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I Z A
World of Labor
Evidence-based policy making

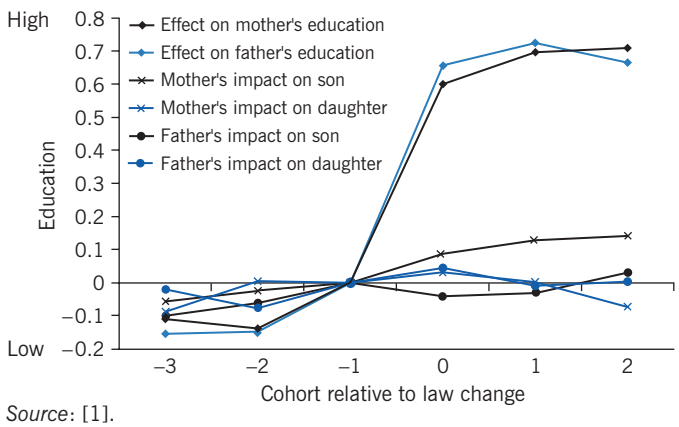
Intergenerational return to human capital

Better educated parents invest more time and money in their children, who are more successful in the labor market

Keywords: education, intergenerational mobility, child development

ELEVATOR PITCH

Governments invest a lot of money in education, so it is important to understand the benefits of this spending. One essential aspect is that education can potentially make people better parents and thus improve the educational and employment outcomes of their children. Interventions that encourage the educational attainment of children from poorer families will reduce inequality in current and future generations. In addition to purely formal education, much less expensive interventions to improve parenting skills, such as parental involvement programs in schools, may also improve child development.



Source: [1].

KEY FINDINGS

Pros

- The fact that better educated parents produce children who also do better implies that the benefits of policies to raise educational attainment are greater than previously estimated.
- Simple measures to improve parenting skills can be effective and inexpensive—and be aimed at parents most in need of help.
- Interventions that encourage the educational attainment of children from poorer families will reduce inequality in current and future generations.
- The estimated payback from successful interventions in educational policy is greater if the focus is not only on the generation or groups directly affected.

Cons

- The fact that children of better educated parents do better than children of less educated parents reduces social mobility across generations.
- Some studies fail to find much evidence that expansions of education for one generation affect outcomes in the next generation.
- Information is limited on returns to different types of schooling.
- Estimates are conflicting on the relative importance of maternal and paternal education.
- Little is known about the effects of expanding the educational system on intergenerational mobility.

AUTHOR'S MAIN MESSAGE

There is a positive intergenerational return to human capital, but it tends to be larger in countries where education significantly increases earnings. The main policy relevance is that the benefits to society of measures that increase education are greater than if they were confined to the directly affected cohorts. Policy interventions that predominantly encourage the educational attainment of children from poorer families will reduce inequality in both the current and future generations.

MOTIVATION

College-educated parents in the US spend more time caring for their children than parents with less than a high school diploma, even though they work longer hours, their time has higher value, and they can better afford childcare. In general, better educated parents invest more in their children, and their children do better in the labor market.

Better educated parents tend to earn more, live in better neighborhoods, have healthier lifestyles, and raise stronger and healthier children who do better in life than the children of less well-educated parents. This suggests that measures to improve the education of one generation will provide benefits to future generations.

Although this intergenerational relationship is well-established, linking the effects of better parental education in a causal way to child outcomes is challenging. Clearly, identifying such causal links is important for making policy recommendations.

Without thoroughly accounting for all the differences between the types of people who attain high education and those who do not, it is difficult to ascertain what effect their education has on their own lives and, subsequently, on their children's. In practice, it is not generally feasible to take all these differences into account, as many are unobserved, or difficult or impossible to measure. Economists have to get past these difficulties and use innovative approaches to measure the actual causal effects of parental education on child outcomes.

DISCUSSION OF PROS AND CONS

Direct evidence from changes in education policy

A natural starting point to study policy effects is to examine the intergenerational effects of policy changes that increased parental education. A good example comes from Norway, where an educational expansion in the 1960s was implemented in different municipalities at different times [1]. The policy change studied was an increase in compulsory education from seven to nine years. To understand the authors' approach, note that some women born in the same year (1950 for example) would have had to complete nine years of compulsory schooling (because their municipality implemented the reform early) but that others would only have completed seven (because theirs implemented it later). Likewise, among women who grew up in the same municipality, some would have completed nine years of schooling rather than seven because they were born a little bit later and were subject to the stricter law.

