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Citation for final published version:

Fox, Stuart, Taylor, Chris , Evans, Ceryn and Rees, Gareth 2023. The positional effects of education on social capital in the UK. International Journal of Sociology 10.1080/00207659.2023.2227457 file

Publishers page: http://dx.doi.org/10.1080/00207659.2023.2227457

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International Journal of Sociology

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/mijs20

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To cite this article: Stuart Fox, Chris Taylor, Ceryn Evans & Gareth Rees (2023): The Positional Effects of Education on Social Capital in the UK, International Journal of Sociology, DOI: 10.1080/00207659.2023.2227457

To link to this article: https://doi.org/10.1080/00207659.2023.2227457

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INTERNATIONAL JOURNAL OF SOCIOLOGY
https://doi.org/10.1080/00207659.2023.2227457

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The Positional Effects of Education on Social Capital in the UK

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ABSTRACT

Social research consistently identifies education as a key driver of social capital, providing skills, experiences and values facilitating social interaction. This theory cannot explain, however, why indicators of social capital (such as social trust) have not increased despite the massification of higher education in Europe and America. Efforts to explain this paradox have suggested the sorting effects of education may be more important for understanding how it is related to social capital. Empirical applications of this theory have produced mixed results, however, and the literature is dominated by a US focus and methodological disputes that make determining generalizability beyond the US difficult. This research attempts to reconcile some of the methodological disputes and examines the sorting effect of education on social capital in the UK. It finds no evidence of educational sorting for behavioral indicators of social capital, but strong evidence for social trust.

ARTICLE HISTORY
Received 16 May 2022
Revised 9 June 2023
Accepted 16 June 2023

KEYWORDS
Social capital; education; positional education; civic participation; volunteering

Introduction

The extensive benefits associated with social capital, and a growing awareness of how individual behavior and circumstances are shaped by social resources and interactions, have led it to be one of the most intensely studied concepts in social research (Bourdieu 1985; Putnam 2000; Welzel et al. 2005; Sapin et al. 2020; Bian et al. 2020; Fox et al. 2021; Botha 2014; Fuzer et al. 2020; Helliwell and Putnam 2007; Richards and Heath 2015). Such research consistently identifies education as a strong determinant of one's ability to mobilize resources from social networks, with higher levels of education associated with greater possession of skills and values that facilitate social interaction, and superior positions within more diverse social networks. While studies of trends in social capital in Europe, the US and Australasia reach varied conclusions, however, there is a consensus that social capital has not increased in the way expected given rising levels of education (Putnam 2000; Verba et al. 1995; Whiteley 2012; Huang et al. 2009; Green et al. 2003; Pichler and Wallace 2007; Richards and Heath 2015). Moreover, lower levels

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Supplemental data for this article can be accessed online at https://doi.org/10.1080/00207659.2023.2227457.

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of social capital are concentrated among the younger generations, who are also the most highly educated (Fox et al. 2021; Putnam 2000; Richards and Heath 2015; Taylor et al. 2020).

Conventional theories of the relationship between education and social capital, which focus primarily on the benefits of education for civic skills, pro-social values and socio-economic resources that facilitate civic participation and social interaction, cannot explain this paradox. This has led to increased interest in alternatives that view the effects of education primarily through its impact on social status – known as positional theories of education. One such theory – the sorting theory – explains the paradox by highlighting the diminishing returns of a high level qualification in a society in which many others are similarly highly educated for assuring superior social status and, therefore, greater access to opportunities to develop and mobilize social capital. The potential of such theories to explain turnout decline in increasingly educated Western societies has received considerable attention (Nie et al. 1996; Campbell 2009; Tenn 2005; Persson 2013, 2014; Aards and Christensen 2020), but that paid to their potential to explain trends in social capital is far more limited. While Nie et al. (1996), Campbell (2009) and Horowitz (2015) examined the positional effects of education on some indicators of social capital (including associational membership and political tolerance), only Helliwell and Putnam (2007) explicitly focused on the concept (examining neighborhood interaction, associational activity and social trust). Not only did the four studies reach contradictory conclusions, but all employed data relating only to the United States; there has, thus far, been no attempt to apply a positional model of education to the study of social capital in a non-US context. In addition, there are methodological disagreements about how the positional effects of education should be operationalized, which contribute to the lack of consensus and make determining the generalizability of findings harder still.

This research will contribute to this literature and study the positional effects of education on social capital in a non-US context. Using the UK's Household Longitudinal Study, it confronts some of the methodological challenges facing the field and examines the positional effects of education on three key indicators of social capital: associational membership, volunteering and social trust. As well as offering further insight into how the effects of education on social capital are contingent on the education level of an individual's social environment, the paper examines whether the sorting model has the potential to explain why the massification of higher education in the UK has not resulted in expected increases in social capital. The analyses find little evidence of positional education effects for behavioral indicators of social capital: by far the most important determinant is the direct, independent effect of one's education. Our analysis leads us to expect, therefore, that rising levels of education in the UK should have led to increased associational membership and volunteering, and we remain unable to explain why this has not happened. For social trust, however, we find a clear sorting effect: propensity to trust one's neighbors is determined in part by how one's level of education compares with that of others' in the social environment. Those who hold superior qualifications are more likely to secure prominent positions in more diverse social networks, leading to a greater propensity to trust others in the community and a greater capacity to mobilize social resources through interaction with them. For those

whose qualifications do not assure superior social status, however, their education provides little benefit to their propensity to trust others. This provides, therefore, evidence of the potential of the sorting theory to explain why the massification of higher education has been accompanied by a decline in social trust in the UK.

In the next section, we review theories of the relationship between education and social capital from both direct and positional perspectives, as well as the findings of previous literature. The research design section sets out our expectations for the relationship between education and social capital, and outlines how the methodological challenges inherent to the study of positional education effects were addressed. The results are then presented, before the discussion considers the implications of the findings for how education and social capital are related, and the conclusion applies those findings to the wider question of rising education alongside stable or falling social capital in Western societies.

