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Agnese Peruzzi

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Contents

Abstract

This paper analyses the common trajectories of children from disadvantaged backgrounds which lead to adult social exclusion. Moreover, it provides an assessment of whether education is effective in breaking the vicious circle of disadvantage both across and within generations. Using data from the 1970 British Cohort Study (BCS70), this empirical analysis is based on structural equation modelling techniques and proceeds in three steps. The measurement model is first tested to validate three groups of theoretical constructs (childhood disadvantage, adolescent deprivation and a multi-dimensional measure of social exclusion) and their indicators. Next, a path analysis is conducted for describing the trajectories linking childhood disadvantage to social exclusion. In the third step, the multi-faceted role of education is established by measuring the extent to which deprivation in the educational domain directly or indirectly affect all the relevant social exclusion dimensions.

Keywords: childhood disadvantage; social exclusion; education; structural equation model; British Cohort Study

Non-technical summary

This paper proposes a conceptual and operational framework suitable for interpreting the pathways into and out of social exclusion from a longitudinal perspective. Grounded in work on multidimensional poverty, the author argues that social exclusion is a multifaceted phenomenon, which occurs when people are excluded from multiple areas of wellbeing, trapping them in a spiral of disadvantage.

Six different spheres of individual wellbeing critical to social inclusion are identified:

- physical and mental health
- relational support
- political participation
- economic resources
- public services
- labour market.

The focus is on examining the specific pathways by which childhood disadvantage (both economic deprivation and family socio-demographic risk factors) accumulate over the life course and determine the level of opportunities both in the short term (adolescence) and long term (during adulthood).

The evidence suggests that any disadvantage experienced in childhood might trigger short-term outcomes, such as poor educational attainment and deviant behaviours in adolescence, in turn increasing the risk of social exclusion in adulthood. However, the pathways via which early deprivation affects adult social exclusion differ. Indeed, the long-term consequences of family socio-demographic risk factors run primarily

via deviant behaviour in adolescence. Economic deprivation, on the other hand, has both direct and indirect effects, the most pervasive indirect effect being via educational attainment. Findings also confirm that all the identified social exclusion domains are directly and significantly affected by educational attainment. This suggests that the relevance of education in the process of social exclusion goes far beyond its role in preventing exclusion from the labour market.

By adopting a longitudinal perspective and by looking at multiple dimensions of exclusion, this work indicates it may be worth widening the scope of welfare measures beyond their current restricted focus. Indeed, policymakers' objectives that focus on youth employability as the key route out of social exclusion either disregard or do not pay sufficient attention to the deep inequalities affecting deprivation in education, which originate in childhood. By widening their focus to include other influential factors, policymakers can account for the distant and multiple roots of social exclusion, as well as the inter- and intra-generational transmission of disadvantage.

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Introduction

In recent years social exclusion has become a central theme in the social policy debate in Europe and has gradually replaced traditional ways of thinking about poverty, which had mostly resulted from a lack of resources. Hence, as increasingly acknowledged (Sen, 1976; Ravallion, 1996; Bourguignon and Chakravarty, 2003), the assessment of wellbeing by means of resources-based indicators provides only partial information on individual situations. It is therefore important to consider other aspects of people's lives too, such as their attachment to social support networks and investment in local and national politics. The relevance of these aspects is accounted for by the concept of social exclusion, which can be broadly understood as a complex and multi-dimensional process emerging when deprivation in relevant wellbeing domains interact and reinforce each other, preventing individuals from either full or partial participation in the basic political, economic and social activities of the society in which they live (Bellani and D'Ambrosio, 2011).

Notwithstanding that some ambiguity in the definition and the measurement of the concept still persists (see Vrooman and Hoff, 2012 for a brief overview of the literature on social exclusion), a consensus has emerged (EC, 2009) that among the groups at higher risk of social exclusion are children growing up in deprived socio-economic environments. A large body of research has found that early experiences of deprivation, typically transmitted from parents to children, usually have a strong impact on a wide range of adult disadvantage and might determine the level of opportunities both in the short and long term (cf. Duncan, Brooks-Gunn and Klebanov, 1994; Haveman and Wolfe, 1995; Blanden and Gregg, 2004; Gregg and Machin, 1999; Case and Paxson, 2006; Halleröd and Bask, 2008). When addressing the task of preventing disadvantaged children from social exclusion in later life, education is universally recognised as the primary means of assisting all young people to fully develop their potential, thus guaranteeing them a successful transition into adulthood.

The aim of this paper is to propose a conceptual and operational framework suitable for interpreting the pathways into and out of social exclusion from a longitudinal perspective. More specifically, two guiding research questions inform this study:

- What are the common trajectories leading to social exclusion that children from disadvantaged backgrounds experience during their life courses? That is, what are the pathways by which early disadvantage translate across generations and accumulate reciprocally over time, leading to adult social exclusion?

- To what degree can academic education be considered a protective mechanism, which prevents the translation of early deprivation over time?

The remainder of this paper is organised as follows. Section 2 briefly reviews the literature investigating the relationship between early deprivation, education and social exclusion and positions this study in the research field. Section 3 deals with the empirical analysis. It first describes the dataset and then it presents the method and the main variables operationalised. The empirical results are discussed in Section 4. The last section summarises the main findings and concludes.

Background

The study of the relationship between initial disadvantage, educational attainment and social exclusion has been the focus of many empirical works in recent decades. Most of this literature can be divided into two broad strands. The first deals with the impact of childhood conditions on several domains of adolescent wellbeing, with a specific focus on educational achievement. The second is concerned with the short- and long-term benefits of education and its relevance in preventing social exclusion later on.

Contributions from the first branch provide substantial evidence that children experiencing poverty and social problems during childhood, compared to their more advantaged peers, go on to be disadvantaged in many adolescent dimensions. They have more behaviour and emotional problems (Duncan, Brooks-Gunn and Klebanov, 1994; Bolger et al., 1995), have inferior health (Case and Paxson, 2006) and are less successful in school (Haveman and Wolfe, 1995). This latter aspect has probably received the most attention as education is considered one of the greatest transmission mechanisms through which disadvantage accumulate across generations. It is indeed well established (cf. Ermisch and Francesconi, 2001; Blanden and Gregg, 2004) that children from poor backgrounds perform worse than their peers in school, ending up with significantly lower levels of educational attainment. This literature explains the educational attainment gap as a consequence of different characteristics of family background and emphasises the role of resources available during children's upbringing, both economic and non-economic (such as the quality of care a child receives), in affecting their achievements later on.

As far as the second strand of literature is concerned, the existence of a robust relationship between academic education and social exclusion is clearly recognised by the European Commission (EC, 2010) and well established in the theoretical and empirical literature. Indeed, a large body of research suggests that poor educational attainment leads to a greater livelihood of unemployment (OECD, 2010), less secure employment, more frequent and longer spells of unemployment (Walker, 1997) and low earnings (Klasen, 1998), which in turn constitute the main determinants of social exclusion.