So, the staggered implementation of the change led to otherwise similar women having different levels of education. The authors investigate whether these differences in maternal education translate into differences in the education completed by their children. They also carry out the equivalent exercises for paternal education. They find that the length of a mother's education does affect her children's educational attainment (especially for sons), but that there is little such evidence for the father's education (illustration on p. 1).

Similar analyses have been carried out for compulsory schooling changes in Sweden [2] and the US [3]. The results for Sweden are similar to those for Norway. Interestingly, the US evidence suggests that both paternal and maternal education matter and that higher

parental education is associated with a lower probability of a child repeating a grade in school. The US effects are larger than those in Scandinavia. One plausible interpretation is that it is related to the higher return to education in the US and the greater availability of high-quality publicly funded education in Norway and Sweden.

Related work found that a large school building program in Indonesia led to increases in education for affected cohorts but also to improved test scores for children of women (but not men) affected by the policy [4].

Evidence from parental deaths

Researchers studied a sample of Israeli families in which one parent died while the children were growing up [5]. They found that if one parent died before the child was 18, the effect of that parent's education on child school performance was lessened and the effect of the surviving parent's education increased. Moreover, the more years a parent was present in the child's life before dying, the greater the effect of that parent's education on the child's test score. This makes intuitive sense: if education causes parents to be more effective, the effect of a parent's education should be greater if they are able to spend more time with their child. Similar effects are found for cases where children lose contact with their father due to divorce. These results strongly suggest that parental education contributes to higher test scores of children, and thus there is an intergenerational return to education. The findings from Israel have been corroborated by a study using Norwegian data [6].

Evidence from adoptees and twins

Clearly, a principal reason for intergenerational correlation is genetic transmission of abilities or characteristics from parents to children (such as attitudes toward risk or willingness to delay gratification). Therefore, researchers have used methods that seek to purge the genetic factors from the connections between parental education and child outcomes. Two approaches of this nature involve using adoptees or twins.

Adoptees

When children are adopted, they move from one family to another, and the importance of parental education can be studied using such cases by seeing whether how adopted children fare is affected by the education of their adoptive parents. A Swedish study examined how various child outcomes depend on the educational levels of both the biological and adoptive parents using a detailed administrative data set [7]. It finds that the effects of paternal education on the educational outcomes of children are similar in size for both biological and adoptive fathers. But the education of biological mothers has a bigger effect on the completed educational attainment of the child than does the education of adoptive mothers. However, the education of adoptive fathers has a larger impact than that of biological fathers on earnings and income. These positive effects of adoptive parents suggest that environmental factors are important, and that having better educated adoptive parents has a beneficial effect on children that translates into better employment outcomes.

Twins

Another approach is to study the children of mothers who are identical twins. Since monozygotic twins are considered genetically identical, it may be a fairly random matter whether one twin ends up with a higher level of education than the other twin. (This assumption is, however, questionable, as there is evidence that educational differences between identical twins are correlated with other characteristics, such as birth weight.) It is thus informative to see whether the twin with the better education produces children who also have better education and employment outcomes. Using this methodology, economists have found positive effects of parental education. This is consistent with an intergenerational return to the extra education of the better educated twin.

Evidence from pre-school

While most research has studied schooling, recent work has looked at the intergenerational effects of pre-schooling. A US study of the Perry Preschool Project uses a randomized experiment to show that the children of pre-school participants have, as adults, higher levels of education and employment as well as other beneficial outcomes [8]. A non-experimental study using Danish data shows that mothers that have access to pre-school have children with greater educational attainment. Overall, this research suggests that pre-school programs lead to benefits for future generations as well as direct participants.

Evidence from other sources

Other research has used different sources of variation in parental education to examine intergenerational returns. A 2008 study uses the increase in university admissions that followed on from the student riots of May 1968 in Paris [9]. One immediate result of the riots was that students were able to negotiate more lenient passing grades for the *baccalauréat* (which, if successfully completed, guarantees access to university) for that year. The proportion of students who passed increased significantly that year, so more students qualified to attend university. Moreover, these educational gains were passed on to the next generation: grade repetition declined significantly for the children of the affected cohort. Another study finds that exposure to radiation while in utero leads to lower cognitive skills and education levels for affected cohorts; the children of those exposed subsequently also have lower cognitive skills, suggesting an intergenerational return to human capital.

Is the mother's or father's education more important?

Much is still not known about the relative importance of mother's and father's education, but research has unearthed some suggestive patterns. Adoptive parents tend to have higher than average education, and adoption studies typically find that paternal education is more important than maternal. But studies that use changes in compulsory schooling laws or school building interventions as a source of variation tend to find the mother's education to be more important. Of course, compulsory schooling laws affect only people with low levels of education. Studies of twins tend to find that the mother's education is more important when the sample is restricted to twin mothers with low education. To complicate matters, data from Sweden show that these differences between findings

from twin, adoptee, and compulsory schooling strategies are the result of differences in the methods used rather than the country studied [2].

