Title

Researching the Links between Education and Well-being

Journal

European Journal of Education, 43(1)

ISSN

0141-8211

Author

DESJARDINS, RICHARD

Publication Date

2008

DOI

10.1111/j.1465-3435.2007.00333.x

This is the accepted version of the following article:

Desjardins, R. (2008). Researching the links between education and well being, *European Journal of Education*, Volume 43, Number, pp. 23-36. https://doi.org/10.1111/j.1465-3435.2007.00333.x

European Journal of Education, Vol. ••, No. ••, 0

Researching the Links between Education and Well-being

RICHARD DESJARDINS

Introduction

This article focuses on some of the conceptual and empirical issues relating to the links between education and well-being. Many of these links are complex and often not well supported by a rigorous knowledge base, nor well understood. Certain outcomes, such as the wage and GDP growth effects of education, are an exception. These have received due attention, and a decent evidence base has therefore been built up. The importance of a well functioning economy ensures that research in this area will continue to thrive, but since there are many other outcomes that are equally important, perhaps it is merely their amenability to straightforward quantitative results that secures the attention of researchers and policy analysts, as well as financial support from policy-makers and research councils. Many researchers have investigated other educational outcomes but their results are less known (see Vila 2005, for a recent review of this work), precisely because the relationships involved are more complex. The latter implies two serious shortcomings in this area of research. Firstly, the relevant variables are difficult to assess using precise quantitative measures, and secondly, complexity combined with poor data make it more difficult to verify any causality that can be generalised.

Despite the complexity involved and the limitations of available measurements and other observations, progress has been made. The first part of the article discusses the ill-defined nature of what educational systems are suppose to achieve and how, and the implications this has for investigating the relationship between education and well-being. The second part reviews the overarching mechanisms at play and discusses some of the ways economists and political scientists have explored these. This is not exhaustive but provides an overview of distinct theoretical explanations for the potential causal links between education and well being. The third section discusses some empirical issues, especially the limitations of statistical and quantitative based measures and analyses.

The Ill-defined Nature of Educational Systems

There are, of course, intense debates to be had about what the objectives of education should be. But the broad set of individual and societal outcomes listed in Table I serves as a useful guide to what constitutes economic, social and personal well-being, and hence anchor the objectives of educational systems in modern societies. Knowledge, competences and capabilities that can lead to these are thus seen as key proximate outcomes for education to achieve. This is precisely

TABLE I. Various dimensions of well-being which are relevant in modern societies

What is a successful life?	What is a well functioning society?
Dimensions of a successful life that were identified include: •Economic positions and resources; •Political rights and power; •Intellectual resources; •Housing and infrastructure; •Personal health and security; •Social networks (social capital); •Leisure and cultural activities; and, •Personal satisfaction and autonomy in value orientation	Dimensions of a well-functioning society that were identified include: •Economic productivity; •Democratic processes; •Solidarity and social cohesion; •Human rights and peace; •Equity, equality and the absence of discrimination; and, •Ecological sustainability

Source: Gilomen (2003).

one of the key purposes of education: to facilitate the processes involved in developing and maintaining capabilities so as to generate well being, ranging from the economic to the social and personal aspects.

But how far are these various dimensions of well-being stated and recognised objectives of educational systems? What is the balance between various objectives and what should be the priorities? Are efforts to guide and manage educational systems, including the design and implementation of policy, and the training of administrators and teachers coherently geared toward these objectives? Are educational systems adequately evaluated and held accountable vis-à-vis such objectives? These are important questions for policy and research to address, but they are not straightforward. This is because the issue of what educational systems are supposed to achieve constitutes a *complex* and *ill-defined problem* (Simon, 1973). The objectives of education are not always known or clear. Firstly, setting these objectives is a political issue. Thus, it may be difficult to reach consensus on well-defined objectives or it may be disadvantageous to do so. Secondly, the knowledge base on what educational systems *can* and *do* achieve is very poor. It is common sense that education has an influence on individuals and society, but how and to what extent are still very much a matter of substantial debate. Unfortunately, due to the inherent complexity, the debate is not as well informed as it could be hoped.

