

Provided for non-commercial research and educational use only.
Not for reproduction or distribution or commercial use.



Volume 36, Number 3, September 2007

ISSN 0049-089X

The journal cover features a grayscale photograph of a group of people in a social setting. Overlaid on the image is the title 'Social Science' in a large, red, serif font. Below the title, the word 'RESEARCH' is written in a smaller, white, sans-serif font on a dark red horizontal bar.

Social Science

RESEARCH

*A Quarterly Journal of
Social Science
Methodology
and Quantitative
Research*

Available online at
 ScienceDirect
www.sciencedirect.com

This article was published in an Elsevier journal. The attached copy is furnished to the author for non-commercial research and education use, including for instruction at the author's institution, sharing with colleagues and providing to institution administration.

Other uses, including reproduction and distribution, or selling or licensing copies, or posting to personal, institutional or third party websites are prohibited.

In most cases authors are permitted to post their version of the article (e.g. in Word or Tex form) to their personal website or institutional repository. Authors requiring further information regarding Elsevier's archiving and manuscript policies are encouraged to visit:

<http://www.elsevier.com/copyright>

Educational resilience in later life: Resources and assets in adolescence and return to education after leaving school at age 16

Amanda Sacker^{a,*}, Ingrid Schoon^b

^a *Department of Epidemiology and Public Health, University College London, 1-19 Torrington Place, London WC1E 6BT, UK*

^b *Department of Psychology, City University, London, UK*

Available online 11 July 2006

Abstract

Few studies have investigated the factors and processes influencing return to education after leaving school at the minimum leaving age. We explore the role of promotive factors in (1) supporting young people to continue with further education after the minimum leaving age and (2) investigate which resources predict who returns to education or gains further qualifications after leaving school early. Sixty-two percent of the 1958 British birth cohort left school at age 16. Eight percent of early school leavers returned to full-time education. We examine the specific role of educational and personal assets and family resources in supporting young people from socially disadvantaged family backgrounds to stay on in school beyond the mandatory school leaving age. Several factors were found to promote educational resilience among disadvantaged young people, including both personal assets and family resources. Some effects did not manifest themselves until later in life, showing the need to build a reserve capacity of resources and assets before resilient reintegration into education becomes possible.

© 2006 Elsevier Inc. All rights reserved.

Keywords: Resilience; Resources; Assets; Return to education; NCDS

* Corresponding author. Fax: +44 0 207 813 0242.
E-mail address: a.sacker@ucl.ac.uk (A. Sacker).

1. Introduction

Industrialised countries rely upon a skilled labour force to maintain growth and sustain the economy. Changing labour markets and opportunities require young people to develop new skills, in particular professional or academic qualifications (Bynner et al., 2000; Shanahan et al., 2002). Current concerns about educational underachievement in the UK have led to initiatives to raise the number of graduates to 50% of young people in higher education by 2010 (Department for Education and Skills, 2003). Education is widely considered as a means of lessening economic and social inequalities. Yet, so far, these initiatives have been unsuccessful at encouraging young people from more disadvantaged family backgrounds to continue with higher education. Teenagers from well-off backgrounds are far more likely to go to university than those from the most deprived areas (Higher Education Funding Council for England, 2005). A recent government report acknowledged that widening access to university means that we need to persuade more teenagers to stay at school after 16 (Department for Education and Skills, 2005). But, recent statistics show participation in full-time education by 17-year-olds has remained level since 1994 at around 60% (Organisation for Economic Cooperation and Development, 2004).

The aim of this paper is to examine the role of individual and family level factors in promoting participation in further education and vocational training. The study adopts a life course perspective to follow routes to further qualifications, including tracks involving vocational and academic training, as well as the acquisition of qualifications by education returners who left school at age 16 (the legal minimum age of leaving education in Britain, known as the statutory leaving age). We argue that it is never too late to learn, and over the life course individuals may gain further qualifications through a variety of routes. This might involve returning to full-time education, or less conventional routes, such as through in-work training and part-time educational opportunities. Of particular interest here is “what works for those from more disadvantaged backgrounds?” Using a resilience perspective of human development may facilitate answering this question.

Resilience research has predominantly featured children’s development, examining who developed competencies despite exposure to at-risk environments (Luthar et al., 2000; Masten, 1994). Markers of risky circumstances include adverse socio-economic conditions, minority ethnicity and parental ill-health (Rutter, 1985; Schoon et al., 2004; Werner, 1996). A key feature of resilience in the face of adversity is that it requires the existence of promotive factors that reduce the prospect of a negative outcome or increase the likelihood of a positive outcome. Resilience theory focuses on understanding healthy development despite risk exposures and on strengths rather than weaknesses (Fergus and Zimmerman, 2005). Here, we examine the promotive factors that help young people from disadvantaged socio-economic backgrounds to remain in education or increase their chances of gaining further qualifications later in life if they “missed the boat” the first time round. Promotive factors that help young people avoid the negative consequences of socio-economic disadvantage may be described as either assets or resources (Beuvas and Oetting, 1999). Assets are positive individual factors such as academic competence, motivations and beliefs. Resources, in contrast, are positive factors that are external to the individual. Examples include parental support and positive attitudes towards education. A resilience perspective highlights the role of external resources in helping adolescents face the challenges that they experience as they move into adulthood.

The concept of resources emphasises the contextual or environmental influences on healthy development and reinforces the theory that resilience is not a static, intrapersonal trait (Schoon, 2006). Resilience is both multidimensional and mutable: individuals may achieve resilient adjustment in one domain of functioning but not another, and at one point in time but not another. An example of this is shown by Luthar et al. (1993) in their examination of adolescents' resilience. They showed that at-risk children might demonstrate good educational attainments but at the same time experience behavioural problems. Within the educational domain, a child may develop successfully at primary level but fail to flourish in secondary school. Educational resilience is defined in terms of educational success despite personal attributes and environmental circumstances which reduce the likelihood of succeeding.

Dropping out from school has been studied from a life-course perspective (Alexander et al., 2001; Garnier et al., 1997), but education does not stop at the end of the school years, and the dynamics of educational resilience continue over the life-course. A long-term perspective of resilient adaptation has the ability to uncover processes that short-term studies fail to reveal (Schoon and Bynner, 2003). "Resilient reintegration" is a term associated with successful adaptation after a period of disruption or stress (Kumpfer, 1999). Positive attributes or circumstances at one stage in the life-course suggestive of resilience may not be associated with immediate benefits but may be predictive of reintegration later in life. In this context, resilient reintegration would be demonstrated by a return to education after a disruption of continuous full-time schooling or by gaining further qualifications after leaving school at the minimum leaving age. Similar to the concept of "sleeper effects" whereby change is not detected until a period of time has elapsed (Clarke and Clarke, 1981), resilient reintegration requires protective attributes or circumstances to be stored up for later use. In the field of neuropsychology, reserve capacity is a potential mechanism for coping with damage to the brain. Reserve capacity is not normally utilized but can be made available when required. Borrowing this terminology, it is hypothesised that resilience, and resilient reintegration in particular, are facilitated by a reserve capacity of individual assets and environmental resources (Staudinger et al., 1995).

Adopting a long-term or life course approach to the study of resilience, this paper will enhance our understanding of the protective processes implicated in educational resilience. Many studies have looked at promotive factors and their relationship with shorter-term outcomes; mainly examining what keeps young people in education. The research evidence on long-term outcomes is sparser and has predominantly focused on the US experience. Key protective factors include family resources and individual assets. Family resources have mainly been considered from a socio-economic perspective. A higher parental occupational position is associated with returning to school or gaining further qualifications in several studies (Berkold et al., 1998; Chuang, 1997; Wayman, 2001). Chuang (1994) also found parental education was linked to the probability of returning to school although neither parental education nor occupation had much effect on returning once individual factors were taken into account. Personal assets such as aptitude for education also increases the likelihood of reintegration into education after dropping out (Berkold et al., 1998; Chuang, 1997; Wayman, 2002). However, the processes underpinning this relationship are not clear. Berkold et al found that dropouts with good ability but not necessarily any success at school were more likely to return, while Wayman reported that both test scores and school success predicted later attainments (Berkold et al., 1998; Wayman, 2002). Specific aptitudes and skills, such as academic ability and attainment, are necessary but not

sufficient preconditions for successful adaptation. These person aptitudes, or educational assets, have been distinguished by Bronfenbrenner (1995) from a more dynamic set of personal assets, such as motivation, self-confidence, or educational expectations. Educational assets, in particular, have been found to be associated with educational attainment in the long-term (Entwisle et al., 2004; Hurst et al., 2004; Wayman, 2002).

Evidence from studies on school drop-outs in the US may not transfer to other settings. Indeed, a comparative study examining outcomes after school dropout in the US and Australia found that Australians were more likely to engage in training and education later on than their US peers (Rumberger and Lamb, 2003). Here, we explore the British experience over a longer follow-up period than previously examined using data from the National Child Development Study (NCDS), a cohort born in 1958 and followed-up through to the present day. Before the 1960s, the British educational experience was a tripartite system of grammar, secondary modern and technical schools. Pupils attended a school that was supposed to reflect their capabilities as measured by performance in an examination taken at 11 years of age (Makepeace et al., 2003). By the 1970s, a more inclusive comprehensive system was being implemented, which created schools attended by pupils of all abilities. Thirty years later, some selection by ability has returned to the British education system. The NCDS cohort attended selective or comprehensive schools depending on their place of residence, a situation not dissimilar to the experience of today's youth.

Also in post-school training great changes have taken place since the 1960s. Vocational training though employer-based apprenticeship schemes has fallen dramatically while further academic education opportunities have expanded (Bynner, 2001). Now, there is a move to increase vocational training as skills shortages have become apparent in some craft and technical occupations. As policies tend to turn full-circle over time, research on the life-course influences increasing qualifications and training still has the potential to provide valuable information relevant for the future well-being of the economy.