Literature review

Social capital and the direct effects of education

Sometimes referred to as social bonding, resources or support, social capital refers to the "personal attributes and access to networks that make it easier for individuals to achieve … objectives [through] interaction with other[s]" (Pena-Lopez and Sanchez-Santos 2017: 8; Bourdieu 1985; Coleman 1988; Putnam 2000; Welzel et al. 2005; Hofreiter and Bahna 2020; Lin and Dumin 1986; Bian et al. 2020). In contrast with human or economic capital, social capital focusses on resources accessed through social interaction, whether in institutional or non-institutional settings (Bian et al. 2020). This makes the social networks through which such interaction occurs pivotal to the study of social capital: networks are sources of information, knowledge and support which can mobilize people to engage in activities (such as volunteering) and help achieve a wide range of goals (such as getting a new job) (Sapin et al. 2020; Hofreiter and Bahna 2020). The nature of the network one has access to, status within it, propensity to interact with it and capacity to mobilize resources from doing so are all critical to determining, therefore, an individual's access to social capital (Sapin et al. 2020; Lin and Dumin 1986; Fuzer et al. 2020). This means that research explaining trends or differences in social capital at the individual level focusses on two key areas: the features of the social networks of which those individuals are a part (e.g., Sapin et al. 2020; Lin and Dumin 1986; Bian et al. 2020; Hofreiter and Bahna 2020) and individual characteristics that shape one's capacity to mobilize resources from them (e.g., Putnam 2000; Fox et al. 2021; Li et al. 2005; Helliwell and Putnam 2007).

Interest in education as a determinant of social capital typically reflects the latter, focusing on the consequences of educational experiences for those characteristics that affect social participation and interaction. These include the development of transferable civic or social skills (such as team working), knowledge (such as of political issues) and pro-social values (such as tolerance or trust) (Green et al. 2003; Verba et al. 1995; Pichler and Wallace 2007; Putnam 2000). Such research consistently finds that individuals with more education tend to exhibit greater markers of social interaction – such as being more socially trusting, more likely to join community associations or volunteer –

and have, therefore, more social capital (Putnam 2000; Welzel et al. 2005; Verba et al. 1995; Pichler and Wallace 2007).

These findings underpin *direct effect* theories of education, which posit that one's education experiences have direct consequences for characteristics related to social capital regardless of the educational characteristics of others. A university graduate, for example, is expected to be more trusting and civically active than a non-graduate regardless of how many other graduates are in their neighborhood. Such theories cannot explain, however, why rising levels of education (primarily as a result of increasing numbers of graduates) in Europe and the US have not been accompanied by increases in expressions of social capital, nor why lower levels of social capital are concentrated among the youngest yet most highly educated cohorts (Putnam 2000; Whiteley 2012; Richards and Heath 2015; Grasso 2016; Richards and Heath 2015; Hall 1999; Nie et al. 1996; Persson 2013; Horowitz 2015; Fox et al. 2021).

Social capital and the positional effects of education: the sorting theory

This challenge has led to greater interest in positional theories of education. Recognizing that society is hierarchically organized around normatively valued characteristics (such as wealth, status and power) to which people have finite access and in which only a minority are able to occupy the highest positions, positional theories focus on how education determines one's place in social structure through its impact on those characteristics that determine social status (Lin and Dumin 1986; Lin et al. 2014; Sapin et al. 2020; Pena-Lopez and Sanchez-Santos 2017). Social resources "are not only intrinsically attached to … [superior] positions, but the [superior] position itself affords greater accessibility to positions at other rankings" (Lin and Dumin 1986: 366) i.e., people in higher positions in the social structure have greater access to those elsewhere in the structure, making their social networks more diverse and so more productive of social resources (Sapin et al. 2020; Bian et al. 2020; Cappellari & Tatsiramos 2015). Individuals in higher positions of the social structure have, therefore, a greater command of social capital (Lin and Dumin 1986; Sapin et al. 2020; Pena-Lopez and Sanchez-Santos 2017; Fuzer et al. 2020). In contrast with direct effect theories that view the effects of education independently of the educational characteristics of others, positional theories view education as a determinant of status the value of which is based entirely on its relation to the educational characteristics of others.

The mechanism through which education affects social status is its 'signalling effect' (Hirsch 1976; Frank 2007; Lin and Dumin 1986): markers of education (such as qualifications) signal to others the individual's likely possession of those resources and characteristics to which normative value is assigned, which affects the status they attach to the individual and how they respond to them in social settings (Birdal and Ongan 2016; Goldthorpe 2014; Campbell 2009; Horowitz 2015). What matters is not the specific qualification of the individual but the signal it sends based on how it compares with the qualifications of others. A doctor, for example, may be assumed to not only possess specialist medical knowledge but also be intelligent, hard-working, successful and wealthy; someone less educated may assume the doctor possesses resources (such as wealth) and characteristics (such as intelligence) they themselves lack. The doctor's qualifications

relative to others' act as a short-cut through which that determination is made, which in turn influences how people respond to the doctor in social situations. The doctor's medical qualification is only significant, however, to the extent that it differentiates them from others in their social environment: a doctor in a community of doctors would receive little advantage because everybody else possesses the same marker of status and has no reason to assume the doctor will necessarily possess more valued resources.

This logic underpins the 'sorting model' of education, in which markers of education (qualifications) – through their impact on social status – are a means through which public goods are distributed in a population in a manner that favors superior status. The model was first developed in economics (Spence 1974; Frank 2007) and applied by Nie et al. (1996) in their effort to explain the paradox of falling turnout alongside rising levels of education in the US. Nie et al. (1996) argued that people are more likely to participate in politics if they can do so in ways they consider valuable (because, for example, they are particularly influential). Opportunities for such valuable forms of participation are limited (either because there aren't many of them or because politicians, journalists and civil servants etc. can only pay attention to a limited number of citizens at any given time), and so people compete to secure them. Social status – dictated by education – is a way in which gatekeepers of those opportunities (such as the politician deciding which constituent to consult with) identify the most desirable individuals to make them available to, on the basis that those of superior status are more likely to possess resources and characteristics of value and that the participation is, therefore, more likely to be valuable (Nie et al. 1996; Tenn 2005; Horowitz 2015; Aars and Christensen 2020; Persson 2013, 2014; Campbell 2009). The result is that those of superior status are more likely to have access to desired means of political participation, and so are more likely to be active.

