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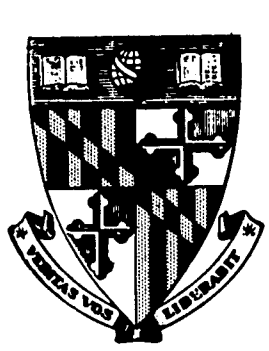
ABSTRACT

IN A SURVEY OF NINTH GRADERS IN AND AROUND BALTIMORE, MARYLAND, IN THE SPRING OF 1968, SEVERAL COGNITIVE STYLE VARIABLES WERE MEASURED. THE SAMPLE OF STUDENTS WAS DIVIDED BY SEX, IQ LEVEL, AND RESIDENTIAL LOCUS. THIS REPORT DISCUSSES ACHIEVEMENT MOTIVATION AND PRODUCTIVITY (THE NUMBER OF WORDS WRITTEN IN ACHIEVEMENT MOTIVATION STORIES). THE ACHIEVEMENT MOTIVE MEASURE IS SHOWN TO HAVE LOW RELIABILITY, SO THE MAJOR PART OF THE REPORT DEALS WITH PRODUCTIVITY. PRODUCTIVITY IS HIGHER FOR GIRLS THAN BOYS ACROSS ALL SCHOOLS, AND IS LOWER IN RURAL THAN IN URBAN SCHOOLS. RACE PER SE, WITH SOCIAL CLASS AND IQ CONTROLLED, IS NOT A SIGNIFICANT SOURCE OF VARIANCE. PRODUCTIVITY, IT IS SPECULATED, MAY BE A GOOD INDICANT OF ACADEMIC SOCIALIZATION. PRODUCTIVITY DATA ARE DISCUSSED ALSO IN TERMS OF CURRENT RESEARCH IN THE LANGUAGE-AND-COGNITION DOMAIN. (AUTHOR)



THE JOHNS HOPKINS UNIVERSITY

THE CENTER FOR THE STUDY OF SOCIAL ORGANIZATION OF SCHOOLS

REPORT No. 60

A SURVEY OF COGNITIVE STYLE IN MARYLAND NINTH-GRADERS:

I. ACHIEVEMENT MOTIVATION, PRODUCTIVITY

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JANUARY 1970

A SURVEY OF COGNITIVE STYLE IN MARYLAND NINTH-GRADERS:
I. Achievement Motivation, Productivity

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ABSTRACT

In a survey of ninth graders in and around Baltimore, Maryland in the spring of 1968, several cognitive style variables were measured. The sample of students was divided by sex, IQ level, and residential locus.

This report discusses achievement motivation and productivity (the number of words written in achievement motivation stories). The achievement motive measure is shown to have low reliability, so the major part of the report deals with productivity.

Productivity is higher for girls than boys across all schools, and is lower in rural than in urban schools. Race per se, with social class and IQ controlled, is not a significant source of variance.

Productivity, it is speculated, may be a good indicant of academic socialization. Productivity data are discussed also in terms of current research in the language-and-cognition domain.

PREFACE

This is one of a series of reports setting forth results of a survey of ninth-graders conducted in and around Baltimore, Maryland in the spring of 1968. Each report deals with the same, or very nearly the same set of respondents, but each deals with different dependent variables (no more than two). This report covers achievement motivation and verbal productivity. Other reports cover test anxiety, sex roles, and locus of academic control. The dependent variables of the separate reports are conceptually distinct. While interrelationships among them will be pointed up whenever appropriate, for example relations between levels of test anxiety and verbal productivity are noted in this report, each report is devoted to a single facet of cognitive style. All reports relate the dependent variables to the following subject characteristics: sex, race, IQ level, social class or residential locus, birth order, and to current school grades.

To save reptition, in this report a complete description of the sample of respondents and of the methods used for procuring data are given in the Method Section. In subsequent reports the method section is very much abbreviated and the reader is referred to this report. The Method section of this report presents a master table (Table 1) showing N's for every variable of the survey. Not every respondent could be measured on every variable, and in a few instances background data, such as the number of siblings, is lacking for a respondent. This causes slight variations in the N's from one table to another.

INTRODUCTION

A great many innovations in school organization and in instructional procedures throughout the country are presently under trial or under consideration and there is little basic knowledge to support any of them. Little is known about social class differences in educability beyond the mere fact that they probably exist.

In the spring of 1968, a survey of Maryland ninth-graders was carried out in seven schools to try to learn more about social class differences in educability. Students of various socioeconomic levels and from various residential loci were sought out in an effort to see whether motivational and/or cognitive style characteristics of students differed among groups. The hope was that we might thereby point to variations in cognitive style that could be mobilized to support the educational task or to suggest modifications in instructional procedures. For example, if sense-of-academic-control should turn out to be lower in inner city blacks than in suburban whites as some previous work suggests, then one might want to consider curricular revisions where black children participate extensively in planning the revisions. On the other hand if sense-of-academic-control does not vary by socioeconomic group but varies by IQ level, then special measures might be in order for low IQ students irrespective of residential locus.

Among the many measures included in the survey of Maryland ninth-graders in 1968 was a fantasy-based measure of achievement motivation

with test materials especially developed by us. The new materials were designed to overcome what we thought were drawbacks of measures used previously by others: out-dated subject matter in pictures, inappropriate sex of main actors (revised to depict girls for girl respondents, boys for boy respondents), inappropriate topics by sex (revised to show ball playing for boys, entertaining for girls), general unattractiveness of the actors, and so on (see Greenberger and Entwisle, 1968). An extensive psychometric investigation of the newly-developed achievement measures based on the ninth-grade survey of about 670 respondents leads to the following conclusions:

(1) Use of a full-scale scoring procedure with each picture having a possible score from 0 to 13 (patterened after Atkinson et al., (1968) by Greenberger and Kervin, (1968)) is not much better than use of a dichotomous system with pictures assigned 1 (achievement imagery present) or 0 (imagery absent).

(2) The reliability of the newly-developed measure is too low to warrant its further use. In 22 subsamples of ninth-graders with sample size ranging from 16 to 41 per group, the average reliability is estimated at 0.29 for girls and 0.33 for boys. This finding of low reliability in a fantasy-based measure of achievement motivation receives considerable confirmation from a review of the literature of fantasy-based measures. Workers have been contented with high inter-scorer agreement, and few attempts have previously

been made to estimate other reliability components. Failure to find consistent relationships between achievement motivation and other measures, we believe, is owing to the generally inadequate reliability of fantasy-based measures, although other workers concentrate on other drawbacks.

In a separate report (Entwisle, 1969) psychometric issues are dealt with at length, and various ways of estimating reliability for fantasy-based measures are discussed. The general problem of reliability for fantasy-based measures is treated there and the ninth-grade survey is used as one of several sets of empirical data.

(3) Putting aside the motive score entirely, however, one is impressed with the interesting and attractive properties of a variable labelled "productivity" (the number of words written by subjects in the achievement motivation procedure). It has reliability high enough to make it a useful measure. It has consistent and theoretically sensible relationships with other variables in the ninth-grade survey. It has variability across strata of the ninth-grade sample that can be linked to subcultural differences, and these differences, besides being possibly related to important motivational variables, are related to a large and important area of linguistic research (Bernstein, 1962; Lawton, 1964; Entwisle and Garvey, 1969). With apparently one exception (Ricciuti, 1954; Ricciuti and Sadacca, 1955) productivity has been ignored as a predictor variable in achievement motivation studies although it goes far in explaining some of the "findings" in the achievement literature (Entwisle, 1969).

