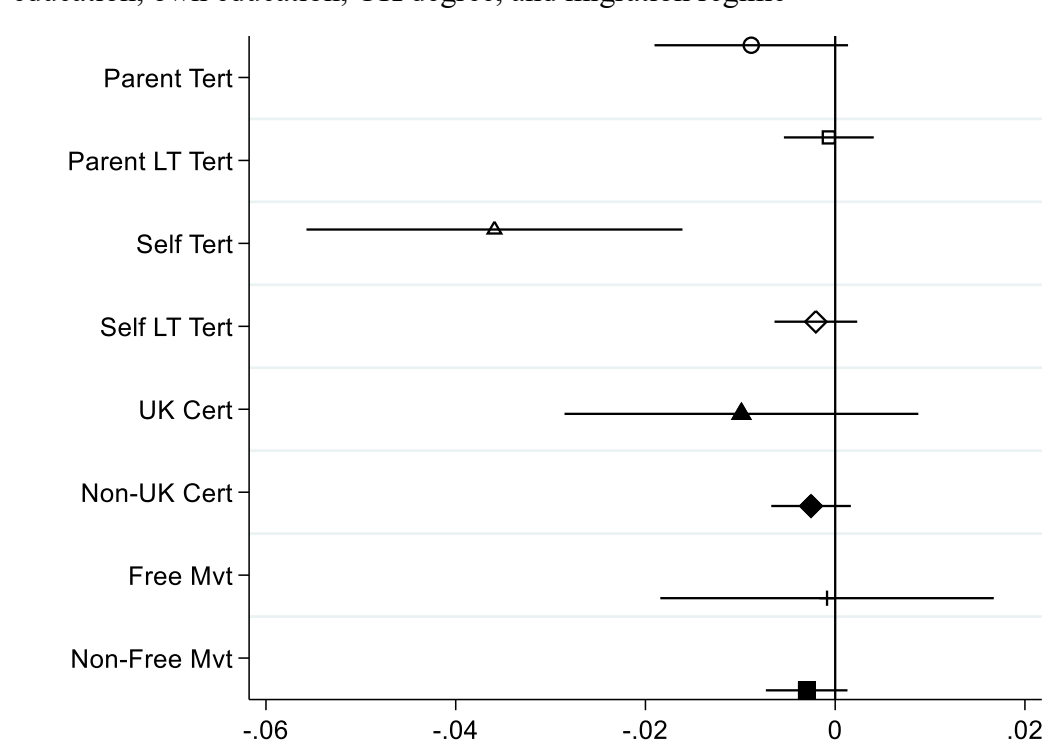
All estimates adjust for: age, arrival cohort, English as first language, and except where it they are the basis of the split sample, absolute level of education, parental background and migration regime.

Figure 8: The relationship between educational selection and Agreeableness, by parental education, own education, UK degree, and migration regime



All estimates adjust for: age, arrival cohort, English as first language, and except where it they are the basis of the split sample, absolute level of education, parental background and migration regime.

Figure 9: The relationship between educational selection and Neuroticism, by parental education, own education, UK degree, and migration regime



All estimates adjust for: age, arrival cohort, English as first language, and except where it they are the basis of the split sample, absolute level of education, parental background and migration regime.

Social networks and health

There are no statistically significant moderators of the relationship between educational selection and health, with the exception (at the 0.1 level) that those experiencing free movement have a more negative association between educational selection and general self-reported health. This is not surprising given that more elite migration associated with immigration control should result in more positive selection on health (H4b). (See Appendix, Figures A1, A2). There is also no statistically significant moderation of the relationship between educational selection and social networks save one: those experiencing free movement have a more positive relationship between educational selection and a friendship network with higher employment, providing very limited support for H4b (See Appendix, Figures A3-A6).

Labour Market and Educational Selection

We have shown that the sets of potential mechanisms we would theoretically expect to drive any positive relationship between educational selection and economic outcomes are in fact barely or negatively associated with educational selection, particularly for more elite emigrants and those who are subject to immigration control. This should imply that, if these findings are robust and are not simply driven by the specific indicators we are drawing on, we should see either or a null or a negative relationship between educational selection and labour market outcomes. And that is, broadly, what we find.

Table 4: Results of multivariate models of labour market outcomes regressed on educational selection and controls

Women										
	Model 1		Model 2		Model 3		Model 4		Model 5	
	Coef	SE	Coef	SE	Coef	SE	Coef	SE	Coef	SE
In Work	0.001	0.003	0.005+	0.003	-0.010*	0.004	-0.009*	0.004	-0.008+	0.004
Logged Positive Wages	0.007**	0.001	0.005**	0.001	0	0.002	0.001	0.002	0.002	0.002
Professional Job	0.027**	0.005	0.032**	0.006	0.008	0.007	0.01	0.007	0.014+	0.007
Men										
	Model 1		Model 2		Model 3		Model 4		Model 5	
	Coef	SE	Coef	SE	Coef	SE	Coef	SE	Coef	SE
In Work	-0.006	0.004	-0.008+	0.005	-0.026**	0.009	-0.027**	0.009	-0.025**	0.008
Logged Positive Wages	0.007**	0.001	0.006**	0.001	-0.004**	0.002	-0.004*	0.002	-0.004*	0.002
Professional Job	0.038**	0.006	0.037**	0.007	-0.003	0.008	-0.003	0.008	0.001	0.008

Source: *Understanding Society* Wave 3. Model 1 controls for age; Model 2 adds marital status, UK region, number of children, arrival cohort, whether English is first language, and, for wages only, number of hours worked; Model 3 adds absolute level of education, and whether qualification is from the UK; Model 4 adds parental education; and Model 5 adds migration regime.

We present the results of a series of step-wise multivariate regressions of three labour market measures on educational selection in Table 4. The basic model (1) controls only for age, while Model 2 adds children in the household, marital status, UK region, year of arrival and native English ability, and, for wages only, hours worked. These are followed by models which include additional confounders including absolute levels of education and UK certification (3), the education level of the highest educated parent (4) and finally a dummy for migration regime (5).³

In Models 1 and 2, with no controls for actual level of education, we see a positive association between educational selection and wages and obtaining a professional job. This is unsurprising since those who are more selected will tend to be more educated. Somewhat less expected is that we observe only a marginally significant association between educational selection and employment for men after adjusting for demographics and region, and a marginally negative association with employment for women. Moreover, all positive associations between educational selection and labour market success completely disappear after controls for the *absolute* level of educational attainment. Above and beyond higher levels of absolute educational attainment, being more positively selected actually has a *negative* association with employment for both men and women and a negative association with wages for men. Further controls for parental educational attainment and migration regime do little to alter this negative association, even though they are independently associated with a higher chance of attaining a professional or managerial job, and with women's employment (privileged background) and wages (migration regime).

