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POVERTY DISCUSSION
PAPERS

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DOES SCHOOLING REALLY COUNT, EVEN FOR THEM?

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Revised February, 1969

ABSTRACT

This paper does three things. (1) It sets forth a general model of the determinants of earnings. (2) It uses this model to reveal the extent to which schooling--as distinct from "learning" and job training--is important as such a determinant. (3) It examines how several other important personal and environmental factors appear to operate in determining earnings levels.

The Data Used

In November 1963 the President's Task Force on Manpower Conservation interviewed a national sample of 2,500 men aged 17-25 who were rejected for military service because of failure to pass the Armed Forces Qualification Test (AFQT). The sample consists, therefore, solely of low-achievement (low AFQT) males--which group comprised 12 per cent of all males aged 17-25 in 1963. The data gathered in those interviews are used in this paper because the authors are of the opinion that it is "especially important to know more about the impact of education on lower achievers, given the propensity of many to view education as the principal and most effective device for raising earnings."

The sample data include, for each man, information on his earnings, schooling, AFQT score, training and a variety of other factors.

Results

(1) Perhaps the most important finding of this paper is that it clearly demonstrates the misconception of postulating highly significant relationships between schooling and earnings-- especially for "low-achievers."

In the authors' simplest model--which only relates schooling-level and earnings--less than 7 per cent of the earnings variations is found to be determined by schooling-level. And the significance, such as it is, of schooling per se vanishes when a measure of learning (the score on the Armed Forces Qualification Test) is also introduced. That is, it is what one learns that influences earnings, not the mere fact of spending time in school! This raises the obvious policy question: perhaps campaigns to keep teen-agers in school--without necessarily changing their attitudes and motivation--are extremely misconceived.

(2)   The paper also shows rather dramatically that the comparative payoffs to schooling and training differ, with training appearing very superior. The results of their most general model show that having some job-training yields $289 additional annual earnings. The authors then estimate that each additional year of schooling contributed $4 to earnings directly, and an additional $22, through the effect of education on AFQT and the subsequent effect of AFQT on earnings. On this basis the equivalent of eleven more years of schooling would be necessary to produce the $289 increase in earnings from training (and the data only specify training or no-training--the amount of training is not specified). The irresistible conclusion is that <u>schooling is a poor substitute for job training in producing higher earnings, at least for this large group of low achievers.</u>

(3)   The final conclusion is that only one-third of the earnings variance was explained in all by schooling plus training plus measured learning. This leaves two-thirds unexplained, and points up the urgent need for additional work on the determinants of earnings--particularly if society wishes to seek effective ways to increase the economic opportunities of the least-advantaged of its young men.

Determinants of Earnings of Low Achievers:
Does Schooling Really Count, Even for Them?*

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Why do earnings differ among people? Much as been made in
recent years of the importance of years of schooling as a determinant
of earnings. But whatever is true of the contribution of schooling in
general, its contribution for persons at the lower end of the achieve-
ment spectrum may be quite different than at the top. If so, the im-
portance of schooling may have been inadequately emphasized for some
groups and overemphasized for others.

The specific objectives of this paper are several: (1) to set
forth a general model of the determinants of earnings; (2) to use this
model to help reveal the extent to which schooling, as contrasted with
"learning" and job training, is an important explanatory variable; and
(3) to reveal how several other important personal and environmental
factors appear to operate in influencing earnings levels. The method

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of approach is to examine systematically a number of variables--in

addition to schooling--that we believe contribute to earnings, to

ascertain their importance, and simultaneously to observe the effect of

schooling per se.

In the empirical application we work with a large national sample

of "low achievers." It seems especially important to know more about

the impact of education on lower achievers, given the propensity of many

to view education as the principal and most effective device for raising

earnings, particularly among the poor and the disadvantaged. Such a view

lies behind campaigns to curb high school dropouts and in other ways to

provide more and better education for the disadvantaged.[1] Because of

the special character of the sample, we try to be cautious in generali-

zing our results.

It is well known that level of educational attainment (LEA) is posi-

tively correlated with level of earnings, for males and females, for whites

and for nonwhites, and for virtually all age groups. At the same time,

it is recognized as erroneous to attribute all of the observed differen-

tials in earnings associated with education to differences in years of

schooling--the reasons being that there are, in all likelihood, system-

atic differences in the "ability," "motivation" and family backgrounds

of students, and in the "quality" of the schooling they receive. Support

for the view that these and other factors, many unrelated to education,

explain at least some portion of the earnings differentials commonly

associated with differences in LEA rests in part on the observation

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[1]For some evidence of the relatively low effectiveness of such
programs in terms of monetary benefits relative to costs, see B. A. Weisbrod,
"Preventing High School Dropouts," in R. Dorfman, ed., Measuring Benefits
of Government (Washington, D. C.: The Brookings Institution, 1965), pp.
117-149; and T. Ribich, Education and Poverty (Washington, D. C.: The
Brookings Institution, 1968).

