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Researching the benefits of learning: the persuasive power of longitudinal studies

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Recent years have witnessed considerable growth of research on the benefits of adult learning. Much of this is UK-based, and draws on evidence from large scale longitudinal data sets. Overwhelmingly, these studies have found clear evidence of economic, social and individual benefits as a result of participating in adult learning. While these claims are important and influential ones, there has to date been little discussion of the nature of the data and analytical techniques being used. Nor has there been sufficient attention to the possibility that learning may have negative outcomes. The paper identifies and explores some limitations of longitudinal research in the study of adult learning, but concludes that despite the problems, this body of work still represents an important departure in the field, with considerable international significance.

Keywords: lifelong learning; benefits of learning; longitudinal research; human capital; social capital

In recent years, we have seen a remarkable upsurge of interest in measuring the outcomes of adult learning. Although most commentators focus only on one type of benefit, usually economic in nature, the more recent research has covered both the economic and the wider social or personal benefits of learning, demonstrating considerable breadth as well as depth (Blunden et al. 2010; Jenkins 2011; Schuller et al. 2004). Overwhelmingly, the findings of this work have confirmed claims that adult learning has wide-ranging and far-reaching positive benefits. Encouraged by funding agencies, as well as their own beliefs, the researchers involved in this work have actively engaged with practitioners and policy-makers to explore the implications. A special issue of this journal, for instance, was devoted to 'policy reflections and research findings on the wider benefits of learning' (see Bynner and Feinstein 2005).

As a result, this research has been taken up by professional institutions and policy-makers, and has made some impact on policy debate. The Organisation for Economic Co-operation and Development (OECD) undertook a series of studies of the social outcomes of learning between 2005 and 2009 (OECD 2010). In Britain, the National Institute of Adult Continuing Education among others has drawn on this work to support its advocacy and lobbying (NIACE 2009). It shaped the thinking of the Government Office for Science's Foresight project on Mental Capital and Well-being (Cooper et al. 2010) and in May 2010, the incoming Conservative Minister for Further Education, Skills and Lifelong Learning spoke of his recognition of the evidence that 'lifelong learning brings immense benefits', listing among others the positive outcomes for community cohesion, democratic

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citizenship, family support, employability and what he termed – citing John Ruskin – a 'process of becoming' (Hayes 2010).

Clearly, this work has been more influential than most research into post-compulsory education and training. Particularly outside the economics of education, research in this field has increasingly been overwhelmingly dominated by qualitative methods, sometimes accompanied by an explicit rejection of quantitative work (Taylor 2001). It is therefore important to assess the strengths and limits of this important body of largely quantitative research. This paper summarises recent relevant studies, subjects their findings to closer scrutiny, and asks how far they can indeed be used to support policy development. It is not directed towards specialists in longitudinal data analysis; rather, it is aimed at the wider educational research community, and assumes no familiarity with technical aspects of the discussion. While it alludes to the important body of work on the economic benefits of adult learning, its main focus is on the newer – and arguably more innovative – studies of the wider benefits of learning, where I try to explore the implications of recent longitudinal studies for the wider field of educational research. And I briefly explore the possibility that, for some people some of the time, some learning experiences may result in negative outcomes. By seeking to identify the limitations and strengths of this emerging approach, I am hoping to contribute to a critical but constructive engagement with the contribution of longitudinal studies to a wider understanding of learning and its impact across the life course.

The value of longitudinal data

A number of impressive recent studies have been based on the analysis of longitudinal survey data. Much of this research is by British researchers, undertaken in two centres launched by the UK government in 1999 to investigate the economic and non-economic benefits of learning. The first was based in the Centre for Economics of Education, at the London School of Economics; the second, symbolically re-named as the Centre for Research on the Wider Benefits of Learning (WBL) is part of the Institute of Education, University of London. Both centres have attracted extensive international interest, and are widely recognised as at the leading edge of educational research; in part, this is precisely because they are able to make use of comparatively strong bodies of longitudinal data.