While, as we noted not all existing literature has demonstrated a positive relationship between selection and economic outcomes, the broad expectation that the two should be linked remains, and counter-evidence has not been able to demonstrate so far *why* there is no

³ The full results of the analysis are in Appendix, Tables A2-A4.

clear association. Our analysis not only provides additional evidence to counter the positive expectations of educational selection found in the literature, we have been able to demonstrate that that is consistent with our finding that rank position on observables in country of origin has basically no positive relationship with social, cultural, cognitive or non-cognitive resources. This is not to say that higher levels of educational attainment do not bring labour market advantages, but that relative rank brings no additional gains. In addition, to the extent that immigration barriers restrict access to the most highly resourced and privileged, who nevertheless regard themselves as having something to gain from migration, it may undermine the potential for the additional strengths that are typically implicated in the act of migration itself.

Discussion and conclusions

In this paper, we have set out a clear theoretical account of how and why educational selection might be expected to affect labour market outcomes. In this we build on Feliciano (2020). Using a case with diverse migration flows and capitalising on a rich data set with multiple measures to capture these theoretical mechanisms, we have shown that, in fact, educational selection is either not or only weakly associated with each of the posited mechanisms. This is particularly the case for those who are more closely associated with an elite pre-migration position, through family background, attainment of tertiary education and coming from a context facing substantial visa restrictions on migration. We went on to demonstrate that, as a result, and counter to common assumptions, educational selection does not provide economic returns for migrants to the UK.

Drawing on the parallel literatures of transnational class reproduction and middling transnationals helps to provide some understanding of why this might be the case. On the one hand, placement at the top of the sending country distribution – and ability to migrate

internationally – is unlikely to be a result of a meritocratic process. A body of literature has pointed to the way that class reproduction is increasingly happening on a global scale, as technological changes in transport and communications have increased opportunity for transnational activity (Dekker and Engberson 2012; Williams and Baláž 2009) at the same time that more stringent border controls have erected barriers which only the privileged can cross. This greater internationalisation of opportunity, including access to high status credentials from British universities, lucrative employment in London transnational firms (where 40 percent of the workforce is foreign born (Rocks 2018)), or investment opportunities in British real estate and financial markets, happens alongside a nativist turn in the UK and indeed across all of Western Europe as the political salience of migration has increased and correspondingly public policies towards immigrants have soured. The result is that it is the global elite, rather than any broader conceptualisation of the ‘brightest and the best’, who are able to avail themselves to the opportunities afforded by globalisation. This can be thought of as a sort of effectively maintained inequality (Lucas and Bryne 2017) on a global scale, where less privileged individuals of higher abilities are unlikely to access opportunities for international movement until saturation across ability levels is reached among those from the privileged classes who are willing – and able - to move. In other words, until there are severe labour shortages which cannot be filled by immigrants with the required financial, social or cultural capital, we might not expect to see the less well resourced – even those who are highly ambitious or able – migrating to the UK.

On the other hand, just as a location at the top of the educational distribution – and ability to migrate - is unlikely to be the result of a meritocratic sorting process in terms of skills, its substantive meaning in terms of social and cultural capital is also likely to have changed over time. As noted by the literature on middling transnationals (Rutten and Verstappen 2013; Scott 2006)), highly educated immigrants in today’s global cities such as

London, New York or Los Angeles do not move as frictionless elites but rather represent a wider range in their social status than might have been expected in the past. The proportion of immigrants with a tertiary degree is certainly driven by migration policy, but it also reflects educational expansion in many origin countries, including those with free movement arrangements with the UK. Among those who come from earlier arrival cohorts, tertiary education is much more likely to imply ‘elite’ membership and all the resources and social and cultural capital associated with such advantaged origins. We believe this may potentially explain why our research diverges from current work on the positive association between educational selection of parents and educational attainment of the second generation, which is restricted to immigrants who arrived before the 1980s. First, more recently arrived immigrants may have a relatively prosperous background, but they may also be more varied in the extent of their social and cultural capital and further from a true ‘elite’. Second, the mechanisms are also likely to be different for more recent migration streams: whereas the aspirations and expectations internalised as members of either ‘middling’ or upper-middle class professionals may translate into better attainment for children than expected given parental employment in jobs for which they are overqualified, levels of pre-migration status do not translate into the far reaching and elite social networks which help secure their own position in high status jobs.

Our study is not without its limitations. While we have a very rich set of potential correlates of educational selection, our measures of non-cognitive skills may not fully reflect those attributes which are most closely linked to migrant selectivity (Model 2018). However, given that we find no or negative associations between educational selection and our labour market outcomes, the results are fully consistent with the findings we present for our mechanisms; and an inferential model of non-cognitive skills (e.g. Heckmann and Rubenstein 2001) would conclude that educational selection does not indicate non-cognitive skills. In

addition, our measures of educational qualifications have to be harmonised to Barro-Lee. Given the high levels of qualifications among our immigrant sample, a given rank score may capture substantial heterogeneity, especially among the tertiary educated. Nevertheless, we use a method that has been used elsewhere to demonstrate the benefits of selection; and our split samples with and without tertiary education also address this issue head on. When analysing the split samples, we do not find the anticipated positive associations between selection and labour market mechanisms for either group.

As we write, the UK has just ended its 40-year membership of the EU. The new immigration rules will apply to both TCNs and those who formerly could enter under free movement. The UK's advisory Migration Advisory Committee notes the greater equity of such arrangements, alongside emphasising their primary consideration of achieving the inflow of migrants who bring the highest returns to the destination (MAC 2020). However, issues of equity aside, our analysis suggests selection on observables cannot be assumed to translate into the 'brightest and best' on other, economically salient measures. The continued – and enhanced – emphasis on selection of high skilled and highly resourced has already proved successful in attracting highly educated cohorts of migrants. But those who came under free movement were also relatively highly educated (Dustmann and Frattini 2011, ONS 2011). From what we have shown, imposing barriers across the board may come at a cost of excluding those for whom somewhat easier access to migration would enable them to better exploit their typically unobserved advantages. Instead, we showed that the relationship between educational selection and economically relevant characteristics cannot be assumed in the ways that have been inferred from existing literature.