that although mean incomes do differ significantly among educational groups

there is still extensive overlapping of the distributions around the

means.[2] However, the problem has been an inability to isolate the quan-

titative importance of the school-related variables with any great degree

of precision, despite some noteworthy attempts.[3]

What are the determinants of a person's earnings? We can quickly

assemble a catalog: (1) physical conditions, including one's general

state of health and presence of any disability; (2) mental capability,

reflecting inherited potential; (3) learning and experience, determined

by quantity and quality of formal education and job training, and the

collection of experiences which contribute to a person's knowledge and

skills; (4) psychological characteristics, among them work-leisure

preferences, motivation, and the ability to communicate and cooperate

in work situations; (5) family environment, reflecting informal learning

in the home, and also the contacts and opportunities that the family

can provide; (6) job access, which includes economic opportunities in

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[2]See U.S. Bureau of the Census, 1960 Census of Population, Subject Reports, Occupation by Earnings and Education, Series PC(2)-7B.

[3]See: G. S. Becker, Human Capital (New York: National Bureau of Economic Research, Columbia University Press, 1964), pp. 79-90; D.S. Bridgman, "Success in College and Business," Personnel Journal, IX (June 1930), pp. 1-19; D. Wolfe and V.G. Smith, :The Occupational Value of Education for Superior High School Graduates," Journal of Higher Education, XXVII (April, 1956), pp. 201-14; E.F. Denison, "Measuring the Contribution of Education (and the Residual) to Economic Growth," in The Residual Factor and Economic Growth (Paris: Organization for Economic Cooperation and Development, 1964), pp. 86-100; and S.J. Hunt, "Income Determinants for College Graduates and the Return to Educational Investment," Yale Economic Essays, III (Fall, 1963), pp. 305-57.

the area as well as the degree of racial and other types of discrimination.
This listing is by no means complete, nor are the classes indicated
mutually exclusive, but the number and complexity of the forces likely
to affect earnings are abundantly clear.

We will focus the bulk of our attention on factors (2) and (3),
with some additional attention given to (5) and (6). We make no pretense
in this paper to having a fully specified empirical model. However, we
believe that we have been able to develop useful proxies for a number of
these variables and to learn something about their quantitative impor-
tance for low achievers.

I. Models of Earnings Determinants

In this section we set forth a series of four increasingly sophis-
ticated models of the determinants of individuals' earnings. Throughout
we pay particular attention to the role of schooling, noting how its
apparent importance varies as additional explanatory variables are
considered. These models are developed in the light of the data available
for our analysis, and, thus, even the most elaborate among them takes
into account only a handful of the many variables that we believe to be
relevant. The theoretical specifications of these models are presented
here, and their empirical counterparts are presented in the section that
follows, along with the results.

We begin with a simple Model I in which earnings--and, hence
differentials in earnings--within age-sex-race groups are attributed solely
to level (differentials in levels) of schooling. While such a model is

naively simple, it does embody the approach implicitly reflected in the frequently-heard statements about the financial payoff from education in today's world--statements based largely on crude census data classifying earners by size of earnings and level of educational attainment plus age, sex, and race.

Analysts of the relationship between schooling and earnings have long recognized the incompleteness of an approach that emphasizes only--or even primarily--level or quantity of schooling. In addition, the quality of schooling, the motivation and ability of the student, and, in turn, what the student has learned are surely important. Indeed, one might hypothesize that it is only what a student has learned--both in school and elsewhere--and not the amount of time spent in school, that influences earnings. Accordingly, we propose the addition of variables-- in the form of test scores--that capture such learning (Model II); more is said about the test scores below.

Besides schooling and learning, job training is likely to be an important means of acquiring knowledge and skills useful for enhancing earnings. Indeed, a variety of studies have demonstrated the substantial payoff of job training.[4] Thus, we include in Model III variables reflecting the quantity and quality of training.

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[4]See Jacob Mincer, "On-The-Job Training: Costs, Returns, and Some Implications," Journal of Political Economy, LXX (Oct. 1962), pp. 50-79; D.A. Page, "Retraining Under the Manpower Development Act: A Cost-Benefit Analysis," Public Policy, XIII (1964), pp. 257-267 (Brookings Reprint No. 86); G.G. Somers and E.W. Stromsdorfer, "A Benefit-Cost Analysis of Manpower Retraining," Industrial Relations Research Association Proceedings (December, 1964), pp. 172-185; M.E. Borus, "A Benefit-Cost Analysis of the Economic Effectiveness of Retraining the Unemployed," Yale Economic Essays, IV (Fall, 1964), pp. 371-430.