The dominant approach for evaluating the impact of educational failures on social exclusion rests upon two main assumptions. The first one regards the identification of the main dimensions of social exclusion and has informed the European Union's and national governments' responses to this important issue. Indeed, even if the multidimensional nature of the concept has been universally acknowledged by now, when addressing the task of tackling social exclusion, the focus is still on enhancing access to employment. According to the European Commission, for example, labour market exclusion represents a core facet of social exclusion, and unemployment, especially if long term, triggers a vicious circle and constitutes the main driver for the accumulation of different disadvantage (EC, 2010). Employment is regarded as the pivotal dimension of social exclusion not just because it represents the most effective

route out of economic deprivation, but also because it has an independent effect on people's social integration (Levitas, 2004).

The second assumption concerns the relevance of education in the process of social exclusion and dates back to the human capital theory (HCT) (Becker, 1964; Mincer, 1974), which has traditionally been the theoretical framework for analysing educational benefits. According to the HCT, the capital embodied in people (realised mainly through education) produces financial or physical capital. Therefore, educational and training decisions are regarded in the same way as investment choices, where current income opportunities are renounced in exchange for better income prospects in the future. Under this framework, education is theorised to play only an instrumental role in personal wellbeing (allowing people to reach a better work position) and is appreciated since it produces skills and competencies which contribute to increased earnings. As a consequence, the benefits of education are mainly analysed in marketable terms, focusing on individual performance in the labour market. The implications in terms of education and training policies aimed at dealing with social exclusion are clear: they should be primarily concerned with the needs of the labour market, and therefore, motivated by employability reasons. The European Commission's emphasis (EC, 2010) on developing the skills linked to jobs in growth sectors (the so-called 'smart jobs'), as a way of guaranteeing social inclusion, goes in this direction.

However, other relevant wellbeing dimensions are affected by academic education. These include health (Grossman and Kaestner, 1997; Arendt, 2005), self-esteem and self-reported happiness (Michalos, 2007), participation in political activities, community networks and voluntary work (Print and Milner, 2009). Since all of these non-market dimensions represent important domains in which lack of participation might trigger social exclusion (Burchardt, Le Grand and Piachaud, 1999; Chakravarty and D'Ambrosio, 2006), the impact of education on them cannot be ignored.

The present work does not intend either to reject the importance of education to individuals' productivity and work capabilities or to confute the relevance of labour market exclusion. I am aware that unemployment is one of the main contributors to social exclusion and that its effects go far beyond monetary deprivation. However, three important drawbacks result from the current discourse on education and social exclusion. First, the HCT, considering educational choices purely in terms of investment decisions, is not able to explain some recent empirical facts, such as the existence of over-education in European countries (Betti, D'Agostino and Neri, 2011) and the rise in unemployment despite educational expansion. Second, by understanding social exclusion mainly as exclusion from the labour market, it is not possible to recognise the independent role of other dimensions in affecting social exclusion, dimensions that may be relevant in themselves but are not necessarily affected by labour market position. Even if unemployment, especially long term, may cause social exclusion, unfortunately employment does not ensure social inclusion (Atkinson and Hills, 1998). As in the case of lack of social or political participation, social exclusion may not involve participation in the labour market at all. Third, policymakers' objectives, which focus on youth employability as the key route out of social exclusion, either disregard or do not pay sufficient attention to the deep

inequalities affecting deprivation in the educational domain, which originate at the very first stages of life. In such a way, the distant roots of social exclusion are neglected and neither the inter- nor intra-generation transmission of disadvantage over time are accounted for.

This study aims at overcoming some of the pitfalls discussed above by proposing a holistic framework able to capture the complexity of the processes leading to social exclusion. For this purpose, grounded in the interlinked works on multidimensional poverty (Tsakloglou and Papadopoulos, 2002; Bossert, D'Ambrosio and Peragine, 2007; Ningaye, Alexi and Virginie, 2012), social exclusion is conceptualised as a multifaceted phenomenon which occurs when exclusions from relevant wellbeing domains combine to trap individuals in a spiral of disadvantage (Bayram, Bilgel and Bilgel, 2012). On the basis of a critical review of the literature related to the measurement of social exclusion (Burchardt, Le Grand and Piachaud, 1999; Chakravarty and D'Ambrosio, 2006), six different spheres of individual wellbeing in which inadequate participation might trigger social exclusion are identified:

- physical and mental health
- relational support
- political participation
- economic resources
- public services
- labour market.

Social exclusion is then operationalised as a latent variable[1] that emerges when deprivation on the six aforementioned domains interact and reinforce each other. Hence, a longitudinal perspective based on life-stages is adopted in order to shed light on the proximal and distant causes of social exclusion. The focus is on examining the specific pathways by which childhood disadvantage (both economic deprivation and family socio-demographic risk factors are considered) accumulate over the life course and determine the level of opportunities both in the short term (adolescence) and in the long term (during adulthood).

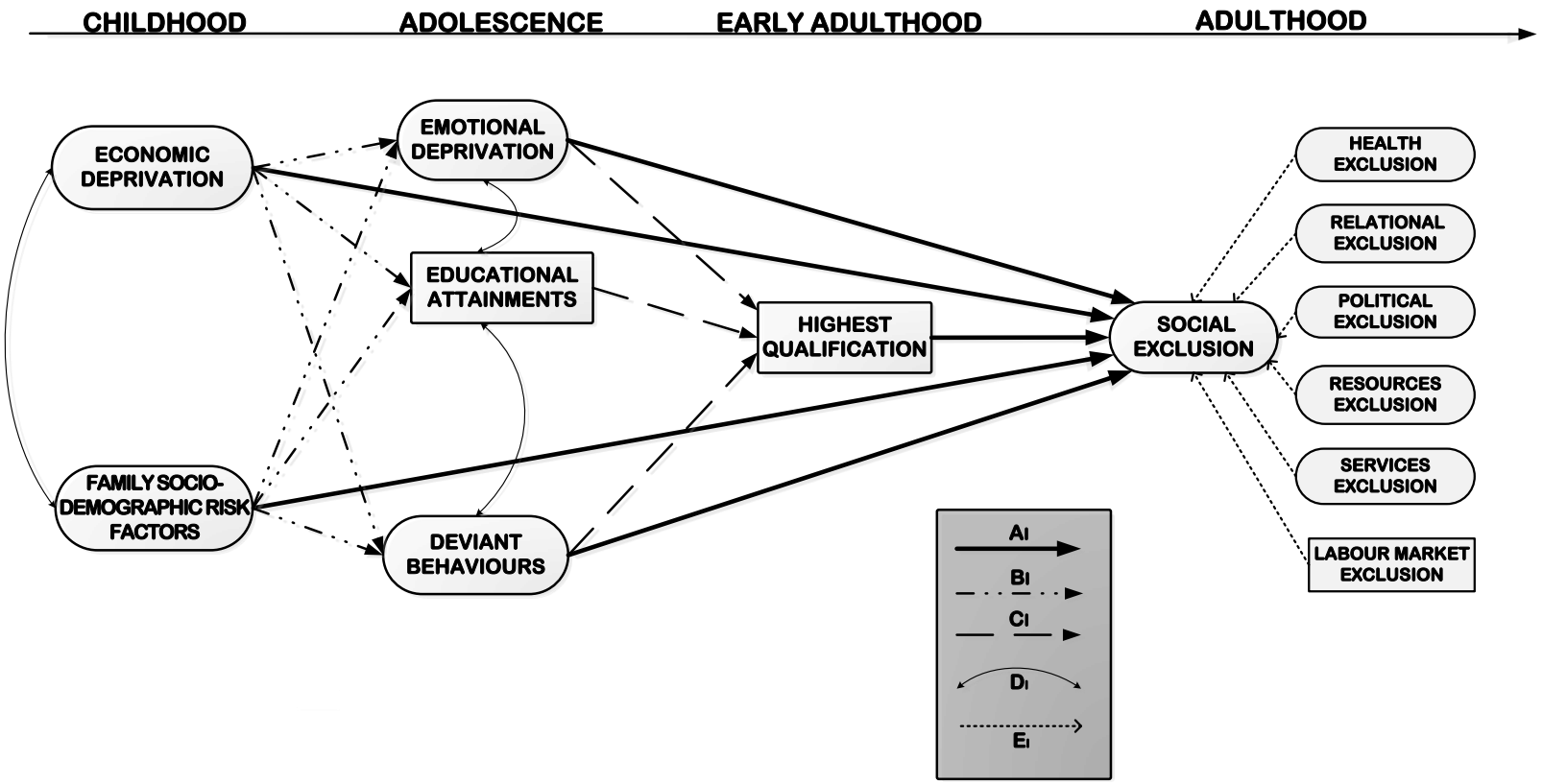
In this study, the main intermediate outcomes considered are educational attainment at age 16 and the highest academic qualification obtained (by age 30). I clarify both the underlying processes of educational attainment, and show how educational deprivation accumulates over time. I demonstrate how this directly or indirectly affects all the relevant social exclusion dimensions mentioned above, not just exclusion from the labour market. Moreover, in order to properly evaluate the role of education in mediating the transmission of disadvantage over time, I control for two

