Education and Quality of Life

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The Importance of Education and Its Connection to Quality of Life

The purpose of formal education, of schooling, can be broadly conceptualized as fourfold—socialization, allocation, economic production, and legitimation—with each process interrelating with the others.

Socialization

Schooling is a primary means for the transmission of culture and passing along of values, knowledge, and skills deemed important in a society and for the responsible participation of citizens within that society. This socialization function has, in recent decades, increasingly come to encompass training and preparation for productive employment in the globalizing "knowledge economy." Critical theorists point to the "hidden curriculum" embedded within the formal education system which instills in students the patterns of thought and behavior compatible with modern capitalist society. Others point to the upper and middle-class values (e.g., achievement orientation, extended time horizon) imbuing formal education and the cultural, material, and social advantages incumbent upon their acquisition.

Allocation

The formal education system is also a means of rationing opportunity, of differentiating and allocating individuals into different positions within a society's social stratification structure; attainment of educationally contingent credentials is linked to occupational trajectory, income, and attendant life chances. Depending on the chosen theoretical perspective, the formal education system can be seen as promoting social mobility or curtailing it, the weight of empirical evidence suggests it does both to varying degrees (Hout and DiPrete 2006). Functionalist and liberal approaches see stratification as an inevitable feature of education as an allocative mechanism; individuals of differing ability and motivation are sorted out according to the needs of society and/or the economy. Critical approaches emphasize the allocative inequities within education systems, contending that formal education systems tend to reproduce existing social inequalities. Functionalist and liberal accounts emphasize the notion of equal educational opportunity; all children should have access to public education, but that ultimately meritocratic competition will ensure that the "cream rises to the top." Critics see claims of equal opportunity as illusory and argue that children are already on unequal footing when they enter the formal education system and that these disparities tend to grow and multiply at successive levels, such that over their educational careers, those from privileged backgrounds experience a cumulative advantage over their less fortunate peers.

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Employment and Economic Development

Increasingly education is seen as vital cog in a country's economic engine, both in terms of training, and research and development. One prominent economic rationalist approach, *human capital theory*, focuses on returns to investment in education: education and training (human capital[1]) increase worker productivity and hence the value of educated workers. Thus, individuals who invest time, energy, and money into education do so with the expectation of securing a better job and enhanced lifetime earnings. At the individual level, increasing education (human capital) increases worker productivity and thus garners better employment and income for the individual. At the social or aggregate level, general increments in the stock of human capital are supposed to increase overall productivity, prosperity, and social cohesion (OECD 1998, 2001). Many governments have embraced this policy rationale even though definitive evidence of the macro-level effects of human capital investment remains rather elusive (e.g., Barro 2001; McMahon 1997, 1999, 2000; Helliwell 2001; Sweetman 2002; Krueger and Lindahl 2001).

Legitimation of Knowledge and Status

A contrarian screening or signaling hypothesis exists which questions the strength of the education-productivity relationship. This hypothesis argues that it is just as likely that it is not the increased level of knowledge *per se* that enhances a person's educational returns but rather what the attainment of a particular credential signifies to employers about the characteristics of a potential employee (i.e., that they have the value orientations, motivation, habits, etc., sought by or familiar to the employer). A related aspect of such credentialism is professionalization, by which certain occupational groups seek to elevate the status of their work (and corresponding level of compensation). This is done by, among other means, establishing institutionalized authority over a specialized area of knowledge and practice (such as medicine or accountancy) and limiting professional membership by requiring certain higher education credentials. This gatekeeping function is a form of social selection that contributes to the stratification within society, as various occupational groups seek to establish or maintain the relative advantages of institutionally sanctioned expertise. Accordingly, the acquisition of certain education-contingent professional credentials has a potent effect on a person's standing within society's socioeconomic structure.

From this brief review of the basic purposes of formal education within modern western society, it is apparent that schooling is integrally related to life chances, both in terms of those who are afforded (and equipped to capitalize on) educational opportunity and those who are excluded from or afforded less opportunity. Indeed, there is a vast body of literature documenting various aspects of this relationship across regional, national, and international contexts. It follows that if education affects life chances, then it also has the potential to affect quality of life. The contemporary tendency to view education as remedy for various social and economic ills is testament to its perceived importance to quality of life. For example, the Organization for Economic Cooperation and Development (OECD) enthusiastically advocates investment in human capital as a strategy for overcoming labor market challenges in the global economy, increasing individual opportunity and national economic productivity, as well as contributing to the resolution of a host of social problems (OECD 1998, 1999a, 2001).

UNESCO (2000: 8) also underscores the fundamental nature of the connection between quality of life and education in its assertion that

> …all children, young people and adults have the human right to benefit from an education that will meet their basic learning needs in the best and fullest sense of the term, an education that includes learning to know, to do, to live together and to be. It is an education geared to tapping each individual's talents and potential, and developing learners' personalities, so that they can improve their lives and transform their societies…Without accelerated progress towards education for all, national and internationally agreed targets for poverty reduction will be missed, and inequalities between countries and within societies will widen.

Defining Quality of Life

The term "quality of life" (QoL) is rendered somewhat problematic by its broad application in different contexts for different purposes by analysts working within

[1] Human capital is succinctly defined by the OECD (1998: 9) as "the knowledge, skills, competences, and other attributes embodied in individuals that are relevant to economic activity." Highest level of education attained and/or number of years of schooling are the most common operational definitions of human capital.

various distinct academic disciplines (Rapley 2003; Phillips 2006).[2] While the generic connotations of the term may be cursorily familiar to most people, its multidimensional and multidisciplinary scope makes more precise conceptualization a task rife with inconsistency and ambiguity. At base, ascertaining quality of life involves some assessment of welfare, whether of the individual or of the collective, and this assessment typically involves objective (i.e., measurable in terms of quantity or frequency) and subjective (i.e., measurement contingent on the perception of the particular individual) indicators. Defining what constitutes welfare or the requisite conditions for the "good life" is itself a value-laden enterprise and underscores the normative footings of quality of life research (particularly the search for "objective" indicators). Often, which indicators—subjective or objective—and which level of aggregation—e.g., individual, family, community, nation—a researcher is interested in depend on the discipline within which that researcher is working. One of the characteristic difficulties in QoL research is that subjective and objective indicators are often poorly correlated, and so it is common practice to include both in research (Rapley 2003; Cummins 1997). Subjective measures typically involve self-report surveys or interviews. Common examples of objective measures include per capita income, life expectancy, morbidity rates, literacy rates, average or median level of educational attainment, and unemployment rates.

Given space considerations, the present chapter will primarily focus on the relationship between education and quality of life outcomes at the individual/familial level. Circumscribing our topic in this way also aids the choice of a definition of quality of life. Rapley (2003) considers a number of proposed definitions of quality of life at various levels of aggregation. He suggests that the most influential individual-level definition of quality of life is that posited by Robert Cummins (and operationalized by the Comprehensive Quality of Life Scale[3]). Cummins (1997: 132) defines quality of life in terms of both subjective and objective dimensions, with each dimension consisting of seven domains: "material well-being, health, productivity, intimacy, safety, community, and emotional well-being. Objective domains comprise culturally relevant measures of objective well-being. Subjective domains comprise domain satisfaction weighted by their importance to the individual." These domains each contribute to overall quality of life. Cummins (1996) conducted a meta-analysis of 32 articles purporting to measure variously 173 dimensions of quality of life (invoking 351 labels) and found that the seven COMQoL dimensions incorporated 83% of the dimensions reported. Haggerty et al. (2001) review 22 prominent QoL indexes and conclude that the seven domains posited by Cummins currently provide the most useful standardized taxonomy for discussing QoL domains.

This chapter uses (with slight modifications) these 7 QoL domains—Material Well-being/Standard of Living, Productivity/Achieving in Life, Emotional Well-being/Resiliency, Health, Community, Relationships/Intimacy, Personal Safety/Future Security—as an heuristic framework to organize an overview of research (primarily in the fields of economics, psychology, and sociology) conducted since 1990 on the relationship between education and quality of life.[4] It should be noted that while we have in several sections drawn attention to the importance of comparison across national contexts, the preponderance of research considered here is focused on the United States. We will first briefly mention education as an indicator of quality of life (output or outcome), and then we will offer a more extensive review of evidence on education as a cause (throughput) of quality of life.

[2] See Sirgy et al. (2006) for an overview and progress report of QoL research across several prominent fields of inquiry.

[3] The ComQoL was abandoned in 2001 due to persistent problems with the instrument (see Cummins 2002). Cummins and associates subsequently established the International Wellbeing Group that is developing a new quality of life measurement, the Personal Wellbeing Index (International Wellbeing Group 2006). In the PWI, the original ComQoL domains have been modified slightly and an eighth added. Thus, the PWI quality of life domains are standard of living, health, achieving in life, relationships, safety, community-connectedness, future security, and spirituality/religion. While the PWI itself is intended only to measure subjective satisfaction within these domains, one of the criteria for domain selection was commensurability with objective measurement (or at least the possibility of objective measurement when suitable indicators are established) of each domain as well (International Wellbeing Group 2006).

[4] The literature review was conducted using the following databases: Education: A SAGE Full-text Collection, Psychology: A SAGE Full-text Collection, Sociology: A SAGE Full-text Collection, ERIC, CSA Sociological Abstracts, EconLit, and PsychINFO. In addition to quality of life, other potentially equivalent keywords used in the search included wellbeing, wellness, standard of living, happiness, subjective wellbeing, life satisfaction, benefits.

Education as Quality of Life Indicator

Extending from the belief in education as integral to life chances is the assumption that educational indicators (e.g., enrolment rates, average scores on standardized achievement tests) are also social indicators or markers of the distribution of living conditions within a society. Social indicators are statistical tools useful to policymakers for monitoring various aspects of social systems and for guiding the implementation and evaluation of policies directed at improving and maintaining quality of life (Ferris 1988; Land 2000). Numerous indexes of quality of life or well-being include education as an indicator, for example, the Human Development Index (UNHDP 2003), Quality of Life (Diener 1995), and Index of Social Progress (Estes 1997) each incorporate some measure of educational participation and literacy rates. Other prominent examples of QoL measures that variously incorporate education indicators include Johnston's (1988) QoL Index, the International Living Index (see Haggerty et al. 2001), Miringoff's Index of Social Health (Miringoff et al. 1996, Miringoff and Miringoff 1999), Michalos' (1980–82) North American Social Report, Netherland's Living Conditions Index (Boelhouwer and Stoop 1999), and the Swedish ULF system (Haggerty et al. 2001). The rest of this chapter will focus on education not as a macro-level indicator of quality of life but rather as a primary factor affecting and affected by individuals' quality of life, both directly and indirectly.

Education Effects by Quality of Life Domain

Achieving in Life

Level of educational attainment itself is an indicator of achievement in that particular levels of educational credentials are associated with particular levels of educational attainment or performance. In the labor market, individual academic credentials signify to employers a particular history of achievement or performance by their holder and by extension, the future performance potential of that individual as an employee. More specific vocational credentials may signify that an individual is formally qualified (i.e., has completed the requisite training) for a particular job.

