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# Relationships between the Primary School Community and Academic Achievement in Uganda

STEPHEN P. HEYNEMAN

From teachers in East Africa it is common to hear that children raised in urban areas near industrial infrastructures are at an academic advantage. Through their daily experiences, these children, so the theory goes, have more opportunities to learn from their communities. Children who have actually seen tall office buildings, elevators, traffic lights, supermarkets, factories, and airplanes and who have talked to foreigners, presumably have some advantage in learning tasks the curriculum requires, a rather sophisticated awareness of economic geography, history, the English language, and mathematics.<sup>1</sup> This is what Gould suggests when he states that in modern areas "children will be more highly motivated to learn and have a more stimulating environment at home and about them, with the result that a child is likely to do better."<sup>2</sup>

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Sociologist/Educator, Central Projects Staff, The World Bank, Washington, D.C. The author wishes to acknowledge his sincere appreciation to all of those who have supported his research. Particularly helpful was the assistance received from the Makerere University National Institute of Education, the University of Chicago Comparative Education Center, and the George Washington University Social Research Group. Specific thanks should also be extended to Philip Foster and James S. Coleman who read earlier drafts of this article. Regardless of the debt owed to these sources, the author acknowledges his sole responsibility for the discussion which follows.

<sup>1</sup> In no way does this imply that learning from the community is the sole influence on academic achievement. Careful measurements of personality, background, and pedagogical variables were made and analyzed. Interested readers may consult the following studies prepared by the author: "A Brief Note on the Relationship between Socio-Economic Status and Test Performance among Ugandan Primary School Children," *Comparative Education Review* (February 1976); "Influences on Academic Achievement: A Comparison of Results from Uganda and More Industrialized Societies," *Sociology of Education* 49 (July 1976): 200-11; "Differences in Construction, Facilities, Equipment and Academic Achievement Among Ugandan Primary Schools," *International Review of Education* (forthcoming, 1977); and "Social Mobility and Relationships between a Ugandan Pupil's Feelings about Himself, Socio-Economic Status, and Academic Achievement" (Paper presented at the Annual Meeting of the Comparative and International Education Society, San Francisco, March 1975).

<sup>2</sup> W. T. S. Gould, "Patterns of Lower School Enrollment in Uganda," *East African Geographical Review* 10 (April 1972): 10.

To test the assumption further, this study took the Primary Leaving Examination (PLE) scores from a random sample of 67 schools in 5 economically diverse districts (North and South Karamoja, West Buganda, Bugisu, and Toro) and the 3 largest urban areas in Uganda (Kampala/Entebbe, Mbale/Tororo, and Jinja).<sup>3</sup> These schools represented 10.7 percent of all the schools and 12.6 percent of all the pupils from the sample districts.

Schools in the sample were first categorized as urban, semirural, and rural. Those schools located within a town of 10,000 people were defined as "urban." These included one school in Jinja, three in Mbale, and eight in Kampala.<sup>4</sup> Schools situated within a 10-mile radius of a town of 10,000 (a bicycle-commuting distance) were defined as "semirural." This group was comprised of 16 schools. Schools situated more than the 10-mile radius from a town were designated "rural." Thirty-nine schools fell into this last category.

Children in urban schools might have been expected to score higher than those in semirural ones, and those in semirural schools higher than those in rural schools. The opposite, however, proved to be the case. Mean achievement on the PLE (153.8) was highest in rural schools; semirural schools ranked next (147.7); while urban schools averaged the lowest (139.1).<sup>5</sup> Moreover, this pattern was not limited to 1972. Examination scores of the sample schools for the previous year yielded similar results, with the average urban school scoring 141.3, the semirural 150.0, and the rural 150.3.

### Population Density and Proximity to a Paved Road

For those who have lived in rural Africa, it should not be difficult to understand why density of population and proximity to a paved road may be interpreted as measures of potential communication. Greater diffusion of ideas, inventions, information, and knowledge of the "outside" world generally occurs in communities where people live close to each other. Similarly, the proximity to fast and efficient flow of goods and services, newspapers, letters, travelers, and other messengers might broaden the

<sup>3</sup> The PLE is an annual academic achievement examination whose purpose is to select approximately 10 percent of its candidates for places in postprimary educational institutions. It consists of equally weighted sections on mathematics, English, and general knowledge (history, science, and geography). In 1972 the examination was administered in 2,615 schools over a 3-day period under approximately uniform conditions. A Ministry of Education official delivered the papers in the early morning, headmasters oversaw the examination of students from schools other than their own, and the completed tests were picked up nightly for computer grading. In all, the process of test administration was surprisingly professional, efficient, and impartial. For further details, see Stephen P. Heyneman, "Influences on Academic Achievement in Uganda: A 'Coleman Report' from a Non-Industrial Society" (Ph.D. diss., University of Chicago, 1975), pp. 1-14.

<sup>4</sup> One school which fell into the Jinja sample was not categorized geographically since it was a small reform school for boys. Administered by the Ministry of the Interior, it possessed its own special budget and source of supplies. The student/inmates had originated from all parts of the country and were not in any way influenced by the nearby town which they were not allowed to visit.