To date, most of the longitudinal studies have used the 1958 National Child Development Study (NCDS) and the 1970 British Cohort Study (BCS) (Bynner and Joshi 2007), while a smaller number of studies have used longitudinal panel data, such as those provided by the British Household Panel Survey (Blunden et al. 2010). These surveys follow a sample of individuals over time, asking them periodically about different aspects of their lives; where the surveys ask for details about people's learning, the results can be correlated with other information about their lives, including health, civic engagement, employment, earnings and general well-being. Because the surveys take place periodically, it is possible to distinguish those who have taken an adult education course in a particular period, compare them with individuals who are otherwise similar in every identifiable manner during that period, and see whether the outcomes in later sweeps differ. The assumption is that if the outcomes are better, or indeed worse, then it is probable that taking the course has caused the difference in outcomes. As the authors of a synthesis of WBL research put it, longitudinal studies should enable us to 'establish, with quite a high degree of certainty, which learning outcome follows which learning input' (Schuller et al. 2004, 162).

One reason for the persuasiveness of longitudinal research is the size of the samples involved. The BCS began when data were collected about the births and families of just under 17,200 babies born in England, Scotland, Wales and Northern Ireland in a particular

week in April, 1970. NCDS has its origins in the Perinatal Mortality Survey, based on a sample of 17,416 babies born during one week in March 1958. The British Household Panel Survey (BHPS) is an annual survey of a nationally representative sample of about 5500 households first recruited in 1991, containing a total of approximately 10,000 interviewed individuals. So these are sizeable samples, with large numbers taking some kind of adult learning: out of some 10,000 people who took part in the 1958 NCDS, 58% undertook some kind of formal learning between the ages of 33 and 42 (Schuller et al. 2004, 163). Moreover, in the case of the WBL Centre, the longitudinal evidence has been supplemented from the outset by a commitment to the use of mixed methods, including the exploration of individual interview data, some of which was collected and analysed within a framework produced by the quantitative analysis of cohort data (Schuller et al. 2004, 194–8).

Invariably, longitudinal surveys are affected by attrition. This can be simply because some people die, or migrate, or have lifestyles or jobs that take them out of the home for long periods, making it hard for interviewers to contact them; or because another factor intervenes, as in the general tendency for people to withdraw from longitudinal surveys as they get older (Uhrig 2008). Researchers report a particularly sharp fall when responsibility for participation changes, as when parents in the cohort surveys give way to cohort members who become (young) adults (Hawkes and Plewin 2006). While it is possible to compensate for attrition, for example by weighting for non-response in the analyses, it is nevertheless widely recognised to be a problem. As the authors of one WBL report note (Feinstein et al. 2003, 87–8), attrition rates are highest among those who have the lowest rates of participation in adult learning, and come from the lowest socio-economic backgrounds; this pattern is, they say, likely to lead to underestimates of the association between learning and social capital or health.

There is then the question of how different surveys treat participation in education and training. In general, they ask about the most formal types of learning activity. The most limited is the BHPS, which asked people in Wave 18 for details of any full-time education; any qualifications held; any training schemes or part time courses taken (excluding 'leisure courses'); and any qualifications gained from the courses (BHPS 2008). The 1958 and 1970 birth cohort surveys have taken a somewhat broader view of learning, often posing detailed questions about learning in adult life, as well as about respondents' experiences of using literacy and numeracy skills, and allowing for follow-up questions. The 2004–2005 questionnaire for the 1958 NCDS, for example, included a set of questions about adult education and training that explicitly covered literacy, numeracy and leisure courses, as well as the more formalised courses covered by BHPS (Centre for Longitudinal Studies 2004). In addition, samples of the survey population have taken basic skills tests, allowing for comparison over time (for one analysis, see De Coulon, Marcenaro-Gutierrez, and Vignoles 2007).