We believe that the novel contributions of this paper – directly assessing the degree of immigrant selectivity rather than inferring it from outcomes alone, measuring the relationship between educational selection and theoretically informed mechanisms linked to

labour market success, and testing for heterogeneity in these associations – can be fruitfully applied in other immigrant receiving contexts, and for other sociologically interesting outcomes, including political and civic participation, health, well-being or social integration. It is also important to assess whether today's highly selected immigrants in terms of educational attainment, coming from more expanded educational systems and less likely to be pioneer migrants than those of the 1950s, 1960s and 1970s, will see the same high levels of second generation performance as the children of earlier immigrant cohorts. We further hope that this paper has demonstrated the utility of ethnic minority and immigrant oversamples in general use household surveys, which enable us to assess mechanisms with an immigrant sample with sufficient variation to measure selection effects.

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Appendix

Table A1: Descriptives by sex, weighted and unweighted proportions and means

Measure (range)	WEIGHTED		UNWEIGHTED	
	Men	Women	Men	Women
Educational Selection (5-99)	76.83	76.64	79.61	79.19
Age (25-64)	42.40	41.65	42.86	41.82
Number of Children (0-3)	.90	.93	1.06	1.04
Age at Immigration (18-63)	28.91	27.68	28.94	27.15
Cognitive Ability: Verbal (0-41)	16.12	18.04	14.85	16.09
Cognitive Ability: Numerical (0-5)	3.30	3.16	3.12	2.87
Agreeableness (1-7)	5.40	5.58	5.48	5.62
Conscientiousness (2-7)	5.25	5.54	5.21	5.47
Extraversion (1-7)	4.22	4.48	4.18	4.30
Neuroticism (1-7)	3.21	3.69	3.17	3.63
Openness (1-7)	4.60	4.76	4.47	4.60
Most friends are of same ethnic group	.64	.65	.64	.64
Most friends have a job	.85	.69	.83	.60
Most friends are family	.15	.15	.15	.17
Friends live in local area	.26	.29	.29	.34
Has a UK Certification	.18	.19	.19	.17
Spoke English as a child	.27	.26	.22	.22
General Health (1-5)	2.39	2.38	2.51	2.56
GHQ Score (0-36)	11.16	11.52	11.39	11.84
Never had a job	.01	.06	.01	.13
Currently in work (if ever worked)	.83	.64	.80	.56
<i>Level of Education</i>				
Primary or Less	.02	.02	.02	.04
Some Secondary	.12	.13	.15	.18
Completed Secondary	.26	.22	.28	.26
Some Tertiary	.12	.17	.11	.16
Completed Tertiary	.48	.46	.44	.37
<i>Migration regime: free movement</i>	.16	.18	.08	.10
<i>Arrival Cohort</i>				
Pre-81	.10	.10	.09	.11
81-90	.12	.12	.13	.14
91-95	.09	.09	.11	.10
96-03	.30	.37	.34	.36
2004-2008	.30	.26	.26	.23
2008-2015	.09	.07	.08	.06
<i>UK Region</i>				
North East	.02	.01	.02	.01
North West	.07	.07	.08	.07
Yorkshire and the Humber	.06	.07	.06	.06
East Midlands	.06	.07	.06	.06
West Midlands	.07	.06	.09	.08
East of England	.11	.10	.08	.08
London	.32	.30	.43	.42

South East	.14	.17	.09	.11
South West	.06	.07	.03	.04
Wales	.02	.03	.02	.02
Scotland	.05	.04	.03	.02
Northern Ireland	.02	.02	.02	.02
<i>Highest Educated Parent</i>				
Did not attend school	.06	.05	.08	.08
No qualifications	.19	.18	.23	.22
Some Qualifications	.25	.27	.26	.27
Some post-secondary qualifications	.25	.22	.20	.19
Has a University degree or more	.24	.28	.22	.24
<i>Marital Status</i>				
Single	.19	.18	.13	.15
Married or Cohabiting	.72	.65	.78	.67
Divorced, Separated or Widowed	.09	.17	.08	.18
<i>Among those Currently in Work</i>	N=901	N=763		
Log Wage (-2.52-10.56)	7.52	7.19	7.37	7.11
Hours per week (5-84)	37.33	30.23	36.18	29.97
Has professional job	.42	.46	.37	.42

Source: *Understanding Society* Wave 3.

Table A2. Results of multivariate models of the association between educational selection and being in work, for men and women

	Model 1		Model 2		Model 3		Model 4		Model 5	
	Men									
	Coef	SE	Coef	SE	Coef	SE	Coef	SE	Coef	SE
Educational Selection	-0.006	0.004	-0.008+	0.005	-0.026**	0.009	-0.027**	0.009	-0.025**	0.008
Age	0.225**	0.083	0.208*	0.105	0.201+	0.107	0.208+	0.106	0.204+	0.106
Age Squared	-0.003**	0.001	-0.003**	0.001	-0.003**	0.001	-0.003**	0.001	-0.003**	0.001
No Children			0	.	0	.	0	.	0	.
1 Child			0.12	0.318	0.128	0.316	0.128	0.31	0.127	0.311
2 Children			0.283	0.359	0.312	0.367	0.336	0.372	0.332	0.373
3 Children			-0.193	0.401	-0.062	0.385	-0.04	0.378	-0.036	0.377
Spoke English as a Child			0.702*	0.292	0.592*	0.297	0.541+	0.295	0.512+	0.292
Single			0	.	0	.	0	.	0	.
Married or Cohabiting			1.065*	0.434	1.128**	0.435	1.171**	0.426	1.210**	0.429
Divorced, Separated or Widowed			0.203	0.551	0.247	0.552	0.288	0.549	0.317	0.542
North East			0	.	0	.	0	.	0	.
North West			0.791	0.954	0.61	0.993	0.661	0.922	0.629	0.922
Yorkshire and the Humber			0.544	0.97	0.415	1.005	0.52	0.939	0.493	0.938
East Midlands			0.774	1.001	0.812	1.062	0.895	1.006	0.865	1.005
West Midlands			1.069	0.939	0.98	0.977	1.047	0.912	0.997	0.913
East of England			1.908+	1.03	1.687	1.053	1.701+	0.988	1.657+	0.994
London			0.753	0.907	0.622	0.95	0.683	0.877	0.647	0.874
South East			1.44	0.934	1.243	0.971	1.277	0.901	1.224	0.901
South West			0.698	1.021	0.57	1.065	0.5	0.994	0.471	0.994
Wales			-0.187	1.01	-0.321	1.059	-0.205	0.998	-0.236	1.002
Scotland			1.122	1.064	0.9	1.098	0.865	1.025	0.838	1.025
Northern Ireland			0.056	1.126	-0.165	1.155	-0.077	1.115	-0.138	1.118
Pre-81			0	.	0	.	0	.	0	.
81-90			-0.2	0.479	-0.28	0.485	-0.291	0.484	-0.239	0.475
91-95			-0.743	0.534	-0.836	0.557	-0.912	0.563	-0.868	0.551
96-03			-0.671	0.466	-0.793	0.496	-0.850+	0.505	-0.805	0.496
2004-2008			0.004	0.511	-0.231	0.542	-0.287	0.55	-0.236	0.543
2008-2015			-0.803	0.598	-1.019	0.645	-1.051	0.644	-1.034	0.633
Primary or Less					0.202	0.689	0.135	0.686	0.185	0.672