[1] There exist, to my knowledge, two previous studies (Robila, 2006; and Bäckman and Nilsson, 2011) which conceptualise social exclusion as a latent variable, using a structural equation model for analysing either the relationships between economic pressure, living in poor communities and social exclusion (Robila), or the pathways linking early deprivation to social exclusion (Bäckman and Nilsson). However, these works fail to recognise the multidimensional nature of social exclusion, which is measured only by means of social relations (Robila) or the labour market position and poverty (Bäckman and Nilsson).

other important short-term outcomes: emotional deprivation and deviant behaviour. Previous analyses (see, for example, Bäckman and Nilsson, 2011) suggest that both these dimensions can mediate or hamper the processes by which early deprivation are transmitted into adult social exclusion. Indeed, they are not only interrelated with educational attainment, but they can also have independent effects on adult outcomes. I analyse the pathways towards an aggregate measure of social exclusion, as well as the trajectories linking initial deprivation to each social exclusion domain. The theoretical model just presented is exemplified in Figure 1.

Note that paths of type A measure the direct effects of earlier deprivation on social exclusion. The processes through which intermediate outcomes mediate the relationships between childhood disadvantage and adult social exclusion are elucidated considering the indirect effects of each initial deprivation on social exclusion. Indirect effects are estimated by taking into account the effect of initial deprivation on adolescent deprivation (paths B) and the effect of adolescent deprivation on the highest qualification obtained (paths C). Paths of type D measure the correlation between concurrent dimensions of deprivation and paths of type E summarise the contribution of each domain of adult deprivation to the aggregate measure of social exclusion.

Figure 1: Pathways to social exclusion from a longitudinal perspective



Data and Measurements

The data are taken from the 1970 British Cohort Study (BCS70), which follows the lives of 17,000 people born in England, Scotland and Wales in one week in 1970. The cohort members have been contacted eight times since the initial survey at birth, at ages 5, 10, 16, 26, 30, 34, 38 and 42. The BCS70 provides information about cohort members' economic and socio-demographic conditions in the family of origin as well as on many aspects of their health, education and social development during the transition towards adolescence and adulthood. The indicators used in this study tap into 12 domains of disadvantage at different points in time. They are based on six of the nine surveys to date: the childhood waves at birth, 5 years and 10 years (1970, 1975 and 1980), the age 16 survey (1986), the age 30 survey (2000), and the age 34 survey (2004).

The types of disadvantage considered refer to:

- two childhood dimensions (economic deprivation and family socio-demographic risk factors), based on data from birth, age 5 and age 10
- three adolescent domains (deviant behaviours, emotional deprivation and educational attainment), based on data from age 16
- one early-adulthood domain (highest academic qualification obtained), based on data from age 30
- six adult spheres of wellbeing (health, relational support, political participation, economic resources, public services and labour market), based on data from age 34.

The latter, in turn, contributes to the assessment of an aggregate measure of social exclusion. In this analysis, only cohort members for whom complete data were collected at birth and in at least one of the later surveys of interest are included. Moreover, potential bias due to missing values and incomplete responses[2] is handled using the full information maximum likelihood method (FIML), which has been shown to produce unbiased parameter estimates (Enders and Bandalos, 2001).

The final working sample consists of 7,016 individuals, 47 per cent men and 53 per cent women.

Method: a structural equation model

In order to analyse the relationship over time between different types of disadvantage, the first step is to operationalise these complex concepts into valid measures. To this end, nine of the twelve domains of deprivation mentioned above are perceived as latent constructs, which cannot be observed directly but that

[2]The final sample also includes cohort members whose responses are incomplete. It is, for example, possible for data to be missing for one part of the schedule especially as, during the years of childhood, data were obtained from different sources (parents, teachers and medical personnel).

manifest themselves as multiple and inter-related indicators. The other three domains, namely the ones related to education and to labour market exclusion are instead measured by means of one categorical indicator, reporting, respectively, the highest qualification obtained at ages 16 and 30 and the capacity to undertake paid work. The rationale behind this choice lies on the necessity to provide clear and comprehensible results for these domains, which are easier to visualise and therefore easier to interpret and compare.

The relationships over time between the 12 domains of deprivation are hence modelled through a structural equation model (SEM) by virtue of its ability to distinguish between direct and indirect relationships among childhood deprivation and outcomes later on, and to specify structural relations among the hypothesised latent constructs (Bayram, Bilgel and Bilgel, 2012). The full SEM comprises two parts: a measurement model, which constructs latent indexes of deprivation on the basis of appropriate observed indicators (i.e. the confirmatory factor analysis model-CFA) and a structural model, depicting the relationships among the latent indexes themselves (Byrne, 2012). CFA is able to deal with constructs that are not directly measurable by exploring patterns of interrelations among manifest indicators, under the hypotheses that (i) any single indicator represents a noise signal of the underlying construct and provides just a partial measure of it; (ii) the observed indicators are inter-correlated because they are affected by the same underlying construct. Hence, each latent index of deprivation consists of only the shared variation in the observed indicators and can be considered as error free (Hoyle, 1995). This procedure enables us to reduce the dimensionality of data using all the available pieces of information, imposing at the same time little structure on the phenomena under examination. Indeed, this method does not require the specification of a weighting structure, preventing in such a way the problem of arbitrariness that usually arises in the aggregation exercise.