Often, the objectives of education are reduced to proximate outcomes such as the attainment of certain skills, because, by assumption (and sometimes theory), these are commonly believed to lead to well-being. To date, most of the evidence base regarding the links between education and well-being rests on assumptions about the significance of proximate outcomes. Rarely, however, is the knowledge base adequate to favour emphasis on certain proximate outcomes over others. Still, this approach offers the opportunity for parsimony, measurability, and hence provides clear and manageable anchors which help to guide and keep educational systems accountable.

EU countries have now stated explicitly, albeit at a general level, that education and training systems should play a strategic role in promoting well-being, including

fostering competitive and dynamic knowledge-based economies, as well as social cohesion and active citizenship. The Education Council has adopted three overarching strategic objectives and 13 specific objectives to support this strategy (European Commission, 2002a; 2002b). Still, they are vaguely stated (e.g. 'developing skills for the knowledge society', 'making the best use of resources') so that the end states are not known (i.e. which skills and at what level). Furthermore, the broad significance of education in transmitting attitudes, values and beliefs, as well as knowledge, is not reflected in the current framework of objectives. Rather, there is an unduly narrow focus on skills. Are skills, values, attitudes and beliefs independent, or is there a necessary mix that is critical for generating capabilities that matter? Which attitudes and which values should education instil is not a well-defined issue, even though these are key proximate outcomes that have an impact on broader well-being.

How educational systems can achieve what they are supposed to is a separate issue. This also constitutes a complex and ill-defined problem. Even if the objectives are explicit, there is no single optimal way of achieving them.

The fact that educational systems are information poor adds to the ill-defined nature of the problem. Two aspects should be considered here. First, the data are insufficient to allow for an adequate empirical assessment of the links between the various aspects of the system (i.e. input → process → output → outcomes → impact (Desjardins, Garouste-Norelius & Mendes, 2004). Second, there is a lack [1] of coherent theories which reveal the alternative pathways and mechanisms that can link education and well-being (OECD, 2007). These two aspects are closely related because progress in measurement is needed to make progress in theory, and vice-versa. We need to develop theory to inform which data we should collect, guide empirical strategies, and interpret the results. Otherwise, there is a risk that the evidence base becomes stagnant and sharply biased in favour of what *can* be and has been measured. Thus, an equal emphasis should be placed on what we *should* measure. This requires further analyses of the *potential* role of education vis-à-vis a wide range of outcomes, as well as the complex links between the relationships involved.

In summary, educational systems constitute an ill-defined problem because:

- the objectives of education are not always known or clear;
- even if the objectives are explicit, there is no single optimal way to achieving them; and,
- there is not sufficient information to allow for adequate debate or solutions to the problem.

There is a need for the field of educational research to further build up the coherence of its theories.

The next section addresses the paucity and incoherence of theory in this area by briefly reviewing some of the major mechanisms and bringing them together to help to build a more complete picture. By necessity, this must draw on various disciplines. This can help to guide the collection of empirics to: a) build up the evidence base; and b) inform better the debate, and hence policies and management in education.

Mechanisms that Link Education and Outcomes

The following discusses three distinct mechanisms that can link education to well-being. They are useful because they help to link different levels of analysis and provide a more complete picture. Both political scientists and economists have approached each of these mechanisms in different ways. Building on the political science literature, Campbell (2006) referred to these as the *absolute*, *relative*, and *cumulative* models. Each model can be seen to have a similar counterpart in the economics literature, but they have not been coherently presented as alternative mechanisms as has been the case in the political science literature. Campbell operationalised the three models using data from the European Values Survey and European Social Survey in order to test which models best fit a wide variety of outcomes. The following describes the main premise and implications of each model, together with some empirical findings. A parallel is drawn with similar constructs used in economics.

Absolute Mechanism

The first mechanism involves an *absolute* effect, where education has a direct effect, by way of developing embodied resources and capabilities, which can influence well-being. This implies that what happens in schools, including the content, pedagogical methods, and the ethos and organisation of schools, matters for well-being. It presumes that educational experiences help people to cultivate knowledge, competences, values, attitudes, beliefs, and motivations that are relevant to achieve well-being. Insofar as this is the case, everyone would benefit from greater exposure to education and widening access to education would lead to an overall net positive effect.

