

Department for Work and Pensions

Research Report No 178

The wider benefits of education and training: a comparative longitudinal study

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A report of research carried out by Warwick Institute for Employment Research on behalf of the Department for Work and Pensions

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Summary

This report presents findings from a comparative longitudinal study of the changing relationship between education, training and various measures of employability and well-being. The aim of this study was to explore the extent to which education and/or work-related training confer employment-related benefits over and above the now well-established positive effects these have on earnings and employment. In so doing, it examines the concept of 'employability' and considers how this might be extended to incorporate some notion of well-being. The study investigates the links between education, training, employment, earnings and well-being and reveals the changing situation experienced by young adults over the past decade.

Defining employability

'Employability' is defined in much of the literature with reference to the process of obtaining work and then sustaining employment. An earlier review conducted by Hillage and Pollard¹ defined employability with reference to:

- the ability of an individual to get a job;
- their subsequent ability to retain employment;
- 'independence' in the labour market (a measure of the factors which enable an individual to make choices in their employment situation);
- the quality of work.

Retaining employability is seen in the context of the uncertainties of the labour market and the need for the individual to obtain both the human capital (e.g. new skills *via* training) and social capital (e.g. becoming part of work-related networks) to either sustain them in their existing job or obtain employment with a new employer. Given that training and the creation of work-related networks are probably more accessible or more readily developed whilst in work, employability may also be enhanced by staying in work long enough to secure these resources.

The concept of employability is typically extended to consider the quality of employment, a concept which relates to either job content (e.g. whether the tasks undertaken in a job are intrinsically satisfying) and/or the quality of the employment relationship. The latter may refer to the content of

¹ J. Hillage and E. Pollard (1998). *Employability: Developing a framework for policy analysis*. Department for Education and Employment Research Report, RR85.

the employment contract (wage levels, fringe benefits, etc.) or more informal benefits such as flexible working hours to meet the individual employee's commitments outside work.

Thus, employability fuses several ideas relating to job security and the quality of working life. The capacity of training and lifelong learning to improve long-run employability needs to be seen in terms of its capacity to foster occupational and social mobility, enhance job satisfaction and limit vulnerability to labour market change. If this view is to assist with the development of policies to improve employability, it is important to consider the links between education, training and employment on the one hand and earnings and job satisfaction on the other, as potential measures of employability.

Employment, education and training

Employability in the first instance is about obtaining a job. Available evidence suggests that education and training play a significant role in determining the extent of unemployment. There is strong evidence to suggest that low literacy and low mathematical ability are associated with long-term unemployment. Similarly, poor or low level qualifications are associated with an increased risk of long-term unemployment. The adverse impact of a lack of qualifications appears, on some evidence, to be increasing over time, perhaps reflecting the decline in the number of unskilled jobs in the labour market.

A further element of employability relates to acquiring those skills and attitudes that will assist people to find work and to move independently in the labour market. If employability is about individuals improving their labour market position (either to find work or improve their earnings or occupational position) then identification is required of those skills that allow them to achieve this end. Looking at the role of education and training in promoting social mobility in its widest sense is perhaps too great a task. A more direct understanding of the role of education and training in promoting occupational mobility can be gauged from an analysis of the changing skill composition of the labour market.

For those in employment, the evidence points to an increase in skill levels and responsibilities within jobs. This suggests that the maintenance of one's occupational position over time requires new skills to be acquired and an increased capacity to handle more responsibility. Under the narrow definition of employability, those who fail to keep up to date with new skills fall behind in their career progression and earnings, but their employability is not reduced because they still have a job. In contrast, those who lose their job with a resultant reduction in their employability also need to acquire those skills that will get them back into work.

Economics of employability

Indirect measurement of the relationship between employability and training can be achieved by correlating some measure of training (e.g. qualifications acquired) against a measure of employability (e.g. income) whilst simultaneously controlling for a number of other factors that may be related to income. The links, however, between vocational training and employability are complex and can be pursued at various levels and from differing perspectives. The literature reveals three approaches to the subject:

- at a macro-level, attempts have been made to measure the impact of education and training on employment and output. Authors such as Thurrow and Reich suggest that the relative levels of human capital development in western nations explain differences between their competitiveness;

- at an individual level, the impact of training on the chances of being employed or unemployed, or the impact of training on income over the life-cycle using work history data, have been measured. The evidence generally reveals a positive relationship between (a) level of education and being in employment/level of earning levels, and (b) training and earnings;
- from an organisational perspective, the relationship between workforce development/training and organisational performance has been measured. Initial evidence suggests that the relationship is positive.

Harmon and Walker, in their recent review of evidence and issues relating to the returns to education, indicate that there is a considerable degree of consensus on some of these issues, particularly upon the range to be placed upon estimates of the rate of return to an additional year of education. Basic specifications suggest a return to a year of schooling of between seven and nine per cent. Most studies reveal that women gain more from additional education than do men, that those in the top part of the income distribution gain higher returns per year of education than those in the bottom part of the distribution, and that the effect of underlying ability on earnings is small compared with the effect of education.

Employability and well-being

Whilst the evidence relating levels of education and training to employment duration and to earnings, reveals a positive link in both cases, much less is known about the relationship between education and training on the one hand and the quality of employment on the other. It might seem self-evident that those in employment or in relatively high wage employment, will be more content with their employment. Certainly, unemployed people have a more abject view of the world of work. To date, the relationship between levels of education/training and the quality of working life in the UK has not been quantitatively assessed in any systematic way. There is some indicative evidence that the wealthier we become, the more we demand from our work, and from life in general, such that our needs become more difficult to satisfy. If such a view is correct, and it is rather speculative, then this suggests that higher levels of education and training, leading to higher waged jobs, may not necessarily be related to greater job or life satisfaction.

Longitudinal analysis

A statistical exploration of the links between education and training, employability and well-being is presented in Chapter 3 of this report. The study moves beyond the more traditional analyses, which make much use of earnings as an indicator of employability, to examine further the links between education, work-related training and measures of psychological health and life satisfaction. We utilise information from the 1958 birth cohort (the *National Child Development Study*) and the 1970 birth cohort (the *British Cohort Study*). Both cohorts were revisited in 1999/2000 to provide fresh information on the employment, health and other circumstances of cohort members. To capture these people at an equivalent point in their life cycles, we compare and contrast the situation of 29 year olds in 1999 (1970 birth cohort) with 33 year olds in 1991 (the previous occasion upon which data were collected from the 1958 birth cohort). Where necessary, we take account of the fact that there is a four-year age difference between these two groups.

Key findings

Among the many interesting results that have become apparent from this comparative longitudinal analysis, we note particularly, the following:

- over the 8½ year period which forms the basis of this comparative study (spring 1991 – winter 1999) the proportion of young people (33 year olds in 1991, 29 year olds in 1999) holding employee status has risen significantly (74 to 79 per cent for men; 61 to 69 per cent for women). Among men this is due to a decline in self-employment and a fall in unemployment. For women it also reflects the continuing increase in their participation in the labour force, particularly their higher rate of participation in full-time employment;
- the proportion of young men and women holding higher qualifications (NVQ3, degree, higher degree) has risen markedly. The increase has been greater among women (25 per cent to 32 per cent), such that the proportion of young women with high-level qualifications now matches that of men. Associated with this rise, is a decline in the proportion with low-level qualifications. However, the proportions of both young men and young women reporting that they hold no qualifications has remained constant over this period (at around 12-15 per cent);
- the experience of unemployment since entering the labour force has declined for both young men and women;
- there is a small but measurable increase in the experience of work-related training between the two birth cohorts;
- there has been a major change in partnership formation. Marriage has declined to be replaced by cohabitation or single status. Those reporting a partnership (marriage or cohabitation) are much more likely to have a working partner.

Via the estimation of a series of multivariate statistical models, we explored further the interrelationships between qualifications, training, work history, employment, earnings and well-being. From this investigation we note the following:

- high-level qualifications continue to lead to higher levels of employment. For men, the effect of a degree on the probability of being employed at ages 29/33 years remains constant over the eight-year period. Lower-level qualifications now appear to be less effective at maintaining employment among the younger cohort. For women, qualifications have generally become more effective at maintaining employment;
- the effect of having a working partner on employment appears to be strengthening over the period. Young people in 1999 who have a working partner are more likely to be employed than was the case for young people with a working partner in 1991;
- the positive impact of qualifications on earnings appears to be declining. For both men and women the effect of a degree on earnings in their late 20s/early 30s now appears lower in 1999 than in 1991. This result must be interpreted with caution due to the four-year difference in the age of the two cohorts;
- young women with high level qualifications (a first degree or higher) continue to earn significantly less than young men who graduated at the same time. This difference, measured in 1999, cannot be wholly attributed to the subjects studied by men and women.
- work-related training continues to be associated with a small but significant positive earnings premium;

- high-level qualifications (degree or higher, NVQ4) appear to 'protect' young men and women from signs of depression, but the effect is somewhat weaker in the younger birth cohort;
- higher levels of 'overall life satisfaction' indicated by young men and women in 1991 are associated with higher-level qualifications in the younger cohort. No such clear relationship was evident for young people in 1991;
- comparing high-level qualifications and work-related training with continuous work experience since entering the labour market, and in the presence of statistical controls for mathematical ability at ages 10/11 and family background, we note the continuing importance of education and training. In terms of the range of economic and non-economic benefits experienced by young adults, education and training remain as important at the end of the 1990s as they were at the beginning in terms of their overall impacts on subsequent employment, earnings and well-being. While the economic returns to a higher qualification may have declined and the 'protection' this affords from poor mental health may be reduced somewhat, the development of human capital via education and training still outweighs the role played by continuous work experience.

Conclusions

The decade of the 1990s was a period of significant social and economic change. Arguably, the group that has experienced these changes the most were young adults. By the time they approach their early 30s, young people hope to settle down into steady jobs, to have started a family, or to have launched themselves into their chosen careers following a period of further or higher education.

During the 1990s the output of the UK higher education system virtually doubled. Economic growth was sustained throughout most of the decade. Inflation fell to its lowest level in 30 years and unemployment among school leavers was virtually eradicated. New forms of partnership began to emerge as marriage became unfashionable (and less stable) and cohabitation arrangements became popular.

Given this background of change, it is of interest then to pursue the social, economic and psychological health of young adults through this decade. We have done this via an analysis of Britain's two major birth cohort studies, contrasting the situation of 33 year olds in 1991 with 29 year olds in 1999. Our analysis has revealed that some young adults remain as vulnerable to social and economic misfortune now as they were a decade ago. While we find evidence which is consistent with the view that educational qualifications (and to a lesser extent, work-related training) 'protect' an individual from psychological ill-health, improve overall life satisfaction, and continue to generate strong economic benefits, it also appears to be the case that these effects are weakening as the pool of highly-qualified persons extends now across one third of all young adults. While unemployment has been reduced significantly via strong economic growth and through the variety of measures adopted under the New Deal programmes, its negative impacts on earnings and psychological health remain as insidious as ever. These influences are clearly long lasting, being readily identified in terms of economic and psychological well-being some 15 years after labour market entry for those who first entered the labour market in the mid 1970s.

The challenge (or puzzle) facing researchers and policy makers is to explore further some of the unanswered issues raised in this analysis. Most importantly, we still find significant differences between young men and young women in the way the labour market 'rewards' them for qualifications, work-related training and work experience. As the proportion of young women with high-level qualifications now equals or surpasses the proportion of men, the present inequities associated with the economic benefits of education will become increasingly obvious. In addition, the

rise we note in our indicator of psychological ill health among young men and particularly among young women, raises a number of concerns. However, it would be premature to seize upon this single result as indicative of a growth in malaise among young people generally. Further work in this area could focus particularly upon the changing nature of the employment relationship and its impact upon job satisfaction and general well-being.

In summary we see the key messages that arise from this study as the following:

- employability is a key concept in labour market evaluation and is more than just about being employed or earning a decent wage - it involves other job-related factors such as job quality and satisfaction;
- education and employability factors are linked with health, although the nature of the relationship and the range of other interactions involved (such as changes in household structure and gender) are neither well researched nor understood;
- relative employment and health gains associated with higher education that were observed a decade ago may be declining as mass participation is institutionalised. However, the interactions are complex and current trends need further monitoring.

1 Introduction

1.1 Aims of the study

Do education and/or work related training confer employment-related benefits on participants over and above the now well-established effect on earnings? To address this issue, research needs to be positioned at the boundaries of a number of disciplines: notably economics, psychology, sociology and human resource management. Economists have typically selected earnings as a measure of individual welfare or well-being. While their work has made significant strides in identifying, treating and resolving some of the methodological difficulties in measurement and modelling, it remains the case that over and above the impact on earnings, there is little systematic and up-to-date evidence from UK national sources about other potential benefits of education and training². While most would agree that being the holder of a reasonably well-paid job is a good indicator of employability there are many other dimensions to the concept that may not relate directly to earnings. Individual workers' aspirations and attitudes to work may also make a significant difference to their ability to thrive and prosper in different work environments. This report draws together a wide variety of studies undertaken across a range of disciplines that have contributed to our knowledge of the relationship between employability, training, and well-being, synthesising their common findings to provide a foundation for the statistical examination of the phenomenon.

Based on a literature review the study provides:

- an examination of the concept of employability and considers how it might be extended to incorporate some notion of well-being; and
- an assessment of the literature that provides a link between employability and well-being.

Building on the literature review, the statistical analysis explores the relationship between individuals' demographic, socio-economic and educational characteristics, employment history and two measures of well-being:

- a *Malaise Inventory* which measures individuals' psychological well-being; and
- the individual's own measurement of their life satisfaction.

² With the foundation of the Centre for the Wider Benefits of Learning, this situation is now improving rapidly. See, for example, Carr-Hill (2002) and Feinstein *et al.* (2001).

Data are used from the 1958 birth cohort (the National Child Development Study – NCDS) and the 1970 birth cohort (British Cohort Study – BCS). Both birth cohorts were surveyed in 1999/2000 to provide recent data on their employment characteristics and well-being. The situation of 29 year olds in 1999 (1970 birth cohort) is compared to that of 33 year olds in 1991 (1958 birth cohort) to gain an indication of changes in employment and well-being that have taken place over this eight year period, as experienced by young adults.

1.2 Understanding well-being

Economists tend to eschew the notion of well-being in favour of utility. In consumer theory, the ‘utility function’ describes preferences between different commodity bundles. Revealed preference theory argues that utility can be viewed as an ordinal concept, describing a preference ordering only. Rational economic behaviour is then predicated upon the maximisation of this preference ordering function.³ Psychologists rely less upon mathematical elegance to understand and predict human behaviour, instead making more use of information as to whether or not individuals are more or less satisfied with their particular situation as motivation for behaviour. As van Praag *et al.* (2000) note, for the last three decades they have utilised subjective questions about life satisfaction or happiness, and satisfaction with their financial situation, their job, their health, their environment, *etc.* These *domain satisfactions* have been measured in a large number of surveys worldwide utilising what is now a fairly standard set of questions.⁴

Unlike economists, whose theories are based upon the axiom that rational economic behaviour relies simply upon the ability of individuals to engage in ordinal preference ranking, psychologists faced criticisms that their measures of domain satisfaction or life happiness may not be comparable between individuals. A lack of comparability could seriously undermine their use for comparative purpose, for example when contrasting life satisfaction between different age groups and across language and cultural divides. Is the measured life happiness of a teenager in any way comparable to that of a pensioner, and do these measures have comparative validity between, say, the UK and Japan?

We are now able to assert with some confidence that there is a common interpretation of the satisfaction level that one individual perceives in others (Diener and Lucas, 1999) and that this common interpretation transcends cultural boundaries. Also, research has shown that there is similar subjective understanding of how psychological feelings translate into a number scale (van Praag, 1991). Most recently, it has been shown how a common set of variables can help us understand cross-national differences in expressions of job and life satisfaction (Blanchflower and Oswald, 2000), and that general life satisfaction appears to be an aggregate of domain satisfactions (van Praag, *et al.* 2000). There are important findings which open new avenues for research, allowing us to combine traditional methods of the economic analysis of individual behaviour with psychological measures of satisfaction and well-being.

It is more than just a curiosity to explore different disciplinary approaches to research that motivates our study. In this study we question the measurement of educational outcomes by economists and

³ For a good mathematical exposition of this argument see, for example, Debreu (1959) Section 4.6.

⁴ The questions vary between a five point scale which utilises the categories ‘very bad’, ‘bad’, ‘neutral’, ‘good’, and ‘very good’ to a Likert (1932) scale such as:
‘On a scale of 0 to 10, where ‘0’ stands for ‘extremely unsatisfied’ and ‘10’ stands for ‘extremely satisfied’ how would you rate your life as a whole?’

psychologists. It has long been argued that education provides more than a method of access to better-paying jobs. Educated individuals may enjoy non-pecuniary benefits from their education, making them happier individuals. But the evidence of such gains from education is slender. We redress this balance.

1.3 Education, training, employability and well-being

From the perspective of the individual, 'employability' can be viewed as both an outcome of experience and as a measure of human potential. Those who have found employment in what they describe as a 'good' job, those whose earnings are higher than average, and those who have found employment after a search for work, may regard themselves in varying degrees as 'employable'. In such cases, the outcome (a good job, higher than average pay, finding a job) is used to define the concept. While this may appear tautological, one only has to consider the lesser outcomes (a 'bad' job, poor pay or remaining unemployed) to argue quite reasonably that these represent *relative measures* of employability and that those who have, in the past, demonstrated poor employability are likely to be less employable in the future.

The links between education, training and employability derive mainly from the human capital tradition. Here it is argued that investment in education (by individuals) and training (by both individuals and their employers) is linked to individual productivity gains, defined as the marginal increase in value added per unit of worker effort. Like any investment decision, these give rise to risky outcomes – the projected demands for goods and services, which underlie an investment decision, may fail to materialise. But, unlike most physical investment decisions, investment in human capital can be split into general and specific components. General investments enhance human productivity across a wide spectrum of activities. These are of low risk, have productivity-enhancing characteristics which can be transferred to different employment situations and tend to be funded by individuals or by the State. On the other hand, specific investments may be associated with a particular type of work or work organisation and so attract funding from employers.

If, as a wide range of empirical studies have revealed, education and (to a lesser extent) training, enhance the general employment prospects for an individual (or their prospects with a specific employer), it follows that increased investments in education and training enhance employability. Recent advances in our ability to measure with more accuracy the impacts of education and training, have confirmed that these investments do confer real⁵ and significant advantages to individuals, especially insofar as general education is concerned. More, and better, education gives rise to higher earnings from employment, better jobs and, to some extent, protects the individual from unemployment.

It seems logical, therefore, to take this work one step further. Does education and training enhance general life satisfaction and satisfaction within other domains? While the question posed has a predictable answer, our interest lies more in understanding whether or not education and training can give rise to increased well-being *over and above* any increase which is attributable to the economic benefits of enhanced employability which they convey. Further, there is a need to explore the differences that may exist between men and women and between age groups. It has been argued elsewhere (Hakim, 2000) that the revealed preferences of women for paid employment illustrate the

⁵ We use this term to imply that there is a causal and measurable relationship between the amount of education provided to an individual and their resulting productivity, rather than simply an association that could stem from screening procedures governing access to education and employment opportunities.

weakness of feminist assumptions⁶ and can assist our understanding of such phenomena as the gender pay gap and the 'glass ceiling' (the extent to which women fail to gain access to internal promotion routes within organisations).