This premature view of the conclusions of this report is designed to acquaint the reader with the plan of the report and the reasons for the plan. The main body of the report will deal with productivity and propose it as a measure of a cognitive style variable in its own right. So far as we know, productivity has not been studied as a motivational variable per se. It may be a good indicant of academic socialization.

After the Method section but before dealing with the productivity measure, we will discuss briefly the lack of reliability in need achievement scores that led to the dismissal of this variable from the ninth-grade survey.

METHOD

Between January and June, 1968, a survey was conducted of ninth-graders in Baltimore City and Baltimore County Maryland. Seven junior high schools were selected to represent seven residential loci. See Fig. 1 for the location of schools and their district boundaries.

Table 1 gives the numbers of students by school, sex, and IQ strata. Within schools, students were chosen from three IQ strata: high, average,and low (see Footnote b, Table 1 for boundaries of IQ categories). Schools were chosen to typify certain segments of American society and include inner city blacks and whites (schools 2 and 7), blue collar blacks and whites (schools 3 and 6), rural whites (school 5), middle class whites (school 4) and middle class Jewish whites (school 1). Table 2 summarizes descriptive data from the 1960 U.S. Census for census tracts whose boundaries are roughly continguous with boundaries of the school's drawing areas. In Baltimore City (schools 2, 6, and 7) the boundaries are not firm since a student may elect to attend a school outside his neighborhood but the large majority of students come from neighborhoods close to the school. Table 2 will be amplified when 1970 Census data become available. For some areas, especially the middle class white and rural areas, the density and the character of the population have changed considerably over the 1960-1970 decade.

In presenting results, variation between schools is stressed. The interpretation of between-school effects depends on which schools are involved. As mentioned, schools were selected to typify certain segments of American society. It is possible to make racial comparisons (black vs. white), social class comparisons (inner city, blue collar and middle class), and also rural-urban comparisons, all in terms of between-school effects.

The first school (School 1, middle class Jewish) furnished data for an extensive pilot study (Greenberger and Entwisle, 1968) and some procedures tried here were not used further. School 1 is omitted from many analyses for these reasons. The pictures for measuring achievement motivation were selected on the basis of trials in this school. The reader should keep in mind that pictures for measuring achievement motivation were selected to maximize reliability and relationships with criterion variables from data obtained in School 1, and it turned out that results for this school are not replicated. Also because other procedures were added subsequent to this pilot study (e.g. measures of test anxiety) data for School 1 are incomplete in several respects.

A word is needed about the labelling of School 1 as "middle class Jewish". The meaning of the label cannot be specified rigorously, as in using Census data to specify labels like "blue collar", (by father's income and occupation)

or "rural" (population density). School administrators within School 1 estimate that 90 percent of the population was "Jewish" when the survey was taken. No questions were asked concerning religion and this information is not available from school records.

In all schools, data were gathered in two sessions of approximately 50 minutes each. Sessions were scheduled one week apart. Students were selected from school records according to sex and IQ level (see Table 1) and tested in groups during school hours. School grades for the current year and sibling data were obtained from school records. Procedures were administered according to the following schedule:

First Session	Second Session
Fantasy-based curiosity measure (25 min.)	Fantasy-based achievement motive measure (25 min.)
Crandall test (locus of control) (15 min.)	Anagram task (10 min.)
Women's role questions (10 min.)	Mandler-Sarason test anxiety scale (15 min.)

The Crandall test, the Mandler-Sarason test, the Anagram task, and the Women's role questions, including all the directions that accompanied them and procedures for scoring them, are given in the Appendix.

Also in the Appendix are given the directions used for the fantasy-based curiosity and achievement motive instruments. In both cases, four pictures were presented in booklet form, and blank pages were provided for story writing. The directions indicate how instruments were given and how the subject's story-writing was timed. As already mentioned, the fantasy-based measures have proved to have such low reliability that they have been eliminated as dependent variables (see p. 2 and Entwisle, 1969). Pictures on which these measures were based are therefore not reproduced.

RESULTS

A. The Achievement Motivation Measure

Full-Scale vs. Dichotomous Scoring.

Students in the ninth-grade survey wrote stories to four pictures especially developed by us (Greenberger and Entwisle, 1968). The stories were then scored using a content analysis scheme modelled after Atkinson et al.'s (1958) procedure, but especially devised for this set of pictures (Greenberger and Kervin, 1968). Inter-scorer checks were made on 100 sets of four pictures and revealed inter-scorer agreement of 92 percent.

Every subject in the ninth-grade survey was assigned two scores: a full-scale score based on the 0-13 scale for each of the four pictures (possible range of total test scores from 0 to 52), and an abbreviated score where pictures with scores of 1 or less on the full scale were assigned a zero, and pictures with scores of two or more on the full-scale were assigned unity. The total possible range of abbreviated scores is 0 to 4, because the maximum score for each of the four pictures is unity. The abbreviated and full scores were then correlated within strata for all 26 strata (sex-IQ-social class groups) of the ninth-grade survey. Correlations were also computed for various combinations of strata where IQ can be held constant. Table 3 shows that the within strata correlations are uniformly high, and that for large groups, the correlation is approximately 0.90.

One can conclude from this demonstration that an abbreviated scoring scheme, based on a dichotomous decision for each picture, is good at reproducing the information contained in the much more elaborate scoring procedure. The abbreviated scoring scheme has implications for the reliability of the achievement motivation measure which will be made clear below.

Reliability of the achievement measure (Homogeneity).

The means and standard deviations for full-scale achievement motive scores for separate pictures and for the four pictures combined are given for all sample subgroups in Table 4. Casual inspection of the standard deviations of the total scores does not suggest a measure with range too small to be capable of differentiating among groups.

Intercorrelations between pictures, by subgroups of the sample, are shown in Table 5. The average intercorrelations for all groups (except the initial trial group, School 1, upon whom the scoring schemes and picture selection was based) are given near the bottom of Table 5. All figures are given separately for boys and girls because different sets of pictures were used for the two sexes. Table 5 also gives the ratio of the sum of the picture covariances to variance (for 4 pictures), based on full-scale scores. The average ratio for girls is 0.22 and for boys is 0.25. If these are multiplied by 4/3 they are equivalent to Cronbach's alpha, and are .29 and .33 respectively.

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*See Entwisle (1969) for a discussion of other kinds of reliability estimates.

Clearly the average intercorrelation between pictures is too small (from .00 to .18) for a reliable measure, using the homogeneity definition of reliability, to be possible with only four pictures. We have assumed that 4 pictures are equivalent to 4 items because of the fact that a dichotomous scoring scheme, as shown above, reproduced so much information contained in the full scale score.

Total test variance is the sum of individual item variances plus the interpicture correlations times the standard deviations for all pairs of items, where "21" is a "different" pair from "12". With n items, there are n(n - 1) covariance terms included in the total variance of the test. Then for 4 items, as here, there are 12 covariance terms. If we assume equal item variances symbolized by s_i^2, and an average inter-item correlation of $\underline{r}$, the total test variance may be written as:

$$4s_i^2 + 12rs_i^2 .$$

The ratio of the covariance to the total test variance is then:

$$\frac{12 r s_i^2}{4 s_i^2 + 12 r s_i^2}$$

or:

$$\frac{3 r s_i^2}{s_i^2 + 3 r s_i^2} .$$

When this ratio is multiplied by 4/3, it is equivalent to Cronbach's alpha.