In essence, the theory of human capital is a special case of the absolute model. It postulates that educational experiences have a direct influence on individuals by developing embodied resources and capabilities. The only difference, at least from how it was originally formalised by Schultz (1961) and Becker (1964), is that the effects of interest are narrowly limited to productive ability and hence the capacity to earn more. Many empirical studies seem to support this explanation, namely that more educated people earn more because education increases their productive capacity (Psacharopoulos, 2006). Still, the evidence base does not preclude alternative explanations such as the fact that educational credentials help people to gain access to better paid jobs, even if the education may do little by way of developing embodied resources (Stigler, 1961; Spence, 1973; Arrow, 1973). This is because of the inherent measurement and methodological problems in verifying these relationships (see next section).

What about the absolute effect of education on other outcomes, i.e. those beyond higher earnings and economic growth? Although less theoretically coherent and less methodologically rigorous, there is a mounting evidence base regarding the wider effects of education (Behrman & Stacey, 1997; McMahon, 1999; Wolf & Haveman, 2001; Schuller *et al.*, 2004; Baudelot *et al.*, 2005; Psacharopoulos, 2006; Feinstein *et al.*, 2006; Campbell, 2006; OECD, 2007).

Campbell (2006) tested the absolute model on a range of non-economic outcomes measures such as civic and political engagement and trust. As an example, his results imply that, if everyone had more years of schooling, society would have higher rates of associational membership and voting; and more

citizens would practise expressive forms of political engagement and report higher levels of institutional trust. The findings are preliminary, but they suggest that much more attention should be paid to these issues. The analysis builds on work by Verba, Nie & Kim (1978), Nie, Junn & Stehlik-Berry (1996), and Helliwell & Putnam (1999); it is an innovative quantitative estimation technique, in that it allows one to make a distinction between the absolute, relative and cumulative effects of education.

The approach seems promising but, as with other techniques, it needs to be supplemented with extensive analyses. The greatest drawback is that the effects vis-à-vis certain outcomes may not be linear, i.e. exposure to at least an upper secondary level of schooling may be necessary to ensure ecological sustainability, but additional years of exposure may do little in this regard. Hence, more attention should be paid to threshold effects. Furthermore, the effects may be conditional on individual life histories and on wider historical, social and cultural conditions that prevail in a given situation. There are other methods which are more appropriate for revealing this sort of contextual information. So there is a need to integrate a variety of methods, or the mixing of methods, to investigate more comprehensively the nature and conditions of the effects of education on well-being.

Relative Mechanism

The second mechanism involves a positional or sorting effect, where well-being outcomes depend on an individual's level of education in relation to others. Campbell (2006) called this the relative model. In essence, education has an impact on well-being by influencing the relative position of individuals in society. The main implication is that education is relevant not for developing embodied resources and capabilities, but for classifying individuals in the hierarchy of social relations in terms of their social status. This means that an across the board increase in education for everyone while maintaining unequal attainment would not lead to an overall change in well-being, i.e. the overall pecking order would remain the same and education would have little effect. There may be some re-distribution, however, so that some groups stand to gain, whilst others stand to lose. Still, the net effect would be zero-sum. Even so, this may be regarded as positive if those worse off were to gain at the expense of those best off, so that there was a net equity gain.

Again, there is a parallel with an economic application, namely signalling theories (Stigler, 1961; Spence, 1973; Arrow, 1973). In a similar way to the relative model, signalling theories postulate that educational credentials act as a sorting device by revealing information about individuals' productive ability. A major difference is that, in the relative model, education sorts more generally according to social status, whereas the signalling models sort only according to productive capacity. Robust evidence for signalling theories has proven to be elusive, although it is widely believed that this is an important alternative explanation to the observed correlation between education and earnings. Tuijnman (1989) reports that the highest level of education attained (as a credential) is a much more robust predictor of life-time earnings than years of schooling, which suggests that credentials matter.