The same logic can be applied to forms of community participation and social interaction over which there is competition, and this is the basis of the application of the sorting model to the relationship between education and social capital. Examples include forms of participation that are finite and for which there may be numerous candidates, such as chairperson of community associations, or the holding of superior positions within social networks (Horowitz 2015, 2018; Campbell 2009; Lin et al. 2014). Such positions offer benefits unavailable to those who do not hold them, such as improved social status, opportunities to advance one's agenda, career or material interests, or greater psychological benefits such as life satisfaction (Nie et al. 1996; Horowitz 2015; Campbell 2009). Among those benefits is greater social capital, for two reasons: first, some roles (such as chair of the parents' and teachers' association) lead the office-holder to meet and work with parents, teachers, school governors and politicians they may otherwise not encounter. This allows them to develop a broader and more diverse social network from which more social resources can be mobilized (Sapin et al. 2020; Bian et al. 2020; Horowitz 2015). Second, occupying such a prominent role within the community could lead the individual to possess higher social status (because of their capacity to speak directly with local politicians, for example), making them more desirable additions to a community project or activity, social network or association. This could lead to others' being more likely to recruit and mobilize that individual to their

community activities i.e., the high status individual would be presented with more opportunities for social interaction and more likely to take advantage of them because of others' efforts to mobilize them, leading to more social capital (Verba et al. 1995; Putnam 2000).

The sorting theory offers a resolution to the paradox of rising levels of education not leading to increases in social capital: if social capital is determined based on social status dictated by education, any diminishment in the utility of education as a determination of status will undermine its capacity to shape the distribution of social capital. Applied to the issue of turnout, numerous studies have shown that the massification of higher education in the US and Europe has led degrees to provide far less of a boost to graduates' turnout because they provide far less of a boost to social status (because most others in their social networks possess degrees as well) (Tenn 2005; Nie et al. 1996; Campbell 2009; Persson 2013, 2014; Aards and Christensen 2020; Horowitz 2015). For characteristics related to social capital, some evidence has been found of a sorting effect for forms of social interaction that are limited and/or for which there is competition determined by gatekeepers receptive to markers of social status, such as holding leadership positions in community associations or membership of associations in which there are leadership positions, the availability of which could affect some people's likelihood of joining or remaining members (Helliwell and Putnam 2007; Campbell 2009; Nie et al. 1996; Horowitz 2015).

An alternative positional effect: the amplification theory

Critics of the sorting model argue, however, that competition and difference is not a sensible basis for explanations of social activities characterized by cooperation, altruism and/or shared identity (Delli Carpini 1997; Galston 2001; Helliwell and Putnam 2007). They also point to the flawed logic of the sorting model when applied to some forms of associational activity: it makes little sense, for example, to think of membership of a sports or book club as finite and competitive when it would only be meaningful if there are enough other people involved to form teams or discuss books. Similarly, while social status may be hierarchical, social trust is not a finite resource over which people compete but rather something formed through shared identity and experience, and reciprocity (Delli Carpini 1997; Helliwell and Putnam 2007).

These criticisms do not preclude the possibility of positional education effects on social capital, but rather imply an alternative to sorting: an 'amplification effect' (Campbell 2009). This theory argues that social environments in which lots of people are highly educated does not diminish the benefit of an individual's qualification but rather makes opportunities for social interaction and civic participation more likely. Drawing on direct effect theories of education, the logic is that a community of graduates (for example) will contain many people with the civic skills, pro-social values and psychological resources that facilitate social interaction, and so will be more likely to maintain opportunities for such interaction (such as through neighborhood forums, community associations or volunteering) (Helliwell and Putnam 2007; Campbell 2009; Green et al. 2003). Someone with similarly high levels of education joining such a community will not only be presented with many opportunities for social participation and interaction, but possess the resources

to take advantage of them. In this way, the amplification theory expects the direct and positional effects of education to be additive: a graduate joining a community of graduates will be more likely to be civically active and generate social capital than a graduate in a community of non-graduates, as while both possess similar resources that facilitate social interaction the latter's community will present fewer opportunities to do so. As with the sorting theory, the literature provides some evidence for amplification effects in relation to social capital as well: Nie et al. (1996) and Campbell (2009) found evidence of amplification in relation to political knowledge and tolerance, while Helliwell and Putnam (2007) found similar evidence with regard to social trust.

The limitations of the existing literature and operationalising the positional effects of education

The literature points, therefore, toward the potential application of both sorting and amplification effects to the relationship between education and social capital. Both represent a substantial development on direct effect theories alone for understanding how education affects social interaction and resources, although only the sorting model can explain why rising levels of education have not led to similar increases in social capital in Europe and America. This theoretical potential makes an examination of positional effects of education on social capital worthwhile, but so too does the limitations of the existing literature. First, as the discussion above illustrates, there is no consensus as to the applicability of positional education effects to social capital, nor which positional theory best characterizes the relationship or for which indicators of social capital each applies. Second, none of the existing studies have employed data from outside the US, raising questions about the generalizability of conclusions to non-US contexts, given differences in social structure, education and qualification systems and their relationship with social status and civic life. Finally, there are numerous disagreements about how to operationalize the positional effects of education, differences in the approach to which have been shown to produce substantially different conclusions (Campbell 2009). The goal of this research is, therefore, to advance understanding of the relationship between education and social capital by i) applying positional theories to that relationship; ii) doing so in a non-US context; and iii) using a refined model of positional education that builds on the debates in the literature, which are summarized in this section.