<sup>5</sup> There were 100 possible points for each of the 3 examination sections. The mean school score thus represents the mean out of 300 possible points for the school as a whole.

outlook of the inhabitants of an otherwise isolated community. Thus, because much knowledge still passes by word of mouth, it was suggested that these two measures could elicit significant associations with a school's performance on the PLE.

In 1962, the *Atlas of Uganda* published population density estimates for each *gombolola*, with the density categorized into ten levels.<sup>6</sup> Each *gombolola* in which sample schools were located was similarly coded on a scale ranging from 0 (signifying less than 24 people/square mile) to 9 (more than 1,000 people/square mile).

Although consistent with the low scores of urban schools, the inverse correlations of  $-0.305$  ( $p < 0.02$ ) between school achievement and population density and  $-0.292$  ( $p < 0.02$ ) between achievement and the distance from a paved road were somewhat startling. Furthermore, when urban schools were excluded, and the characteristics of only rural and semirural schools were processed, any remaining preconceptions were shaken, for these relationships remained negative and statistically significant ( $-0.286$  [ $p < 0.04$ ] and  $-0.202$  [ $p < 0.05$ ]).<sup>7</sup> Assuming linearity, this suggests that despite the assumption that greater academic advantage accrued from living in more modern areas, levels of achievement actually increased the further a school was situated from a paved road and the lower the local density of population.

### Community Wealth

Each year all adult males out of school and every head of household are assessed for tax purposes by a village headman. Not to be equated with a traditional chief, the headman is often appointed by the district officer, and though sometimes unschooled, he is an official with considerable administrative responsibility. Based upon guidelines established for each district he must place taxpayers into one of 17 tax liability categories which range from 40 to 600 shillings per year (US \$4.80 to \$72.00).<sup>8</sup>

<sup>6</sup> Uganda, *The Atlas of Uganda* (Entebbe: Department of Lands and Surveys, 1962), map 60. Uganda is divided into regions, districts, counties, *gombololas*, and subparishes. The *gombolola*, analogous to the American subcounty, is the smallest unit on which records of population density and tax collection are kept.

<sup>7</sup> A coefficient was considered significant if  $p < 0.05$ . However, this had varying relevance since by necessity the data had to be aggregated at differing levels with differing degrees of freedom. Wherever possible the relationships were tested at the level of the individual pupil ( $N = 2,293$ ). Where this proved impossible, the levels of the relationships tested were *gombolola* and county ( $N =$  less than 67) or the district ( $N = 7$ ). Though the differing aggregations elicited relationships with divergent strengths, on no occasion did they demonstrate contradictory directions; the ecological effect was consistent throughout.

<sup>8</sup> Because individuals seldom keep income records, tax assessment is a delicate and, at times, arbitrary process. For those with no regular salary (i.e., 92 percent of the labor force), headmen assess taxes on the basis of coffee or banana trees under cultivation, the number of livestock owned, or the acreage planted with particular crops. Each income source has a particular scale. Assessments of salaried employees, who have regular income records, are more systematic. An employee who lives in a city but maintains a "home" in the rural area would be assessed for tax in the area of his "home." All males must possess a valid receipt for tax payment. Each headman is familiar with the adults to be taxed—even those who have left for the city—because a headman is native to his small territory. If he is unfair, he and his family may be ostracized; if he is corrupt he

Tax information on the community surrounding each sample school was gathered and then used to form two economic indicators: (1) the per capita revenue collected and (2) the proportion of the community assessed above subsistence level. The first was computed by taking the assessed revenue actually collected and then dividing it by the adult population residing within each gombolola.<sup>9</sup> The second was defined after it was noticed that headmen tended to group many individuals into the 60 or 70 shilling bracket. For example, out of 17 brackets, a majority of the Toro district taxpayers were assessed into either the 60 or the 70 shilling category. An unusually impoverished household would be assessed at less than 60 shillings per year; a household with any income from milk cows, eggs, or tea would be assessed at over 70 shillings per year. The proportion assessed in excess of 70 shillings per year was, therefore, taken as representing those adults with better than subsistence economic status.

Consistent with population density and distance from a paved road, both the collected revenue per capita and the proportion paying over 70 shillings per year were negatively correlated with school achievement. The proportion coefficient was the stronger at  $-0.436$  ( $p < 0.001$ ) but per capita was significant nonetheless at  $-0.292$  ( $p < 0.02$ ).

There is something surprising and consistent in the above findings. Although there have been reports before of weakly negative or zero correlations between the wealth of a nation and mathematics achievement, consistently significant negative correlations were not expected.<sup>10</sup> We found rural schools, especially those situated in areas of low population density, tending to perform better than schools in areas of high population density; schools farther away from paved roads scoring better than those near paved roads; and schools in communities with low per capita incomes and low percentages of wealthy taxpayers scoring higher than those in communities with high per capita incomes and higher percentages of wealthy taxpayers. This was precisely the opposite of what had been expected. The question now remains as to why these schools in isolated, less populated, economically impoverished areas tended to score better than those schools in urban, wealthy, or heavily populated areas near paved roads.