Campbell (2006) found that amongst a variety of outcomes, those related to competitive forms of political engagement such as belonging to a party, or seeking

to influence politics via lobbying fit this model best. This has an intuitive appeal, since power is an important dimension of politics and may be regarded to largely depend on the relative position of individuals in a social hierarchy. So, by increasing social status, education may lead to increased political engagement outcomes. Revealing the complexity of the relationships, Campbell found that education had both absolute and relative effects on the likelihood of participating in voluntary associations, voting, and practising expressive forms of political engagement. The relative effect was weak compared to the absolute effect. Still, this implies that the extent of the absolute effect of education on these outcomes is attenuated by the sorting effects of education. This may in part explain why voting rates and a number of other indicators of civic engagement have remained stagnant or even declined (Putnam, 2000), whilst average levels of educational attainment have risen (OECD, 2007).

Cumulative Mechanism

The third mechanism involves a *cumulative* effect, where education can have an absolute effect, but the well-being outcome is conditional on the average level of education of the individuals' peers and/or surrounding groups. This means that certain effects of education are only likely to materialise amongst groups with similar levels of educational attainment, but also that the prevalence of the outcome increases with the average level. The implications are that there may be a cumulative pay off to education and that high levels of inequality in attainment may have adverse effects on well-being.

These types of effects are similar to what economists refer to as *externalities*. They arise when the decision to participate in education, which is made by one individual, not only benefits the individual but may also benefit others. The effect on others is not taken into account by the individual making the decision to invest, which, in theory, leads to an inefficient market solution. The presence of positive externalities reinforces the case for supporting education as a public good. But externalities can also be negative. For example, the decision to participate can increase the status of one individual at the expense of all those who have a lower level of attainment, i.e. the relative effect. For societies who place added emphasis on equity, this may be regarded as a negative effect. Generally however, the externality effects of education are regarded as positive. There is mounting evidence to suggest that education has externality effects on the economy, primarily in the form of growth effects, such as greater production of ideas and innovation (De La Fuente & Ciccone, 2002).

Applications of this or similar models to other aspects of well-being are less common (but see McMahon, 1999), even though it is potentially extremely significant as a basis for most arguments seeking to sustain education as a public good. In short, there is much broader scope for applying this model to a wide variety of outcomes.

Campbell (2006) found that the cumulative model best fits interpersonal trust. This makes sense. Individuals who have more education are not necessarily more trusting of others; but if others around them also have more education, then individuals are more likely to be trusting. By implication, societies with large disparities amongst groups in levels of educational attainment may have a general lack of trust amongst those groups. This is consistent with Green *et al.*'s (2004)

finding of a significant negative correlation between educational inequality and the level of general trust in a society. Therefore, the way in which education is distributed may have important implications for social cohesion. Research is needed to explore further the dynamic implications of inequalities in attainment on trust amongst groups and communities, and also whether diversity and social stratification impact on individual and group levels of trust.

The Role of Agency and Contexts

Together, the distinctions above are useful to build a broader picture of the links between education and well-being, but they ignore some details which are essential to gain a deeper understanding of how they relate to each other. The concept of agency as it is used in sociology and philosophy is important in this context — it signifies the capacity of an individual to act[1]. Thus, individual agency matters for well-being. Essentially, the absolute model refers to the effects of education that influence the capacity of individuals to act, i.e. to make choices and decisions and behave accordingly. This includes effects on cognitions, beliefs and psycho-social capabilities, as well as emotions, feelings, attachment and identity. These are all important in shaping learning behaviours and associated outcomes. The interaction of education with innate factors such as natural abilities can also be important. This perspective is much more comprehensive than conventional interpretations of human capital which usually limit themselves to the effect of education on knowledge and skills.

Furthermore, the way people behave cannot be taken out of its context of social relationships. So the concept of collective agency is equally important. Education affects individuals, as in the absolute model, but it also affects how individuals act, as in the relative and cumulative models. Firstly, education can have an influence on the contexts that people choose to inhabit, as well as on their opportunities to choose amongst contexts. Secondly, education can affect the structural conditions of choice, opportunity, authority and power. For example, schools play an important role in developing and sustaining the norms and networks that make up society (Coleman & Hoffer, 1987). Thus, education plays an important role in the formation and mobilisation of collective agency, either through socialisation or other civic related processes, and thereby influences the nature of contexts, including changes in workplaces, homes, communities and wider society. Thirdly, it can affect the distribution of resources in society by providing the opportunity and capacity to do so.