Having validated the measurement model, the structural part is used to address the proposed research questions. First, in order to examine the common trajectories leading to social exclusion experienced by children from disadvantaged backgrounds, a path analysis in the framework of a structural equation model is conducted. Path analysis is an extension of multiple regression and allows for variables to be dependent with respect to some variables and independent with respect to others. It is therefore suitable for describing the direct and indirect pathways by which childhood circumstances (treated as independent variables) affect social exclusion (the main dependent variable) via intermediate outcomes (which are modelled to be dependent and independent simultaneously). Second, the multi-faceted role of education within this dynamic process is explored and the extent to which educational attainment is affected by childhood circumstances, and in turn affects all the relevant adult domains, is assessed.

The analyses are carried out using Mplus 6 (Muthén and Muthén, 2007) and all the hypothesised models are tested using as estimator Robust Weighted Least Squares (WLSMV), which is considered the best approach for dealing with non-normal and categorical data (Flora and Curran, 2004). Moreover, in assessing models fit, the following criteria (Hu and Bentler, 1999) are used: (i) the Comparative Fit Index (CFI),

where values >.95 indicate an excellent fit and values >.90 an adequate fit, (ii) the Root Mean Square Error of Approximation (RMSEA) where values ≤.05 are considered as indication of good fit and below 0.08 of adequate fit. I do not rely on the chi-square test since it is directly affected by sample size: for big samples even small differences may become significant (MacCallun, Browne and Sugawara, 1996).

Indicators of deprivation

As mentioned above, most of the domains of disadvantage are understood as latent variables and operationalised by means of confirmatory factor analysis (CFA) techniques. Both simultaneous CFA and a hierarchical CFA, applied at different points in time, are used to define nine domains of deprivation based on 40 manifest indicators. In order to select the relevant indicators for each domain, previous works based on the same dataset are reviewed (cf. Bynner and Joshi, 2002; Bynner and Parsons, 2002; Blanden et al., 2010; Feinstein and Sabates, 2006; Schoon, 2006). Those studies provide a comprehensive and empirically-based assessment of each latent dimension and permit us to broaden the spectrum of indicators as much as possible.

The domains of childhood disadvantage represent the set of resources (both economic and non-economic) that individuals can dispose of and measure the extent to which different kinds of deprivation accumulate among children during the first ten years of life. These domains are constructed on the basis of 11 indicators, traditionally used for exploring childhood wellbeing in the literature reviewed, which refer primarily to adverse living conditions. However, indicators of social problems in the family of origin are also considered. As for the intermediate outcomes, in addition to educational attainment at ages 16 and 30, I consider two other domains of adolescent wellbeing: deviant behaviours and emotional deprivation. The deviant-behaviours domain measures youth capacity for maintaining a healthy life style and is based on indicators of self-harm and substance misuse (alcohol and drug abuse, risky sexual behaviour and contact with police). Emotional deprivation provides a measure of the extent to which adolescents establish satisfactory relationships with their peers and develop themselves as people. The latter is measured by means of an index of low self-esteem and a subjective indicator of self-confidence (whether cohort members recognise their own value). Table 1 presents a brief description of these indicators, reporting also the incidence of each welfare problem among the general population. Note that all indicators are coded such that 1 indicates a presence of a problem and 0 indicates an absence. However, in order to stress the role of education in avoiding the transmission of disadvantage over time, indicators of education are coded such that lower values indicate lower achievements.

Table 1: Childhood and adolescence deprivation indicators

Childhood			
Economic deprivation			
Indicators	**Wave**	**Description**	**%**
Free meals (MEALS)	1980	1 if child got free school meals; 0 otherwise	11.8
State benefits (BENEF)	1980	1 if family received state benefits; 0 otherwise	21.2
Income poverty (POVE)	1980	1 if equivalised income below 60% of the median income; 0 otherwise	20.5
Overcrowding (CROWD)	1975	1 if one or more persons per room, 0 otherwise	26.2
Lack of appliances (DEPRI)	1975	1 if fewer than four appliances out of phone, fridge, colour TV, washing machine, dryer and car; 0 otherwise	18.4
Ownership (OWNER)	1975	1 if no housing tenure; 0 otherwise	34.1
Family socio-demographic risk factors			
Indicators	**Wave**	**Description**	**%**
Teenage mum (TEEN)	1970	1 if mother's age at birth ≤19; 0 otherwise	7.9
Family moves (MOVES)	1975	1 if more than two household moves; 0 otherwise	18.9
Separation (SEPAR)	1975	1 if child experienced a long-term separation from mother (> one month); 0 otherwise	4.1
Authority care (CARE)	1975	1 if child had ever been in local authority care; 0 otherwise	2.0
Single mum (SINGLE)	1970	1 if single mother at birth; 0 otherwise	4.8
Adolescence			
Deviant behaviours			
Indicators	**Wave**	**Description**	**%**
Alcohol abuse (ALCHOL)	1986	1 if drank alcohol at least 2-3 times a week; 0 otherwise	23.8

Drugs use (DRUGS)	1986	1 if ever tried drugs; 0 otherwise	9.6
Smoking habits (SMOKE)	1986	1 if regular smoker; 0 otherwise	9.0
Police contacts (POLICE)	1986	1 if cautioned at police station since 10; 0 otherwise	8.4
Sexual behaviours (SEX)	1986	1 if risky behaviours (no contraception); 0 otherwise	18.8
Emotional deprivation			
Indicators	**Wave**	**Description**	**%**
Own value (VALUE)	1986	1 if cohort members do not agree with: - Recognizing my own self-worth - Capable of making decisions about things, - Felt I am playing useful part in things; 0 otherwise	24.4
Self-esteem (ESTEEM)	1986	1 if low self-esteem for the Lawseq Scale; 0 otherwise	18.7
Isolation (ISOLAT)	1986	1 if cohort members do not get on well with their friends; 0 otherwise	15.4
Education			
Indicators	**Wave**	**Description**	**%**
Secondary school qualification at age 16 (EDUCATIONAL ATTAINMENT)	1986	0 = no qualifications; 1 = only CSE obtained; 2 = 1-4 O-level passed or equivalent; 3 = 5 or more O-level	0.7 31.4 36.4 31.5
Highest academic qualification at age 30 (HIGHEST QUALIFICATION)	2000	0 = none; 1 = only CSE obtained; 2 = O-level passed or equivalent; 3 = A-level passed or equivalent; 4 = Degree, diploma, other teaching qualifications; 5 = Higher degree	8.1 14.7 33.0 9.5 28.1 6.6