The main disputes relate to the way the educational features of an individual's social environment – i.e., the social setting in which the individual is assumed to primarily interact with others, participate in their community and compete for public goods etc. – are defined and measured. There are two key features to consider: locality and age. Locality is important because social networks are heavily influenced by proximity: we are more likely to interact with people we see at work every day or who we live near than those living miles away (Campbell 2009; Helliwell and Putnam 2007). In addition, most community associations or activities through which people interact are rooted in localities: Sunday league football teams, church groups, book clubs etc. are all run by and for people living in the area, and even national organizations – such as political parties – have localized branches. Age is similarly important because social networks are shaped by people's life circumstances and common socializing experiences: people tend

to form friendships and bonds with those of similar age, and common life circumstances can be the basis of shared experiences that underpin social bonds (Bukodi and Goldthorpe 2016; Campbell 2009; Horowitz 2018; Tenn 2005). People are more likely to maintain lasting friendships with those from their class at school, for example, than those twenty years older; students are more likely to interact with other students than someone who works full-time; and a retired person is more likely to socialize with fellow retirees than a neighbor who just had their first child.

To determine someone's positional level of education (i.e., how an individual's level of education relates to that of their social environment), therefore, it is necessary to account for the educational characteristics of others of a similar age in the same locality. Previous research is highly variable in how it has done so. Nie et al. (1996) defined locality as the entire US, and the age group as anybody who reached 25 in the same year as the individual or any of the preceding 24 years. This reflected their assumption that participation in national political activities (such as elections) was influenced by social status in a national context, but ignored the localized and age-oriented nature of social networks. Helliwell and Putnam (2007) and Horowitz (2015) used smaller localities defined by US Census Regions, however the average size of a US Census Region in 2017, for example, was 2.5 million square kilometers and included an average of 81 million people – still very large for approximating a geographic area in which social interaction is concentrated. While Horowitz (2015) grouped respondents into five-year age bands, Helliwell and Putnam (2007) took no account of age, arguing that social interaction is conditioned only by whomever one lives near, which overlooks the link between social interaction and life circumstance. Campbell's (2009) analysis defined locality in terms of local authority and zip code, which are far more likely to correlate with the geographic concentration of social networks. He also clustered respondents into age categories corresponding to those used by US education statistics. While leading to a broader age classification than Horowitz, this allowed the average level of education for each age group in each locality to be defined by US Census data rather than relying on survey samples not intended to be representative of those age groups or areas. Campbell's approach offers, we argue, the best way of operationalizing the positional effect of education for social capital employed thus far.

Research design

Data and hypotheses

This study uses the 2016 UK Household Longitudinal Survey (UKHLS): an annual panel of UK households that gathers data on a host of economic, social and political measures from a large sample (over 40,000 respondents). The survey includes 13 measures of social capital – used as the dependent variables in this research – including 11 measures of associational membership (trade unions, parents' and teachers' associations, tenants' and residents' associations, religious organizations, voluntary service organizations, social clubs, political parties, environmental groups, sports clubs, professional organizations, and pensioners' associations), volunteering (in the previous 12 months) and social trust (whether respondents trusted their neighbors). Associational membership is a staple of social capital research, with community associations providing increasingly

important institutional settings of social bonding in an urbanized and individualized society (Bian et al. 2020). The more community groups someone participates in, the more likely they are to interact and form bonds with others, and so the more social capital they can access (Fuzer et al. 2020; Pichler and Wallace 2007). A limitation of this measure, however, is that younger citizens are increasingly unlikely to form attachments to traditional social institutions and community groups even though they may be civically active in other ways, and so their lack of associational activity alone cannot be taken as indicative of low social capital (Dalton 2013; Fox et al. 2021). Including a measure of whether respondents have volunteered within the previous year, therefore, provides a measure of social interaction that is more common among young adults and does not require the same degree of institutional attachment.

Social trust is the foundation of social networks formed beyond institutional settings, binding people together and providing a basis for shared experiences (Bian et al. 2020; Fuzer et al. 2020; Hofreiter and Bahna 2020). Unlike the others, it is an attitudinal indicator of social capital. The nature of the causal relationship between attitudinal and behavioral indicators is disputed, but social trust can be both a driver of community activity that facilitates the forging of social bonds (i.e., people who are more socially trusting are more likely to be active in their community) and a consequence of community activity as people form bonds with others that leads them to be more trusting (i.e., people who are more active are more likely to be socially trusting) (Bian et al. 2020; Putnam 2000; Helliwell and Putnam 2007). While positively associated with the traits commonly identified as determinants of social capital – such as education – the detail of its relationship with them is also different. Associational membership and volunteering, for example, are both behaviors requiring (among other things) time, resources, opportunity and motivation. As an attitude, social trust requires none of these, but is instead indirectly affected by how those resources and characteristics affect the propensity to participate in activities that facilitate social trust formation, or by other characteristics that can predispose people to be trusting correlated with those more commonly measured indicators. People with higher levels of education are more likely to come from wealthier and more highly educated households, for example, in which their parents are more likely to be socially trusting and to socialize their children into sharing this trait as well (Bourdieu 1985).

The consistent finding that there is a direct effect from education on social characteristics – including in studies of the positional effects of education – underpins our expectation that there will be positive direct education effects for all 13 of our dependent variables. We expect different positional education effects, however. While there is no consensus in the literature about such effects, there is little evidence of amplification effects regarding behavioral manifestations of social capital. Rather, where positional effects are found they are sorting effects, particularly for activities in which there are particularly powerful or prestigious positions over which people may compete, such as membership of associations with hierarchical leadership structures (Horowitz 2015; Campbell 2009). We expect a sorting effect for membership, therefore, of trade unions, political parties, parent and teacher associations, and tenants' and residents' associations. We expect no sorting or amplification effect for membership of organizations that do not have such structures and that are defined from attracting as many members as possible, including sports clubs, social clubs, pensioner associations, environmental groups,

religious associations, professional associations and voluntary service organizations, as well as for volunteering. For social trust, we follow the arguments and findings of Helliwell and Putnam (2007) and expect an amplification effect: social trust is not limited by access to competition and expected to grow in an environment in which trusting behavior is more likely to be reciprocated i.e., we expect highly educated people in highly educated environments to be even more socially trusting.