In turn, through individual and collective agency, education has an impact on institutional formation and reform, on the safety and nature of environments, on political stability, social cohesion and inclusion, the nature of social action itself, and the communication, transfer and dissemination of knowledge, all of which are critical aspects of well-being. It should be noted, however, that although these are all plausible links between education and well-being, we have little robust empirical knowledge on the nature and range of such effects or on the conditions needed to secure positive effects. Furthermore, there is much evidence to suggest that these potential effects are not necessarily positive. Indeed, the wider context of values and norms, especially with regard to morality, compassion, tolerance and inclusion, are key aspects to take into account because education can equally be used for evil purposes.

Empirical Issues and Limitations

Measurement

Valid and reliable measurement in the field of education is essential for at least three reasons. Firstly, it is an essential tool for effective policy and management in education. This presumes that measures are able to reveal information that helps to address the issue of how best to organise and manage systems so as to achieve the actual objectives. More precisely, it presumes that measures are meaningful and can be related back to systems and conditions for learning. Secondly, it is essential to ensure accountability, i.e. to inform the public about the performance of educational systems and how effectively their money is being spent on their behalf. But this presumes that outcome measures do justice to the nature of the actual objectives. Thirdly, measurement can contribute to research by identifying relationships; monitoring changes in those relationships; and the further development of measures. This last function feeds into the first two by helping to identify the levers where interventions are most likely to have the desired impact and the factors explaining the observed outcomes. But there are many limitations to the extent to which the current state of measurement in education actually fulfils these functions.

One issue is that the right measures are not always available. Another is that indicators and other analyses provide limited information. For example, education policy indicators, such as those developed and maintained by OECD's Indicators of National Education Systems (INES) or those derived from the European Commission's *Guidelines for the use of Indicators in country performance assessment* (2002c), add information to an otherwise information poor sector. Taken together, they reveal information about all parts of the educational system but each one usually only describes a particular feature, such as inputs, processes, outputs, outcomes and impacts. This fails to inform on the relationships between different parts of the system which is essential for most concepts that are useful for policy, management and accountability purposes. Concepts such as effectiveness, relevance, efficiency and quality all transcend various parts of the system. Thus more complex indicators are needed to analyse the interrelationships between the different parts of the system (Bottani & Tuijnman, 1994, p. 32). The difficulty arises in determining which parts or variables to relate to each other; and in the availability of appropriate data that are affordable and accessible. For example, in assessing the efficiency of producing maths achievement on PISA tests, is it more appropriate to relate maths scores to the total cumulative spending per student from age 5 to 15, or the total time spent learning mathematics from age 5 to 15? Theory suggests that the latter is sounder (Fraser *et al.*, 1987) and hence of potentially more value, but, in practice, it would be difficult to obtain these data.

A separate issue is whether existing outcome measures do justice to the nature of actual objectives. Accountability that is driven by measurement carries the risk that educational systems are guided by what can be measured rather than by the actual objectives. For example, teaching to the test is a real concern; so is an over-emphasis on certain outcomes that favour science and technological development outcomes vs wider outcomes that relate to socialibility and civicness. Still, measures that are unduly narrow can help us to make headway as long as the limitations are known and taken into account.

Statistical and Quantitative Analyses

An underlying purpose for measuring the effects of education is to estimate findings that can be generalised. This can provide policy-makers and others with a reasonable guide to the *probable* impact of a policy change. Any attribution of causality to education implies that the *probability* of the effect increases, not that education will necessitate an effect. Statistical and quantitative analyses offer powerful tools for estimating probable and generalisable impacts of education and associated changes. But there are limitations to the use of such methods.

Firstly, much of the educational research that seeks to produce valid and reliable results that can be generalised regarding the effects of education on the economy and wider society is limited to an analysis of the effect of the number of years spent in schooling or the highest credential attained. This says little about what it is about education that matters and produces those effects. We know very little about the impact of different curricula on wider society, or about different pedagogical methods and ways of organising and running schools. An over-reliance on quantitative and qualification based measures has neglected qualitative evidence and theoretical perspectives, which argue that the effects of education depend just as much on the nature and quality of learning provision as on the number of years spent in schooling. To move beyond this, we need to look more carefully at what happens during learning experiences and expand the range of measures to include the more qualitative dimensions of learning environments. The knowledge base for identifying which features should be measured and how is not strong, although there is an increasing amount of good data sources which can provide some insights.