Some Secondary	0	.	0	.	0	.
Completed Secondary	0.781*	0.375	0.774*	0.383	0.764*	0.38
Some Tertiary	1.123*	0.534	1.096*	0.539	1.079*	0.532
Completed Tertiary	1.487**	0.475	1.382**	0.502	1.340**	0.491
	0	.	0	.	0	.
Has a UK Certification	0.147	0.353	0.181	0.349	0.188	0.349
Parent did not attend school			0	.	0	.
Parent no quals			0.125	0.434	0.116	0.432
Parent some quals			-0.24	0.449	-0.239	0.447
Parent post-secondary			0.309	0.51	0.297	0.504
Parent tertiary			0.457	0.521	0.462	0.523
					0	.
Free Movement					0.218	0.42
Constant	-1.069	1.823	-1.509	2.387	-0.884	2.386
	-1.059	2.333	-1.114	2.331		
	Model 1	Model 2	Model 3	Model 4	Model 5	

	Women									
	Coef	SE	Coef	SE	Coef	SE	Coef	SE	Coef	SE
Educational Selection	0.001	0.003	0.005+	0.003	-0.010*	0.004	-0.009*	0.004	-0.008+	0.004
Age	0.238**	0.052	0.411**	0.069	0.483**	0.072	0.496**	0.073	0.491**	0.074
Age Squared	-0.003**	0.001	-0.005**	0.001	-0.006**	0.001	-0.006**	0.001	-0.006**	0.001
No Children			0	.	0	.	0	.	0	.
1 Child			-0.783**	0.194	-0.851**	0.199	-0.829**	0.199	-0.820**	0.199
2 Children			-1.375**	0.209	-1.455**	0.219	-1.459**	0.219	-1.450**	0.22
3 Children			-2.367**	0.29	-2.268**	0.286	-2.245**	0.285	-2.239**	0.285
Spoke English as a Child			0.691**	0.178	0.445*	0.182	0.425*	0.184	0.428*	0.183
Single			0	.	0	.	0	.	0	.
Married or Cohabiting			-0.450*	0.22	-0.358	0.233	-0.35	0.232	-0.321	0.234
Divorced, Separated or Widowed			-0.107	0.278	0.105	0.29	0.129	0.289	0.157	0.289
North East			0	.	0	.	0	.	0	.
North West			-0.12	0.589	-0.05	0.617	0.013	0.621	0.031	0.61
Yorkshire and the Humber			-0.006	0.588	0.139	0.611	0.191	0.611	0.218	0.6
East Midlands			0.029	0.584	0.133	0.607	0.185	0.612	0.196	0.601
West Midlands			-0.281	0.589	-0.1	0.618	-0.069	0.622	-0.043	0.612
East of England			-0.453	0.577	-0.497	0.598	-0.461	0.601	-0.434	0.591

London	-0.323	0.545	-0.252	0.567	-0.207	0.571	-0.182	0.56
South East	-0.069	0.567	-0.065	0.589	-0.026	0.592	-0.011	0.581
South West	0.367	0.612	0.177	0.627	0.215	0.632	0.244	0.624
Wales	0.424	0.699	0.435	0.725	0.467	0.732	0.485	0.727
Scotland	-0.049	0.648	-0.173	0.668	-0.163	0.671	-0.15	0.667
Northern Ireland	0.819	0.692	0.829	0.703	0.897	0.702	0.867	0.696
Pre-81	0	.	0	.	0	.	0	.
81-90	-0.204	0.326	-0.542	0.359	-0.583	0.361	-0.561	0.363
91-95	-0.222	0.368	-0.62	0.405	-0.667	0.41	-0.703+	0.41
96-03	-0.201	0.33	-0.642+	0.366	-0.680+	0.368	-0.673+	0.369
2004-2008	-0.001	0.356	-0.458	0.392	-0.486	0.395	-0.477	0.397
2008-2015	-0.28	0.427	-0.614	0.447	-0.671	0.448	-0.66	0.451
Primary or Less			-1.602**	0.617	-1.276*	0.623	-1.244*	0.629
Some Secondary			0	.	0	.	0	.
Completed Secondary			1.061**	0.239	0.941**	0.243	0.929**	0.244
Some Tertiary			1.757**	0.299	1.551**	0.307	1.528**	0.308
Completed Tertiary			1.536**	0.278	1.268**	0.295	1.220**	0.301
			0	.	0	.	0	.
Has a UK Certification			0.145	0.22	0.175	0.22	0.154	0.221
Parent did not attend school					0	.	0	.
Parent no quals					0.676	0.411	0.666	0.411
Parent some quals					0.662	0.404	0.659	0.404
Parent post-secondary					0.930*	0.41	0.919*	0.411
Parent tertiary					0.965*	0.41	0.970*	0.41
							0	.
Free Movement							0.2	0.232
Constant	-4.352**	1.132	-6.314**	1.496	-7.611**	1.563	-8.628**	1.637

Table A3. Results of multivariate models of the association between educational selection and logged positive wages, for men and women