Measure of education effects

Following Campbell (2009), the social environment used to measure positional education was defined in terms of local authority and age group.[1] Respondents were categorized into four groups corresponding broadly to understandings of life cycle circumstances and the age groups used to record education statistics by the Census (under-25s were omitted as their education status was less likely to be stable – they could, for example, have been in university):

- 25-34: young adults who recently completed their education, and are less likely to own homes, be married, or have established careers;
- 35-49: adults with more established careers and economic security, more likely to be married with children and to own homes, making them more integrated into a community;
- 50-64: adults with yet more established careers and/or approaching retirement, with greater financial security and likely to have adult children;
- Over-65s: adults likely to be retired and well established within their communities, but who may face health obstacles to social participation.

The level of education for each age group in each local authority area was identified using data from the 2011 Census for England and Wales, and the Scotland Census, with population data updated using 2016 mid-year population estimates produced by the Office for National Statistics. The Census records education in levels ranging from 0 (no qualifications) to 4 (higher education or equivalent), which are detailed in Table 1. UKHLS respondents were matched to their local authority and age group using UKHLS geographic matching and age variables. The modal education level for each age group and local authority was identified and represented in the positional education variable (its values are listed in Table 1). The highest qualification of respondents was used to represent their education level, which was recoded to correspond to the levels used by the Census (see Table 1); the coding of qualifications in UKHLS meant that not all level 1 and 2 qualifications could be differentiated, however, and so those two levels were merged into a 'Level 1/2′ value for both direct and positional variables. The distribution of these variables in the UKHLS sample is summarized in Table 2.

Model details

The hypotheses were tested using logistic regression analysis. The models were weighted using UKHLS cross-sectional weights and took account of sample stratification and

Table 1. Summary of qualifications and variable value.

Qualification	Summary	Typical age acquired	Level	Value in education variables
No qualifications	N/A	N/A	0	1
1-4 O-levels, CSEs or GCSEs (any grade) Entry level; Foundational Diploma; NVQ level 1; Foundational GNVQ; Basic/Essential Skills; 5 or more O-levels (passed), CSEs (Grade 1) or GCSEs (grades A*-C); School Certificate; 1 A-Level; 2/3 AS-Levels or Vocational Certificates of Education; Intermediate or Higher Diploma; Welsh Baccalaureate Intermediate Diploma; NVQ Level 2; Intermediate GVNQ; City and Guilds Craft; Btec First/General Diploma; Royal Society of Arts Diploma; Apprenticeship.	Standard school qualifications;, low level vocational or work based qualifications	16	1/2	2
2 or more A-Levels or Vocational Certificates of Education; 4 or more AS-Levels; Higher School Certificate; Progression/Advanced Diploma; Welsh Baccalaureate Advanced Diploma; NVQ Level 3; Advanced GNVQ; City and Guilds Advanced Craft; Ordinary National Certificate; Ordinary National Diploma; Btec National Diploma; Royal Society of Arts Advanced Diploma	Post-compulsory schooling short of higher education; more advanced work qualifications	18	3	3
Degree (e.g., BA, BSc); Higher Degree (e.g., MA, PhD); NVQ Level 4 or 5; Higher National Certificate; Higher National Diploma; Royal Society of Arts Higher Diploma; Btec Higher Level; Professional Qualifications	Some form of higher education	21	4	4

CSE = Certificate of Secondary Education; GCSE = General Certificate of Secondary Education; NVQ = National Vocational Qualification; GNVQ = General National Vocational Qualification. BTEC = Business and Technology Education Council.

clustering using UKHLS provided variables and the svy command suite in Stata 14 (Buck and McFall 2012). The dependent variables were the 13 social capital indicators outlined above, and the models included two independent variables. Direct education indicated the level of respondents' highest qualification, and captured the direct effect of their educational experience on social capital. Positional education refers to the modal level of education in respondents' social environment. Following Campbell (2009) and Horowitz (2015, 2018), an interaction term between the direct and positional variables was included to represent the effect of how respondents' qualifications related to the average education level in their social environment. This allowed the direct, sorting and amplification hypotheses to be tested as follows:

- The direct effect hypothesis expects a positive, statistically significant effect from direct education, indicating the greater propensity and capacity for social interaction arising from higher levels of education.

Table 2. Variable information.

(a)

Variable & response categories		%
Dependent variables		
Associational Membership	Trade Union	12.8
	Parents/Teachers	3.5
	Tenants/Residents	4.1
	Religious	12.2
	Voluntary service	6.2
	Social club	6.0
	Political party	2.6
	Environmental group	2.7
	Sports club	16.6
	Professional	13.2
	Pensioner	2.0
Social trust	Neighbors can be trusted	71.3
Volunteered	Volunteer in last 12 months	20.9
Independent variables		
Direct education	No qualifications	25.5
	Level 1 or 2	26.7
	Level 3	8.6
	Level 4	39.2
Positional education	No qualifications	28.4
	Level 1 or 2	43.0
	Level 3	0.02
	Level 4	28.5
Control variables		
Age	25-34	17.3
	35-49	31.2
	50-64	28.2
	65+	23.3
Gender	Male	45.5
	Female	54.5
Ethnicity	White British	76.4
	Other white	3.7
	Mixed background	1.9
	Indian/Pakistani/Bangladesh	9.9
	Black Caribbean	2.5
	African	2.7
	Other	2.9

(b)