If s_i^2 is unity (not too far from the value observed) and r takes on the values shown below, the dependence of the reliability on the size of the item intercorrelations is clear:

r	Item Covariance/Variance	Reliability
.5	.60	.80
.4	.54	.72
.3	.47	.62
.2	.37	.49
.1	.24	.32

These calculations suggest that the average intercorrelation between items has to be 0.4 or larger for a test consisting of 4 items to have adequate reliability. Usually, of course, a test has enough items, say 10 or more, so that the number of covariance terms rather than the size of inter-item correlations is prepotent in the above expressions. Even small inter-item intercorrelations, as long as they are positive, will yield a test of adequate reliability if the test is sufficiently long. A 10-item test, for example has a reliability ratio $10/9\,[(90\ r)\ /\ (10 + 90\ r)]$, assuming item variances equal to unity, so even an average item intercorrelation of 0.2 will lead to reliability estimates of 0.71. With a 30-item test there are 870 covariance terms, so an average inter-item correlation as low as 0.1 will generate reliabilities close to 0.77.

To sum up, then, achievement motivation scores in the ninth-grade survey have very low reliability in terms of a homogeneity estimate. The low reliability stems from a short test where correlations between scores on individual pictures are low. The calculations above suggest that inter-picture correlations are so low that lengthening the test by feasible amounts (doubling the number of pictures, for instance) will not improve reliability sufficiently. For a more thorough discussion of the reliability of fantasy-based measures outside the context of the ninth-grade survey, the reader should consult Entwisle (1969). There evidence is presented suggesting that low reliability, estimated by homogeneity techniques and others, is probably a general characteristic of <u>all</u> fantasy-based measures, and that occasionally "meaningful" results are reported because of influences of other variables. No further discussion of fantasy-based measures of achievement motivation will be presented in connection with the ninth-grade survey.

RESULTS

B. The Productivity Measure

Productivity Defined.

Productivity is defined as the number of words written to four picture stimuli under neutral conditions.* In the past, this variable has been used a few times in studies of motivation assessed by fantasy methods as a "control" variable, as when scores based on content analyses are adjusted for story-length. Apparently productivity itself has rarely been considered as a dependent variable. Exceptions are a few linguistic studies (especially Lawton, 1964) and a perceptive series of reports by Ricciuti and his co-workers (1954, 1955) that have not received the attention they deserve. As we will try to show, productivity has some very interesting properties, and leads to some provocative findings when it is used in comparing ninth-grade students from various subcultural groups. For instance:

(1) Productivity is correlated with school grades (long-term performance) when IQ is controlled.

(2) Productivity shows meaningful relations with background variables like social class and sibling patterns.

(3) Productivity relates sensibly also to other variables like test anxiety and locus-of-control measures.

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*"Neutral conditions" means that Ss are given standard directions (see Appendix) and asked to write an "imaginative story" based on pictures in the booklet. Questions to aid the writing are furnished on (otherwise) blank story-writing sheets. In particular no "challenging" tasks are given just prior to the story-writing task. Subjects are unaware that the number of words they write will be counted.

We suspect that productivity may turn out to be a good measure of academic socialization although there is not enough information available from the ninth-grade survey to confirm this suspicion.

Reliability of the Productivity Measure.

First we will summarize evidence concerning reliability of productivity scores.

With 4 "items", where an item score is defined as the number of words used in telling a story about the picture, there are 12 covariance terms to contribute to a reliability estimate (see p. 9). With so few "items", the inter-item correlation must be rather high to achieve adequate reliability. As Table 6 shows, the inter-picture correlations for boys (below the main diagonal in Table 6) and girls (above the main diagonal) range from 0.59 to 0.71. The means and standard deviations for productivity scores by individual pictures are given in Table 7. Also Table 7 gives the covariance ratios of word count scores. With two exceptions, these ratios exceed .80. While these reliabilities are somewhat smaller than those typical for cognitive tests, they are sufficiently large and consistent to justify a search for meaningful relationships between productivity and other variables (see Entwisle, 1969).

It is of some interest to check the reliability of the productivity measure in another way that is available from the data of the ninth-grade survey.

In an effort to assess another cognitive variable, curiosity,* the same subjects wrote stories a week earlier, to four pictures other than the ones from which the main productivity measures were derived. The numbers of words written in these two sets of stories were correlated, and may be thought of as analogous to an alternative-form estimate of reliability. Since schools are known to differ in productivity (Entwisle and Garvey, 1969) correlations are calculated separately by school: Inner City, black, .78; Blue Collar, black, .70; Inner City, white, .63; Blue Collar, white, .80; Rural, white, .77; and Middle Class, white, .68. The size of these correlations suggests that the productivity measure is probably not very sensitive to the materials used to generate it, and also that it has some stability, at least over short periods of time (one week).

In a subsequent study (1968- 1969) of 7th, 8th, and 9th graders in the two sections of lowest ability in School 4 (white middle class) productivity data are available from a fall survey and from a spring survey of the same students with about 9 months intervening. These students are all low-achievers, but the causes of low achievement are various: mild brain damage or other organic impairment, hyperactive behavior

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*This fantasy-based measure suffers from the same drawbacks of unreliability, and for the same reasons, as the achievement motive score. No homogeneity estimates have been found that equal or exceed .4 on fantasy-based curiosity scores and therefore data are not presented or analyzed in detail in this series of reports.

disorders, school maladjustment over a long period, and others, including unspecified factors. Correlations between productivity scores are based on four stories written in the fall and two stories in the spring. Two of the same pictures that had been used in the fall were given again in the spring. The correlations are: seventh grade, .67 and .78; eighth grade, .64 and .47; ninth grade, .64 and .79. With one exception (.47) these correlations are in the same range as the one-week correlations based on two sets of materials. It is important to notice that these correlations are for groups fairly homogeneous on IQ, a fact which would tend to attentuate them. It seems that reliability is satisfactory in terms of homogeneity, short-interval stability, alternate test forms, and probably longer-term stability.

Productivity Scores, Social Class, Sex, IQ, Race, and Rural-Urban Residence.

The means and standard deviations for productivity scores (totals for 4 pictures) are given in Table 8. The productivity data have been subjected to several variance analyses to clarify the roles of the several demographic variables. (Tables 9, 10, 11, and 12)

(1) A sex difference, girls exceeding boys, is evident within every stratum. Sex is identified as a highly significant source of variance in every analysis.

(2) There is no difference attributable to race (black vs. white) when sex, IQ, and social class are controlled. (Table 11)

(3) IQ is associated with differences in productivity between low and medium IQ students and between medium and high IQ students. Every school which contains more than one IQ level (Tables 10, 12) shows a significant IQ effect. The sex x IQ interaction is of borderline significance (Table 10, $p \lesssim .06$) in the analysis of blue collar vs. inner city blacks, but is <u>not</u> significant in the analysis of blue collar vs. middle class whites.

(4) Between school differences account for significant variance, but effects are complex. In some analyses (Table 11) social class interacts at borderline significance with race, and in others (Table 12) between school differences interact jointly with IQ and sex. The most noticeable source of the latter interaction is the large sex difference in Jewish students which greatly exceeds the difference in any other group whether at medium or high IQ. Probably not too much attention should be paid to this because, as mentioned, this group constituted the pilot group, and is atypical in many respects. But the rural group also contributes to this interaction, because although <u>both</u> boys and girls of rural residence show productivity levels below those noted in other groups, there is an average difference of about 40 words between medium-and high-IQ rural girls, and a much larger difference--almost 70 words between medium-and high-IQ rural boys.

The most noticeable finding for productivity, aside from the large sex differences, is its depressed level in rural students, particularly rural boys. High-IQ rural students (see Table 12, IQ x School interaction) are responding at rates characteristic of medium-IQ students in other groups. The medium-IQ rural students are lower in productivity than all other groups, including inner city blacks (see Table 9). There is considerable variability, then, in productivity associated with residential locus, even with IQ controlled.