As for the aggregate measure of social exclusion, 22 pertinent indicators, taken from the age 34 survey and reported in Table 2, are used to measure adult deprivation in the relevant domains identified. More specifically, poor health is measured with indicators of physical and mental health conditions. Physical health conditions include both a subjective assessment of health and one objective measure of it, which reports whether health limits everyday activities. Mental health conditions include psychological problems according to the Rutter scale of behaviour disorder (Rutter, 1967), and measures of life satisfaction and self-efficacy. Exclusion from relational support considers whether the cohort member is currently in a supportive relationship, whether he/she trusts people, and if he/she has someone who will offer support in case of need. Exclusion from political life is measured by means of three indicators: whether cohort members voted in last election, whether they feel they can influence decisions affecting the local area and whether they have undertaken different forms of active participation. Moreover, in order to take into account whether the lack of participation is a consequence of personal choice, an indicator of general interest in politics is included. Exclusion from resources is the combination of objective indicators of the financial situation (income poverty, whether cohort member has borrowed money from a pawnbroker, money lender or friends during the past year, and whether they have the capacity to save) and subjective indicators of it (how well would cohort members say they are personally managing financially). Finally, exclusion from public services is assessed on the basis of cohort members' evaluation of their neighbourhood in terms of social and leisure facilities, health services, educational services, police service and public transport.

Hence, in order to construct my social exclusion measure, I proceeded as follows. First, I derive five latent domains of deprivation through a first order CFA on the basis of the selected indicators. As already mentioned, exclusion from the labour market is not understood as a latent domain, but is measured by one indicator referring to an individual's capacity to undertake paid work. Then, having understood social exclusion as a multi-dimensional process emerging when deprivation in relevant wellbeing domains interact and reinforce each other, a second order CFA is performed and another latent variable is used to capture the concept of social exclusion, which is theorised to relate simultaneously to the six dimensions just described. The assumption underlying a second order CFA is that not only are the different domains of exclusion interconnected, but also that this correlation is due to an unobserved common cause (a second order latent variable, which corresponds to social exclusion in this case).

Table 2: Measuring social exclusion at age 34: Domains and indicators

Indicators	Description	%
Health exclusion		
Self-assessed health (HEALTH)	1 if poor or very poor; 0 otherwise	6.0
Health limits daily activities (LIM ACT)	2 = yes; 1 = no but health problems; 0 = no, no health problems	7.1 50.9 42.0
Risk of depression (DEPRES)	1 if yes, 0 otherwise	15.1
Life satisfaction (LIF SAT)	Original code: 0–10; dichotomised: (0/6) = 1: slight or severe dissatisfaction; (7/10) = 0: satisfied	22.0
Self-efficacy (SELF-EF)	1 if cohort members do not agree with: - Usually get what I want out of life, - Usually feel free choice and control over my life, - Usually I can run my life more or less as I want to; 0 otherwise	19.6
Relational exclusion		
Affective relations (AFFECT)	1 if not currently in an affective relationship; 0 otherwise	36.1
Trust people (TRUST)	1 if not very much, not at all; 0 otherwise	25.9
Emotional support (SUPPORT)	1 if no one can turn to for having support; 0 otherwise	6.9
Political exclusion		
Voted in last election (VOTE)	1 if not voted in the last General Election; 0 otherwise	35.8
Interested in politics (INTERES)	1 if not very interested, not at all; 0 otherwise	16.9
Can influence decisions affecting local area (POL EFF)	1 if tend to disagree, definitely disagree; 0 otherwise	46.8
Active participation (POL PAR)	1 if no contact with governments or public people, not attended a public meeting, not taken part in a public demonstration or signed a petition in the last 12 months; 0 otherwise	67.2

Resources exclusion		
Income poverty (POVERTY)	1 if equivalised income below 60% of median income; 0 otherwise	24.9
Subjective poverty (SUB POVE)	1 if finding it difficult, very difficult; 0 otherwise	4.9
Saving opportunities (SAVE)	1 if did not manage to save any amount of income; 0 otherwise	36.9
Credit market exclusion (BOR)	1 if family borrowed money in the last year from pawnbroker, money lender, friends, family; 0 otherwise	14.6
Services exclusion		
Social/facilities (SOCIAL)	1 if poor, very poor; 0 otherwise	16.1
Health services (HEALTH)	1 if poor, very poor; 0 otherwise	8.9
Education service (EDUCAT)	1 if poor, very poor; 0 otherwise	5.0
Police service (POLICE)	1 if poor, very poor; 0 otherwise	15.0
Public transport (TRANSP)	1 if poor, very poor; 0 otherwise	19.8
Labour market exclusion		
Current economic activity	1 if not paid employee or self-employed, 0 otherwise[3]	16.4

[3] People looking after home or family are included in this latter category.