Variable & response categories		%
Marital status	Single & never married	13.4
	Married/co-habiting	71.2
	Separated/divorced	8.9
	Widowed	6.1
	Missing/n/a	0.4
Children in household	0	66.1
	1	13.0
	2	14.2
	3+	6.7
Tenure	Owned	70.5
	Local authority/Housing association	16.5
	Private rented	11.4
	Missing/N/a	1.7
Father's work status at 14	Father was working	85.1
	Father wasn't working	5.9
	Father was deceased	4.2
	Missing/N/a	4.8
Father's qualifications	None	30.6
	School	16.0
	Post-school	18.1

(*continued*)

	University degree	8.4
	Missing/n/a	27.0
Mother's work status at 14	Mother was working	56.2
	Mother wasn't working	40.8
	Mother was deceased	1.4
	Missing/n/a	1.6
Mother's qualifications	None	36.6
	School	21.8
	Post-school	12.3
	University degree	5.1
	Missing/n/a	24.1

Source: UKHLS 2016; Census for England and Wales; Scotland Census.

- The sorting hypothesis expects a positive effect from education but one that is diminished for those in more highly educated social environments. This would be indicated by a statistically significant, negative interaction between direct and positional education.
- The amplification hypothesis expects a positive direct effect, which is greater still for those in more highly educated social environments. This would be indicated by a significant, positive interaction between direct and positional education.

Finally, the models controlled for traits shown to affect civic participation or social trust in previous research: age, gender, ethnicity, marital status, number of children and tenure (Putnam 2000; Verba et al. 1995; Whiteley 2012; Wilson 2000). Controls were also included for respondents' parents' educational attainment and work status when respondents were 14 to account for selection effects (Egerton 2002; Kam and Palmer 2008). There was also a control for each local authority area. The full range of variables (except the list of local authorities which are available from the corresponding author on request) are summarized in Table 2.

Results

Table 3 summarizes the results of the regression models. For the sake of brevity only the coefficients and standard errors for the education variables and interactions are reported – the full regression output is provided in the Appendix. For each dependent variable, four models are summarized: one including the direct education variable only; another including the positional education variable only; a third including both; and a fourth including direct and positional education with the interaction between them. The coefficients were also converted to predicted probabilities to aid interpretation (using the Stata 14 'margins' command), which are reported in the discussion of the results below.

The analyses found evidence of mixed education effects across the indicators of social capital and show that no single theory fully captures how the two are related. In most cases, however, positive, statistically significant effects were found only for direct education, with no significant effects from positional education or the interaction between the two. This includes membership of parents' and teachers' associations, where someone with a level 4 qualification was typically 5 percentage points more likely to join than someone with no qualifications; tenants' and residents' associations (where the difference was 3 points); religious organizations (8 points); political parties (4 points);

Table 3. Regression analysis results.

(a)

	Union		Parents'/Teachers'		Tenants/Residents'		Religious		Voluntary org.		Social group	
	Coef	Std Er	Coef	Std Er	Coef	Std Er	Coef	Std Er	Coef	Std Er	Coef	Std Er
Direct education	0.21***	0.02	0.30***	0.05	0.29***	0.04	0.34***	0.02	0.33***	0.03	−0.14***	0.03
Positional education	−0.03	0.04	0.02	0.08	0.03	0.07	0.01	0.04	0.03	0.05	−0.07	0.06
Direct education	0.21***	0.02	0.30***	0.05	0.29***	0.04	0.34***	0.02	0.33***	0.03	−0.13***	0.03
Positional education	−0.03	0.04	0.01	0.08	0.03	0.07	0.02	0.04	0.03	0.05	−0.07	0.06
Direct education	0.30***	0.05	0.40***	0.10	0.30***	0.06	0.41***	0.04	0.44***	0.05	−0.19***	0.06
Positional education	0.09	0.07	0.14	0.16	0.04	0.13	0.14	0.08	0.23**	0.09	−0.15	0.09
Direct x Positional	−0.04*	0.02	−0.04	0.04	0.00	0.03	−0.04	0.02	−0.06**	0.02	0.03	0.02

(b)

	Political party		Environmental		Sports club		Professional		Pensioners'		Social Trust		Volunteering	
	Coef	Std Er	Coef	Std Er	Coef	Std Er	Coef	Std Er	Coef	Std Er	Coef	Std Er	Coef	Std Er
Direct education	0.52***	0.05	0.55***	0.05	0.19***	0.02	0.87***	0.03	0.23***	0.05	0.08***	0.02	0.36*	0.02
Positional education	−0.04	0.08	0.02	0.09	0.06	0.04	−0.06	0.04	−0.14	0.12	0.02	0.03	−0.02	0.03
Direct education	0.52***	0.05	0.55***	0.05	0.19***	0.02	0.87***	0.03	0.23***	0.05	0.08***	0.02	0.36***	0.02
Positional education	−0.04	0.08	0.02	0.09	0.07	0.04	−0.06	0.04	−0.14	0.12	0.02	0.03	−0.02	0.03
Direct education	0.50***	0.08	0.65***	0.09	0.18***	0.04	0.98***	0.06	0.20*	0.09	−0.02	0.04	0.40	0.03
Positional education	−0.08	0.16	0.19	0.18	0.05	0.06	0.11	0.10	−0.20	0.24	−0.11*	0.05	0.05	0.06
Direct x Positional	0.01	0.04	−0.05	0.04	0.01	0.02	−0.05	0.03	0.02	0.06	0.04**	0.01	−0.02	0.01

Source: UKHLS. *** - effect statistically significant at 99.9% confidence; ** - at 99% confidence; * - at 95% confidence.

environmental action groups (5 points); sports clubs (12 points); professional organizations (25 points); and pensioners associations (1 point). This was also true for volunteering, where someone with a level 4 qualification was 18 points more likely to have volunteered than someone with no qualifications. In all these cases, the more educated an individual was the more likely they were to join the association or to volunteer, regardless of the education level of their social environment. The case of social clubs was unusual, in that while only direct education had a significant effect, it was negative: someone with a level 4 qualification was 5 points less likely to join than someone with no qualifications. This reflects the specific meaning of 'social clubs' in the UK, which refers to associations such as 'working mens' clubs' i.e., entities designed to cater for older, 'working class' men in manual industries who were unlikely to hold (or need) formal qualifications. With this in mind, we would expect people with professional, managerial or technical qualifications to be less likely to join.