It follows that educational achievement is crucial to occupational status attainment as well. Hauser et al. (2000: 197) analyzed several national survey datasets from the USA and concluded that the net effect of education on occupational status (controlling for mother's and father's education levels, family head's occupational status, and several other relevant social background variables) is much greater for high school and postsecondary education than for sub-high school levels of education. Similarly, using longitudinal data from the Wisconsin Longitudinal Survey, they document a substantial and enduring positive effect for post-high school education on occupational status over the lifespan, adjusting for social background, ability, and various socialpsychological variables (Hauser, et al. 2000: 225).[5]

Pascarella and Terenzini (2005) identify several net effects of higher education on labor market success. With regard to occupational status, they find that a bachelor's degree provides a substantial advantage over a high school diploma. An associate (i.e., 2-year) degree provides a moderate status advantage, while lesser amounts of postsecondary education or sub-baccalaureate credentials, such as vocational diplomas, provide a modest advantage. In terms of labor force attachment, their gathered evidence generally indicates a positive association between amount of postsecondary education and workforce participation and, conversely, a negative association between amount of postsecondary education and likelihood of unemployment. As well, workers with postsecondary education are more likely to rise to supervisory roles (Ross and Reskin 1992; Bound et al. 1995; Krahn 2004).

Intergenerational Effects

In all OECD countries, educational achievement is strongly linked to the occupations, education, and economic status of students' parents, although the magnitude of the relationship differs across counties (UNICEF 2002). There is a well-documented positive relationship between parental education and child education level and cognitive development (Wolfe and Haveman 2001). Conversely, poor education is associated with a

[5] Hauser and Sewell have developed a socialpsychological model to account for impact of social background and education on occupational status (Hauser et al. 2000: 209–210; Sewell and Hauser 1992a; b).

number of detrimental intergenerational consequences (Haveman and Wolfe 1994, 1995; Maynard and McGrath 1997: 127). Wolfe and Haveman (2001) observe that there are two paths of influence generally identified in the literature, a direct path (via better choices and investments by parents) and an indirect path (contextual effects—such as better quality human and social capital—of the neighborhoods in which children are raised). They review a number of studies and conclude there seems to be a strong relationship between number of years of parental schooling and several important outcomes for their offspring such as school performance, teenaged childbearing, health, and criminal behavior. As well, Wolfe and Haveman (2001; Ginther et al. 2000) identify a "persistent" (although not unanimous) pattern of findings linking neighborhood contextual variables with offspring outcomes such as schooling, teenaged childbearing, and criminal activity.

Parental postsecondary attendance has a net positive effect on the high school math and science scores of a child. The effect seems to be largely accounted for by the relatively learning-enriched or intellectually stimulating home environment ("learning capital") provided by more educated parents (Pascarella and Terenzini 2005: 590; Feinstein et al. 2004). Educated parents are not only more likely to cultivate the disposition and the capacity to learn but are also more apt to ingrain an appreciation and enjoyment of learning along higher achievement expectations (Krahn 2004). Reared in more cognitively enriching home environments from an early age (UNICEF 2002), children from socioeconomically advantaged backgrounds enter formal schooling with a greater "readiness to learn." Conversely, Miech et al. (2001) found that children from lower SES backgrounds are more likely to enter the education system with lower levels of self-regulation[6] which is associated negatively with school adjustment outcomes—even when family background is controlled for. Haas (2006) found that socioeconomic disadvantage is associated with poorer childhood health, which, in turn, has significant negative effects on educational attainment and adult socioeconomic status (occupational earnings, wealth) over the life course.

[6] "Specifically, self-regulation refers to processes, such as the tendency to maintain attention on a task and to suppress inappropriate behavior under instructions" (Miech et al. 2001: 103).

More educated parents are also more likely to settle in neighborhoods where not only are there more stimulating and supportive public resources, but where their children interact—in school and out—with peers primed in similarly enriched home environments and frequently exposed to high-achieving adult role models (Feinstein et al. 2004). There is also some evidence that student's performance is affected by peer grouping, with students benefiting from immersion in context of high performing peers and high expectations (Davies 1999; Ho and Willms 1996; Frempong and Willms 2002; Feinstein et al. 2004).

Furthermore, the early educational advantage tends to persist at successive educational levels (Kerckhoff and Glennie 1999). Students whose parents attended postsecondary institutions are more likely to pursue postsecondary education themselves, more likely to attain a first degree, and are more likely to continue on to graduate or professional school. For instance, students whose parents attended a postsecondary educational institution are twice as likely to complete a bachelor's degree as first generation students (those whose parents did not attend). While students whose parents hold bachelor degrees are five times as likely as first generation students to also earn one (Pascarella and Terenzini 2005). The children of university-educated parents are also much more likely to enter into managerial or professional occupations (Krahn 2004).

Material Well-Being/Standard of Living

Space limitations prevent a comprehensive treatment of the socioeconomic returns to education literature, so we will content ourselves with touching on some of the basic findings. Educational attainment directly effects occupational status (one's initial level of entry and subsequent stability of attachment to the labor market), and both contribute to determining how much one earns (Tachibanaki 1997). OECD data on employment and unemployment rates by level of education generally demonstrate this, as seen in Tables 12.1 and 12.2. On average across OECD countries, the probability of unemployment decreases while the probability of employment increases with higher levels of education. In terms of earnings premiums for higher levels of education, Table 12.3 shows that, on average, across OECD countries, those with less than upper secondary

Table 12.1 Trends in unemployment rates by educational attainment (1991–2004)

Number of 25- to 64-year-olds in unemployment as a percentage of the labor force aged 25–64, by level of educational attainment[a]								
		1995	1998	2000	2001	2002	2003	2004
OECD average	Below upper secondary	10.8	9.5	9.1	8.9	9.4	10.2	10.4
	Upper secondary and postsecondary non-tertiary	7.3	6.4	5.8	5.6	5.9	6.2	6.2
	Tertiary education	4.6	4.1	3.6	3.3	3.8	4.0	3.9

Source: Table A8.4a in OECD (2006)
[a]International Standard Classification of Education (ISCED), see Appendix for definitions of educational levels

Table 12.2 Trends in employment rates by educational attainment (1991–2004)

Number of 25- to 64-year-olds in employment as a percentage of the population aged 25–64 by level of educational attainment								
		1995	1998	2000	2001	2002	2003	2004
OECD average	Below upper secondary	57	57	57	57	57	56	56
	Upper secondary and postsecondary non-tertiary	73	75	75	75	75	74	74
	Tertiary education	84	85	85	85	84	83	84

Source: Table A8.3a in OECD (2006).

Table 12.3 Relative earnings of the population with income from employment

By level of educational attainment and gender for 25- to 64-year-olds and 30- to 44-year-olds (upper secondary education = 100)						
		Below upper secondary education	Postsecondary non-tertiary education	Tertiary-type B education	Tertiary-type A and advanced research programs	All tertiary education
Australia	2001	77	NA	106	148	133
Belgium	2002	91	NA	114	152	132
Canada	2001	79	105	115	177	143
Czech Rep.	1999	68	NA	151	180	179
Denmark	2001	87	118	114	127	125
Finland	2001	95	NA	121	181	150
France	2002	84	NA	125	167	150
Germany	2002	78	116	120	161	146
Hungary	2001	77	131	164	210	210
Ireland	2000	87	82	124	163	149
Italy	2000	78	NA	NA	138	138
Korea	1998	78	NA	106	147	135
Netherlands	1997	85	121	139	144	144
New Zealand	2001	74	NA	NA	133	133
Norway	2002	85	125	155	135	137
Portugal	1999	62	NA	141	192	178
Spain	2001	78	NA	95	141	129
Sweden	2001	89	127	110	148	135
Switzerland	2003	76	112	141	168	158
UK	2001	67	NA	128	174	159
USA	2002	71	120	118	195	186
Average		79	116	126	161	150

NA not applicable or data not available
Source: Table A11.1a in OECD (2006)

education earn 21% less than individuals with upper secondary education (i.e., high school diploma); individuals with postsecondary but non-tertiary education earn 16% more. Individuals with type B tertiary education (i.e., technical/vocational training) earn 26% more than those with upper secondary education while those with type A tertiary education (usually university) enjoy the greatest advantage of all, earning 61% more. The table also indicates that the steepness of this educational-level earnings gradient varies substantially across countries.

Card (1998) conducted an extensive review of the economic literature pertaining to the impact of education on earnings and concluded that "A unifying theme in much of this work is that the return to education is not a single parameter in the population, but rather a random variable that may vary with other characteristics of individuals, such as family background, ability, or level of schooling" (Card 1998: 2). Thus, while the weight of evidence points toward a causal link, the relationship is far from straightforward as the effect of education on earnings is variously conditioned by a host of other variables. Yet as complicated as the picture can become, as Soloman and Fagano (1997: 826) aptly summarize, "everything else being equal, those with more and better education seem to earn more."

Consistent with this, Pascarella and Terenzini (2005) identify an income premium related to higher educational attainment. Using data from representative nationwide samples, Pascarella and Terenzini estimate the general premium for a bachelor's degree (compared to a high school diploma) in the USA to be about 37% for men and about 39% for women. They estimate the hourly wage premium to be about 28% for men and about 35% for women.

Pascarella and Terenzini (2005) also find evidence of a credentialing effect. The term credentialing effect[7] is used to denote the earnings advantage that accrues to those who complete a degree compared to others who have the same amount of credits or courses but no degree. Pascarella and Terenzini estimate that men with a bachelor's degree earn, on average, about 15% more than men with 4 years of university credit but no degree. For women, they estimate the average advantage at about 12%. The average earnings advantage for men who complete a 2-year associate degree is 9% over men with 2 years of postsecondary course credit but no degree. For women, the estimated average advantage is about 11%. Heckman et al. (1996) findings suggest the credentialing effect represents only a small proportion of the relationship between educational attainment and earnings. Their results indicate a statistically significant credentialing effect, but they also found an enduring net return to years of schooling.

Another important source of evidence regarding the effects on education on earnings comes from longitudinal studies. Grubb (1993) analyzed data from the 1972 National Longitudinal Survey (NLS) in the USA and found an earnings advantage related to higher education (even after correcting for factors such as socioeconomic status, race, ability, work experience, and access to on-the-job training). For males, about one half of the earnings advantage offered by obtaining a 4-year bachelor degree (compared to just high school completion) is due to the additional schooling itself; for females, extra schooling accounts for about a third of the advantage. He found that while community college (2-year) degrees offer a return, it is less than for 4-year degrees and is due mostly to increased access to jobs that offer greater opportunity for on-the-job training rather than the additional schooling per se.

