

## 4.C. Health behaviours: the competence approach

By Laura Salganik\*

### Introduction

The Feinstein *et al.* paper presents a framework relating education to health and summarises a large body of related research. It is clear from the paper that the relationship between education and health outcomes is complex and multi-faceted. Further, it is certainly reasonable to hypothesise, as presented in Feinstein’s framework, that education influences health both through influencing the context in which individuals live and through influencing the actions individuals take. The research appears to support these hypotheses and demonstrates numerous interrelationships between education and health-related factors, suggesting that it may be possible to link health outcomes to individuals’ education. In this paper, I discuss issues related to using this work as a starting point for the development of indicators of health-related returns to education.

### Indicators and research: rationale for indicators

Much of the material in the Feinstein *et al.* paper focuses on research relating education to a wide range of health outcomes. In reviewing these relationships, it is important to keep in mind the role of such a review for discerning whether the development of indicators relating health outcomes to education is justified. It is important to clarify that the primary rationale for indicators is that they are of interest of policy makers. Statistical indicators are statistics about phenomena that policy makers are interested in, such as health status and educational attainment. Simply put, they are policy-relevant statistics. Policy makers may be interested in various statistics for any number of reasons, including but not limited to relationships supported by research. Commonly-held beliefs about policy goals and beliefs about how social processes work are other sources affecting the interest of policy makers in statistical indicators. Of course, research, commonly-held beliefs, and policy questions are interrelated. But they are also distinct from each other, and it is through their relationship to policy questions that statistics become “indicators”.

Thus, when considering indicators of returns to education related to health outcomes, the most important question to consider is: Is the relationship between education and

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indicators of interest to policy makers? Although the research base informs the interest of policy makers, it is not the only input. A few illustrations from other topics highlight why this approach is relevant and appropriate.

Consider returns to schooling for literacy outcomes (again operationalised as differential outcomes for individuals with different educational attainment). It is immediately clear to policy makers and others that one of the policy goals of education is to influence literacy outcomes. If literacy outcomes did not vary with education, one would not conclude that indicators showing the relation between literacy and education were not important. Rather, indicators would likely be interpreted to mean that something is askew in the education system. The relevance of this indicator does not depend on research evidence.

Moving a bit further from such a well-defined arena of education goals, consider returns to schooling for income. Although the mechanism relating education and income is not as direct as the one relating education and literacy, there are commonly agreed on mechanisms through which education affects income, not necessarily the only influence but an influence nonetheless. If there were no returns to schooling on income, would this still be a valid indicator? I suspect it would. Lack of a relationship could be a result of characteristics of the labor market (criteria for hiring, wage differentials) or of the education system. In either case, although the body of research supporting these returns details the mechanisms, provides corroborating evidence, and may contribute to commonly held beliefs, it is not logically necessary for the indicators to be interesting to policy makers in a cross-national context.

Health outcomes take us even further from goals that are typically expressed for the education system. In developed countries, a connection between education and health is not a major element of policy or ideology. Rationales for policies that support education generally do not include improving the health of the population. Yet it is quite reasonable to envision that skills individuals learn in school contribute to their own health.

Additionally, while indicators and research may address the same topics, there is also an important difference in their underlying logic. Researchers look for complexities in relationships. In research, there is always another rock to turn over, another variable to investigate, another methodology to apply to more fully understand a particular phenomenon. Indicators, like research findings, must be high-quality statistics that accurately measure what they purport to describe. But their purpose is to stimulate discussion, not to fully understand the phenomenon. Useful indicators can be generated where linkages are plausible, even if research does not conclusively demonstrate causality. Research proceeds over a long time perspective; indicators operate in a fast-moving policy – and political – environment.

Exploring whether health returns to education are an indicator of interest, like other indicator development, should take place through an iterative process of conceptual and empirical work, each informing the other. Conceptual work provides a foundation for research – for structuring research questions and interpreting findings; research speaks to these questions and suggests modifications to conceptual frameworks. The Feinstein *et al.* paper begins both areas of work. In the conceptual area, Feinstein *et al.* present a broad conceptual framework that relates education to health. The framework shows explicitly that factors from context influence health as well as characteristics of self. It illustrates that education influences context, and that there are direct and indirect influences on health. I have two recommendations for building on the work in the framework arena.