To illuminate the foregoing relationships we separated the four most isolated schools and considered them independently. These were situated

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can, with proper pressure, be replaced. Although the reputation of a headman among his constituents is based upon his sense of impartiality, his standing with the government appears to be largely determined by his effectiveness as a tax collector. This study found it impossible to differentiate the headmen who might have been less efficient collectors since meaningful data on tax evasion were often not available. Thus, despite the efficiency of collection which could have varied from community to community, these measurements of community wealth had to be based solely upon the amount of revenues collected.

<sup>9</sup> For urban locales, tax receipts down to the level of the school's neighborhood were unobtainable and "community" revenue had to be defined as the taxes collected from the city at large.

<sup>10</sup> C. Arnold Anderson, "The Reflection of Societal Characteristics within the School," in *Toward a Cross-National Model of Educational Achievement in a National Economy: The Report of the Lake Mohonk Conference*, ed. Donald E. Super (New York: Columbia University, Teachers College, forthcoming).

in the two Karamoja districts. Kotido and Kiru schools lay 220 miles from the nearest paved road; Kalas was 105 and Namalu 50 miles from such a convenience. For the total sample the average distance from a paved road was 19.2 miles (table 1). The average per capita revenue of these 4 isolated school gombololas was 5.5 and 4.0 shillings for North and South Karamoja—half the figure for the school communities in Toro District and well below the sample mean of 18.9 shillings. Only 20.4 and 23.7 percent of the taxpayers in North and South Karamojan communities paid above the subsistence tax category—approximately half the percentage for the sample in West Buganda (51 percent) and considerably less than the overall average of 45.9 percent. Lastly, these four Karamojan school communities were the most sparsely populated.<sup>11</sup> Their figures of 125 and 33 people per square mile contrasted sharply with 280 for West Buganda, 700 for Bugisu, and the sample mean of 310, making them, by all measures, both the most impoverished and the most isolated of the school communities in the sample.

TABLE 1  
CHARACTERISTICS OF LOCAL COMMUNITY DEVELOPMENT  
IN EACH SAMPLE DISTRICT (1971)

| DISTRICT       | PERCENTAGE<br>PAYING OVER<br>70 SHILLINGS | PER CAPITA<br>ASSESSMENT<br>IN SHILLINGS | MEAN MILEAGE<br>FROM A<br>PAVED ROAD | POPULATION<br>DENSITY PER<br>SQUARE MILE |
|----------------|---|--|--------------------------------------|--|
| North Karamoja | 20.4                                      | 5.5                                      | 147.0                                | 125                                      |
| South Karamoja | 23.7                                      | 4.0                                      | 77.0                                 | 33                                       |
| Toro           | 10.8                                      | 12.5                                     | 27.3                                 | 160                                      |
| West Buganda   | 51.0                                      | 10.2                                     | 7.8                                  | 280                                      |
| Bugisu         | 43.3                                      | 7.7                                      | 8.8                                  | 700                                      |
| Mbale/Jinja    | 90.6                                      | 59.4                                     | 0.0                                  | 1,000+                                   |
| Kampala        | 90.9                                      | 54.4                                     | 0.0                                  | 1,000+                                   |
| Sample Mean    | 45.9                                      | 18.9                                     | 19.2                                 | 310                                      |

Before proceeding further it should be pointed out that though these four schools were among the most isolated in Uganda, they were situated amongst the few permanent settlements in their sections of the country. Therefore, in comparison to the surrounding communities, these schools played a relatively urbane role; their employees provided a source of local middle-class literati and were accorded higher status than they might receive had they worked where primary schools were more common and modern institutions more diversified.

### Three Characteristics of Children in the Most Isolated Schools

An examination of the children enrolled in the most isolated schools suggests three possible reasons why they perform better: (1) their age at the time of sitting for the PLE, (2) their rate of examination repetition, and (3) their preselectivity based upon the scarcity of primary school places in their local communities.

<sup>11</sup> "Karamojong" refers to the people of the Karamojong group; "Karamojan" refers to the people of the two Karamojan districts who are made up of many ethnic groups.

*Maturity.* Conditions force children in the most isolated, sparsely populated, underdeveloped areas to start school later, and if they leave school temporarily, to return after having stayed away longer. For example, though P7 children should all have been 13 years old, the Karamojong children in P7 were older, on the average, than the children of other ethnic groups. Only 8 percent of the full sample fell into the oldest category of between 16 and 19 years old, but 20 percent of the Karamojong pupils were between those ages. This proportion is twice that for the second ranked group—the Bagisu (10 percent), and substantially higher than the 8 percent of the Batoro and the 5 percent of the Baganda P7 children in the same age category.

*Exam Repetition.* In addition, the frequency with which pupils repeated the examination was two or three times higher in the most isolated schools.<sup>12</sup> A fifth of the pupils in North Karamoja and fully 40 percent of those in South Karamoja confirmed that they had repeated, compared to 5.4 percent and 7.5 percent in Toro and Bugisu Districts, and 14 percent in West Buganda (table 2). The urban areas, however, reported relatively high repeat rates: 16 percent for Mbale and Jinja, and 20 percent for Kampala. Given the fact that the examination's format does not alter radically from year to year, it would not be surprising to find children in the areas of high exam repetition more familiar with it.