Kane and Rouse (1995) also utilize the 1972 NLS data to estimate the annual returns (% increase in income) to community college and 4-year university degrees to be 7% and 28% respectively for men and 26% and 39% for women. They also find evidence of returns for those who completed some course credits but not a degree, the rate of return per completed credit was higher for university courses than community college ones, and higher for women than men. Kane and Rouse also analyzed data from a different survey, the National Longitudinal Survey of Youth (NLSY), and found somewhat different results in that male college and university dropouts held an earnings advantage over their high school graduate counterparts while female dropouts did not.

Murname et al. (1995) found that the net wage gap between university graduates and high school graduates increases over the career span. Arias and McMahon

[7] Also called the "sheepskin effect" (Card 1998: 7).

(1997) used cross-sectional earnings data (1967–1995) from the Current Population Survey (CPS) to estimate "dynamic rates of return." Their findings indicate that the earnings premium for completing a university degree is increasing relative to the rate of return for only partially completing a degree (i.e., earning some credits). The cumulative nature of this economic gap is evident in Land and Russell's (1996) finding (using 7 years of panel data from the Survey of Income and Program Participation) that households with a highly educated head have more wealth (net assets) than households with a poorly educated head.

Two important "third" variables to be considered when examining the education-income relationship are family background and ability. First, individuals with higher education tend to have parents with higher education as well. It might be that the income advantage results from family background (for instance, from having a parent with connections). Second, it can be argued that those who attain higher levels of education do so because they have greater ability and that those individuals would earn higher wages even without higher schooling. In short, it might actually be underlying ability—not education—that is responsible for higher income.

Intrafamily comparisons provide an opportunity to control for family background effects on earnings.[8] For example, Ashenfelter and Zimmerman (1997) estimated the relationship of educational attainment differences to income differences between fathers and sons. They found that a 1-year difference in educational attainment resulted in a 5-percent difference in wage rates. Altonji and Dunn (1996) looked at siblings and found that an additional year of schooling translated into a 3.7-percent increase in earnings among brothers and a 6.3-percent increase among sisters.

Identical twin studies are a useful method for isolating the effect of schooling on earnings from the effects of both family background and ability differentials. The rationale behind such studies is that studying genetically identical individuals raised in the same family provides increased control (sometimes referred to as a "natural experiment") over variance due to disparities in social background and ability. Hence, "contrasts of the wage differences of identical twins with their education differences may provide a particularly useful way to isolate the causal effect of schooling on earnings" (Ashenfelter and Rouse 1998: 281). If there are earnings differences between identical twins with differing levels of education, the difference is presumed not to be due to genetically determined ability, and we can be more confident that schooling does indeed affect earnings over and above any contribution by family background or ability. Ashenfelter and Rouse (1998) estimate an earnings advantage of about 8% per extra year of schooling for the more educated twin (adjusted upward to 9.9% when accounting for family background and measurement error in the self-reported education variable). Similarly, Miller et al. (1995) found an adjusted income (log of annual earnings) advantage of 4.5% per extra year of schooling among another sample of twins.

Although the above discussion of returns to education has focused almost exclusively on findings in the American context, there is evidence from other countries as well—for examples, see Asplund and Pereira (1999) for a review of European evidence, see Johnes (1993) for evidence from developing countries, see Blundell et al. (2000) and Chevalier et al. (2002) for UK evidence. But cross-national comparison also adds to the complexity of the emerging picture since the transition from school to work is not uniform across nations. For example, Sullivan and Smeeding (1997) utilize Luxembourg Income study (LIS) data (1989–1994) to compare the educational attainment-income gradient across eight nations. They conclude that "among advanced economies there is no obvious relationship between the degree of earnings inequality and the percentage of the labor force attaining higher levels of education. Countries differ substantially both in the way in which they organize their educational systems and the way in which they integrate the educational system with the labor market" (p. 513). Thus, we can add institutional features of the linkages between national education systems and labor markets to the list of important variables that condition the education-earnings relationship.

Similarly, Kerckhoff (2000, 2001) concludes that various institutional features of education systems determine their "capacity to structure" students' transition into the workforce. Müller and Shavit (1998), for example, analyze data and case studies from 13

[8] The outcome variable in the monetary return to education is typically the average log hourly wage.

developed countries in an effort to examine the importance of three institutional characteristics of national education systems—vocational specificity of credentials, standardization of credentials, and degree of stratification within the education system. Educational systems vary in terms of the extent to which they focus on specialist versus generalist education credentials. Some systems ("qualificational") are characterized by a high degree of specialized vocational training, while others ("organizational") offer a more generalized (academic) education aimed at providing a basic set of skills that are widely transferable across vocational settings, to be fine-tuned by on the job learning. Educational systems also vary in terms of degree of formal stratification and standardization. For instance, the German system is a qualificational one that is highly stratified in that it sorts students from early on into differing educational trajectories leading either to an academic track or a vocational track in which specialized training is linked to particular vocations. The German credential system is also characterized by a high degree of standardization of credentials. Employers are more involved in determining and sanctioning the skill requirements of a particular credential, with the result that a specific credential from different schools has uniform meaning. The USA, on the other hand, is an organizational system where credentials tend to be more generic, formal sorting begins later, and credentials are much less uniform in their value and meaning. In the USA, a credential is typically not considered specialized preparation for a particular job (although there are exceptions such as professional schools or vocational training programs) but rather a broad indication (a signal) of the ability and potential of that individual. The process of matching skills to job requirements is much more "a trial-and-error process" in North America (Heinz 1999).

Müller and Shavit (1998) found that while there were some significant differences among the 13 countries studied, there were also some important commonalities such as educational credentials are positively linked with occupational prestige; the marginal returns to postsecondary education are greater than for lower level education; educational attainment is an important determinant of labor force participation; and educational attainment (particularly postsecondary) is associated with lower risk of unemployment. One of the most notable differences between countries concerned is the magnitude of the effects of credentials on occupational outcomes, with some countries exhibiting a more rigid credential contingent occupational hierarchy than others.

Conventional human capital theory holds that it is the skill-imparting, productivity-enhancing aspects of education that lead to the earnings advantage enjoyed by the more educated. But some scholars argue that there is more to the equation, making the case for the importance of the socialization aspects of schooling in the determination of labor market success as well (Bowles and et al. 2001a, b; Farkas 1996; Heckman 2000; Rosenbaum 2001). Bowles and Gintis (2000) conducted a meta-analysis of 25 studies that looked at the schooling-earnings connection and found that cognitive skills were only part of the equation; formal education imparts not only skills but also instills the attitudes and habits valued by employers. They call these qualities (e.g., trustworthiness, identification with company or management goals, diligence, future-orientation, strong sense of self-efficacy) "incentive-enhancing preferences."

Thus, it may be that those individuals who succeed in higher education (which rewards many similar preferences or habits of conduct) may be more prepared to succeed within the similar incentive structure of a demanding high performance (and hence higher paying) workplace. A higher level of education is associated with enhanced "psychological capital," that is, the motivational and attitudinal orientation—particularly high self-esteem and internal locus of control—likely to lead to higher wage employment (Goldsmith et al. 1997). These habits, skills, and styles associated with school and occupational success are also referred to by some analysts as "cultural capital" (e.g., Farkas 1996, 2003; Lareau 2001; Lareau and Weininger 2003).

Further evidence for the importance of such non-cognitive skills (or "soft skills"[9]) in the labor market comes from studies by Heckman and colleagues (Cameron and Heckman 1993; Heckman and Rubinstein 2001) which reveal that while GED (Graduate Education Development) certificate holders exhibit substantially superior cognitive skills than other high school dropouts, they do not experience a

[9] See also Duncan and Dunifon (1998).

corresponding earnings advantage. Part of the reason appears to be related to behavioral issues such as delinquency and crime. Thus, the authors suggest that the GED sends a "mixed signal" in the job market—that the individual has the cognitive capacity to complete high school but may be lacking other attitudinal and behavioral qualities that are valued by the employer.

Emotional Well-Being

There is an abundance of evidence pointing to a positive correlation between education and psychological health and well-being. Educational achievement is associated directly with increased self-esteem and indirectly via effect of earnings. Education is associated with an increased sense of self-efficacy, and self-efficacy is associated with numerous physical and mental benefits (see Ross and Van Willigen 1997). "Emotional resilience" or the ability to cope with adversity and stress is related to self-efficacy and self-esteem both of which can be enhanced through education and successful learning (Hammond 2004). Schooling can also help foster the acquisition of adaptive skill sets—such as problem-solving skills and communication skills—that contribute to resilience (Howard et al. 1999). There is evidence that undesirable events and adverse experiences have greater negative emotional repercussions for lower SES individuals compared to those with higher SES (e.g., McLeod and Kessler 1990). Ranchor et al. (1996) found an association between SES, especially education level and significant variation in coping styles and resources, with lower SES individuals being disadvantaged along several psychosocial dimensions (negative self-esteem, social desirability, hostility, social support).

de Ridder (1995: 313) found that level of educational attainment influenced beliefs related to SES differences in vulnerability to psychological distress. She defined beliefs as "lay theories" or "cultural models" held by the individual that are shaped by their social group and social position, and which "reflect the generalized experiences about the meaning of stressful events, their impact on health, and their controllability." Similarly, a previous interview study ($n = 10$) conducted by de Ridder (cited in de Ridder 1995: 322) found that "lower educated participants were more easily agitated by daily hassles, thought them very unpleasant and disruptive, and felt they had no control," compared to more highly educated participants who "…limited their definition of stress to severe problems for which no solution was available; daily hassles were considered part of their normal routine." As well, more educated respondents "thought of stress more positively: although they agreed that stress was potentially harmful in specific situations, in many cases, they also considered it a challenge, as they felt able to control or solve the situation."

Many studies have found the effects of education on psychological health are mediated by work conditions (e.g., Lennon 1994; Link et al. 1993). Individuals with higher education are more likely to be involved in work with greater intrinsic and extrinsic rewards. For example, more educated individuals are less likely to be involved in alienating repetitive labor and more likely to be involved in work that permits greater autonomy (developing and reinforcing feelings of self-efficacy), creativity, more novelty and opportunity for continued learning and personal growth (Mirowsky and Ross 2003, 2005; Ross and Wu 1995; Schieman 2002), and greater social support which enhances resilience to psychological distress, depression, and anxiety (Ross and Van Willigen 1997).

Although people who are college educated rate higher on a wide range of quality of life indicators (e.g., income, self-efficacy, social support network, mortality risk, perceived health status, time spent in developmentally enriching activities with children), they do not consistently express a higher degree of satisfaction with their lives (Ross and Van Willigen 1997; Pascarella and Terenzini 2005). It seems that with increased educational attainment and socioeconomic status come higher expectations, people's sense of life satisfaction is affected by their rising frame of reference and the tendency to recalibrate expectations upward at each level of achievement and acquisition. Education may also open one's eyes to a wider range of possibilities as well as raising the standards by which one evaluates satisfaction in various domains of life. As well, people tend to compare their circumstances not with those below them but rather with their status peers and those above them. There are several different accounts of the relative nature of satisfaction such as congruity theory (Wilson et al. 1973), multiple discrepancies theory (Michalos 1985, 2008), and judgment theory (Meadow et al. 1992).