Results

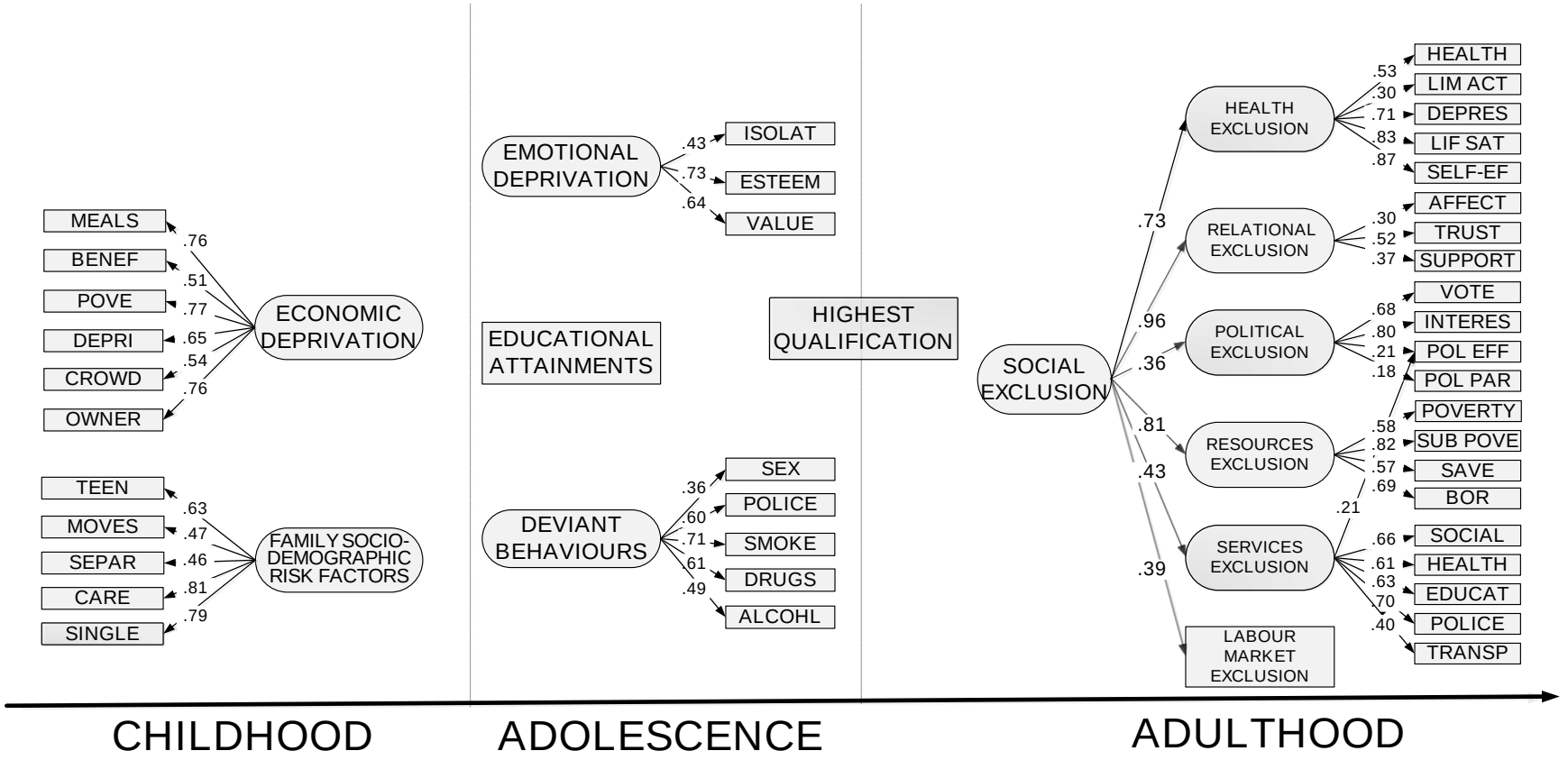
The measurement model

Figure 2 includes the main domains whose relationships are investigated and shows the results of the measurement model for each point in time. In the figure, the rectangles represent manifest indicators and the ellipses represent latent domains of deprivation. Uni-directional arrows report the standardised coefficients or factor loadings, describing the strength of the relations between latent domains and their manifest indicators and between the six adult dimensions of deprivation and social exclusion.

Out of the childhood domains, home tenure, family poverty and free school meals are the most important indicators for measuring economic deprivation, with standardised factor loadings ranging from 0.76 to 0.77. In terms of family socio-demographic characteristics, the most powerful risk factors are having been in local authority care during the first 5 years of life (0.81) and having a single mother at birth (0.79). During adolescence, low self esteem is the major indicator of emotional deprivation with a factor loading of 0.73, while smoking habits and using drugs are the most important indicators of deviant behaviours, with standardised factor loadings of 0.71 and 0.61 respectively. The factor loadings between indicators of adult deprivation and domains of social exclusion are also strong and range from 0.18 (between political exclusion domain and the indicator of active participation in political activities) to 0.87 (health domain and the indicator of self-efficacy). Finally, as far as the global measure of social exclusion is concerned, all the domains considered have solid relationships with it. The strongest ones are exclusion from relational support, health and resources and the weakest one is exclusion from political life.

Overall, the descriptive goodness-of-fit indicators point to a good fit of the model to the data (CFI=0.930, RMSEA=0.020) and the values of factor loadings are uniformly high and all statistically significant ($p<0.001$). Those indices validate the selected indicators as methodologically sound measures for the latent domains identified and provide support to the hypothesised six-dimensional structure of social exclusion, where each adult domain reflects a different aspect of social exclusion.

Figure 2: The measurement model



Establishing the pathways from childhood deprivation to adult social exclusion

In order to describe the short and long term influence of childhood disadvantage, the latent domains derived from the CFA are used as input variables in a path analysis, in which economic deprivation and family socio-demographic factors are modelled to affect an aggregate measure of social exclusion via four important intermediate outcomes: educational attainment at ages 16 and 30, deviant behaviours and emotional deprivation. All the possible direct and indirect paths stemming from early disadvantage to adult social exclusion are tested using the model indirect statement of MPLUS. The results are presented in Table 3, which shows the unstandardised and standardised path coefficients between each dependent and independent variable (which correspond to paths of type **A**, **B** and **C** described in Figure 1) and the correlation between concurrent domains of disadvantage (paths of type **D**)

Table 3: From early deprivation to social exclusion

	Unst.	S.E.	St.
Type A: Direct effects on social exclusion (SE)			
From Economic deprivation → SE	0.057***	0.015	0.146
From Family socio-demographic factors → SE	0.036	0.020	0.073
From Emotional deprivation → SE	0.324***	0.056	0.337
From Educational attain. at age16 → SE	- 0.052**	0.017	- 0.143
From Deviant behaviours → SE	0.217***	0.056	0.183
From Highest qualification at age 30 → SE	- 0.056***	0.011	- 0.179
Type B: From children to youth deprivation			
From Economic deprivation → Emotional deprivation	0.079***	0.022	0.203
From Economic deprivation → Educational attain. at 16	- 0.466***	0.040	- 0.513
From Economic deprivation → Deviant behaviour	0.070***	0.016	0.228
From Family socio-demographic factors → Emotional deprivation	0.014	0.032	0.029
From Family socio-demographic factors → Educational attain. at 16	0.002	0.050	0.001
From Family socio-demographic factors → Deviant behaviours	0.042*	0.022	0.106

	Unst.	S.E.	St.
Type C: From youth deprivation to highest qualification at age 30 (High Qual.)			
From Emotional deprivation → High Qual.	- 0.343***	0.091	- 0.114
From Educational attain. at 16 → High Qual.	0.733***	0.021	0.732
From Deviant behaviours → High Qual.	- 0.799***	0.139	- 0.199
Type D: Correlations between concurrent dimensions of disadvantage			
Economic deprivation with family socio-demographic factors	0.447***	0.053	0.471
Emotional deprivation with educational attain. at 16	- 0.009	0.016	- 0.021
Deviant behaviours with educational attain. at 16	- 0.044***	0.013	- 0.136
Emotional deprivation with deviant behaviours	-0.003	0.007	-0.023

Note. Unst., unstandardised; S.E., standard error; St., standardised.
*p < .05; **p < .01, ***p < .001

As can be seen from Table 3 (see paths of type **D**), economic deprivation and family socio-demographic risk factors are strongly correlated (r = 0.471), thus suggesting that children are exposed to different welfare problems at the same time, which interact and reinforce each other. Looking at the impact of these initial conditions on social exclusion, only economic deprivation has a statistically significant effect, while the unstandardised path coefficient linking family socio-demographic risk factors to social exclusion (0.036) is neither significant nor really appreciable in standardised size (0.073). However, the influence of socio-demographic factors on deviant behaviours in adolescence (see paths of type **B**) cannot be ignored. Since the deviant behaviours domain significantly affects social exclusion, both directly (0.183) and through its negative impact on the highest level of education (- 0.199), the hypothesis is supported that growing up in a safe and stable home environment is important for preventing social exclusion later on.