TABLE 2  
ACADEMIC ACHIEVEMENT, AGE, REPEATING, AND  
SCHOOL ATTENDANCE AVERAGED BY DISTRICT

| DISTRICT       | PLE<br>ACHIEVEMENT | AGE  | PERCENT<br>REPEATING<br>THE PLE | PERCENT IN<br>PRIMARY SCHOOL<br>(AGES 5-14) |
|----------------|--------------------|------|---------------------------------|---|
| Kampala        | 136.7              | 14.9 | 20.0                            | 51.0  |
| Bugisu         | 145.0              | 13.9 | 7.5                             | 44.4  |
| Mbale/Jinja    | 151.0              | 13.8 | 16.0                            | 65.0  |
| West Buganda   | 152.0              | 13.6 | 14.1                            | 49.8  |
| Toro           | 162.6              | 13.8 | 5.4                             | 35.1  |
| South Karamoja | 164.6              | 14.0 | 40.0                            | 24.8  |
| North Karamoja | 175.5              | 14.7 | 20.0                            | 8.8   |

Naturally those who repeated the examination also tended to be older [0.689 ( $p < 0.001$ )], and repeating once did affect scores. Those 295 individuals who reported having repeated once scored an average of 10 points (0.25 of a standard deviation) above those who said they had never repeated. This factor thus appears to have affected scores in those areas where

<sup>12</sup> Officially, a headmaster could request permission from the district education officer to allow an examination repetition if three conditions were met: (1) the exam was taken in the same year as the petition (1972), (2) the child had proof of being under 14 years old, and (3) the previous score had been over 180 (165 for girls). Y. Y. Okot, Senior Examination Secretary, Ministry of Education, Circular A:283, 12 January 1972. Since all other attempts to repeat were illegal, the children included in the sample had to be assured of absolute confidentiality when asked to indicate if they had, indeed, repeated. Clearly, an affirmative response to the question: "Have you repeated the PLE?" would be reliable, but a negative response less so.

illegal repeating was most prevalent. But it would be difficult to assert that examination repetition or the older age of candidates provide the principal explanations for the better PLE results of isolated schools in impoverished communities.

First, though the mean score for 12 year olds (156) was higher than that of 11 year olds (150) and 10 year olds (147), the relationship between age and individual examination performance is hardly linear (fig. 1). For example, 13, 14, and 15 year olds' scores differed only slightly (150.1 to 150.6), and though the mean for 17 year olds was significantly higher (154), those of 16 and 18 year olds were the lowest of all the age groups (144 and 142).

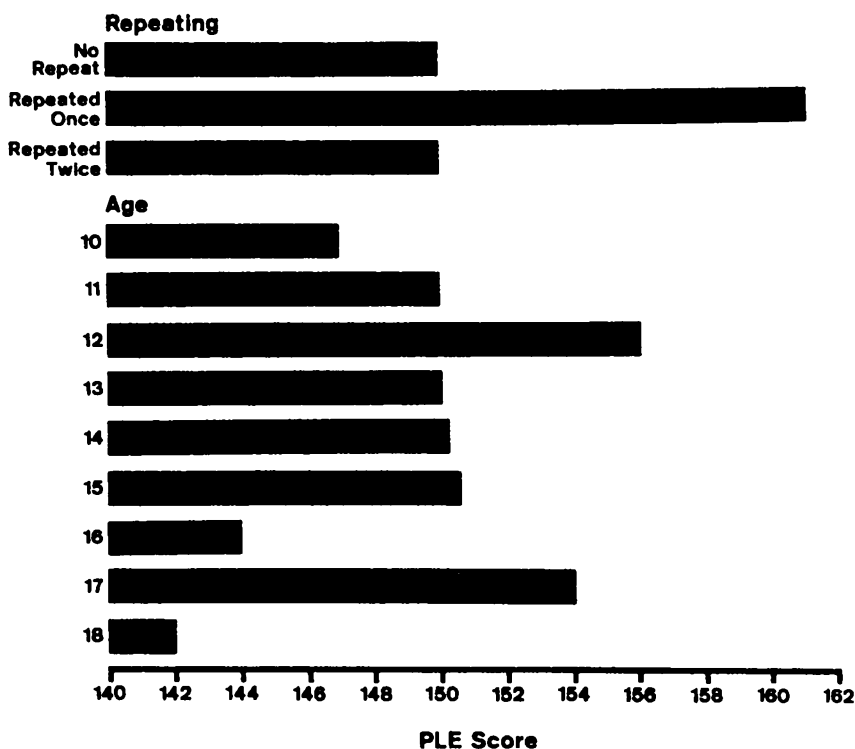


Fig. 1. Mean PLE Scores at Different Age and Repeating Levels.

Second, to repeat more than once did not result in greater success because the scores of those who reported having repeated the exam more than once did not differ from those who had never repeated the exam at all (fig. 1). Furthermore, though children in the four most isolated schools tended to be older and more apt to have repeated the examination, the correlations between these variables and performance (0.06 and  $-0.01$ ) indicate a lack of association. Lastly, neither repeating nor age could be identified as a principal reason for the success of isolated schools because the capital city of Kampala, whose rate of repetition and average age for



examinees appeared as high or higher than North Karamoja, scored lower than all other sample districts.