At this point, having considered variables related to the learning process, we add a group of personal and environmental variables to mirror individual and family characteristics and regional economic opportunities (Model IV). Individual and family circumstances can affect the development of personality, mental capability, motivation, and through them affect earnings. At the same time they will affect earnings as a result of the contacts and the opportunities which family position can command. Similarly, economic opportunities vary among regions, reflecting differential prices and unemployment rates, differences in the mixes of skills demanded and supplied, access to knowledge about job opportunities, and the like.[5] Since the ways in which these variables operate on earnings are sometimes less clear than is the case with the education and learning variables, our empirical efforts represent a crude foray into this realm.

II. Empirical Application

In this section we describe the sample data, list the proxies for the classes of variables discussed above in connection with each of the models, and explain the rationale for selecting the particular proxies used. Finally, we present and analyze the findings.

The Data. In November of 1963 the President's Task Force on Manpower Conservation interviewed a national sample of approximately 2,500 men,

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[5]V.R. Fuchs, Differentials in Hourly Earnings by Region and City Size, 1959 (National Bureau of Economic Research, Occasoinal Paper 101, 1967).

aged 17-25, who were rejected for military service because of failure to
pass the Armed Forces Qualification Test (AFQT).[6] The Task Force objec-
tive was to learn more about the characteristics of the "mental" re-
jectees, as a guide to policy for cutting the rejection rate. The data
obtained also serve us in our effort to study determinants of earnings.
The sample data are unusual in that they include, for each man, infor-
mation on his earnings, schooling, Armed Forces Qualification Test (AFQT)
score, training and a variety of other factors, at least some of which
are thought to influence levels of earnings. Of particular note are
the AFQT scores which range from 0 to the 30th percentile, with the bulk
of them concentrated around the 9th percentile.

The fact that the sample consists entirely of low-achievement
(low AFQT) males certainly makes it a biased sample of the population
of all young men, and so we cannot generalize our findings beyond that
population. However, the size of the rejectee group is itself sufficient
to warrant our interest, since it comprises 12 percent or more of all
males aged 17- 25,[7] and low-achievers surely constitutes much of the core of
the poverty problem.

The Variables. The variables, their proxies, the units of measure,
and our notation are shown in Table 1.

The dependent variable, annual earnings, Y, indicates total money
income received in the year 1962, after deduction of any transfer payments.

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[6]President's Task Force on Manpower Conservation, One-Third of a
Nation (Washington, D.C.: January 1, 1964).

[7]Ibid., p. 11.

While there are always problems in knowing exactly what is actually
included in reported income, we are willing to accept the measure as a
reasonably good one for market earnings.

Schooling, X_1, is measured simply as years of educational attain-
ment, without regard for type (academic versus vocational) or quality
of schooling.

As a broad measure of "learning" (whether in or out of school), re-
flecting student ability, motivation, school quality, and home environ-
ment, we used the score on the Armed Forces Qualification Test, X_2.
The test is rather comprehensive, covering word knowledge, arithmetic,
mechanical understanding, and ability to distinguish forms and patterns.

> The examinee's score on the test depends on
> several factors: on the level of his educational
> attainment; on the quality of his education (quality
> of the school facilities); and on the knowledge he
> gained from his educational training or otherwise,
> in and outside of school. These are interrelated
> factors, which obviously vary with the youth's socio-
> economic and cultural environment, in addition to his
> innate ability to learn--commonly understood as I.Q.[8]

Though the score is certainly a composite reflection of many factors,
the nature of the test leads us to believe that learning, most importantly
that acquired in school, will be the dominant influence. Accordingly AFQT
will serve as a good proxy for learning.

The test is specifically designed to predict a young man's success in
military training and military service, and apparently it performs

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[8]Karpinos, Bernard D., "Results of Examination of Youths for
Military Service, 1965," Supplement to Health of the Army, July 1966
p. 6.

TABLE 1

Variable	Notation	Proxy	Units of Measure
Earnings	Y	Annual earnings	In dollars
Schooling	X_1	Years of schooling	0-17, by single years
Learning quantity	X_2	AFQT score	0-30, by single percentile points
Job training outside of school, economic opportunities	X_3	Training	1 with 0 without
Experience and motivation	X_4	Age	(18-26, by single years) 0-8, with base year set at age 18
Color distinctions	X_5	Color	1 if white 0 if nonwhite
Family responsibility	X_6	Current marital status	1 if married 0 if not married
Home environment during youth	X_7	Divorce of parents	1 if divorced 0 if not divorced
Family size during youth	X_8	Number of brothers and sisters	1 if 5 or more 0 if under 5
Regional income differences	X_9	Region	1 if from non-South 0 if from South

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reasonably well.[9] Incidentally, it is also regarded--though with

little evidence--as an indicator of productivity in the civilian

economy.[10] In Section IV, below, we examine this contention.