How do family- and individual-level factors act together over time to facilitate educational attainment among at-risk populations? Previous studies found support for the hypothesis that the factors associated with dropout would be inversely related to returning to school (Chuang, 1994, 1997). In this paper, we also examine whether factors that are associated with leaving school at the minimum statutory leaving age are, in their reverse, also related to the likelihood of returning to education and further qualifications in the long-term. We will include key family resources that have been associated with school retention in the literature but have so far not been examined in the context of returning to education: parental aspirations and support for education (Alexander et al., 2001; Ensminger and Slusarcick, 1992; Schoon et al., 2004). Differences between studies in the measurement of aspirations and expectation may conceal important information on resiliency processes. Here, we seek to separate the effects of these concepts by using parental and individual measures of both variables.

In previous research, two key models of resilience have been identified: the compensatory and the protection model (Schoon, 2006). In the compensatory model, the existence of promotive factors offsets or in some cases cancels out the effect of adversity or risk. A compensatory resilience model assumes that resources and assets are independent of the risk factor; that they have a direct effect on an outcome; and that they fully or partially compensate or counteract the effects of the risk (Fergusson and Horwood, 2003; Luthar et al., 2000; Masten et al., 1999; Sameroff et al., 1998). The influence of different assets and resources is typically specified in terms of a main effects model, which describes the

additive effect of these compensatory factors. By contrast, in the protection model, the exposure to a promotive factor should have beneficial effects on those exposed to the risk factor, but show no benefit or less benefit among those not exposed to the risk factor (Garmezy et al., 1984; Rutter, 1985, 1987). The protection model of resilience assumes that the promotive factors moderate the relationship between risk and outcome; that there is no direct relationship between the promotive factors and the outcome independent of the risk; and that the effect of the risk on an outcome in the absence of any promotive factors is more negative than in their presence. This model is normally specified by an interaction effects model. In practice, compensatory and protective processes may operate at the same time so that resources or assets promote positive outcomes but the effects are greater for those exposed to risk (Rose et al., 2004). The two models have different implications for potential intervention. If the data conform to a protection model, then policies that target at-risk populations are indicated, whereas universal provision of resources is suggested by a compensatory model. In addition to these two models of resilience, we propose the investigation of a long-term, or ‘reserve capacity’ model of resilience, where the protective effect of promotive factors manifests itself after some time delay.

In the first instance, we test the hypothesis that family resources and individual assets can act to keep young people in education beyond the age of 16 years, i.e. stay in school after the minimum leaving age. We explore whether the processes keeping young people in education despite socio-economic disadvantage conform to a compensatory or protection model of resilience. In the next stage of the analysis, the long-term effect of resources and assets in adolescence are examined to determine whether they promote resilient reintegration into education after leaving school at 16 years, the statutory minimum school leaving age. Resilient reintegration is assessed by examining two outcomes: the highest level of academic and vocational qualifications gained and a return to full-time education by the year 2000, 26 years after leaving school. The compensatory and protection models of resilience against the disadvantage of leaving school at age 16 are applied with highest qualification level at age 42 as the outcome. The two models of resilience cannot be separated for return to education by age 42 as the outcome is only pertinent to the at-risk group. Interpretation of the results will explore whether a reserve capacity of promotive factors needs to be built up before it is possible for resilient reintegration to occur.

2. Materials and methods

2.1. Sample

The National Child Development Study (NCDS) originated in the Perinatal Mortality Survey (Butler and Bonham, 1963), and has followed 98% of all births in England, Scotland and Wales born during 3rd–9th week of March 1958. The cohort members, numbering some 17,414 individuals, have been followed-up at ages 7, 11, 16, 23, 33 and 42 years, with the sample being augmented by immigrants to the UK who were born in the study week. The achieved sample in 2000 was 11,419. This paper mainly uses data collected when the cohort members were 16 and over. Bias due to attrition of the sample during childhood and young adulthood has been shown to be minimal (Davie et al., 1972; Ferri, 1993; Fogelman, 1976; Plewis et al., 2004).

A work history dataset was provided by Fernando Galindo-Rueda (London School of Economics). This gives a month-by-month record of economic activity after age 16,

constructed from the information collected retrospectively at ages 23, 33 and 42 years. Extensive checks were made to ensure internal consistency of the data with a particular emphasis on reducing the incidence of missing observations in the school to work transition period (Galindo-Rueda, 2002). This analysis is based on original cohort members for whom there are sufficient data on their work history to assess the date they left continuous full-time education ($N = 12,940$). The analysis sample size is greater than the achieved sample in 2000 since the date left full-time education can be determined from data provided at ages 16, 23, 33 or 42 years. Subsequent data are submitted to multiple imputation for cohort members who had dropped out of the survey after leaving full-time education (details given below).

2.2. Measures

2.2.1. Socio-economic risk factors at birth

2.2.1.1. *Social class of origin.* The social class of the father is measured by the Registrar General's social class (RGSC) on a 6-point scale: I professional; II Managerial and technical; IIINM Skilled non-manual; IIIM Skilled manual; IV Semi skilled; V Unskilled (Leete and Fox, 1977).

2.2.1.2. *Mother's education.* Mother's education was coded as (0) left school after minimum leaving age or (1) left school at the minimum leaving age.

2.2.2. Family resources

2.2.2.1. *Parental support for education.* Head teachers were asked how much interest each parent showed in their child's educational progress. Parental support was coded on a 3-point scale (1) very interested (2) some interest (3) little or no interest.

2.2.2.2. *Educational aspirations.* Parental aspirations are coded (1) wishes child to leave at 16 years (2) hopes child continues full-time education to 18 years (3) hopes child continues full-time education after 18 years.

2.2.2.3. *Educational expectations.* Parental expectations are coded (1) expects child to leave at 16 years (2) expects child to continue full-time education to 18 years (3) expects child to continue full-time education after 18 years.

2.2.3. Personal assets

2.2.3.1. *School motivation.* The cohort members completed an Academic motivation scale consisting of eight items measured on a 5-point likert scale. Summed scores range from 0 to 40, with higher scores representing greater motivation to study at school. Internal consistency of the scale is acceptable, with coefficient $\alpha = .75$.

2.2.3.2. *Confidence in abilities.* Cohort members were asked seven questions at age 16 on how they felt about their own abilities in sports, academic, artistic and practical subjects at school. Individuals rated themselves as below average, average or above average on each subject. A principal components analysis revealed three orthogonal components: confidence in abilities in science, confidence in abilities in the arts and confidence in practical abilities. Component loadings ranged from 0.69 to 0.79 but, for simplicity, constituent raw

item scores were summed to create three scales with higher values representing greater confidence.

2.2.3.3. Educational aspirations. Cohort members own aspirations are coded (1) no wishes for GCE A level or Scottish Higher level exams (2) uncertain about wishes (3) hopes to study for GCE A level or Scottish Higher exams.

2.2.3.4. Educational expectations. Cohort members' expectations are coded (1) expects to leave at 16 years (2) expects to continue full-time education to 18 years (3) expects to continue full-time education after 18 years.

2.2.4. Educational assets

2.2.4.1. Academic achievement. In 1974, students could take the Certificate of Secondary Education (GCE) examinations and the ordinary ('O' level) examinations within the General Certificate of Education (GCSE). A GCE grade A is equivalent to a GCSE 'O' level. The total number of 'O' levels passed and GCE exams passed at A grade taken at school at age 16 is used as the measure of academic achievement (range 0–9+).

2.2.4.2. General ability. This was measured at age 11 using the General ability test (Douglas, 1964). This is an IQ-type test with verbal and non-verbal subscales which are combined to give a general ability score. The published reliability of the General ability test is $r = .94$ (Douglas, 1964).

2.2.4.3. Reading comprehension. The National Foundation for Educational Research in England and Wales (NFER) constructed a reading comprehension test specifically for use in the NCDS at age 16. The scores on this reading test range from 0 to 35.

2.2.4.4. Mathematics. A mathematics comprehension test devised at the University of Manchester and originally intended for the NFER's study of comprehensive schools was completed by the cohort members at age 16. Scores range from 0 to 31. Both reading and maths tests have been reported to have excellent reliability ($r = .85$ for the mathematics test and $r = .86$ for the reading test) (Goldstein, 1979).

2.2.5. Individual outcomes

2.2.5.1. Left continuous full-time education at 16 years. Cohort members were defined as having left continuous full-time education once the month-by-month work histories showed they had a period of activity other than education lasting more than 4 months. Thus the definition of "continuous" allowed for short breaks from education. This included activities such as temporary work after taking the age 16 exams until starting college in the autumn. In practice, most of the early leavers reported that they left school either in April 1974, the legal minimum age of leaving education, or from June to August 1974 at the end of the academic year. Cohort members are defined as having left continuous full-time education at 16 years if they left education by the beginning of August 1974 (i.e. on or before the end of the academic year in which they were 16).

2.2.5.2. Returned to full-time education. After initially leaving continuous full-time education, cohort members are considered to have returned to education if they reported in their

work history being in full-time education again after a gap of more than 4 months. The choice of time lag is always problematic, but this definition is consistent with that used in other studies (Berkold et al., 1998; Wayman, 2002). A four month gap allows those that returned to education in September 1974 after leaving school in April 1974 to be considered as returned to education. Those who left school in July and worked during the summer holidays before starting at college in September are considered to have remained in continuous education.

2.2.5.3. Highest qualification achieved. Academic and vocation qualifications achieved by 42 years of age are ranked into a 6-point scale based on the National Vocational Qualifications scale. The scale points are no qualifications, NVQ1 (CSE 2-5 or initial competence for vocational award), NVQ2 (GCSE 'O' level or the minimum vocational standard for industrial recognition), NVQ3 (GCSE 'A' level or advanced vocational level of specialisation within a given occupation), NVQ4 (degree or academic or vocational diploma or master level award within a given occupation) and NVQ5 (higher degree). Unlike in the US, British schools train students for externally set examinations. There is no exact US equivalent, but a high school diploma is roughly comparable to at least five GCSE 'O' levels. The nearest equivalents to GCSE A-levels are Advanced Placement (AP) tests. For a detailed description of the NVQ qualification levels see Makepeace et al. (2003).

