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Influences on Academic Achievement: A Comparison of Results from Uganda and More Industrialized Societies*

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"School variables" account for only a modest proportion of variance in academic achievement. Neither physical facilities nor characteristics of teachers match the strength of pupil socioeconomic status and other indices of the pupil's out-of-school environment. These findings, so vividly portrayed in the Coleman and Jencks studies, can now be generalized beyond the United States to Great Britain, to Western Europe, and (relying on the recently published IEA data) throughout much of the industrialized world. These conclusions are less qualified for less industrial societies, however. Facilities seem to have a larger impact and socioeconomic status appears to have less effect than would have been expected.

This discussion explores recent results with an eye on two specific questions. First, can the primacy attributed to socioeconomic status be generalized beyond industrialized societies? Second, do school facilities and teacher characteristics have more impact on achievement in societies at the lower end of the industrial spectrum?

I pursue two questions briefly in this paper. First, is the relationship between a pupil's academic performance and his or her socioeconomic environment as strong in the less- as it is in the more-industrialized societies? Second, is the influence of the school stronger in the less-industrialized societies than one would expect on the basis of findings from Europe and America (Coleman et al., 1966; Jencks, 1972; Peaker, 1971)?

The first question is of theoretical interest for it asks tacitly whether the tendency for under-privileged children to perform poorly is uniform in different societies. The second question addresses issues of policy for it advises those involved in day-to-day economic development on whether they should invest in more formal schooling, and if so, how.

Socioeconomic Status and Academic Achievement

Ample evidence exists from industrial societies showing that children of "lower" socioeconomic backgrounds score less well on an average in tests of academic achievement. There are noteworthy dispersions, even among industrial societies (Anderson, in press), in the effect of SES on test performance. However despite this diversity each of the publications of the International Study of Educational Achievement (IEA)[1] has emphasized mainly

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[1] A complete listing of IEA publications up to 1974 can be found in the Comparative Education Review 18 (June, 1974), pp. 327-29. Its history can be found in Harnqvist (1975), and a complete description of the methodology in the following: Alexander and Simmons (1975); Shimade (1973); Lewis (1974); Carroll (1974); Farnen, Marklund, Oppen-

the relatively strong effects of SES compared to other variables. Because the effect of socio-economic status is not uniform, there is a question as to how far the relatively strong relationships found in most industrial societies may be generalized to non-industrial societies. In facing up to this question I have tried to understand why some primary pupils in Uganda out-perform others on the nationally administered Primary Leaving Examination (PLE).

The annual three-day-long PLE is expected to select approximately ten percent of the candidates to hold places in post-primary schools. Consisting of equally weighted sections on math, English, and general knowledge (science, history, and geography), the 1972 examination was administered in 2,615 schools under rather uniform conditions (Heyneman, 1975c:1-14). My data are for 67 primary schools from five districts (North and South Karamoja, West Buganda, Bugisu, and Toro), and from all three urban areas (Kampala/Entebbe, Mbale/Tororo, and Jinja). Within each locality schools possessing a seventh grade were identified and a minimum of ten percent selected randomly. The final sample contained 10.7 percent of the schools, 13.1 percent of the grade-seven pupils (N = 2,293), and 12.9 percent of teachers within the selected areas.[2]

The sampled schools were situated in varied local settings: e.g. isolated but economically developed areas, isolated but economically poor areas, plantation and peasant agricultural areas, urban areas (some with heavy manufacturing and commerce), and areas of relative isolation from all modern stimuli. Political and economic considerations prevented me from gathering a truly national sample, but there is reason to believe that the major socio-economic factors associated with Primary

heim and Torney (1974); Passow, Noah and Eckstein (1974); Peaker (1974); Purves (1973); Comber and Keeves (1973); Thorndike (1973); and Husen (1967).

[2] A more complete description of the data can be found in my dissertation (Heyneman, 1975c).