## Grounding in a broad framework

The first recommendation is to extend the framework so it represents more fully the questions addressed by both research and indicators. Ideally, there should be a correspondence between the framework and the major questions under discussion. Thus, rather than proposing a framework for how education relates to health, an extended framework would present a broader conceptual view of health-related behaviour and outcomes in which education is one component. The framework then would address the question of what factors “produce” health outcomes of individuals. It is not the place here to propose a particular one, but I assume it would include a place for genetic makeup, early health, socioeconomic status, characteristics of individuals that influence their behaviour, as well as aspects of the health care system and other health-related characteristics of the social and physical environment.

Having such a framework would make transparent the competing hypotheses for how correlations between health outcomes with other factors are generated. Whether correlations between education and health-related behaviours and outcomes reflect indirect effects, selection effects, or reverse causality rather than direct effects is a central question for researchers, and the existence of the competing hypotheses is frequently mentioned in the Feinstein *et al.* paper. Making alternate explanations explicit through a broad framework would aid both in critiquing the research base and in interpreting indicators.

It is a challenge to reach the right level of specificity, but in light of the research questions a framework that places education in a broader framework of health behaviours and outcomes is a necessary step for indicator development, particularly since the topic involves two different policy spheres, health and education. As is generally recommended for indicators development, such a framework is best designed through a consensus process representing multiple viewpoints.

## Linking individual behaviour to health outcomes

A conceptual framework for health outcomes that focuses on links between health and education should be explicit about how individuals can influence their own health. The second recommendation is to expand the framework by providing more depth in this area, thus providing an important link toward understanding the processes through which education – going to school – can lead to better health for individuals. (It is of course possible that the link between education and health is totally mediated by placing individuals in a different context – different environment, different services, no germs – but it is far-fetched to posit that the behaviour of individuals has no role to play once they arrive in this context.) What is the conceptual and theoretical base for positing the influence of individuals over their own health?

The findings of another OECD project, DeSeCo (Definition and Selection of Competencies: Theoretical and Conceptual Foundations), shed light on responding to this question. Through international and interdisciplinary interchange among scholars from different disciplines as well as policy makers and policy researchers, DeSeCo addressed the topic:

*“Beyond reading, writing, and computing, what competencies are needed by individuals to live a successful life and for society to face the challenges of the present and the future in modern, democratic societies?”*

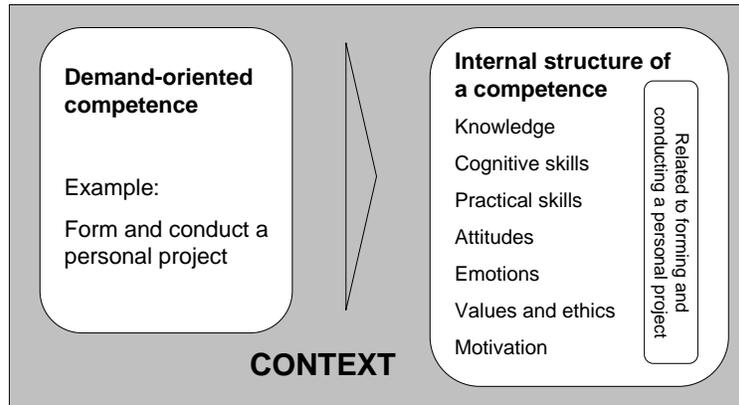
DeSeCo adopted a broad view of a successful life, reaching beyond economic outcomes to all aspects of life, including health. The purpose of the project was to develop an overarching frame of reference relevant to lifelong learning, international assessment of competencies, and the development and interpretation of internationally comparable indicators. Additional information about the project can be found in OECD (2005), Rychen and Salganik (2003b), Rychen and Salganik (2001), and Rychen, Salganik, and McLaughlin (2003). Rather than providing a summary of the findings, which can be found in the OECD Executive Summary (2005), I will focus briefly on the theoretical and conceptual work that most directly relates to linking individual behaviour to health outcomes, *i.e.* the concepts of competence and key competence and the three-fold categorisation of key competencies.