2.3. Statistical analyses

All statistical analyses are carried out using Stata version 8.2 (Stata Corporation, 2003). Men and women's experiences of education, occupations and employment histories differed quite markedly for this cohort born in 1958 (Makepeace et al., 2003). Therefore, we expected that there would be different resiliency processes by gender. This was confirmed by preliminary models which estimated effects for all cohort members, with interactions between gender and the risk and promotive factors formally tested. Given the very high proportion of interaction terms that were statistically significant, the models are presented after stratification by gender. Logistic regression models are fitted to estimate the odds of leaving education at 16 years of age compared with staying on in education depending on the promotive factors. The independent variables include the socio-economic risk factors at birth and the promotive factors (family resources, personal assets and educational assets). A main effects model assesses support for the compensatory model of resilience and an interaction effects model assesses support for the protection model (interactions between the two risk factors and the promotive factors). Ordinal logistic regression models are estimated for the effect of risk, resources and assets on acquiring higher levels of qualifications by age 42 years. Again, main and interaction effects models are estimated with socioeconomic risk at age 16 considered after controlling for earlier risk. Separate logistic regression models are estimated for men and women to predict the return to full-time education for those who left school at 16 years. In these models, only the resources and assets are entered as independent variables—no interaction with the risk factor is possible.

Categorical variables are dummy coded with the most disadvantageous condition set as the reference category for the promotive factors and the most advantageous condition as the reference for the risk factors. All predictor variables are entered separately in univariate models and then simultaneously into multivariate models. The contributions to the fit

of the model of the groups of risk and promotive factors (socio-economic risk factors, family resources, personal assets, educational assets) are assessed using the Wald χ^2 statistic.

Missing values were filled in by multiple imputations using the multiple imputation by chained equations (MICE) programs implemented in Stata by Royston (Royston, 2004). The imputation model contained additional variables which either predict values on the variables in the substantive models or predict drop-out from the study. For example, items from earlier sweeps were used to impute missing values on the same items in the age 16 survey (e.g. parental support for education, aspirations and expectations, reading and mathematics test scores). Other socio-economic indicators were included in the imputation model as they predict drop-out. Five replicates of the data were created, giving 95% efficiency (Rubin, 1987). The Stata program MICOMBINE is used to calculate the average regression estimates over the set of replicates, adjusting the standard errors for missing-data uncertainty according to Rubin's rule (Rubin, 1987). The variation between the parameter estimates from the different replicates is an estimate of imputation variance. Rubin's rule allows the estimates of sampling variance to be combined with this imputation variance to estimate the total variance of the parameter estimates. Full details are given in Royston (2004). Table 1 gives the distribution of all the variables in the original dataset and averaged over the five filled-in datasets. Differences between the two sets of figures are consistent with the profile on non-responders and drop-outs (Ferri, 1993; Plewis et al., 2004).

3. Results

Young men were more likely to leave education early than women (Table 1). Although they were less likely to return to education than young women, they achieved higher qualifications than women by the age of 42. Men also differed from the female cohort on a number of the family resources. Parents were more likely to want their daughters to stay on in education until the age of 18 and expected them to do so, although there was no difference in the aspirations for further education beyond 18 for sons and daughters. Despite this, there were no gendered differences in parental support for education. Personal aspirations and expectations were similar for their sons and daughters, albeit slightly higher for daughters. Boys had poorer motivation to work at school than girls but had greater confidence in their own abilities in science and physical activities and less confidence in their abilities in the arts than girls. There were only small differences in the educational assets of young men and women: boys scored less well on the general ability test, fared better in the mathematics test which were completed at age 11 (year 6), and gained fewer examination passes at 16 years (year 11).

3.1. Resources, assets and remaining in education

Being born in a socio-economically disadvantaged family was a major risk for leaving education at the minimum statutory age. Boys whose father was in an unskilled job were 33 times as likely to leave school at 16 years as boys from a professional background. For girls, the odds ratio was 25. If their mother had left school at the minimum statutory age then the risk of leaving school early was over four times that for children with mothers who had stayed in the education system for longer. Table 2 shows the estimated odds of remaining in education beyond the minimum leaving age. Once all the promotive factors are taken into account, boys born into professional homes were still nearly three times

Table 1

Distribution of explanatory and outcome variables used in the models in (a) the original dataset and (b) the replicated datasets

	Original		Replicated	
	Males	Females	Males	Females
<i>Socio-economic risk factors at birth</i>				
Social class of origin (%)				$P = .75$
I Professional	5.0	4.9	5.1	4.9
II Managerial and technical	15.1	14.6	15.2	14.6
IIINM Skilled non-manual	10.1	11.4	10.7	11.5
IIIM Skilled manual	43.6	43.5	43.0	43.1
IV Semi-skilled	18.6	18.5	18.7	18.8
V Unskilled	7.0	7.1	7.3	7.2
Mother's school leaving age (%)				$P = .64$
Mother left school at 16	75.0	74.6	74.5	74.1
<i>Family resources</i>				
Parental aspirations (%)				$P < .00005$
Wish child leaves education at 16	40.0	35.5	40.0	36.8
Continue full-time education to 18	24.1	30.0	23.7	27.8
Continue full-time education after 18	35.9	34.5	36.3	35.4
Parental expectations (%)				$P < .00005$
Hopes to leave education at 16	57.6	50.7	55.7	49.9
Continue full-time education to 18	17.0	23.4	19.8	25.1
Continue full-time education after 18	25.4	25.9	24.5	25.1
Support for education (%)				$P = .35$
Little or no interest	18.5	16.9	19.0	18.1
Some interest	35.6	36.6	36.2	37.2
Very interested	45.9	46.5	44.8	44.7
<i>Personal assets</i>				
Own aspirations (%)				$P = .14$
No further academic study	50.3	51.8	51.3	52.4
Uncertain	15.1	14.3	14.5	14.2
Would like to study for A levels	34.6	33.9	34.2	33.4
Own expectations (%)				$P = .32$
Hopes to leave education at 16	68.4	66.0	67.0	65.8
Continue full-time education to 18	7.3	8.2	7.6	8.1
Continue full-time education after 18	24.4	25.8	25.5	26.2
School motivation				$P < .00005$
Mean (SD)	27.8 (6.4)	28.9 (6.3)	27.9 (6.2)	28.9 (6.1)
Confidence in abilities in science				$P < .00005$
Mean (SD)	5.9 (1.1)	5.6 (1.0)	5.9 (1.1)	5.6 (1.0)
Confidence in abilities in arts				$P < .00005$
Mean (SD)	8.8 (1.4)	8.9 (1.3)	8.7 (1.4)	8.9 (1.3)
Confidence in physical abilities				$P < .00005$
Mean (SD)	6.4 (1.0)	6.1 (0.9)	6.4 (1.0)	6.1 (0.9)
<i>Educational assets</i>				
General ability				$P < .00005$
Mean (SD)	42.5 (16.1)	44.7 (15.7)	42.2 (16.3)	44.3 (15.8)
Academic achievement				$P = .001$
Mean (SD)	1.9 (2.7)	2.1 (2.8)	1.9 (2.7)	2.1 (2.7)
Reading comprehension test				$P = .12$
Mean (SD)	25.6 (7.2)	25.4 (6.7)	25.3 (7.4)	25.3 (6.8)

Table 1 (continued)

	Original		Replicated	
	Males	Females	Males	Females
Mathematics test			$P < .00005$	
Mean (SD)	13.6 (7.2)	12.2 (6.6)	13.2 (7.2)	12.0 (6.6)
<i>Individual outcomes</i>				
Cohort member's schooling (%)			$P < .00005$	
Cohort member left education at 16	62.8	56.2	66.1	58.9
Highest qualification by age 42 (%)			$P < .00005$	
None	10.6	12.8	10.8	13.1
NVQ1 (CSE 2-5 or equivalent)	10.7	11.3	11.5	11.8
NVQ2 (O level or equivalent)	20.5	30.1	20.7	28.3
NVQ3 (A level or equivalent)	24.5	14.6	23.5	15.6
NVQ4 (degree or diploma)	28.7	27.2	28.9	27.5
NVQ5 (higher degree)	5.0	4.0	4.6	3.7
Returned to full-time education (%)			$P < .00005$	
Returned after leaving at 16 years	6.2	9.3	6.8	9.5
<i>N</i>				
Minimum, maximum	4931, 6224	4830, 6117	6558, 6558	6582, 6582
Multivariate	1606	1787	6558	6582

more likely and girls around four times as likely to stay in education as those from unskilled homes. Nevertheless, the attenuation of the social class differences between the univariate and multivariate models shows the importance of resources and assets. Mother's school leaving age also remained a negative influence on their child's leaving age once the resources and assets had been taken into account, but the effect was less severe.

Each promotive factor predicted retention in full-time education univariately, even if they were not independently related to retention in the multivariate model which simultaneously includes socio-economic risk plus all the resources and assets. In the multivariate model, family resources and personal assets were the strongest independent influences on keeping boys in education (Family resources $\chi^2(6) = 295$; personal assets $\chi^2(8) = 279$; educational assets $\chi^2(4) = 114$). For girls, family resources accounted for more than twice the variability in school leaving status than either personal or educational assets (Family resources $\chi^2(6) = 531$; personal assets $\chi^2(8) = 192$; educational assets $\chi^2(4) = 163$). Overall, parental expectations had the greatest impact on school leaving age. If parents expected their offspring to remain in education for at least another 2 years, they were around six times as likely to stay beyond 16 as leave. Parental aspirations remained a significant predictor of staying at school even after accounting for differences in expectations. Even a small amount of parental support for education increased the chances of boys staying on in full-time education.