TABLE 1

Number and Percent of Schools, Children and Teachers in the Sample Districts and in Uganda[a]

District	Number of P7 Schools	Number of P7 Pupils	Number of Teachers	Percent of P7 Schools In Sample	Percent of P7 Pupils In Sample[b]	Percent of Teachers In Sample
Toro	126	4,475	775	11.9	14.4	18.4
Bugisu	153	6,816	862	10.0	9.1	16.1
West Buganda	197	4,330	1,937	10.2	19.7	9.6
N. Karamoja	13	603	347	15.4	16.2	10.4
S. Katamoja	19	943	c	10.6	8.0	c
Kampala	81	4,852	411	10.0	8.9	21.1
Jinja	12	852	160	16.6	14.4	13.5
Mbale	14	755	151	21.3	d	d
Sample	615	23,624	4,643	10.7	13.1	12.9
Uganda Total	12,615	108,096	20,004	2.6	2.8	3.0

[a] Calculated from: Ministry of Education, *Education Statistics* (Entebbe: Uganda Government Printer, 1968), Table 17.

[b] The percent of those in the sample who sat for the Primary Leaving Examination eight months after the administration of the sample questionnaires is approximately one quarter less.

[c] The above figure includes both North and South Karamoja.

[d] The above figure includes both Mbale/Tororo and Jinja Townships.

Leaving Examination performance in Uganda as a whole are represented.

Information was gathered from each child on his parents' education, occupation, and the number of household possessions (from a pretested list of modern consumer items including a bed, newspaper, bicycle, radio, clock, motorcar or lorry, camera, and television). These variables were also formed into a summary socioeconomic scale. Occupation was measured by asking each child: "How does your father earn money?" Fathers often earn money by performing a variety of tasks (e.g. fishing, raising goats, and repairing cycles). All tasks were noted and later each was coded into five levels of renumeration. The father was then assigned to the highest possible level of tasks mentioned.

The relationships between both intelligence and academic achievement scores and Ugandan SES have been discussed in other contexts (Heyneman, 1976a). Briefly there is a weak relationship between socioeconomic background and academic achievement scores on the Primary Leaving Examination. The correlation between achievement and paternal schooling was only .07; maternal schooling, .02; the number of modern possessions in the home, .03; paternal occupation, .06; and the summary measure of the four SES variables, only .05. Selecting only males with low, medium or high intelligence, also yielded consistently low relationships between all five SES measures and PLE performance.

The absence of the expected relationships might be questioned on grounds either of insufficient socioeconomic variance or of varied proportion of a community's children in school. But each SES measure contained cases which fell across a full range (between five and eight categories). For example, some children came from homes with no modern possessions, while others came from homes with all of them; the mean was very close to owning half. Of the four SES measures, the least variance was found for mother's schooling, yet 57 percent of the pupils reported that their mothers had attended school, ranging from a few years to university.

Because less than ten percent of the age cohort reaches grade seven in the Karamoja Districts as contrasted to more than 80 percent in the capital of Kampala, one might wonder if selectivity in terms of school attendance influenced the findings. But no relationships between performance and SES emerge within either Karamjoa or within Kampala.

These "deviant" Ugandan findings, furthermore, agree with other recent evidence (Pope and Jones, 1974), particularly from sub-Saharan Africa. Silvey (1963) in his early Kampala work noted a "marked tendency for sons of higher socioeconomic parents to perform well on a test of mental alertness," but later concluded that paternal education was not related to scholastic performance in any meaningful way (1972). Currie (1974) reported an almost random correlation between paternal socioeconomic status and performance on the Cambridge School Certificate examinations for Uganadan secondary school students in 1954, 1959, and 1964, and Olson (1975) has reported low or random correlations between socioeconomic status and Kenyan Cambridge School Certificate performance. Perhaps even more startling is Murphree's (1973) finding that children from illiterate homes in Rhodesia did better in secondary school than children of the more privileged.

Findings from children in primary school are consistent with those just given. K. Mwaniki (1973) found correlations of only .09, -.03, and .01 between mother's education and the achievement scores of children in tests of English, math, and general knowledge in four Kenyan primary schools. Another study of Kenyan primary schools found no relationship between these variables (D. Mwaniki, 1973). And lastly, Peil (1974:412) said recently that her data for Ghana show that "examination success is by no means all due to social advantages and, in the case of parental education, the differential is the reverse of what was expected."

