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The present study attempts to find the variables in the fifth grade which discriminate between dropouts and non-dropouts and to test the hypothesis that data about a student's school achievement from the fifth to seventh grades will yield a significant increase in predictable variance. This study makes use of a data bank, collected especially for research purposes, which is longitudinal in nature. The base sample for the present study were all of the 1961, fifth-grade students from a Northeastern urban school system, who were tested as part of the Study of Academic Prediction and Growth. The dropouts in this sample were representative of those people in the school system who progressed normally from fifth to seventh grades and who withdrew from school before their fifth-grade class completed 11th grade. Conclusions indicate that data readily available at the outset of the fifth grade will point out those persons who are potential dropouts. Programs aimed at remediation should be started much sooner than they have been traditionally. Plans are underway to replicate this study in another school system in an attempt to generalize the results. (CJ)

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ANTECEDENTS AND PATTERNS OF GROWTH OF SCHOOL DROPOUTS

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Over the past ten years much has been said about school dropouts. Organizations such as the Ford Foundation, the National Education Association, the U. S. Departments of Labor and Education, and virtually every State Department of Education have studied the problem, compiled mountains of statistics about it and written hundreds of reports about the problem. The Federal government has allocated millions to programs aimed at rehabilitating school dropouts, preventing people from becoming school dropouts, and getting dropouts to return to school, all of which have met with varying degrees of success.

Most of the recent research on school dropouts has tended to describe dropouts as they were in the ninth or tenth grade and several significant trends are evident. These studies show that dropouts tend to be older than their grade peers by more than a year, are one to two years below their grade peers in reading level, do not participate in extra-curricular activities, have poor school attendance records, and live in lower socio-economic environments than those who graduate.

With a few notable exceptions, little has been said about the elementary school characteristics or the patterns of academic growth of school dropouts. This silence is probably due to lack of good data rather than lack of interest on the part of researchers. Bowman and Matthews in an eight year longitudinal study used existing school records and interview data to investigate among other things the attendance patterns and the grade retention records of dropouts. They found that dropouts were older when they entered school and were four times as frequently retained as were graduates. Carrino also used existing school records to look at ten attributes associated with early school leaving. Among these were Reading Achievement, Spelling Achievement, and Word Discrimination

in the second grade; attendance record in grades 1-3; and grade retention. He found that in grades 1-3 dropouts were absent 3 times as much as graduates (35.2 to 11.7) and that the greater the number of absences the earlier the tendency to withdraw. He also found that the second grade word discrimination test discriminated between dropouts and graduates. Interpretation of the results of these studies is rather tenuous because of lack of information on the way data were obtained and combined.

The present study attempts to find the variables in the fifth grade which discriminate between dropouts and non-dropouts and to test the hypothesis that data about a student's school achievement from the fifth to seventh grades will yield a significant increase in predictable variance. One way this study is unique is that it makes use of a data bank collected especially for research purposes and which is longitudinal in nature. These differences allow for testing specific hypotheses about academic growth patterns.

The base sample for the present study was all of the 1961 fifth grade students from a Northeastern urban school system who were tested as part of the Study of Academic Prediction and Growth. A subsample of approximately 800 students who were not retested in the 11th grade as part of the regular bi-annual testing of the Growth Study subjects was identified. The school census records of these students were then consulted to determine a sample of 88 students who were known to withdraw for reasons other than transfer or illness. A sample of students who were tested in both the fifth and eleventh grades was matched, wherever possible, to the dropouts on the basis of the elementary school attended in the fifth grade, sex, and race. For example, when it was found that there were 3 Negro male dropouts from elementary school "A" then 3 subjects were randomly selected from the students who reached 11th grade, had attended school "A" as a 5th grader, and were male Negroes. Since the schools involved are known to be neighborhood schools this matching should be analogous to matching on SES. There were initially 88 dropouts and 81 non-dropouts. Since growth from fifth to seventh grade is under investigation, complete data require-

ments further diminished the sample to 68 dropouts and 81 non-dropouts. A word of caution about this sample: The dropouts are representative of those people in the school system who progressed normally from the 5th to 7th grades and who withdrew from school before their 5th grade class finished the eleventh grade; and the non-dropouts are representative of those people who progressed without apparent failure from 5th to 11th grades. These dropouts, then, are typical of those that Voss, Wendling, and Elliott label early dropouts and, if we follow their reasoning, are of lesser ability than the persons who drop out later in their school careers. This may have the effect of increasing differences in mean 5th grade scores.

The variables under investigation, their means, standard deviations, and correlations with the dropout criterion are listed in Table 1. As is readily seen by looking at the table, age in the 5th grade is the single best predictor ($r = .53$) and age in combination with any one of the 5th grade tests yields multiple R's from .54 to .56. Thus, with just two pieces of readily-available 5th grade data anywhere from 29 to 31 percent of the variance can be accounted for.