Overall, the literature suggests that extra maternal education is particularly important when mothers have low education, but that extra paternal education is more important when fathers already have a fairly high educational level. The differences here are probably related to the differing roles played by mothers and fathers in family life and the labor market.

Why might there be intergenerational returns to education?

There are many mechanisms for parental education to operate intergenerationally. Considered here are birth endowments, parental investment, and other environmental influences.

Birth endowments

When people have more education, it tends to influence when and whom they marry, when they have children, and how many children they have. Most research finds that better educated women postpone childbearing and usually have fewer children. They are also more likely to marry a highly educated man. This means better educated mothers are more likely to produce children with good prospects from the outset—good, so-called, "birth endowments."

Another mechanism is that parental schooling may increase skills or knowledge relevant to the well-being and capabilities of a child. Well educated parents tend to be more aware of the value of good health habits and preventative care and have greater knowledge of good parenting traits. This is important when the child is young—and even before birth, because better educated mothers are less likely to smoke during pregnancy and to have low birth-weight children, relevant because infant health is a strong predictor of later outcomes, such as completed education, cognitive test scores, and earnings.

Some policy-related evidence for the effect of education on infant health comes from a 2011 US study using data from California and Texas to compare women born just before and just after school-entry dates [10]. The second group starts school a year later and ends up, on average, with a poorer education. The authors find little evidence that the difference in the education of these mothers affects the birth weight of their children.

Another study also using US data exploits the fact that as tertiary-level colleges opened around the country some women happened to be in a late enough cohort to attend a local college, while other women from the same county were too old by the time a college opened [11]. This created variation in college attendance uncorrelated with personal characteristics. The study finds that a higher level of maternal education reduces the probability that a child has a low birth weight. The contrasting results between these two studies of, respectively, school [10] and college [11] education in the US suggest that a compulsory increase in the length of secondary schooling may have little effect on birth outcomes, but policies that increase access to college may have positive effects.

Parents' investment in their children

Parents may invest in their children for altruistic reasons (they want them to do well in life), and they see enhanced abilities as a way to achieve this. They may also invest for

selfish reasons: they want their children to provide income or other support to them (the parents) once they have grown up. Education itself may lead to a change in preferences or attitudes. For example, better educated parents may want to spend more time with their children and be more willing to sacrifice their own consumption in order to invest in them.

It is possible that well educated parents would invest more in their children because the return from doing so would be perceived as higher. For example, if parents have better academic skills, an extra hour spent helping a child with homework may be more productive than for less well-educated parents. But it is not clear that the return is necessarily higher for better educated parents, as their children may have more human capital in the first place, and the return to parental effort might be expected to be higher for a child with less human capital—one from a less educated family. Research suggests that the returns to investments early in life may be particularly high for disadvantaged children.

It is no surprise that better educated parents invest more in their children financially: on average, they have higher incomes. But better educated parents also spend more time with their children. A study using the American Time Use Survey for 2003–2006 shows that college-educated women spend over four hours more per week interacting with their children than women with less education than a high school diploma, despite the fact that, on average, the college-educated work longer hours and have fewer children [12]. Similarly, men with college degrees spend significantly more time providing childcare than men without a high school diploma. The authors also present evidence from several other countries that, in general, better educated mothers spend more time caring for their children than less educated mothers.

One drawback of this survey is that the authors are unable to fully take into account the fact that parental education may be correlated with many unobserved characteristics of the parents [12]. For example, more motivated or more patient parents may be more likely to acquire higher levels of education and these traits may be passed on genetically to their children and have direct effects on child human capital accumulation. Another US study uses the variation in parental education that arises from differences in the availability of college education in the mother's county when she was growing up, variation in college tuition fees, and variation in labor market conditions when the mother was considering going to college [13].

Educational differences that arise because of these factors are likely to be unrelated to other characteristics of the mother. When the authors allow for these sources of variation in maternal education, they still find that better educated mothers tend to invest more time in their children. For example, they are more likely to read to their children at least three times a week. Thus, the evidence that maternal education increases investment in children in the US appears to be robust.

Other environmental influences

Even if parents do not specifically invest in their children, the children of better educated parents are likely to benefit from a richer environment when growing up. In the study mentioned above, better educated mothers are more likely to have a computer or musical instrument in the house [13]. And the children may live in nicer areas, go to better

schools, and be fed more wholesome foods. They are more likely to mix with peers who are ambitious and to make contacts that will help them find employment later in life.