In the adolescent phase, engaging in risky behaviours is negatively correlated with educational attainment at age 16 as expected (r = - 0.136), while, quite surprisingly, emotional deprivation is not significantly correlated with the other two adolescent domains. From a longitudinal perspective, economic deprivation seems to be the most important predictor of failure in each of the adolescent domains. Emotional deprivation has the strongest direct effect on social exclusion, with a standardised coefficient equal to 0.337. This result suggests that developing as people and establishing satisfactory relationships with peers at age 16 are important mechanisms for preventing social exclusion later on. As for the relevance of educational attainment at age 16, there are two important considerations to make. On the one side, the evidence supports the hypothesis of accumulation of educational success over time, that is, good educational attainment at age 16

strongly affects the highest qualification obtained at age 30 (standardised path equal to 0.732). On the other side, both the indicators of educational attainment at ages 16 and 30 have a significant and negative effect on social exclusion (with standardised path coefficients equal to -0.143 and -0.179), suggesting that educational attainment at age 16 has its own role in preventing social exclusion, which goes far beyond its importance in affecting the highest qualification obtained at age 30.

Finally, by examining the effect decomposition for direct, total indirect and total effects[4] of each childhood dimension on social exclusion (Table 4), an in-depth understanding of the processes leading to social exclusion can be gained.

Table 4: Specific indirect, total indirect and total effects

	Dependent variables					
	Economic Deprivation			Family socio-demographic risk factors		
Independent variable:	Unst.	S.E.	St.	Unst.	S.E.	St.
Social Exclusion						
Direct effect	0.056***	0.015	0.146	0.036	0.020	0.073
Total indirect effect	0.090***	0.012	0.236	0.016	0.013	0.033
*Specific indirect effects**: not mediated** by highest qualification at age 30:*						
via educational attainment age 16	0.025**	0.008	0.065	0.000	0.003	0.000
via deviant behaviour	0.016**	0.005	0.042	0.010*	0.005	0.019
via emotional deprivation	0.026**	0.007	0.068	0.005	0.011	0.010
*Specific indirect effects: **mediated** by highest qualification at age 30:*						
via educational attainment age 16	0.019***	0.004	0.049	0.000	0.002	0.000
via deviant behaviour	0.003***	0.001	0.008	0.002*	0.001	0.004
via emotional deprivation	0.002**	0.001	0.004	0.000	0.001	0.001
Total effect	0.146 **	0.016	0.383	0.052 *	0.020	0.106

Note. Unst., unstandardised; S.E., standard error; St., standardised.
*p < .05; **p < .01, . ***p < .001

[4] The total indirect effects refer to the sum of all indirect effects of a causally prior variable on a subsequent one while the total effects indicate the sum of all direct and indirect effects of one variable on another.

As already mentioned, unlike family socio-demographic risk factors, the relationship between economic deprivation and social exclusion is only partially mediated by intermediate outcomes. That is, initial economic deprivation, inherited by the family of origin, exerts a direct and significant effect on social exclusion on its own: children with poor resources are much more likely to experience social exclusion than their more advantaged peers. The hypothesis of inter-generational transmission of disadvantage is therefore supported by the data.

Looking at the indirect effects, different trajectories emerge depending on the type of problems experienced during childhood. Family socio-demographic factors only have a significant effect on social exclusion via deviant behaviours. That is, growing up in an unsafe and unstable home environment increases the likelihood of engaging in dangerous behaviours during adolescence, which in turn affects both the educational qualifications obtained by age 30 and adult social exclusion. The trajectories stemming from economic deprivation are more complex. Indeed, this domain has an impact on all the outcomes later on, which is both statistically significant and appreciable in size (the standardised coefficient for the total indirect effect is equal to 0.236). Finally, the magnitude of the standardised specific indirect effects indicates that the pathway running from economic deprivation to social exclusion via educational attainment (both at age 16 – coefficient of 0.065 and at age 30 – coefficient of 0.049) is the more detrimental one. This result suggests that not only do economic deprivation tend to transmit across different generations, but also that they primarily exert an effect on social exclusion through educational achievement, thus confirming that education might play a relevant role in avoiding the transmission of disadvantage from childhood to adulthood.

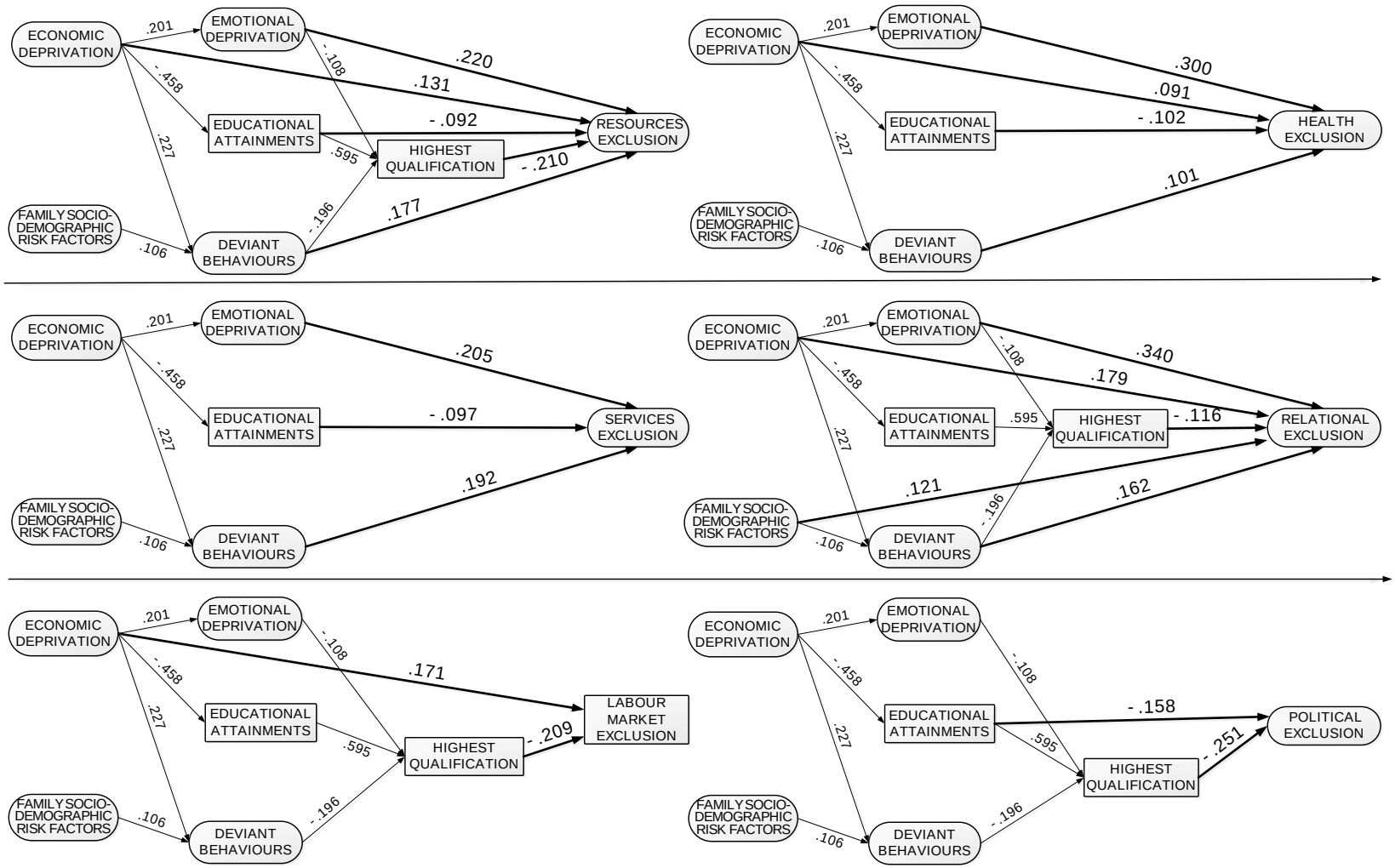
Analysing the role of education within this complex process

So far I have identified risk trajectories towards an aggregate measure of social exclusion that children from disadvantaged backgrounds experience during the life course. I have shown that both economic and non-economic deprivation might trigger short-term outcomes, such as poor educational attainment and deviant behaviours, in turn increasing the risk of adult social exclusion.