Yet informal learning remains problematic. Although some questionnaire designers have acknowledged the importance of addressing 'both the widest range of obstacles to learning and the widest range of opportunities taken to do it in informal and formal settings' (Bynner et al. 2000, 13), this poses considerable challenges. Moreover, questions in the cohort surveys about courses leading to qualifications include only participation that resulted in gaining the qualification, excluding those who participated but did not end up with the qualification (Feinstein et al. 2003, 88–90). Yet, as a growing body of qualitative research shows, people's own subjective understanding of their learning career may not be articulated or understood in ways that enable simple quantitative comparisons to be made. For example, a study of adults in further education showed that motivations for returning to learning are multiple, overlapping and often shifting, with much movement between more and less formal types of learning,

leading to varying and often fluid self-understandings of people's own learning identities (Crossan et al. 2003).

Clearly, then, the longitudinal data sets are not without their limitations and problems. Yet they also represent an enormous potential resource, and one that has been energetically exploited by researchers interested in exploring the benefits of learning. In turn, it is important that any wider public debate on the benefits of learning should be informed by a robust and accessible body of evidence. I therefore turn now to some of the claims that can reasonably be made in respect of learning's impact on people's lives.

The benefits of learning

Evidence on the wage and employability effects of learning is reasonably plentiful. It is also international in character, although most of the published work has covered advanced nations like Canada, Sweden, Britain and the US, with much less evidence for southern Europe, and very little for the newly industrialised and developing nations. It is also limited in scope, as most of the literature concerns work-related training and higher education. Broadly, most research on the economic effects of learning suggest that non-traditional routes into higher education incur an age penalty, so that people who take a qualification later in life gain less of a return than those who take it while young. Nevertheless, those who take qualifications are still better off on average than those who do not (see for example Holmlund, Liu, and Nordstrom Skans 2008; Egerton 2000). There is also some evidence that people who improve their literacy or numeracy are likely to enjoy higher earnings and more regular employment as a result. In an international context, though, the value of basic skills in the UK labour market is comparatively high, suggesting a relative scarcity of these skills as compared with other some other countries (Hansen and Vignoles 2005). There is also evidence of an employability effect; people who learn are more likely to be in work, especially if they have been out of the labour market for some time. When taken together with wage effects, the employability benefits help produce quite significant increases in overall earnings (Dorsett, Liu, and Weale 2010). But as well as these economic effects there are also now a number of studies showing that learning has benefits for health and well-being.

There are good reasons for considering well-being to be among the most important outcomes of adult learning, in its significance for the wider community as well as for learners themselves. It is not just that well-being is desirable in itself; it also has further consequences, not least for learning. For learners, a positive outlook on the future and a sense of one's ability to take charge of one's life are indispensable to further, continuing successful learning (Biesta et al. 2011). Well-being is also associated with better health, higher levels of social and civic engagement, and greater resilience in the face of external crises (Cooper et al. 2010). Conversely, the absence of well-being is a cause for wider concern. Earlier important studies of longitudinal data, such as Albert Tuijnman's study of the 50-year Malmö cohort – limited unfortunately to men – found in the 1980s that men who took courses found their lives more meaningful and worthwhile than those who did not (Tuijnman 1989, 226–70). However, this important finding was not followed up. The recent growth of research into lifelong learning and well-being is therefore an important development.

Researchers have long been interested in the influence of adult learning on personal development, while the impact of education on learner confidence and self-esteem are among the most frequently mentioned items in the professional literature (Tett and Maclachlan 2007). A considerable body of recent research has explored the relationship between adult learning and well-being. Some of this work examines the effects of adult learning upon factors directly relevant to well-being, such as self-efficacy, confidence or the ability to create

support networks. Others address factors that are indirectly – sometimes rather loosely – associated with well-being, such as earnings and employability. In both cases, the accumulated evidence points to positive associations between participation in learning and subjective well-being, and between learning and mental health. These are important findings, for even if the effects are comparatively small ones, they nevertheless offer policy-makers one possible way of influencing levels of well-being among the wider population. However, participation in learning also has a downside, and there is some evidence that for some people, in some circumstances, learning can be associated with stress and anxiety, eroding factors that maintain good mental health (see the discussion in Jenkins 2011, 404–5).