There are several ways to look at the question of whether data subsequent to the fifth grade adds significantly to the prediction of dropouts. I shall go into detail on only one specific way here. It seems reasonable to assert that if it is true that 5th to 7th grade growth adds to the prediction then the multiple correlation of a set of achievement test variables with the dropout criterion will be significantly greater than the multiple correlation of just fifth grade variables with the dropout criterion. For each of the six STEP tests a subject's fifth grade score was subtracted from his seventh grade score and used as the independent variable in two separate analyses.

First the multiple partial correlation of the set of six difference scores and the dropout criterion was computed with SCAT-V and SCAT-Q partialed out. The multiple partial R in this case is .24 which is not significantly different from zero. The same analysis was repeated, adding age in fifth grade to the

variables partialed out. This R is .28 which is also not significantly different from zero. From these analyses one could conclude that fifth to seventh grade growth as measured by two-year differences in achievement test scores does not add any significant information over that which was already available in the fifth grade. It is interesting to note that when age and SCAT are partialed out the r increases over that obtained when only SCAT is partialed out. This is most likely due to age having a higher correlation with the dropout criterion than the set of difference scores thereby decreasing the denominator in the variance ratio. One must also keep in mind that even though these values of .24 and .28 seem fairly high, that these are multiple partials. Since we have already accounted for a significant part of the variance the relative increase is very small. Even with the e analyses it is not possible to make a simple statement about differential growth patterns.

A closer look at Table 1 tends to support the notion of non-differential growth. The correlations of the raw difference scores range from -16 to +17. Also evident is the lack of significant mean differences in these scores. Suffice it to say that there appears to be little evidence here that supports the notion of differential growth rates for these two samples.

What conclusions can public school personnel draw from these data? First, it seems reasonably certain that the data that are readily available at the beginning of the fifth grade, persons who are highly potential dropouts can be identified and programs of remedial instruction, counseling, and curriculum revision should begin no later than this point. Programs aimed at stemming the tide of dropouts have traditionally been too late with too little, and these data as well as other studies show that this is in large part wasted effort. The differences exist early, therefore treatment must come early. These data also suggest that the differences come even earlier than the fifth grade. If we think of age as we traditionally think of grades, that is, a

measure of prior academic performance, then the fact that the dropouts in this sample are on the average nearly a year older than their clas[illegible]tes suggests that they had failed in school prior to entry into the fifth grade. Much more research is needed in this area but it behooves us to stop researching around the sore spot by describing groups of failures as they exist when the failure is so blatantly evident. One fruitful avenue would be to collect data about students' backgrounds and primary school performance to enable us to better understand how these phenomena relate to early school leaving. The act of dropping out of school it seems is a culmination of many years of failure, failure on the part of the schools as well as the students. To properly research this perplexing situation is going to take a commitment on the part of the educational world to extend the body of knowledge about dropouts and act on the basis of that knowledge.

Presently plans are underway to replicate this study in another school system in an attempt to see if the results found here can be generalized. A proposal is also being prepared which will enable us to investigate the effects of different school systems and treatments within school systems, such as enrollment in specific curricula and remedial programs. It seems imperative that we turn our attention to the underlying causes which precipitate school failure, if we are ever going to stop the waste to individuals and society which is created by under-educating large segments of our population.

Table 1

Means, Standard Deviations, and Correlations of Fifth Grade Variables and Fifth to Seventh Grade Growth Scores

Variable Fifth Grade	DROPOUT N	DROPOUT $\bar{X}_1$	DROPOUT S.D.	NON-DROPOUT N	NON-DROPOUT $\bar{X}_2$	NON-DROPOUT S.D.	r*	R**	$t_{\bar{x}_1-\bar{x}_2}$
Age	59	11.55	.76	81	10.62	.74	-.53	-----	-7.29xx
SCAT-V	67	242.45	8.03	78	248.33	10.63	.29	.54	3.52xx
SCAT-Q	67	251.35	7.13	78	256.31	8.25	.30	.54	3.81xx
STEP Math	68	239.46	8.44	81	245.11	10.20	.30	.54	3.62xx
STEP Science	68	243.82	9.95	81	252.96	13.00	.36	.55	4.71xx
STEP Social Studies	68	241.76	8.37	81	250.72	11.46	.40	.56	5.33xx
STEP Reading	68	246.40	11.68	80	255.71	15.25	.32	.54	4.08xx
STEP Listening	68	260.29	10.54	81	265.56	11.35	.23	.54	2.90x
STEP Writing	68	244.90	13.06	81	255.09	12.82	.37	.55	4.76xx
Difference Scores Seventh-Fifth									
STEP Math	65	10.05	13.10	78	10.49	9.82	.01		.23
STEP Science	63	14.06	10.60	79	10.54	9.21	-.16		-2.10
STEP Social Studies	66	11.97	10.58	78	9.45	8.18	-.13		-1.60
STEP Reading	64	11.11	11.90	76	12.38	10.62	.03		.66
STEP Listening	59	7.90	10.99	78	10.77	7.79	.17		1.77
STEP Writing	59	10.39	12.36	76	7.76	9.94	-.09		-1.36

*The zero order r with the dropout criterion D.O. = 1, NDO = 2
**The multiple R with dropout criterion when combined with age
xxP $<$ .001
xP $<$ .01