### **Competence**

DeSeCo proposed that for assessment and indicator development, it is most useful to think of competence as “the ability to successfully meet complex demands in a particular context through the mobilisation of psychosocial prerequisites (including both cognitive and noncognitive aspects)” (Rychen and Salganik, 2003a, p. 43).

This conceptualisation incorporates several critical elements (see Figure 4.C.1). First is the idea that competencies are structured around the capability of individuals to meet demands they face in any sphere of life, including health. By putting demands at the forefront of the definition, it contrasts with definitions that focus on internal attributes of individuals. The concept of competence recognises internal attributes as prerequisites that enable action through interacting dynamically among themselves. Internal attributes typically thought of as cognitive (such as knowledge and skills) together with those typically thought of as noncognitive (attitudes, emotions, values, motivation, social skills) play a complex and important role but are not competencies themselves. The final critical element is the role of context. Competencies are played out in the social and physical environment – and thus their specifics, as well as the specifics of their internal components, are influenced by the individual’s particular situational context. For this element, DeSeCo drew from Pierre Bourdieu’s notion of social fields. According to this theory, individual action takes place within dynamic systems of sets of social interests and challenges, which are referred to as social fields. Meeting demands in a social field involves understanding and being able to operate within the system of capital of the field.

An example from the health domain is the competence to deal with an illness. To respond to the demand associated with an illness, it takes attributes associated with cognitive and non-cognitive domains: knowledge (which symptoms are dangerous, should a doctor be consulted?), motivation to take the necessary actions and do what the doctor ordered, beliefs about self-efficacy and potentially the efficacy of the medical system, in many cases literacy and numeracy, problem-solving, and the ability to plan and think in the future. Each is diminished without the other. What is required of individuals is also affected by the context – the resources available from the health care system and what actions and capabilities are necessary to access them, for example, what is involved to see a doctor or read the directions on medicine containers. A similar example is eating food that contributes to health. To eat a healthy diet requires a range of attributes – including knowledge, motivation, deferred gratification, etc., – and is dependent on elements of the context in which the individual lives such as the availability of healthy food.

**Figure 4.C.1. The demand defines the internal structure of a competence**

Adapted from Rychen and Salganik (2003b), page 44, Figure 1.

Given that competencies are the ability to meet demands and that they require the mobilisation of numerous individual resources, what competencies contribute to health outcomes? The concepts of competence, key competencies, and three categories of key competencies provide a starting point for this discussion.

### ***Key competencies***

DeSeCo defined competencies as “key competencies” if they [1] contribute to highly valued outcomes at the individual and societal levels in terms of an overall successful life and a well-functioning society... [2] are instrumental for meeting important, complex demands and challenges in a wide spectrum of contexts... and [3] are important for all individuals” (Rychen, 2003, pp. 66-67).

The project also developed a three-fold categorisation of key competencies and through an analysis of the use of key competencies in OECD countries, identified exemplar key competencies in each category. The three categories and exemplar key competencies in each group are shown below.

*Interacting in socially heterogeneous groups.* Human beings are dependent throughout their lives on ties with others, not only for physical survival but also for their sense of self and social meaning. This category addresses interaction with others, and given the pluralistic character of modern democratic societies, the focus is on socially heterogeneous groups – “different others”. The key competencies in this group are: the ability to relate well to others; the ability to cooperate; the ability to manage and resolve conflicts.

*Acting autonomously.* This category focuses on an individual’s sense of identity and empowerment to exercise control over his or her own life. Key competencies in this area enable individuals to develop a value system, “to act rather than to be acted upon, to shape rather than to be shaped, and to choose rather than to accept choices decided by others” (Rychen, 2003, p. 91). It should not be interpreted as meaning that individuals can do whatever they want or can freely act in isolation from others; all our actions take place in the context of other people and of social norms and institutions. The identified key competencies are: the ability to act within the “big picture”; the ability to form and

conduct life plans and personal projects; the ability to defend and assert one's rights, interests, limits, and needs.