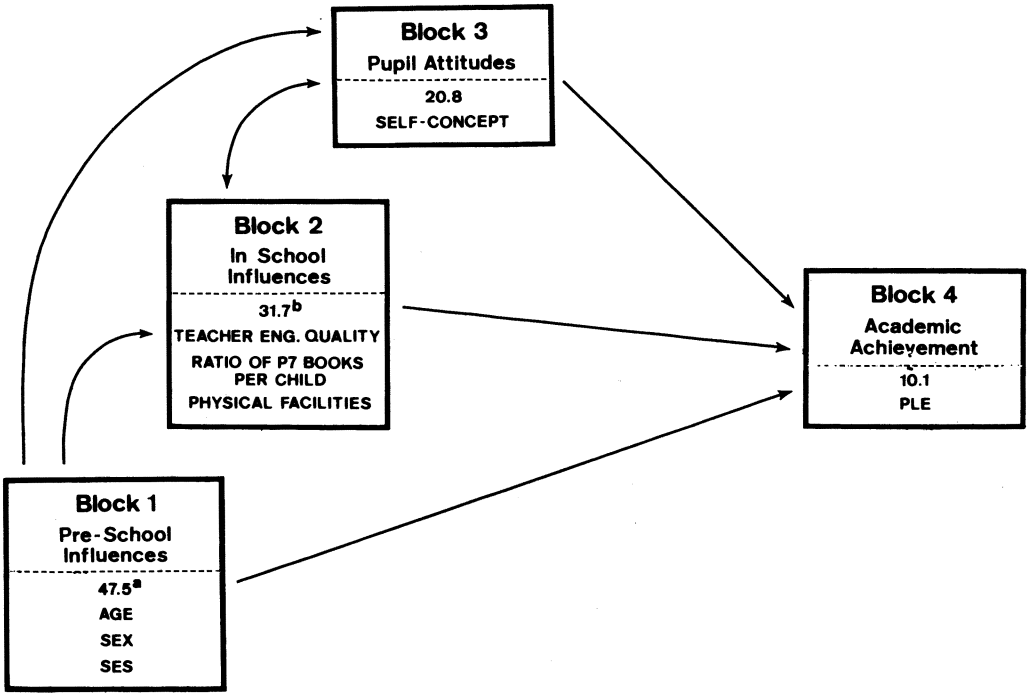
The Weight of Preschool Influence: A Comparison of Ugandan and IEA (Science) Results

The International Study of Education

Achievement (IEA) has been pursuing questions of academic performance over the last decade. With the cooperation of educational administrators in 19 countries, it sponsored the testing of pupils in mathematics, science, reading comprehension, English and French as foreign languages, literature, and civics. Because the Ugandan and the IEA studies were similarly designed, one can compare them to see if differences emerge among societies at varying levels of industrial development. But a note of caution: using any of the IEA studies raises four methodological concerns. First, each IEA test was especially devised for cross-national use; the Ugandan PLE was intended to serve as a selection examination specifically for Ugandan children. (That these Ugandan children knew that the examination was to be used for selection purposes, perhaps created strong motivation to score high.) Children in the IEA studies knew that their scores were to be used solely for research purposes. Second, the IEA studies were "subject-specific," i.e.: science, literature, reading comprehension, etc. (The Ugandan study took a summary achievement score of math, English, science, geography, and civics as its basic dependent variable.) Third, the IEA equivalent population ("Population II") was limited to age 14 whereas Uganda tested all children in grade seven—their mean age happened to cluster around 14 but in fact ages ranged from 10 to 18. Fourth, the IEA studies were administered indirectly, with "national teams" measuring "school influence," by mail. There may be bias because questionnaires were not administered on-site and there was no chance for researchers to have direct contact with respon-

FIGURE 1

Basic Ugandan Model: Proportionate Effects of Three Variable Blocks on the 10.1 Percent Explicable Achievement Variance



[a] 41.9 percent is attributable to Sex. If Sex were excluded from Block 1, the effect of the school would rise to 50 percent and attitudinal influences to 44 percent.