Taken together, these findings suggest that adult learning has positive direct effects on well-being. This influence is measurable and the evidence is reasonably consistent. While most of the quantitative studies suggest that it is comparatively small, this is by no means to suggest that it is trivial. Given that policy-makers repeatedly find that influencing the behaviour of adult citizens is difficult, and sometimes downright impossible (as illustrated by the limited success of public health campaigns in many countries), it is highly significant that adult learning has these positive results, both for individuals and for collective groups more widely. Of course, these findings are usually at the aggregate level, and they tend to rest on bodies of evidence that take little account of the experiences of people who drop out along the way, or who are deterred from enrolling by poor provider behaviour. For some people, experiences of learning are deeply unsatisfactory, and the next section explores this issue further. But we should not lose sight of remarkably consistent findings from research that suggests an overall positive influence of adult learning on the way people feel about themselves and their lives.

Yet participation does not invariably have positive consequences. It is natural to focus on the benefits of learning, especially when so many researchers come from a background of practice. Nevertheless, participation in learning can sometimes have negative effects; far from improving people's well-being, it can actively damage it. This is rather different from acknowledging that serious learning can be demanding, even painful, yet worthwhile in the longer term. The study of people nominated for Adult Learners' Awards – a sample that is likely to be biased towards comparatively successful learners – found that, while there were many benefits, most of their respondents also experienced 'disbenefits' such as stress, broken relationships and a new dissatisfaction with one's present way of life (Aldridge and Lavender 2000). Survey data can sometimes mask these negative outcomes, partly by a process of 'averaging out' across entire populations. And patterns of behavioural change may also vary by type of course taken. One WBL analysis found, for instance, that participation in work-related learning was associated with a substantial increase in alcohol consumption, along with increased exercise and civic activity (Feinstein et al. 2003, 56).

In explaining such negative outcomes, one likely factor is that adult education can evoke – even if unintentionally – unpleasant and stressful experiences from people's earlier lives. A study of adult basic education participants found that anxieties were particularly acute 'if elements of the learning environment recalled people's previous negative experiences of education or authority, or other traumatic or painful events from their histories' (Barton et al. 2007). Further, although learning helps to extend some social networks, it can disrupt others (Barton et al. 2007; Field 2009). This is inseparable from the processes of social mobility and change that learning produces. In particular, while it tends to extend those wider and more heterogeneous networks that some social capital analysts call 'bridging ties', it corrodes unreflexive 'bonding ties', such as close kinship and neighbourhood connections. And while bonding ties can often form a barrier to social and geographical mobility, they can also provide access to types of social support that can be extremely important in times of

trouble (Field 2008). This can in turn increase vulnerability to ill-health, including poor mental health, and undermine resilience.

On balance, though, the evidence is persuasive. Adult learning influence people's income and employability, as well the attitudes and behaviours that affect people's mental well-being. In principle the benefits could be assigned an economic value, which could then be set against the costs of investing in adult learning. In practice, there are enormous data weaknesses, the relationship seems to be non-linear, and adults' life-courses are complex and highly context-dependent, so it is highly unlikely that a realistic cost–benefit analysis is feasible or even worthwhile (some might argue that it is better not to know, either because the answer might be inconvenient or because they think it reduces everything to cash). Nevertheless, even if we cannot assign a simple economic value to the well-being that people derive from learning, in general the evidence suggests a clear positive relationship. These effects can be found for some general adult learning as well as vocational learning, and they are particularly marked for basic literacy and numeracy.

Limitations to the evidence

However persuasive this evidence, a number of qualifications need to be made. First, these are probabilistic and non-linear relationships; their existence does not mean that everyone who takes a course will feel happier and better about themselves. As the WBL researchers have emphasised, the relationship between learning and its effects is non-linear. And it is in the nature of longitudinal data that the findings are related to events and experiences that are now in the past; predicting the future on the basis of probabilistic findings is extremely shaky.