1.4 Structure of the report

This report is presented in two main chapters. Following this introduction, Chapter 2 reviews the range of theoretical and empirical research that has explored the concepts of employability and well-being. Chapter 3 presents results from the study we undertook to explore further certain of these research ideas. In particular, we examine for changes over the decade of the 1990s in the way in which education and training contribute to the employability and well-being of young adults. Chapter 4 provides a conclusion.

⁶ That gender/power relations place women in subordinate positions, leading to under-investment in their education and under-utilisation of their productivity in paid employment.

2 Employability and well-being: a review of findings

2.1 Introduction

There is now increasing evidence at a macro-economic level of the relationship between education and economic performance. There may well be doubt about the magnitude of any effect, but one recent study concluded

*'...there is now compelling evidence that human capital increases productivity, suggesting that education really is productivity enhancing rather than just a device that individuals use to signal their level of ability to the employer' (p. i)*⁷

Indeed, over recent years a degree of importance has been attached to the role of education and training in generating competitive advantage⁸ with some commentators suggesting that it is human capital, more than anything else, that explains comparative economic performance between countries⁹.

From a policy perspective, the debate about education and skills is not contextualised solely with regard to their macro- or even micro-economic effects. Education policy, though cognisant of the evidence relating to private and social rates of return, is not concerned solely with feeding the needs of the economy. Education policy sees learning as a goal in its own right, providing individuals with the ability to participate as fully as possible in adult life¹⁰, but this is, arguably, sometimes more implicit than explicit in a policy context. Much less is said about the capacity of education and training to raise individuals' conceptual abilities and, thereby, broaden their horizons, where the returns to additional years of education are more than economic. John Stuart Mills' dictum *'that it is better to be Socrates dissatisfied than a pig satisfied'* is of note here, that by raising our ability to 'appreciate the finer things

⁷ B. Sianesi and J. Van Reenen, *The Returns to Education: A review of the macro-economic literature*, Centre for the Economic for Education, LSE, London, 2000.

⁸ Commission of the European Communities (1993) *Growth Competitiveness and Employment*, Brussels CEC; Department for Trade and Industry (1994) *White Paper: Forging Ahead*, London, HMSO.

⁹ L. Thurrow, 'New Games, New Rules, New Strategies', *RSA Journal* CXLII, No 5454, November, pp50-56.

¹⁰ DfES 14-19: *extending opportunities, raising standards*, DfES Green Paper, 2002; *Learning to Succeed: Post-16 Funding: Second Technical Consultation Paper*, DfEE 0069/2000.

in life', for want of a better expression, overall levels of life satisfaction are improved¹¹. This is returned to later in the discussion.

Increasingly, policy has regarded the social rate of return to education in a wide sense with recognition of the potentially high costs to society accruing from social exclusion, unemployment, and inequality where the education system fails to provide individuals with the ability to survive (and prosper) in the labour market. Hence, of late, the national debate has focused on issues such as the low level of qualification in the workforce¹², and the seven million adults considered functionally illiterate¹³. This also relates very much to how social and educational disadvantage can be passed down the generations such that employability also becomes a function of family background. In tandem with attempts to improve the operation of the education and training systems, has been the strengthening of active labour market policy through the Welfare to Work initiative - especially the various New Deal programmes¹⁴. The revitalisation of active labour market policy via New Deal, marks one of the most significant attempts to improve the employability of those at the margins of the labour market. It recognises, to a greater extent than has been the case for some time, that no matter how strongly the economy performs and no matter how much the education and training system is strengthened, there are always individuals at the margins of the labour market who require special assistance to be integrated into the world of work.

Writ large through education and active labour market policy is the concept of employability. Employability is very much an economic concept concerned as it is with entry to, maintenance in, and progression through, the world of work. But it is much less concerned, if at all, with concepts such as life satisfaction which psychologists are wont to consider. As a concept, employability appears to go no further than ensuring people have the capabilities to find and keep a job and then, hopefully, experience promotion in it. Conceptually, it is very much about those at risk of being out of work. Whether workers – including those with little risk of being unemployed – find satisfaction in their jobs appears, at first glance, to be beyond the definitional boundaries of employability. In this chapter, the emphasis is very much on extending the concept of employability and its relationship to education and training beyond the narrow, technical definitions of private and social rates of return to encompass views about individual well-being. With John Stuart Mills' dictum in mind, this chapter weighs the evidence whether more education and training can make us happier, more satisfied, people as well as monetarily richer.

The chapter is in three main parts. The first section reviews the literature on employability. In the second section the evidence on private and social rates of return is provided. Finally, in the third section the evidence of positive externalities accruing from education and training. Taken together, this provides a basis for the statistical analysis in the next section which addresses the relationship between education and training with individual well-being where well-being is measured using: (i) a *Malaise Inventory*; and (ii) individuals' own assessment of their life satisfaction.

¹¹ J.S. Mill, *Utilitarianism*, Penguin, Harmondsworth, 1974.

¹² M. Campbell et al. *Skills in England 2001: Research Report*, Department for Education and Skills, Nottingham, 2001.

¹³ C. Moser, *A Fresh Start: Improving Literacy and Numeracy*, Department for Education and Employment, Sudbury, 1999.

¹⁴ C. Hasluck, *Early Lessons from the New Deal*, Employment Service Research Report, 2000; Peck, J. and N. Theodore. Beyond 'employability', *Cambridge Journal of Economics*, Vol 24, pp 729-749, 2000; D. Finn, 'From full employment to employability: a new deal for Britain's unemployed', *International Journal of Manpower*, Vol. 21, No. 5, pp 384-399, 2000.

2.2 The concept of employability

2.2.1 The core concept

Hillage and Pollard¹⁵, based on an extensive review, defined employability as:

- the ability of an individual to get a job;
- their subsequent ability to retain employment;
- ‘independence’ in the labour market (a measure of the factors which enable an individual to make choices in their employment situation);
- the quality of work.

These concepts were further refined with reference to:

- the assets people have to provide to employers (skills, knowledge, attitudes);
- the deployment of those skills (awareness of one’s skills and abilities, and how to use them);
- how people present themselves to employers (*i.e.* persuading an employer to give them a job);
- the context in which they seek employment (reflecting both personal circumstances and wider labour market influences).

In summary, Hillage and Pollard state:

‘[Employability is] ... the capability to move self-sufficiently within the labour market to realise potential through sustainable employment. For the individual, employability depends on the knowledge, skills and attitudes they possess, the way they use those assets and present them to employers and the context (e.g. personal circumstances and labour market environment) within which they seek work.’ (p.12)

Kellard *et al.*¹⁶, in their analysis of sustainable employment, draw attention to the related concepts of:

- job stability (*i.e.* how long a job lasts);
- job retention (*i.e.* the ability to hold onto a job when the job holders’ circumstances change);
- career development and enhancement (*i.e.* the ability of job holders to experience some form of job advancement);
- self-sufficiency – whether a job frees an individual from benefit dependency. The Working Families’ Tax Credit is germane here;
- periods of continuous employment – the longitudinal study of the employed carried out over the early 1980s revealed that many people in low paid/low-skilled jobs experienced recurrent bouts of short-term unemployment which, when added together, often resulted in a substantial period of time spent unemployed¹⁷.

¹⁵ J. Hillage and E. Pollard. *Employability: Developing a framework for policy analysis*, Department for Education and Employment Research Report, RR85, 1998.

¹⁶ K. Kellard, R. Walker, K. Ashworth, M. Howard, and W. Chia Liu. *Staying in Work: Thinking about a New Policy Agenda*, Department for Education and Skills Research Report No. RR264 2001.

¹⁷ W.W. Daniel, *The Unemployed Flow*, Policy Studies Institute, London, 1990.

2.2.2 Reviewing the concept

This concept of employability and sustainable employment builds upon the simple 'recruitment/retention' model of the labour supply/demand interaction to emphasise further the extent of an individual's preparation for employment, their motivation to make best use of such preparation, the nature of their presentation of these attributes to a potential employer, and the ensuing degree of match between the expectations of the employer and the employee. It is in the latter area that the links between education, training and employability are pursued. If employer and employee expectations of what each can provide within the employment relationship are well matched and if an employee considers that a job provides the intrinsic satisfaction they expect from work, it seems reasonable to conclude that no further enhancements to employability are required. In the employability literature the intrinsic satisfaction that a job provides to its holder is touched upon but is not explored in substantial detail.

Much of the debate and definitional analysis referred to above has been undertaken in relation to either: (a) active labour market policy subsumed under the New Deal programmes; and/or (b) concerns about the more acute education/training problems alluded to in the introduction. Underlying the New Deal is that employment growth is constrained by a lack of employability amongst that part of the labour supply not in paid employment. The notion of employability in this context is about facilitating entry or re-entry into work from unemployment or economic activity¹⁸. But should more attention be paid to the employability of those in work? The answer to this question depends upon whether or not there is evidence that the employability of some of those who hold jobs is at a sub-optimal level. Is it the case that, through further participation in education or training, the experience of work can be improved by facilitating access to better jobs? This in turn raises the issue of what constitutes a 'better job'. A simple answer would be that a 'better job' is one with higher pay. Yet it is clear from the decisions people make as they gain educational qualifications and work-related training, that improvements in pay are not an exclusive measure of improved employability. To make that definitional leap would ignore all those who have pursued a vocation by working in jobs that provide intrinsically high levels of job satisfaction but not necessarily salary maximisation.

Vocational training might well improve an individual's employability by providing not only sustained employment over the life cycle but a better matching between their interests and the type of work performed in a job. In this sense, the concept of employability relates very much to the human relations/organisational behaviour literature that addresses how workplaces can improve their employees' overall job satisfaction¹⁹. Here, job satisfaction is defined broadly to encompass the intrinsic interest employees have in their work, the levels of skill they deploy, and the amount of job autonomy they possess.

2.2.3 Extending the concept

Employability, as it is defined above, is largely about survival in the labour market. For a large part of the workforce, survival is taken for granted. Recent evidence, for example, relating to the psychological contract indicates that few employees feel insecure in either their current job or in the

¹⁸ R. Layard, 'Getting people back to work', *Centrepiece*, Autumn, pp 24-27, 1998.

¹⁹ M. Rose, *Industrial Behaviour*, Penguin, Harmondsworth, 1975; W.W. Daniel and N. McIntosh, *The Right to Manage?*, Macmillan, 1972.

labour market more generally²⁰. What is likely to be more of an issue for much of the workforce is access to jobs that provide interest, fulfilment and stimulation.

Maslow²¹ developed the idea that people have a hierarchy of needs from a basic physiological need for shelter and security rising to psychological needs related to self-actualisation and so forth. Research has shown that individuals' assessments of their work life satisfaction are related to the gap between their aspirations and achievements.²² Organisational behaviour, as will be assessed later, has built on the hierarchy of needs to address how organisations might best motivate their staff and more efficiently meet their business goals through improving work satisfaction. Where it has attempted to develop a theory of motivation in isolation from the wage-effort bargain it has clashed with more mainstream social science²³. Where this research has taken into account the wage-effort bargain, the evidence indicates that efforts to bring about greater job satisfaction through organisational change are welcomed by the workforce²⁴. Moreover, there is evidence that efforts to increase worker motivation lead to productivity growth which, if one accepts that wages equal workers' marginal productivity, one would expect to see reflected in remuneration.

The hierarchy of needs raises the important issue of how well-being, either in work or in life more generally, might be measured. Following on from the psychology literature one might simply address:

- economic security: being in work and sustaining an income;
- psychological needs: job and life satisfaction;
- general well-being: physical and mental.

The statistical analysis presented in the next chapter concentrates specifically on the relationship between education and training with: (a) life satisfaction measured by individuals' own self-assessment; and (b) psychological well-being as measured by the *Malaise Inventory*.

If one considers that a large part of our lives are spent at work then the importance of what goes on there to our overall life satisfaction cannot be underestimated. Many employers try to place themselves in the jobs market as the 'employer of choice' by which is meant, presumably, that they attempt to attract scarce labour through a combination of wage levels, fringe benefits, career development opportunities, and a good working environment. For individuals entry to these good quality jobs is dependent upon them possessing a range of skills and, often, personality traits that are not commonly found. A priori, education and training would appear central to individuals obtaining the skills required to access high quality jobs.

Clearly then, employability as a concept fuses several ideas relating to job security and the quality of working life. The capacity of training and lifelong learning to improve long-run employability needs to be seen in terms of its capacity to foster occupational and social mobility, enhance job satisfaction, and limit vulnerability to labour market change. But if this view is to assist us in developing measures

²⁰ D. Guest et al, 'The State of the Psychological Contract' *Issues in People Management*, No.8, Wimbledon, IPD.

²¹ A.H. Maslow, *Motivation and Personality*, John Wiley, London, 1970.

²² D. De la Croix 'Growth and the relativity of satisfaction' *Mathematical Social Sciences*, 36.

²³ M. Rose, *Organisational Behaviour: Theoretical perspectives since Taylor*, Penguin, Harmondsworth, 1975.

²⁴ T. Hogarth, 'Worker Support for Organisational and Technical Change', *Work Employment and Society*, 1992.

of employability, it is important that we consider first the links between education, training and employment on the one hand and earnings and job satisfaction on the other, as potential measures of employability. Taking into account the ideas and research mentioned previously, employability as a concept can be extended to take much greater account of job quality and, from there, relate this to individuals' overall life satisfaction and psychological well-being measured through, for example, the *Malaise Inventory* as described in the next chapter.

2.3 Economics of employability

Economic approaches to the study of education and training in relation to employability can be considered in respect of:

- being in or out of work;
- occupational mobility; and
- earnings levels.

2.3.1 Unemployment and employability

Employability in the first instance is about obtaining a job. Available evidence suggests that education and training play a significant role in determining the extent of unemployment²⁵. Unemployed people are at a relative disadvantage in the job market if they do not possess the skills that employers require. There is strong evidence to suggest that low literacy and low mathematical ability is associated with long-term unemployment. Similarly, poor- or low-level qualifications are associated with an increased risk of long-term unemployment. The adverse impact of a lack of qualifications appears, on some evidence, to be increasing over time, perhaps reflecting the decline in the number of unskilled jobs in the labour market.

Much of the recent policy debate has been in relation to the capacity of the Welfare to Work programme to increase the employability of those groups that are most likely to face persistent or recurrent unemployment or to exit the labour force. Current policy is based on the premise that if, for example, the long-term unemployed people were assisted through a combination of subsidised work, training, and employment advice they would become more employable in the open economy. In turn, it is anticipated that this will reduce wage pressures in the economy, since there are more people with the skills and attributes required by employers, allowing it to operate at a higher level of employment and output without adding to inflation²⁶. Central to this are the New Deal programmes. Available evidence in relation to the New Deal for Young People, suggests that it has created a number of new jobs for young people²⁷, and further statistical analysis on the Pathfinder areas

²⁵ P. Dolton and D. O'Neill 'Unemployment Duration and the Restart Effect: Some Experimental Evidence', *Economic Journal*, 106 (March) 387-400, 1996. P. Elias 'The Development and Structure of Long-term Unemployment in Britain', Paper presented to the seminar on 'Long-term Unemployment – a European Problem', Landesakademie für Struktur und Arbeits, Genshagen, Berlin, 11-12 June, 1996.

²⁶ R. Layard 'Preventing Long-term unemployment', in J. Philpott (ed) *Working for Full Employment*, London, Routledge, 1997; Layard, R. 'Getting people back to work', *Centrepiece*, Autumn, pp 24-27, 1998; Layard, R. . 'Preventing long-term unemployment: an economic analysis' in D. Snower, and G. De la Dehesa (eds). *Unemployment Policy: Government Options for the Labour Market*, 1996.

²⁷ Hasluck, 2000, *ibid*.

suggests that the outflows from unemployment for young people have increased without much impact on other groups in the labour market²⁸. Macro-economic evidence also suggests that the New Deal has had a positive impact on the number of young people leaving the claimant count²⁹. This study indicates that youth unemployment has been reduced by 30 per cent, which is equivalent to a reduction in long-term youth unemployment by 40 per cent.

2.3.2 Sustaining employment and occupational mobility

If an important element of employability relates to acquiring those skills and attitudes that will assist people to find work and to move independently in the labour market, attention needs to be drawn to how the skill composition of the labour market is changing. From a dynamic perspective, if employability is about individuals improving their labour market position (either to find work or improve their earnings or occupational position) then identification is required of those skills that allow them to achieve this end.

The Social Change and Economic Life Initiative (SCELI) conducted in the mid to late 1980s indicated important findings about the direction of skill change³⁰. For those in employment, the evidence points to an increase in skill levels and responsibilities within jobs. This suggests that the maintenance of one's occupational position over time requires new skills to be acquired and an increased capacity to handle more responsibility. It is not simply the case that each new cohort of entrants brings higher levels of skill whilst the existing workforce is left behind. Existing employees are required to acquire new skills and competencies. Maintaining employability even whilst in a job would appear to require an investment in skills to be made. For those who are unemployed the problem may be one of not just acquiring new skills but ensuring that existing skills does not atrophy. Under the narrow definition of employability, those who fail to keep up to date with new skills fall behind in their career progression and earnings, but their employability is not reduced because they still have a job. In contrast, those who lose their job with a resultant reduction in their employability also need to acquire those skills that will get them back into work.

There is a gender element to the changing pattern of skill development and utilisation with women doing less well than men³¹. Equal opportunities legislation in the UK recognises the diversity of the workforce while attempting to ensure equal access to educational and employment opportunities. Research indicates that women continue to take responsibility for primary parenting and most domestic work in most households^{32 33}, including care of the disabled and elderly in the community³⁴. There is, however, evidence of gradual increase in the extent to which men do unpaid work in the

²⁸ B. Anderton, R. Riley, and G. Young. *The New Deal for Young People: Early Findings from the Pathfinder Areas*, Employment Service Research Report, 1999a.

²⁹ B. Anderton, R. Riley, and G. Young. *The New Deal for Young People: First Year Analysis of the Implications for the macroeconomy*, Employment Service Research Report, 1999b.

³⁰ R. Penn 'Where Are All the Craftsmen?: Trends in Skilled Labour in the USA since 1940' *British Journal of Sociology*, Vol. 37, No.4, pp 569-580, 1986.

³¹ D. Gallie, 'Are the unemployed an underclass? Some evidence from the Social Change and Economic Life Initiative', *Sociology*, 29, 95-115, 1994.

³² A. Hoschild (1989) *The Second Shift: Working Parents and the Revolution of Home*, London: Piatkus.

³³ J. Brannen, G. Meszaros, P. Moss and G. Polard (1994) *Employment and Family Life: A Review of Research in UK*, Sheffield: Employment Department.

³⁴ D. Worman (1990) 'The forgotten carers', *Personnel Management*, Vol. 22, No.1, January.

home³⁵ and it is clear that movement from the traditional breadwinner/homemaker to a more joint domestic division of labour is most advanced in households where both partners are in full-time employment³⁶. There is also evidence that women may continue to be forced to make choices between employment, career development and family to a substantially greater extent than men³⁷. Employability for women must incorporate those issues related to their re-entry into the labour market.

2.3.3 Earnings, education and training

Measurement of the relationship between employability and training is achieved by regressing some measure of training (e.g. qualifications acquired) against income, whilst simultaneously controlling for a number of other factors that may be related to income.

The links between vocational training and employability are complex and can be pursued at various levels and from differing perspectives. We characterise three dimensions to this:

- at a macro-level one can look at the role of education and training, typically using qualifications as a measure of activity, and its impact on output and employment;
- at an individual level one can look at the impact of training on the chances of being employed or unemployed, or the impact of training on income, especially over the life cycle using work history data;
- from an organisational perspective one can look at the impact on organisational performance of education and training. Critical here is the extent to which employers engage in training their staff and provide employees with transferable skills in the labour market³⁸.