*Spatial Distribution of Schools: The First Selection Process.* The fact that primary schools are distributed unequally has recently been of interest to investigators concerned with the equality of educational opportunity.<sup>13</sup> Spatial distribution is linked with the present discussion in two ways: first, it can be assumed there are fewer opportunities for schooling in the communities which are less developed economically and more isolated. Second, in communities where educational opportunities are limited, the kind of children who do enter and who do remain in school are unusual in one way or another in comparison to their general age cohort. In other words, in areas with less opportunity for schooling, the 7th grade students are less representative of their age cohort than are those who are found in grade 7 in areas where school attendance is more universal. Is it possible that this original selectivity has some effect upon mean academic performance?<sup>14</sup>

Pursuing this hypothesis was not planned before the study's implementation, so unlike taxation revenues, no attendance rates were collected at the optimal geographical unit parallel to the school's catchment area. However, two estimates of the percentage of a "community" in school have been made through the use of secondary sources. These will be explained and correlated with academic achievement.

*Ethnic Selectivity.* In a study of the social characteristics of Ugandan students, Janice Currie found that certain ethnic groups were over- or underrepresented in secondary schools.<sup>15</sup> Because secondary school enrollments generally depend upon opportunity for schooling within a given geographical area, Currie's secondary school selectivity ratios might be used as a proxy measure of the opportunities for primary schooling available to the five ethnic groups whose home districts match those in the two surveys (table 3).<sup>16</sup>

<sup>13</sup> W. T. S. Gould, *Planning the Location of Schools: Case Studies, Ankole District, Uganda* (Paris: UNESCO, International Institute for Educational Planning, 1973); C. Arnold Anderson, "Patterns and Variability in the Distribution and Diffusion of Schooling," in *Education and Economic Development*, ed. C. Arnold Anderson and Mary Jean Bowman (Chicago: Aldine, 1966), pp. 314-45; and Margorie Jane Mbilinyi, "The Decision to Educate in Rural Tanzania" (Ph.D. diss., University of Dar es Salaam, 1972).

<sup>14</sup> Foster and Clignet first mention this possibility when they discovered that modernity attitudes of Malinke children in Ivory Coast schools were significantly higher than both their ethnic groups as a whole, and the more modernized, urbanized Agni group whose children had more universal access to school. They said that "this would imply different selectivity ratios within these two ethnic groups and might suggest that among the more backward Malinke the first individuals to enter secondary school are likely to be drawn from very small and atypical segments of the group." Philip Foster and Remi Clignet, *The Fortunate Few: A Study of Secondary Schools and Students in Ghana and the Ivory Coast* (Evanston, Ill.: Northwestern University Press, 1966), p. 68.

<sup>15</sup> Janice Currie, "Social Characteristics of Secondary School Students in Academic Secondary Schools" (Chicago: University of Chicago, Comparative Education Center, 1973), mimeographed; and "Has the Die Been Cast? A Study of Ugandan Secondary School Recruitment Patterns Before and After Independence," *Rural Africana* 25 (Fall 1974): 47-63.

<sup>16</sup> The geographical distribution of schools of course is not the only variable which could account for an ethnic group's representation in school. Religion has often been a factor, as have certain cultural idiosyncracies. Furthermore, these ratios are calculated

TABLE 3  
SELECTIVITY RATIOS AND MEAN ACHIEVEMENT  
FOR REPRESENTATIVE ETHNIC GROUPS

| ETHNIC GROUP | SELECTIVITY RATIO <sup>a</sup> | MEAN ACHIEVEMENT |
|--------------|--------------------------------|------------------|
| Batoro       | 1.5                            | 157.9            |
| Baganda      | 1.5                            | 146.1            |
| Bagisu       | 0.9                            | 146.7            |
| Bakonjo      | 0.3                            | 167.7            |
| Karamojong   | 0.5                            | 172.9            |

<sup>a</sup>Calculated from the characteristics of 1969 secondary school students; see: Janice Currie, "Has the Die Been Cast? A Study of Ugandan Secondary School Recruitment Patterns Before and After Independence," *Rural Africana*, 25 (Fall 1974), Table 3.

The tendency is not uniform. The Batoro in P7, whose ethnic group had the same secondary school selectivity ratio as the Baganda, averaged more than ten points higher in mean PLE achievement. Nevertheless, the two groups most poorly represented in secondary schools (the Bakonjo and the Karamojong) had markedly higher levels of PLE performance. When the ethnic group selectivity ratios displayed in table 3 are correlated with group PLE scores, the coefficient of  $-0.184$  ( $p < 0.001$ ) appears.<sup>17</sup> This is one indication that the higher an ethnic group's proportional representation, the lower will be its *average* examination performance.

*County Selectivity.* One additional piece of evidence would justify our paying attention to the influence of preselectivity. From two sources, the percentage of the 5-14 year old age cohort in primary school was calculated for each sample school's *county* in West Buganda, Toro, and Karamoja, and the *district* for each sample school in Bugisu, Kampala, Jinja, and Mbale.<sup>18</sup> These ranged between 6 and 76 percent. There was a marked tendency for average academic achievement to decline in those areas where the percentage of the general age cohort attending school was higher. The correlation between PLE performance and the percentage of children attending school at the most local level where data were available was  $-0.251$  ( $p < 0.05$ ). When the preselectivity data were all aggregated to the district level, the influence appeared all the more pronounced. As illustrated in figure 2 the relationship approached linearity, expressed by the correlation of  $-0.516$  ( $p < 0.001$ ). Therefore, it appears that in areas lacking in op-

estimates of a group's representation in *senior secondary schools*. Nevertheless, because of the absence of any data on the catchment area surrounding each primary school, these data even with their limitations, can serve to illustrate our achievement hypothesis.

