Consequences of Schooling by Mike Cole

Introduction to Literacy and Mothering: How Women's Schooling Changes the Lives of the World (LeVine et al., 2012)

As the several authors emphasize, schooling is not a form of experience that can be manipulated to create a true experiment: children cannot be assigned to attend school at random, irrespective gender, family composition, social class, religious background, and all the other antecedent factors that might be involved when one attempts to explain why the education of girls produces the social effects documented here: greater use of health care facilities, lower infant mortality rates, better comprehension of health related messages in the mass media, changes in the way they interact with their children, and children's increased academic performance. Yet, in the best traditions of social science, the authors have strategically collected data sufficient to make highly plausible, if not logically iron clad, their central claim that the acquisition of literacy as a part of formal education profoundly changes their behavior in a manner that increases the life chances of their own children in the next generation.

Confident that the reader of this monograph will discover, as I have, a clearly written account of the exemplary research project supporting these important conclusions, I will confine my comments largely to a major contribution of this work that the authors do not particularly emphasize- its contribution to solving a knot of technical difficulties associated with attempting to understand the intellectual and social consequences of literacy and formal schooling.

A major analytic problem that this research confronts, as I already noted, and the authors are quick to point out, is that schooling is not, strictly speaking, an "*independent* variable/" Children are not assigned to schools at random; rather the decision to attend school is made for them by government policies about where to build schools, their parents' decisions about whether and for how long they will attend school and broader socio-ecological factors over which neither child nor family have control.

But even if the problem of random assignment could be set aside, or at least bracketed by careful procedures that take account of as many co-varying factors as possible (as the authors have done in the research they report here) there remains the problem of how to assess psychological changes wrought by literacy and schooling. It is also necessary to take account of the fact that schooling is, in Beatrice Whiting's apt term, a "packaged variable": it includes at least the forms of language uses and how they mediate the morphologies of the social-interactional patterns that are ubiquitous in schooling, it means, crucially, being able to observe how social-interactional patterns move beyond the school setting to enter into other, more traditional, cultural practices. Literacy is perhaps the linchpin which cobbles together these disparate elements into something that appears recognizable as a culturally organized form of experience extant across a very wide range of human societies.

But literacy, even as a lynchpin of schooling, is a packaged variable itself. By my reading, uses of the term, literacy, combine two distinct, but interwoven features: the ability to code and de-code graphic representations of the sounds of a spoken language to construct meaning and the additional knowledge that accrues as a consequence of engaging in activities in which meaning making (knowledge acquisition) is mediated by written language. The presence of codes and alternative means of knowledge acquisition in the settings where children acquire knowledge of the world should make it clear that lack of literacy cannot be equated with ignorance in general –rather, the ability to use specialized codes is foundational to success in modern, formal, education.

So schooling is a complex system of heterogeneous factors and literacy, as a central element in schooling is also mixture of factors, some of which depend more upon schooling (acquiring the code for representing spoken language in graphic symbols, participation in social distinctive modes of discourse) and some of which do not (one does not have to be able to read and write to acquire deep knowledge as a part of a vast range of everyday experiences).

An additional complication arises because the procedures used for data collection, including tests and surveys, are themselves modeled on the school practices they purport to analyze. Consequently, even when investigators take all possible precautions to insure that the methods and procedures they use to assess intellectual functions are as familiar to non-schooled experimental subjects as to the schooled ones, the conclusions may be method-driven in a manner that renders their entirely circular.

In light of such complexities, doubts always could, and often have been, voiced about social science research on the developmental consequences of formal, literacy-mediated, education using quantitative methods. Statistical control is not experimental control. Combining experimental, survey, and ethnographic approaches, as the authors of this monograph have done, can reduce the plausible space of warranted scientific inference, but it cannot completely "close the deal" by delivering a logically causal law – reality exceeds our grasp of it.