[b] Only Block 2 is aggregated by school.

TABLE 2

Achievement and Economic Development Data for 18 Nations[a]

	Scotland	Japan	England	USA	Finland	Netherlands	Sweden	Fed. Ger. Repub.	New Zealand	Australia	Hungary	Chile	Italy	Thailand	Belgium (Fr.)	Iran	India	Uganda
Preschool Influences on Achievement	29	23	23	22	22	19	18	18	17	16	14	13	10	10	8	5	3	5
GPI[b] Percapita (1971)($000)	2.4	2.1	2.4	5.2	2.6	2.6	4.2	3.2	2.5	2.9	1.2	.8	1.9	.2	3.0	.5	.1	.1
GNP[b] Growth Rate (1965-1971) (Percent)	1.8	10.4	1.8	1.9	4.6	4.2	3.9	4.2	1.6	3.3	5.9	2.4	4.6	4.7	4.5	7.7	2.4	1.6
Percent in Primary School[c,d] (Ages 6-11)	97	98	111	102	101	103	94	127	106	107	102	105	108	81	111	60	56	51
Percent in[c] Secondary School (Ages 12-16)	42	86	72	100	69	62	94	66	56	77	31	31	54	13	-	21	15	5

[a] SOURCE: L.C. Comber and John P. Keeves, *Science Education in 19 Countries: An Empirical Study*, (Stockholm: Almqvist and Wiksell, 1973), p. 261.

[b] SOURCE: *World Bank, Atlas of Population, Percapita Product, and Growth Rates,* (Washington, D.C.: International Bank for Reconstruction and Development, 1973).

[c] SOURCE: United Nations Education, Science and Cultural Organization, *Statistical Yearbook*, (Paris, UNESCO, 1970).

[d] Countries with high rates of primary school repeating often contain figures in excess of 100 percent.

dents. In the Ugandan study the data were gathered personally from each of the 67 schools. Despite these four contrasts however, both studies evaluated the effect of particular influences upon academic performance, and presumably a sufficient number of common variables were tapped to warrant comparison.

Many readers are familiar with the five block model of variables employed by the IEA studies to sort out influences on academic achievement. The first block, "preschool influences," includes sex, age, and SES. Over these school could have little direct effect. The second block acted as a control for differing curricular tracks (e.g.: grammar/modern school) widely applicable in Western Europe. The third block, "school influences," combined the qualities of teachers and physical facilities. And the fourth block (the effect of children's attitudes) was labelled "kindred" influences because they might be affected by the school, the home, or by other environments. No tracking occurs on the primary level in Uganda, so IEA's second block was not needed. The three block Ugandan model is illustrated in Figure 1.

The low correlations between SES and academic performance in Africa are consistent with the comparatively small effect of preschool influences on primary school science achievement in the industrialized societies included in the IEA report (Comber and Keeves, 1973). The Ugandan version of the IEA model altogether explained 10.1 percent of the total variance in school achievement.[3] The Ugandan Block 1 (sex, age, and SES) accounted for almost half of this–4.9 percent. When the preschool fraction is placed alongside results of the IEA science study (chosen because of the large number of countries utilized), preschool influences in Uganda appear to be stronger than the 3 percent reported for India, equivalent to Iran, but lower than 15 of the 17 other countries reporting comparable data. The top row of Table 2 displays the proportion of variance in achievement explained by preschool influences in 17 countries and in Uganda. Table 2 also displays four measures of social and economic development for each country.

The data in Table 2 point to a single conclusion: the more industrialized a society, the more achievement in school is apt to be affected by a pupil's socioeconomic environment and other out-of-school influences. For example, when the percentage of children who are in secondary school is plotted against the achievement effects of Block 1, there is a definitely positive relationship: the higher the percentage of a nation's age cohort in secondary school, the greater the percentage of achievement variance explained by preschool influences. The correlation between these influences and per capita income is .67 ($p < .002$); with the percent in primary school, .51 ($p < .002$); with the percent in secondary school .71 ($p < .002$); and with growth in GNP, .04. Thus, with three of the four indicators, in wealthy nations the national level of achievement is strongly associated with preschool social milieu.