Our proxy for "job training," X_3, is far from ideal, since it gives

only an indication of whether or not an individual recieved training

outside of school. Neither the intensity, the duration, nor the type

or quality of the training is known. This variable must also be regarded

as a weak proxy for economic environment since the acquisition of training

depends upon its availability and expected payoff.

Throughout the analysis we control for age, X_4, recognizing that

it reflects a conglomeration of factors affecting earnings. For example,

it measures the acquisition of experience from a variety of sources--

schooling, job training, and employment. It also reflects the depre-

ciation and obsolescence of learning and training. Finally, it captures

some of the variation in motivation as that is correlated with family

responsibility. Because we will be concerned in our sample with young

men aged 17-25, this family-responsibility element seems especially im-

portant; within this age span there is greatly reduced dependence upon

parents as more and more individual responsibility is assumed.

Another control that we employ throughout is color, X_5. Differences

in mean earnings between whites and nonwhites have often been noted,

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[9]President's Task Force on Manpower Conservation, op. cit., p. 9.

[10]Ibid., p. 15.

along with numerous possible causes. Although our data offer no oppor-
tunity to isolate the causes of these differences--job discrimination
and low-quality schooling are especially suspected--the inclusion of
the color variable will improve the estimation of the effects of our
other variables.

Turning to the "personal characteristics" variables, we assume that
being married indicates increased financial responsibility, and thus
current marital status, X_6, reflects one aspect of motivation. (Thus a
positive sign is expected for the coefficient of this variable.) The
variables denoting divorce of parents, X_7, and family size during child-
hood, X_8, are included to describe the individual's family circumstances
as a youth. While the role of the family in affecting earnings is almost
impossible to quantify, these variables should capture at least some of
the disadvantages accompanying the divorce of parents and of life in a
large family. (Negative signs are anticipated.)

The region variable, X_9, serves as a proxy for the economic environ-
ment. This variable will indicate the increment to income from living in
a region outside of the South (and, accordingly, a positive sign is ex-
pected); it should capture some of the effects of regional price differences
and employment opportunities.

The Findings. Each of the models described in Section I has been
estimated by least squares, in the form $Y = a_o + a_1X_1 + \ldots + a_nX_n$.
The results for the entire sample of 2,403 men are presented in Table 2.[11]
The results after disaggregation of the sample into four region-color

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[11]The zero-order correlation coefficients are shown in Appendix Table A,
with the means and standard deviations in Appendix Table B.

groups will be shown in Table 3, to be discussed below. It whould be recalled that all of these results apply to "low achiever" males, as described earlier.

The parameter estimates in Model I (Table 2) provide the type of information from which many have concluded—but too readily—that schooling as such pays off financially. Level of educational attainment (LEA), X_1, is indeed highly significant, with a coefficient suggesting that each additional year of schooling (around the mean of 8.9) contributes an additional $62 per year to earnings—even for this low achievement group. Age, too, is significant, with each year (around the mean of 21.9)—reflecting added experience and maturity—being associated with an additional $191 per year in earnings. Especially striking is the $608 average difference in earnings between whites and nonwhites. Equally notable, though, is the low R^2 shown in Column 10, namely, 0.107; factors other than differences in LEA, age, and race apparently explain a whopping 89 per cent of the observed variance in annual earnings.

Model II introduces, as X_2, the learning variable, AFQT score. Recall that we hypothesized that learning, not formal schooling per se influences earnings. As expected, the results show that AFQT is highly significant. It apparently takes over about half of the effect previously assigned to schooling, X_1, for we now find that years-of-schooling falls in significance and is reduced in size from $61 to $30. Our inference is that the number of years spent in school is not as powerful a means of increasing earnings as is what has been learned, in school and outside of it. An

TABLE 2

Regression Results

All Men

(N = 2403)

Model No.	Constant	Educ X_1 (1)	AFQT X_2 (2)	Training X_3 (3)	Age X_4 (4)	Color X_5 (5)	Marital Status X_6 (6)	Divorce of Parents X_7 (7)	Family Size X_8 (8)	Non-South X_9 (9)	R^2 (10)	Standard Error of Estimated Earnings (11)
I	195.8 (135.3)	61.5* (12.1)	—	—	191.1* (15.2)	607.5* (58.4)	—	—	—	—	0.107	1399.57
II	224.5 (134.5)	30.3** (13.2)	26.6* (4.6)	—	201.7* (15.2)	537.0* (59.3)	—	—	—	—	0.120	1390.02
III	253.6 (134.4)	25.7 (13.2)	25.9* (4.5)	326.4* (90.6)	199.0* (15.2)	518.6* (59.4)	—	—	—	—	0.124	1386.56
IIIa	227.4 (135.2)	55.9* (12.2)	—	345.9* (91.2)	188.6* (15.2)	586.3* (58.5)	—	—	—	—	0.113	1395.68
IV	252.1 (146.0)	20.3 (13.2)	23.7* (4.5)	291.3* (89.3)	184.0* (15.2)	361.7* (63.1)	458.7* (80.5)	−60.1 (61.9)	−40.4 (58.0)	442.0* (60.7)	0.155	1363.18