2.3.4 Macro-economic impact

From a comparative international perspective, attempts to identify the extent to which education and qualifications affect relative economic performance, including employment levels, have begun to reveal the importance of human capital. There have been two approaches to the study at a macro-level. First, an extension of the neo-classical model which incorporates human capital into the standard production function. Second, 'new growth theories' where human capital is related to factors leading to endogenous growth³⁹. Siansi and Van Reenen give an overview of the results stemming from the two approaches. Despite the many methodological and measurement problems

³⁵ J. Gershuny, Godwin, M. And S. Jones (1994) 'The Domestic Labour Revolution: a Process of Lagged Adaptation' in M. Anderson, F.Bechhofer and J. Gershuny (eds.) *The Social and Political Economy of the Household*, Oxford: Oxford University Press.

³⁶ C. Vogler (1996). 'Money in the Household' in M. Anderson, F.Bechhofer and J. Gershuny (eds.) *The Social and Political Economy of the Household*, Oxford: Oxford University Press. and K. Purcell (1996) 'Researching value-loaded issues: the management of food in households', in L. Morris and E.S. Lyon (eds) *Gender Relations in Public and Private: New Research Perspectives*, London: Macmillan.

³⁷ J. Wajcman (1996) 'Women and Men Managers' in R. Crompton, D. Gallie and K. Purcell (eds.) *Changing Forms of Employment: Organisations, Skills and Gender*, London: Routledge.

³⁸ M. Stevens, 'Human Capital Theory and UK Vocational Training Policy', *Oxford Review of Economic Policy*, Vol.15, No.1, pp16-32, 1999.

³⁹ D. W. Joregenson and B. Fraumeni, 'Investment in Education and US Economic Growth', *Scandinavian Journal of Economics*, Vol. 94, pp. 51-70.

posed in establishing a causal relationship between average schooling levels and, for example, GDP⁴⁰, the results generally reveal a general link with an increase in the stock of human capital leading to output growth⁴¹.

The amount of information macro-economic analysis reveals about employability, is quite limited. Granted, it is important to know about the relationship between overall employment growth and investment in human capital, but it provides little information about where those investments are being made and whom they affect. Macro-economic evaluations of the New Deal for Long-term Unemployed provide much needed information about the extent of deadweight, but little about the impact of specific policies⁴². Moreover, given the definition of employability we wish to employ, it is difficult to see how this can be readily incorporated within macro-economic modelling framework. Hence the importance of micro-economic analysis.

2.3.5 Micro-economic impacts: individuals

Traditionally, most economists have made use of information on earnings as an indicator of employability. There are both theoretical and pragmatic arguments that favour this approach. On the theoretical side, earnings from employment can be viewed as an indirect measure of an individual's productivity or work rate and effectiveness. Under certain assumptions, earnings can indicate the value society places upon the additional effort each individual makes to facilitate the flow of goods or services resulting from their employment. From this perspective it can be argued that earnings provide a measure of employability – those who can command higher earnings are more likely to be able to offer high productivity gains to the employing organisation, hence, they are more 'employable' than those who receive low earnings. At a more pragmatic level, it is undoubtedly the case that earnings is a well understood concept which can be measured with ease, is scalar and facilitates comparison between individual earners. This is not the case for physical measures of productivity, which will vary according to the nature of goods produced or which may be intangible in the case of most services provided via the employment relationship.

The link between employment, productivity and earnings is usually expressed as a rate of return on those activities (e.g. education, training) that are assumed to enhance productivity. Typically, rates of return are computed for various qualifications or for the length of time spent in education or on training courses. The rate of return expresses the value of an additional year of education (or the value of a particular qualification) in terms of the associated increase in earnings. The issues addressed in the wide variety of studies which have estimated rates of return to education and training include:

- the variations in rates of return according to type of qualification, gender, age, ability, etc.;
- the screening/signalling hypotheses – does additional education enhance productivity or are more productive individuals 'filtered' through an educational system into well-paid jobs?
- the effects of over-education – the potential imbalance in the supply for educated workers compared with demand.

⁴⁰ C. Harmon, H. Oosterbeek, and I. Walker, *The Returns to Education: A review of the evidence, issues, and deficiencies in the literature*, Centre for the Economics of Education, LSE, 2001.

⁴¹ B. Sianesi and J. Van Reenen, *The Returns to Education: A review of the macro-economic literature*, Centre for the Economic for Education, LSE, London, 2000.

⁴² B. Anderton *et al.* 1999a; 1999b *ibid.*

Harmon and Walker⁴³, in their recent review of evidence and issues relating to the returns to education, indicate that there is a considerable degree of consensus on some of these issues, particularly upon the range to be placed upon estimates of the rate of return to an additional year's education. Basic specifications suggest a return to a year of schooling of between seven and nine per cent. Most studies reveal that women gain more from additional education than do men, that those in the top part of the income distribution gain higher returns per year of education than those in the bottom part of the distribution, and that the effect of underlying ability on earnings is small compared with the effect of education.

In terms of current knowledge regarding the rate of return to education and training, the review and analysis presented by Harmon and Walker provides a useful summary of the state-of-the-art. We draw attention to two issues that are revealed in this review, the measurement of 'over-education' (or 'under-utilisation of human resources') and the links between family resources, education and earnings. On the former issue, 'over-education' has been measured in a variety of ways, from subjective assessment based on direct questioning of individuals to a more objective approach utilising information on the typical years of education required to perform competently in specific occupations. Neither approach yields a satisfactory basis for measurement of over-education. Instead, current approaches favour the utilisation of information on job satisfaction. The assumption underlying this approach is that, if employees are working in jobs for which they are overqualified, they will express this mismatch between their perceived employability and the requirements of their job in terms of an expression of dissatisfaction. Second, we note with interest the evidence on the effect of family background on education decisions and earnings. Recent attempts utilising pooled time-series, cross-sectional data⁴⁴ or from longitudinal data sources⁴⁵, reveal that family income and educational participation decisions (staying on at age 16) are linked. We suspect that such a link will increasingly pervade higher education; given this educational participation decision has effectively displaced what used to be the 'watershed' in young people's lives, the decision to stay on at school at age 16.

Given the massive increase in higher education participation rates over recent years, much attention has been paid to its private and social rates of return. Chevalier *et al.*⁴⁶ provide a summary of the evidence on the rates of return to higher education. Generally, the literature reveals private rates of return to higher education have increased over the past ten years. Comparing those whose highest qualification is a degree to those with A-levels the results reveal that private rates of return to graduates have increased even if there are differing estimates of the size of the return depending upon the data used and the method employed⁴⁷. Walker and Zhu, for example, indicate that rates of

⁴³ C. Harmon, and I. Walker, 2001, *The Returns to Education: A review of the evidence, issues, and deficiencies in the literature*, Department for Education and Skills Research Report, Sheffield, 2001.

⁴⁴ C. Harmon, H. Osterbeek, and I Walker, 2001 *ibid.*

⁴⁵ L. Dearden, S. McIntosh, M. Myck, A. Vignoles, *The Returns to Academic, Vocational, and Basic Skills in Britain*, Skills Task Force Research Paper, 2000; A. Chevalier and G. Lanot, *The Relative Effect of Family and Financial Characteristics on Education Achievement*, Centre for the Economics of Education, LSE, 2001.

⁴⁶ A. Chevalier, G. Conlon, F. Galindo-Rueda, and S. McNally, *The Returns to Higher Education Teaching*, Centre for Economics of Education, LSE, London, 2001.

⁴⁷ See for example: C. Belfield, A. Bullock, A. Chevalier, WS Siebert, and H. Thomas, *Mapping the careers of highly qualified workers*, HEFCE Research Series M10/97, Bristol, 1997; S. Harkness and S Machin *Graduate Earnings in Britain 1974-5*, Department for Education and Employment Research Report, Nottingham, 1999; I. Walker and Y. Zhu, *The returns to education: evidence from the Labour Force Survey*, Department for Education and Employment Research Report, Nottingham, 2001.

return to graduation have increased by between 12 and 18 per cent for men and by 19 and 31 per cent for women over recent years. These results vary by subject studied and also in relation to the characteristics of individuals. Research conducted for HEFCE indicated that the private rates of return for those classified as non-traditional students or graduates – i.e. members of an ethnic minority group, from a working class household, entered university without A-levels, or entered university as a mature student – were substantially lower than for their ‘traditional’ counterparts⁴⁸. Subject studied is also important. Generally the data indicates that science, engineering, and technology graduates obtain higher salaries to their art and social science counterparts, although rates can vary by individual subjects within these broad groupings⁴⁹.

Evidence relating to employment and unemployment reveals that UK graduates have the highest probability of being in employment in the European Union⁵⁰. Although overall employability levels of graduates are higher than for non-graduates⁵¹, differences vary by subject studied. For example, using the Youth Cohort Survey, Lissenborough and Bryson estimated that two years after graduation, those with qualifications in science, mathematics, and engineering had longer spells of employment by around two to three months compared to graduates of other subjects⁵².

Much of the analytical debate regarding the need to make greater public investments education and training has rested on the social rate of return relative to the private one. Evidence on social rates of return looks, more or less, at the benefits to the economy from increased years of education, typically by calculating all of the costs of education/schooling compared to pre-tax earnings. From a methodological perspective the whole subject area is contentious due to the need to make many assumptions, but available evidence indicates returns are around 6-12 per cent⁵³. Dutta, Sefton, and Weale compared the earnings profile for graduates and non-graduates based on an assumption of the cost of producing a graduate and indicated that the social rate of return was around 11 per cent for medicine/science/computing graduates and 0 per cent for humanities/biology graduates⁵⁴. These were lower than the corresponding private rates of return. Given the expansion of higher education, the social rate of return for graduates in future is likely to be much lower, possibly around 3 per cent⁵⁵. Indeed, the rationale employed here can be potentially extended to other branches of the post-compulsory education and training system.

⁴⁸ T. Hogarth, M. Maguire, J. Pitcher, K. Purcell, and R. A. Wilson, *The Participation of Non-traditional students in higher education*, HEFCE Research Report, Bristol, 1997.

⁴⁹ C. Belfield, A. Bullock, A. Chevalier, WS Siebert, and H. Thomas, *Mapping the careers of highly qualified workers*, HEFCE Research Series M10/97, Bristol, 1997; P. Elias, K. Purcell, A. McKnight, J. Pitcher and C. Simm, *Moving on*, DfES/CSU/AGR Research Report, 2001.

⁵⁰ J. Brennan, B. Johnston, B. Little, T. Shah, and A. Woodley (2001) *The Employment of UK Graduates: Comparisons with Europe and Japan*, HEFCE Research Series R01/38, Bristol, 2001.

⁵¹ J. Smith, A. McKnight, and R. Naylor, ‘Graduate employability: policy and performance in higher education in the UK’ *Economic Journal*, Vol 110, pp382-410.

⁵² S. Lissenborough and A. Bryson, *The Returns to Graduation*, Department for Education and Employment, Sheffield, 1996.

⁵³ A. Chevalier, G. Conlon, F. Galindo-Rueda, and S. McNally, *The Returns to Higher Education Teaching*, Centre for Economics of Education, LSE, London, 2001; J. Steel and C. Sausmann, ‘The contribution to graduates to the economy’ *National Committee of Inquiry into Higher Education*, Stationery Office, London, 1997.

⁵⁴ J. Dutta, J. Sefton, and M. Weale, ‘Education and Public Policy’, *Fiscal Studies*, Vol. 20, pp351-386, 1999.

⁵⁵ J. Ashworth, A Waste of Resources? ‘Social rates of return to higher education in the 1990s’, *Education Economics*, Vol. 6, No.1, pp27-44.

2.3.6 Micro-economic impacts: employers

A principal source of training is that provided by employers. There is considerable evidence relating to the types of training employers are willing to provide⁵⁶. Becker distinguished between general and specific training. General skills are skills that have a productive value in many different firms, whereas specific skills relate only to the particular workplace in which the employee is employed. The costs of general skills will have to be met by the employee because in a competitive labour market the employer could not guarantee that it could recoup the costs of training. With specific training, the costs will be shared between the employee (lower wages) and the employer (costs of training). Stevens⁵⁷ adds a further type of training relating to transferable skills, that is those skills that can be shared amongst a limited group of companies. Because part of the future benefits of such training may be shared with companies that have not shared the costs, firms may under-invest in such training and instead concentrate on specific training. By inference, the training that companies provide may increase the employability of individual employees by sustaining their employment with their current employer, but adding little to their employability in the external labour market. Given that the narrow definition of employability detailed above includes an element of independence in the labour market, relying on employers to provide training to improve employability would appear to fail this test. In practice, the distinctions made above are difficult to operationalise empirically and there is little evidence to suggest that employers view training in such a manner (for example). There may be a range of positive externalities accruing to the employer, from providing general training, such as a more committed and motivated workforce.

The most obvious and direct effect of training provided by employers is to provide additional skills and to raise productivity. This is the central notion of the human capital model of training. Few businesses, however, recruit people who do not possess at least the minimum level of technical skills required to be competent at the job to which they have been recruited. The exception is, of course, where jobs are seen as trainee status jobs such as traditional apprenticeships in manufacturing industry. If employers do indeed recruit people with minimum levels of competence, wherein lies the scope for training by the employer to further enhance productivity and, ultimately, business performance? The possibilities are that such training impacts on the workforce – a more speedy transition to full competence and reduced turnover – or that training provides additional skills or qualities not possessed on recruitment. The mechanisms may relate to enhanced knowledge of the specific market served by the business or of the systems operated by the business.

Training may enhance flexibility in terms of widening the range of tasks that employees are competent and confident to undertake. Providing training and lifelong learning is not simply related to the provision of training to meet current skill needs. It may also lead to a greater ability by those trained to work independently or without high levels of supervision or to work in teams. It may affect employees' perceptions of their job, their role in the business and their relationship with customers (especially important in the service sector). Such psychological effects could also be reinforced by any impact that training has upon workplace relationships (an appreciation of what colleagues do) and relations with their employer if it leads to greater motivation and a sense of being valued. This may contribute to the wider definition of employability which incorporates a 'quality of life' element. Bishop notes that more highly-educated workers tend to make more suggestions about work processes and are more innovative in general⁵⁸.

⁵⁶ G. Becker, *Human Capital*, University of Chicago Press, Chicago, 1964.

⁵⁷ M. Stevens, 'Human Capital Theory and UK Vocational Training Policy', *Oxford Review of Economic Policy*, Vol.15, No.1, pp16-32, 1999.

⁵⁸ J. H. Bishop 'The impact of previous training on productivity and wages' in L. Lynch (ed.) *Training and the Private Sector: International Comparisons*, University of Chicago Press, Chicago, 1994.

Where employers are no longer able to offer job security and medium to long-term career structures, they have to address how to obtain the most from employees in their current job. This has been expressed in terms of a psychological contract that trades the offer of an opportunity to get ready for the next job in return for greater flexibility and commitment in the current one⁵⁹. Hence there has been an emphasis by some employers of building up the employability of their staff, even if their long-term future lies elsewhere.

Much has been made of 'learning organisations' – those that regard investments in their employees as a benefit rather than a cost. Attempts have been made to characterise learning organisation⁶⁰ but the key element is engaging the workforce in the problem solving process related to the development of new products and processes so that there is a shared view of the company's future. The literature to date has been rather sceptical of the ability of organisations to go beyond the rhetoric of improving employability and becoming a learning organisation⁶¹. Other evidence point to organisations engaging in training simply as a response to current skill problems with some doubt about whether employees are capturing transferable skills⁶².

2.4 Employability and well-being

2.4.1 Job satisfaction

Without doubt, the economics literature has revealed robust and reliable analyses of the rates of return to education/schooling. It is also apparent in the literature reviewed above that the economists have made reference, albeit indirectly, to the role of job satisfaction (and related concepts), insofar as it increases productivity and wages. The analysis in this report wishes to go beyond the 'rates of return' framework, not least because of the problems posed by incorporating a range of potentially positive externalities accruing in the relationship between education/training and earnings levels as outlined in the previous section. Important here is the psychology literature relating to organisational behaviour and the importance of understanding orientations to work expressed by employees⁶³.

Tamkin and Hillage⁶⁴ point to the corporate origins of employability relating to the psychological contract between employer and employee. They also point to the quality of work being an important component of employability. This can be related simply to occupational level or earnings (as discussed above) where an increased level of employability is simply a reflection of being in a higher level occupation with a relatively high level of earnings, which in turn is likely to be related to educational attainment.

⁵⁹ G. Martin, J. Pate, and T. Riddell *HRD and the Psychological Contract: A Case Study in Life-long Learning*, mimeo University of Abertay, 2000; Pfeffer, G. *The Human Equation: building profits by putting people first*, Boston, Harvard University Press, 2000.

⁶⁰ V. McGivney, 'Adult Participation in learning: can we change the pattern? In F. Coffield (ed) *A National Strategy for Lifelong Learning*, University of Newcastle, Newcastle, 1997.

⁶¹ P. Herriot, 'The Management of Careers' in S. Tysm (ed). *Strategic Prospects in HRM*, Wimbledon, 1997.

⁶² D. Gallie and M. White, *Employee commitment and the skills revolution*, Policy Studies Institute, London, 1993.

⁶³ W. W. Daniel 'Industrial Behaviour and Orientation to Work - A Critique,' *Journal of Management Studies*, 6, 366-375, 1969; Daniel, WW 'Productivity Bargaining and Orientation to Work - A Rejoinder to Goldthorpe', *Journal of Management Studies*, Vol.8, No.3 pp 329-335, 1971; J. H Goldthorpe, D. Lockwood, F. Bechhofer, and J. Platt *The Affluent Worker in the Class Structure*, CUP, Cambridge, 1969.

⁶⁴ P. Tamkin and J. Hillage. *Employability and Employers: the missing piece of the jigsaw*, Institute for Employment Studies, Brighton. 1999.

This unduly limits the scope of analysis. Even at the same occupational level or earnings level, some employees may enjoy a better quality of employment than others and this may be related to educational attainment and training. There may well be a degree of simultaneity here. Better quality jobs, however defined, may be more accessible to those with a relatively higher level of educational attainment, and an important component of better quality employment may be access to education, training, or lifelong learning. The evidence above suggests that those organisations with a more sophisticated approach to human resource management are more likely to engage in training and this, in turn, may be related to a more strongly developed sense of trust between employer and employee⁶⁵.

What are those features of a job that lead to job satisfaction? Evidence to answer this question can be obtained from the organisational behaviour literature concerned with the relationship between employee job satisfaction and returns to the employer (and returns to the employee through higher wages, bonuses, etc.).

Excessive concern with economic returns in understanding workplace behaviour was broken by some of the early industrial psychology experiments of the 1920s and 1930s. The human factor approach to industrial behaviour began by looking at fatigue and recognising that physiology alone did not account for all the findings⁶⁶. Studies demonstrated that workers tried to introduce variety into their jobs. Boredom was likely to arise amongst more intelligent workers and the more efficient ones, and least likely to set in where work was highly automated – workers could let their minds wander – and in ones that required complete concentration.

The emphasis given to the conditions of work in the early industrial psychology research subsequently gave way to the *human relations school* with its emphasis on the relationship between job satisfaction and worker productivity and its reluctance to recognise wages as a source of worker motivation or as a principal factor affecting industrial behaviour. The human relations school was characterised by a number of now famous studies that explored the relationship between workplace environment and productivity. Though some of these studies were overly prescriptive, others were empirically based, such as that by Coch and French⁶⁷, who were able, to demonstrate the relationship between improved working conditions, communication, and productivity. Herzberg⁶⁸ also drew attention to the importance of *job enrichment* in raising job satisfaction where job enrichment referred to raising the complexity of conceptual tasks to be undertaken by employees. In many respects this appeared to be an early reference to the importance of multi-skilling.