Second, in most of the longitudinal studies, effect sizes are relatively small (Feinstein et al. 2003, 40–7). People's lives may be improved as a result of learning, but the improvements are pretty modest ones. Even so, the findings are reasonably consistent, across a range of outcomes, and we know – for example from health promotion campaigns or health and safety training – that attitudes and behaviour in adult life are entrenched. Even small shifts are therefore important. To take one example of health outcomes, on the basis of British data, for every 100,000 women enrolling in adult learning programmes, it is likely that 116–134 cancers would be prevented (Schuller and Desjardins 2007, 17). Even if effect sizes are small, then, the outcomes may be highly meaningful for those involved.

Moreover, even if they are small, the effect sizes are often comparable with those produced by other interventions. The most striking example is produced by Andrew Jenkins in his study of learning and well-being among older adults: he estimates that the effect of participating in arts, music or evening classes on quality of life is the same as that reported by someone who was troubled by pain during the first wave of the survey and became free of pain by the time of the second wave (Jenkins 2011, 411).

Third, most of the research takes an undifferentiated view of learning. This often reflects underlying problems with the data being analysed. In general, they measure 'static' products of learning such as qualifications, or easily identifiable input measures such as the numbers of courses attended or hours spent studying; these measures tend to present one particular way of understanding learning, as something that is more or less passively acquired (Hodkinson and Macleod 2010, 180). Whether or not it is inevitable that survey instruments always marginalise participatory and construction accounts of learning, as Hodkinson and Macleod argue (Hodkinson and Macleod 2010, 184), it is certainly true that the use of standardised indicators of learning tends to conceal the nuances and subtleties of different types of learning.

Some cohort studies have tried to disaggregate different types of learning, including a WBL study of the health and social capital benefits from learning (Feinstein et al. 2003;

Feinstein and Hammond 2004). In this study, the authors distinguished four broad types of learning: academic accredited courses, vocational accredited courses, employer-provided training, and leisure courses. Even this study, important as it is, was only able to disaggregate at a fairly high level of generality. It is not at all certain that the effects found for, say, accredited vocational courses were equally distributed across all types of vocational course, which included a vast range from an advanced General National Vocational Qualification (GNVQ) to a Level One NVQ. Nor is it clear whether the effects would be similar for all subjects and disciplines. There is no possibility of identifying the effects of particular approaches to learning and teaching.

Fourth, much of the research takes an undifferentiated view of learners. Researchers are able to show effects of learning as an average for all learners; they can also sometimes distinguish between the effects for men and women, or for workers and people outside the labour market. But as the analysis deals with smaller and smaller groups, so the reliability of the findings declines. So although it is helpful to know that learning seems to help people stop smoking or stay in work, we still do not know whether this was the case for all groups of learners, or whether there are significant variations between them.

Fifth, longitudinal data sets are essentially historical. They capture the experiences of particular generations, forged through time, and while it is important to demonstrate that learning has had particular effects, it is also essential to recognise the historical specificity of these experiences. For instance, the two most frequently-used cohort studies in Britain are of groups of people who were born in 1958 and 1970. These are invaluable data sets, and have been used widely to examine the effects of education and training. To take one example, some studies have produced detailed and convincing analyses of the effects of learning during the recession of the early 1990s. Based on a study of men, Gregg and Tominey produce compelling evidence that the long term wage penalty of being unemployed during youth was lower for people who then took educational qualifications between the ages of 23 and 33, while noting that relatively few of those who had experienced a lot of youth unemployment had taken qualifications (Gregg and Tominey 2005, 500). This is important, and is clearly relevant to policy decisions. Nevertheless, it relates to the experiences of people who became unemployed in one specific context, and then experienced the very specific conditions of the labour market of the late 1990s and early 2000s. It is not clear that the same outcomes will result for people who are unemployed in later periods, or for people from different age cohorts.

Sixth, again linked to the sequenced nature of longitudinal data, there is a risk that the theoretical frameworks that inspired the survey questions are out of date by the time that the results are being analysed (Bergman and Magnusson 1990, 25–6). Put simply, if we were collecting the data now, this means that we would have been asking different questions from the ones chosen five, 10 or 20 years ago.