Sibling Patterns and Productivity.

The size of sub-samples in this survey does not allow anything but a crude analysis of the association between sibling patterns and productivity. Average size of sib set, for example, varies with social class and cannot be partialled out. Also, in some cases the number of individuals with a particular sibling pattern is very small. Data on sibling patterns and productivity are given in Table 13 separately for sample strata. An overall sex difference is again apparent. With the exception of two sub-samples, the first-born boy does not exceed later borns. An analysis of variance (omitting inner city whites because of the small number of cases) with school and sibling patterns as factors, ignoring sex and IQ, shows significant differences only between schools, and no interaction between sibling pattern and school. Table 14 gives data for combined sexes by schools.

Relationships of Productivity to other Measures.

a. Grades.

Especially for some boys, productivity shows sizeable relationships with grades (see Table 15, white boys of blue collar, rural and middle class groups) within IQ strata. These correlations appear mostly for white boys, excepting inner city whites and high-IQ middle class whites. Although the correlations are not significant for rural white boys, since almost all are in the range .30 to .40, with IQ controlled, one suspects that larger samples would yield significance. It is especially noteworthy that these correlations are computed for groups of a single IQ level; this implies predictability of grades in addition to that produced by IQ. The number of positive relationships between productivity and grades is amaller for girls.

There does not appear to be much patterning in relation to subject areas--English grades, for instance, are not always the most strongly related to productivity. When groups are combined, IQ variation is no longer controlled, and then, as would be expected, correlations with grades increase for all groups, but especially for whites of blue collar level or better.

	English	Soc.Stud.	Math.	Science
Blacks and Inner City Whites	.35	.17	.20	.33
All other Whites	.47	.37	.42	.36

b. Test Anxiety.

Relationships between productivity and test anxiety are complex. Although a few modest negative relations between test anxiety and productivity occur (-.34, -.43), overall both the size and consistency of the relationships are far from impressive. With anxiety data available for 5 of the 7 schools (see Table 1), three major breakdowns are possible: (1) black students of low IQ, (2) white students of medium or high IQ, and (3) both black and white students of average IQ. These will be discussed in turn, (see Table 16).

(1) For black students the only comparison that can be made is one between inner city and blue collar, with all students of low IQ. Besides sex differences in anxiety, there are also noticeable school differences (to be discussed in detail in a separate report in this series). These data for low IQ students provide two reasons for avoiding an analysis of productivity with anxiety as a covariate: (i) the relationship in one school (inner city) between anxiety and productivity is higher than in the other; (ii) the distribution of the covariate measure differs from one school to the other. Therefore an analysis of productivity variance "controlling" on the anxiety variable is inappropriate.

(2) The situation for 3 white schools (blue collar, rural, and middle class) is more compatible with a covariance analysis, for aside from the expected IQ and sex differentials, anxiety levels

look very similar across the three schools. The main effects noted in an analysis of variance for productivity with and without anxiety as a covariate (sex, IQ, and social class) are found to be highly significant.

(3) For students of average IQ, four white groups (inner city, blue collar, rural and middle class) and one black group (blue collar) can be compared. There is a noticeable relationship between average level of test anxiety and type of school for both sexes, with girls higher than boys. There is a clear difference in the average level of anxiety from school to school, so as in (1) above, an analysis of productivity with anxiety as a covariate is contraindicated.

Until further evidence is available it appears that there is no consistent relation between test anxiety and productivity. For three schools in Baltimore County (blue collar, rural, and middle class), the correlation between the productivity measure and test anxiety ($n = 317$) is .01. If the group is partitioned into high IQ ($n = 159$) and medium IQ ($n = 158$) groups, the correlations turn out to be .02 and .22 respectively. For $n = 158$, the value .22 is significantly different from zero ($p < .05$), but of course is small in terms of absolute magnitude.

d. Locus of Academic Control (Crandall IAR).

Relationships between the two Crandall scales (success and failure) and productivity hover around

zero (see Table 17). In only one instance (out of 52) is the correlation significantly different from zero. Since there appears to be no relation between productivity and the Crandall scale further discussion will be postponed to the report dealing mainly with the Crandall scale.

e. Women's Role Questions.

Relationships between women's role questions and productivity are nil.

Summary of Results for Productivity.

Productivity shows considerable variability in terms of the major independent variables of the ninth-grade survey. Sex, rural-urban residence, and IQ are all linked to significant differences in productivity, with girls consistently exceeding boys, higher IQ children being more productive than lower IQ children, and rural children producing less than other groups. Productivity appears unassociated with race (black vs. white) or social class when IQ is controlled, with the possible exception of an extra deficit for low-IQ inner city black boys. The finding that productivity is more closely related to school grades for boys than girls, especially for some social class groups, may be an important one, for it suggests that academic socialization may play a crucial role in boys' school achievement (also perhaps that all girls are socialized above some minimum level crucial for school achievement).

What could "productivity" be an index of? We believe that in the present context it measures academic socialization, the tendency for boys to carry out actions in accord with experimenters' (or others') suggestions. To ask a group of boys to "write imaginative stories" is not unlike many requests made of students by teachers in the course of a school day. Willingness to follow instructions, to attend to tasks that are of little interest, to persist throughout the allotted time and so on, lead boys to write longer stories, and the same qualities monitoring responses to teachers' requests would result in higher grades. Other indices of academic socialization (the socialization scale of the California Personality Inventory, for instance) are reported to differentiate between high-aptitude (Gough, 1968) students who go on to college and those who do not.

DISCUSSION

The identification of productivity--the number of words produced in a standard story-writing task in a fixed time--as a variable of interest and of possible academic significance rests mainly on two bodies of evidence: (1) findings reported here, and not contradicted elsewhere, that productivity is a significant variable of cognitive style--it correlates with school achievement for boys when IQ is controlled--plus the fact that "positive" findings generally in the achievement literature are probably traceable to the (uncontrolled) influences of productivity; (2) the demonstration here that productivity is an important linguistic variable (it differs consistently by sex and IQ, and is noticeably lower in rural groups when IQ is controlled) plus evidence in the linguistic literature suggesting that productivity *per se*, more than qualitative differences in language, may be the primary factor in linguistic variation associated with social stratification. Further ideas about productivity in addition to those presented below may be found in Entwisle (1969) (related to point 1) and in Entwisle and Garvey (1969) (related to point 2).

Productivity as a Cognitive Style Variable.

The first clue that productivity *per se* might be an important cognitive style variable in the ninth-grade survey was the observation that the *number of words* written in four minutes correlated

better with course grades (36 out of 46 cases for girls and 39 out of 46 cases for boys) than achievement motivation scores based on a content analysis of the same 4-minute stories. (The data are not reproduced in detail for comparisons of achievement motivation and productivity because the achievement measure has been shown to be unreliable). The productivity measure correlates (beyond the 5 percent level) with grades in 13 instances (see Table 15 for four major subjects) even though groups have small n's and are homogeneous in IQ. For white boys (blue collar, rural, and middle class) the average correlation between grades and productivity, IQ controlled, is 0.32. For girls relations are equivocal, probably because girls' grades appear to be less reliable. Elsewhere, (Entwisle, 1969) data are presented showing that high IQ boys' grades intercorrelate more strongly than girls, and for a middle class sample, girls' grades in only two cases out of six (English vs. Social Studies, Math) intercorrelate beyond the 5 percent level. Coleman (1961) calls attention to a very similar phenomemon where girls, in order not to violate sex role standards, avoid getting very high or very low grades (see Coleman's Table 55, p. 253) and so their distribution of grades is narrow. A restriction in range like that Coleman notes may be responsible for differences

between boys' and girls' grades seen in our sample too. For example, standard deviations of grades for high IQ, white middle class boys average 0.89 and for girls average 0.57 on a scale where each letter grade is one unit. In considering productivity then, where grade prediction is an indication of predictive validity, it may be pointless to try to predict girls' grades because of their constricted range. Grades for girls in this study, in other words, will not covary with any other variables.