*Using tools interactively.* Using tools is a universal activity for human beings. Here, the term “tool” is used in the broadest sense of the term, to include not only physical tools but also socio-cultural ones such as language, information, and knowledge. The adverb “interactively” signifies that what is needed is not just the technical skills to operate a tool (*e.g.*, reading or making a phone call with a cell phone, locating a web site); to use a tool interactively is to understand the potential of the tool for allowing us to do new things, to interact with the world in a different way, to accomplish new goals. Three key competencies were identified in this category: the ability to use language, symbols, and text interactively; the ability to use knowledge and information interactively; the ability to use technology interactively.

This conceptualisation of key competencies provides a starting point for thinking about what is involved with the health-related competencies such as responding to illness, eating a healthy diet, exercising and resting, going to the doctor regularly, refraining from activities that negatively impact health, or other activities that are related to health outcomes. Each of these draws on combinations of inter-related key competencies.

The material compiled for the DeSeCo project – the concepts of competence and key competence, and the categorisation of key competencies – provides a theoretical and conceptual foundation for further research and indicator development that links such concepts discussed in the research literature as self-efficacy, resilience, self-esteem, and time preference; other factors not mentioned by Feinstein *et al.* such as knowledge, problem-solving, literacy and numeracy; as well as aspects of the social and physical context including the health care system to individual actions that affect health outcomes. Such a broad view can be used to make explicit the linkages between education and health and other social outcomes and provide a framework for continuing research and for relating research to indicators and interpreting indicators.

### **Linking education to health outcomes**

Once the process of “producing” health is outlined, the next step is to examine where education fits in. Are there competencies that contribute to health and are they linked to education? Does education influence characteristics such as literacy, self-efficacy, or time preference that may allow individuals to act in the interest of their own health? Does education influence contextual factors that contribute to health? These become the critical questions for developing a framework that relates education to health outcomes. With a framework rooted in all factors affecting health, both research and indicators can be more explicit about how education fits into a picture that includes other influences also, and what methodological challenges await.

### **Methodological challenges**

As with any policy question that involves complex processes in different spheres, analyses of statistics can highlight relationships that were otherwise unnoticed, confirm relationships that some would rather not believe, or lead to interesting further questions. But it is also important to recognise their limitations.

*Causality.* Much has been written about the concept of causality in social science research, and an in-depth discussion of it is well beyond the scope of this endeavour. I will comment, however, on use of the concept of causality in discussions of indicators, where it is common to establish the criterion that a measure is more appropriate for an indicator if it has a “causal” relationship to the outcome. Feinstein *et al.* write that causality can be used “in terms of a generalisable impact that can provide policy makers and others with a reasonable guide to the likely impact of a policy change”. In the context of education policy, it would be helpful to establish whether policies that increase the level of educational attainment in the population would also lead to improvements in health outcomes. Assuming that there was a true causal relationship, indicators would provide information on the extent to which changes in education would cause health outcomes to improve.

The question of causality often arises in the context of one or a few competing hypotheses that represent factors correlated with the predictor of interest. For example, examining the relationship of education to health outcomes and to income, some aspect of socioeconomic status is a factor correlated with education that poses a competing source of “cause”. Statistical controls are used to verify whether the relationship persists among those with the same level on the control variable. If it does, and if there are no other such correlated factors under consideration, then the term “causal” is used. It is critical to realise that any conclusion about causality is only valid in the context of the particular model it references. Changing the model by adding another predictor introduces a whole new hypothesis about causality. A factor such as educational attainment may qualify as causal with respect to one model and not with respect to another.

A final word about causality, that is very basic but also very important for both research and indicators, is that statistical models can only demonstrate causality when there is variation. If everyone in a population has an identical characteristic, *e.g.* attending primary school, then statistics cannot demonstrate its effect on a particular outcome, *e.g.* health. As a policy becomes widely implemented or mandated for all, variation in the target characteristics will decline and its relationship to its intended outcome will be diminished. As a result, it will become impossible to tell from the statistical relationship alone whether it is because the policy worked or because it did not work.