There is huge volume of evidence relating to organisational behaviour stretching back to the beginning of the 20th century. More recent and comprehensive evidence comes from the Workplace Employee Relations Survey (WERS) which reveals that training and job satisfaction are related⁶⁹ with the finding that levels of job satisfaction were particularly low amongst those who felt inadequately consulted or had limited or no access to training. Panel data from the USA suggests that job satisfaction is a good predictor of whether people will quit a job, or may explain why people do not

⁶⁵ Martin *et al.* 2000 *ibid.*

⁶⁶ M. Rose, *Industrial Behaviour. Theoretical Development Since Taylor*, London: Allen Lane, 1975.

⁶⁷ L. Coch, and J. R. P. French 'Overcoming Resistance to Change', *Human Relations*, 1, 4, 512-532, 1948.

⁶⁸ F. Herzberg, B. Masner, and B. B. Synderman, *The Motivation to Work*, New York: Wiley, 1968.

⁶⁹ Cully, M. S. Woodland, A. O'Neil, and G. Dix *Britain at Work: As Depicted by the 1998 Workplace Industrial Relations Survey*, Routledge, London, 1999.

participate in the labour market⁷⁰.

Much of the change in the structure and organisation of work has been contextualised in the human resource literature with reference to the psychological contract⁷¹. The emphasis has been very much on how the end of the lifelong employment relationship has threatened the psychological contract between employer and employee, in essence, because implicit job insecurity threatens the degree of trust between employer and employee. Guest *et al.* are sceptical and suggest that the psychological contract built around job security is alive and well. By implication, this suggests that there is plenty of scope for employers to promote job commitment and worker satisfaction through training and development.

2.4.2 Returns to society

The above views employability from the perspective of the employees in the workplace and how human resource practices influence job satisfaction. Though somewhat outside the scope of the empirical analysis contained in later chapters, there is a need to recognise that there may well be macro-social benefits stemming from improvements in employability brought about by increased education and training provision. It is apparent that the calculation of the social return to increased years of schooling takes no account of positive externalities to society stemming from increased schooling. Whilst there is little evidence linking education to crime directly, because levels of unemployment and inequality confound such relationships, the evidence does point to increased years of schooling reducing both of these⁷². In fact, there are many non-market outcomes associated with education, although there are difficulties in establishing causality. For example, if one is looking at health then there is a problem about the direction of causality⁷³. Bynner and Egerton recognise these problems but conclude that graduates tend to be in excellent physical health compared to other groups. Similarly, Hartog and Oosterbeek⁷⁴ found that education is related to health, happiness, and wealth, although in their study it was those who had attained upper-secondary education who reported the highest levels of happiness. Whilst these analyses are far from definitive there is strong indicative evidence that there are society wide benefits stemming from greater investment in education and training.

⁷⁰ A. E. Clark 'Job Satisfaction in Britain', *British Journal of Industrial Relations*, Vol. 34, pp 189-217, 1997; R. Freeman, M. Kleiner and C. Ostrott 'The Anatomy of Employee Involvement and its effects on firms and workers', NBER, Cambridge MA, 2000.

⁷¹ D. E. Guest and N. Conway 'Employee Motivation and the Psychological contract'. *Issues in People Management*, No. 21, Wimbledon, IPD, 1997. Also, D.E. Guest, N. Conway, R. Briner and M. Dickman 'The State of the Psychological Contract', *Issues in People Management*, No. 18, Wimbledon, IPD, 1996.

⁷² M. Kelly 'Inequality and Crime' *Review of Economics and Statistics*, Vol. 82, No. 4, pp175-475.

⁷³ J. R. Behrman and N. Stavey, *The Social Benefits of Education*, University of Michigan, Ann Arbor, 1997; JP Leigh, 'The Social Benefits of Education: a review article' *Economics of Education Review*, Vol.17, No.3, pp. 363-368.

⁷⁴ J. Hartog and H. Oosterbeek, 'Health, wealth, and happiness' *Economics of Education Review*, Vol.17, No.3, pp141-154.

2.4.3 Family background, employability and well-being

The description provided so far is primarily about the individual – the individual in the labour market, the individual in the workplace. A final dimension is to consider the individual within the family and how family characteristics and education opportunities are transmitted through the generations. This is particularly important given the extent of work-less households in the economy and the fact that members of ‘no-earner’ households find it increasingly difficult to find work against a background of an increase in ‘two-earner’ households⁷⁵.

Given modest levels of inter-generational mobility this plausibly points to social disadvantage (and advantage) being transferred across generations. Educational attainment potentially provides a pathway out of economic and social disadvantage, but there are often multiple barriers to be cleared before this is achieved. At the end of the 1980s, the *School Effect* study analysed the influence of family background of a cohort of pupils passing through secondary school. It monitored their progress between the ages of 11 and 15/16 years⁷⁶. Controlling for the intellectual ability of students before they entered secondary school, the study was able to reveal, other things being equal, the influence of family background on intellectual progression, subject choices, and examination scores. Typically, children from less privileged households, other things being equal, fared less well. A number of plausible explanations are available, such as the ability of parents to assist with their children’s education. From a policy perspective, the question is one of how to break the cycle of disadvantage over the generations. Educational Maintenance Allowances have been developed to assist pupils from poorer households to stay on at school, but recent, highly speculative evidence suggests that family finances are not the most important factor explaining educational achievement⁷⁷. The main issue here is less about staying on rates and more about achievement within the compulsory education system. As noted above, unemployment, especially long-term unemployment, is highly correlated with low educational achievement and learning problems.

2.5 Conclusion: what is measurable?

In developing ideas about the relationship between education and training and employability, this short review reveals that the concept of employability has been operationalised to date within a fairly narrow framework: the capacity of education and training to maintain individuals in employment and maximise their earnings. This is an area which has received considerable attention over recent years, especially in relation to active labour market policy such as the New Deal and in response to the massive increase in higher education participation rates.

Hillage and Pollard seek to go beyond the narrow definition of employability that would see its relation to education and training expressed primarily with regard to private and social rates of return. They emphasise that employability is also about independence in the labour market, the capacity to move between jobs. An important element here is the capacity of training to foster mobility and the mechanism through which training promotes occupational mobility over the lifecycle.

⁷⁵ E-J Cooper-Green, ‘The relationship between work-rich and workless households’, *Labour Market Trends*, December 2001, Vol. 109, No.12, pp547-554.

⁷⁶ D. Smith, S. Tomlinson, L. Bonnerjea, T. Hogarth, H. Tomes, and N. Longford, *The School Effect: a study of multi-ethnic secondary schools*, Policy Studies Institute, London, 1988.

⁷⁷ A. Chevalier and G. Lanot, *The Relative Effect of Family and Financial Characteristics on Education Achievement*, Centre for the Economics of Education, LSE, 2001.

The final dimension of employability that has been addressed relates to the quality of jobs and by implication, the quality of life. This needs to go beyond measuring 'quality' simply as a high income, high-level job. In the economics literature there is a growing interest in measures of job satisfaction and 'happiness', although the human resource literature stretching back to the 1930s has been concerned with those elements of an employee's job that promote effective working alongside job satisfaction.

What appears less well understood is the link between various aspects of employability (education, qualifications, work-related training, work experience, unemployment) and the general well-being of an individual. For many people work occupies a central place in their lives if only because a large part of their time is spent at work. Indications of how satisfied we are with our work will inevitably influence how satisfied we are with our lives overall. The following chapter elaborates further on the relationship between the personal characteristics of an individual, their social and economic background, their education, training and employment history and a variety of measures of the social, economic and psychological 'well-being' of an individual. The purpose is essentially exploratory and is designed to assist in developing measurable approaches to the concept of employability that go beyond and can potentially enrich the more traditional economic approach.

3 Comparative longitudinal analyses: the 1958 and 1970 birth cohorts

3.1 Introduction

This chapter presents results from an empirical analysis of the links between education, training, employability and well-being. The analysis is based upon a comparison of 33 year olds in 1991 (the 5th 'sweep' of the 1958 birth cohort)⁷⁸ with 29 year olds surveyed in winter 1999/2000 (the 1970 birth cohort)⁷⁹. Because of the four-year difference in age between these two groups, a degree of caution must be attached to the nature of the changes which are revealed via this study.

3.2 Studying the relationships between education, training, employability and well-being

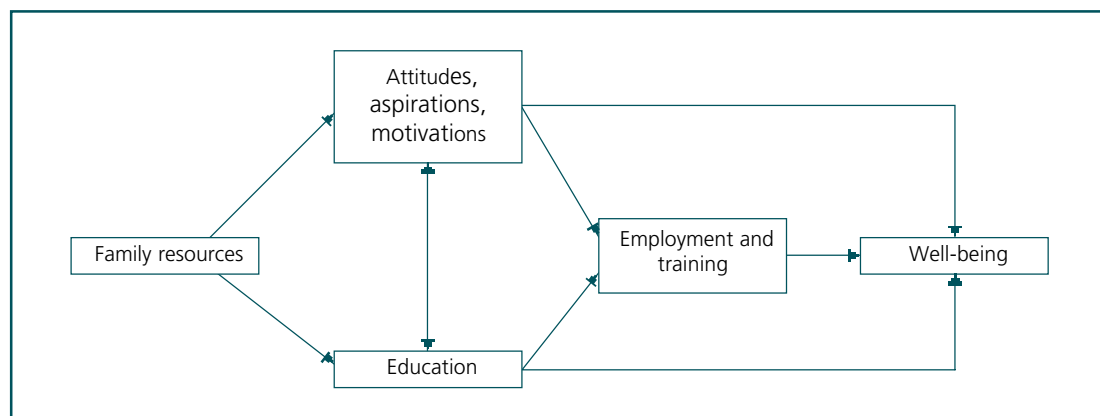
Figure 3.1 presents a stylised view of the 'processes' of education, employment and training as they contribute to the well-being of an individual. In formulating this stylised view it has been assumed that 'employability', in combination with other factors, will contribute to the general well-being of an individual. It is further assumed that the general well-being of an individual is a consequence of life experiences, which include as significant components their education, employment and training. These may, in turn, be moderated by the attitudes, aspirations and motivations shown by an individual, themselves conditioned by the family resources⁸⁰. Employability is then both an outcome from some of these processes and an input into others. For example, different educational experiences may give rise to various employment trajectories that, in turn, add to the 'employability' of an individual. Attitudes, aspirations and motivation may also form a part of what we term employability, again influencing employment and individual well-being and moderated via educational experiences.

⁷⁸ We refer to this study in this chapter as the National Child Development Study (NCDS).

⁷⁹ We refer to this study as the British Cohort Study (BCS).

⁸⁰ We use the term 'family resources' to indicate both the quality and the quantity of resources available to the individual during their dependent years.

Figure 3.1 A stylised view of the relationship between family resources, education, training and employment and well-being



Some of the links between these processes and individual welfare are well established. For example, the link between family resources and educational outcomes has been shown in numerous studies (e.g. Atkinson, 1981; Behrmann and Taubman, 1985; Breen and Goldthorpe, 2000; Dearden, Machin and Reed, 1997; Elias and Blanchflower, 1987; Gregg, Harkness and Machin, 1999). What is novel about the approach adopted here is the simultaneous examination of these processes within the same statistical framework and their comparisons for two groups of individuals placed at the beginning and the end of, a period of significant change. This places strong requirements on the information sources that can be used to calibrate such a model – that they should be relatively long-term and rich in terms of the diversity of measurements they provide to enable us to characterize family resources, education and training, employment, motivations, attitudes and aspirations and individual well-being. Ideally, a large national panel study spanning the last 20-30 years would be optimal. Such a data source is not available for the UK⁸¹. Instead, use is made of two separate sources of information: the 1958 National Child Development Study and the 1970 British Cohort Study.

3.3 The data modelling strategy

Our approach was recursive. We commenced by estimating statistical models of an individual's 'current' (time of survey status) measuring two dimensions of employment and relating these to education, training, other relevant personal characteristics and social background. Appendices A and B describe in detail the range of variables we use for this purpose. The two measures of employability we choose are:

- *current employment status*. This is defined at the time of the survey (ie at ages 33 [1958 cohort] or 29 [1970 cohort]) as employed (1) as opposed to not employed (0). These states are modelled via logistic regression techniques;
- *current earnings of employed individuals*. This is defined at the time of each survey (1991 or 1999). Statistical methods are used to adjust for potential biases that can arise via the selective nature of this approach (correction for selection into employment).

⁸¹ As a part of the research undertaken within this project, we investigated the potential of the British Household Panel Study to extend the age range of our analyses. Unfortunately these data could not be utilised due to significant differences in the way certain key variables are operationalised and because of the much smaller sample size of the BHPS.

We study the extent to which qualifications and training influence the probability of being employed and the level of wage obtained from that employment at ages 29 or 33. As was discussed before, these outcomes have been analysed extensively in previous economic literature.

We use two measures of well-being. The *Malaise Inventory* provides a measure for assessing psychiatric morbidity. It is a 24-item, self-completion questionnaire which was included in the NCDS and BCS surveys. The 24 variables included in this measure are identified in Appendix A. Following the literature on this topic, we classify these as a binary variable: people who accrue a cumulative total of between zero and six positive responses are categorised as 'normal' and those who accrue seven or more positive answers are classified as 'depressed'⁸². For the *life satisfaction* measure, respondents are asked to enter the number which corresponds with how satisfied or dissatisfied they are about the way their life has turned out so far, on a scale of 0 (completely dissatisfied) to 10 (completely satisfied).

We then extend the analysis to include these measures of well-being. We translate the stylized view presented in Figure 3.1 into the following statistical model. The probability of being classified as depressed and life satisfaction are modelled as functions of education, training, past employability, current employability, current family structure and family background. Being employed and the level of pay are expected to be positively correlated with individuals' level of well-being and life satisfaction. Our aim is to determine whether, in addition to the influence of pay and employment, qualifications and training are correlated positively with our measures of well-being.

Each of these sets of models is estimated for males and females separately, from data provided by members of the 1970 birth cohort study and the 1958 birth cohort study. From the 1970 birth cohort, we make use of the 1999/2000 sweep (age 29). From the 1958 sweep we make use of the 1991 sweep (age 33). To a significant extent this controls for lifecycle effects, allowing us to focus on the wider and changing impacts of education and training as each cohort makes the transition from youth to prime age.

3.4 A descriptive comparison of the birth cohorts

Before carrying out a detailed statistical analysis, we review some descriptive statistics comparing the two cohorts at ages 33 and 29 (see Table 3.1).

⁸² This label must be interpreted cautiously. The *Malaise Inventory* indicates a tendency towards clinical depression for persons who score 7 positive responses or more. For details of the assessment method and its application within the birth cohorts, see Bowling (1983) and Hirst (1982). For an assessment of the validity and reliability of this instrument, see Rodgers *et al.* (1999).

Table 3.1 Main characteristics of survey respondents, by gender and birth cohort

| | <i>Percentage</i> | | | |
|--|---------------------------------|--------------------------------|---------------------------------|--------------------------------|
| | Men | | Women | |
| | NCDS-1991 (33 years) | BCS-1999 (29 years) | NCDS-1991 (33 years) | BCS-1999 (29 years) |
| Employment status: | | | | |
| Employee | 74.5 | 78.7 | 61.3 | 69.2 |
| Self employed | 15.9 | 11.3 | 6.7 | 4.6 |
| Unemployed | 6.0 | 4.5 | 2.0 | 2.1 |
| Not in labour force | 3.6 | 5.5 | 30.0 | 24.1 |
| Hours: | | | | |
| Full-time work | 70.3 | 86.8 | 32.0 | 50.0 |
| Part-time work | 1.8 | 1.0 | 27.7 | 20.3 |
| Not in work | 9.6 | 10.0 | 32.0 | 26.2 |
| Missing | 18.3 | 2.1 | 8.4 | 3.4 |
| Qualifications: | | | | |
| No qualifications | 12.3 | 13.7 | 14.1 | 14.8 |
| Poor O' levels/CSE 2-5/other Scot/NVQ 1 equivalent | 14.8 | 8.7 | 14.7 | 10.1 |
| Good O' levels/1 A' level or more than 1 AS/NVQ2 | 25.7 | 23.6 | 32.3 | 29.6 |
| 2 or more 'A' levels/NVQ 3 | 18.2 | 22.6 | 13.1 | 13.5 |
| Diploma/degree/other degree/PGCE/NVQ 4 | 25.6 | 28.1 | 23.5 | 29.2 |
| Higher degree/NVQ 5,6 equivalent. | 2.2 | 3.3 | 1.1 | 2.6 |
| Missing | 1.3 | 0.0 | 1.1 | 0.0 |
| Average gross hourly earnings (£/hour) | 7.8 | 11.5 | 5.7 | 9.5 |
| (sample size) | (3715) | (4191) | (3100) | (3906) |
| Previous labour market experience: | | | | |
| Has had 2 or more spells of unemployment | 13.8 | 7.7 | 7.6 | 2.8 |
| Average percentage of time spent in employment | 80.8 | 78.0 | 61.1 | 68.4 |
| Average number of spells of work related training | 1.8 | 2.2 | 0.9 | 1.3 |
| Maths test scores at 11/10: | | | | |
| In bottom 25% | 20.7 | 16.5 | 20.6 | 17.8 |
| 25-50% | 19.2 | 16.7 | 20.0 | 19.2 |
| 50-75% | 22.6 | 18.9 | 24.9 | 21.5 |
| In top 25% | 23.3 | 22.0 | 20.6 | 16.0 |
| Missing | 14.1 | 25.8 | 13.9 | 25.5 |

Continued

Table 3.1 Continued

| | <i>Percentage</i> | | | |
|--------------------------------------|---------------------------------|--------------------------------|---------------------------------|--------------------------------|
| | Men | | Women | |
| | NCDS-1991 (33 years) | BCS-1999 (29 years) | NCDS-1991 (33 years) | BCS-1999 (29 years) |
| Father's social class: | | | | |
| i – Professional | 4.1 | 3.6 | 3.8 | 3.6 |
| ii – Manager | 14.2 | 12.9 | 14.4 | 14.7 |
| iiim – Skilled non-manual | 6.9 | 4.5 | 6.4 | 5.1 |
| iiim – Skilled manual | 29.9 | 17.2 | 29.5 | 20.1 |
| iv – Semi-skilled manual | 9.7 | 3.9 | 9.6 | 4.4 |
| v - Unskilled | 3.0 | 0.9 | 3.5 | 1.3 |
| Missing | 32.1 | 57.0 | 32.6 | 50.8 |
| Partnership status: | | | | |
| No partner | 14.2 | 31.4 | 9.7 | 23.3 |
| Married and spouse does not work | 25.1 | 11.4 | 4.9 | 2.4 |
| Married and spouse works | 40.5 | 25.9 | 64.6 | 45.0 |
| Cohabiting and partner does not work | 2.7 | 6.1 | 1.7 | 2.4 |
| Cohabiting and partner works | 7.5 | 19.9 | 7.6 | 20.7 |
| Other | 6.2 | 5.2 | 8.7 | 6.2 |
| Missing | 3.8 | 0.1 | 2.8 | 0.0 |
| Number of observations | 5587 | 5446 | 5780 | 5771 |

We observe that young adults are more likely to be employed in 1999/2000 than in 1991. This may be explained by the more favourable current labour market conditions prevailing at the end of the decade. For women, the larger increase in employment relates additionally to their increased participation in the labour market. Young people are also slightly more likely to be employed full-time in 1999 compared with 1991. This rise in full-time employment as opposed to part-time employment is particularly significant for young women. However, women are still more likely than men to work part-time or not to work at all.