Katz (1967) points to the general need for research in socialization of academic behavior, especially for minority group children. His major concern is with self-regulatory behavior. Verbal productivity in an unstructured task may represent one such kind of behavior, as we pointed out earlier. In fact Katz says (p. 140), "The major sources of class and cultural differences in learning willingness (lie in) the differential capability of children from different social backgrounds for vigorous and sustained effort on tasks that are not consistently interesting and attractive, and which offer no immediate extrinsic payoff." Writing an "imaginative story" in a fixed time at the request of persons only vaguely related to the school may provide a behavioral sample of just the kind of academic socialization motives that Katz believes are so important.

A persistent problem in the education of some minority groups is the failure of children from these groups to engage in verbal interaction in

the classroom. Orata (1953), for instance, notes that for American Indian children at junior high level, 50 percent of responses in class are monosyllables, whereas only 15 percent of first-grade responses for Indians are monosyllables. The highest production rates of all groups in the ninth-grade sample are noted for Jewish girls, and the acknowledged superiority of this subcultural group in academic pursuits may be linked to the productivity of this group in verbal tasks.

It is noteworthy that in the only other study that reports an investigation of verbal productivity in connection with grade prediction (Ricciuti, 1954) number of words was found to be a good predictor of average grades in the junior year (for males only) with IQ controlled. Ricciuti re-analyzed the same data obtained by Morgan (1953) for 147 high school males, and found the correlation between average grades and word output with IQ controlled to be .25 ($n = 147$, $p. < .05$). A subsequent study (Ricciuti and Sadacca, 1955) of 79 high school juniors replicated this result for one group ($n = 79$) and was inconclusive for another group ($n = 50$).

Possibly more important evidence of the validity and relevance of productivity as a cognitive style variable comes from sources less direct. It is clear that high productivity is associated with high intelligence but that rural residence is associated with productivity deficits in the face of high IQ. Other kinds of linguistic development, such as growth in paradigmatics,

has also been shown to lag in rural groups, even when effects of IQ are partialled out (see Entwisle, 1966a, 1966b, 1968). While it would certainly be premature to state that quantity of language is prepotent over other linguistic components like those posited by Bernstein (1962) in his specification of restricted as opposed to elaborated codes, it does seem that cognitive skills like abstraction and grouping are associated with high rates of language production. Lawton (1964), too, calls attention to productivity as an important component of cognitive style, noting that more productive boys emit language that is superior by every criterion. He finds large differences in productivity associated with social class (working class, 219 words, vs. middle class, 319 words) for English boys with IQ controlled. His task is different from the one used by us in that he gave specific topics for boys to write upon and allowed 30 minutes for writing. The difference in procedures is apparent from the fact that the total number of words produced by Lawton's subjects in 30 minutes is close to the number of words produced by our subjects in 4 minutes. Nevertheless, his work suggests that verbal productivity is a variable that shows variation concomitant with other important linguistic and socio-psychological dimensions.

Studies of Hess and his associates (1969) provide the only known and precisely specifiable link between linguistic style and socialization practices.

They observe that mothers who are highly productive socialize their children verbally in ways that tend to produce high verbal productivity in the children. Earlier Entwisle (1966a) has speculated that slower linguistic development in rural groups and accelerated development in inner city groups may be one consequence of isolated as opposed to crowded living conditions and of differential exposure to television.

Two things are now required to elucidate the effect of productivity as a cognitive style variable. First, more work is needed to specify exactly what productivity implies. Is it, in fact, a measure of socialization? Little is written about academic socialization per se or the influence of socializing forces. One could regard academic socialization as the adoption of various roles typical of successful students, as the learning of attitudes and values that facilitate successful school performance, and perhaps more specifically as an enhanced tendency to engage in appropriate verbalization. Little has been done to point up social class differences in academic socialization, although it has been noted (Smith, 1968) that opportunities for children to play differing roles may be the chief way in which middle class and blue collar socialization milieux differ.

Secondly, work is needed to see how productivity varies within the classroom: Is productivity mainifest in other ways in the classroom also significantly related to academic performance? For example, is volunteering verbal behavior in class related to school performance? Assuming that

both these questions receive favorable or positive answers, one would then like to study the effects of various kinds of classroom interventions to raise productivity levels. Teacher aides, for instance, may have such an effect, and this may be one effect that is easy to measure.

Table 1 . Distribution of Subjects for Various Background Characteristics and Dependent Variable Measures[a]. Number Is Given Only When It Differs from Total Possible.

			n Ach		n Ach Productivity		Crandall		Women's Role Questions		Test Anxiety		Grades Math		Grades Sci		Siblings		Total Possible	
			M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Inner City	B	LoIQ																	30	30
		MedIQ	29		29		29		28	39	0	0	0	0			40		30	41
	W	MedIQ									14								16	16
Blue Collar	B	LoIQ	21		21				21		20	21					20		22	22
		MedIQ	25		25						25						23		26	30
	W	MedIQ									29								30	30
		HiIQ																	19	30
Rural	W	MedIQ					27												29	28
		HiIQ																	20	30
Middle Class	W	MedIQ							20										22	20
		HiIQ																	30	30
Middle Class Jewish	W	MedIQ					20				0	0	0	0					21	30
		HiIQ					18				0	0	0	0					20	16
TOTAL			312	353	312	353	312	352	311	351	238	265	245	266	313	350	316	353		

[a] For Grades (English and Social Studies), Anagram Scores, Curiosity Scores, and Curiosity Productivity Scores, the "Total Possible" (last column) is the number of subjects.

[b] "Average IQ" students have IQ's (mostly CTMM) in the range 95 to 114 or SCAT scores between 39th and 60th percentile on national norms.
"Low IQ" students have IQ's in the range 70-85.
"High IQ" students have IQ's in the range 128-up or SCAT scores above the 92nd percentile on national norms.

Table 2a. Characteristics (from 1960 Census) of Main Residential Areas Schools Draw From.

		Percent Black	Average School Years Completed	Average Income
Inner City	B	71.16	8.2	$ 4,608.
	W	65.23	7.0	3,528.
Blue Collar	B	20.64	10.3	6,629.
	W	23.07	8.7	5,953.
Rural	W	29.26	9.2	5,829.
Middle Class	W	8.91	12.6	9,828.
Middle Class Jewish	W	3.65	12.2	11,133.

Table 2b. Characteristics (from 1960 Census) of Main Residential Areas Schools Draw From.