Evidence from interventions in parenting

Policies that increase or improve education may have positive effects on the next generation but are generally expensive. So, it is interesting to consider less costly interventions that increase the human capital of parents in ways directly targeted at their children's outcomes. These include programs to increase parenting skills immediately before and after the birth of a child, such as the Irish "Preparing for Life" program that uses home visits to provide advice and support to mothers in a deprived Dublin community from pregnancy to when the child is five years old. An evaluation of this program shows large positive effects on the cognitive skills of children at age five, indicating that this type of home-visiting scheme can have positive effects on early childhood development and child human capital accumulation [14].

Other programs help parents support their children through school. One example is an intervention in French middle schools in a relatively disadvantaged part of Paris [15]. In each participating school, about half the sixth-grade classes (students are around age 11) were randomly allocated to the treatment, which consisted of three meetings of parents with the school principal where they were informed about the workings of the school and encouraged to help their children to engage with their studies at home.

The study finds significant benefits for the classes allocated to the program. Truancy rates fell, as did the number of sanctions for bad behavior, but there is not much evidence for any improvement in cognitive skills. Nevertheless, the positive effects found on noncognitive skills are important, as children's later outcomes are likely to be strongly influenced by them. Interestingly, the study also finds spillover effects of the program to children in treatment classes whose parents did not attend meetings. This suggests that increasing the human capital of a subset of parents may have positive effects not just on their own children but also on their children's classmates.

Policy implications of positive intergenerational transmission

The estimated payback from successful interventions in educational policy is greater if the focus is not only on the generation or groups directly affected. But potentially complex implications for social inequality depend on exactly whose education is increased by an educational improvement or expansion.

For example, researchers found that the large growth in higher education in Britain in the late 1980s and early 1990s led to a much bigger increase in educational attainment for children from better-off families than from poorer ones. Although it is still too early to study the labor market outcomes of children of the affected cohorts, it is reasonable to believe that a positive intergenerational return to education will tend to increase rather than reduce earnings inequality in the next generation. By contrast, increasing the length of compulsory schooling has a disproportionate effect on children from poorer families, and if their children in turn do better because of this extra parental education, the effect should be to reduce overall social inequality.

In considering educational policy interventions, it is natural to compare their effects with those of other policies that might achieve similar outcomes. For example, governments could increase financial transfers to parents (for example, through child benefit), which might improve child outcomes to the same extent as policies that increase parental education. The economics literature on the causal effects of parental income on child outcomes is inconclusive, so it is difficult to compare these types of policy quantitatively. The tax system also provides an avenue to redistribute incomes, and there may be a trade-off in that educational policies that reduce inequality in the next generation imply that a less progressive tax system is required for any particular level of after-tax income equality.

LIMITATIONS AND GAPS

There are still gaps in knowledge. Information is limited on the specific returns to different types of schooling (primary, secondary, college). Estimates are conflicting on the relative importance of maternal and paternal education, an area that requires further study. And little is known about the effects of expanding the educational system on intergenerational mobility. More research is needed to identify whether an intervention that increases schooling for a particular group is likely to make outcomes of the next generation more or less equal.

Other gaps include the relative importance of many mechanisms for the increased education of parents to improve child outcomes. Nor is much known about how the costs and benefits of increasing parental education compare with those of other policies that can improve child outcomes.

SUMMARY AND POLICY ADVICE

Better educated parents tend to invest more time and money in their children, who obtain more education and are more successful in the labor market. Economists find a causal effect of parental education on child outcomes, but the magnitudes tend to be larger in countries with a high earnings return to education and where investments in child human capital are costly. Both maternal and paternal education matter. The relative value of extra maternal education tends to be greater when educational levels are low.

Government intervention is often justified on the basis that less well-off people cannot afford the education they wish for their children, or because education has benefits for society. Even if intergenerational transmission is considered a private benefit by parents (they choose the optimal level of education for their children and view the benefits as confined to their own family), there may still be spillover benefits to society if there are more able members in subsequent generations—benefits that arise if the children of better educated parents are more likely to be productive and contribute to society through, for example, taxation. In this way, positive intergenerational returns strengthen the case for government subsidy of education and for compulsory schooling laws.

Interventions that encourage the educational attainment of children from poorer families will reduce inequality in current and future generations. Other interventions to increase parental human capital (such as help with parenting skills) can target poorer and less educated parents and be relatively inexpensive to implement. Therefore, they are promising for public policy.

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Competing interests

The IZA World of Labor project is committed to the IZA Code of Conduct. The author declares to have observed the principles outlined in the code.

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