* Indicates that the variable is significant at the 0.01 level.
** Indicates that the variable is significant at the 0.05 level.
— Indicates that the variable did not enter that particular model.

Standard errors are in parentheses.

additional year spent in school while learning little, does appear to increase earnings, but only by $30 per year; but if measures are taken so that the amount learned is increased, earnings will, it appears, rise by $27 per year for each additional point of score on the AFQT. In the light of this finding, the wisdom of campaigns to keep teen-agers in school--without necessarily changing their attitudes and motivation, or the quality of the instruction offered--may be doubted.[12]

In Model III we add a variable indicating whether or not the respondent received any vocational or apprenticeship training. With the addition of this variable, X_3, the coefficient of the schooling variable, X_1, becomes insignificant. Training, however, appears to be a large and very important factor, adding $326 per year to earnings for those who have received training. Note, too, that whereas most of the vocationally-valuable content of ordinary schooling is captured by the AFQT (previously seen in the comparison of Models I and II), AFQT picks up only a small portion of the effects of the training variable. This is to observe that in Model III, with the AFQT variable included, ordinary schooling is insignificant, but vocational training is highly significant. This is also seen in a comparison of Model III with Model IIIa, which is included so as to show to what degree, if at all, the financial return from training, like that from schooling, depends heavily upon the kinds of learning measured by the AFQT. Accordingly, this model includes the job training variable but not AFQT. The results indicate that exclusion

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[12]See also B.A. Weisbrod, *op. cit.*

of the learning variable, AFQT, has a quite small relative effect on the coefficient of the training variable, but a large relative effect on the coefficient of LEA. We conclude, therefore, that the vocational value of training seems to stem from types of learning not measured by AFQT.

Finally, in Model IV we include all of the variables that prior theorizing led us to believe are relevant, and for which we have data. These include variables X_6-X_9, reflecting current and past family circumstances and current economic opportunities. The estimates of Model IV, also shown in Table 2, disclose that AFQT (X_2), training (X_3), age (X_4), and color (X_5) retain their significance. But schooling remains insignificant, and the absolute size of the coefficient--$20 per year in additional earnings per year of schooling--would appear unimportant even if it were statistically significant.

Of particular interest here are the effects of the other variables reflecting family circumstances and economic environment. The coefficient of the current marital status variable, X_6, indicates, as predicted, that being married is associated with the man's having additional earnings of $459 per year (significant at the .01 level). Coming from a home with divorced parents (X_7) or from a large family (X_8) is associated with some-what lower earnings, as expected, but the coefficients are not significant.[13] The region variable, X_9, has a large (and significant) coefficient, which shows that there is considerable financial advantage associated with living outside the South.

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[13]The lack of significance of the family-size variable, X_8, in our multiple- regression analysis is in notable contrast to the findings from a simple correlation analysis. Thus, the Task Force Report points out that 47 per cent of rejectees came from large families, with five or more children (President's Task Force on Manpower Conservation, op. cit., p. A23).

Not surprisingly, none of the models appears to explain substantially the cross-section earnings differentials; this is indicated by the relatively low values of R^2. First, the men in the sample are too young to have settled into their lifetime work patterns. Second, earnings information is available for only a single year, while the appropriate earnings variable is probably an average value for a period long enough to eliminate transitory factors such as illness and job changes. And finally, their age implies a lack of seniority which makes them subject more to seasonal and cyclical unemployment. An indication of the importance of these latter two sets of factors is the increase in R^2 to 0.360 which was obtained by including a weeks-worked variable with the other explanatory variables of Model IV. Although this variable did serve as a proxy for these transitory factors as well as for motivation, its inclusion in our final model did not seem justified, since work-time might also reflect employers' discrimination among workers of differing educational and ability levels.[14]

Whatever the reasons for the low R^2 value the fact remains that formal schooling (LEA), apart from its influence on learning (AFQT)--which varies among students--is not as significant as is commonly supposed in explaining earnings differentials. Even when AFQT is taken into account we find that the overwhelming majority of earnings differentials--at least those existing in a single year and still early in the careers of these low achievers--cannot be attributed to education.

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[14]Inclusion of the weeks-worked variable had no substantial effect on the coefficients or significance levels of the other independent variables.