	Model 1		Model 2		Model 3		Model 4		Model 5	
	Men									
Educational Selection	0.007**	0.001	0.006**	0.001	-0.004**	0.002	-0.004*	0.002	-0.004*	0.002
Age	0.052	0.041	0.035	0.035	0.053	0.033	0.060+	0.034	0.059+	0.033
Age Squared	-0.001	0	0	0	-0.001	0	-0.001+	0	-0.001+	0
No Children			0	.	0	.	0	.	0	.
1 Child			0.006	0.096	-0.001	0.09	-0.016	0.092	-0.015	0.09
2 Children			0.053	0.102	0.05	0.093	0.046	0.095	0.048	0.094
3 Children			-0.115	0.113	-0.109	0.102	-0.118	0.102	-0.115	0.098
Spoke English as a Child			0.313**	0.076	0.308**	0.073	0.296**	0.073	0.296**	0.073
Single			0	.	0	.	0	.	0	.
Married or Cohabiting			0.092	0.103	0.1	0.102	0.113	0.101	0.12	0.109
Divorced, Separated or Widowed			0.134	0.142	0.132	0.14	0.133	0.139	0.138	0.14
North East			0	.	0	.	0	.	0	.
North West			0.066	0.215	0.13	0.179	0.184	0.18	0.182	0.18
Yorkshire and the Humber			-0.046	0.214	-0.038	0.179	0.004	0.178	0.003	0.179
East Midlands			0.107	0.216	0.192	0.186	0.222	0.192	0.218	0.194
West Midlands			0.263	0.226	0.277	0.187	0.31	0.188	0.303	0.189
East of England			0.231	0.214	0.254	0.181	0.286	0.184	0.281	0.186
London			0.164	0.201	0.187	0.166	0.215	0.168	0.211	0.167
South East			0.380+	0.21	0.383*	0.176	0.407*	0.175	0.400*	0.178
South West			0.131	0.21	0.211	0.175	0.235	0.175	0.234	0.176
Wales			0.047	0.235	0.119	0.196	0.174	0.197	0.168	0.2
Scotland			0.136	0.217	0.089	0.182	0.118	0.186	0.115	0.188
Northern Ireland			0.062	0.247	0.028	0.212	0.076	0.213	0.067	0.214
Pre-81			0	.	0	.	0	.	0	.
81-90			-0.096	0.174	-0.119	0.161	-0.139	0.158	-0.127	0.161
91-95			-0.099	0.181	-0.116	0.163	-0.165	0.162	-0.157	0.159
96-03			0.103	0.172	0.045	0.152	0.001	0.149	0.012	0.152
2004-2008			0.014	0.169	-0.095	0.151	-0.138	0.15	-0.125	0.15

2008-2015			-0.042	0.22	-0.195	0.209	-0.235	0.206	-0.229	0.207
Hrs worked per week			0.047**	0.005	0.047**	0.005	0.047**	0.005	0.047**	0.005
Primary or Less					-0.074	0.242	-0.058	0.248	-0.059	0.249
Some Secondary					0	.	0	.	0	.
Completed Secondary					0.055	0.105	0.026	0.106	0.021	0.105
Some Tertiary					0.084	0.16	0.046	0.162	0.041	0.155
Completed Tertiary					0.703**	0.149	0.613**	0.15	0.603**	0.149
					0	.	0	.	0	.
Has a UK Certification					0.156+	0.084	0.166*	0.084	0.168*	0.082
Parent did not attend school							0	.	0	.
Parent no quals							0.049	0.166	0.047	0.166
Parent some quals							0.105	0.152	0.105	0.151
Parent post-secondary							0.099	0.16	0.096	0.16
Parent tertiary							0.282	0.174	0.282	0.174
									0	.
Free Movement									0.037	0.129
Constant	6.020**	0.837	4.290**	0.725	4.293**	0.687	4.040**	0.717	4.042**	0.716
	Model 1		Model 2		Model 3		Model 4		Model 5	

	Model 1		Model 2		Model 3		Model 4		Model 5	
	Coef	SE	Coef	SE	Coef	SE	Coef	SE	Coef	SE
Educational Selection	0.007**	0.001	0.005**	0.001	0	0.002	0.001	0.002	0.002	0.002
Age	0.110+	0.063	0.051	0.05	0.057	0.05	0.062	0.05	0.053	0.048
Age Squared	-0.001+	0.001	-0.001	0.001	-0.001	0.001	-0.001	0.001	-0.001	0.001
No Children			0	.	0	.	0	.	0	.
1 Child			-0.081	0.078	-0.07	0.075	-0.061	0.074	-0.053	0.072
2 Children			-0.118	0.095	-0.083	0.097	-0.075	0.095	-0.052	0.093
3 Children			-0.325*	0.154	-0.307*	0.152	-0.302*	0.15	-0.305*	0.148
Spoke English as a Child			0.229**	0.076	0.198*	0.085	0.187*	0.084	0.187*	0.083
Single			0	.	0	.	0	.	0	.
Married or Cohabiting			-0.101	0.09	-0.086	0.086	-0.099	0.086	-0.055	0.08
Divorced, Separated or Widowed			-0.024	0.115	0.003	0.104	-0.023	0.101	0.031	0.101

North East	0	.	0	.	0	.	0	.
North West	0.111	0.251	0.1	0.237	0.137	0.248	0.197	0.249
Yorkshire and the Humber	-0.028	0.243	-0.022	0.226	-0.017	0.242	0.079	0.245
East Midlands	0.058	0.232	0.083	0.212	0.095	0.227	0.143	0.23
West Midlands	0.031	0.268	0.071	0.247	0.095	0.262	0.162	0.263
East of England	0.195	0.237	0.206	0.219	0.242	0.235	0.326	0.241
London	0.146	0.232	0.154	0.213	0.186	0.229	0.255	0.231
South East	0.102	0.225	0.114	0.214	0.142	0.231	0.189	0.234
South West	0.124	0.238	0.099	0.222	0.137	0.238	0.214	0.24
Wales	0.138	0.264	0.104	0.248	0.187	0.269	0.241	0.273
Scotland	0.101	0.266	0.098	0.242	0.097	0.257	0.166	0.262
Northern Ireland	0.141	0.236	0.068	0.225	0.119	0.24	0.118	0.243
Pre-81	0	.	0	.	0	.	0	.
81-90	0.383*	0.168	0.338+	0.179	0.333+	0.176	0.361*	0.179
91-95	0.369+	0.201	0.329+	0.198	0.327	0.199	0.28	0.193
96-03	0.281	0.171	0.223	0.167	0.217	0.165	0.24	0.168
2004-2008	0.171	0.186	0.135	0.18	0.142	0.18	0.162	0.181
2008-2015	0.199	0.188	0.142	0.185	0.146	0.187	0.167	0.191
Hrs worked per week	0.053**	0.005	0.052**	0.005	0.053**	0.005	0.053**	0.005
Primary or Less			-0.093	0.248	0.017	0.288	0.09	0.288
Some Secondary			0	.	0	.	0	.
Completed Secondary			-0.084	0.098	-0.08	0.101	-0.084	0.101
Some Tertiary			0.249*	0.113	0.212+	0.12	0.204+	0.116
Completed Tertiary			0.374**	0.142	0.285+	0.157	0.228	0.162
			0	.	0	.	0	.
Has a UK Certification			0.058	0.133	0.076	0.126	0.038	0.122
Parent did not attend school					0	.	0	.
Parent no quals					0.194	0.23	0.143	0.232
Parent some quals					0.03	0.238	-0.008	0.24
Parent post-secondary					0.156	0.229	0.104	0.23
Parent tertiary					0.32	0.236	0.288	0.235

Free Movement									0	.
Constant	4.466**	1.204	3.867**	1.153	3.907**	1.123	3.572**	1.124	0.315**	0.084
									3.513**	1.115