These issues are more than academic. They often involve, as in the current case, links to government policies and strategies of economic development. In this guise the result take on deep political significance. For example, what if policy makers were to take at face value the research indicating that cognitive development in industrialized, modern, societies is a direct function of years of education? Moreover, such results would imply that cognitive development without education produces a level of development roughly equivalent to a 6 year old? From such evidence, it appears, for example, that Jerome Bruner and his colleagues were correct in the 1960's when they concluded that some societies (e.g., those with formal schooling) push cognitive development faster and further than others. If these were true, the imperative of providing widespread, quality, education to all children immediately sheds its humanitarian mantle and reveals itself as a compelling, concrete economic necessity for social survival. We do not generally advocate putting the fate of society in the hands of six year olds!

Before taking such conclusions as established facts, and acting on them, and because social science warns us that however well they are conducted, the results of comparative psychological analysis are inherently ambiguous, it seems only common sense to get our scientific house in order before disseminating information that could be seriously misleading.

Such complexities and the doubts they engender were a central concern of our research on the cognitive consequences of schooling in Liberia and rural Mexico in the 1960's and '70's. Frustrated in our attempts to solve the problem we proposed the following thought experiment:

> Suppose, for example, that we wanted to assess the consequences oflearning to be a carpenter. Sawing and hammering are instances of sensorimotor coordination. Learning to measure, to mitre corners, and to build vertical walls requires mastery of a host of intellectual skills which must be coordinated with each other and with sensorimotor skills to produce a useful product (we are sensitive to this example owing to our own lack of success as carpenters!). To be sure, we would be willing to certify a master carpenter as someone who had mastered carpentering skills, but how strong would be our claim for the generality of this outcome? Would we want to predict that the measurement and motor skills learned by the carpenter make him a skilled electrician or a ballet dancer, let alone a person with 'more highly developed' sensorimotor and measurement skills?
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> Lest it be thought that the example is too absurd to merit juxtaposition with the outcome of schooling, consider psychological experiments in light of the contexts from which their procedures have been derived and the domains in which they are routinely applied.
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> Some version of virtually every experimental task reported in this monograph can be found in Alfred Binet's early work on the development of behavior samples which would predict children's success in school. The inspiration for their content came from an examination of the school curriculum, combined with Binet's sage guesses about the fundamental principles that underlie success in mastering that curriculum. The correlation between successful performance on Binet's tasks and success in school was a tautology; the items were picked because they discriminated between children at various levels of academic achievement. Might we not be witnessing the converse of that process when we observe people with educational experience excelling in experimental tasks whose form and content are like those they have learned to master in school? Is there any difference in principle between their excellence in recalling word lists, and the master carpenter's ability to drive in nails quickly? After all, practice makes perfect; if we test people on problems for which they have lots of practice, why should we be surprised when they demonstrate their competence? Conversely, what leads us to conclude that they will be equivalently good at solving problems for which they have no specific practice? (Cole, Sharp, & Lave, 1976, p. 227).

It seemed to us that the only secure conclusion was that people who had been to school acquired new ways of acquiring, retaining, and dealing with the intellectual tasks we posed. What remained obscure was whether these "new

ways" represented generalized changes of "modes of thought" and "modes of learning" that people acquire in school are deployed quite generally, or whether the changes are of a far more local character. As the question was posed at the time, did schooling produce relatively specific consequences, adding to the cultural tool kit of those who attended, but not bringing about any general changes in "modes of thought," or did schooling bring about far reaching, pervasice, and more highly developed modes of thought that permeated their behavior in all walks of life?

We were skeptical about claims for generalized effects. We not only balked at the conclusion that millions of seemingly normal adults thought like 6 year olds. We worried about the technical obstacles to reaching such a conclusion. Our skepticism was reinforced by the fact that although schooled people manifested new ways of responding to our psychological tests, by world standards the vast majority still failed miserably in school! After all, endemic low academic achievement in "third world" schools was the very reason that many anthropologists and psychologists were financed to figure out reasons for school failure in the first place.