By the age of 29 years it is reasonable to assume that respondents have achieved their highest level of education. Comparing BCS and NCDS, we find that young respondents in 1999/2000 tend on average to report higher qualifications: they are more likely to have qualifications at the level of two or more A' levels or higher. Contrasting the changing experiences of young men with young women, we note that the increase in the proportion of young women with a degree is double the increase in the proportion of men holding a degree. Equal proportions (almost one third) of young women and young men now hold high-level qualifications. An interesting finding revealed in Table 3.1 is that the proportion of young people without any qualification appears constant across the two cohorts.

Analysis of the distribution of weekly and hourly earnings of young men and young women in 1991 and 1999 shows that the earnings distributions remain fairly similar across the cohorts, although men in NCDS compared to men in BCS have a slightly higher probability of being towards the lower end of the distribution and a slightly lower probability of being in the higher end. For women, the distribution of earnings of 33 year olds in 1991 appears to be shifted to the left compared to the distribution of earnings for 29 year olds in 1999. Separating full-time and part-time female workers, we observed

this difference appearing for both types. As we are using nominal earnings, a slight shift is expected and represents the normal wage inflation over time. The shift however is larger for women. This can be partly explained by the change in the educational attainment of women: a higher proportion of those working are holding a higher qualification.

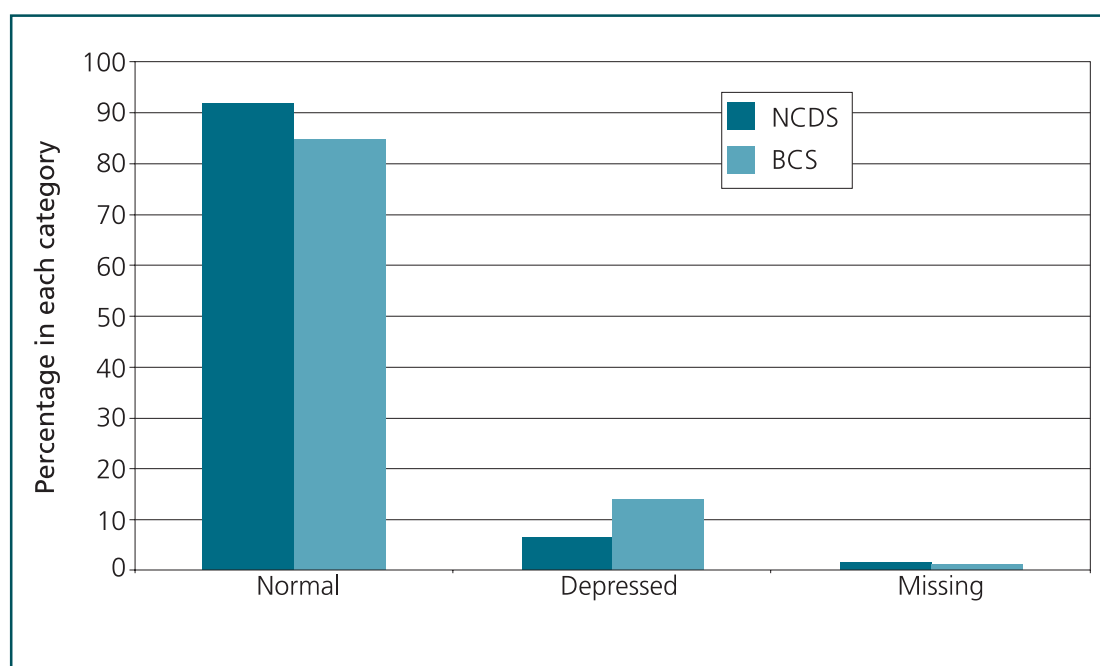
Information on father's social class and the results of a maths test score at ages 10/11 were available for both cohorts. This information is missing from a significant number of the BCS respondents (aged 29 years).

The distribution of life satisfaction scores is fairly similar across the two cohorts, while individuals in the BCS (1999) are more likely to report being depressed (see Figures 3.2 to 3.5).

The change in partnership status among men and women revealed by these data is quite remarkable. In the 1958 birth cohort, more than two-thirds of men and women reported that they were married by age 33. Within the 1970 birth cohort, this rate had declined to just under one half of women aged 29 years. While this may reflect the four-year difference in age between the groups compared, other sources of information confirm that there has been a significant decline in the rate of first marriage and a corresponding increase both in cohabitation and the number of persons reporting that they have 'no partner'.⁸³

Tables 3.2 to 3.4 present cross-tabulations between the main variables of interest, following the model described in Figure 3.1. The results are as expected. Individuals from the NCDS (age 33 in 1991) with no qualification are more likely to come from a poor family background, while those with a degree are more likely to come from a favourable environment. For the BCS cohort (age 29 in 1999) the results are similar except that they are accentuated for those holding a degree but much decreased for those with no qualifications. The results are similar for men and women.

Figure 3.2 The distribution of Malaise Inventory scores for young men, NCDS (age 33 in 1991) compared with BCS (age 29 in 1999)



⁸³ Meaning that they choose not to live with a person with whom they may have a conjugal relationship.

Figure 3.3 The distribution of Malaise Inventory scores for young women, NCDS (age 33 in 1991) compared with BCS (age 29 in 1999)

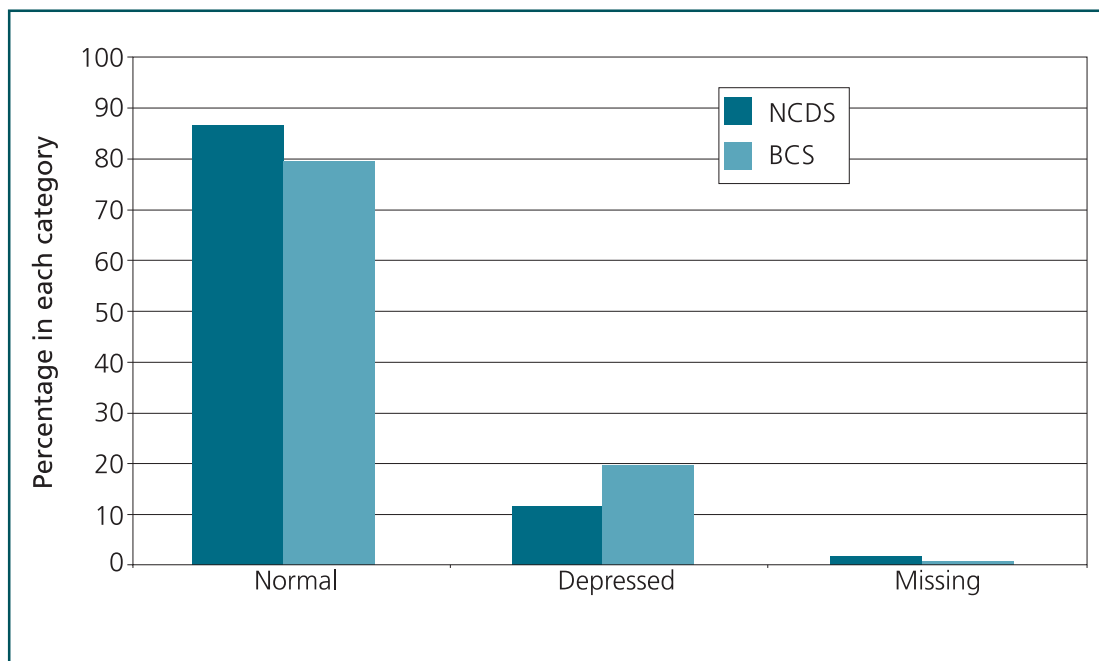


Figure 3.4 The distribution of life satisfaction scores for young men, NCDS (age 33 in 1991) compared with BCS (age 29 in 1999)

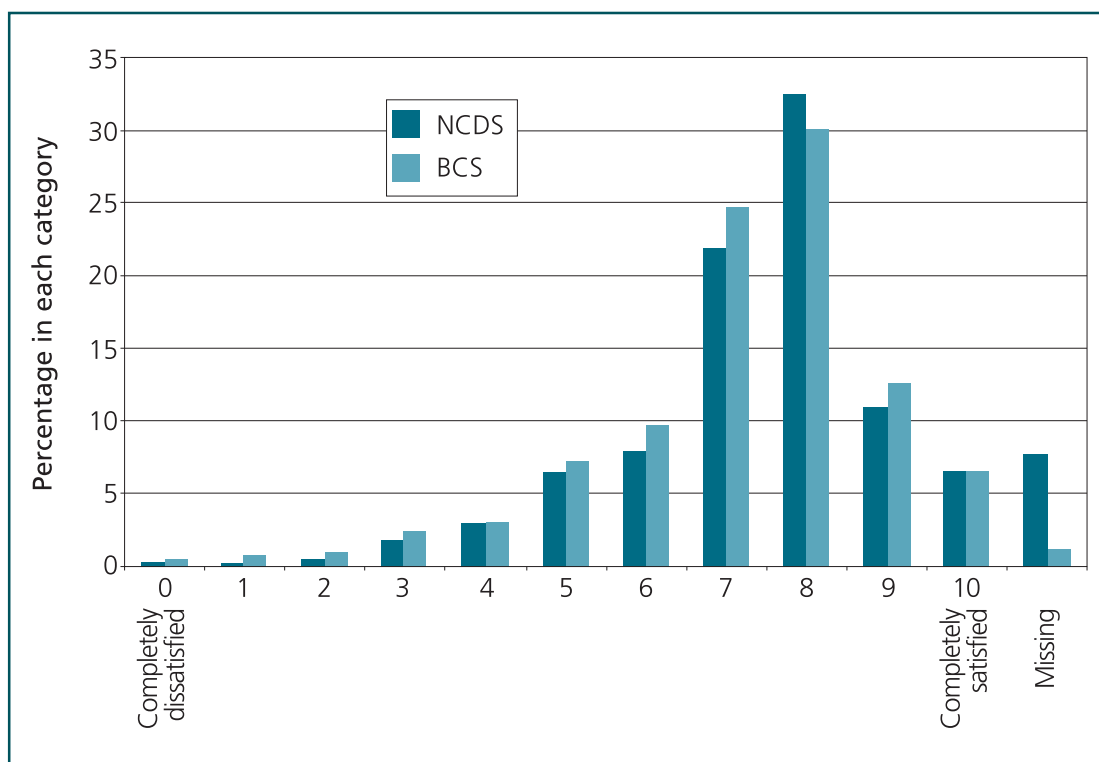


Figure 3.5 The distribution of life satisfaction scores for young women, NCDS (age 33 in 1991) compared with BCS (age 29 in 1999)

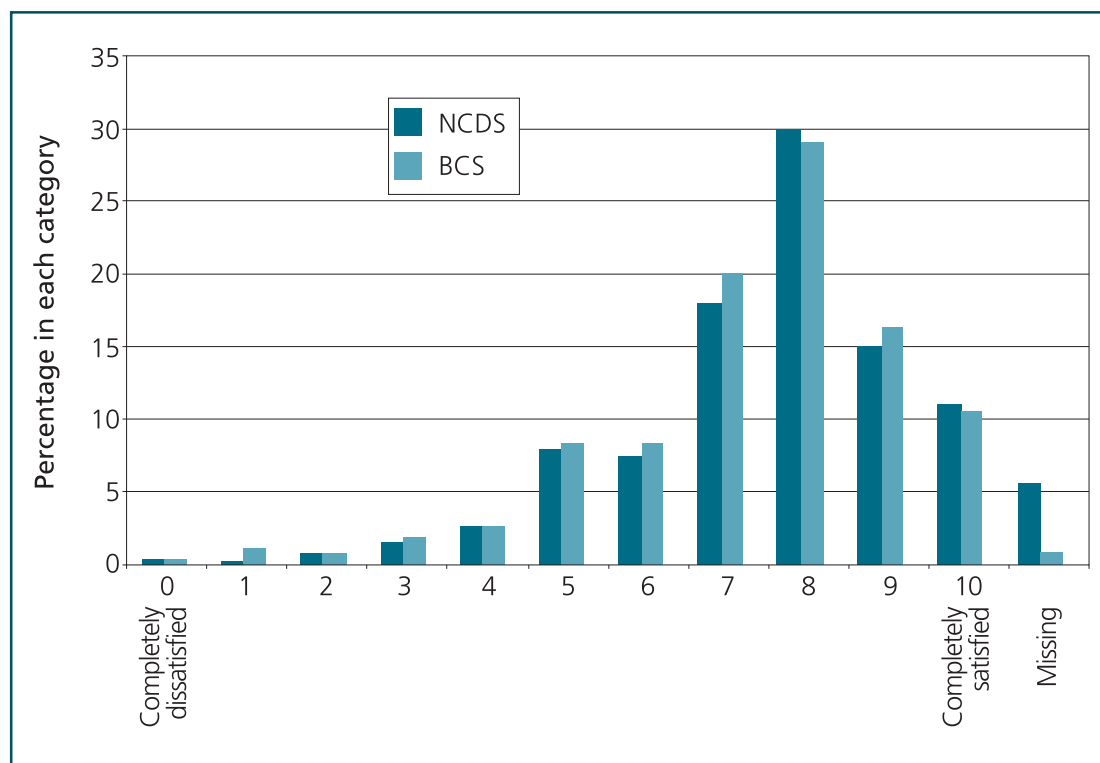


Table 3.2 Education and family resources

| | | | | | | | <i>Percentage</i> |
|------------------------|--------|---------------------|------------------|--------|---------------------|------------------|-------------------|
| Family resources | Degree | Men | | Degree | Women | | |
| | | NVQ 2 or equivalent | No qualification | | NVQ 2 or equivalent | No qualification | |
| NCDS-1991 | | | | | | | |
| Favourable | 81 | 56 | 21 | 81 | 54 | 16 | |
| Poor | 19 | 44 | 79 | 19 | 46 | 84 | |
| Number of observations | 529 | 407 | 182 | 542 | 517 | 214 | |
| BCS-1999 | | | | | | | |
| Favourable | 87 | 68 | 48 | 89 | 67 | 43 | |
| Poor | 13 | 32 | 52 | 11 | 33 | 57 | |
| Number of observations | 497 | 219 | 71 | 616 | 324 | 112 | |

Favourable family resources: father professional or manager.

Poor family resources: father unskilled or semi-skilled.

Table 3.3 Education and work history

| | <i>Percentage</i> | | | |
|------------------------|---------------------|-------------------|---------------------|-------------------|
| Education | Men | | Women | |
| | Work history | | Work history | |
| | Patchy | Continuous | Patchy | Continuous |
| NCDS-1991 | | | | |
| Degree | 21 | 27 | 26 | 24 |
| NVQ 2 or equivalent | 25 | 26 | 32 | 32 |
| No qualification | 17 | 11 | 13 | 14 |
| Number of observations | 773 | 4639 | 441 | 5236 |
| BCS-1999 | | | | |
| Degree | 20 | 29 | 27 | 29 |
| NVQ 2 or equivalent | 25 | 24 | 26 | 30 |
| No qualification | 22 | 13 | 17 | 15 |
| Number of observations | 418 | 4873 | 161 | 5463 |

Patchy work history: had 2 or more spells of unemployment.

Continuous work history: had less than 2 unemployment spells.

To explore the link between education and the subsequent experience of employment, we define a 'patchy' work history as one where the respondent has reported two or more spells of unemployment since completing their full-time education. In the NCDS (see Table 3.3), compared to those with a patchy work history, those with a continuous work history are slightly more likely to have a degree and less likely to have no qualifications. This is not the case for women. In the BCS, these differences are accentuated and appear for women. Finally, Table 3.4 shows that those who we define as having a high level of well-being are less likely to have a patchy work history and more likely to have a continuous one. The differences go in the same direction in BCS but are larger.

Table 3.4 Well-being and work history

| Work history | <i>Percentage</i> | | | |
|------------------------|-------------------|-----|-------|-----|
| | Men | | Women | |
| | High | Low | High | Low |
| NCDS-1991 | | | | |
| Patchy | 12 | 26 | 7 | 11 |
| Continuous | 88 | 74 | 93 | 89 |
| Number of observations | 3822 | 171 | 3890 | 325 |
| BCS-1999 | | | | |
| Patchy | 6 | 16 | 2 | 7 |
| Continuous | 94 | 84 | 98 | 93 |
| Number of observations | 3628 | 418 | 3694 | 534 |

High well-being: not depressed and life satisfaction score greater or equal to 7.

Low well-being: depressed and life satisfaction score lower than 7.

3.5 Multivariate analysis of the links between employment, education and training

The information displayed in Tables 3.1 and 3.4 indicates that there are some significant relationships between education, training and employment experiences and various economic and psychological outcomes in young adulthood. To explore the complexity of these relationships in more detail, we make use of multivariate statistical techniques.

Detailed multivariate analyses were undertaken, examining the relationships between employment at ages 33 or 29 and a range of variables describing qualifications, training, work experience, mathematical ability, domestic situation at the time of the survey and family background⁸⁴. The full results are shown in Appendix C. Here we focus upon the key relationships observed in these data, specifically noting the change in the nature of these relationships over the decade of the 1990s.

Tables 3.5 and 3.6 display what we term the 'marginal effects' on the probabilities of (separately) being employed at ages 33 or 29; showing signs of depression; and having high life satisfaction arising from a variety of factors. Examining first the probability of being employed, it can be seen that this is positively related to possession of a degree for both men and women. For women the effect is strong and is present both in the 1958 cohort and the 1970 cohort.

A significant experience of unemployment (two or more spells) for both men and women in the 1958 cohort is associated with a lower employment probability. In the 1970 cohort this effect is much reduced.

⁸⁴ Before arriving at our preferred specifications, we started from less parsimonious models. Details are in Appendix C.

Additional spells of work-related training appear to improve the probability of subsequent employment for both men and women and in both cohorts. This finding reflects previous research that indicates that those who receive work-related training display lower rates of job turnover (Elias, 1997).

Turning to the marginal effects of these same factors on indicators of depression (*Malaise Inventory* score of 7 or more), high-level qualifications reduce the indications of depression. The effect is apparent for both men and women and is present in both cohorts, but the effect appears to be weakening for women. In other words, by 1999 the reduction in this indicator of depression among women and associated with their possession of a degree was significantly reduced. Higher than average earnings for both men and women also act in some way to reduce signs of depression, this time the effect appears to be gaining strength between 1991 and 1999. For women, a significant experience of unemployment contributes to signs of depression, whereas full-time employment at the time of the survey is associated with lower indications of depression.⁸⁵

Finally, Tables 3.5 and 3.6 display the marginal effects of this range of factors upon whether or not a person displays high life satisfaction. Here we note that the effects are generally small and sometimes inconsistent. Higher than average earnings impact positively with high life satisfaction and a significant experience of unemployment has a negative impact, particularly for women.