On the other hand, there is some affirmative evidence regarding the effects of education on reported happiness. Blanchflower and Oswald (2001) looked at multiyear cross-sectional data from the USA (GSS) and Great Britain (Eurobarometer Survey) and found that educational attainment is associated positively with happiness even when family income is controlled. There is also some indication that education may be indirectly related to life satisfaction in later adulthood. Fernandez-Ballesteros (2001: 27) found that more educated individuals with higher incomes report higher levels of participation in physical, cultural, and social activities which are positively associated with life satisfaction.

Gerdtham and Johannesson (2001) also found that reported happiness increased with education and income, as well as with self-rated health status.[10] Meeks and Murrell (2001) suggest that the lifelong health advantage associated with educational attainment is mediated by "trait negative affect." That is, higher educational attainment is inversely associated with levels of enduring negative effect; low negative affect is, in turn, associated with better health and greater life satisfaction in older adults—or what the authors term "successful aging." Successful aging is contingent on a "life history of successful adaptation" which results from the interplay of inherited and learned psychological attributes, degree of life adversity, and available resources. Educational attainment is positively related to successful adaptation along each of these dimensions (e.g., high intelligence, high level of aspiration and motivation, enhanced socioeconomic opportunities and outcomes).

Health

The positive association between education and health is well documented. For example, Bound et al. (1995) found that more educated men were generally less likely to report having health problems such as severe chronic pain, hearing and vision problems, arthritis or functional limitations on daily activities, while individuals who attended or graduated college have a lower risk profile for cancer and coronary heart disease (Pascarella and Terenzini 2005). There is also considerable evidence to suggest that such education-related health disparities grow across the lifespan (Mirowsky and Ross 2003; O'Rand 2001; Prus 2004; Ross and Wu 1995, 1996). Mirowsky and Ross (2005: 27) observe that the cumulative health-related consequences of education are evident at various levels, "… from the socioeconomic (employment, job quality, earnings, income, and wealth) and behavioral (habits such as smoking or exercising, beliefs such as perceived control over one's own life, personal relationships) to the physiological (blood pressure, cholesterol levels, aerobic capacity), anatomical (body fat, joint deterioration, arterial fatty plaque) and perhaps intracellular (insulin resistance, free radical damage)." They also note that in addition to permeating most aspects of life, many of these consequences of educational attainment are reciprocal in nature, mutually conditioning and compounding the effects of one another, good and bad, such that disparities grow over time.

Mirowsky and Ross (2003) found evidence of substantial socioeconomic disparities in health which increase across the lifespan. Modest education-contingent socioeconomic disparities upon initial entrance into the workforce compound over time, as do related health disparities. Specifically, they found that persons with college degrees have lower levels of impairment across the lifespan; the increase in impairment with aging was steeper for those with less than high school compared to those with college degrees, thus resulting in an increasing impairment gap across the lifespan. Although the gap continues to grow after age 65, the rate of divergence attenuates (see also Ross and Wu 1996). Prus (2004) found that the education-contingent gap in both subjective health and functional health grew across the adult life course up until age 79 (survey data was aged capped at age 79).

Higher education typically leads to occupations that involve less health risk and provide greater financial capacity to purchase better housing, nutrition, and health care, all of which are directly linked with health status (Roberge et al. 1995). Indirect psychosocial effects emanate from one's position in the socioeconomic structure (sense of personal agency, coping skills, social support) and from lifestyle preferences and practices (recreational activities, diet, smoking, access to health care information, and services). Even so, there is evidence that educational attainment is predictive of health even when income is controlled for. For example, Meeks and Murrell (2001) found that

[10] There is some evidence for the positive effects of happiness on health (Veenhoven 2008).

education accounts for variation in health (and life satisfaction) above and beyond that predicted by income, but the reverse does not hold for income net of education.

Grossman and Kaestner (1997) review a number of American studies that point to years of formal education as the most important socioeconomic correlate of good health, more important than either occupation or income (both of which are partially determined by education). This relationship holds across a number of health indicators, including mortality rates, morbidity rates, self-rated health status, and physiological measures, regardless of whether analyzed at the group or individual level. Using structural equation modeling and the National Health Interview Survey, Lynch (2006) found that only about 30% of the effect of education on self-rated health is accounted for by income, but that this indirect effect of education through income is increasing across cohorts.

As with emotional well-being, many of the effects of education on physical health are mediated by workplace conditions. Less educated have more physically demanding jobs with increased risk of negative physical consequences (although less than in the past). In addition, some of the same workplace conditions that affect psychological health also impact physical health. For example, the fact that more educated individuals are less likely to be involved in alienating repetitive labor and more likely to be involved in work that develops and reinforces feelings of self-efficacy or personal control (Mirowsky and Ross 2003, 2005; Ross and Wu 1995; Ross and Van Willigen 1997). A greater sense of self-efficacy, or the belief in one's ability to initiate action and effect outcomes, is also associated with better health outcomes. There is also some evidence that the salutary effects associated with the more autonomous, less routinized employment afforded by higher educational attainment may actually be even greater for women than men. Due to their traditionally disadvantaged status within society, women may reap amplified health benefits from educationally augmenting their socioeconomic position (Reynolds and Ross 1998; Schieman 2002).

Many of the positive effects of education on health stem from the increased likelihood of adopting or initiating proactive health measures, which prevents and/or forestalls many ailments. If individuals believe they have some control over the conditions of their life, including their health, they are more likely to participate in health-promoting lifestyles and activities. Education increases the capacity to produce healthy outcomes via "learned effectiveness," education imparts analytical and problem-solving skills that transfer to various aspects of life including health maintenance (Mirowsky and Ross 2005). For instance, education is associated with increased likelihood of adaptive response in the wake of health crisis such as quitting smoking after a heart attack (Wray et al. 1998).

More educated individuals live healthier lifestyles including moderation in consumption and regular exercise (Ross and Wu 1995; Mirowsky and Ross 1999) due to access to better information for health management, greater proficiency at integrating information into lifestyle decisions, greater resources to facilitate health-promoting activities (e.g., money to buy equipment, gear, memberships, more flexible schedule to fit exercise in), and to procure health professional assistance when needed. For example, college graduates spend more time on fitness activities than those with lower educational attainment (Robinson and Godbey 1997). Similarly, Kenkel (1991) found an education-contingent difference in exercise time of about 17 min per day per extra year of schooling.

In general, the more educated are less likely to smoke (Bound et al. 1995; Sander 1995b; Zhu et al. 1996; Kenkel 1991). If they do smoke, the more educated tend to smoke less per day, with each additional year of schooling reducing average daily cigarette intake by 1.6 for men and 1.1 for women (Kenkel 1991). The more educated are also more likely to quit smoking than those with less education (Sander 1995a; Zhu et al. 1996). Those with more education are also less likely to be heavy drinkers than their less educated counterparts (Kenkel 1991).

Parental education is also associated with various child and adolescent health outcomes. Several studies by Edwards, Shakotko, and Grossman (cited in Grossman and Kaestner 1997: 94) find that parental educational attainment, particularly mother's, has positive and statistically significant effects on a number of health indicators in childhood and adolescence. For example, children and adolescents of better educated mothers have better oral health and less likelihood of obesity or anemia than those of less well-educated mothers.

Further to the body of research on the relationship between education and health, there are also studies looking at the relationship between education and longevity. Numerous studies have found a positive

relationship between education and life expectancy (e.g., Rogot et al. 1992; Crimmins and Saito 2001). Connected to this is a relationship between education and decreased morbidity (Crimmins and Saito 2001). Individuals with less health problems over the lifespan enter their later years in better health and tend to live longer. As cohorts age, education's association with health and longevity grows stronger. Individuals with higher socioeconomic status experience a "compression of morbidity" into a short period in the final years of life, whereas lower status individuals are more likely to start experiencing health problems from middle age onward (Mirowsky and Ross 2005: Prus 2004). Educational attainment is negatively related to mortality across the lifespan (Guralnik et al. 1993; Kaplan and Keil 1993). There is a growing socioeconomic disparity in mortality rates (Lauderdale 2001; Bartley et al. 1998). Manton et al. (1997) studied National Long Term Care Surveys in the USA from 1982 to 1991 and found that persons with 8 or more years of education had advantages in terms of level of functioning and longevity over those with less than 8 years of education. The longevity advantage at age 65 for educated women was 7 years and 2 years for men.

Explaining the relationship between education, health, and longevity. Ross and Wu (1995) contend that education affects health along three basic fronts: work and socioeconomic conditions (income security, nature of work, satisfaction with work, access to quality health care, etc.), socialpsychological resources (self-efficacy, social support network, etc.), lifestyle (exercise, diet, smoking, health monitoring, etc.). Mirowsky and Ross (2003, 2005) offer a more comprehensive cumulative advantage/disadvantage model to account for the positive effects of education on health. They suggest that the lifelong health advantage afforded by greater educational attainment is due to three interrelated processes: permeation, accumulation, and amplification. First, *the differential effects of education permeate most aspects of life* such as the conditions of one's work; rewards from work; interpersonal relationships; habits; economic capacity; social, psychological, and informational resources; security; sense of autonomy. For example, more educated individuals are less likely to be involved in work that involves repetitive task performance, or is physically demanding, and tend to have higher degree of autonomy. The more educated also tend to earn more and so are less likely to experience economic stress and more able to purchase goods and services (e.g., food, heath care, housing) that produce good health. Second, *consequences accumulate over the lifespan.* For example, the health consequences of habits and lifestyles (diet, exercise, smoking) accumulate over the lifespan, both positive (e.g., lung capacity, muscle mass) and negative (e.g., excess body fat, fatty plaque in blood vessels, decreasing bone density). Third, *cumulative outcome differentials condition and amplify each other, with advantages concentrating in some individuals and disadvantages concentrating in others, such that disparities grow over the lifespan.* For example, over time regular exercise and a healthy diet produce beneficial accumulations (low body fat and high aerobic capacity), thereby reinforcing those healthy behaviors and the sense of control over one's health, while lack of exercise and poor diet produce harmful accumulations (high body fat and low aerobic capacity) which perpetuate those unhealthy behaviors (e.g., the more body fat one has, the more difficult physical activity becomes, not exercising results in increased fat and further aversion to exercise) and diminishes the sense of control over one's health and undermines further effort. Thus, to the degree that educational attainment is associated with increased sense of control over one's health (via successful engagement in health-promoting behaviors), the educationally advantaged are likely to enjoy corresponding health advantages.