III. Regional-Color Disaggregation

Up to this point, our findings have been based on the entire sample. Thus, they have been essentially averages for the various component groups comprising the sample. We now want to determine whether our findings regarding the statistical significance of particular variables hide the fact that these variables are not significant for some subgroups--e.g., for men of different color groups in different regions. And conversely, we want to learn whether the finding that particular variables are not significant masks the fact that they are highly significant for one color-regional group but not another.

We can provide here only a partial answer to these questions. Table 3 shows the results of disaggregating Model IV and running separate regressions for men from two regions, South and non-South, and two color groups, white and nonwhite.

For the group of non-South whites, coefficients for education and AFQT are both small and insignificant, while the training coefficient indicates a very substantial addition to earnings of $604 (significant at the 0.01 level). These results suggest that the low achievers are treated indifferently with regard to education and ability, and that they are only rewarded by employers when they offer some special skill. Such a result is not surprising, considering that the range of their ability is extremely limited and that to employers they are probably viewed as a fairly homogeneous group. The other coefficients for this group follow the same pattern as those of the whole sample.

TABLE 3

Regressions by Region and Color

Subgroup	Constant	Educ X_1 (1)	AFQT X_2 (2)	Training X_3 (3)	Age X_4 (4)	Marital Status X_5 (5)	Divorce of Parents X_6 (6)	Family Size X_7 (7)	R^2 (8)	Standard Error of Estimated Earnings (9)
Non-South Whites (N = 644)	1532.4* (302.9)	9.2 (29.0)	17.3 (10.2)	604.2* (197.1)	126.7* (29.8)	736.3* (197.2)	-298.7 (152.9)	-230.8 (147.5)	0.083	1745.63
Non-South Non-Whites (N = 321)	496.5 (435.6)	6.7 (41.9)	30.5** (14.1)	23.3 (248.3)	197.1* (38.2)	367.8 (238.4)	227.0 (168.8)	95.2 (171.8)	0.110	1473.82
South Whites (N = 481)	-82.3 (316.5)	62.2** (31.9)	25.4* (8.3)	187.4 (178.5)	256.2* (42.0)	519.0* (165.1)	-125.0 (156.5)	1.0 (123.9)	0.158	1287.16
South Non-Whites (N = 957)	123.4 (173.7)	10.8 (15.8)	28.0* (6.3)	126.0 (125.1)	228.0* (22.2)	232.4* (97.4)	41.5 (70.3)	44.8 (67.6)	0.138	1010.95

*   Indicates significance at 0.01 level.
**   Indicates significance at 0.05 level.

The non-South nonwhites have a significant AFQT coefficient (at the 0.05 level) and an insignificant education coefficient. Most startling though is the insignificance of the training coefficient. Unfortunately, we cannot pinpoint the cause of this result since all we know about training is its presence or absence. We cannot attribute this difference to discrimination alone since there could be considerable variance in the quality, duration, and types of training present among the whites and the nonwhites. However, the significant AFQT coefficient in the nonwhite sample indicates that learning differences do enter into the determination of nonwhite earnings. Of the remaining coefficients, the only notable change is the insignificance of marital status for this group.

The results for Southern whites and nonwhites are similar, the only exception being the significance of education (0.01 level) for whites. The training coefficient is insignificant for both groups suggesting that the training programs are not intensive enough to provide a skill valuable for enhancing earnings or the industrial structure is such as not to utilize specially trained labor. The remaining variables again follow the pattern of the results for the whole sample.

In summary, the disaggregated data, while providing a surprise regarding the training variable, do not cause us to greatly alter our earlier conclusions concerning the importance of schooling and learning. The results do suggest the appropriateness of disaggregation, for in any effort to develop new programs their possible effects may vary markedly among regions and racial groups.

IV. Some Extensions of the Results

In this section we utilize our findings to explore briefly several hypotheses. We also investigate the nature of the relative payoffs to education, training, and learning.

Sheepskin Effect. The first hypothesis on which our data and findings can cast some light is: There exists a "sheepskin effect" such that the mere possession, ceteris paribus, of an educational degree-- as for example a high school diploma--brings additional financial returns.

A test of this hypothesis involves determining whether men who graduate from high school have higher earnings than men who do not, holding constant at least the level of learning (AFQT score), and age. The desirability of making such a test stems from the hypothesis that there is information value to employers in the knowledge that an individual graduated from high school. This information value arises from the consistency of effort required by a student to complete assignments, follow instructions, and get along reasonably with superiors and other students for four years. In contrast, an employer knows little about the ability of a dropout to meet such demands.