Table 3.5 Marginal effects in percentage points (Men)

| | <i>Percentage</i> | | |
|--|-------------------|------------------|------------------------------------|
| | Employed | Depressed | Life satisfaction of 10 |
| NCDS-1991 | | | |
| Degree | 4.0 | -3.4 | -1.1 |
| NVQ level 2 or equivalent | 2.0 | -1.7 | -1.8 |
| Received an additional spell of work-related training | 0.2 | 0.1 | 0.1 |
| Has had two or more spells of unemployment | -10.3 | 0.9 | -0.9 |
| Spent an additional one per cent of time in employment | 0.2 | - | - |
| Works full-time | - | -7.2 | 1.7 |
| Wage is higher than median | - | -1.3 | 1.8 |
| BCS-1999 | | | |
| Degree | 4.7 | -5.3 | 1.4 |
| NVQ level 2 or equivalent | 0.1 | -0.8 | -0.4 |
| Received an additional spell of work-related training | 0.2 | -0.2 | -0.1 |
| Has had two or more spells of unemployment | -5.5 | -1.9 | -2.2 |
| Spent an additional one per cent of time in employment | 0.2 | -0.1 | - |
| Works full-time | - | -13.5 | 1.7 |
| Wage is higher than median | - | -4.3 | 2.8 |

Note: 'Marginal effects' are computed from the regression coefficients shown in Tables A3.1 (employment), A3.6 (depression) and A3.8 (life satisfaction). They indicate the variation around the mean associated with the factor shown in each row of Table 3.5.

⁸⁵ This result may well reflect the fact that persons who are suffering from depression may be less likely to be

Table 3.6 Marginal effects in percentage points (Women)

| | <i>Percentage</i> | | |
|--|-------------------|------------------|------------------------------------|
| | Employed | Depressed | Life satisfaction of 10 |
| NCDS-1991 | | | |
| Degree | 22.3 | -6.9 | 1.3 |
| NVQ level 2 or equivalent | 2.6 | -5.6 | -1.2 |
| Received an additional spell of work-related training | 1.1 | -0.1 | -0.1 |
| Has had two or more spells of unemployment | -7.0 | 4.2 | -3.4 |
| Spent an additional one per cent of time in employment | 0.9 | -0.1 | -0.1 |
| Works full-time | - | -0.7 | -2.5 |
| Wage is higher than median | - | 0.1 | 1.2 |
| BCS-1999 | | | |
| Degree | 17.7 | -2.4 | 2.3 |
| NVQ level 2 or equivalent | 4.3 | -0.9 | 1.0 |
| Received an additional spell of work-related training | 0.5 | -0.2 | -0.1 |
| Has had two or more spells of unemployment | -1.2 | 9.6 | -4.1 |
| Spent an additional one per cent of time in employment | 0.7 | - | - |
| Works full-time | - | -6.2 | -0.9 |
| Wage is higher than median | - | -4.6 | 2.4 |

Note: 'Marginal effects' are computed from the regression coefficients shown in Tables A3.2 (employment), A3.7 (depression) and A3.9 (life satisfaction).

To give a more intuitive interpretation of these findings, we identify the outcomes for several typical individuals. This is done by setting several individuals' characteristics and calculating the predicted probability (or linear prediction in the case of earnings) for individuals with these characteristics. The results are presented in Tables 3.7 and 3.8.

Our definition of these 'typical individuals' is as follows:

- *High employability*

No record of unemployment since entering the labour market. Percentage of time in employment set to the same average for those who have never been unemployed.

- *Low employability*

Respondent has had two or more spells of unemployment. Percentage of time in employment set to the sample average for those who have experienced or more spells of unemployment since joining the labour market.

- *High education/training*

Has a degree and has attended five or more work-related training courses.

- *Low education/training*

Respondent has no qualifications and has never attended a work-related training course.

We then combine these two sets of characteristics to create the four types of individuals shown in Table 3.7 and 3.8.

Table 3.7 Predicted probabilities* (Men)

| | Employed (%) | Average wage (£/hr) | Depressed (%) | Life satisfaction 7 or more (%) | Completely satisfied (10/10) (%) |
|------------------------------------|---------------------|----------------------------|----------------------|--|---|
| NCDS-1991 | | | | | |
| Average individual | 91 | 7.1 | 7 | 78 | 7 |
| High employability, high education | 97 | 8.9 | 3 | 79 | 7 |
| Low employability, low education | 83 | 5.3 | 11 | 80 | 8 |
| Low employability, high education | 95 | 8.8 | 4 | 77 | 7 |
| High employability, low education | 88 | 5.4 | 10 | 81 | 9 |
| BCS-1999 | | | | | |
| Average individual | 91 | 8.3 | 15 | 75 | 7 |
| High employability, high education | 98 | 9.9 | 10 | 78 | 8 |
| Low employability, low education | 78 | 7.0 | 20 | 72 | 5- |
| Low employability, high education | 93 | 9.7 | 12 | 77 | 7 |
| High employability, low education | 91 | 7.2 | 17 | 74 | 6 |

*For average wage, the numbers are linear predictions. High employability means never unemployed and percentage of time spent in employment equal to the sample average for those never unemployed. Low employability means had 2 or more spells of unemployment and percentage of time spent in employment equal to the sample average for those with 2 or more spells of unemployment. High education means that respondent holds a degree and attended 5 work-related courses. Low education means that respondent holds no qualification and never attended work-related courses. All other variables are at their actual values.

Table 3.8 Predicted probabilities* (Women)

| | Employed (%) | Average wage (£/hr) | Depressed (%) | Life satisfaction 7 or more (%) | Completely satisfied (10/10) (%) |
|---------------------------------------|-------------------------|------------------------------------|--------------------------|--|---|
| NCDS-1991 | | | | | |
| Average individual | 68 | 5.0 | 12 | 77 | 11 |
| High employability, high education | 85 | 7.1 | 7 | 78 | 12 |
| Low employability, low education | 61 | 3.9 | 19 | 78 | 12 |
| Low employability, high education | 83 | 7.1 | 8 | 77 | 11 |
| High employability, low education | 63 | 3.9 | 19 | 79 | 12 |
| BCS-1999 | | | | | |
| Average individual | 74 | 6.9 | 20 | 76 | 11 |
| High employability, high education | 88 | 8.4 | 18 | 78 | 12 |
| Low employability, low education | 53 | 6.0 | 22 | 73 | 9 |
| Low employability, high education | 79 | 8.3 | 18 | 78 | 11 |
| High employability, low education | 68 | 6.0 | 21 | 73 | 9 |

*See notes to Table 3.7.

In the following analysis it must be stressed that we are controlling for the impacts of family resources and differences in ability⁸⁶ when making these comparisons. As a result, the differences that are revealed between these typical individuals are less likely to be confounded by factors such as social background.

Focusing first upon what we usually term the 'economic returns' to education and employability (as defined via the experience of employment since entering the labour market), the first two columns of Tables 3.7 and 3.8 show the impact of these factors on the probability of employment and the level of earnings. Prior work experience, defined here as the contrast between those who have never been unemployed and those who have had two or more spells of unemployment, appears to be of lesser importance than education and training in terms of its impact upon the respondent's current employment and earnings. This result holds for both men and women.

- For both men and women and in both periods, starting from low education and low employability, higher education brings a greater payoff in terms of earnings than higher employability. Women get a better return to education and employability than men in terms of employment probability and about the same return in terms of earnings.

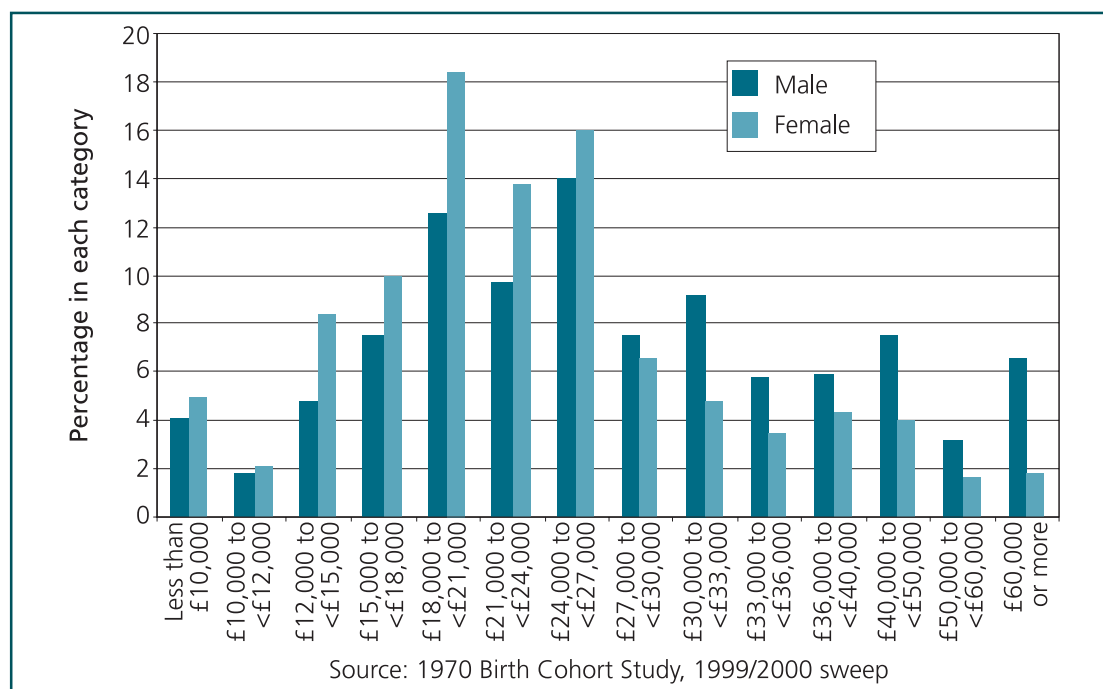
⁸⁶ Our measure of 'ability' is derived from the score on a mathematical test by respondents at ages 10 or 11.

- We find evidence of a gender gap in pay, which appears to decrease over time for highly-educated/highly-employable workers, and in particular for their low-skilled⁸⁷ counterparts. The pay gap between skilled workers and unskilled workers appears to decrease over the period especially for women.

Controlling for various aspects of family structure and background, we find significant differences between men and women in terms of the return to education and employability. Highly skilled women have lower earnings than the average man, and are disadvantaged compared to men with similar skills, especially in terms of pay. The gap between the earnings of low-skilled men and low-skilled women decreases over the period, mainly through a worsening of the men's situation. The outcomes for low-skilled women compared to their male counterparts appears to have improved more than the situation of skilled women compared to skilled men. However, the former started from a low position in the labour market.

To explore further the gender gap in pay, we focus specifically upon those respondents to the 1970 birth cohort who gained a degree. Over 17 per cent of this birth cohort gained a first degree, nearly all of them graduating in 1992 or 1993. Figure 3.5 shows the distribution of annual gross earnings in 1999/2000 for these first-degree holders who were in full-time employee jobs at the time of the survey, distinguishing between men and women. It is immediately apparent that the women earn substantially less than the men. Separate multivariate analysis of the annual earnings of these 29 year olds shows that, while some of the difference relates to the subject studied (those with maths and computing degrees earn significantly more than other degree subjects, and more men hold such degrees than women), a difference of about 10 per cent in annual earnings remains after taking account of subject studied. This finding replicates similar work conducted on a cohort of persons who graduated in 1995 (Elias, *et al.* 1999).

Figure 3.6 Distribution of annual gross earnings in 1999 of male and female graduates aged 29 years - full time employees only



⁸⁷ By low (highly) skilled, we mean with low (high) employability and low (high) education, as defined in Tables 3.7 and 3.8.

Turning next to the impact of qualifications and work experience on the propensity to indicate signs of depression, we note first that there is a significant increase in the incidence of depression among 29 year olds in 1999 compared with 33 year olds in 1991. For both men and women, the corresponding percentages shown in Tables 3.7 and 3.8 are higher in 1999 than in 1991. There is no doubt that possession of high-level qualifications 'insulate' individuals from poor mental health. For men, a degree plus work-related training, reduces the propensity to indicate signs of depression by about seven percentage points. For women, the effect was even sharper in 1991; a reduction of about 11 percentage points, but this has now lessened. In 1999, the reduction in the propensity to indicate signs of depression associated with a degree that 29 year olds women showed was only three to four percentage points.

The last two columns of Tables 3.7 and 3.8 show the effect of these factors on life satisfaction. Interestingly, the effects are not so marked as they are for mental well-being. Some variations are apparent in 1999 between those with what we define as a 'low' level of education and those with a high level, for both men and women, but the effect is fairly small. In 1991 no association could be detected between qualifications, work experience and life satisfaction.

3.6 Discussion on the roles of education and training

Qualifications and training appear to have the expected effects on economic outcomes such as the probability of holding a job in early adulthood and earnings. The latter, together with past employability, plays a significant role in improving well-being. This is consistent with results in the psychology literature that study the effects of unemployment. Depending on their capacity to cope and their attachment to the labour market, people suffer in different ways from unemployment, but generally report lower life satisfaction and a greater likelihood of depression (Argyle, 1987).

From our results in Tables 3.7 and 3.8, we see that across the two periods, men and women with a low level of education show a higher risk of being depressed. Consistently, in each of the cases presented in the tables, women are less likely to rank their life satisfaction towards the top of the scale (score of 7 or more) in the BCS compared to women in the NCDS. Low-skilled men and men with low education and high employability are less likely to rank themselves at the top of the life satisfaction scale compared to similar men in 1991, but highly-skilled men and highly-educated men are more likely, they are especially likely to rank themselves as 'completely satisfied'. These results seem to suggest that the depression and the life satisfaction variables measure different dimensions of well-being. Because of their definitions, the former is considered to be a more objective measure of psychological well-being compared to the latter, which measures subjective well-being.

Because the depression and life satisfaction variables do not appear to capture exactly the same concepts, studying these separately seems to be potentially more informative. There is no clear evidence that lower mental health *causes* a lower probability of employment (Theodossiou, 1998). Measures of well-being, therefore, constitute an *additional* dimension or outcome for individuals. Actual labour market outcomes represent only part of the picture as individuals seek to improve different aspects of their lives. Measures of well-being give a broader view on success, achievements and the role of various factors in improving these.

Following this, our results imply that education not only improves labour market outcomes, but also mental health, through its effect on reducing the likelihood of depression. There is no compelling reason to think that people who aspire to lower education are also more likely to be depressed, so this effect can be considered to be causal. A possible explanation for this result can be found in the psychological literature (see for example Argyle, 1987), and is that our educational qualifications

variable captures the quality side of employment, which is not always linked to the level of the wage. Job characteristics such as autonomy, significance, skill variety and task identity may be associated with higher well-being. The education variable may capture this aspect of employment, and our results show that it is a significant determinant of well-being, over and above the effect of being employed and having a comparatively high wage. In turn, because higher education provides the means for individuals to obtain such 'quality' in their job, it in effect improves their well-being.

Life satisfaction, as mentioned above, may be considered a more subjective measure as it depends on individuals' state of mind. For our purpose it appears very interesting to use the concept of happiness as defined in De La Croix (1998) and based on previous studies. This concept is based on the hypothesis that satisfaction is a function of the gap between aspirations and achievements. This seems to be consistent with our result that education does not have a clear-cut association with men's life satisfaction. Several reasons could explain this result. One is the age effect, 29 year-old highly-educated men may be less likely to be disappointed by their achievements than 33 year olds; another one is an actual change in the fulfilment of aspirations in the latest cohort, which may be due to a better recognition of highly-educated men in the current labour market. Alternatively, it may relate to the general increase in the proportion of young adults with higher qualifications. It is possible that the mix of people has changed so that on average, people with, for example, a degree will be more likely to report higher life satisfaction.

However, the incidence of training has clear economic benefits. While these may appear small compared with the effects of further and higher education, it should be borne in mind that most training events recorded in these surveys are of relatively short duration. This contrasts with the duration of period of further and higher education, often lasting three or more years.

4 Conclusion

Recent years have seen substantial changes in the British education system, none more so than the rise in higher education participation. Subsequently, there have been a number of investigations to measure the added value from this increase in participation, looking at graduate employment paths and the rate of return, both private and social. Despite concerns about over-qualification in the labour market there appears to be a consensus of sorts that, in aggregate, a rise in education attainment results in a net financial benefit to the economy. Results presented in this report are consistent with this conclusion.

Analyses of rates of return typically regard 'return' in a narrow sense, looking no further than the rise in income arising from an additional year of education or an increase in level of qualification. More recently research has addressed the relationship between health and educational attainment but this has tended to be speculative with the direction of causality somewhat ambiguous. Yet, given the volume of research that has addressed the rate of return question, attempts to incorporate some measure of the wider benefits of learning are to be welcomed. One might ask how much more traditional, narrowly focussed rate of return analysis is required to justify the expansion in educational participation?

Central to this report is an attempt to address and quantify some of the externalities associated with educational attainment – namely life satisfaction and mental health as measured by the Malaise Inventory – for two birth cohorts: 29 year olds in 1999 and 33 year olds in 1991. Within psychology there is a wealth of research on what makes us 'tick', what makes us happy or satisfied with our lot in life. Building on this, organisational behaviourists have addressed the role of job satisfaction in meeting business objectives through an extension of a simple idea that a happy and contented worker is a motivated and productive one. Again, there is a consensus of sorts that productivity is raised where workers are satisfied with their jobs.

Each of us spends a substantial part of our lives at work. People who work full-time will probably spend around half or more of their conscious time either at work and getting to and from it. If the time spent in work offers little satisfaction or fulfilment then one can reasonably infer that overall levels of life satisfaction will be affected. Provision of education and training is related to this in two by no means consistent ways. First, higher levels of educational attainment give individuals access to better jobs - jobs that can give some sense of achievement or fulfillment. Second, against a background of rapidly rising levels of educational attainment, there is a greater likelihood that more individuals will be over-qualified for the jobs they fill. In the case of the former life satisfaction could be enhanced, in the latter it may be denuded.

Statistical analysis carried out as part of this study indicates that higher levels of educational attainment, other things being equal, are associated with higher levels of life satisfaction and better mental health. But the relationship is changing over time. The better-qualified 29 year olds in 1999 revealed more life satisfaction compared to their lesser-qualified counterparts, whereas in the older birth cohort, the 33 year olds in 1991, no such relationship was evident. Both cohorts were less likely to report depression where they more highly qualified, but the relationship was weaker amongst the younger cohort. For both cohorts higher levels of educational attainment seem more likely to 'protect' them against one of the most psychologically and economically damaging events of all - unemployment.

The challenge (or puzzle) facing researchers and policy makers is to explore further some of the unanswered issues raised by the study. Most importantly, significant differences are still found between young men and young women in the way the labour market 'rewards' them for qualifications, work-related training, and work experience. As the proportion of young women with high-level qualifications now equals or surpasses the proportion of men, the present inequities associated with the economic benefits of education will become increasingly obvious with potential psychological ramifications within the workplace and beyond. In addition, the sharp rise we observe over this decade in the indicator of psychological ill-health among young men and particularly among young women raises a number of concerns. Education appears to act as a buffer here, affording individuals some protection against psychological ill-health, but the relationship may be weakening over time. The processes at work here are undoubtedly varied and complex.

Appendix A

The measurement of well-being and employability in NCDS and BCS70

Unless otherwise stated, the variables described below were taken from the interviews carried out in 1999/2000. The questionnaires were the same for NCDS and BCS70 cohort members. Similar questions were asked of NCDS members in 1991.

Well-being variables

Malaise Inventory

This questionnaire includes 24 questions (see below) to which respondents respond by answering yes or no. We counted the number of positive responses for all those who answered all questions and created a variable, which is generally regarded as indicative of a state of depression (8 or more positive responses).

Do you often have backache?

Do you feel tired most of the time?

Do you often feel miserable or depressed?

Do you often have bad headaches?

Do you often get worried about things?

Do you usually have difficulty falling or staying asleep?

Do you usually wake unnecessarily early in morning?

Do you wear yourself out worrying about health?

Do you often get into a violent rage?

Do people often annoy and irritate you?