The cumulative nature of socioeconomic health disparities is highlighted by Mirowsky and Ross's (2005) concept of "cascading structural amplification." It captures the "slippery slope" nature of socioeconomic health disadvantage, in which a sequence of circumstances unfolds leading the less educated down a path of mounting health problems: low education leads to poor income, economic hardships are rendered more difficult by inadequate coping skills (due to educational deficits), and economic hardships exacerbate health issues (do not live in neighborhood with recreational facilities, cannot afford healthy food or exercise gear/equipment or memberships, lack information about health-promoting behaviors or opportunities, no peer support, etc.).

Another suggested mechanism by which education effects health is *rate of time preference*, or one's time orientation. Adoption of a longer time horizon is assumed to be associated with health-promoting behavior. Just as the propensity to delay gratification is conducive to time (and monetary) investment in

education (and hence greater educational attainment), it may also be related to inclination to invest time (and money) in health management (Fuchs 1982 in Grossman and Kaestner 1997). There is some suggestion that the education-time preference relationship is reciprocal; that is, more educated parents tend to instill a more future-oriented time preference in their children to begin with, and this preference is further reinforced by successful educational attainment (Leigh 1998). Either way, it may be that the majority of education's positive effect on health is a function of education's effect on time preference—individuals with a longer time horizon may be more willing to invest proactively in the maintenance of their health. Thus, to the degree that education alters time preference toward the future, it also improves health.

Mirowsky and Ross (2005) suggest that the more educated are more proficient at producing health outcomes due to generally enhanced analytical and problem-solving skills ("learned effectiveness") which they apply to health maintenance. Similarly, Grossman and Kaestner (1997) observe that the more educated tend to be "more efficient producers of health" than less educated individuals. This efficiency effect is twofold: "allocative efficiency" pertains to the augmentation of knowledge afforded by education—better educated individuals typically have access to greater amounts of health relevant knowledge and are more inclined to appreciate its import. "Productive efficiency" refers to the greater efficacy of the better educated in producing positive health outcomes than the poorly educated, given that both have the same information. More educated individuals have greater familiarity with the knowledge production process which may translate into greater trust in "expert" recommendations and greater likelihood of compliance. That is, more educated individuals may be more likely (and better equipped) to comprehend the relevance of expert recommendations and to be more effective in mitigating risk accordingly (Smith 1997).

It should also be noted that there is also research that suggests that the pattern of the relationship between education and health across the lifespan is not linear. For example, Lynch (2006) found that the relationship between education, income, and health varies across the lifespan and across cohorts and that the relationship between these variables peaks at different times. In his sample, the relationship between education and income peaked around age 81, the relationship between income and health peaked around age 56, and the total effect of education (including indirect effects through income) on health peaked around age 46. His results suggest that the cumulative health advantage associated with education grows into middle age and then tapers off into old age.

Community

Ross and Van Willigen (1997) found that the well-educated reported a higher level of social support. Further to this, there was a strong association between the non-alienated work typical of the well-educated and perceptions of social support. They suggest that the non-alienated work environments characterized by non-routine, autonomous, creative work and opportunities for personal growth and learning also foster supportive relationships among coworkers, colleagues, and bosses.

According to the 1987 GSS, individuals with higher levels of educational attainment report having membership in a greater variety of volunteer groups and participating in more organized activities (Smith 1995). Postsecondary graduates exhibit higher levels of involvement in civic and community groups. Pascarella and Terenzini (2005) report that, compared to high school graduates, individuals with a bachelor degree were 1.8 times more likely to participate regularly in political activities, 2.4 times as likely to be involved in community welfare groups, and 1.8 times as likely to be highly committed to community leadership. Such engagement with community causes and organizations may also foster introduction to influential social networks that are less accessible to the less educated.

Curtis et al. (2004) analyzed Canadian data from the World Values Survey and found individuals with higher levels of education reported greater involvement in public protest, in community interest groups, as well as in supporting social movements. Utilizing data from Statistics Canada's National Survey of Giving, Volunteering, and Participation, they also found that the more educated were more likely to report voting and participation in volunteer activities.

In recent years, the notion of social capital has been broadly deployed to describe various dimensions of "community." While human capital resides in individuals, social capital resides in relationships. There are two basic approaches to conceptualizing social capital (see

Portes 2000); one school sees social capital as a second order property of individuals embedded in social networks, while the other sees it as a collective property of communities and nations.[11] The following discussion of returns to social capital is conducted with reference to the former (more instrumental) understanding, the social networks (or social resources) approach. Burt (2000) pithily characterizes the basic notion of network social capital theory as "[b]etter connected people enjoy higher returns." Flap (1999: 7) describes social capital as "social networks and the resources of others an actor can call upon [which] can be considered a social resource…another means for that actor to improve or defend his conditions of living." There is considerable evidence that social capital, in the form of social resources, significantly affects status attainment (Lin 1999). Social resources are resources activated through one's direct and indirect contacts. The potential utility of such resources is related to one's position within particular social networks (i.e., status, connections, and influence). Not all networks are created equal: some networks (comprised predominantly of socioeconomically advantaged groups) are richer in social resources (more diverse, higher caliber connections) than others. Structural constraints and homophily (like affiliating with like) contribute to the maintenance of this network inequality, such that the level of social resources (and potential status outcomes) available to the individual is substantially impacted by one's social background (Lin 2000) and resulting social capital disparities tend to be cumulative in nature (Granovetter 1995). Some individuals and families are embedded in richer networks with greater access to information and opportunity, not only from their own social network, but via complimentary cross connections with other networks (Burt 2000). Lai et al. (1998) found evidence that occupational attainment (current job status) is significantly influenced by level of education but also by the social resources of contacts mobilized in the job search. The caliber of contacts (i.e., the richness of contact social resources) available to a person, in turn, derives from "positional advantages" related to family background (parental resources), education, and network resources.

Lin (2000: 484) observes that human capital and social capital can be seen as reciprocally related in that "[w]ell-connected parents and social ties can … enhance the opportunities for individuals to obtain better education, training, and skill and knowledge credentials. On the other hand, it is clear that human capital induces social capital. Better educated and better trained individuals tend to move in social circles and clubs rich in resources." One compelling question that then emerges from this insight—the convertibility of capital forms—concerns the relative importance of human versus social capital to status outcomes. For example, Boxman et al. (1991) found an inverse relationship between the two forms of capital, where the effect of human capital on income was strongest when social capital was low and weakest when social capital was high. Consistent with this, Flap and Boxman (1999) found that for top managers, social capital had a positive effect on income regardless of the level of human capital and that the effect of human capital diminished as the level of social capital increased. Flap and Boxman (2001) also found that social capital had a positive effect on income, prestige of job attained, and likelihood of informal job searching (i.e., those with greater social capital are more likely to attempt to invoke it via informal job searches). Taken together, these results suggest that level of human capital is most important to status attainment for those with lesser levels of social capital, but that its importance diminishes as one's level of social capital increases. Thus, while education may facilitate entrance to a socioeconomic trajectory, beyond a certain threshold, accumulated social capital (i.e., access to information and influential connections) carries greater weight and further advantage. Or put another way, returns to education may be limited without sufficient social capital.[12]

As previously discussed in the section on intergenerational effects of academic achievement, there is some evidence of "neighborhood effects" due to factors such as disparities in the quality of resources available

[11] Portes (1998, 2000) and others (e.g., Morrow 1999) argue that, increasingly, the application of the social capital as collective property approach is being uncritically stretched beyond the limits of its usefulness and as, a result, is become increasingly vague, all encompassing, and of dubious analytical value.

[12] Mouw (2003) contends that evidence for the positive effects of network social capital on labor market outcomes is—upon closer inspection—confounded and that while the utility of influential contacts is intuitively appealing, better evidence is still required to substantiate proponents' claims regarding social capital mechanisms.

to families and "collective socialization." Children in neighborhoods with less well-developed infrastructure (libraries, family resource centers, literacy and after school programs, cultural amenities like museums, and recreational facilities) may lag behind their peers from more affluent neighborhoods in terms of social and physical development and school-readiness (Brooks-Gunn et al. 1993, 1996; Neuman and Celano 2001). Brooks-Gunn et al. (1993) also find evidence consistent with the notion of "collective socialization" which highlights the importance of neighborhood adult role models and extra-familial monitoring or informal social control (Sampson 2001) to children's psychosocial development. Exposure to high-achieving adult role models has positive effects on student conduct, attitudes, and expectations regarding education and occupational options. Ainsworth (2002) reported that prevalence of high-status residents is strongly predictive of increased time spent on homework and higher math/reading test scores, results consistent with the collective socialization thesis.

Children's educational outcomes can also be impacted (above and beyond individual family background influences) by the makeup of the student population at their school (Strand 1997; Feinstein et al. 1999; Robertson and Symons 2003). Indeed, there is a substantial body of evidence that "the average socioeconomic status of a child's class or school has an effect on his or her outcomes, even after taking account of (individual-level) ability and socioeconomic status" (Willms 2001: 25). For example, Ho and Willms (1996), utilizing a large representative sample of US middle school students, found that both advantaged and disadvantaged students achievement in mathematics and reading improves when they attend schools with higher average socioeconomic status. Mayer (2002) found that increased economic segregation (the affluent concentrating in particular areas and the poor in others) in the USA increased the educational attainment gap (the gradient) between socioeconomically advantaged and disadvantaged students.[13] Thus, "economic segregation in one generation contributes to economic inequality in the next generation" (p. 167) via perpetuation of disparities in educational and occupational opportunities.

[13] Similar results emerged when she conducted the analysis at the level of census tracts and at the level of school districts.

Ho and Willms (1996) also found that parental involvement in schooling (i.e., volunteering, attending parent teacher organization meetings) has a positive effect on student achievement, and parental involvement tends to be higher in high socioeconomic status schools (although they did not find significant family-level SES-contingent differences in extent of parental involvement). Furthermore, their results show that socioeconomic gradients (SES-contingent differences in achievement) tend to be shallower in schools with high parental involvement. A number of studies (e.g., Barnard 2004; Fan and Chen 2001; Feuerstein 2000; Jeynes 2003; Steinberg et al. 1992; McWayne et al. 2004) document the importance of parental involvement (variously measured) to academic achievement, and while Ho and Willms (1996) found no family-level SES differences in parental involvement, other studies (e.g., Lee and Bowen 2006) indicate a positive relationship between parental education and parental involvement. Hill et al. (2004) found that parental involvement by more educated parents tended to increase their children's level of academic aspiration, school behavior, and achievement, but that parental involvement by lower educated parents only raised academic aspirations without significantly improving school behavior or achievement.

Sampson and colleagues (Sampson et al. 1997, 1999), in an attempt to augment the generic social capital metaphor, posit the related, but more circumscribed, notion of "collective efficacy." They (Sampson et al. 1999: 635) conceive collective efficacy as "…a task-specific construct that relates to the shared expectations and mutual engagement by adults in the active support and social control of children." They argue that collective efficacy places more emphasis on the "agentic" dimensions of community social relations and—consonant with the social network "instrumental" approach to social capital—focuses on the purposeful mobilization of resources toward desired (child and youth) outcomes. In a study utilizing survey data from residents in 342 Chicago neighborhoods, Sampson et al. (1999) found neighborhood affluence to be positively related to collective efficacy, as well as to "reciprocated exchange" (the intensity of interfamily and adult involvement in childrearing), and "intergenerational closure" (extent to which adults and children in a neighborhood are linked to one another).