<sup>17</sup> Each ethnic group was weighted equally.

<sup>18</sup> Uganda, Ministry of Education, "Enrollment in Primary Schools by District and County and Sex—1968," in *Education Statistics—1968* (Entebbe: Government Printer, 1969), table 6, and Uganda, *Report of the 1969 Census: The Population of Administrative Areas* (Entebbe: Ministry of Planning and Statistics, November 1971), vol. 1. County-by-county rates of school attendance could not be assessed for Bugisu because county names and boundaries had been altered between the publication of *Education Statistics—1968* and the population census of 1969.

portunity for schooling, the selectivity of those who do go to school distinguishes them in some way from pupils in areas where opportunity is more universal.

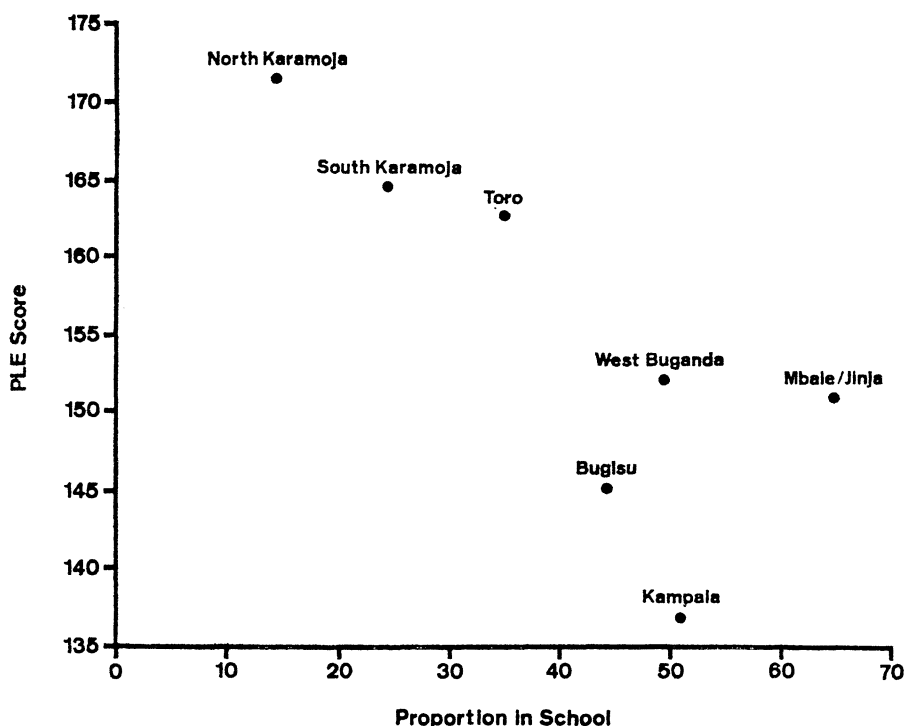


Fig. 2. Relationship between the Proportion of Children Age 5-14 in School and School PLE Performance at the District Level.

Whether access to school had an independent effect on PLE achievement was next explored. Indeed it seemed to, for when any intervening influence of repeating was partialled out of the equation, the relationship ( $-0.251$ ) held constant ( $-0.256$ ). Nor did the relationship diminish when any potential influence of age was partialled out ( $-0.252$ ), or even the summary influence of age and repeating together ( $-0.258$ ). In short, of the three, selectivity operated more strongly and independently to influence school achievement scores in isolated areas.<sup>19</sup>

*Preselectivity and Intellectual Ability.* When schooling is not free, the most impoverished among those who wish their children to attend are

<sup>19</sup> Some of the most isolated schools in the Karamojan districts were equipped with facilities for boarding. But whether the presence of these facilities had an independent effect on academic performance is a difficult question to answer because of the complexity of holding all other intervening variables in control. The pattern of high scores, however, was parallel to *both* boarding and nonboarding institutions within the Karamojan districts, leading one to suspect that it would be beneficial to pursue other explanations. For further discussion, see Heyneman, "Differences in Construction, Facilities, Equipment, and Academic Achievement Among Ugandan Primary Schools."

forced to select more carefully.<sup>20</sup> For them, a dropout or an examination failure would result in a loss of investment more serious than in communities where schooling is taken as the norm. In addition to older pupils and examination repeaters, in more isolated and impoverished areas the more able pupils may be the first to attend because they are deemed the soundest investment. Given that the definition of intelligence is unequally measured and very much influenced by social and cultural beliefs, nevertheless, the concept of who is the most able is hardly limited to industrial contexts. Is it possible that preselection was the reason why P7 children from the two most remote and economically impoverished ethnic groups outperformed all others on an intellectual test of perceptual ability (the Raven's Progressive Matrices—RPM) regardless of the other groups' superior level of economic wealth, community literacy, and exposure to "modern" influences (table 4)?<sup>21</sup> The Karamojong and the Pokot had mean RPM scores of 27.1 and 27.2, versus the Baganda's and the Bagisu's 23.3 and 23.6 and the Batoro's 22.1.<sup>22</sup> Also, because of the consistently negative correlations between a school's mean RPM score and the proportion earning over subsistence incomes ( $-0.279$ ), the distance from a paved road ( $-0.245$ ), and the population density ( $-0.146$ ), in future research it would seem reasonable to explore the possibility that in the less wealthy areas there might be a tendency for the more able to receive the first opportunity for schooling.