- Have you had twitching of face/neck/shoulders?
- Do you often suddenly become scared for no reason?
- Are you often scared to be alone without friends near?
- Are you easily upset or irritated?
- Are you frightened of going out alone?
- Are you constantly keyed up and jittery?
- Do you suffer from indigestion?
- Do you suffer from an upset stomach?
- Is your appetite poor?
- Does every little thing get on your nerves?
- Does your heart often race like mad?
- Do you often have bad pains in your eyes?
- Are you troubled with rheumatism or fibrositis?
- Have you ever had a nervous breakdown?

Life satisfaction

Respondents had to rank their life satisfaction on a scale from 0 (completely dissatisfied) to 10 (completely satisfied). The questions were the following:

How satisfied are you with the way your life has turned out so far?

How satisfied are you with where you expect to be in 10 years?

Employability variables

Current economic activity

Each respondent was classified in one of the following detailed categories:

- Full-time paid employee (30 hours per week or more)
- Part-time paid employee (less than 30 hours per week)
- Full-time self-employed
- Part-time self-employed
- Unemployed seeking work
- Full-time education
- Government training scheme
- Temporarily sick/disabled
- Permanently sick/disabled
- Looking after home/family

Wholly retired

Employed but status unclear

Self-employed, not known if ft/pt

Employed, but unpaid

Voluntary work

Part-time education

Travelling

Other

Employed (current)

A simple yes/no variable indicates whether the respondent is employed or not.

Current hours worked

Usual weekly hours worked (exc. meal breaks but incl. overtime).

Current occupation

The Standard Occupational Classification was used to classify the occupations of people in employment. The categories used for analysis were:

Managers and administrators

Professional occupations

Associate professional and technical occupations

Clerical and secretarial occupations

Craft and related occupations

Personal and protective service occupations

Sales occupations

Plant and machine operatives

Other occupations

Current Sector

The Standard Industrial Classification (1992) was used for classification of economic activities. The categories used for analysis were:

Agriculture, hunting and forestry and fishing

Mining and quarrying

Manufacturing

Electricity, gas and water supply

Construction

Wholesale and retail trade, repairs

Hotels and restaurants

Transport, storage and communication

Financial intermediation

Real estate, renting and business activities

Public administration and defence, compulsory social security

Education

Health and social work

Other community, social and personal services

Private households/international organisation

Current contractual status

Not employed

Permanent job

Seasonal, temporary or casual job

Fixed-term contract

Self-employed

Current earnings

We have four measures of pay: monthly and hourly net and gross pay. (Hourly pay is based on the usual number of hours worked). For the regression analyses reported here we use hourly gross pay.

Experience of unemployment

Whether had two or more spells of unemployment since the age of 16.

Experience of employment

Percentage of time spent in employment since the age of 16.

Training experience

Number of work related training courses attended since joining the labour market.

Educational variables

The highest qualification obtained was categorised as follows:

None

Some qualifications (NVQ 1)

O'-level or vocational equivalent (NVQ 2)

A'-level or vocational equivalent (NVQ 3)

Other higher qualification, degree (NVQ 4)

Higher degree (NVQ 5)

Family resources

These were all obtained from previous waves of NCDS and BCS70. For this reason, the variables may slightly differ between the two cohorts. They all concern the situation of the parents of the respondent when the latter was 16 years old.

Parental education

Whether the parents left school at the legal minimum age.

Parental social class

Housing tenure

Number of siblings

Age of mother at birth of respondent

Appendix B

Details of the specification of regression models

The following variables were included in all specifications (some were subsequently dropped if they were statistically insignificant):

Personal characteristics:

Qualifications

Mathematics test scores

Taken when respondent was 11 years in NCDS, 10 years old in BCS.

Employment history:

Has had two or more jobs

BCS: Constructed by counting spells of employment reported since 1986 or since the first reported spell (of anything).

NCDS: calculated using *ACCNCD*⁸⁸, counting the number of employment spells started.

Has had two or more spells of unemployment

Same as for employment spells

Number of work related training courses

Used answer to question 'how many work related training provided by an employer which lasted for three days or more have you done'

⁸⁸ *ACCNCD* is a software package designed to process dated work and life history event information contained in the 1991 sweep of the National Child Development Study, summarising these data and making them amenable to basic statistical analysis (Elias, 1995).

Family background:

Father's social class when respondent was 16

Taken from the relevant wave

Housing tenure when respondent was 16

Taken from the relevant wave

Age at which father (mother) left school

Family structure:

Partnership status

BCS: Combines answers to questions about marital status, whether there is a partner in the household and the current economic status of the partner

NCDS: Combines answers to questions about marital status, whether respondents are married cohabiting or other, and the current economic status of the partner

Number of children in household

This is calculated from the household grid. Children are: own children, adopted children, child of current spouse/partner, child of previous spouse/partner (BCS only), and fostered child.

Age of youngest child in household

The following variables appear on some specifications:

Mother's status when respondent was 16 (Employment equations)

Tenure in current job (Earnings equations)

BCS: calculated as the number of months since the start date of the current spell of employment.

NCDS: calculated using *ACCNCDS* (Elias, 1994)

Works part-time (Earnings equations)

Part-time: less than 30 hours

NCDS: Calculated from 'number of number of hours usually worked for that pay including paid overtime, excluding meal breaks'

BCS: From number of hours usually worked excluding meal breaks and overtime, number of hours of overtime usually worked, and number of hours of unpaid overtime.

Partner's net pay per month (Employment equations)

Pay above median (Malaise and Life Satisfaction equations)

Binary variable: the median pay is calculated for each gender, the variable is equal to one if the individual's pay is higher than the median.

Employment (Malaise and Life Satisfaction equations)

From question on current economic activity

Health (All specifications except Malaise equations, dropped when not significant)

Appendix C

Tables of results

Table C.1 Employment probability (Men)

| | NCDS-1991 | BCS-1999 |
|--|----------------------|---------------------|
| Qualifications | | |
| CSE 2-5/NVQ1 equivalent | 0.361 (3.557)** | -0.051 (0.422) |
| O' Levels/NVQ2 equivalent | 0.249 (2.604)** | 0.006 (0.059) |
| A' Levels/NVQ3 equivalent | 0.401 (3.546)** | 0.142 (1.416) |
| Higher qualification/degree/NVQ4 equivalent | 0.630 (5.400)** | 0.634 (5.556)** |
| Higher degree/NVQ5,6 equivalent | 0.960 (3.698)** | 1.075 (5.299)** |
| Missing | 0.293 (1.101) | - - |
| Mother's status when age 16 | | |
| Missing | -0.034 (0.241) | -0.223 (2.973)** |
| Not working | -0.028 (0.364) | -0.200 (1.959) |
| Percentage time spent in employment since 16 yrs | 0.019 (13.869)** | 0.026 (19.239)** |
| Unemployment | | |
| Has had two or more spells | -0.735 (10.832)** | -0.437 (4.821)** |
| Missing | -1.062 (4.155)** | - - |

Continued

Table C.1 Continued

| | NCDS-1991 | BCS-1999 |
|---|---------------------|---------------------|
| Number of work related training courses | 0.027 (1.861) | 0.026 (2.379)* |
| Mathematics test score at 10/11 | | |
| Missing | 0.057 (0.591) | -0.057 (0.606) |
| 25-50% | -0.019 (0.215) | 0.027 (0.266) |
| 50-75% | 0.291 (2.870)** | 0.107 (1.060) |
| Top 25% | 0.221 (2.077)* | 0.217 (1.999)* |
| Partnership status | | |
| Married and spouse does not work | 0.373 (4.194)** | 0.131 (1.277) |
| Married and spouse works | 0.747 (7.796)** | 0.692 (6.540)** |
| Cohabiting and partner does not work | -0.036 (0.238) | 0.174 (1.403) |
| Cohabiting & partner works | 0.497 (3.682)** | 0.493 (5.056)** |
| Other | -0.042 (0.348) | -0.108 (0.880) |
| Missing | 1.024 (3.964)** | - - |
| Number of children aged between 5 & 15 in household | -0.117 (3.512)** | -0.221 (4.315)** |
| Father schooling | | |
| Missing | 0.024 (0.180) | - - |
| Left school at 16-17 | 0.091 (0.629) | 0.101 (1.178) |
| Left school at 18 or over | 0.130 (1.052) | 0.185 (1.799) |
| Reports fair/poor health | -0.617 (8.453)** | -0.348 (4.636)** |
| Constant | -0.554 (3.839)** | -0.741 (4.735)** |
| Observations | 4952 | 4664 |
| Pseudo R-squared | 0.318 | 0.337 |

Notes (valid for all subsequent tables):

1 * significant at 5% level; ** significant at 1% level.

2 T-ratios in parentheses.

Table C.2 Employment probability (Women)

| | NCDS-1991 | BCS-1999 |
|--|---------------------|---------------------|
| Qualifications | | |
| CSE 2-5/NVQ1 equivalent | 0.125 (1.401) | 0.277 (3.142)** |
| O' Levels/NVQ2 equivalent | 0.078 (0.931) | 0.167 (2.355)* |
| A' Levels/NVQ3 equivalent | 0.181 (1.791) | 0.198 (2.303)* |
| Higher qualification/degree/NVQ4 equivalent | 0.644 (6.411)** | 0.775 (9.095)** |
| Higher degree/NVQ5,6 equivalent | 1.056 (3.783)** | 1.344 (6.818)** |
| Missing | 0.701 (2.505)* | |
| Mother's status when age 16 | | |
| Missing | 0.101 (0.518) | -0.001 (0.014) |
| Not working | -0.043 (0.725) | -0.206 (2.884)** |
| Percentage time spent in employment since 16 yrs | | |
| | 0.028 (21.576)** | 0.027 (24.056)** |
| Unemployment | | |
| Has had two or more spells | -0.202 (2.428)* | -0.042 (0.334) |
| Missing | -0.451 (1.641) | |
| Number of work related training courses | | |
| | 0.035 (2.489)* | 0.019 (1.916) |
| Mathematics test score at 10/11 | | |
| Missing | 0.122 (1.391) | 0.107 (1.523) |
| 25-50% | 0.077 (0.993) | 0.158 (2.104)* |
| 50-75% | -0.012 (0.155) | 0.129 (1.742) |
| Top 25% | 0.106 (1.221) | 0.291 (3.340)** |

Continued

Table C.2 Continued

| | NCDS-1991 | BCS-1999 |
|--|----------------------|----------------------|
| Partnership status | | |
| Married and spouse does not work | -0.362 (2.920)** | -0.184 (1.262) |
| Married and spouse works | 0.025 (0.277) | 0.353 (4.889)** |
| Cohabiting and partner does not work | -0.670 (3.776)** | -0.078 (0.518) |
| Cohabiting and partner works | 0.277 (2.032)* | 0.450 (5.605)** |
| Other | -0.182 (1.674) | -0.114 (1.183) |
| Missing | 1.369 (5.054)** | |
| Housing tenure when respondent was 16 | | |
| Missing | -0.003 (0.016) | -0.057 (1.010) |
| Publicly rented | 0.149 (2.310)* | -0.194 (2.010)* |
| Privately rented | 0.223 (1.551) | 0.178 (0.780) |
| Other | -0.154 (1.237) | 0.179 (0.687) |
| Number of children younger than 2 in household | | |
| | -0.912 (13.641)** | -1.120 (19.736)** |
| Number of children aged between 2 and 4 in household | | |
| | -0.550 (11.996)** | -0.509 (11.630)** |
| Number of children aged between 5 & 15 in household | | |
| | 0.062 (1.923) | 0.078 (1.945) |
| Age of youngest child in household | | |
| | 0.020 (2.245)* | -0.039 (3.358)** |
| Father's social class when respondent was 16 | | |
| Missing | 0.080 (0.849) | 0.027 (0.301) |
| i – Professional | 0.187 (1.411) | 0.440 (2.888)** |
| ii – Manager | 0.231 (2.896)** | 0.204 (2.391)* |
| iiinm – Skilled non-manual | 0.106 (1.044) | -0.014 (0.123) |
| iv – Skilled manual | 0.140 (1.560) | 0.126 (1.039) |
| v – Unskilled | -0.062 (0.459) | 0.097 (0.472) |

Continued

Table C.2 Continued

| | NCDS-1991 | BCS-1999 |
|-----------------------------------|---------------------|---------------------|
| Partners' annual net wage (£*100) | -0.0003 (2.291)* | -0.001 (3.659)** |
| Reports fair/poor health | -0.227 (3.280)** | -0.322 (5.072)** |
| Constant | -1.308 (8.728)** | -1.127 (8.517)** |
| Observations | 4174 | 5154 |
| Pseudo R-squared | 0.294 | 0.358 |

Table C.3 Earnings (Men)

| | NCDS-1991 | BCS-1999 |
|--|---------------------|---------------------|
| Qualifications | | |
| CSE 2-5/NVQ1 equivalent | 0.112 (4.058)** | -0.031 (0.991) |
| O' Levels/NVQ2 equivalent | 0.167 (6.354)** | 0.040 (1.557) |
| A' Levels/NVQ3 equivalent | 0.227 (8.308)** | 0.083 (3.231)** |
| Higher qualification/degree/NVQ4 equivalent | 0.400 (14.462)** | 0.255 (9.401)** |
| Higher degree/NVQ5,6 equivalent | 0.459 (9.833)** | 0.358 (7.598)** |
| Missing | 0.158 (2.403)* | - - |
| Percentage time spent in employment since 16 yrs | 0.001 (2.251)* | 0.001 (2.236)* |
| Unemployment | | |
| Has had two or more spells | -0.170 (8.246)** | -0.159 (5.096)** |
| Missing | -0.121 (1.359) | - - |
| Number of work related training courses | 0.019 (12.051)** | 0.014 (9.770)** |

Continued

Table C.3 Continued

| | NCDS-1991 | BCS-1999 |
|--|--------------------|---------------------|
| Father schooling | | |
| Missing | -0.011 (0.266) | - - |
| Left school at 16-17 | -0.014 (0.540) | 0.107 (5.837)** |
| Left school at 18 or over | 0.094 (3.546)** | 0.129 (5.574)** |
| Mathematics test score at 10/11 | | |
| Missing | 0.080 (3.366)** | 0.105 (4.296)** |
| 25-50% | 0.037 (1.725) | 0.068 (2.858)** |
| 50-75% | 0.085 (3.972)** | 0.127 (5.357)** |
| Top 25% | 0.173 (7.570)** | 0.181 (7.462)** |
| Partnership status | | |
| Married and spouse does not work | 0.091 (3.873)** | 0.192 (7.091)** |
| Married and spouse works | 0.066 (3.194)** | 0.117 (6.108)** |
| Cohabiting and partner does not work | 0.032 (0.665) | 0.079 (2.326)* |
| Cohabiting and partner works | 0.008 (0.281) | 0.074 (3.682)** |
| Other | 0.047 (1.381) | 0.050 (1.429) |
| Missing | 0.168 (2.972)** | 0.183 (0.766) |
| Housing tenure when respondent was 16 | | |
| Missing | 0.029 (0.687) | -0.005 (0.284) |
| Publicly rented | -0.025 (1.427) | -0.116 (3.076)** |
| Privately rented | -0.015 (0.450) | -0.034 (0.443) |
| Other | -0.067 (1.676) | -0.106 (1.194) |
| Number of children aged between 2 and 4 in household | 0.006 (0.466) | -0.034 (1.926) |
| Number of children older than 16 | -0.004 (0.088) | -0.214 (3.290)** |

Continued

Table C.3 Continued

| | NCDS-1991 | BCS-1999 |
|--|---------------------|---------------------|
| Father's social class when respondent was 16 | | |
| Missing | 0.015 (0.503) | -0.028 (1.465) |
| i – Professional | 0.032 (0.868) | 0.032 (0.751) |
| ii – Manager | 0.049 (2.184)* | 0.041 (1.537) |
| iiinm – Skilled non-manual | 0.081 (3.066)** | -0.012 (0.339) |
| iv – Skilled manual | -0.022 (0.938) | 0.002 (0.059) |
| v – Unskilled | -0.034 (0.840) | -0.019 (0.250) |
| Reports fair/poor health | -0.067 (3.222)** | -0.060 (2.876)** |
| Constant | 1.468 (30.782)** | 1.707 (33.107)** |
| Observations | 3337 | 3472 |
| Adjusted R-squared | 0.293 | 0.218 |

Table C.4 Earnings (Women)

| | NCDS-1991 | BCS-1999 |
|---|---------------------|---------------------|
| Works part-time | -0.146 (8.587)** | -0.093 (4.583)** |
| Tenure in current job (months) | 0.001 (8.944)** | 0.001 (4.430)** |
| Qualifications | | |
| CSE 2-5/NVQ1 equivalent | 0.064 (2.246)* | 0.039 (1.302) |
| O' Levels/NVQ2 equivalent | 0.111 (4.276)** | 0.042 (1.744) |
| A' Levels/NVQ3 equivalent | 0.202 (6.514)** | 0.079 (2.848)** |
| Higher qualification/degree/NVQ4 equivalent | 0.482 (16.884)** | 0.267 (10.092)** |
| Higher degree/NVQ5,6 equivalent | 0.521 (7.648)** | 0.361 (7.627)** |
| Missing | 0.134 (2.021)* | - - |

Continued

Table C.4 Continued

| | NCDS-1991 | BCS-1999 |
|--|--------------------|---------------------|
| Percentage time spent in employment since 16 yrs | 0.0003 (0.601) | 0.0003 (0.741) |
| Unemployment | | |
| Has had two or more spells | -0.059 (2.159)* | -0.184 (4.218)** |
| Missing | -0.066 (0.621) | - - |
| Number of work related training courses | 0.021 (9.260)** | 0.014 (7.357)** |
| Mother schooling | | |
| Missing | -0.067 (1.232) | - - |
| Left school at 16-17 | -0.005 (0.193) | 0.043 (2.697)** |
| Left school at 18 or over | 0.028 (1.032) | 0.100 (4.126)** |
| Mathematics test score at 10/11 | | |
| Missing | 0.058 (2.291)* | 0.106 (4.532)** |
| 25-50% | 0.005 (0.205) | 0.092 (4.106)** |
| 50-75% | 0.066 (2.892)** | 0.127 (5.676)** |
| Top 25% | 0.114 (4.573)** | 0.230 (9.423)** |
| Partnership status | | |
| Married and spouse does not work | 0.012 (0.285) | -0.063 (0.987) |
| Married and spouse works | 0.043 (1.836) | 0.002 (0.090) |
| Cohabiting and partner does not work | 0.053 (0.790) | -0.115 (2.090)* |
| Cohabiting and partner works | 0.075 (2.481)* | -0.012 (0.601) |
| Other | -0.020 (0.646) | 0.026 (0.827) |
| Missing | 0.126 (2.213)* | - - |

Continued

Table C.4 Continued

| | NCDS-1991 | BCS-1999 |
|---|---------------------|---------------------|
| Housing tenure when respondent was 16 | | |
| Missing | 0.058 (0.987) | -0.023 (1.444) |
| Publicly rented | -0.026 (1.414) | -0.069 (2.348)* |
| Privately rented | 0.002 (0.065) | -0.089 (1.555) |
| Other | 0.051 (1.248) | -0.070 (0.939) |
| Number of children younger than 2 in household | | |
| | 0.098 (4.288)** | 0.022 (1.049) |
| Number of children aged between 2 and 4 in household | | |
| | 0.0003 (0.022) | -0.027 (1.590) |
| Number of children aged between 5 and 15 in household | | |
| | -0.049 (4.777)** | -0.075 (4.683)** |
| Age of youngest child in household | | |
| | -0.009 (3.763)** | -0.008 (2.097)* |
| Father's social class when respondent was 16 | | |
| Missing | 0.046 (1.657) | 0.005 (0.279) |
| i – Professional | 0.138 (3.662)** | 0.102 (2.705)** |
| ii – Manager | 0.022 (0.962) | 0.041 (1.801) |
| iiinm – Skilled non-manual | 0.015 (0.512) | 0.025 (0.756) |
| iv – Skilled manual | -0.027 (1.099) | -0.045 (1.286) |
| v – Unskilled | -0.044 (1.109) | -0.042 (0.742) |
| Constant | 1.297 (28.001)** | 1.671 (35.959)** |
| Observations | 2784 | 3234 |
| Adjusted R-squared | 0.488 | 0.292 |