In order to reach a fuller understanding of the associations between earlier deprivation and social exclusion in adulthood and to better appreciate the multifaceted role of academic education within this complex process, the next step is to analyse the social exclusion domains separately. For this purpose, I replicate the path analysis done above but replace the aggregate measure of social exclusion as the main dependent variable with each of the six domains that contribute to its assessment. Again, economic deprivation and family socio-demographic risk factors are treated as independent variables while intermediate outcomes are modelled to be simultaneously dependent and independent. Figure 3 summarises the main findings through six distinct maps that report, for each social exclusion domain, the standardised path coefficients linking earlier disadvantage to each specific adult domain. Two preliminary considerations are necessary. First, since the analyses for each adult dimension are run simultaneously, the six maps have the left-side part in

common: the effects of childhood conditions on intermediate outcomes are invariant across the adult domains of deprivation. Second, for the sake of clarity, only significant paths are reported. In consequence, where highest qualification obtained at age 30 does not significantly mediate the relationships between earlier disadvantage and the specific social exclusion domain considered, the indicator of highest qualification is not reported in the map.

Figure 3: From early deprivation to social exclusion domains



As can be seen from Figure 3, the importance of education in preventing exclusion from each social exclusion domain (and not only from the one related to labour market) is supported by data. All the direct effect coefficients linking educational attainment, either at age 16 or at age 30, with the social exclusion domains are indeed appreciable in size and significant. However, the trajectories linking initial disadvantage to deprivation later on via educational attainment differ greatly according to the specific adult domain examined. For both services and political exclusion, the impact of childhood conditions is entirely mediated by intermediate outcomes. In the case of political exclusion, the only direct and significant paths stem from educational attainment (at both ages 16 and 30), thus suggesting that early experiences of economic and non-economic deprivation negatively affect educational achievement, which in turn provides the skills and resources to effectively participate in politics. For services exclusion instead, each adolescent dimension has a significant effect on the capacity to enjoy public services, where emotional deprivation seems to be its most important determinant.

As far as exclusion from health is concerned, pathways similar to those linking childhood disadvantage to services exclusion are found. Also in this case, lack of emotional support in adolescence seems to be a good predictor of poor health during adulthood. Moreover, unlike services exclusion, the relevance of economic deprivation experienced in childhood is not completely mediated by intermediate outcomes, thus suggesting that children growing up with economic deprivation, are more likely to have inferior health in adulthood compared to who do not. However, since the model does not control for health during childhood, which is said to be an important determinant of health later in life (Forrest and Riley, 2004), some caution is needed in the interpretation of this trajectory.

In terms of labour market exclusion, the highest qualification obtained is the most important preventative factor. However, there is also a strong and significant path stemming from initial economic deprivation, which supports the hypothesis that policies aimed only at improving academic attainment to increase youth employability might not be sufficient for preventing labour market exclusion. This confirms the need to adopt a much longer-term perspective and to address disadvantage experienced during the first years of life.

As for exclusion from resources, the relevance of family socio-demographic risk factors for determining the level of economic resources in adulthood is entirely mediated by deviant behaviours in adolescence, while initial economic deprivation have both a direct and an indirect effect.

Finally, as far as relational exclusion is concerned, both economic and non-economic deprivation experienced in childhood has a significant direct effect on this domain. Growing up in a safe, stable and familiar environment is not therefore entirely mediated by adolescent outcomes, but directly helps to prevent experiences of social isolation later on.

Conclusions

This paper has analysed the common trajectories leading to social exclusion experienced by disadvantaged children during their adult life. I have proposed a comprehensive framework suitable for interpreting the pathway into and out of social exclusion from a longitudinal perspective. Social exclusion is conceptualised here as a complex phenomenon emerging when exclusion from six different spheres of adult wellbeing (health; relational support; political participation; economic resources; public services and labour market) interact and reinforce each other. Hence, I apply quantitative techniques based on latent variable approaches (confirmatory factor analysis and structural equation modelling), which have so far only been used for analysing social exclusion in a partial way and, at least to my knowledge, have never been applied to investigate the pathways linking initial disadvantage to an aggregate measure of social exclusion using the BCS70.

More specifically, the issues addressed here concern two broad research questions investigating (1) the extent to which economic and non-economic disadvantage experienced during childhood are related to adult social exclusion; and (2) whether education can be considered an effective way out, capable of interrupting the vicious circle of disadvantage both across and within generations.

As far as the first question is concerned the findings presented here suggest that early economic and non-economic conditions of disadvantage affect the level of opportunities both in the short and the long term, thus confirming that disadvantage tends to transmit from childhood to adulthood. However, the trajectories by which initial deprivation accumulate over time differ. Indeed, the long-term consequences of growing up in a deprived home environment are entirely mediated by intermediate outcomes and run primarily via deviant behaviours in adolescence. Economic deprivation instead affects the risk of becoming socially excluded in adulthood both directly and indirectly, where its most pervasive indirect effect runs via educational attainment. The recognition that material resources, inherited from the family of origin, have a substantial and significant influence on social exclusion supports the hypothesis of intergenerational transmission of disadvantage.

As for the second research question, analysing each social exclusion domain separately provides additional information on the accumulation of welfare problems over time as the trajectories linking childhood disadvantage to adolescent and adult deprivation differ depending on the domain considered. However, the evidence also indicates the existence of a common feature: the role of education in preventing adulthood disadvantage. Indeed all the relevant social exclusion dimensions are directly and significantly influenced by educational attainment, thus suggesting that the relevance of education goes far beyond its role in preventing exclusion from the labour market. This confirms the hypothesis that other important outcomes of education should be considered for a comprehensive assessment of the relevance of education for social exclusion.

Finally, two important limitations need to be acknowledged regarding the present study. First, although plenty of studies have found gender differences in the ways through which children are affected by initial deprivation (cf. Bäckman and Nilsson, 2011; Hobcraft, Hango and Sigle-Rushton, 2004; Hobcraft and Mensah, 2006), the gender dimension has not been analysed in this study. It therefore represents an important issue that needs to be further investigated. Second, this paper focuses on the marketable and not-marketable benefits of academic qualifications, without distinguishing between different kinds (academic or vocational) and fields of education. A further step in this research would be to make such distinctions in order to identify how they impact on the trajectories to social exclusion.

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