		Percentage of Year Structure Built			Percentage Persons Per Room			
		1950-March 1960	1949-1940	1939-earlier	0.50-less	0.51-0.75	0.76-1.00	1.01-more
Inner City	B	.69	6.17	93.14	41.12	20.15	20.99	17.73
	W	3.76	2.48	93.77	41.15	20.09	20.36	18.40
Blue Collar	B	23.54	31.15	45.31	51.86	26.16	17.21	4.76
	W	22.62	22.55	54.84	37.60	24.12	24.01	14.26
Rural	W	26.71	11.57	61.71	47.43	26.08	17.95	8.54
Middle Class	W	68.06	11.39	20.54	43.37	32.57	20.41	3.64
Middle Class Jewish	W	48.61	16.33	35.06	51.35	31.61	14.10	2.94

Table 3. Correlations between the Full Need Achievement Scale Scores and a Binary Scale (0-1 Scoring)

			Group Number	Girls		Boys	
				n	r	n	r
Inner City	Black	LoIQ	1	30	.911	30	.858
		MedIQ	2	41	.924	29	.775
	White	MedIQ	5	16	.933	16	.950
Blue Collar	Black	LoIQ	3	22	.927	21	.863
		MedIQ	4	30	.822	25	.924
	White	MedIQ	6	30	.943	30	.923
		HiIQ	7	30	.927	19	.910
Rural	White	MedIQ	8	28	.883	29	.842
		HiIQ	9	30	.931	20	.927
Middle Class	White	MedIQ	12	20	.864	22	.953
		HiIQ	13	30	.930	30	.915
Middle Class Jewish	White	MedIQ	10	30	.927	21	.966
		HiIQ	11	16	.878	20	.941

Correlations for Combined Strata

r = .900 for all students of average IQ (Groups 2, 4, 5, 6, 8, 10, 12)

r = .876 for black students, average and low IQ (Groups 1, 2, 3, 4)

r = .918 for white students, average and high IQ (Groups 6, 7, 8, 9, 10, 11, 12, 13)

Table 4. continued

Boys

				Picture 1		Picture 2		Picture 3		Picture 4		All Pictures	
			No.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Inner City	Black	LoIQ	30	1.43	1.38	0.87	0.43	1.50	1.38	1.53	1.10	5.33	2.21
		MedIQ	29	1.38	1.49	1.31	1.28	2.79	1.93	3.10	1.75	8.59	3.72
	White	MedIQ	16	2.13	2.15	1.56	1.71	1.56	1.93	2.44	2.12	7.69	4.55
Blue Collar	Black	LoIQ	21	1.29	1.30	1.19	0.74	1.43	1.50	1.81	1.36	5.71	2.84
		MedIQ	25	1.68	1.67	1.88	1.85	1.40	1.80	2.32	1.79	7.40	4.41
	White	MedIQ	30	1.70	1.66	1.17	1.23	1.47	1.52	1.97	1.75	6.30	3.49
		HiIQ	19	1.10	1.37	0.84	1.60	1.42	1.86	1.68	1.52	5.05	4.18
Rural	White	MedIQ	29	1.00	0.80	1.14	0.99	1.03	1.01	1.48	1.15	4.65	2.14
		HiIQ	20	2.15	2.05	0.80	1.05	1.05	1.50	2.85	2.27	6.85	4.60
Middle Class	White	MedIQ	22	1.27	1.60	1.00	1.06	1.50	1.56	2.05	1.81	5.81	3.76
		HiIQ	30	1.60	1.61	1.70	2.01	1.10	1.49	2.80	2.00	7.20	4.35
Middle Class Jewish	White	MedIQ	21	2.67	2.74	2.14	1.90	3.10	2.38	3.43	2.61	11.33	7.09
		HiIQ	20	2.00	1.83	1.60	1.39	2.00	2.05	3.20	2.52	8.80	5.36

Table 4. Means and Standard Deviations for Individual Picture Scores and Total Scores, Full Scale Need Achievement

Girls

				Picture 1		Picture 2		Picture 3		Picture 4		All Pictures	
			No.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Inner City	Black	LoIQ	30	1.10	0.92	1.30	1.05	1.50	1.38	1.93	1.46	5.83	3.16
		MedIQ	41	1.68	2.04	1.66	1.62	1.56	1.36	2.56	1.73	7.46	4.15
	White	MedIQ	16	1.75	1.73	1.06	0.85	2.13	1.54	2.38	1.96	7.31	3.53
Blue Collar	Black	LoIQ	22	1.36	1.52	1.14	1.16	1.73	1.42	2.36	1.73	6.59	3.92
		MedIQ	30	1.67	2.08	0.80	0.92	2.00	1.92	2.13	1.83	6.60	2.84
	White	MedIQ	30	1.33	1.56	1.33	1.58	2.03	1.79	2.03	1.62	6.73	3.60
		HiIQ	30	1.23	1.65	1.37	1.56	2.10	1.93	2.70	1.87	7.40	4.05
Rural	White	MedIQ	28	1.64	1.36	0.89	0.73	1.75	1.48	1.93	1.60	6.21	2.52
		HiIQ	30	1.77	1.92	1.63	1.80	1.77	1.75	2.97	2.17	8.13	4.36
Middle Class	White	MedIQ	20	1.40	1.18	1.30	1.30	2.15	1.95	2.90	2.04	7.75	3.94
		HiIQ	30	1.13	1.52	0.63	1.06	1.70	1.87	2.37	1.79	5.83	3.48
Middle Class Jewish	White	MedIQ	30	2.23	2.59	1.57	1.61	3.23	2.20	3.80	2.41	10.83	5.96
		HiIQ	16	1.87	2.06	1.37	1.25	3.31	1.88	3.50	2.28	10.06	5.14

Table 5. Intercorrelations of Scores on Individual Pictures

			Girls[a]							Boys[a]						
			12	13	14	23	24	34	Picture Covar.[c] Total Var.	12	13	14	23	24	34	Picture Covar.[c] Total Var.
Inner City	B	LoIQ	358	230	210	295	327	068	.40	-072	135	-020	-229	153	-179	0
		MedIQ	480	039	143	293	-098	096	.16	042	-061	094	-192	016	214	.06
	W	MedIQ	327	-011	147	-309	383	028	.20	-164	798	307	-020	-309	-112	.24
Blue Collar	B	LoIQ	-028	136	379	426	257	352	.43	197	011	480	146	-157	-104	.21
		MedIQ	143	-153	-311	232	-329	-116	below 0	510	347	215	040	500	-316	.40
	W	MedIQ	302	-201	050	215	022	035	.17	596	139	-038	250	-092	-174	.21
		HiIQ	352	-082	145	056	109	113	.24	033	308	123	616	046	186	.41
Rural	W	MedIQ	-112	064	-045	042	212	-255	below 0	-089	-087	541	-075	221	-196	.13
		HiIQ	-153	575	-026	-222	251	152	.23	257	133	-028	272	403	571	.39
Middle Class	W	MedIQ	054	449	-003	064	249	070	.28	305	246	273	000	565	-242	.33
		HiIQ	010	002	133	356	-071	003	.16	291	032	092	159	095	271	.32
Average			157	095	075	132	131	050	.22	173	182	185	088	131	-009	.25
Initial Trial Group[b]			165	363	244	349	296	197	.43	268	402	515	228	428	385	.53
			-160	251	397	172	302	519	.45	288	-041	647	018	593	142	.45

[a] All entries in the table are product moment correlations between need Achievement scores for pairs of pictures. The leading decimal point is omitted.

[b] Initial trial group is the initial sample whose data dictated selection of pictures.

[c] These ratios may be converted to Cronbach's alphas by multiplying by 4/3.