Table A4. Results of multivariate models of the association between educational selection and currently or previously working in a professional occupation, for men and women

	Model 1		Model 2		Model 3		Model 4		Model 5	
	Men									
	Coef	SE	Coef	SE	Coef	SE	Coef	SE	Coef	SE
Educational Selection	0.038**	0.006	0.037**	0.007	-0.003	0.008	-0.003	0.008	0.001	0.008
Age	0.105	0.085	0.211+	0.11	0.322*	0.128	0.387**	0.137	0.359**	0.135
Age Squared	-0.001	0.001	-0.003*	0.001	-0.004*	0.001	-0.004**	0.002	-0.004**	0.002
No Children			0	.	0	.	0	.	0	.
1 Child			0.08	0.287	0.191	0.314	0.124	0.319	0.155	0.325
2 Children			-0.398	0.289	-0.369	0.328	-0.381	0.329	-0.375	0.338
3 Children			-0.671+	0.399	-0.634	0.447	-0.69	0.437	-0.624	0.439
Spoke English as a Child			1.551**	0.234	1.707**	0.271	1.714**	0.275	1.739**	0.273
Single			0	.	0	.	0	.	0	.
Married or Cohabiting			0.162	0.351	0.111	0.386	0.19	0.377	0.358	0.389
Divorced, Separated or Widowed			-0.345	0.522	-0.491	0.539	-0.512	0.548	-0.401	0.564
North East			0	.	0	.	0	.	0	.
North West			-0.587	0.727	-0.763	0.722	-0.311	0.857	-0.376	0.856
Yorkshire and the Humber			-0.855	0.799	-1.2	0.756	-0.834	0.902	-0.896	0.895
East Midlands			-0.492	0.798	-0.425	0.805	-0.066	0.943	-0.174	0.941
West Midlands			-0.685	0.712	-0.987	0.733	-0.686	0.86	-0.895	0.86
East of England			-0.04	0.713	-0.2	0.716	0.175	0.862	0.042	0.861
London			-0.227	0.665	-0.371	0.659	-0.014	0.813	-0.119	0.811
South East			0.177	0.688	0.032	0.687	0.43	0.832	0.267	0.825
South West			-0.168	0.716	-0.225	0.734	0.076	0.898	0.03	0.9
Wales			-0.191	0.929	-0.182	0.949	0.406	1.074	0.263	1.089
Scotland			-0.013	0.779	-0.405	0.806	-0.065	0.93	-0.139	0.926
Northern Ireland			-0.77	0.967	-1.153	1.008	-0.673	1.11	-0.949	1.147
Pre-81			0	.	0	.	0	.	0	.
81-90			-0.054	0.525	-0.205	0.609	-0.373	0.625	-0.108	0.625
91-95			-0.328	0.601	-0.504	0.728	-0.993	0.761	-0.816	0.758
96-03			0.509	0.538	0.368	0.654	0.09	0.685	0.328	0.685
2004-2008			-0.095	0.559	-0.386	0.687	-0.684	0.722	-0.408	0.726

2008-2015			0.499	0.622	0.25	0.762	-0.113	0.787	0.016	0.784
Primary or Less					1.992+	1.028	2.213*	1.028	2.226*	1.083
Some Secondary					0	.	0	.	0	.
Completed Secondary					0.994+	0.548	0.986+	0.548	0.878	0.549
Some Tertiary					1.849**	0.614	1.894**	0.623	1.780**	0.625
Completed Tertiary					3.155**	0.603	2.961**	0.606	2.736**	0.604
Has a UK Certification					0.890**	0.283	0.939**	0.285	0.979**	0.292
Parent did not attend school							0	.	0	.
Parent no quals							0.152	0.713	0.104	0.712
Parent some quals							0.353	0.718	0.342	0.711
Parent post-secondary							0.14	0.705	0.06	0.702
Parent tertiary							1.354*	0.672	1.361*	0.667
Free Movement									0.664+	0.339
Constant	-5.539**	1.879	-7.602**	2.314	-8.998**	2.497	-10.942**	2.705	-10.888**	2.689
	Model 1		Model 2		Model 3		Model 4		Model 5	

	Women									
	Coef	SE	Coef	SE	Coef	SE	Coef	SE	Coef	SE
Educational Selection	0.027**	0.005	0.032**	0.006	0.008	0.007	0.01	0.007	0.014+	0.007
Age	0.155+	0.079	0.166+	0.095	0.212*	0.101	0.231*	0.105	0.211*	0.105
Age Squared	-0.002*	0.001	-0.002+	0.001	-0.002*	0.001	-0.003*	0.001	-0.002+	0.001
No Children			0	.	0	.	0	.	0	.
1 Child			-0.205	0.247	-0.084	0.266	-0.068	0.269	-0.054	0.27
2 Children			-0.784**	0.284	-0.597+	0.305	-0.593+	0.307	-0.570+	0.31
3 Children			-0.535	0.451	-0.367	0.509	-0.397	0.539	-0.404	0.57
Spoke English as a Child			0.953**	0.22	0.830**	0.233	0.813**	0.235	0.825**	0.233
Single			0	.	0	.	0	.	0	.
Married or Cohabiting			-0.287	0.269	-0.151	0.276	-0.194	0.271	-0.1	0.274
Divorced, Separated or Widowed			-0.306	0.355	-0.134	0.381	-0.271	0.388	-0.175	0.398
North East			0	.	0	.	0	.	0	.
North West			-1.097	1.402	-1.003	1.261	-1.01	1.096	-0.919	1.197
Yorkshire and the Humber			-1.864	1.427	-1.911	1.302	-2.022+	1.153	-1.862	1.252
East Midlands			-1.793	1.393	-1.639	1.243	-1.672	1.057	-1.604	1.165
West Midlands			-1.522	1.397	-1.278	1.247	-1.286	1.075	-1.192	1.188
East of England			-1.434	1.397	-1.332	1.264	-1.379	1.102	-1.26	1.213