While Ainsworth (2002) found that neighborhood characteristics predicted educational outcomes almost

as strongly as family and school-related factors, Duncan et al. (2001) found that family context is much more important than neighborhood or school in relation to school achievement and delinquency.[14] Their results revealed much greater variability within neighborhoods and schools than between different neighborhoods and schools. Cook et al. (2002) contend that neighborhood effects should be understood as merely one context that contributes jointly, along with school, nuclear family, and peer group, to student outcomes.

Intimate Relationships

Marriage

Schooling has a positive influence on success in making choices involving marriage and family size by allowing better access to information for decision-making (Wolfe and Haveman 2001: 228). More educated individuals are more likely to be married, and marriage is negatively related to various forms of distress, although the effect of education on this is modest at best (Ross and Van Willigen 1997: 287).

Berrington (2001) found that enrollment in education was a strong inhibitor of marriage among young adults. Level of education is an especially important determinant of marital status for women. Women with less education tend to marry and have children earlier than more educated women. Higher educational attainment gives more educated women greater earning power which equals greater economic independence and greater freedom in deciding whether to marry or not. Accordingly, marriage and childbearing tend to occur later for more educated women. As well, women with little or no educational credentials are more likely to marry early than are men of similar educational standing. (Blackwell and Bynner 2002).

Marriage Dissolution

There is evidence of an educational effect on divorce, and this effect is stronger for women than for men. More educated women are generally less likely to divorce than women with lower levels of education (Tzeng 1992). Less educated women are more likely to marry and have children earlier, and early marriage is related to higher likelihood of divorce (Blackwell and Bynner 2002: 9; also see Berrington and Diamond 1999). As well, women's level of educational attainment and employment status are important moderators of the consequences of divorce for children (Kiernan 1996). More educated women (particularly those employed in well-paying jobs before marital dissolution) tend to be better protected from economic hardship postseparation. (Bianchi et al. 1999).

Educational homogamy effects marital stability. Couples in which the wife has a higher level of educational attainment than the husband are about 28% more likely to divorce than couples where each member has the same level of education; when husbands have a higher level of education than their wives, couples are 20% more likely to divorce than couples with the same level of education (Tzeng 1992).

Education may enhance communication skills which protect against marriage breakdown. But in the case of divorce, education is also positively associated with ability to cope with divorce (Blackwell and Bynner 2002: 10).

Parenthood

Education is positively associated with delayed motherhood and negatively associated with fertility rate, especially among college educated women (Rindfuss et al. 1996). That is, less educated women are more likely have children earlier (Blackwell and Bynner 2002), while more educated women are more likely to delay motherhood (Heck et al. 1997; Ekert-Jaffé et al. 2002). The birth rate among American women over the age of 30 has increased in recent decades only among those with 4-year university degrees (Martin 2000). This finding is consistent with the notion that more educated women are waiting (perhaps to establish careers) before having children.

The increased opportunity cost for more educated higher earning women is an important factor in delayed childbearing. So is a shift in preference among more educated parents from quantity to quality, that is, toward greater intensity of investment in fewer children, with the expectation that "higher expenditures of time and money [will] raise the future productivity of the child in the workforce and in everyday life" (Greenwood 1997: 506).

Kieran (1997) identifies a number of benefits associated with delayed marriage and/or parenthood,

[14] Strong correlations for peer group are confounded by inadequate control for self-selection.

such as enhanced financial capacity to improve quality of housing, consumer goods and leisure activities and decreased likelihood of marital breakdown. As well, delayed childbearing also often affords greater opportunity for women to become established in their careers or employment situations which increases resilience to economic hardship in the case of marital dissolution.

Teens (especially girls) with lower academic performance are more likely to experience early parenthood and attendant social disadvantages (Kiernan 1997). Teen parents are more likely to drop out of high school, lack parenting skills, and live in poverty (Maynard and McGrath 1997). Children born to adolescent mothers are academically and behaviorally disadvantaged relative to children born to older mothers (Dahinten et al. 2007) and are more likely to become teen parents themselves (Maynard and McGrath 1997; Kiernan 1997).

Child Welfare

Numerous familial outcomes are associated with level of educational attainment, including poverty, out-of-wedlock childbearing, early parenthood, and child abuse and neglect. All these outcomes are less prevalent among high school graduates than among early school leavers (Maynard and McGrath 1997: 130). Wolfe and Haveman (2001: 230) review a number of studies and also conclude that there exists generally a strong relationship between number of years of parental schooling and several important outcomes for their offspring such as schooling, teenaged childbearing, health, and criminal behavior. Higher parental education is associated with ability to pay for better quality childcare and residence in communities with more extensive social service and educational resources, positive peer groups, and lower crime (Maynard and McGrath 1997: 133).

While many of the child welfare benefits of education cited by Maynard and McGrath appear to be mediated by the positive effect of more schooling on income, there are also parental education effects above and beyond the monetary advantage. Higher parental education is associated with greater access to knowledge about the developmental needs of children, greater propensity to seek out and implement new childcare information (Greenwood 1997), increased quality of parent-child interaction, and less negative and more positive parenting behaviors (Feinstein et al. 2004), greater probability of parental involvement with child's school, of reading to a child, and of helping with homework (Pascarella and Terenzini 2005).

Personal Safety/Future Security

As we have seen, educational disadvantage generally translates into socioeconomic disadvantage. Such disadvantaged persons are disproportionately exposed to various types of risk. They are more exposed to economic risks such as unemployment, job insecurity, and general economic hardship (Abbot et al. 2006; Furlong and Cartmel 1997; Perrons 2000); to environmental hazards such as pollutants and toxins, proximity to polluting industries, and insalubrious "ambient conditions" such as poor housing quality (Evans and Kantrowitz 2002; Lester et al. 2001; Liu 2001; Mohai and Bryant 1992); and are often less well equipped to deal with negative events or circumstances (e.g., lack of marketable credentials, insufficient financial management knowledge, inadequate financial resources for relocation, limited psychosocial coping skills).

Some aspects of the safety domain dovetail with the health domain in that socioeconomic disparities in safety are related to numerous disparities in health. As Evans and Kantrowitz (2002: 204) contend, much of the "…link between SES and health derives from multiple exposures to a plethora of suboptimal environmental conditions…The poor are most likely to be exposed not only to the worst air quality, the most noise, the lowest-quality housing and schools, etc., but of particular consequence, also to lower-quality environments on a wide array of multiple dimensions." For example, as noted before, higher educated individuals are also less likely to have physically demanding jobs which are associated with various negative effects on health (Bound et al. 1995). Cubbin and Smith (2002: 365)—after reviewing a number of studies examining the relationship between socioeconomic status and injury—conclude that "SES has a strong inverse association with the risk of both homicide and unintentional injuries in all ages; as individual or area SES decreases, the risk of homicide or unintentional injury increases." In a similar vein, Adler et al. (1994: 18) observe that "…components of SES, including income, education, and occupation, shape one's life course and are enmeshed in key domains of life, including (a) the physical environment in which one lives and works and associated exposure to pathogens, carcinogens,

and other environmental hazards; (b) the social environment and associated vulnerability to interpersonal aggression and violence as well as degree of access to social resources and supports…."

More educated individuals are less likely to suffer the stress of economic hardship. The least qualified workers are the most vulnerable to unemployment during economic downturns (Gangl 2001). Moreover, those with higher educational attainment have greater "ability to benefit from disequilibria" (Bowles et al. 2001a). In simple terms, they are better positioned to take advantage of/profit from market trends and cycles (i.e., to extract rents) or, conversely, to protect themselves and their families from economic trends and cycles. Someone with a MBA is generally better positioned to repackage him/herself in a changing labor market (or migrate to a different market for new opportunities) than is a manual laborer with grade 10 education. Such market resilience may also be enhanced by a strong sense of agency/self-efficacy and a more future-oriented time preference, both characteristics that are associated with higher educational attainment. As well, there is some indication that even when income is low, education decreases the likelihood of economic hardship by improving household budget management (Mirowsky and Ross 1999). This difference may be related to the efficiency advantages ("learned effectiveness") apparent among the more educated in health maintenance (Grossman and Kaestner 1997; Gilleskie and Harrison 1998; Mirowsky and Ross 2005) and environmental risk-averting behavior (Smith 1997). The better educated are likely to have access to more relevant knowledge, to trust it, and, given equal information, to be more proficient at generating positive outcomes than those with less education. This learned effectiveness advantage may apply in financial management just as it does in health management.

There is also some indication of a negative relationship between education and crime (Tauchen et al. 1994; Lochner and Moretti 2004). Over two thirds of incarcerated men in the USA in 1993 had not graduated high school (Freeman 1996). The inhibitory effect of education on crime seems to be primarily explained in terms of increasing the cost opportunity—those with more education and higher wages are more risk averse—although there may also be effects related to missed learning as well as peer influence and lifestyle factors associated with non-completion of high school (Lochner 2004). Consistent with this, several studies (e.g., Freeman 1996; Machin and Meghir 2000; Gould et al. 2002) have found negative relationships between wages and criminal activity, although the empirical relationship is not clear-cut (Lochner 2004).

Methodological Considerations

This chapter, although by no means exhaustive, has sampled a fairly diverse body of research from multiple disciplines intent on identifying various connections between education and an assortment of quality of life outcomes. These studies vary in the degree to which they attempt to account for threats to the validity of their findings. While an in-depth discussion of the strengths and weaknesses of each study is beyond the objectives of this chapter, in this section, we will briefly touch upon some prominent threats to validity that should be kept in mind when looking at returns to education research. The two most common sets of concerns pertain to (a) the spuriousness of reported educational effects due to inadequate consideration of antecedent or intervening "third" variables and (b) issues regarding the valid and reliable measurement of educational attainment.

"Third" Variables

In short, failure to adequately control for the influence of important third variables may lead to overestimation or underestimation of the effects of education on observed outcomes. That is, the more potentially confounding antecedent or intervening variables controlled for, the more confident one can be that the observed relationship is in fact valid and that the difference (or some significant portion thereof) observed in the outcome/dependent variable is due to the effect of the predictor/independent variable. In addition to level of educational attainment, there are a host of variables that might plausibly influence some of the quality of life outcomes in question. The most prominent factors are family background and ability as well as a number of variables pertaining to mental and physical health and psychological attributes (preferences) such as motivation, aspirations, and time orientation. Additionally, the benefits of education may transpire via both direct and indirect effects. For example,

education has a substantial indirect effect on health through income and wealth. Studies vary in terms of how many and how well they control for these variables, but no study can incorporate them all. A notable shortcoming of many studies is that they do not partial income out when looking at the relationship between education and various quality of life outcomes. The basic idea behind the most common approach for estimating the influence of so-called third variables (alternative explanations) is to compare the estimates of the effect of educational attainment on a target outcome when a particular variable (or set of variables) is controlled for versus when it is not controlled for. The observed difference in educational effects provides an approximate indication of the influence on returns to education of the variable(s) in question. Practical limitations (e.g., most available datasets are cross sectional rather than longitudinal and/or are not likely to include measures of all plausible control variables) prevent any study from adequately considering all potentially confounding variables, so we are left to weigh the balance of complimentary and contradictory findings across a body of studies as best we can. We also, of course, need to exercise due caution in making causal connections due to the correlational nature of most of the returns to education research.