Personal assets were also influential in keeping young people in education. Like parental expectations, individual expectations had the greatest impact on the decision to stay in education or not of the personal assets. Aspirations to study 'A' levels also increased the chance that young people would opt to stay in education after controlling for the other promotive factors. School motivation and confidence in abilities did not have an independent effect on boys remaining in education net of their educational assets, but girls' motivation was associated with staying on.

Table 2

Estimated odds ratios and 95% confidence intervals in parentheses of remaining in education beyond 16 years of age for males ($N = 6558$) and females ($N = 6582$)

	Males		Females	
	Univariate	Multivariate	Univariate	Multivariate
<i>Socio-economic risk factors at birth</i>				
Social class of origin	$P < .00005$	$P < .00005$	$P < .00005$	$P < .00005$
I Professional	1.00	1.00	1.0	1.0
II Managerial and technical	0.30 (0.22–0.41)	0.56 (0.36–0.86)	0.37 (0.26–0.52)	0.62 (0.39–0.99)
IIINM Skilled non-manual	0.20 (0.14–0.27)	0.60 (0.38–0.95)	0.24 (0.17–0.33)	0.49 (0.30–0.79)
IIIM Skilled manual	0.07 (0.05–0.10)	0.39 (0.25–0.59)	0.08 (0.06–0.12)	0.34 (0.22–0.54)
IV Semi-skilled	0.05 (0.04–0.07)	0.38 (0.24–0.60)	0.07 (0.05–0.10)	0.35 (0.22–0.56)
V Unskilled	0.03 (0.02–0.04)	0.33 (0.19–0.58)	0.04 (0.03–0.06)	0.26 (0.15–0.45)
Mother's school leaving age	$P < .00005$	$P < .00005$	$P < .00005$	$P = .0007$
Mother left school at 16	0.21 (0.18–0.23)	0.63 (0.52–0.77)	0.23 (0.21–0.26)	0.72 (0.60–0.87)
<i>Family resources</i>				
Parental aspirations	$P < .00005$	$P = .002$	$P < .00005$	$P < .00005$
Wish child leaves education at 16	1.00	1.00	1.00	1.00
Continue full-time education to 18	10.19 (8.22–12.63)	1.66 (1.24–2.23)	10.19 (8.46–12.27)	1.87 (1.45–2.40)
Continue full-time education after 18	43.74 (35.61–53.74)	1.38 (0.98–1.94)	34.73 (28.86–41.80)	1.36 (1.01–1.84)
Parental expectations	$P < .00005$	$P < .00005$	$P < .00005$	$P < .00005$
Hopes to leave education at 16	1.00	1.00	1.00	1.00
Continue full-time education to 18	18.36 (15.31–22.02)	4.22 (3.24–5.49)	16.72 (14.26–19.61)	5.37 (4.31–6.70)
Continue full-time education after 18	76.33 (62.97–92.52)	5.82 (4.14–8.17)	56.38 (46.92–67.75)	6.24 (4.59–8.48)
Support for education	$P < .00005$	$P = .0002$	$P < .00005$	$P = .0004$
Little or no interest	1.00	1.00	1.00	1.00
Some interest	4.40 (3.34–5.81)	1.78 (1.27–2.49)	3.24 (2.58–4.06)	1.29 (0.95–1.76)
Very interested	17.07 (13.15–22.16)	2.09 (1.47–2.96)	13.81 (10.94–17.43)	1.80 (1.28–2.53)
<i>Personal assets</i>				
Own aspirations	$P < .00005$	$P < .00005$	$P < .00005$	$P = .003$
No further academic study	1.00	1.00	1.00	1.00
Uncertain	3.45 (2.85–4.16)	1.23 (0.97–1.56)	2.47 (2.10–2.90)	1.03 (0.83–1.28)
Would like to study for A levels	29.49 (25.33–34.33)	2.11 (1.65–2.70)	16.12 (14.07–18.47)	1.47 (1.17–1.85)
Own expectations	$P < .00005$	$P < .00005$	$P < .00005$	$P < .00005$
Hopes to leave education at 16	1.00	1.00	1.00	1.00
Continue full-time education to 18	15.79 (12.70–19.62)	3.12 (2.38–4.09)	11.12 (9.01–13.71)	2.88 (2.24–3.72)
Continue full-time education after 18	48.65 (41.03–57.69)	3.60 (2.72–4.76)	26.38 (22.47–30.97)	2.79 (2.16–3.60)
School motivation	$P < .00005$	$P = .68$	$P < .00005$	$P = .0003$
Per unit increase in score	1.15 (1.14–1.17)	1.00 (0.98–1.03)	1.15 (1.14–1.16)	1.03 (1.01–1.05)
Confidence in abilities in science	$P < .00005$	$P = .25$	$P < .00005$	$P = .40$
Per unit increase in score	1.99 (1.87–2.10)	1.07 (0.96–1.19)	1.61 (1.52–1.71)	0.96 (0.87–1.06)
Confidence in abilities in arts	$P < .00005$	$P = .68$	$P < .00005$	$P = .72$
Per unit increase in score	1.23 (1.18–1.28)	1.02 (0.94–1.09)	1.26 (1.21–1.31)	0.99 (0.93–1.05)
Confidence in physical abilities	$P < .00005$	$P = .09$	$P = .0007$	$P = .20$
Per unit increase in score	0.82 (0.78–0.87)	0.92 (0.83–1.01)	1.12 (1.05–1.19)	1.07 (0.96–1.19)
<i>Educational assets</i>				
General ability	$P < .00005$	$P = .57$	$P < .00005$	$P = .10$
Per unit increase in score	1.07 (1.07–1.08)	1.00 (0.99–1.01)	1.07 (1.06–1.07)	1.01 (1.00–1.01)
Academic achievement	$P < .00005$	$P < .00005$	$P < .00005$	$P < .00005$
Per exam	1.67 (1.63–1.71)	1.13 (1.08–1.18)	1.65 (1.60–1.69)	1.15 (1.10–1.20)
Reading comprehension test	$P < .00005$	$P = .007$	$P < .00005$	$P = .13$
Per unit increase in score	1.22 (1.21–1.24)	1.03 (1.01–1.05)	1.21 (1.19–1.22)	1.01 (1.00–1.03)

Table 2 (continued)

	Males		Females	
	Univariate	Multivariate	Univariate	Multivariate
Mathematics test	$P < .00005$	$P = .014$	$P < .00005$	$P = .005$
Per unit increase in score	1.22 (1.21–1.23)	1.03 (1.01–1.05)	1.21 (1.19–1.22)	1.03 (1.01–1.05)

Educational assets reflect successful academic progress throughout the school years and in part are due to the accumulation of protective family resources and personal assets over time. General ability had no impact on whether young people remained in education once reading and mathematics test results at age 11 and exam results at age 16 were accounted for. Academic achievement at 16 years was the strongest determinant of remaining in education of the educational assets.

Interaction effects between the promotive factors and risk variables were tested one at a time in addition to all the main effects in the models. The family resources were equally effective for those born in socio-economic advantage and disadvantage: no significant interaction terms were found when the interaction between each family resource and either social class or mother's school leaving age was tested. Likewise, we found that personal assets did not help disadvantaged young people any more than their more advantaged peers, since the personal assets showed no interaction with the socio-economic risk factors. Academic attainment was the only factor which had different effects depending on socio-economic origins. Girls from disadvantaged backgrounds were more likely to stay in education if they gained some exam success than girls from more advantaged homes (RG V by exams odds ratio 1.35, 95% CI 1.08–1.69).

3.2. Resources, assets and achieving further qualifications

The majority (52%) of the NCDS cohort left school without passing any GCE O level exams. But most had later acquired further qualifications, either through occupational schemes or formal academic training. Only 24% of the cohort still had no NVQ2 level qualifications when asked at 42 years of age. Table 3 shows the results of the ordinal logistic regression models for men and women with highest qualification level as the dependent variable. The parameter estimates are interpreted as the odds ratio of being in a higher category on the NVQ qualification system for a one-unit change in the independent variable. The socio-economic risk factors from birth are entered into the models as control variables. Of interest here is socio-economic risk at age 16, indexed by leaving education at the minimum statutory age, and its effect on qualifications over the life-course. In a univariate model which excludes the promotive factors, men who left school at the statutory age were 5.88 times less likely (95% CI: 5.26–6.67) and women were 8.33 times less likely (95% CI: 7.69–9.09) to gain higher NVQ level qualifications. The promotive factors partially offset this risk. After accounting for all the promotive factors, leaving education at the statutory leaving age was still associated with odds ratios of 1.47 and 2.38 of lower NVQ level qualifications for men and women, respectively, (Table 3).

The results indicate that to a large extent, promotive resources and assets needed to be realised in educational assets in order to have long-term effects (males: family resources $\chi^2(6) = 28$; personal assets $\chi^2(8) = 101$; educational assets $\chi^2(4) = 616$. Females family resources $\chi^2(6) = 76$; personal assets $\chi^2(8) = 91$; educational assets $\chi^2(4) = 549$). Moreover,

Table 3

Estimated odds ratios and 95% confidence intervals in parentheses of achieving a higher NVQ qualification level by age 42 for males ($N = 6558$) and females ($N = 6582$)