Table C.5 Earnings women (Heckman correction)

| | NCDS-1991 | | BCS-1999 | |
|---|---------------------|---------------------|---------------------|---------------------|
| | lnhpay | employed | lnhpay | employed |
| Works part-time | -0.148 (8.300)** | | -0.103 (4.878)** | |
| Tenure in current job (months) | 0.001 (7.837)** | | 0.001 (3.872)** | |
| Qualifications | | | | |
| CSE 2-5/NVQ1 equivalent | 0.052 (1.748) | 0.105 (1.126) | 0.035 (1.153) | 0.271 (2.797)** |
| O' Levels/NVQ2 equivalent | 0.092 (3.338)** | 0.065 (0.741) | 0.044 (1.742) | 0.162 (2.090)* |
| A' Levels/NVQ3 equivalent | 0.192 (5.883)** | 0.144 (1.351) | 0.078 (2.693)** | 0.192 (2.035)* |
| Higher qualification/degree/ NVQ4 equivalent | 0.457 (14.244)** | 0.676 (6.527)** | 0.249 (8.677)** | 0.756 (8.427)** |
| Higher degree/NVQ5,6 equivalent | 0.445 (5.641)** | 1.114 (4.107)** | 0.319 (6.243)** | 1.404 (6.372)** |
| Missing | 0.119 (1.622) | 0.566 (2.307)* | - - | - - |
| Percentage time spent in employment since 16 yrs | -0.001 (1.059) | 0.030 (23.281)** | -0.0004 (0.730) | 0.028 (22.962)** |
| Unemployment | | | | |
| Has had two or more spells | -0.068 (2.419)* | -0.210 (2.390)* | -0.187 (4.251)** | -0.065 (0.459) |
| Missing | -0.007 (0.065) | -0.531 (1.724) | - - | - - |
| Number of work related training courses | 0.020 (8.344)** | 0.049 (3.634)** | 0.014 (7.243)** | 0.022 (2.169)* |
| Mother schooling | | | | |
| Missing | -0.046 (0.799) | 0.346 (1.379) | - - | - - |
| Left school at 16-17 | 0.024 (0.908) | -0.058 (0.613) | 0.046 (2.773)** | -0.035 (0.563) |
| Left school at 18 or over | 0.041 (1.467) | 0.148 (1.447) | 0.095 (3.816)** | 0.072 (0.737) |

Continued

Table C.5 Continued

| | NCDS-1991 | | BCS-1999 | |
|---|---------------------|----------------------|---------------------|----------------------|
| | lhpay | employed | Inhpay | employed |
| Mathematics test score at 10/11 | | | | |
| Missing | 0.055 (2.017)* | 0.151 (1.693) | 0.093 (3.821)** | 0.054 (0.669) |
| 25-50% | -0.002 (0.088) | 0.126 (1.534) | 0.084 (3.566)** | 0.133 (1.710) |
| 50-75% | 0.062 (2.563)* | 0.038 (0.463) | 0.118 (5.063)** | 0.149 (1.907) |
| Top 25% | 0.114 (4.324)** | 0.129 (1.388) | 0.218 (8.506)** | 0.306 (3.337)** |
| Partnership status | | | | |
| Married and spouse does not work | 0.036 (0.852) | -0.333 (2.467)* | -0.067 (1.021) | -0.152 (0.898) |
| Married and spouse works | 0.052 (2.231)* | 0.078 (0.765) | 0.004 (0.201) | 0.402 (4.888)** |
| Cohabiting and partner does not work | 0.081 (1.245) | -0.580 (2.983)** | -0.109 (1.932) | 0.014 (0.088) |
| Cohabiting and partner works | 0.051 (1.599) | 0.357 (2.518)* | -0.016 (0.787) | 0.480 (5.175)** |
| Other | -0.006 (0.207) | -0.150 (1.287) | 0.030 (0.945) | -0.127 (1.209) |
| Missing | 0.117 (1.706) | 1.463 (5.772)** | | -6.741 (0.000) |
| Housing tenure when respondent was 16 | | | | |
| Missing | 0.044 (0.701) | -0.139 (0.519) | -0.024 (1.423) | -0.054 (0.859) |
| Publicly rented | -0.045 (2.273)* | 0.135 (1.965)* | -0.066 (2.178)* | -0.166 (1.604) |
| Privately rented | -0.015 (0.411) | 0.255 (1.766) | -0.088 (1.523) | -0.027 (0.122) |
| Other | 0.019 (0.444) | -0.220 (1.566) | -0.078 (1.034) | 0.240 (0.839) |
| Number of children younger than 2 in household | | | | |
| | 0.124 (4.122)** | -0.941 (13.629)** | 0.056 (2.146)* | -1.127 (18.645)** |
| Number of children aged between 2 and 4 in household | | | | |
| | 0.029 (1.366) | -0.598 (12.041)** | -0.019 (1.025) | -0.542 (11.296)** |
| Number of children aged between 5 and 15 in household | | | | |
| | -0.053 (4.842)** | 0.074 (2.243)* | -0.072 (4.374)** | 0.073 (1.677) |

Continued

Table C.5 Continued

| | NCDS-1991 | | BCS-1999 | |
|---|---------------------|----------------------|---------------------|---------------------|
| | lhpay | employed | lnhpay | employed |
| Age of youngest child in household | -0.010 (3.589)** | 0.015 (1.584) | -0.008 (2.034)* | -0.041 (3.236)** |
| Father's social class when respondent was 16 | | | | |
| Missing | 0.041 (1.429) | 0.058 (0.586) | 0.011 (0.597) | 0.039 (0.391) |
| i – Professional | 0.121 (3.128)** | 0.207 (1.411) | 0.086 (2.205)* | 0.402 (2.326)** |
| ii – Manager | -0.003 (0.128) | 0.220 (2.562)* | 0.042 (1.744) | 0.250 (2.669)** |
| iiinm – Skilled non-manual | -0.012 (0.403) | 0.155 (1.415) | 0.011 (0.336) | 0.016 (0.124) |
| iv – Skilled manual | -0.026 (1.003) | 0.197 (2.151)* | -0.050 (1.393) | 0.145 (1.092) |
| v – Unskilled | -0.028 (0.664) | -0.060 (0.417) | -0.039 (0.679) | 0.131 (0.613) |
| Mother's status when age 16 | | | | |
| Missing | | -0.139 (0.592) | | -0.014 (0.139) |
| Not working | | -0.052 (0.852) | | -0.232 (2.952)** |
| Partners' annual net wage (£*100) | | -0.0004 (2.840)** | | -0.001 (3.035)** |
| Number of children older than 16 in household | | 0.432 (2.477)* | | -0.240 (0.677) |
| Constant | 1.438 (17.666)** | -1.605 (10.271)** | 1.758 (27.282)** | -1.335 (9.156)** |
| Observations | 3699 | 3699 | 4242 | 4242 |
| Rho | -0.286* | | -0.178 | |

Table C.6 Malaise (Men)

| | NCDS-1991 | BCS-1999 |
|--|---------------------|---------------------|
| Mother was younger than 20 at delivery | 0.066 (0.595) | 0.188 (2.715)** |
| Qualifications | | |
| CSE 2-5/NVQ1 equivalent | -0.228 (1.861) | 0.029 (0.286) |
| O' Levels/NVQ2 equivalent | -0.168 (1.537) | -0.037 (0.454) |
| A' Levels/NVQ3 equivalent | -0.199 (1.655) | -0.003 (0.040) |
| Higher qualification/degree/NVQ4 equivalent | -0.577 (4.458)** | -0.266 (2.919)** |
| Higher degree/NVQ5,6 equivalent | -0.434 (1.690) | -0.619 (3.123)** |
| Missing | 0.009 (0.034) | - - |
| Percentage time spent in employment since 16 yrs | -0.004 (2.442)* | -0.004 (3.404)** |
| Unemployment | | |
| Has had two or more spells | -0.087 (0.866) | -0.092 (0.978) |
| Missing | -0.043 (0.131) | - - |
| Number of work related training courses | 0.004 (0.412) | -0.010 (1.617) |
| Works full-time | -0.496 (4.917)** | -0.518 (6.174)** |
| Works part-time | -0.647 (1.493) | -0.091 (0.316) |
| Wage is higher than median | -0.122 (1.406) | -0.206 (3.364)** |
| Partnership status | | |
| Married and spouse does not work | -0.159 (1.440) | -0.197 (1.987)* |
| Married and spouse works | -0.225 (2.255)* | -0.131 (1.813) |
| Cohabiting and partner does not work | -0.125 (0.578) | 0.079 (0.698) |
| Cohabiting and partner works | -0.148 (1.026) | -0.091 (1.244) |
| Other | 0.012 (0.087) | 0.005 (0.046) |
| Missing | -0.077 (0.281) | - - |

Continued

Table C.6 Continued

| | NCDS-1991 | BCS-1999 |
|--|-------------------|-------------------|
| Father's social class when respondent was 16 | | |
| Missing | -0.033 (0.386) | 0.072 (1.040) |
| i – Professional | -0.401 (1.577) | -0.221 (1.204) |
| ii – Manager | 0.087 (0.781) | 0.002 (0.020) |
| iiim – Skilled non-manual | -0.037 (0.254) | -0.261 (1.754) |
| iv – Skilled manual | -0.199 (1.588) | -0.129 (0.883) |
| v – Unskilled | 0.097 (0.556) | 0.037 (0.137) |
| Number of children younger than 2 in household | -0.163 (1.579) | -0.062 (0.811) |
| Constant | -0.305 (1.878) | -0.054 (0.416) |
| Observations | 3570 | 3961 |
| Pseudo R-squared | 0.085 | 0.078 |

Table C.7 Malaise (Women)

| | NCDS-1991 | BCS-1999 |
|---|---------------------|--------------------|
| Qualifications | | |
| CSE 2-5/NVQ1 equivalent | -0.229 (2.679)** | 0.028 (0.351) |
| O' Levels/NVQ2 equivalent | -0.349 (4.293)** | -0.034 (0.523) |
| A' Levels/NVQ3 equivalent | -0.547 (4.958)** | 0.075 (0.967) |
| Higher qualification/degree/NVQ4 equivalent | -0.557 (5.312)** | -0.089 (1.176) |
| Higher degree/NVQ5,6 equivalent | -0.597 (1.709) | -0.112 (0.676) |
| Missing | -0.351 (1.463) | - - |
| Unemployment | | |
| Has had two or more spells | 0.218 (2.444)* | 0.315 (2.778)** |
| Missing | 0.181 (0.715) | - - |

Continued

Table C.7 Continued

| | NCDS-1991 | BCS-1999 |
|--|---------------------|---------------------|
| Percentage time spent in employment since 16 yrs | -0.004 (3.285)** | -0.001 (1.160) |
| Number of work related training courses | -0.005 (0.434) | -0.008 (1.003) |
| Mathematics test score at 10/11 | | |
| Missing | -0.143 (1.622) | -0.100 (1.603) |
| 25-50% | -0.096 (1.223) | -0.093 (1.402) |
| 50-75% | -0.124 (1.514) | -0.331 (4.849)** |
| Top 25% | -0.342 (3.419)** | -0.275 (3.472)** |
| Works full-time | -0.039 (0.429) | -0.231 (3.208)** |
| Works part-time | -0.008 (0.115) | -0.155 (2.297)* |
| Wage is higher than median | 0.006 (0.072) | -0.173 (3.039)** |
| Partnership status | | |
| Married & spouse does not work | 0.046 (0.342) | -0.138 (0.994) |
| Married & spouse works | -0.219 (2.198)* | -0.281 (4.845)** |
| Cohabiting & partner does not work | 0.325 (1.697) | -0.087 (0.645) |
| Cohabiting & partner works | 0.035 (0.278) | -0.162 (2.557)* |
| Other | 0.258 (2.248)* | -0.021 (0.236) |
| Missing | -0.336 (1.505) | - - |
| Housing tenure when resp. was 16 | | |
| Missing | 0.098 (0.875) | 0.168 (3.183)** |
| Publicly rented | 0.166 (2.420)* | 0.142 (1.684) |
| Privately rented | 0.034 (0.239) | -0.195 (0.911) |
| Other | 0.257 (1.846) | 0.131 (0.536) |

Continued

Table C.7 Continued

| | NCDS-1991 | BCS-1999 |
|---|--------------------|---------------------|
| Number of children younger than 2 in household | -0.129 (1.533) | -0.248 (4.099)** |
| Number of children aged between 2 and 4 in household | -0.053 (0.910) | -0.082 (1.828) |
| Number of children aged between 5 and 15 in household | -0.023 (0.666) | 0.105 (2.891)** |
| Age of youngest child in household | 0.010 (1.103) | -0.018 (1.639) |
| Father's social class when respondent was 16 | | |
| Missing | -0.131 (1.308) | 0.070 (1.199) |
| i – Professional | -0.345 (1.783) | -0.023 (0.162) |
| ii – Manager | -0.102 (1.111) | 0.049 (0.634) |
| iiim – Skilled non-manual | -0.147 (1.222) | -0.145 (1.284) |
| iv – Skilled manual | -0.078 (0.857) | 0.147 (1.383) |
| v – Unskilled | -0.051 (0.391) | 0.084 (0.462) |
| Constant | -0.368 (2.486)* | -0.325 (2.718)** |
| Observations | 4408 | 4920 |
| Pseudo R-squared | 0.096 | 0.063 |

Table C.8 Life satisfaction (Men)

| | NCDS-1991 | BCS-1999 |
|--|---------------------|---------------------|
| Qualifications | | |
| CSE 2-5/NVQ1 equivalent | -0.069 (0.820) | 0.030 (0.402) |
| O' Levels/NVQ2 equivalent | -0.178 (2.306)* | -0.038 (0.639) |
| A' Levels/NVQ3 equivalent | -0.178 (2.234)* | -0.001 (0.019) |
| Higher qualification/degree/NVQ4 equivalent | -0.059 (0.756) | 0.123 (1.992)* |
| Higher degree/NVQ5,6 equivalent | -0.114 (0.896) | 0.372 (3.871)** |
| Missing | -0.119 (0.614) | - - |
| Unemployment | | |
| Has had two or more spells | -0.090 (1.575) | -0.235 (3.710)** |
| Missing | -0.307 (1.104) | - - |
| Percentage time spent in employment since 16 yrs | 0.004 (3.305)** | 0.002 (1.836) |
| Number of work related training courses | -0.006 (1.335) | 0.008 (2.724)** |
| Works full-time | 0.177 (2.269)* | 0.176 (2.632)** |
| Works part-time | 0.176 (0.722) | 0.110 (0.568) |
| Wage is higher than median | 0.163 (3.929)** | 0.250 (6.869)** |
| Partnership status | | |
| Married and spouse does not work | 0.705 (10.726)** | 0.398 (6.511)** |
| Married and spouse works | 0.622 (9.812)** | 0.418 (7.672)** |
| Cohabiting and partner does not work | 0.210 (1.579) | 0.122 (1.521) |
| Cohabiting and partner works | 0.327 (3.669)** | 0.207 (3.657)** |
| Other | -0.279 (2.843)** | -0.039 (0.535) |
| Missing | 0.752 (3.097)** | -0.170 (2.111)* |

Continued

Table C.8 Continued

| | NCDS-1991 | BCS-1999 |
|--|---------------------|---------------------|
| Number of children younger than 2 in household | 0.085 (1.834) | 0.121 (2.566)* |
| Partner's annual wage (£*100) | 0.001 (1.385) | 0.001 (2.594)** |
| Reports fair/poor health | -0.432 (7.401)** | -0.434 (9.260)** |
| Observations | 3315 | 4142 |
| Pseudo R-squared | 0.047 | 0.040 |

Table C.9 Life satisfaction (Women)

| | NCDS-1991 | BCS-1999 |
|--|---------------------|---------------------|
| Qualifications | | |
| CSE 2-5/NVQ1 equivalent | -0.072 (0.893) | 0.138 (2.060)* |
| O' Levels/NVQ2 equivalent | -0.073 (1.012) | 0.063 (1.195) |
| A' Levels/NVQ3 equivalent | -0.079 (0.987) | 0.043 (0.711) |
| Higher qualification/degree/NVQ4 equivalent | -0.067 (0.882) | 0.136 (2.404)* |
| Higher degree/NVQ5,6 equivalent | 0.073 (0.444) | 0.201 (2.102)* |
| Missing | 0.103 (0.582) | - - |
| Unemployment | | |
| Has had two or more spells | -0.226 (3.517)** | -0.308 (3.481)** |
| Missing | 0.154 (0.553) | |
| Percentage time spent in employment since 16 yrs | 0.003 (2.875)** | 0.001 (1.565) |
| Number of work related training courses | 0.006 (1.114) | 0.007 (1.620) |
| Works full-time | -0.152 (2.529)* | -0.053 (1.001) |
| Works part-time | -0.118 (2.290)* | -0.142 (2.666)** |

Continued

Table C.9 Continued

| | NCDS-1991 | BCS-1999 |
|---|---------------------|----------------------|
| Wage is higher than median | 0.069 (1.346) | 0.142 (3.628)** |
| Partnership status | | |
| Married and spouse does not work | 0.252 (2.564)* | 0.233 (1.993)* |
| Married and spouse works | 0.627 (9.959)** | 0.525 (11.000)** |
| Cohabiting and partner does not work | -0.097 (0.635) | 0.148 (1.353) |
| Cohabiting and partner works | 0.241 (2.901)** | 0.299 (5.984)** |
| Other | -0.467 (5.760)** | -0.091 (1.441) |
| Missing | -0.065 (0.303) | -0.630 (10.677)** |
| Housing tenure when respondent was 16 | | |
| Missing | 0.031 (0.397) | -0.055 (1.496) |
| Publicly rented | -0.023 (0.478) | -0.075 (1.196) |
| Privately rented | 0.050 (0.521) | 0.342 (2.818)** |
| Other | -0.157 (1.572) | 0.139 (0.815) |
| Number of children younger than 2 in household | 0.021 (0.429) | 0.126 (2.989)** |
| Number of children aged between 5 and 15 in household | 0.007 (0.296) | -0.047 (1.714) |
| Father's social class when respondent was 16 | | |
| Missing | 0.008 (0.106) | -0.052 (1.230) |
| i – Professional | 0.093 (1.128) | 0.036 (0.445) |
| ii – Manager | -0.062 (1.106) | -0.058 (1.120) |
| iiinm – Skilled non-manual | 0.089 (1.271) | -0.120 (1.656) |
| iv – Skilled manual | 0.078 (1.119) | -0.021 (0.266) |
| v – Unskilled | 0.006 (0.053) | -0.133 (0.944) |

Continued

Table C.9 Continued

| | NCDS-1991 | BCS-1999 |
|-------------------------------|---------------------|---------------------|
| Partner's annual wage (£*100) | 0.00004 (0.401) | 0.0003 (2.288)* |
| Reports fair/poor health | -0.374 (6.947)** | -0.452 (0.045)** |
| Observations | 3512 | 4570 |
| Pseudo R-squared | 0.042 | 0.034 |

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