To generalize with confidence from the foregoing correlations, information is also needed for socialist nations (where stated policy has been to minimize the educational effects of social status) and for a larger number of less-developed nations. But the thrust of these recent findings, and especially those from sub-Saharan Africa, indicates that the strength of the relationship found in industrial countries between academic performance and socioeconomic status may not prevail in societies at the other end of the industrial spectrum.

Effect of the Primary School on Academic Achievement

In the Uganda study, school effects were measured by combining the characteristics of teachers with those of a school's physical facilities. Judging from surveys within industrial societies, the zero-order relationships for school effects might have been expected to be weaker than SES effects (Mosteller and Moy-

[3] This model had to leave out the effects of intelligence, past academic achievement, and the potential influence of school district administration. The latter can be of crucial importance to the distribution of both personnel and supplies (Heyneman, 1975b).

nihan, 1972:20; Mayeske, 1970:100-20; Rossi, 1961:270). Indeed, five of the six teacher characteristics aggregated to the school level (Table 3) have little or no connection with academic performance. Only one characteristic of those measured was significantly associated with achievement: the quality of a teacher's English. Length of professional training, salary grade, seniority, schooling of teachers' parents, and the frequency of English spoken in teachers' childhood homes have no significant association with the achievement of primary pupils (Heyneman, 1976c).

TABLE 3

Teacher Characteristics Averaged by School and Their Correlations with Mean School Achievement (N = 67)

Total Years of Schooling	-.11
Teaching Salary Status Grade	.09
Frequency of English in the Childhood Home	-.20
Teaching Experience	-.03
Parental Education	-.14
English Language Competence	.31**

** $p < .01$.

The relationships between a school's physical facilities and academic achievement of its pupils are more consistent. For example, we counted each book to which a grade seven student was likely to have access: textbooks (in English or vernacular), workbooks, reference books, and teachers' books in all eight academic subjects. The number of these books per grade seven classroom was then divided by the enrollment. Books-per-child was then correlated with mean school achievement and r = .24 ($p < .06$) indicates an association worth noting.

In addition, we tallied the presence of a duplicating machine, a farm, a staff room, electricity, boarding facilities, a football or hockey field, and whether or not window frames (present in all schools) were filled with glass. Correlations between these variables and achievement range from a low of .081 to a high of .330, but are consistently positive. Each is therefore included in the summary scale.

When the three school variables of grade seven books, teachers' English quality, and the summary of physical facilities were entered simultaneously into a regression as Block 2 (portrayed in Figure 1), their combined effect accounts for 3.18 percent of the total variance. But in addition, consistent with the IEA concept of "kindred" influences (that could be either a cause or an effect of school experience), when one assumes that some or all of Block 3 is a result of experience in the classroom, then the effects of the school could

TABLE 4

The Presence of Physical Facilities and Their Correlations with Mean School Achievement (N = 67)

Physical Characteristic	Percentage of Schools Possessing Each Facility	Correlation With Mean School Achievement
Duplicating Machine	74.5	.33**
School Farm	37.3	.23**
Boarding Facilities	8.9	.19**
Electricity	20.9	.17*
Football Field	80.5	.12
Glass Windows	25.3	.10
Staff Room	44.7	.08
Summary of the Above Characteristics	--	.29**

* $p < .05$.
** $p < .01$.

potentially be boosted by the approximate 2.02 percent of the total variance attributable to the influence of the Ugandan child's attitudes.[4] Thus taking the IEA model, between 3 and 6 percent of the total variance can be attributed to the influence of the Ugandan primary school.

As with preschool influences, to decide whether school effects are "a lot" or "a little," we can compare them to the IEA findings. The range of 3 to 6 percent for Uganda is below the mean (9 percent) but similar to the 7 percent attributed to schools in the United States, Sweden, and England; to the 6 percent for schools in Italy and Chile; to the 5 percent for Hungary; and to the 4 percent for Japan (Comber and Keeves, 1973:261).