For the three remaining indicators of social capital there was a statistically significant interaction between direct and positional education. The negative interaction term indicates that membership of trade unions and voluntary service organizations are subject to sorting: while higher levels of education led to an increased likelihood of joining, that benefit was reduced in more highly educated social environments in which that qualification would provide less of an advantage. Someone with a level 4 qualification in a social environment in which the average level of education was no qualifications, for example, had an 11 per cent probability of joining a trade union, 7 points higher than that for someone with no qualifications in the same environment; the advantage provided by a level 4 qualification in an environment where the average level of education was a level 4 qualification, however, was 5 points. For membership of voluntary service organizations, the effect was even more pronounced: a level 4 qualification in an environment in which most had no qualifications increased the probability of joining by 11 points relative to someone with no qualifications, while in an environment dominated by people with level 4 qualifications that effect was reduced to 4 points. As these figures also indicate, however, the magnitude of the direct education effect was greater than that of the sorting effect i.e., the boost to the probability of joining from having a higher level of education was still greater than the reduction to that boost stemming from being in a highly educated environment. While there is evidence of sorting for both unions and voluntary service organizations, therefore, it is still the direct effect of education that dominates.

The final social capital measure was social trust. The first three models showed that only direct education had a significant, positive effect; but once the interaction between direct and positional education was included, only a negative positional effect and positive interaction were significant. This effect was not hypothesized above because living in a more highly educated area was not expected to depress one's level of trust independently of one's own level of education (i.e., a negative positional effect). With this effect, however, the positive interaction indicates sorting: those with higher levels of education are more likely to be trusting than those with low education but the positive effect from education is lower in more highly educated areas. Someone with no qualifications living in a social environment with a similarly low average level of education, for example, had a 78 per cent probability of trusting their neighbors, which fell to 57

per cent if they were in an environment where a level 4 qualification was the average. There was, in effect, a 21-point penalty to the likelihood of them trusting their neighbors if they lived in a social environment far more educated than they were. Someone with a level 4 qualification in a social environment in which the average was no qualifications, on the other hand, had an 83 per cent probability of trusting their neighbors, compared with 73 per cent if they were in an environment with a modal average level 4 qualification. Similar effects were found for those lower in the education scale: someone with a level 1 or 2 qualification living in a social environment in which the modal qualification was no qualifications had an 81 per cent probability of trusting their neighbors, while someone with a level 3 qualification had an 83 per cent probability of doing so. The differences in the probability of trusting for those with level 1/2, 3 or 4 qualifications across social environments were negligible and not significant: whether respondents lived in a social environment in which they had a lower, similar or higher level of education than average was the significant determinant of whether they trusted their neighbors.

Discussion

The analyses found that for all indicators of social capital except social trust, the direct effect of education was the most important; indeed, in most cases, it was the only effect that mattered. For every form of associational membership and volunteering, those with higher levels of education were more likely to join/volunteer, regardless of the educational characteristics of their social environment. Only in two cases – trade unions and voluntary service organizations – was there any evidence of sorting, but this was weaker than the direct education effect. This is likely a reflection of competition that exists for roles related to trade unions and voluntary service groups that – while weak – have a small effect on the probability of people joining them. Trade unions, for example, are hierarchical national organizations with localized branches, and at both the national and local levels there are positions of authority for which there is competition determined by elections. The sorting theory suggests that the winners of those elections are more likely to be those of higher social status, of which education is an important determinant. To the extent that someone's decision to join a trade union is dependent on their being able to occupy positions of authority (which these results suggest matters to a limited extent), this would explain why those with higher levels of education in more highly educated areas were less likely to join than those in less educated areas: their qualifications were not as valuable as a determinant of likely victory in those elections. Surprisingly, the situation for voluntary service organizations is evidently similar. Membership of many associations in this category – such as the Salvation Army – is certainly not determined on a competitive basis, but there are positions within them that are competitive and determined by elections, in which social status could help decide the outcome and which these results suggest may affect individuals' decision to join.

The more substantive finding is, of course, that the sorting hypothesis was not supported in most cases. This is consistent with our expectations, except for membership of political parties, parent and teacher associations and tenants' and residents' associations. Critics of the sorting model argue that this reflects the unsuitability of the

assumptions of the sorting theory to community activity based on common interest and identity, and for which membership is not competitive (Galston 2001; Helliwell and Putnam 2007; Delli Carpini 1997). For many of the entities examined here membership may be restricted (to the ability to pay a fee or live in a certain neighborhood, for example) but not in a competitive way; rather in a way more likely to be related to either the civic skills and values developed through education or the ability to meet entry requirements correlated with education (such as having a well-paid enough job to pay the membership fee). The failure of the sorting effect to account for the relationship between education and membership of political parties, parent and teacher associations and tenants' and residents' associations could reflect these restrictions being more important determinants of membership than competition for prized positions within those organizations. Another possibility, however, is that while this is true for *membership* of these associations, it may not be so for *leadership roles* within them. Horowitz (2015) analyzed whether respondents held leadership roles within community organizations and found sorting effects – roles that are in many cases distributed based on elections and so more consistent with sorting theory. Rather than contradictory, therefore, it may be that the findings of Helliwell and Putnam (2007), Horowitz (2015) and this research are complementary: sorting does not explain associational membership or volunteering at the level of membership, but plays more of a role in determining leadership positions over which there is competition that social status could help determine.