The test we propose involves determining whether the mean earnings of high school graduates (those persons having 12 years of schooling) are significantly greater than those of high school dropouts (having 9-11 years of schooling) of the same age with the same AFQT scores. The need for the assumption of AFQT constancy poses an index number problem. Since the distribution of AFQT scores differs for men with

12 years of schooling and for those with 9-11 years, there is a question
as to which distribution should be used in holding AFQT constant.
Since the age distribution for the two LEA groups also differs, the
same problem arises again. In fact, we calculated mean earnings for
the two LEA groups, using the AFQT and age distribution for one group
and then for the other.[15] Our findings are that the mean earnings for
the two LEA groups were not significantly different, whichever distri-
bution was used. Thus, this test does not support the sheepskin hypothesis
that graduation per se increases earnings for our low-achievement groups.

The fact that the hypothesis is not supported may come as no great
surprise considering the special nature of the sample. Since all its
members scored within a limited range of the AFQT exam--below the
30th percentile and concentrated around the 10th percentile---it may be
that those who were able to achieve this score with less schooling had
more ability or a better background. These factors could have over-
ridden the sheepskin effect--if it exists. But this is purely specula-
tion, and thus additional testing for the presence of the sheepskin
effect is needed.

AFQT as a Predictor of Civilian Productivity. The second hypothesis
is: The mental qualities deemed important to the military services in
judging the acceptability of men are the same as the mental qualities
deemed important to the civilian economy.

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[15]A more ideal situation would employ this test for each subgroup;
however the size of our sample, though large, is not sufficient to provide
an adequate view of the distribution of earnings for each subgroup by
age and AFQT, since many of the cells in the cross classification would
be empty.

We noted earlier that the validity of this hypothesis has been asserted, but, while seemingly plausible, it is by no means obviously correct. If the hypothesis were correct, we would expect to find that in a multiple regression of _civilian_ earnings on the test of mental capability for _military_ service--AFQT score--and on other relevant variables, the coefficient of the AFQT score variable would be significantly positive. Reference to Table 2 shows that this condition is, indeed, fulfilled for the whole sample, and Table 3 indicates it is fulfilled for all groups except non-South whites. However, a test for the entire AFQT spectrum is required to adequately judge this hypothesis.

Tradeoffs Between Education, Training, and Learning. The results presented also offer an opportunity to investigate several oft-posed questions. What is the relative payoff of education versus training? How much additional education is required to yield an increase in earnings equivalent to that provided by training?

We can shed a little light on these questions by referring to the findings reported above. Although our disaggregate results indicate a wide divergence in the value of training, as noted previously we cannot determine if the result is caused by variance in the training programs themselves--some provide a skill valuable for enhancing earnings while others do not--or by variance in the industrial structure such that specially trained labor is not utilized uniformly in different regions. Thus in the interest of economy we will make the comparison of education and training using only results from the aggregate sample reflecting the averages among regions.

We see from our aggregate results (Table 2) that the presence of training is associated on average, with $291 additional annual earnings. Each additional year of schooling, by comparison, contributes about $20 to earnings directly and an additional $24--for a total of $44 per year-- through the apparent effect of education on AFQT and the subsequent effect of AFQT on earnings. The $24 figure reflects our estimate that each additional year of schooling for this group contributes approximately one point to AFQT, and each additional AFQT point is worth $24 per year.[16]

On the basis of these relationships, the equivalent of almost seven more years of schooling would be necessary to produce the $291 increase in earnings associated with training. In making this statement we are, obviously, extrapolating beyond the range of our data; for since members of our sample already possess an average of 8.9 years of schooling, our calculation assumes that 17.9 years of schooling would be required. The point is only that schooling--at least of the types actually obtained--is apparently a poor substitute for job training--of the type received--in producing higher earnings for this group of low achievers.

In discussing the impact of training, we have been constrained by the serious lack of information on the amount or kind of training that respondents possessed... But this does not prevent us from inquiring about the amount of money individuals would be justified in spending

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[16]This result was obtained by regressing AFQT on the independent variables, including LEA, in Model IV. Specifically, the value of schooling was determined by regressing AFQT on the independent variables in Model IV to determine the coefficient of schooling in Model IV is the earnings value of an additional year of schooling.

on training as an investment. We proceed as follows, though in full recognition of the crudeness of the calculations. On the assumption that (1) the observed absolute financial payoffs from training will persist over the remainder of the working lifetime, and that (2) the market rate of return on investment is, alternately, 5 per cent or 10 per cent, we simply capitalize the additional earnings--$291 per year-- over the expected working lifetime, to estimate the value of training. We arrive at figures of about $5,300 (at 5 per cent) and $2,900 (at 10 per cent).