	Males		Females	
	Univariate	Multivariate ^a	Univariate	Multivariate ^a
<i>Socio-economic risk factor at 16 years</i>				
Cohort member's schooling	$P < .00005$	$P < .00005$	$P < .00005$	$P < .00005$
Cohort member left education at 16	0.17 (0.15–0.19)	0.68 (0.59–0.79)	0.12 (0.11–0.13)	0.42 (0.37–0.48)
<i>Family resources</i>				
Parental aspirations	$P < .00005$	$P = .40$	$P < .00005$	$P = .002$
Wish child leaves education at 16	1.00	1.00	1.00	1.00
Continue full-time education to 18	2.20 (1.96–2.47)	1.10 (0.96–1.27)	3.12 (2.78–3.50)	1.28 (1.11–1.48)
Continue full-time education after 18	5.62 (5.03–6.28)	1.09 (0.91–1.31)	8.38 (7.46–9.41)	1.30 (1.08–1.57)
Parental expectations	$P < .00005$	$P = .016$	$P < .00005$	$P = .10$
Hopes to leave education at 16	1.00	1.00	1.00	1.00
Continue full-time education to 18	2.85 (2.54–3.21)	1.10 (0.93–1.29)	3.83 (3.41–4.29)	1.11 (0.94–1.31)
Continue full-time education after 18	7.86 (6.99–8.85)	1.36 (1.10–1.70)	10.72 (9.48–12.13)	1.28 (1.02–1.61)
Support for education	$P < .00005$	$P = .0097$	$P < .00005$	$P < .00005$
Little or no interest	1.00	1.00	1.00	1.00
Some interest	2.14 (1.84–2.50)	1.19 (1.00–1.42)	2.52 (2.20–2.88)	1.33 (1.15–1.55)
Very interested	5.34 (4.62–6.18)	1.31 (1.10–1.57)	7.99 (6.85–9.30)	1.66 (1.39–1.97)
<i>Personal assets</i>				
Own aspirations	$P < .00005$	$P = .028$	$P < .00005$	$P = .0001$
No further academic study	1.00	1.00	1.00	1.00
Uncertain	1.57 (1.38–1.79)	1.04 (0.90–1.19)	1.74 (1.52–1.99)	1.20 (1.04–1.39)
Would like to study for A levels	5.73 (5.15–6.37)	1.25 (1.06–1.47)	6.98 (6.26–7.79)	1.42 (1.21–1.68)
Own expectations	$P < .00005$	$P = 0.12$	$P < .00005$	$P = .05$
Hopes to leave education at 16	1.00	1.00	1.00	1.00
Continue full-time education to 18	2.67 (2.25–3.16)	0.80 (0.65–0.99)	3.10 (2.63–3.65)	0.81 (0.67–0.98)
Continue full-time education after 18	6.94 (6.19–7.78)	0.91 (0.74–1.11)	7.59 (6.77–8.51)	0.83 (0.69–1.01)
School motivation	$P < .00005$	$P < .00005$	$P < .00005$	$P = .0001$
Per unit increase in score	1.11 (1.10–1.12)	1.03 (1.02–1.04)	1.11 (1.10–1.12)	1.02 (1.01–1.03)
Confidence in abilities in science	$P < .00005$	$P < .00005$	$P < .00005$	$P = .07$
Per unit increase in score	1.74 (1.66–1.83)	1.13 (1.07–1.19)	1.55 (1.47–1.63)	1.05 (1.00–1.12)
Confidence in abilities in arts	$P < .00005$	$P = .07$	$P < .00005$	$P = .003$
Per unit increase in score	1.20 (1.16–1.25)	1.03 (1.00–1.07)	1.29 (1.24–1.33)	1.06 (1.02–1.10)
Confidence in physical abilities	$P = .74$	$P = .012$	$P < .00005$	$P = .0003$
Per unit increase in score	0.99 (0.94–1.04)	1.08 (1.02–1.15)	1.17 (1.10–1.24)	1.13 (1.06–1.20)
<i>Educational assets</i>				
General ability	$P < .00005$	$P = .0022$	$P < .00005$	$P = .0006$
Per unit increase in score	1.06 (1.06–1.06)	1.01 (1.00–1.01)	1.06 (1.06–1.07)	1.01 (1.00–1.01)
Academic achievement	$P < .00005$	$P < .00005$	$P < .00005$	$P < .00005$
Per exam	1.45 (1.43–1.48)	1.11 (1.08–1.14)	1.49 (1.46–1.52)	1.10 (1.07–1.13)
Reading comprehension test	$P < .00005$	$P < .00005$	$P < .00005$	$P < .00005$
Per unit increase in score	1.15 (1.14–1.16)	1.06 (1.05–1.07)	1.18 (1.17–1.19)	1.07 (1.06–1.08)
Mathematics test	$P < .00005$	$P < .00005$	$P < .00005$	$P = .03$
Per unit increase in score	1.16 (1.15–1.17)	1.03 (1.01–1.04)	1.17 (1.16–1.18)	1.01 (1.00–1.03)

^a Controlling for social class of origin and mother's school leaving age.

each indicator of educational assets had an independent positive effect on higher qualification levels, suggesting that even if individual potential is not fully realised during the years at school, achievements at any stage of development act as a personal reserve for further

achievements later in life. Family resources continued to exert a positive effect on achievement in adulthood, particularly in women. However independent of their family's backing, personal assets had a stronger influence on outcomes. Interestingly, while motivation and confidence in abilities had little independent effect on whether young people remained in education beyond 16 years; both factors were important determinants for obtaining higher qualifications in the adult years. Confidence in physical abilities was important for both men and women, whereas confidence in scientific abilities was only significant for the former and confidence in the arts for the latter.

A compensatory model best described the relationship between the promotive factors and school leaving age, with the exception of academic attainment among girls at age 16. Yet, several individual assets and family resources were found to conform to a protection model of resilience in dealing with the consequences of leaving education at the statutory age: The interaction terms between risk at 16 years and the protective factors were added to the main effects model one at a time, and many were found to be statistically significant. Specifically, for men, confidence in physical abilities and general ability only had a significant protective effect for those who left school early. Among early leavers reading test scores predicted higher NVQ qualifications more strongly than among those who remained in full-time education beyond 16 years. For women, parental aspirations had no independent effect on qualifications at age 42 if they stayed in education but they promoted higher qualifications in young women who left school at 16. Parental expectations and support were only positively related to higher qualifications if young women left school early. Educational assets acquired by the age of 16 were more effective for women who left school at 16, with the exception of mathematics test scores. Similar to the findings for men, general ability was a protective asset for women who left school at 16 years but did not promote higher qualifications among women who stayed on in education. For simplicity of presentation, the data are further stratified by school leaving age to show the effects of the interaction terms (see [Table 4](#)).

3.3. *Resources, assets and returning to education*

The logistic regression model predicting return to education is based on the subset of cohort members who had left school at the statutory leaving age ([Table 5](#)). As such, it is not possible to separate compensatory from protection effects on resilience. Less than 10% of men and women returned to full-time education. Most had gained their additional qualifications after leaving school by other means. Nevertheless, the results are consistent with those for further qualifications described above. Educational assets predicted returning to education more than personal assets or family resources. Neither family resources nor personal assets had much of an independent effect on returning to education among men. However, the Wald test for the joint contribution of all the promotive factors was highly significant ($\chi^2(18) = 116, p < .00005$) compared with the sum of the Wald statistics for each independent effect ($\sum \chi^2(18) = 22$) and demonstrates that the educational assets of young men did not occur in isolation from other promotive factors but were contextualised. The univariate results support this interpretation.

Similarly, few of the young women's resources and assets had significant independent effects on returning to full-time education. If young women left school despite their parents' expectations that they would stay on in education, then they were more likely to return to education later. Women who aspired to study 'A' levels were also more likely

Table 4

Estimated odds ratios^a and 95% confidence intervals (CI) in parentheses of achieving a higher NVQ qualification level by age 42 stratified by gender and age left education

	Males		Females	
	Left school at 16 years	Left school after 16 years	Left school at 16 years	Left school after 16 years
<i>Family resources</i>				
Parental aspirations	<i>P</i> = .16	<i>P</i> = .15	<i>P</i> = .0039	<i>P</i> = .57
Wish child leaves education at 16	1.00	1.00	1.00	1.00
Continue full-time education to 18	1.13 (0.97–1.31)	1.09 (0.68–1.75)	1.31 (1.11–1.54)	0.88 (0.59–1.30)
Continue full-time education after 18	0.97 (0.79–1.19)	1.39 (0.84–2.30)	1.24 (0.99–1.55)	0.97 (0.63–1.50)
Parental expectations	<i>P</i> = .013	<i>P</i> = .52	<i>P</i> = .12	<i>P</i> = .44
Hopes to leave education at 16	1.00	1.00	1.00	1.00
Continue full-time education to 18	1.12 (0.92–1.36)	1.21 (0.83–1.75)	1.14 (0.93–1.40)	1.08 (0.78–1.48)
Continue full-time education after 18	1.56 (1.16–2.10)	1.28 (0.84–1.96)	1.42 (1.01–2.00)	1.23 (0.84–1.80)
Support for education	<i>P</i> = .040	<i>P</i> = .63	<i>P</i> < .00005	<i>P</i> = .034
Little or no interest	1.00	1.00	1.00	1.00
Some interest	1.17 (0.98–1.40)	1.13 (0.68–1.88)	1.37 (1.14–1.64)	0.95 (0.58–1.56)
Very interested	1.31 (1.06–1.62)	1.22 (0.75–1.99)	1.66 (1.34–2.07)	1.23 (0.77–1.97)
<i>Personal assets</i>				
Own aspirations	<i>P</i> = .028	<i>P</i> = .28	<i>P</i> = .0013	<i>P</i> = .043
No further academic study	1.00	1.00	1.00	1.00
Uncertain	1.04 (0.89–1.22)	1.07 (0.76–1.51)	1.25 (1.04–1.50)	1.10 (0.85–1.43)
Would like to study for A levels	1.30 (1.07–1.58)	1.28 (0.93–1.76)	1.46 (1.16–1.83)	1.38 (1.07–1.78)
Own expectations	<i>P</i> = .16	<i>P</i> = .47	<i>P</i> = .37	<i>P</i> = .22
Hopes to leave education at 16	1.00	1.00	1.00	1.00
Continue full-time education to 18	0.77 (0.56–1.05)	0.88 (0.65–1.17)	0.86 (0.62–1.20)	0.82 (0.64–1.04)
Continue full-time education after 18	0.82 (0.60–1.13)	1.01 (0.75–1.37)	0.81 (0.59–1.12)	0.96 (0.75–1.23)
School motivation	<i>P</i> < .00005	<i>P</i> = .0043	<i>P</i> = .0061	<i>P</i> = .0082
Per unit increase in score	1.03 (1.02–1.05)	1.03 (1.01–1.05)	1.02 (1.01–1.03)	1.02 (1.01–1.04)
Confidence in abilities in science	<i>P</i> = .006	<i>P</i> = .0043	<i>P</i> = .52	<i>P</i> = .042
Per unit increase in score	1.12 (1.03–1.21)	1.13 (1.04–1.23)	1.03 (0.94–1.12)	1.09 (1.00–1.19)
Confidence in abilities in arts	<i>P</i> = .41	<i>P</i> = .20	<i>P</i> = .0047	<i>P</i> = .24
Per unit increase in score	1.02 (0.97–1.07)	1.04 (0.98–1.11)	1.08 (1.02–1.14)	1.04 (0.97–1.11)
Confidence in physical abilities	<i>P</i> < .00005	<i>P</i> = .026	<i>P</i> = .0011	<i>P</i> = .061
Per unit increase in score	1.18 (1.09–1.27)	0.91 (0.83–0.99)	1.14 (1.05–1.23)	1.09 (1.00–1.20)
<i>Educational assets</i>				
General ability	<i>P</i> = .0004	<i>P</i> = .88	<i>P</i> = .0006	<i>P</i> = .66
Per unit increase in score	1.01 (1.00–1.02)	1.00 (0.99–1.01)	1.01 (1.00–1.02)	1.00 (0.99–1.01)
Academic achievement	<i>P</i> = .0031	<i>P</i> < .00005	<i>P</i> < .00005	<i>P</i> < .00005
Per exam	1.07 (1.02–1.12)	1.15 (1.11–1.19)	1.14 (1.09–1.20)	1.10 (1.06–1.14)