Secondly, this approach focuses on average effect sizes. This makes identifying sub-groups in which the structure of the relationships is inherently different very important. Otherwise, a positive effect for some sub-groups may be offset by a negative effect for some other groups, leading to an inaccurate evaluation of the significance of education. Providing there are sufficient sample sizes, the quantitative analyses can be separated by group (e.g. by gender), which can partly offset these problems. Still, it must be recognised that the effects are averaged and do not necessarily reflect real impacts for every individual. Further, without an understanding of the contextual conditions that are needed to secure the average effect, the information is of limited value.

Thirdly, not enough attention is paid to the mechanism for observed effects. That is, the theory becomes secondary to empirical estimation. The mechanism, however, remains crucial to interpret meaningful results and draw conclusions for policy and practice. That is why the distinction between the absolute and relative (positional) mechanisms for the effect of education is so important. Without knowing the extent to which each type of mechanism is responsible for the effects of education, one cannot predict with great confidence what the impact would be of policy changes that brought about substantial adjustments to the current distribution of education. Conducting more advanced statistical modelling, such as structural equation modelling, can partly offset these problems.

More emphasis should be placed on complementing statistical analyses with qualitative evidence, or on mixing methods (Johnson & Onwuegbuzie, 2004; Cook & Gorard, 2007). This would help to address the above limitations and allow for a more precise understanding of how education leads to well-being. In turn, this may

help to draw up more meaningful implications for both policy and practice in relation to curricula and pedagogy at different ages and stages.

Assessing the Causal Effects of Education

A common problem arises in the research literature that assesses educational outcomes; empirical associations are often taken as the causal effect of education. Little is known about the effects of education in a more careful empirical and theoretical setting. More coherent theories would be helpful to locate and acknowledge such potential problems. In some cases, it is possible to correct existing difficulties so as to improve the robustness of the analyses.

In the absence of controlled experiments, it is very difficult to identify causation with certainty. Many aspects of the notion of causality are relevant for the study of educational outcomes (Cook & Gorard, 2007). The following outlines two limitations which must be carefully considered when conducting causal analyses and interpreting results.

Firstly, determining the direction of causality, if any, is difficult. Since the cause always precedes the effect, the temporal order of events is the easiest precondition to suggest the direction. But because human and social phenomena are often subjected to dynamic interactions over time and space, causality often runs both ways. The only other precondition is a theoretical basis which suggests that there is at least some degree of dependency between the cause and the effect. This, however, does not preclude the possibility of reverse effects. Theory is therefore crucial for inferring causality.

Secondly, people do not receive education in a random fashion. This means that individuals who attain higher levels of education may have characteristics that differ systematically from those who receive less exposure to education. These characteristics are often referred to as 'third factors' because they can affect both education and well-being. If third factors are omitted in an analysis of the causal effect of education on well-being, then the effect attributed to the amount of education received can be over-estimated. This is because there is high probability that individuals with more education will tend to have many other advantages and capabilities that independently lead to well-being. An ideal way to address this problem would be to randomise the opportunity to receive education, but this is not ethical; so alternative methods are necessary to ensure robustness. Estimates based on Ordinary Least Squares regression, for example, do not address these problems. Economists have been concerned with this issue for some time and have thus used alternative techniques (e.g. instrumental variables estimation, twin studies, natural experiments) to assess the effect of the number of years of schooling on earnings (Card, 1999).

While randomising the opportunity to receive education is not a possibility, randomising the nature of educational exposure is. Although it is not common practice, it is conceivable to think of experimental interventions that would be feasible such as randomising the adoption of particular curricula, pedagogical methods, or school-based voluntarism. A growing number of education and other researchers are beginning to encourage this sort of randomisation in education (Angrist, 2003; Cook & Gorard, 2007).

Finally, it is important to stress that most assessments of causality in education are *ad hoc*. This has important implications for interpreting the significance of

causal analyses. For example, if it was never the intention of education to influence the smoking behaviour of individuals then we should be cautious in judging whether education can have an effect on smoking. Whilst numerous factors are likely to be responsible for various aspects of well-being, schools are a promising lever to project various influences. Policy-makers have a direct hand in the design and implementation of a nation's system of education, and so it is logical to look to schools as a means of enhancing well-being. The important question remains, how? From this perspective, *ad-hoc* causality type studies are at best exploratory in nature, no matter how robust they are, and are not conclusive as to whether real effects exist. Still, they can help to reveal relationships that need to be considered further, both scientifically and politically.