TABLE 4  
MEAN ETHNIC DIFFERENCES OF P7 PRIMARY SCHOOL  
CHILDREN ON TWO MEASURES OF COGNITIVE ACHIEVEMENT

| ETHNIC GROUP | RAVEN'S PROGRESSIVE MATRICES <sup>a</sup> | PRIMARY LEAVING EXAMINATION |
|--------------|---|-----------------------------|
| Batoro       | 22.1                                      | 157.9                       |
| Baganda      | 23.3                                      | 146.1                       |
| Bagisu       | 23.6                                      | 146.7                       |
| Karamojong   | 27.1                                      | 172.9                       |
| Pokot        | 27.2                                      | 182.4                       |
| Labwor       | 24.7                                      | 157.4                       |
| Bakonjo      | 21.1                                      | 167.7                       |
| Bawamba      | 23.2                                      | 162.1                       |

<sup>a</sup>Controlled for age.

*School Access and Ethnic Differences.* Knowing that schools and pupils from the most impoverished and isolated communities outperformed others might raise questions as to whether this situation was attributable solely to community selectivity, or whether it was due to a systematic distinction between ethnic groups expressing itself in cognitive performance. There

<sup>20</sup> Mbilinyi, "Decision to Educate."

<sup>21</sup> The RPM is a test of intellectual and perceptual ability. It is nonverbal and widely used in nonindustrial societies. For an elaboration of its usefulness, see Heyneman, "A Brief Note."

<sup>22</sup> Controlled for age, and statistically significant at the  $P < 0.05$  level.

were eight groups from whose areas schools were chosen: the Bakonjo, Bawamba, Labwor, Pokot, Karamojong, Batoro, Bagisu, and Baganda.<sup>23</sup> Though these groups are linguistically and culturally distinct, from the evidence of ethnic differences elsewhere, several potential hypotheses might be advanced to explain their differences in performance.

First, one might ask which ethnic group had the first experiences in school. In Africa where schooling is of such crucial importance in the labor market, the group with the first experiences might be expected to "get the jump" on the others, to be more used to schools and testing, and perhaps to be more achievement-oriented in general. For example, I have argued elsewhere that differential school attainment (one product of differential school performance) has been for the Tonga and Timbuka of Northern Malawi a function of being endowed with academic opportunities prior to their neighbors.<sup>24</sup> Could this be true as well in Uganda to explain the differences in performance displayed in table 4? If this were so, then the highest performing groups, the Pokot, Karamojong, Bawamba, and Bakonjo, would have had the first schools, the first missionaries, and the first opportunities. In fact the opposite was true. Schools in Uganda were established first in the areas of the Baganda and second, from the sample, in the areas of the Batoro and Bagisu. In fact, schools have only recently been established in the areas of the highest-scoring ethnic groups, often taking several generations for the diffusion.

Second, one might ask whether cultural similarities between ethnic groups could explain the pattern of high scores to be found in isolated areas, and two hypotheses might be advanced to speak to this issue. Since Fortes and Evans-Pritchard's ethnographic survey published in 1940, it has been common to dichotomize African ethnic groups by traditional political structures.<sup>25</sup> Some, such as the Zulu, the Bemba and the Banyankole, have been noted for having developed a central governmental authority, legal structure, and administrative machinery. On the other hand, the Nuer, the Logoli, and others have been categorized as acephalous—as having established no central governmental structure, no standing army, no king, and no state. Knowing that children from ethnic groups with centralized political structures have moved upward occupationally out of proportion to their number in areas of Ghana, western Nigeria, and southern Uganda, one might reasonably wonder if the present offspring of these well-organized, powerful political empires wouldn't manifest their aggressive success of old in the realm of academic performance. If they do, however, it is not evident after the differing patterns of attendance have taken their effect. Of the Ugandan children who reached P7, the two worst performing

<sup>23</sup> Even in the most isolated areas, schools were rarely, if ever, ethnically homogeneous. In all, 30 ethnic groups had children in the sampled schools. However, only those groups whose "home" areas were selected will be discussed.

<sup>24</sup> Stephen P. Heyneman, "The Formal School as a Traditional Institution in an Underdeveloped Society: The Case of Northern Malawi," *Paedagogica Historica* 12 (1972): 460-72.

<sup>25</sup> M. Fortes and E. E. Evans-Pritchard, eds., *African Political Systems* (London: Oxford University Press, 1940), p. 5.

groups (the Baganda and the Batoro) were those who would be considered the offspring of the old political kingdoms, a result exactly the opposite of what might have been expected.