Table 4 (continued)

	Males		Females	
	Left school at 16 years	Left school after 16 years	Left school at 16 years	Left school after 16 years
Reading comprehension test	$P < .00005$	$P = .015$	$P < .00005$	$P = .0008$
Per unit increase in score	1.06 (1.05–1.08)	1.03 (1.01–1.05)	1.08 (1.06–1.09)	1.04 (1.02–1.06)
Mathematics test	$P = .0002$	$P = .058$	$P = .28$	$P = .010$
Per unit increase in score	1.03 (1.01–1.04)	1.02 (1.00–1.04)	1.01 (0.99–1.03)	1.02 (1.01–1.04)
<i>N</i>	4330	2228	3758	2624

^a Controlling for social class of origin and mother's school leaving age.

to return to education as were women who had higher reading test scores at age 16. Nevertheless, as for men, the promotive factors did not operate independently of each other. The joint effect of women's resources and assets greatly exceeded their independent effects ($\chi^2(18) = 137, p < .00005$ compared with $\sum \chi^2(18) = 35$). While only the joint effect of their educational assets was significant net of the joint effect of family resources and personal assets for men, all three forms of assets and resources contributed to the multivariate model for women. Indeed, as for the model predicting remaining in education beyond 16 years, family resources accounted for more than either personal or educational assets.

4. Discussion

The purpose of this study focused on identifying the promotive factors and processes implicated in educational resilience among men and women, first with respect to continuing in education beyond the mandatory leaving age and second with respect to returning to education and gaining qualifications after leaving school at 16. The aim was to find out whether known resources and assets that support positive educational outcomes in general would also support "resilient reintegration". In this context, resilient reintegration is demonstrated by choosing to return to education having left school at 16 by choice or external circumstance or by gaining higher level qualifications after leaving school with minimal qualifications.

The main findings in relation to remaining in education beyond the mandatory leaving age endorse the hypothesis that promotive factors at the individual and family level can act independently and cumulatively to support young people's education. The resources and assets examined conformed to a compensatory model with little evidence in support of a protection model of resilience. Alexander, Entwisle and Kabbani also reported that resources add to one another to promote academic resilience despite disadvantage (Alexander et al., 2001). Consistent with other studies (Rosenthal, 1998), more young men left school at 16 than young women. At the same time, family resources were not as great for boys as girls and the overall effect of family resources was weaker for the former than for the latter. If today's young men still have fewer family resources then school resources may be able to compensate by providing a supportive learning environment. Parental expectations were found to be more important than parental aspirations, suggesting that aspirations alone are not as effective in changing behaviour as expectations are. It may be that parents who expect their offspring to remain in education give more support and guidance

Table 5

Estimated odds ratios and 95% confidence intervals in parentheses of returning to full-time education for males ($N = 4330$) and females ($N = 3758$) who had left school at 16 years of age

	Males		Females	
	Univariate	Multivariate ^a	Univariate	Multivariate ^a
<i>Family resources</i>				
Parental aspirations	$P < .00005$	$P = .82$	$P < .00005$	$P = .071$
Wish child leaves education at 16	1.00	1.00	1.00	1.00
Continue full-time education to 18	1.59 (1.18–2.15)	1.09 (0.77–1.55)	2.22 (1.62–3.04)	1.50 (1.05–2.13)
Continue full-time education after 18	2.55 (1.86–3.50)	1.17 (0.69–2.01)	3.13 (2.32–4.24)	1.15 (0.74–1.79)
Parental expectations	$P < .00005$	$P = .64$	$P < .00005$	$P = .013$
Hopes to leave education at 16	1.00	1.00	1.00	1.00
Continue full-time education to 18	1.90 (1.37–2.65)	1.15 (0.74–1.78)	2.27 (1.66–3.11)	1.43 (1.01–2.05)
Continue full-time education after 18	3.70 (2.53–5.39)	1.32 (0.74–2.36)	4.57 (3.30–6.32)	2.27 (1.28–4.02)
Support for education	$P = .0008$	$P = .89$	$P < .00005$	$P = .80$
Little or no interest	1.00	1.00	1.00	1.00
Some interest	1.32 (0.86–2.02)	0.98 (0.63–1.52)	1.47 (1.02–2.12)	1.09 (0.75–1.56)
Very interested	2.12 (1.34–3.35)	1.05 (0.65–1.70)	2.39 (1.64–3.49)	1.17 (0.74–1.84)
<i>Personal assets</i>				
Own aspirations	$P < .00005$	$P = .47$	$P < .00005$	$P = .059$
No further academic study	1.00	1.00	1.00	1.00
Uncertain	1.51 (1.03–2.20)	1.14 (0.73–1.77)	1.31 (0.91–1.88)	1.13 (0.77–1.65)
Would like to study for A levels	2.59 (1.90–3.53)	1.31 (0.85–2.01)	3.23 (2.34–4.45)	1.65 (1.08–2.53)
Own expectations	$P < .00005$	$P = .29$	$P < .00005$	$P = .74$
Hopes to leave education at 16	1.00	1.00	1.00	1.00
Continue full-time education to 18	2.53 (1.54–4.14)	1.43 (0.81–2.52)	1.66 (0.76–3.64)	0.80 (0.36–1.79)
Continue full-time education after 18	3.77 (2.55–5.57)	1.47 (0.86–2.53)	3.50 (2.49–4.92)	1.10 (0.65–1.85)
School motivation	$P = .02$	$P = .88$	$P = .017$	$P = .32$
Per unit increase in score	1.04 (1.01–1.08)	1.00 (0.96–1.03)	1.03 (1.00–1.05)	0.99 (0.96–1.01)
Confidence in abilities in science	$P < .00005$	$P = .41$	$P = .44$	$P = .39$
Per unit increase in score	1.32 (1.16–1.49)	1.07 (0.92–1.24)	1.06 (0.92–1.22)	0.94 (0.81–1.09)
Confidence in abilities in arts	$P = .14$	$P = .79$	$P = .0002$	$P = .079$
Per unit increase in score	1.10 (0.97–1.26)	1.02 (0.88–1.19)	1.20 (1.09–1.33)	1.10 (0.99–1.22)
Confidence in physical abilities	$P = .87$	$P = .85$	$P = .075$	$P = .17$
Per unit increase in score	1.01 (0.89–1.15)	0.99 (0.86–1.13)	1.14 (0.99–1.33)	1.11 (0.96–1.28)
<i>Educational assets</i>				
General ability	$P < .00005$	$P = .50$	$P < .00005$	$P = .23$
Per unit increase in score	1.03 (1.02–1.04)	1.00 (0.98–1.01)	1.03 (1.02–1.04)	1.01 (1.00–1.02)
Academic achievement	$P < .00005$	$P = .0092$	$P < .00005$	$P = .21$
Per exam	1.30 (1.23–1.37)	1.12 (1.03–1.23)	1.25 (1.18–1.32)	1.05 (0.97–1.14)
Reading comprehension test	$P < .00005$	$P = .0049$	$P < .00005$	$P = .03$
Per unit increase in score	1.08 (1.05–1.12)	1.05 (1.01–1.08)	1.09 (1.06–1.11)	1.03 (1.00–1.06)
Mathematics test	$P < .00005$	$P = .53$	$P < .00005$	$P = .75$
Per unit increase in score	1.09 (1.06–1.11)	1.01 (0.98–1.04)	1.09 (1.07–1.10)	1.01 (0.97–1.04)

^a Controlling for social class of origin and mother's school leaving age.

than those who have high hopes but with little expectation of them being realised. Alternatively, young people whose parents expect them to stay in education may be more likely to expect to stay too. This in turn may allow them to think in terms of higher aspirations for the future. Parental expectations correlate more strongly with their child's aspirations than parental aspirations do, providing some support for this latter interpretation. Worrell and

Hale also identified hope for the future, which included expectations, as an important promotive factor for educational resilience (Worrell and Hale, 2001).

A priori, one might have hypothesised that educational assets would have had the greatest influence on remaining in education. In a meritocracy, those with more ability and greater achievements would be most likely to stay on in education. The fact that educational assets were not the main determinant of who stayed on, even after controlling for socio-economic risk, shows that the British education system in the 1970s was far from a meritocracy. Nevertheless, the model indicates that of the educational assets, academic achievement was the most important predictor of remaining in education. Although there was little support for a protection model of resilience with respect to remaining in education, academic achievement was the only protective factor shown to promote resiliency in young women, in that it had a greater protective effect on young women from socio-economically disadvantaged backgrounds.