Table 6. Average Correlations Across 13 Strata Between Number of Words (Productivity) Written to Individual Pictures

Boys \ Girls	Picture 1	2	3	4
1	--	.64	.69	.63
2	.70	--	.70	.70
3	.63	.69	--	.68
4	.59	.68	.71	--

Picture

Table 7a. Girls: Means and Standard Deviations for Numbers of Words Written to Four Need Achievement Pictures

			Picture 1		Picture 2		Picture 3		Picture 4		Covariance/Variance[a]
			Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	
Inner City	B	LoIQ	50.9	17.2	55.8	20.0	54.9	15.4	48.4	15.3	.693
		MedIQ	77.3	17.1	78.3	15.7	77.1	19.0	68.2	18.1	.660
	W	MedIQ	77.6	25.1	82.4	25.5	88.2	24.5	74.9	19.1	.690
Blue Collar	B	LoIQ	54.9	17.8	56.1	11.5	57.7	17.6	50.2	19.5	.650
		MedIQ	78.7	18.8	85.5	20.4	87.4	16.9	79.1	14.9	.575
	W	MedIQ	74.1	16.3	76.9	16.6	76.1	20.3	69.0	20.3	.684
		HiIQ	82.0	17.4	89.4	13.6	91.2	13.1	82.5	13.9	.569
Rural	W	MedIQ	62.5	18.0	67.4	15.4	64.7	14.9	60.5	14.6	.741
		HiIQ	72.8	10.8	75.1	14.0	78.6	16.2	69.7	15.5	.631
Middle Class	W	MedIQ	70.6	14.9	73.6	17.5	77.5	11.3	70.6	13.1	.623
		HiIQ	71.1	15.7	79.9	22.8	85.2	19.8	75.5	13.3	.614
Middle Class Jewish	W	MedIQ	77.8	21.6	83.3	18.5	84.1	20.4	76.7	25.5	.663
		HiIQ	85.6	21.4	88.5	21.5	91.6	19.1	78.6	23.4	.709

[a]These ratios may be converted to Cronbach alphas by multiplying each by 4/3.

Table 7b. Boys: Means and Standard Deviations for Numbers of Words Written to Four Need Achievement Pictures

			Picture 1		Picture 2		Picture 3		Picture 4		Covariance/Variance [a]
			Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	
Inner City	B	LoIQ	38.1	14.1	47.2	18.7	43.3	18.5	40.0	19.1	.687
		MedIQ	62.9	14.7	63.7	12.3	60.6	13.4	55.0	17.2	.656
	W	MedIQ	64.4	23.2	70.4	26.3	69.3	20.0	63.3	19.7	.645
Blue Collar	B	LoIQ	46.8	18.5	43.5	20.4	47.7	16.7	42.2	16.8	.678
		MedIQ	64.4	15.0	63.6	18.9	65.1	17.9	55.8	21.4	.637
	W	MedIQ	61.9	19.4	60.8	17.9	61.9	16.2	61.3	17.1	.678
		HiIQ	72.7	23.2	74.4	21.4	71.5	23.4	72.4	17.4	.699
Rural	W	MedIQ	48.6	16.7	54.1	12.4	47.3	15.3	47.7	11.7	.634
		HiIQ	67.0	17.8	71.3	18.8	62.8	17.8	62.6	14.4	.642
Middle Class	W	MedIQ	58.9	15.8	62.5	14.0	62.5	16.7	54.3	17.5	.601
		HiIQ	65.0	18.1	73.2	19.5	73.7	23.7	72.0	19.5	.673
Middle Class Jewish	W	MedIQ	64.3	27.1	60.9	27.1	58.0	33.2	53.9	23.0	.713
		HiIQ	69.7	24.0	66.5	22.2	66.1	28.0	63.0	28.4	.660

[a]These ratios may be converted to Cronbach alphas by multiplying each by 4/3.

Table 8. Productivity: Average Number of Words Written in 16 Minutes to Four Pictures

			Boys			Girls		
			n	Mean	S.D.	n	Mean	S.D.
Inner City	Black	LoIQ	30	168.8	63.4	30	210.0	61.6
		MedIQ	29	242.2	49.5	41	302.4	62.5
	White	MedIQ	16	267.4	75.1	16	323.1	85.0
Blue Collar	Black	LoIQ	21	180.2	64.0	22	218.7	56.5
		MedIQ	25	248.9	61.3	30	330.5	67.6
	White	MedIQ	30	248.9	62.4	30	297.3	62.6
		HiIQ	19	290.9	77.9	30	344.4	45.6
Rural	White	MedIQ	29	195.7	47.0	28	255.2	56.0
		HiIQ	20	264.7	58.0	30	297.0	48.7
Middle Class	White	MedIQ	22	238.2	50.8	20	292.2	46.8
		HiIQ	30	285.0	70.7	30	311.0	61.1
Middle Class Jewish	White	MedIQ	21	237.0	104.0	30	322.4	76.2
		HiIQ	20	263.1	86.4	16	344.3	79.3

Table 9. Ninth Graders, Medium IQ, Seven School Groups Means and Variance Analysis for Productivity (Number of Subjects Given in Parentheses)[a]

	Sex x School							
	Inner City		Blue Collar		Rural	Middle Class		Total
	Black	White	Black	White		Jewish	Non-Jewish	
Boys	242 (29)	267 (16)	249 (25)	249 (30)	196 (29)	237 (21)	238 (22)	240 (172)
Girls	302 (41)	323 (16)	330 (30)	297 (30)	255 (28)	322 (30)	292 (20)	303 (195)

Source of Variation	d.f.	F value	P(F)
Sex	1	81.86	<.01
Between Schools	6	6.36	<.01
Sex x Schools	6	0.61	-
Residual Mean Square, 4233	353		

[a] Interaction totals are "equally weighted", i.e. each cell is formed by averaging its component cells without regard to differing numbers upon which component cells are based.

Table 10. Black Ninth-Graders, Inner City vs. Blue Collar, Low vs. Medium IQ, Means and Variance Analysis for Productivity (Number of Subjects Given in Parentheses)[a]

	Sex x IQ			Sex x School			Sex x IQ x School				
							Inner City		Blue Collar		
	Low IQ	Med IQ	Total	Inner City	Blue Collar	Total	LoIQ	MedIQ	LoIQ	MedIQ	Total
Boys	174 (51)	245 (54)	210 (105)	205 (59)	214 (46)	209 (105)	169 (30)	242 (29)	180 (21)	248 (25)	210 (105)
Girls	215 (52)	316 (71)	266 (123)	256 (71)	275 (52)	265 (123)	210 (30)	302 (41)	219 (22)	330 (30)	265 (123)
Total	194 (103)	280 (125)		230 (130)	244 (98)		189 (60)	272 (70)	200 (43)	289 (55)	

Source of Variation	d.f.	F-value	P(F)
Sex	1	44.93	.01
IQ (Low vs. Med)	1	109.87	.01
Social Class (Inner City vs. Blue Collar)	1	2.77	.10
Sex x IQ	1	3.52	.06
Sex x Social Class	1	0.32	N.S.
IQ x Social Class	1	0.20	N.S.
Sex x IQ x Social Class	1	0.53	N.S.
Residual Mean Square, 3740	221		

[a] Interaction totals are "equally weighted", i.e. each cell is formed by averaging its component cells without regard to differing numbers upon which component cells are based.

Table 11. Ninth Graders, Black vs. White, Inner City vs. Blue Collar, Medium IQ: Means and Variance Analysis for Productivity (Number of Subjects Given in Parentheses)[a]

School x Race

	Inner City	Blue Collar	Totals
Black	272 (70)	285 (55)	278 (125)
White	295 (32)	273 (60)	284 (92)
Total	283 (102)	279 (115)	

Sex x Social Class x Race

	Inner City		Blue Collar		Totals
	Black	White	Black	White	
Boys	242 (29)	267 (16)	239 (25)	249 (30)	249 (100)
Girls	302 (41)	323 (16)	330 (30)	297 (30)	313 (117)
Total	272 (70)	295 (32)	285 (55)	273 (60)	

Source of Variation	d.f.	F-value	P(F)
Sex	1	45.42	.01
Social Class (Inner City vs. Blue Collar)	1	0.25	N.S.
Race (Black vs. White)	1	0.34	N.S.
Sex x Social Class	1	0.39	N.S.
Sex x Race	1	1.56	N.S.
Social Class x Race	1	3.38	.07
Sex x Social Class x Race	1	1.02	N.S.
Residual Mean Square, 4433	209		

[a] Interaction totals are "equally weighted", i.e. each cell is formed by averaging its component cells without regard to differing numbers upon which component cells are based.