A second ethnic hypothesis might distinguish the pastoral, Eastern Nilotic groups of the north from the agricultural, Bantu-speaking people of the south. A systematic investigation of differences in aggressiveness and other personality traits has recently been reported by Edgerton, and it would be significant indeed if his discussion was supported by evidence of differing examination performances.<sup>26</sup> True enough, the two pastoral groups (the Karamojong and the Pokot) scored the highest on both the RPM and the PLE (table 4). As a group, however, the Pokot are not uniform; they are divided culturally between pastoral and agricultural sections, and our survey had no method of accurately distinguishing from which each Pokot child had come. In addition though, a Nilotic but agricultural group (the Labwor) also performed quite well, as did the southern Bantu agricultural groups which were isolated in the Ruwenzori mountains—the Bawamba and the Bakonjo. In sum, to distinguish between traditional political structures or between pastoral and agricultural livelihoods adds little to our understanding of differences in group performance. This suggests that when one asks the question as to why children in the more isolated areas appear to perform better on standardized tests, one would be more likely to find the answer by asking what percentage of the age cohort was in school from the local community than by asking to which ethnic group a child happened to be affiliated.

### School Access and "Controlled Score" Comparisons

When comparing the performances between German gymnasia or English grammar schools, it is common to make allowances for the proportion of the local age cohort which can attend. In one German state, if the opportunity exists for 50 percent of the children to progress to a gymnasium but only 25 percent in another, then the former would be handicapped in a comparison. One solution is to take the lowest rate of attendance and compare only that portion of the individuals having the best scores. Using this technique, if one state has only 25 percent of the children attending a gymnasium, then only the top-scoring 25 percent would be used in a comparison between states.

This procedure could not be identically applied in areas where children had not already passed through a single selection screen, such as the examination for entrance into grammar school or gymnasium. Nevertheless, though Ugandan children arrived in P7 for a mixture of other reasons (parental motivation, endurance, ability, health, wealth, proximity, etc.), the following will serve to illustrate the effect of applying a similar "controlled-score" comparison designed to fit particular Western European situations.

Only 8.8 percent of the children age 5-14 were found to be attending school in the communities of the sampled North Karamoja primary schools. This was the lowest proportion of all five districts and three urban areas.

<sup>26</sup> Robert B. Edgerton, *The Individual in Cultural Adaptation: A Study of Four East African People* (Berkeley and Los Angeles: University of California Press, 1971).

When this proportion is used and only the top 8.8 percent is taken for purposes of comparison, the effect would be to jump West Buganda's average performance from 152.0 to 221.4, ranking it well above North Karamoja's 171.5 (table 5). When similar "controls" are applied to the scores of other districts, one can visualize the effects which theoretically would accrue from having a small but highly intelligent portion of the population attending school and sitting for the examination.

TABLE 5  
MEAN ACADEMIC ACHIEVEMENT SCORES BY DISTRICT:  
BEFORE AND AFTER AN 8.8 PERCENT "CONTROL" <sup>a</sup>

| DISTRICT       | SAMPLE<br>MEAN | TOP-SCORING<br>8.8 PERCENT |
|----------------|----------------|----------------------------|
| Kampala        | 136.7          | 207.4                      |
| Bugisu         | 145.0          | 209.0                      |
| Mbale/Jinja    | 151.0          | 214.9                      |
| West Buganda   | 152.0          | 221.4                      |
| Toro           | 162.6          | 220.0                      |
| South Karamoja | 164.6          | 206.2                      |
| North Karamoja | 171.5          | .....                      |

<sup>a</sup>The approximate percentage of the 5-14 age cohort in North Karamoja attending school.

### Summary

Contrary to the belief that economic development of the community would be positively associated with a school's academic performance, in Uganda the two sets of variables are consistently and negatively correlated. Focusing upon the most isolated schools in the sample, where educational opportunity was most scarce, highlighted these negative relationships.

Despite the common theory that pupils in isolated, impoverished communities would be disadvantaged when sitting for examinations, we find pupils in these communities to be advantaged in that they tended to be older and were more likely to have received a second or third chance to take the exam. The most significant advantage of these pupils in disadvantaged areas, however, seemed to stem not from their age or chances to repeat, but from the fact that they were more highly preselected. The fact that the most isolated and impoverished groups tended to outperform others on the RPM is one indication that the more capable have received the first opportunity for schooling. This preselectivity prior to the P7 examination seems to create a strong tendency for schools and pupils in the most isolated communities, away from paved roads, in areas of low population density, low per capita revenues, and fewer incomes over the subsistence level, to outperform others more favorably situated. Thus, if there is an independent advantage to being placed in a more modern locale, it is negligible in comparison to these other, more prevailing characteristics affecting academic performance.

In sum, what this suggests is that when a higher proportion of an age cohort can attend school, one might expect the average academic level to diminish by some amount. In no way does this imply, however, that the

quality of education transmitted by the schools has declined, because the more representative the in-school population, the more difficult the task of transferring knowledge. What this means for providing equal educational opportunity is that scholars, planners, and administrators should not assume that isolated and impoverished schools are automatically the most underprivileged; for by having to educate a smaller percentage of the community's children, they may in fact have been given a higher quality of pupil-material with which to work.