This statistical discussion differs substantially from the non-technical use of the word causal, and since indicator discussions need to take place in a non-technical sphere, it can lead to miscommunication and misunderstandings. Interest to policy makers (which often stems from previous research and the plausibility of causality) is a better criterion than causality demonstrated through a statistical process.

*Instrumental variables.* “Instrumental variables” refers to a statistical technique frequently used in regression analysis when a predictor variable (also called an independent variable) is correlated with the error term of the regression equation; usually this means there is a variable omitted from the model that is correlated with both the independent variables and the outcome variable (also called the dependent variable). This correlation can lead to bias in estimating the relationship between the predictor variable and outcome variable. Statistical theory shows that this bias can be reduced by using an “instrumental” variable in the regression in place of the predictor variable that is correlated with the error term. The criterion for an instrument is that it be correlated with the independent variable as highly as possible but not with the error term. Although econometrics books routinely suggest caution in using instrumental variables, the

temptation to use this technique for inferring causality seems difficult to resist, especially with the importance given to this type of evidence of causality.

But these cautions should not be overlooked. It is easier said than done to identify instruments that are correlated highly with the independent variable and not correlated with the error term. Thus, in practical terms, the correlation between the independent variable and an instrument will be a moderate one. Moreover, it must be recognised that the methodology of instrumental variables relates variation in the dependent variable to the variation in the independent variable but only the part it shares with the instrumental variable, otherwise the variation in the independent variable that is not correlated with the instrument is dropped. There is no way around that, and this limits the meaning of a non-significant regression coefficient.

In addition, analysts should be knowledgeable about the instruments selected. For example, compulsory attendance laws in the United States are used as an instrument for educational attainment in studies cited in the paper. Such laws were typically passed only when enrolment was already high so it is unlikely that they discriminate very well between different levels of educational attainment for individuals.

### **Additional topics**

Some additional topics to consider in the development of indicators are the following:

*Interpreting returns to education.* As with any analysis of returns to education in developed countries, it is important to remember that conclusions refer to returns to education beyond the level that is attained by just about everyone. Thus, in OECD countries, it is impossible to tell from these analyses whether there are health-related returns to education at the primary and lower secondary levels.

*Developing countries.* It is widely agreed that there are positive health outcomes when education is introduced in developing countries, and that these are not just an artifact of the benefit of higher incomes. This introduces a different set of policy questions, but considering interest in indicators for projects beyond OECD countries, this should be considered in indicator planning. Bloom (2005), the introduction to a special issue of *Comparative Education Review* on the synergies between education and health for human development, provides an overview of the topic in the context of developing countries.

### **Next steps**

The following are a few recommendations for next steps in developing indicators relating education to health outcomes:

*Wide participation in indicator development.* It is extremely important to include experts in the fields under consideration, including those with statistical expertise, those with a policy perspective, and substantive experts. Medical and health professionals should be involved in the development of a framework to relate education to health. Communication across different groups of stakeholders, including researchers, practitioners, and policy makers, is critical to the process of indicator development.

As an observer reflecting on the development of indicators in the United States reaching as far back as the unemployment rate (beginning in the 1920s) put it:

*“From my perspective... the most influential, valid, and reliable indicators are constructed not just through the efforts of technicians, but also through the vision and understanding of the other participants in the policy process. Influential indicators reflect socially shared meanings and policy purposes as well as respected technical methodology. If they were not simultaneously technical and political creations... they would not be valid, since the very concept of validity implies a correspondence of measure and meaning.” (Innes, 1990, p. 4)*

*Utilise widely-recognised and validated measures.* It is important that indicators be understood and recognised as valid by a wide audience. Using measures that have been developed and used for other purposes contributes to this end.

*Practical data requirements.* At the most practical level, the main data requirements for producing cross-national indicators of health outcomes and health-related behaviours for those with different levels of education are (1) that information on both characteristics be available on the same data set, and (2) that the information be comparable across countries. Longitudinal data have many advantages but in a practical sense are not necessary for indicators. A few carefully-developed questions that could be placed on for example the upcoming OECD Programme for International Assessment of Adult Competencies (PIACC) questionnaire could lead to a number of indicators not only empirical relationships between education and health outcomes, but between what individuals know and can do and their health.

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