London	-1.295	1.372	-1.142	1.219	-1.196	1.043	-1.097	1.158
South East	-1.359	1.376	-1.176	1.229	-1.215	1.054	-1.156	1.166
South West	-1.035	1.391	-1.04	1.24	-1.02	1.06	-0.896	1.176
Wales	-1.156	1.48	-1.221	1.377	-1.118	1.239	-1.061	1.337
Scotland	-0.81	1.438	-0.683	1.283	-0.778	1.108	-0.655	1.228
Northern Ireland	-0.618	1.408	-0.769	1.257	-0.712	1.085	-0.712	1.2
Pre-81	0	.	0	.	0	.	0	.
81-90	0.412	0.482	0.009	0.516	-0.028	0.526	0.008	0.523
91-95	0.419	0.569	0.155	0.595	0.172	0.607	0.066	0.597
96-03	0.5	0.499	0.26	0.522	0.269	0.533	0.299	0.529
2004-2008	0.176	0.511	0.138	0.53	0.161	0.54	0.161	0.536
2008-2015	0.241	0.609	0.103	0.64	0.093	0.654	0.087	0.649
Primary or Less			0	.	0	.	0	.
Some Secondary			0	.	0	.	0	.
Completed Secondary			0.757	0.604	0.751	0.607	0.733	0.608
Some Tertiary			1.576**	0.575	1.430*	0.59	1.415*	0.59
Completed Tertiary			2.221**	0.561	1.964**	0.57	1.857**	0.57
Has a UK Certification			0.887**	0.263	0.971**	0.269	0.907**	0.27
Parent did not attend school					0	.	0	.
Parent no quals					0.776	0.657	0.684	0.658
Parent some quals					0.313	0.655	0.216	0.653
Parent post-secondary					1.026	0.634	0.93	0.633
Parent tertiary					1.197+	0.625	1.134+	0.623
Free Movement							0.556+	0.297
Constant	-5.404**	1.724	-4.711+	2.427	-6.033*	2.504	-7.291**	2.581
							-7.314**	2.626