Logically speaking the solution to this problem of school/non-school comparisons was text-book clear. We needed to identify cognitive tasks that were equally familiar to schooled and non-schooled subjects and stop relying on tasks that were modeled on school practices in the first place. Clear these tasks had to be drawn from the everyday life shared by children who went to school and those who did not – on the school yard, at the market, in church, on the farm. Having identified such tasks, it would presumably be a straightforward matter to determine if non-schooled people, and schooled people at different levels of education, responded to the tasks in the same way. If they did, then we could conclude that the cognitive consequences of schooling were to located in cultural practices closely associated with what children learned in school. Alternatively, schooling may have induced general changes in the thought processes involved, as many reputable scholars were concluding.

Our work foundered on precisely this point. Approaching the issues from a grounding in experimental psychology, lacking training in developmental psychology, and failing to incorporate theoretically the socio-historical nature of schooling as an institutionalized form of activity, we began to focus squarely on the problem of how to identify cognitive tasks in everyday activities common to schooled and unschooled people alike. We believed that being able to identify such tasks and how people thought when they encountered them was a precondition for answering questions about the intellectual consequences of schooling.

Over the ensuing decade we discovered that such tasks are difficult to identify in a manner that would be satisfactory to experimental psychologists. While fruitful in its own right, our subsequent research into what is known as the problem of the ecological validity of psychological tasks led us away from cross-cultural research on the consequences of schooling for children's development. Meanwhile, the work of LeVine and his colleagues provided a productive answer to that central question.

Interestingly, toward the end of our monograph on the cognitive consequences of education in the Yucatan, recognizing that our data could not avoid the perfectly reasonable logical objections sketched above, we speculated about the possible usefulness of schooling even if it did *not* produce generalized changes in intellectual abilities. We wrote

> ... the information-processing skills which school attendance seems to foster could be useful in a variety of tasks demanded by modern states, including clerical and management skills in bureaucratic enterprises, or the lower-level skills of record keeping in an agricultural cooperative or a well-baby clinic. (p. 84)

LeVine and his colleagues succeeded where we had failed. Our work, and almost all of the cross-cultural work that psychologists had conducted to that time, required inferences based exclusively on differential test performance. The conclusions of LeVine and his colleagues rest in part upon such inferences, but their warrants differ in a crucial way. Their conclusions are simultaneously grounded test results implicating psychological processes that in turn are related to changes in mothers' behavior that have documentable, socially valued, outcomes involving the next generation of children.

Whether or not one has been to school for some length of time, raising children requires adult decisions about how best to feed and clothe the child, how to protect them from disease and injury. Adults must learn to whom one should turn for help when normal care taking measures do not suffice. In modern society, such measures require not only choosing a pre-natal care clinic rather than a visit to a local shaman, but taking an interest in one's children if only to respond to insistent demands or to assign them a chore to do. It also means knowing how to behave when visiting the doctor, where to obtain help if potable water and sanitation facilities are scarce, and how to deal effectively in myriad other activities largely under the control of bureaucratic institutions inhabited by people who have, themselves, been socialized in the formal educational system. In short, but adopting an ***intergenerational*** approach to the consequences of formal schooling, LeVine and his colleagues have adhering to an often-heard but seldom implemented insight about psychological testing: the best test is a sample of the criterion it is supposed to measure. The intergenerational approach to the study of the developmental impact of schooling does just this: it treats the test (how mothers raise their children) as the criterion (how efffectively mothers raise their children). Now when a simple test such as a word definition task is used, the observed differences between mothers-once-students and mothers who have not been to school can be related to their mothering of the next generation, outside of any particular school tasks but clearly related to child rearing. It would of course be of interest to know whether mothers talk to their children at home, when they are not being observed, or to their husbands when they are out on the farm digging potatoes in the same way that they talk to the pediatrician or the official at the motor vehicle department. But it is not necessary to determine the answers to such questions to draw important and valid conclusions. So long as the more schooled and/or more literate mothers behave in ways that improve the life chances for their children, positive consequences of schooling, mediated by changes in the way that women think and behave in settings of importance to them and their children, the developmental impact of schooling has been properly demonstrated.

One can only be grateful when someone else spends 30 years solving a problem you found too difficult and abandoned. But that is what LeVine and his colleagues have done in this book. They have provided scientific evidence about basic psycho-social processes in a compelling and policy-relevant way.

Read, learn, and enjoy.