The clearest evidence of sorting in this analysis was found for social trust. The analyses did not correspond exactly to the sorting hypothesis because it was not expected that being in a highly educated social environment would depress social trust regardless of one's own level of education. This may reflect the geographic distribution of highly educated social environments, which are more likely to be in inner city, more highly and densely populated areas, in which people know far fewer members of their immediate community and which inhibits the formation of social bonds. With this accounted for, however, the positive interaction term can be interpreted as evidence of sorting: those more highly educated than their social environment are more likely to occupy prominent locations in their social networks, which not only affords superior status but also greater access to others across all levels of the social structure. This results in their social networks being more diverse. Not only are more diverse networks more productive of social capital but someone with more diverse social relations is more likely to interact with and trust people of differing backgrounds and characteristics. In this way, those for whom their education is a route to superior status – i.e., those whose education differentiates them from others in their social environment – could be more socially trusting and have greater access to social capital. This differs from our expectation of an amplification effect as well as the findings of Helliwell and Putnam (2007), suggesting that more highly educated people do not enjoy greater social capital if they live in equally highly educated areas. It is impossible to explain this with existing data resources, but this could indicate that social trust is more a consequence of social interactions and activities, which are affected by sorting, than a predisposition to be socially trusting resulting from socialization and educational experiences, which are not. This would explain why someone's social status would have a stronger impact on their social trust than their education level in isolation (as the negative positional effect indicates) and how it could be subject to sorting.

Whatever the explanation, this means that increasing access to education should not necessarily be expected to lead to increased social trust and capital in communities – as is apparent in the literature showing both are lower among young people in Britain (Hall 1999; Fox et al. 2021; Richards and Heath 2015). If simply being in a highly educated social environment were enough to increase social capital, we would expect it to be higher among young people whose social networks are likely to be dominated by other young (highly educated) people. Previous research has shown this is not the case, so the absence of the amplification effect is consistent with that finding.

Conclusion

An enduring mystery in social research is why the massification of higher education has not delivered increases in social capital, whether measured using associational membership, social trust, volunteering, neighborhood interactions or political participation. Recent studies of the positional effects of education have offered a resolution to this paradox in the form of the sorting model, in which education is viewed as a determinant of social status rather than skills, experiences, attitudes and values that facilitate social interaction. Studies such as Nie et al. (1996), Campbell (2009) and Horowitz (2015, 2018) suggest the stability or decline of social capital in Europe and America despite massification could reflect the diminishment of the sorting effect of education as a means of distributing access to social positions and relationships that are the most productive of social capital. While this potential is rejected by Helliwell and Putnam (2007), the literature in this area is dominated by a focus on the US and methodological disputes over how positional effects should be measured. This study has contributed to this literature by examining those effects on social capital in the UK, and in so doing has tested the potential for the sorting theory to explain the lack of growth in social capital alongside the massification of higher education in that context.

The results, for the most part, reject the applicability of positional theories to the education/social capital relationship. For the behavioral indicators of social capital examined, there was in most cases no evidence of sorting, and in the minority of cases where sorting did occur the effect was much weaker than the direct education effect. For social trust, however, a clear sorting effect was observed, with individuals' level of education unimportant for determining their likelihood of trusting their neighbors, and rather how their level of education compared with others in their social environment the more influential. While the sorting theory cannot explain why rising education levels have not led to increases in behavioral indicators of social capital, therefore, it can explain why social trust has fallen in the UK and why it is concentrated among the youngest cohorts: the dramatic growth in the number of university graduates (which is concentrated among the young) has led to decreased utility for degrees as a way of ensuring social status, and so the increased access to relationships underpinning the development of social trust that comes with superior status is unavailable for a growing number of young graduates. The finding that sorting can explain the relationship between education and social trust but not that for behavioral manifestations of social capital also suggests that it is misguided to search for a single theoretical explanation for the Simpson's Paradox of rising aggregate education alongside falling social capital,

and that the relationship between education and social capital is likely more nuanced than the question posed in the introduction to this study assumed.

There are numerous limitations to the research, the overcoming of which can pose fruitful avenues for further inquiry. First, we are unable to explain differences in findings between our analyses and those of other related literature. As noted above, they may reflect differences in the operationalization of positional education effects, or the US or UK focused context of the studies. Some of the differences could also reflect the choice of social capital measure (such as membership of associations rather than holding leadership positions within them). Without a dataset that offers identical measures of social capital across national contexts and which allows matching of respondents to relatively small geographic areas, as well as uniform statistics on education in those contexts, it will be impossible to determine which (if any) difference in research design lies at the heart of the discrepancies. A cross-national comparative approach is nonetheless required, however, to provide some confidence that the findings of this research (or others) are not artefacts of the context in which the data was collected. Such a study would also shed light on effects that may arise from different types of education system and qualification regime, which is another potential source of difference in the findings in this field. Second, this study did not test the impact of using different geographic indicators to define the social environment. The only study to do so previously is Campbell (2009), who showed that such changes can have a substantial impact on results. Future research should explore just how big of an effect changes to the definition to the social environment can have and consider the possibility that different geographic indicators are better suited to different forms of social participation, reflecting the potential for those we interact (or compete) with to vary depending on whether we area voting in an election, forming bonds with neighbors or applying for a job.

Note

1. In contrast with the US Census Regions used by Helliwell and Putnam (2007) and Horowitz (2015), the average size of a British local authority area is 600 square kilometres, with an average population of 172,000 people.

Acknowledgements

The authors would like to thank Prof David Campbell and Prof Cees Van der Eijk for invaluable advice relating to the research design and method of this study. We would also like to thank attendees at the Annual Conference of the Wales Institute for Social and Economic Research, Data and Methods, the Annual Conference of the Political Studies Association and the Annual Conference of the Elections, Public Opinion and Parties specialist group for providing feedback and advice. Finally, we would like to thank the editors and anonymous reviewers for their feedback and advice for improving the manuscript. All errors are the responsibility of the authors alone.

Funding

This research was partially funded by the Economic and Social Research Council through the Wales Institute for Social and Economic Research, Data and Methods (grant number ES/L009099/1).

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