Knowing that the preschool impact on achievement tends to be relatively less in the less industrial societies might lead one to ask whether the impact of "the school" would be larger. We do find one negative relationship with an economic development variable; the portion of variance explained by the school (column 2, Table 5) and the percentage of children in secondary schools exhibits a coefficient of r = -.15, but unlike the three relationships with preschool influences, this relationship is not statistically significant.

We should point out, however, that more achievement variance can be accounted for in industrial countries. Significant relationships emerge between the total variance explained (column 1 of Table 5) and a country's per capita income ($r = .49$, $p < .04$), the percent of children in secondary ($r = .54$, $p < .02$) and in primary schools ($r = .55$, $p < .02$). This does not mean that the variables chosen were inappropriate for the less industrial countries, because differences in the amount of total variance explained might be attributed to many factors (i.e. increased possibility of bias in questionnaire administration, the increased likelihood of error due to linguistic complexities, or the added difficulties of achieving comparable representativeness in sampling).

One way to explore whether bias exists is to note in each country the school's portion of the explained variance. For example, as previously mentioned, in the Uganda study the IEA model accounted for 10.1 percent of the total variance in academic achievement. Of this 10.1, 47.5 percent (4.9) was attributable to preschool influences; 31.7 percent of it (3.18) to school influences; and 20.8 percent (2.02) to attitudinal effects (Figure 1).

When one takes the total variance explained (column 1 in Table 5) and for each country compares the proportion within it attributable to school effects (column 3, Table 5), then the impact of schools in less industrial areas can be more clearly identified. The sizeable portion of school influences within the explicable achievement variance in Uganda (31.7 percent) is comparable to that of India (33.3 percent). But even these rank lower than the portion due to school influences in Iranian and Thai schools (52.9 percent and 62.2 percent). In fact, the portion of explicable variance due to school influences is well above the mean (25 percent) in four of the five less industrial countries, and with two exceptions (Fr. Belgium and the F.R.G.), ranks in size above all 18 nations.

Nevertheless, when correlating these "school effects" with measures of national economic development, the relationships still do not appear as strong as preschool influences. Table 6 gives coefficients for both school and preschool effects (on total variance and on the explained variance) with economic development. Though only one coefficient between an economic development variable and the proportion of total variance explained by the school was markedly negative, three negative coefficients emerge when economic development is correlated with school effects within that explained variance. The coefficient between school effects and the percent of children in secondary school was $r = -.57$ ($p < .01$); with the proportion in primary school, $r = -.36$, and with per capita income, $r = .41$. Thus the original ambiguity in school impact could be influenced by the comparatively low proportion of total variance that is explained in the less industrial countries. In sum, the

[4] Pupil attitudes were limited to an index of self-concept developed for use in the Ugandan context (Heyneman, 1975a or 1976b).

TABLE 5

Total Variance, Proportion Explained by School Effects, and the Proportion within the Explicable Variance Attributable to School Effects in 18 Nations[a]

	(1) Proportion Total Variance Explained	(2) Proportion of Variance Explained by School Effects	(3) Proportion Within the Explicable Variance Attributable to School Effects
Uganda	10	3	31.7
India	24	8	33.3
Iran	17	9	52.9
Belgium (Fr.)	26	12	46.2
Thailand	37	23	62.2
Italy	24	6	25.0
Chile	25	6	24.0
Hungary	31	5	16.1
Australia	39	11	28.2
New Zealand	45	8	17.7
F.R.G.	34	14	41.2
Sweden	36	7	19.4
Netherlands	49	10	20.4
Finland	44	10	22.7
U.S.A.	36	7	19.4
England	52	7	13.5
Japan	40	4	10.0
Scotland	55	9	16.4
Mean	36	9	25.0

[a] Source: L. C. Coomber and John P. Keeves, *Science Education in 19 Countries: An Empirical Study*, (Stockholm: Almquist and Wiksell, 1973), p. 261.

school has slightly—but not always significantly—more effect in less industrial societies, especially if one looks at the impact of the school within the explained variance. However, there is as yet insufficient evidence to suggest a linear relationship. Preschool influences appear more consistent, for findings are similar whether one correlates economic development with the proportion of the total variance explained by preschool milieu or with the preschool's portion within the explicable variance. Both indices display significantly and consistently positive associations with three of the four measures of industrial development.