Conclusion

There are many important questions for education policy and practice to address but because educational systems constitute a complex and ill-defined problem, these are not straightforward. This means that the debate surrounding education is not as well-informed as it could be hoped. Furthermore, the objectives of education are consequently reduced to proximate outcomes such as the attainment of certain skills which can be identified and measured. This offers the opportunity for parsimony and provides clear and manageable anchors from which to guide and keep educational systems accountable. But rarely is the knowledge base adequate to favour emphasis on certain proximate outcomes over others.

Even if the objectives of education are adequately debated and explicit, there is no single optimal way of achieving them. Furthermore, there is no theoretical consensus or coherence about the alternative pathways and mechanisms in order to attain these objectives. As such, there is a need for the field of educational research to build up further the coherence of its theories, and inform better on which relationships we should measure and monitor, otherwise, the evidence base will remain stagnant and become increasingly biased in favour of what can be and has been measured. One must also ensure that there continues to be sufficient information to allow for adequate debate or solutions to the problems.

Beyond a further build up of theory that can guide the collection of better data and development of measures, we need better analyses and empirical testing using mixed methods. Together, these are necessary to build up a well balanced evidence base that can inform the debate. But this requires recognition of the full cycle of complementary phases and activities which underlie the research process. Moreover, it requires recognition of the empirical limitations of the various methods used in educational research, especially those that seek to produce generalisable results as to the likely effects of specific policies and practices.

NOTE

1. The term agent is used slightly differently in economics and in law. The law of agency concerns the relationship between principals (usually the owner), agents (person who acts on behalf of owners), and third parties (Coleman, 1990, p. 17).

REFERENCES

ANGRIST, J. (2003) *Randomized Trials and Quasi-Experiments in Education Research, National Bureau of Economic Research Reporter: Research Summary* (http://www.nber.org/reporter/summer03/angrist.html).

ARROW, K. J. (1973) Higher education as a filter, *Journal of Public Economics*, 2, pp. 193–216.

BAUDELOT, C., LECLERCQ, F., CHATARD, A., GOBILLE, B. & SATCHKOVA, E. (2005) *Les Efffets de l'Éducation* (Paris, La Documentation Française).

BECKER, G. S. (1964) *Human Capital: A Theoretical and Empirical Analysis with Special References to Education* (Editions revised in 1975 and 1993) (Chicago, University of Chicago Press).

BEHRMAN, J. R. & STACEY, N. (Eds) (1997) *The Social Benefits of Education* (Ann Arbor, University of Michigan Press).

BOTTANI, N. & TUIJNMAN, A. (1994) International education indicators: framework, development and interpretation, in: OECD (Ed.) *Making Education Count: Developing and Using International Indicators*, pp. 21–36 (Paris, OECD).

CAMPBELL, D. E. (2006) What is education's impact on civic and social engagement? in: R. DESJARDINS & T. SCHULLER (Eds) *Measuring the Effects of Education on Health and Civic/social Engagement*, pp.25–126 (Paris, OECD/CERI).

CARD, D. (1999) The causal effect of education on earnings, in: O. ASHENFELTER & D. CARD (Eds) *Handbook of Labour Economics*, pp. 1801–1863 (Oxford, Elsevier Science).

COLEMAN, J. S. & HOFFER, T. B. (1987) *Public and Private High Schools: The Impact of Communities* (New York, Basic Books).

COLEMAN, J. S. (1988) Social capital in the creation of human capital, *American Journal of Sociology*, 94 (Supplement), S95–S120.

COLEMAN, J. S. (1990) *Foundations of Social Theory* (Cambridge, MA, Harvard University Press).

COOK, T. & GORARD, S. (2007) What counts and what should count as evidence, in: OECD (Ed.) *Evidence in Education: Linking Research and Policy*, chapter 2 (Paris, OECD/CERI).

DE LA FUENTE, A. & CICCONE, A. (2002) *Human Capital in a Global and Knowledge-based Economy* (Brussels, European Commission).