A classic example of the third variable issue is evident in the study of the education-income relationship. Two prominent third variables that must be considered are family background and ability. First, individuals with higher education tend to have parents with higher education as well. It could be that the income advantage results from family background factors (i.e., financial, cultural, and social capital advantages received from well-educated, affluent parents). Second, it can be argued that those who attain higher levels of education do so because they have greater ability and that those individuals would earn higher wages even without higher schooling. In short, it might actually be underlying ability—not education—that is responsible for higher income. In addition to statistically controlling for factors such as gender, race, and SES, sometimes preexisting groups can be incorporated into a study in order to increase control over outcome-relevant variance. For instance, intrafamily comparisons provide an opportunity to control for family background effects on earnings while identical twin studies are a useful (though impractical) method for isolating the effect of schooling on earnings from not only family background variation but also variation in individual ability.

A related source of confounding variance in returns to education research is "selection bias." The alternative explanation offered by the selection hypothesis is that individuals from higher SES backgrounds, with higher ability, exhibiting a particular cluster of psychological attributes and robust health are more likely to attain (to be selected into) higher levels of education; thus, these factors account for part (some would argue most) of the effects of educational attainment. For example, there is some indication that the positive association between educational attainment and health is due not to the effects of education on health status but rather to the effects of health (particularly in the school years) on educational attainment: individuals with better health are more apt to persist in school and to reach higher levels of educational attainment (Grossman and Kaestner 1997). The basic question concerns the influence of selection versus social causation (i.e., education causes adult outcomes such as health status). Haas (2006) found that poorer childhood health was negatively associated with educational attainment and lifelong returns to education (adult occupational SES, earnings, and wealth), a finding consistent with the selection hypothesis. But he also found that the association between SES and adult health persisted above and beyond such selection effects; that is, adult SES had some significant effect on adult health regardless of childhood health. In sum, he found support for both selection and social causation. So while there is evidence of a selection bias in effect, this bias does not appear to fully account for the observed relationship between education and various quality of life outcomes.

Measuring Educational Attainment

Educational attainment is often measured by number of years/grades or highest degree obtained, but as numerous commentators have pointed out such measures do not adequately capture all the relevant aspects of education, such as variation in quality of education (Behrman et al. 1997), or the value of different credentials that require the same years of schooling, nor do such attainment indicators apply with equal accuracy across different national contexts (Kerckhoff et al. 2002). National education systems vary along a number of

important dimensions such as extent of formal stratification (i.e., tracking or streaming), degree of standardization and credential specialization, and articulation with the labor market (Kerckhoff 2001; Müller and Shavit 1998; Sullivan and Smeeding 1997). For example, years of schooling is a more valid measurement of education in the USA than in many European countries with much more differentiated credential systems and multiple pathways of school-to-work transition. As well, utilizing years of schooling assumes that the effect of educational attainment is linear and that the returns to schooling increase linearly per additional year of education. But there is also evidence of nonlinear effects such as the credentialing or sheepskin effect, where inordinate wage premiums are often evident for degree holders in comparison to nondegree holders with similar total years of schooling (Card 1998; Pascarella and Terenzini 2005).

Two of the most widely used standards for classifying educational credential across countries are the ISCED (International Standard Classification of Education) and CASMIN (Comparative Analysis of Social Mobility in Industrial Nations) schemes. Traditionally, CASMIN fits the education credential systems of some countries better (many European countries) while the ISCED appears to better fit other countries (e.g., the USA) although there are examples of CASMIN being modified to incorporate these other countries (Kerckhoff et al. 2002; Müller and Shavit 1998). Another approach being developed by OECD/INES mitigates the incommensurate credentials problem by taking a broader picture of what education actually provides individuals. This new approach is based on the notion that schooling imparts more than just academic skills to students and thus seeks to augment measurement of curricular subjects (i.e., math, science, and reading literacy) with measurement of "cross-curricular competencies," or knowledge and skills that transcend specific subject areas (OECD 1997; Peschar 2004). Cross-curricular competencies are conceived as those competencies (life skills) required by individuals in order to be responsible, productive, fully functioning members of society. Four important cross-curricular competency domains have currently been identified: civics, problem-solving, self-related cognitions, oral and written communication. The OECD's Programme for International Student Assessment has incorporated self-regulated cognitions (learning) and problem-solving items into subsequent cycles. Other similar efforts at developing indicators of the general life skills imparted by schooling are also underway (e.g., Hautamaki 1998; Meijer et al. 2001). More comprehensive sets of indicators may provide a more multidimensional understanding of how schooling contributes to preparing students to meet the personal, social, and economic challenges of modern life. For example, it may help further clarify the extent to which the positive effect of education on earnings is due to the cultivation of cognitive versus noncognitive skills.

Conclusion

This chapter has reviewed a wide array of research on the impact of educational attainment on quality of life. Adopting Cummins' (1996, 1997) quality of life schema as a heuristic framework, we looked at educational effects in seven broad life domains: *achieving in life, material well-being/standard of living, emotional well-being/resiliency, physical health, community, intimate relationships, and personal safety/future security.* Of course, no life domain is an island; each exists jointly with the others. Accordingly, the effects of educational attainment on QoL are multidimensional (cutting across life domains) and often reciprocal (conditioning of and conditioned by domains) in nature. In light of this, we deem it useful at this juncture to give some consideration to the dynamic nature of the relationship between education and quality of life.

Behrman et al. (1997: 3) suggest there are basically three underlying pathways by which schooling imparts benefits: (a) improving the stock of knowledge and the analytical skills individuals use to guide their behavior, (b) altering individuals' preferences, and (c) altering the constraints/opportunities presented to individuals.

(a) Enhancing Knowledge and Cognitive Development

Pallas (2000: 505) sums up key findings in this area as indicating that "individuals with more schooling have access to a richer array of information than those with less schooling. They know more about their social, cultural, and political worlds, and they can apply that knowledge to shape their futures." In short, more

educated individuals are able to bring more information to bear in decision-making situations, thus, on the whole, improving the quality of those decisions.

Pascarella and Terenzini (2005) reviewed a host of studies from the 1990s that compared freshmen to seniors in terms of a number of basic dimensions of learning and cognitive development. In addition to statistically significant gains in fundamental knowledge domains such as English, Mathematics, Science, and Social Sciences, senior university students also demonstrated statistically significant improvements over their freshman counterparts in terms of general intellectual sophistication. That is, they exhibited greater propensity for critical thought and more advanced critical thinking skills, greater reflective judgment-thinking ("the ability to use reason and evidence to address ill-structured problems"), and greater epistemological sophistication or maturity. Evident long-term effects are that, compared to high school graduates, postsecondary graduates are not only "more knowledgeable and more proficient at becoming informed" but that they are also better equipped and more amenable to lifelong learning and continued intellectual growth.

There are numerous benefits to enhanced cognitive proficiency, some of which are related to productivity, employment, and earnings and some of which are related to other aspects of life quality, such as health. For example, there is strong suggestion that the more educated, due to greater access to information and greater proficiency at analyzing and implementing new information, are "more efficient producers of health" (Grossman and Kaestner 1997). Education imparts analytical and problem-solving skills ("learned effectiveness") that transfer to various aspects of life including health maintenance (Mirowsky and Ross 2005). More educated individuals have greater familiarity with the knowledge production process which may translate into greater trust in "expert" recommendations and greater likelihood of compliance. Thus, more educated individuals are more likely (and better equipped) to comprehend the relevance of expert recommendations and to be more effective in mitigating risk accordingly (Smith 1997).

This increased receptivity to learning is a primary consequence of the socialization effect of schooling. In addition to introducing new knowledge and training the mind to approach information, problems and ideas with more sophistication, schooling also shape individual preferences.

(b) Changing Preferences

When economists talk of an individual's preferences, they are essentially talking about a constellation of personal attributes or tendencies, such as an individual's general values orientation or priorities—the motives, attitudes, and ethics that guide individual conduct (what psychologists would see as facets of personality). Development of preferences occurs in concert with cognitive development, the two manifesting synergistically as habits of mind and behavior.[15] Thus, preferences include a host of possible personal traits such as work ethic, primary incentives, desire for autonomy, comfort with delayed gratification, political beliefs, and various lifestyle choices such as diet and leisure activities.

Level of education also has an effect on the values and practices that parents model for their children. Lareau (2000, 2003) has provided ethnographic evidence of important differences between middle- and working-class parents in childrearing practices and value orientations that translate into advantageous educational outcomes for middle-class children. Middle-class parents tend to be more hands on in their children's education, provide greater extracurricular learning opportunities, encourage analytical thought, impart greater achievement motivation, and model social skills (such as self-assertiveness and negotiation) conducive to success within "the rules of the game" that constitute formal education and later occupational contexts. Kohn (1969) observed an association between education and valuing autonomy even when controlling for subsequent occupation; increasing level of education was associated with increasing prioritization of autonomy. One of the aspects of autonomy that is most important to individual psychological health is control over the work process (Kohn 1976; Kohn and Schooler 1982).[16] A notable corollary

[15] Farkas (2003: 556) notes that a growing body of research suggests that "[p]atterns of habitual behavior, particularly the extent of conscientiousness or good work habits, developed from birth through adolescence, in conjunction with the cognitive skills developed alongside these behaviors, determine school success and schooling and occupational attainment. These skills and habits then combine with skills and habits developed on the job to determine employment and earnings success."

[16] Kohn et al. (1990) found that while the significant relationship between level of education and priority given to autonomy held in the USA, it was not evident in Japan or Poland.

of the desire for autonomy is self-efficacy or belief in one's ability to exert control over valued outcomes.

Formal education instills an analytical and problem-solving orientation that leads to a greater sense of personal agency or self-efficacy which strengthens resolve to initiate action and to better manage various aspects of one's life such as health status (Mirowsky and Ross 1999, 2005). Similarly, Goldsmith et al. (1997) found that higher educational attainment is associated with enhanced "psychological capital," the motivational and attitudinal requisites—particularly high self-esteem and internal locus of control—leading to higher wage employment. Pascarella and Terenzini (2005), in their extensive review of the literature on the affects of college, conclude that numerous studies indicate that postsecondary education has a net effect (i.e., persists after a number of potentially confounding variables are controlled) on student self-concept. As well, they identify a small but significant and long-term increase in university students' internal locus of control (perception of internal or self-control versus external or other-control of one's life) as well as fairly consistent indications of improved social skills and social self-confidence.