Suggested Hypotheses

Possibilities abound as to why influences on academic achievement might differ by industrial levels, and we advance three. The first two involve the school, the third preschool influences. Schiefelbein and Farrell (1974, 1975) have suggested that relatively more variance in physical facilities will be found among societies at lower levels of industrialization. This may pertain particularly to Latin America, to Brazil, for example, where primary and secondary schools are administered by states and municipalities with vast ranges of wealth and conferred benefits. But this may not be true in Africa where the educational role of the central government tends to be more pronounced. In Uganda, for instance, the quality of school buildings seemed equivalent anywhere in the districts sampled (Heyneman, 1977). Nevertheless, the hypothesis of more variation in physical facilities deserves ex-

TABLE 6

Correlations between Academic Achievement Influences and the Economic Development of 18 Nations, Using Two Indices of Explained Variance (N = 18)

	Preschool Influences		School Influences	
	On Total Variance	Within the Explicable Variance	On Total Variance	Within the Explicable Variance
Percent in Secondary School	.71**	.60**	-.15	-.57**
Percent in Primary School	.61**	.48*	.12	-.36
Per Capita Income	.65**	.56*	-.05	-.41
Percent GNP Growth	-.08	-.01	.04	.16

* $p < .05$.
** $p < .01$.

ploration.

Second, it is a common belief that a particular facility or teacher characteristic has more effect on less privileged children. (Coleman et al. (1966:22) found this to be the case with science laboratories.) This cannot be easily documented internationally because of a lack of comparability in items. The presence of a duplicating machine, unnoted in other studies, accounted for more influence in Uganda than any other "facility." The evidence from the present research suggests that two school characteristics eventually may prove to be universal predictors in less industrialized societies, the per capita number of textbooks (of critical value in areas of lower teacher quality), and the intellectual or verbal facility of teachers.

The last and most significant explanation may lie in the alternative question of why preschool influences should be weaker in less industrial societies. Presumably feelings and attitudes of children from different status levels are inversely related to the length of time a society has been industrially stratified. Differences between attitudes and self-views of privileged and less privileged children could profoundly influence group performance in school. For example, in the United States we know that correlations exist between lower status, attitudes, and performance in school; and we also know that lower test performance and lower self-confidence occur relatively more often among children of lower socioeconomic strata in the United Kingdom (Peaker, 1971; Runciman, 1969). But unlike societies with a long history of industrial stratification, Ugandans who are privileged in commerce and government tend to be first generation. There has been insufficient time for Ugandan children to develop feelings of personal confidence characteristic of their "stations" elsewhere. In addition, recent and dramatic upward mobility may influence attitudes of school children from less privileged backgrounds. The absence of self-confidence differences between wealthy and non-wealthy children in Uganda (Heyneman, 1976b) may identify an environment economically stratified, but one not yet characterized by social classes. In contrast to more industrial societies children of the less privileged in Uganda want to do well in school and believe that doing well will strongly affect their occupational future. In sum, the lower preschool influence found in less industrial societies, especially in sub-Saharan Africa, may stem from a lack of build-up in school-based social class effects.

Conclusions

Results from Uganda and elsewhere lead to several comments on the universality of achievement data generated in industrial societies. First, the relationship between socioeconomic status and academic achievement appears weaker in less industrialized societies. There are substantial differences among societies both in the amount of total variance explained and in the amount within that explicable variance attributable to preschool social milieu, but preschool influence is less in the less industrialized societies. Second, schools in less industrial societies have stronger effects on cognitive achievement than one would expect given the data from industrialized societies, though the evidence on this question is not strong. Nevertheless, there is now sufficient evidence—particularly from Uganda—to support Schiefelbein's (1973) plea for *caution* when basing decisions about school investment in less industrial societies upon the Coleman (1966) or Jencks (1972) conclusions from the United States.

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