There was far more evidence supporting the protection model in addition to the cumulative model of resilience when further qualifications were the outcome. Moreover, another complementary hypothesis considered here suggests that building a reserve capacity of promotive factors promotes resilient reintegration. The protection effect did not manifest itself until later in life when individuals had to depend more on their own reserve capacity. There was a chain of influence from family and personal assets to educational assets at one age which in turn acted as promotive factors for the next stage of development, demonstrating the utility of a life-course perspective on educational resilience (Schoon et al., 2002). The results for achieving further qualifications throughout life indicate that not only did achievements at school reduce the odds of dropout but that success bred further success over the life course. But like Wayman and Bertold et al., we found even if young people were unsuccessful at school, they were still more likely to reintegrate into education if they had higher general ability and reading and mathematics test scores. Educational assets throughout the life-course act as a personal reserve to be drawn on when needed. Even when potential was not realised at 16 years, educational assets acquired by age 11 contributed to the reserve. This indicates the importance of building up resources and assets for the future and that it is never either too early or too late to add to this personal reserve.

In early life, reserve capacity for education was topped up predominantly from interpersonal (i.e. family) resources whereas in later life it was predominantly from intrapersonal (personal) assets. This is illustrated by the protective effect of motivation and confidence in abilities on later qualifications even though these assets had little independent effect on remaining in education. The delayed effect from motivation and confidence adds another dimension to our understanding of reserve capacity building. Resources and assets do not necessarily need to be reinforced by immediate positive outcomes for them to be useful: they may lie dormant until there is some future need for them to be drawn on. From a policy perspective, it is important to note the results of a study on the development of capability beliefs which found that these beliefs are amenable to change (Juang and Vondracek, 2001). Finn and Rock reported that academic engagement, of which motivation is a component, is an important component of academic resilience (Finn and Rock, 1997). However, their conclusions were based on a sample of disadvantaged young people only. When both disadvantaged and more advantaged young people are compared, school motivation was shown to promote better outcomes irrespective of risk status. Instead, it was men's confidence in their physical abilities which was specifically a protective resiliency factor.

Gender differences in the promotive factors which build reserve capacity for education are evident from the NCDS data. Confidence in abilities in science promoted resilience among men whereas confidence in abilities in the arts compensated for disadvantage among women. The independent effect of confidence in physical abilities on later qualifications but not returning to full-time education suggests that it promotes the acquisition of vocational qualifications through in-work training. In comparison to men, women were still supported more by family resources in adulthood than they were in adolescence. The promotive factors also tended to interact more with disadvantage at age 16 for women than for men. While family resources did not interact with school leaving age for men, all three family resources acted differently depending on whether women left education at 16 or remained in education. The finding that family resources were only protective for at risk girls highlights their importance for young women's educational resilience building. Among young men building up promotive capacities might follow a different pattern, possibly reflecting their greater independence from parental influences.

The rate of return to full-time education was generally low, so despite the large sample size, the power to detect relationships between the promotive factors in childhood and adult commitment to return to education was weaker than that for relationships between the promotive factors and staying in education or gaining further qualifications. Even so, it is clear that resources and assets accumulated earlier in life have lifelong effects on educational resilience. For men, only educational assets had an independent effect on returning to education. However, this is not to say that family resources and personal assets did not contribute to the prediction of which men returned to education. The total contribution of the promotive factors to the model was far in excess of the sum of the individual contributions. Those men who returned to education often had accumulated a combination of family resources, personal assets and educational assets. This is consistent with an interpretation that resilient reintegration is promoted in individuals whose reserve capacity exceeds some critical level.

For women, family resources, personal assets and educational assets all had independent effects on them returning to education, with family resources and educational assets again providing the major contributions. The evidence on the influences on returning to full-time education is consistent with that discussed above for further qualifications. Individually, for both men and women, each of the parental, personal and educational assets significantly increased the odds of returning to education but in combination few had independent significant effects. But as for men, women returning to full-time education required a greater reserve capacity than women gaining qualifications by other means. Again, the total predictive power of adolescent girls' promotive factors far exceeded the sum of the independent effects.

In interpreting the findings presented here, some limitations should be noted. As with all research based on prospective cohort studies, we rely on data collected over 40 years ago in the context of the prevalent research practices of the time. Effect sizes for the associations between disadvantage, promotive factors and adult outcomes may have been different if alternative measures had been used or the timing of the measurement had been different. It is possible that the measurement of the promotive factors at age 16 was contaminated by proximity to individuals' school leaving date. Nevertheless, the effect is likely to be small given the results of a study by Janosz et al. (1997) who found that the predictors of school dropout were quite stable over time.

It is also important to acknowledge the tension in the requirement of the research aims for a long follow-up period in which to examine reintegration into education and the need to draw policy conclusions from the work. In the intervening years between leaving school and follow-up, many changes have taken place including greater participation by women in education and employment, the loss of most occupational apprenticeship schemes and many non-skilled employment opportunities, and the expansion of higher education. A cautious extrapolation of the conclusions of the study to contemporary contexts is recommended. Nevertheless, the prevailing context is likely to have less influence on the dynamics of family resources and individual assets than on school or other socio-cultural factors.

We have used multiple imputations in this study to correct for bias due to attrition and item non-response. The statistical approach taken assumes data are missing at random. Whilst we can never be sure that this assumption has been met, at present there is no accepted method for dealing with data that are not missing at random. Multiple imputations are a ‘best effort’ technique for dealing with these problems, but bias in our model estimates may still be present. Nevertheless, the data source offers a unique opportunity for investigating long-term development in a population sample.

In this study, school resources or assets and resources acquired after leaving school have not been examined. To date there is little evidence that events after leaving school influence decisions to return to education (Chuang, 1997; Wayman, 2002), with the exception of Entwisle and colleagues who found that employment since leaving school was related to the likelihood of returning to education (Entwisle et al., 2004). However, it has been demonstrated that the length of time since leaving school is a strong predictor of returning (Chuang, 1997). We also found that when a Cox regression model of time to return to education was analysed, there was a diminishing likelihood of returning as time went on (results not reported here). The sample design of the NCDS does not allow for a hierarchical contextual analysis of neighbourhood and school. Studies which have been able to explore these issues have found that both neighbourhood and school factors influence school drop-out in addition to individual and family factors (Baker et al., 2001; Crowder and South, 2003; Goldschmidt and Wang, 1999; Luyten et al., 2003; Rumberger, 1995).

In summary, the life-course approach adopted in this study enables a better understanding of how to meet targets for increasing participation in education. There are many possible routes leading to obtaining further qualifications, including continued participation in education after minimum school leaving age, return to full-time or part-time education, or gaining qualifications while learning on the job. What is needed is a better recognition of the varied pathways facilitating educational advancement and life long learning. It is never too late to learn, and there should be more opportunities throughout the life course to facilitate, encourage, and support learning and the acquisition of new skills and qualifications.

This study found that educational expectations and support in particular were important protective resources needed to build educational resilience. Positive attitudes to education and not just vague hopes need to be fostered at all levels: nationally, in school and at home. Opportunities should be provided for disadvantaged young people and their parents to learn more about possible routes through the educational system and about the associated costs and returns. Positive role models and affirmative experiences in the school environment can play a vital role in establishing trust and confidence in achievable goals and can encourage the formation of positive aspirations for long-term accomplishments.

Confidence and achievement were shown to be especially effective for resilient reintegration into education. It is important here to note that the measures of confidence in abilities encompassed a range of abilities, not just academic subjects. Despite findings that resilience in one domain of functioning does not always promote resilience in another domain, it appears that confidence in abilities in areas such as sport, music and art can spill over to promote educational resilience. Young people need opportunities to prove themselves and to learn more about their strengths and capabilities. Confidence can be gained not only through academic performance, but through the recognition of being able to do well in a variety of settings. Thus, the findings would support a wider spectrum of school activities in disadvantaged areas, providing young people with experiences that can be helpful in shaping their ambitions, supporting their confidence, and enabling them to make more informed choices.

Policies to facilitate gaining at least some qualifications before leaving school have already been implemented. Moreover, the study suggests that capacities or assets may not find expression if there are no opportunities to do so. Thus, we should not overlook measures to encourage and make it easier for people to take advantage of educational opportunities later in life if they missed the boat during their teens or early twenties.

Acknowledgments

This work was funded by the UK Economic and Social Research Council Grant No. L326253061. Data from the National Child Development Study were supplied by the ESRC Data Archive. We gratefully thank Fernando Galindo-Rueda, London School of Economics, for providing us with the Work history data. Those who carried out the original collection and analysis of the data bear no responsibility for its further analysis and interpretation.

References

- Alexander, K.L., Entwisle, D.R., Kabbani, N.S., 2001. The dropout process in life course perspective: early risk factors at home and school. *Teachers College Record* 103, 760–822.
- Baker, J.A., Derrer, R.D., Davis, S.M., Dinklage-Travis, H.E., Linder, D.S., Nicholson, M.D., 2001. The flip side of the coin: understanding the school's contribution to dropout and completion. *School Psychology Quarterly* 16, 406–426.
- Berkthold, J., Geis, S., Kaufman, P., 1998. Subsequent Educational Attainment of High School Dropouts. U.S. Department of Education, Office of Educational Research and Improvement, Washington, DC.
- Beuvais, F., Oetting, E.R., 1999. Drug use, resilience, and the myth of the golden child. In: Glantz, M.D., Johnson, J.L. (Eds.), *Resilience and Development: Positive Life Adaptations*. Kluwer Academic Publishers, New York, pp. 101–108.
- Bronfenbrenner, U., 1995. A future perspective. In: Moen, P., Elder, G.H., Lüscher, K. (Eds.), *Examining Lives in Context. Perspective on the Ecology of Human Development*. American Psychological Association, Washington, DC, pp. 619–647.
- Butler, N.R., Bonham, D.G., 1963. *Perinatal Mortality*. Livingstone, Edinburgh.
- Bynner, J., 2001. British youth transitions in comparative perspective. *Journal of Youth Studies* 4, 5–23.
- Bynner, J., Joshi, H., Tsatsas, M., 2000. *Obstacles and Opportunities on the Route to Adulthood: Evidence from Urban and Rural Britain*. Smith Institute, London.
- Chuang, H.L., 1994. An empirical-study of re-enrollment behavior for male high-school dropouts. *Applied Economics* 26, 1071–1081.
- Chuang, H.L., 1997. High school youths' dropout and re-enrollment behavior. *Economics of Education Review* 16, 171–186.