Pascarella and Terenzini (2005) also find evidence that attainment of university education is positively associated with increased valuation of the intrinsic rewards of work such as interesting tasks, freedom to use one's skills and talents, and involvement in decision-making. They also observe an association between university attendance and long-term changes in graduates' "sociopolitical attitudes and values and civic community engagement." Enduring changes include increased likelihood of voting and direct participation in the political process, as well as involvement in civic and community initiatives (Pascarella and Terenzini 2005).

Another important preference that is affected by education is what economists term "rate of time preference." Basically, this construct refers to the relative value an individual places on immediate versus future consumption or gratification, or even more pointedly, their degree of "patience" (Becker and Mulligan 1997). People vary in their capacity to forgo more immediate consumption, to invest time, effort, and money with the promise of greater payoff (pleasure or "utilities") in the future. While some argue that a lower rate of time preference for the present (longer time horizon) increases the level of formal schooling attainment, Becker and Mulligan (1997: 736) suggest that schooling enhances the ability to delay gratification because it teaches problem-solving and abstract thinking skills such as scenario simulation, and consequently, "educated people should be more productive at reducing the remoteness of future pleasures." As well, they suggest that education increases patience indirectly via its positive effect on earnings in that those with greater wealth are better positioned to cultivate long-term returns. Others suggest that the relationship between education and time preference is probably one of reciprocal effects: the ability to delay gratification enhances educational attainment, and greater educational attainment enhances ability to delay gratification (Leigh 1998). Thus, more educated parents tend to cultivate a more future-oriented time preference in their children to begin with, and this preference is further reinforced by successful educational attainment. Health status, occupational prestige, income, and credit rating are examples of areas in one's life potentially affected by one's time preference.

(c) Lessening Constraints and Increasing Opportunities

Learning begets learning, schooling provides access to substantive knowledge, but it also creates awareness of and potential access to further learning opportunities, thereby broadening the aspirational horizon of students. For instance, successful students, as they advance, become introduced to previously unknown educational and occupational options. Or academic success may lead to financial assistance such as scholarships and bursaries that enable a student to further their education beyond what their financial resources might otherwise afford.

Higher educational attainment also leads to occupations that are more likely to provide the opportunity for continued refinement of the cognitive and interpersonal skills developed in school. As well, occupations requiring higher education credentials tend to provide relatively high earnings which, in turn, enable access to wider range of material and nonmaterial resources and opportunities linked to an array of positive long-term outcomes (Pascarella and Terenzini 2005). Higher earnings enable individuals to live in safer, better-resourced (libraries, schools, recreational facilities, etc.) communities and to afford healthier lifestyles (e.g., healthier food, gym memberships, exercise

equipment, personal trainers, etc.). In addition, there are intergenerational repercussions, in that offspring of highly educated parents are more likely to attain high levels of education (and attendant benefits) themselves.

The effects of education on a broad spectrum of life outcomes are mediated by workplace conditions. For example, better educated individuals are generally less likely to be employed in dangerous working conditions and generally have better access to non-alienated work (less routinized and monotonous, greater autonomy, variety, and creativity) which decreases physical and mental distress (Ross and Van Willigen 1997) and the level of satisfaction derived from work (Ross and Reskin 1992).

These three pathways are interrelated; change or development in one is accompanied by change or development in the others, and each—to varying degrees—affects aspects of quality of life, within and across specific domains and in general. Thus, like a series of feedback loops, the effects of education in one domain may impact and be impacted by the effects of education in other domains. By way of simple illustration, remaining in school improves an individual's knowledge base and the analytical tools they bring to bear upon a range of circumstances, which may produce more successful responses (e.g., school achievement, task performance at work) and thus better opportunities (scholarship, promotion to a better paying job), which may, in turn, reshape individual preferences (reinforces hard work ethic, expands time horizon), which may increase the probability of the person pursuing further schooling (either initially or via upgrading) thereby increasing occupational and economic status. Of course, this example ignores a number of other factors that may differentially impinge upon individual educational trajectories (e.g., family background, ability, gender, race, school resources, etc.). The array of combinations of factors that could plausibly affect the educational attainment-quality of life relationship is sizeable and remains a primary challenge to researchers.

None of the returns to education studies considered here has incorporated the full breadth of plausibly influential variables into its design; social reality is too complex. Studies vary in the number of plausible influences they attempt to account for and in the rigor with which they do so. Practical and methodological limitations persist (e.g., selection bias and appropriate measurement of education), but viewed across the laminate profile of a large number of studies, certain patterns become apparent. Schooling does affect (and is affected by) individual quality of life by enhancing knowledge and analytical capacity, shaping preferences, and expanding opportunities. These changes feed off one another and have repercussions across all seven life domains examined; change along one pathway can affect the other pathways and one or more domains which can, in turn, affect each other.

Schooling is positively associated with achieving in life; in simple terms, success breeds success; those who do well in school are likely to continue onto higher levels of educational attainment which is associated with higher socioeconomic attainment (occupational status, income, etc.). Concomitant with enhanced achievement, schooling also raises material well-being by increasing economic returns. While factors such as family background, ability, and health influence educational attainment and its effect on economic returns, there is strong evidence for an effect of schooling on earnings net of these factors. The exact mechanism by which education enhances economic returns is still not completely clear. Some findings suggest that education increases the productivity of workers by increasing knowledge and skills, while other findings are more consistent with the notion that education socializes individuals into the values, habits, and attitudes favored by employers as conducive to successful performance. From the studies reviewed here, it seems that both views contribute something integral to the answer that is emerging and will continue to emerge as the breadth and sophistication of available data keeps growing.

Education also benefits psychological and physical health. While there is evidence of direct (net of other factors) health benefits to education (such as greater health knowledge and "learned effectiveness" and increased psychological resiliency via a greater compliment of coping skills), many of the salutary effects of education are indirect consequences of work, whether it be the actual conditions of the workplace (autonomy, nature of tasks and relationships, opportunity for continued learning, and personal fulfillment) or the socioeconomic repercussions (occupational prestige, financial resources to pursue other interests, etc.). The various health advantages related to education and socioeconomic status are cumulative in nature, growing across (and extending) the lifespan. Part of

the association between health and education seems to be due to the effect of early health on subsequent school attainment, but education still appears to provide significant health benefits above and beyond this selection effect.

There also seem to be indications of positive associations between education and richer social networks and social resources (social capital) as well as context effects related to neighborhood of residence and schoolmates, although contradictory results also exist which suggest such connections may be spurious. Again, the complexity of social reality and the difficulty associated with accounting for all plausible influences presents a stern test for scientific consensus.

Our review also looked at a number of studies pointing to a positive association between education and various dimensions of intimate relationships such as later onset of marriage and parenthood, greater parental resources and skills, and better child welfare. The benefits to women appear particularly strong in a number of respects: delayed marriage and/or motherhood are associated with higher educational attainment, greater economic resources, and more personal freedom for women, and educational attainment is negatively associated with teen parenthood (the disadvantages of which—such as poverty—seem to fall disproportionately upon young mothers). Lastly, in the domain of personal safety/future security, it appears that education is associated with decreased likelihood of exposure to an assortment of economic, social, and environmental risks and that when such stressors are encountered, the more educated are better equipped to effectively cope or adapt.

In sum, while there are still numerous questions and gaps remaining, the case for the positive effects of educational attainment on quality of life is in the balance very convincing. But it remains incumbent upon researchers to keep striving toward the increasingly comprehensive data required to bring the blurry aspects into focus. For example, one increasingly popular research strategy, necessarily given short shrift in this chapter, is cross-national comparison. Studying the differences and similarities between the institutional features of national educational systems promises to further reveal significant insights into the importance of societal and institutional context in determining quality of life returns to education.

Appendix

International Standard Classification of Education (*ISCED*): The International Standard Classification of Education (ISCED-97) is used to define the levels and fields of education used as part of the OECD's system of education indicators (OECD 2006). For details on ISCED 1997 and how it is nationally implemented, see *Classifying Educational Programmes: Manual for ISCED-97 Implementation in OECD Countries* (OECD 1999b). Levels include *Pre-primary education (ISCED 0)*, *Primary education (ISCED 1)*, *Lower secondary education (ISCED 2)*, *Upper secondary education (ISCED 3)*, *Postsecondary non-tertiary level of education (ISCED 4)*, *Tertiary-type A education (ISCED 5A)*, *Tertiary-type B education (ISCED 5B),* and *Advanced Research Qualifications (ISCED 6)*.

Upper secondary education (*ISCED 3*): Upper secondary education (ISCED 3) corresponds to the final stage of secondary education in most OECD countries. Instruction is often more organized along subject matter lines than at ISCED level 2, and teachers usually need to have a higher level, or more subject-specific, qualifications than at ISCED 2. The entrance age to this level is typically 15 or 16 years. There are substantial differences in the typical duration of ISCED 3 programs both across and between countries, typically ranging from 2 to 5 years of schooling. ISCED 3 may either be "terminal" (i.e., preparing the students for entry directly into working life) and/or "preparatory" (i.e., preparing students for tertiary education). Programs at level 3 can also be subdivided into three categories based on the degree to which the program is specifically oriented toward a specific class of occupations or trades and leads to a labor-market relevant qualification: general, pre-vocational or pre-technical, and vocational or technical programs.

Postsecondary non-tertiary level of education (*ISCED 4*): Postsecondary non-tertiary education straddles the boundary between upper secondary and postsecondary education from an international point of view, even though it might clearly be considered upper secondary or postsecondary programs in a national context. Although their content may not be significantly more advanced than upper secondary programs, they serve to broaden the knowledge of participants who have

already gained an upper secondary qualification. The students tend to be older than those enrolled at the upper secondary level.

Tertiary-type A education (*ISCED 5A*): Tertiary-type A programs (ISCED 5A) are largely theory based and are designed to provide sufficient qualifications for entry to advanced research programs and professions with high skill requirements, such as medicine, dentistry, or architecture. Tertiary-type A programs have a minimum cumulative theoretical duration (at tertiary level) of 3 years full-time equivalent, although they typically last 4 or more years. These programs are not exclusively offered at universities. Conversely, not all programs nationally recognized as university programs fulfill the criteria to be classified as tertiary-type A. Tertiary-type A programs include second degree programs like the American Master. First and second programs are subclassified by the cumulative education of the programs, i.e., the total study time needed at the tertiary level to complete the degree.

Tertiary-type B education (*ISCED 5B*): Tertiary-type B programs (ISCED 5B) are typically shorter than those of tertiary-type A and focus on practical, technical, or occupational skills for direct entry into the labor market, although some theoretical foundations may be covered in the respective programs. They have a minimum duration of 2 years full-time equivalent at the tertiary level.

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