Figures

Figure A1: General health and moderators

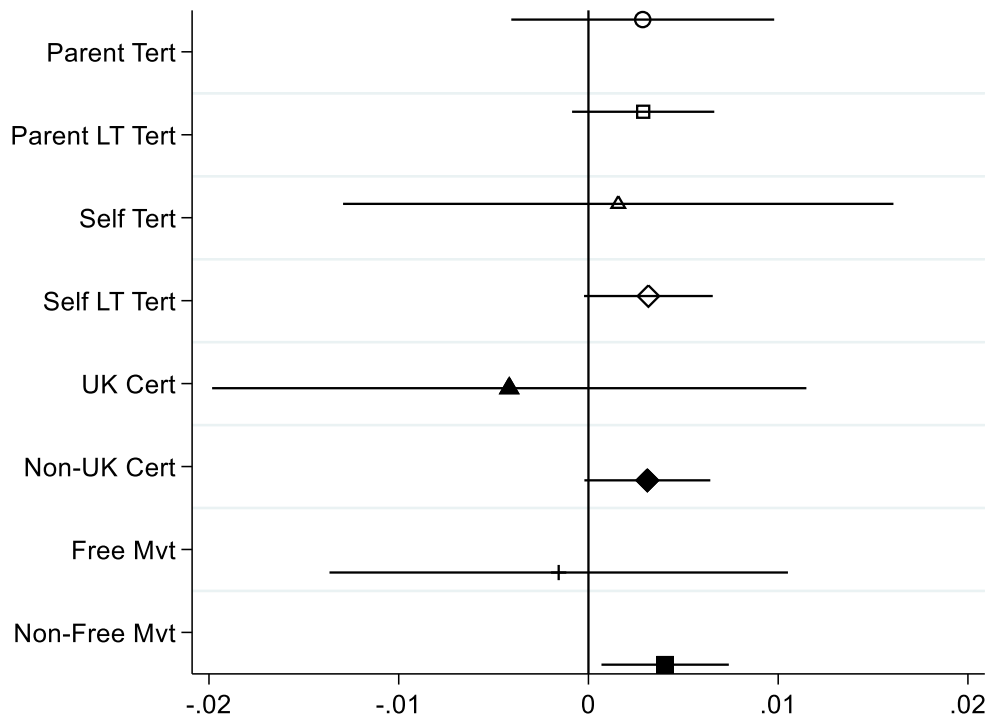


Figure A2: GHQ and moderators

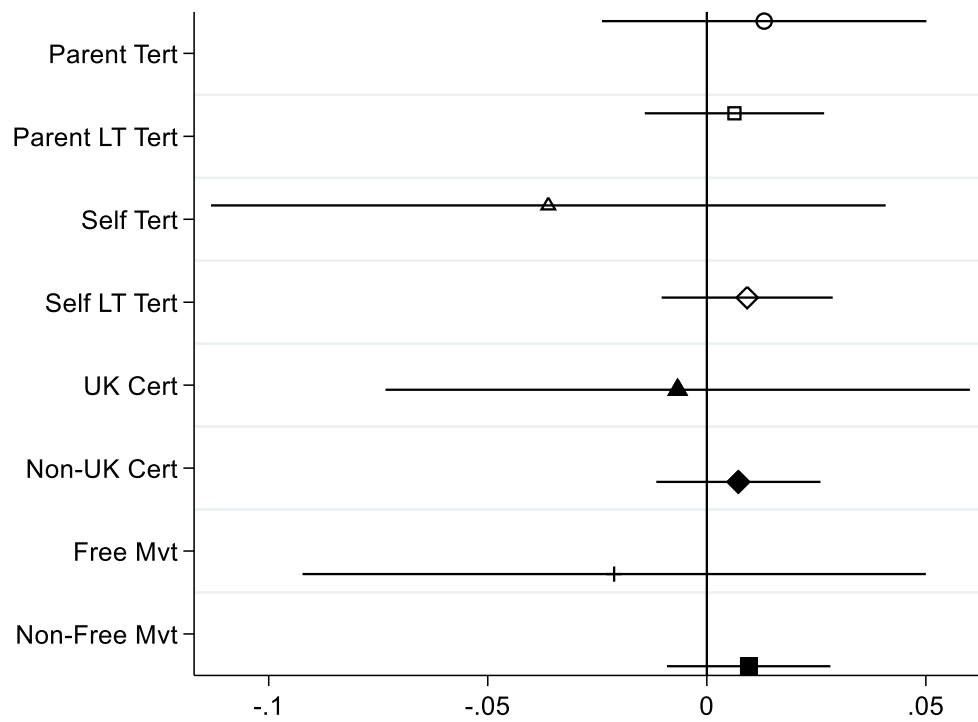


Figure A3: High share of friends have a job and moderators

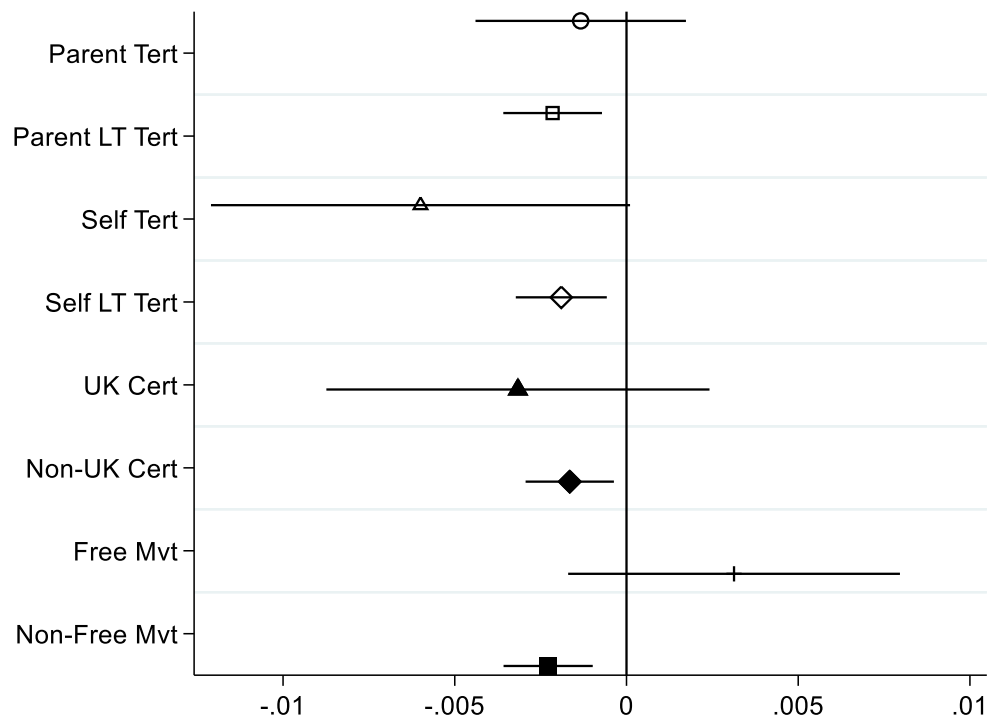


Figure A4: High share of friends are of same ethnic group and moderators

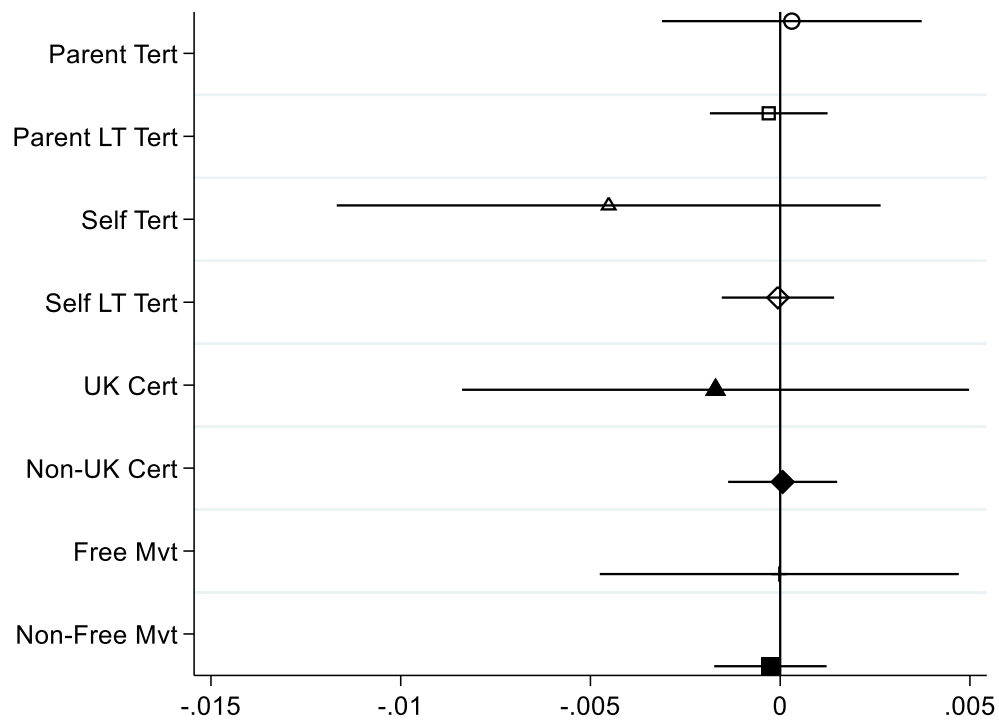


Figure A5: High share of friends are family and moderators

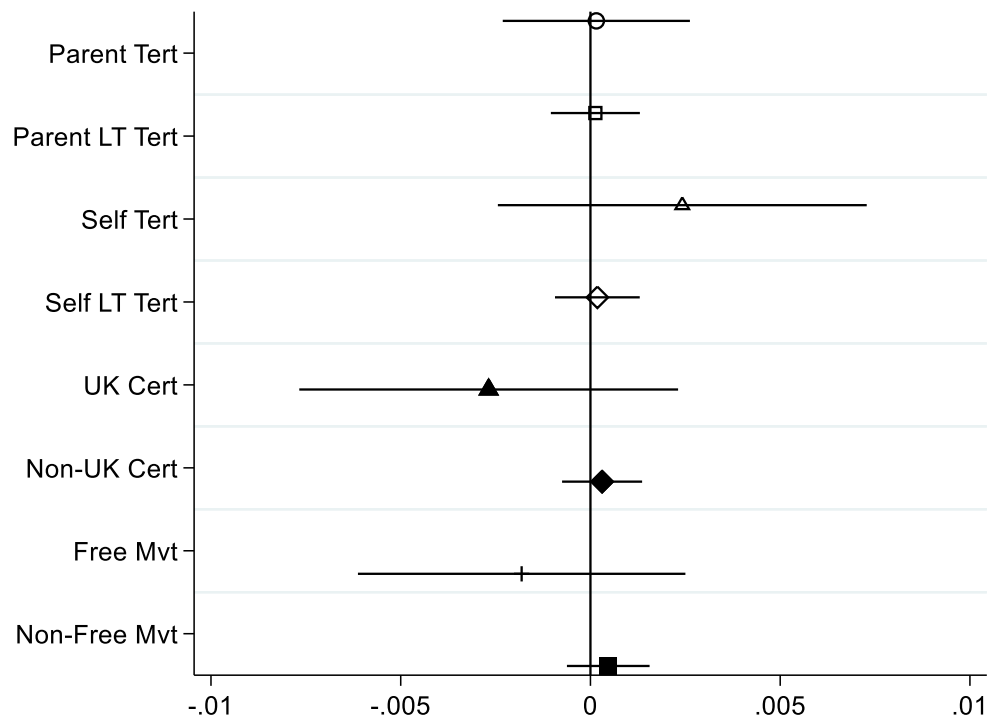


Figure A6: High share of friends are from the same area and moderators