- Clarke, A.D.B., Clarke, A.M., 1981. Sleeper effects in development. *Developmental Review* 1, 344–360.
- Crowder, K., South, S.J., 2003. Neighborhood distress and school dropout: the variable significance of community context. *Social Science Research* 32, 659–698.
- Davie, R., Butler, H., Goldstein, H., 1972. *From Birth to Seven: The Second Report of the National Child Development Study (1958 Cohort)*. Longman, London.
- Department for Education and Skills, 2003. *The Future of Higher Education—White Paper*. DfES, London.
- Department for Education and Skills, 2005. *14–19 Education and Skills—White Paper*. DfES, London.
- Douglas, J.W.B., 1964. *The Home and the School*. Macgibbon and Kee, London.
- Ensminger, M.E., Slusarcick, A.L., 1992. Paths to high-school graduation or dropout—a longitudinal-study of a 1st-grade cohort. *Sociology of Education* 65, 95–113.
- Entwisle, D.R., Alexander, K.L., Olson, L.S., 2004. Temporary as compared to permanent high school dropout. *Social Forces* 82, 1181–1205.
- Fergus, S., Zimmerman, M.A., 2005. Adolescent resilience: a framework for understanding healthy development in the face of risk. *Annual Review of Public Health* 26, 399–419.
- Fergusson, D., Horwood, L., 2003. Resilience to childhood adversity: results of a 21 year study. In: Luthar, S.S. (Ed.), *Resilience and Vulnerability: Adaptation in the Context of Childhood Adversities*. Cambridge University Press, Cambridge, pp. 130–155.
- Ferri, E. (Ed.), 1993. *Life at 33: The Fifth Follow-up of the National Child Development Study*. National Children's Bureau, London.
- Finn, J.D., Rock, D.A., 1997. Academic success among students at risk for school failure. *Journal of Applied Psychology* 82, 221–234.
- Fogelman, K. (Ed.), 1976. *Britain's Sixteen-Year-Olds*. National Children's Bureau, London.
- Galindo-Rueda, F., 2002. Progression routes of cohort members: NCDS (1974–2000) and BCS70 (1986–2000). Description of the data work on the British Cohort Surveys. London School of Economics, London.
- Garnezy, N., Masten, A.S., Tellegen, A., 1984. The study of stress and competence in children: a building block for developmental psychopathology. *Child Development* 55, 97–111.
- Garnier, H.E., Stein, J.A., Jacobs, J.K., 1997. The process of dropping out of high school: a 19-year perspective. *American Educational Research Journal* 34, 395–419.
- Goldschmidt, P., Wang, J., 1999. When can schools affect dropout behavior? A longitudinal multilevel analysis. *American Educational Research Journal* 36, 715–738.
- Goldstein, H., 1979. Some models for analysing longitudinal data on educational attainment. *Journal of the Royal Statistical Society Series A* 142, 407–422.
- Higher Education Funding Council for England, 2005. *Young participation in higher education*. HEFCE, Bristol.
- Hurst, D., Kelly, D., Princiotta, D., 2004. Issue Brief: Educational Attainment of High School Dropouts 8 Years Later. National Center for Educational Statistics, Washington, DC.
- Janosz, M., LeBlanc, M., Boulerice, B., Tremblay, R.E., 1997. Disentangling the weight of school dropout predictors: a test on two longitudinal samples. *Journal of Youth and Adolescence* 26, 733–762.
- Juang, L., Vondracek, F.W., 2001. Developmental patterns of adolescent capability beliefs: a person approach. *Journal of Vocational Behavior* 59, 34–52.
- Kumpfer, K.L., 1999. Factors and processes contributing to resilience: the resilience framework. In: Johnson, J.L., Glantz, M.D. (Eds.), *Resilience and Development: Positive Life Adaptations*. Kluwer Academic Publishers, Dordrecht, Netherlands, pp. 179–224.
- Leete, R., Fox, J., 1977. Registrar General's social classes: origins and users. *Population Trends* 8, 1–7.
- Luthar, S.S., Doernberger, C.H., Zigler, E., 1993. Resilience is not a unidimensional construct: insights from a prospective study of inner-city adolescents. *Development and Psychopathology* 5, 703–717.
- Luthar, S.S., Cicchetti, D., Becker, B., 2000. The construct of resilience: a critical evaluation and guidelines for future work. *Child Development* 71, 543–562.
- Luyten, H., Bosker, R., Dekkers, H., Derks, A., 2003. Dropout in the lower tracks of Dutch secondary education: predictor variables and variation among schools. *School Effectiveness and School Improvement* 14, 373–411.
- Makepeace, G., Dolton, P., Woods, L., Joshi, H., Galinda-Rueda, F., 2003. From school to the labour market. In: Ferri, E., Bynner, J., Wadsworth, M. (Eds.), *Changing Britain, Changing Lives Three Generations at the Turn of the Century*. Institute of Education, London.
- Masten, A., 1994. Resilience in individual development: successful adaptation despite risk and adversity. In: Wang, M.C., Gordon, E.W. (Eds.), *Educational Resilience in Inner City America: Challenges and Prospects*. Erlbaum, Hillsdale, NJ, pp. 3–25.

- Masten, A.S., Hubbard, J.J., Gest, S.D., Tellegen, A., Garmezy, N., Ramirez, M., 1999. Competence in the context of adversity: pathways to resilience and maladaptation from childhood to late adolescence. *Development and Psychopathology* 11, 143–169.
- Organisation for Economic Cooperation and Development, 2004. *Education at a Glance: OECD Indicators 2004*. OECD, Paris.
- Plewis, I., Lisa Calderwood, Hawkes, D., Nathan, G., 2004. National Child Development Study and 1970 British Cohort Study Technical Report: Changes in the NCDS and BCS70 Populations and Samples over Time. Centre for Longitudinal Studies Bedford Group for Lifecourse and Statistical Studies, Institute of Education, University of London, London.
- Rose, B., Holmbeck, G., Millstein Coakley, R., Franks, E., 2004. Mediator and moderator effects in developmental and behavioral pediatric research. *Developmental and Behavioral Pediatrics* 25, 58–67.
- Rosenthal, B.S., 1998. Non-school correlates of dropout: an integrative review of the literature. *Children and Youth Services Review* 20, 413–433.
- Royston, P., 2004. Multiple imputation of missing values. *The Stata Journal* 4, 227–241.
- Rubin, D.B., 1987. *Multiple Imputation for Nonresponse in Surveys*. John Wiley, New York.
- Rumberger, R.W., 1995. Dropping out of middle school—a multilevel analysis of students and schools. *American Educational Research Journal* 32, 583–625.
- Rumberger, R.W., Lamb, S.P., 2003. The early employment and further education experiences of high school dropouts: a comparative study of the United States and Australia. *Economics of Education Review* 22, 353–366.
- Rutter, M., 1985. Resilience in the face of adversity: protective factors and resistance to psychiatric disorder. *British Journal of Psychiatry* 147, 598–611.
- Rutter, M., 1987. Psychosocial resilience and protective mechanisms. *American Journal of Orthopsychiatry* 57, 316–331.
- Sameroff, J., Bartko, W., Baldwin, A., Baldwin, C., Seifer, R., 1998. Family and social influences on the development of child competence. In: Lewis, M., Feiring, C. (Eds.), *Families, Risk, and Competence* Lawrence Erlbaum Associates, Mahwah, NJ, pp. 161–185.
- Schoon, I., 2006. *Risk and Resilience. Adaptations in Changing Times*. Cambridge University Press, Cambridge.
- Schoon, I., Bynner, J., 2003. Risk and resilience in the life course: implications for interventions and social policies. *Journal of Youth Studies* 6, 21–31.
- Schoon, I., Bynner, J., Joshi, H., Parsons, S., Wiggins, R.D., Sacker, A., 2002. The influence of context, timing and duration of risk experiences for the passage from childhood to early adulthood. *Child Development* 73, 1486–1504.
- Schoon, I., Parsons, S., Sacker, A., 2004. Socio-economic adversity, educational resilience, and subsequent levels of adult adaptation. *Journal of Adolescent Research* 19, 383–404.
- Shanahan, M.J., Mortimer, J.T., Kruger, H., 2002. Adolescence and adult work in the twenty-first century. *Journal of Research on Adolescence* 12, 99–120.
- Stata Corporation, 2003. *Stata Statistical Software. Release 8.2*. Stata Corporation, College Station, Texas.
- Staudinger, U.M., Marsiske, M., Baltes, P.B., 1995. Resilience and reserve capacity in later adulthood: potentials and limits of development across the lifespan. In: Cicchetti, D., Cohen, D.J. (Eds.), *Developmental Psychopathology: Risk, Disorder, and Adaptation*, vol. 2. John Wiley, New York, pp. 801–847.
- Wayman, J.C., 2001. Factors influencing GED and diploma attainment of high school dropouts. *Education Policy Analysis Archives*, 2005.
- Wayman, J.C., 2002. The utility of educational resilience for studying degree attainment in school dropouts. *Journal of Educational Research* 95, 167–178.
- Werner, E.E., 1996. Vulnerable but invincible: high risk children from birth to adulthood. *European Child and Adolescent Psychiatry* 5, 47–51.
- Worrell, F.C., Hale, R.L., 2001. The relationship of hope in the future and perceived school climate to school completion. *School Psychology Quarterly* 16, 370–388.