DESJARDINS, R., GARROUSTE-NORELIUS, C. & MENDEZ, S. (2004) *Benchmarking EU Education & Training Systems: An International Comparative Study* (Stockholm, Institute of International Education).

EUROPEAN COMMISSION (2002a) *European Benchmarks in Education and Training: Follow-up to the Lisbon European Council* (Brussels, European Commission).

EUROPEAN COMMISSION (2002b) *Detailed Work Programme on the Follow-up of the Objectives of Education and Training Systems in Europe* (Brussels, European Commission).

EUROPEAN COMMISSION (2002c) *Guidelines for the use of Indicators in country performance assessment* (Brussels, European Commission).

FEINSTEIN, L., SABATES, R., ANDERSON, T. M., SORHAINDO, A. & HAMMOND, C. (2006) What are the effects of education on health? in: R. DESJARDINS & T. SCHULLER (Eds) *Measuring the Effects of Education On Health and Civic/social Engagement*, pp. 171–354 (Paris, OECD/CERI).

Fraser, B. J., Walberg, H. J., Welch, W. W. & Hattie, J. A. (1987) Syntheses of educational productivity research, *International Journal of Educational Research*, 11, pp. 145–252.

Gilomen, H. (2003) Desired outcomes: A successful life and a well-functioning society, in: D. S. Rychen & L. H. Salganik (Eds) *Key Competencies: For a Successful Life and a Well-Functioning Society* (Cambridge, MA, Hogefe and Huber).

Green, A., Preston, J. & Malmberg, L.-E. (2004) Non-material benefits of education, training and skills at a macro level, in: P. Descy & M. Tessaring (Eds) *Impact of Education and Training. Third Report on Vocational Training Research in Europe: Background Report* (Cedefop, Thessaloniki).

Helliwell, J. F. & Putnam, R. D. (1999) *Education and social capital*, NBER Working Paper W7121 (Cambridge, MA, NBER).

Johnson, B. & Onwuegbuzie, A. Q. J. (2004) Mixed methods research: A research paradigm whose time has come, *Educational Researcher*, 33, pp.14–26.

Mcmahon, W. (1999) *Education and Development: Measuring the Social Benefits* (Oxford, Oxford University Press).

Nie, N. H., Junn, J., & Stehlik-Barry, K. (1996) *Education and Democratic Citizenship in America* (Chicago, University of Chicago Press).

OECD (2007) *Understanding the Social Outcomes of Learning* (Paris, OECD).

Psacharopolous, G. (2006) The value of investment in education: theory, evidence and policy, *Journal of Education Finance*, 32, pp. 113–126.

Putnam, R. D. (2000) *Bowling Alone: The Collapse and Revival of American Community* (New York, Simon and Schuster).

Schultz, T. W. (1961) Investment in human capital, *American Economic Review*, 51, pp. 1–17.

Schuller, T., Preston, J., Hammond, C., Brassett-Grundy, A. & Bynner, J. (2004) *The Benefits of Learning: The Impact of Education on Health, Family Life and Social Capital* (London, Routledge Falmer).

Simon, H. A. (1973) The structure of ill-structured problems, *Artificial Intelligence*, 4, pp. 181–204.

Spence, A. M. (1973) Job market signaling, *Quarterly Journal of Economics*, 87, pp. 355–374.

Stigler, G. (1961) The economics of information, *Journal of Political Economy*, 69, pp. 213–225.

Tuijnman, A. C. (1989) *Recurrent Education, Earnings, and Well-being: A fifty-year longitudinal study of a cohort of Swedish men* (Stockholm, Almqvist and Wiksell).

Verba, S., Nie, N. H. & Kim, J.-O. (1978) *Participation and Political Equality: A Seven-Nation Comparison* (Chicago, University of Chicago Press).

Vila, L. E. (2005) The outcomes of investment in education and people's well-being, *European Journal of Education*, 40, pp. 3–11.

Wolfe, B. & Haveman, R. (2001) Accounting for the social and non-market benefits of education, in: J. F. Helliwell (Ed.) *The Contribution of Human and Social Capital to Sustained Economic Growth and Well-being*, chapter 11, (Ottawa, Human Resources Development Canada).