But now consider the payoff of added schooling. Capitalizing the additional earnings stream ($44 per year) associated with one additional year of schooling--resulting either directly through schooling or in- directly through the effect of schooling on AFQT and, then, on earnings-- yields a present value of from $800 (5 per cent) to $440 (10 per cent). When we compare this to the individual's cost of acquiring one more year of schooling--anywhere from $1,500 to $3,000 per year of income foregone, the estimated payoff to more schooling is indeed low for our sample group of low achievers.

Thus, the oft-deplored dropping out of school by low-achiever groups may not be irrational. This is particularly true if the alter- native of job training is available (although, of course, not all dropouts are low achievers). For many, however, training is not available, but even in its absence additional schooling appears to offer little in the way of future financial attraction to these young men.

V. Summary

The results presented here demonstrate the misconception of postulating highly significant simple relationships between schooling and earnings—especially for "low-achievers." Though incomplete, the results indicate some directions for future inquiries. The naive approach which regards schooling as the only important determinant of earnings within age-sex-race groups is very incomplete, as is indicated by the low value of R^2—less than 11 per cent—in the Model (I) in which schooling-level, age and color are used to explain variations in earnings. Such a result leads us to hypothesize that earnings are a function of many other factors, and to an attempt to specify and quantify those factors. It also leads us to question whether schooling is itself one of these factors, or whether its apparent significance is due to its correlation with some other, more fundamental variables. Our study thus raises one more question about the efficacy of schooling as a means of raising incomes for youngsters who may have limited ability, as motivation or poor have environment?[17]

The significance of years of schooling _per se_ diminishes with the introduction of a measure of learning—score on the Armed Forces Qualification Test (AFQT). In short, it is apparently true that what one learns—in or out of school—influences earnings more than does the mere fact of spending time in school. A more fundamental approach—which we could not take because of data limitations—would examine the factors affecting

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[17]For a survey educational program intended to aid children of the poor and other educationally disadvantaged youth, see Ribich, _op. cit._

learning, i.e., ability, motivation, home environment and quality of schooling, to determine their individual and collective roles.

The distinction between the importance of schooling and of learning raises a question about the policy of encouraging low-achiever students to remain in school. It is unlikely to benefit them financially unless an attempt is made to insure that they learn in school rather than merely attend school, and that they are not deprived of other, perhaps more valuable opportunities—such as training programs—to enhance their earning power. Our results show rather dramatically the comparative payoffs to schooling and training, although we have no information concerning the nature or duration of the training programs. The returns to training are large enough, however, to suggest the wisdom of expanding training facilities rather than simply urging school attendance.

The most complete model we presented explained only 15 per cent of the variance in annual earnings among the men in the sample. No doubt this is partly a result of limiting the number of variables—there were other variables that we believed to be significant determinants of earnings but which we were unable to estimate with the available data. The problem for a model of earnings determination remains to find bodies of data rich enough to supply meaningful proxies.

The principal, though limited finding of the present study is that, whatever the case may be for other groups of men, for this sample of low achievers, the amount (years) of formal schooling was a significant determinant of earnings only as it was a proxy for what students learned. Moreover, seven-eighths of the variance in earnings of the men sampled is explainable by factors other than schooling, training and

measured learning. All of this suggests the need for additional work on the determinants of earnings, particularly as society seeks ways to increase the economic opportunities of the least advantaged of its young men.

Correlation Coefficients

Earnings	Education	AFQT	Training	Age	Color	Marital Status	Divorce of Parents	Family Size	Non-South	
1.000	.048	.132*	.109*	.252*	.202*	.157*	-.042**	-.075*	.204*	Earnings
	1.000	.376*	.103*	-.048*	-.194*	-.014	.003	-.141*	.013	Education
		1.000	.086*	-.115*	.105*	.031	.030	-.152*	.088*	AFQT
			1.000	.044**	.076*	.022	-.037	-.065*	.069*	Training
				1.000	.067*	.173*	-.066*	-.013	.007	Age
					1.000	.018	-.130*	-.140*	.327*	Color
						1.000	-.019	.000	.007	Marital Status
							1.000	-.112*	.054	Divorce of Parents
								1.000	-.125	Family Size
									1.000	Non-South

*   Indicates the coefficient is significantly different from 0 at the 0.01 level.
** Indicates the coefficient is significantly different from 0 at the 0.05 level.

APPENDIX TABLE B

Means and Standard Deviations of Variables

Variable	Mean	Standard Deviation
Earnings (Y)	$1776.90	1480.30
Education (X_1)	8.94	2.40
AFQT (X_2)	9.11	6.91
Training (X_3)	0.11	0.32
Age (X_4)	21.90	1.88
Color (X_5)	0.47	0.50
Marital Status (X_6)	0.14	0.35
Divorce of Parents (X_7)	0.31	0.46
Family Size (X_8)	0.47	0.50
Non-South (X_9)	0.40	0.49