Seventh, it is not possible to be confident about cause and effect. While the studies are very persuasive, since they control for as many other variables as possible, it is still possible that unobserved factors might explain both findings. In their major study, Feinstein and Hammond, for example, controlled for the effects of prior education and socio-economic statues. In an attempt to cater for the possibility of selection bias, they then conducted a further analysis controlling for further factors, including changes in life circumstances, measures of childhood attainments and developmental and family background factors, reporting that while introducing these factors did not alter the substantive findings, they did reduce the effect sizes (Feinstein and Hammond 2004, 208; Feintstein et al. 2003, 47–9). They also found that in some cases, changes in wider attitudes and behaviour preceded participation in learning, and so could not be an outcome of the learning (Feinstein and Hammond 2004, 213). This can only be clarified through further research.

Eighth, virtually none of the research on the benefits of learning identifies its costs. None of the studies I have seen even attempts to identify the costs of achieving a particular benefit. This reduces its value for policy-makers, who are required to compare any potential intervention with other ways of achieving similar ends (Behrman 2010).

Finally, there are some areas of well-being where there is no evidence – at least, not yet – of well-being effects from education and training. We do not yet have any evidence that learning prevents the onset of dementia (though it seems to delay the appearance of symptoms) nor that participating in adult learning can counter infant-acquired or genetic disabilities such as dyslexia or ADHD (though it is possible that it can help to address some of the problems that these disabilities produce). We should not over-state the case.

Some, of course, take the view that any analysis of the benefits of learning of this nature is intrinsically suspect. The application of social statistics to adult education research has been widely criticised. Interpretative and constructionist researchers note, reasonably enough, that quantitative data cannot tell us what people's responses actually mean to them, let alone how they construct and share the process of making meaning in their lives (Bagnall 1989). Of course, qualitative research is also problematic to the extent that self-reporting, including different understandings of benefits, and indeed learning, usually make generalisation extremely difficult, so that case studies often take the form of individual narratives, providing little if any evidence of general trends.

Some feminists argue that positivist research occupies a privileged status within both academic institutions and policy circles, allowing its exponents to pose as neutral and value-free when in reality their work is gendered and politicised (Jackson and Burke 2007, 26–7). The most obvious pitfall in this particular case is the possibility that, rather than measuring learning in some kind of neutral manner, the benefits of learning studies are actually constructing a definition of learning. There is also the question of the ways that this evidence is used (and abused) in wider policy debates, where 'learning' is frequently reduced to 'upskilling' and 'benefits' to 'employability and competitiveness'.

Despite these criticisms, and allowing for the gaps, I believe that the longitudinal studies represent a major advance in our knowledge of the economic, individual and social impact of learning. The WBL Centre's synthesis and theorisation of work on the social, health and family outcomes of learning is a particularly significant contribution, and marks a real breakthrough in combining different research methods to present and analyse a complex body of evidence on the ways in which people's learning can influence their well-being (Schuller et al. 2004). In turn, these studies provide a base which further work may develop. In addition to continuing policy-driven interest in lifelong learning, technical developments in the social sciences have made it increasingly possible to process and analyse large amounts of data, qualitative as well as quantitative. Thanks largely to rapid technological developments, it is now relatively easy to apply complex statistical techniques to large scale survey data, and analyse the findings in ways that control for other factors than educational participation. This allows researchers to identify causation, though such large data sets do not allow us to specify precisely what types of learning have which particular consequences – not yet, at any rate. This has proven a fruitful field of investigation, and although the findings need to be interpreted with caution, their significance for policy and practice is enormous. This field of research is therefore likely to thrive for some time.

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John Field is a Professor in the School of Education, University of Stirling. His recent books include *Improving learning across the lifecourse: Learning lives* (with Gert Biesta, Phil Hodkinson, Flora Macleod and Ivor Goodson), Routledge, 2011.

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