Table 12. White Ninth-Graders, Medium and High IQ, Four School Groups- Means and Variance Analysis for Productivity (Number of Subjects Given in Parentheses)[a]

Sex x IQ

	MedIQ	HiIQ
Boys	230 (102)	276 (89)
Girls	292 (108)	324 (106)

Sex x School

	Blue Collar	Rural	Jewish Middle Class	non-Jewish Middle Class
Boys	270 (49)	230 (49)	250 (41)	262 (52)
Girls	320 (60)	275 (58)	333 (46)	301 (50)

IQ x School

	Blue Collar	Rural	Jewish Middle Class	non-Jewish Middle Class
Med IQ	273 (60)	225 (57)	280 (51)	265 (42)
High IQ	318 (49)	280 (50)	303 (36)	298 (60)

Sex x IQ x School

	Blue Collar		Rural		Jewish Middle Class		non-Jewish Middle Class	
	MedIQ	HiIQ	MedIQ	HiIQ	MedIQ	HiIQ	MedIQ	HiIQ
Boys	249 (30)	291 (19)	196 (29)	265 (20)	237 (21)	263 (20)	238 (22)	285 (30)
Girls	297 (30)	344 (30)	255 (28)	296 (30)	322 (30)	344 (16)	292 (20)	311 (30)

[a] Interaction totals are "equally weighted", i.e. each cell is formed by averaging its component cells without regard to differing numbers upon which component cells are based.

Table 12. continued

Source of Variation	d.f.	F-Value	P(F)
Sex	1	67.44	<.01
IQ	1	6.66	.02
Between schools	3	6.18	<.01
Sex x IQ	1	2.16	N.S.
Sex x School	3	7.08	<.01
IQ x School	3	5.23	<.01
Sex x IQ x School	3	5.57	<.01
Residual Mean Square, 4230	389		

Table 13a. Boys: Average Productivity and Sibling Patterns by Sample Strata
(Number in parentheses is number of persons with sibling pattern)

			No Sibs Older	Older Sister(s)	Older Brother(s)	Both Older Brothers and Sisters	Average Size of Sib Set
Inner City	B	LoIQ	164 (1)	186 (8)	170 (6)	159 (15)	6.13
		MedIQ	231 (3)	253 (2)	234 (8)	217 (16)	5.79
	W	MedIQ	262 (4)	335 (4)	302 (4)	220 (4)	5.25
Blue Collar	B	LoIQ	169 (8)	207 (2)	224 (3)	168 (10)	6.26
		MedIQ	201 (6)	209 (3)	252 (6)	273 (7)	4.54
	W	MedIQ	253 (5)	248 (8)	253 (6)	246 (11)	4.36
		HiIQ	280 (8)	376 (2)	269 (6)	305 (3)	3.73
Rural	W	MedIQ	192 (9)	201 (3)	211 (9)	180 (8)	4.24
		HiIQ	292 (7)	243 (4)	257 (6)	244 (3)	3.95
Middle Class	W	MedIQ	247 (5)	257 (5)	255 (6)	198 (6)	3.36
		HiIQ	284 (7)	295 (8)	319 (8)	236 (7)	3.56

Table 13b. Girls: Average Productivity and Sibling Patterns by Sample Strata
(Number in parentheses is number of persons with sibling pattern)

			No Sibs Older	Older Sister(s)	Older Brother(s)	Both Older Brothers and Sisters	Average Size of Sib Set
Inner City	B	LoIQ	183 (3)	208 (11)	232 (6)	207 (10)	6.80
		MedIQ	271 (7)	325 (10)	295 (9)	304 (14)	5.41
	W	MedIQ	223 (2)	356 (5)	355 (3)	313 (6)	5.62
Blue Collar	B	LoIQ	202 (5)	0 (0)	187 (3)	230 (12)	6.18
		MedIQ	347 (10)	300 (4)	303 (6)	342 (10)	5.06
	W	MedIQ	314 (11)	295 (5)	292 (8)	276 (6)	3.96
		HiIQ	341 (15)	350 (4)	348 (9)	341 (2)	2.96
Rural	W	MedIQ	195 (7)	285 (6)	240 (3)	279 (12)	5.07
		HiIQ	305 (14)	285 (6)	281 (6)	310 (4)	3.40
Middle Class	W	MedIQ	313 (7)	294 (3)	280 (9)	248 (1)	3.75
		HiIQ	320 (16)	243 (1)	305 (8)	303 (5)	3.16

Table 14. Average Productivity and Sibling Patterns: Total Schools
(Number in parentheses is number of persons with sibling pattern)

		Number in Sib Set	No Older Sibs	Older sister(s)	Older brother(s)	Both Older sisters and brothers
Inner City	Black	6.03	236 (14)	243 (31)	239 (29)	230 (55)
Inner City	White	5.43	246 (5)	348 (8)	325 (7)	276 (10)
Blue Collar	Black	5.51	245 (28)	249 (9)	254 (18)	253 (38)
Blue Collar	White	3.75	310 (39)	295 (19)	297 (29)	271 (22)
Rural	White	4.16	254 (37)	263 (19)	244 (24)	250 (27)
Middle Class	White	3.45	301 (35)	281 (17)	292 (31)	242 (19)

Table 15. Correlations Between Productivity and Grades (English, Social Studies, Mathematics, Science), Test Anxiety Scores, Anagram Scores.

			Girls						Boys					
			Eng.	S.S.	Math.	Sci.	Anx.	Anag.	Eng.	S.S.	Math.	Sci.	Anx.	Anag.
Inner City	B	LoIQ	-.09	.05	.10	.15	-.29	-.12	.10	.16	.00	.18	-.21	.15
		MedIQ	-.11	-.32	-	-	-	.33	.08	.24	-	-	-	.33
	W	MedIQ	.16	.06	.23	.02	.35	.08	-.01	.27	.16	.05	.29	.29
Blue Collar	B	LoIQ	.55	.56	.45	.50	-.13	.47	.56	.49	.54	.53	-.12	.09
		MedIQ	.31	.18	.29	-.04	-.01	.28	.08	.22	.05	-.06	.11	-.02
	W	MedIQ	.08	.05	.23	.00	-.34	-.26	.19	.39	.41	.45	.37	-.15
		HiIQ	-.08	-.13	.13	-.08	-.19	.29	.69	.28	.37	.31	-.07	.07
Rural	W	MedIQ	.05	-.02	.11	.19	-.18	.29	.35	.30	.35	.32	-.13	.32
		HiIQ	.18	.16	.35	.44	.11	.23	.41	.37	.32	-.26	-.04	.11
Middle Class	W	MedIQ	.52	.37	.34	.47	.07	-.36	.55	.40	.62	.26	-.05	.44
		HiIQ	.13	.32	.00	.16	-.43	.26	.07	.39	.08	-.05	.14	.24
Middle Class Jewish	W	MedIQ	.41	.17	-	-	-	.12	.26	.56	-	-	-	.53
		HiIQ	.51	.43	-	-	-	.46	.27	.22	-	-	-	.02

Table 16. Productivity and Anxiety Scores, and Correlations Between Them.

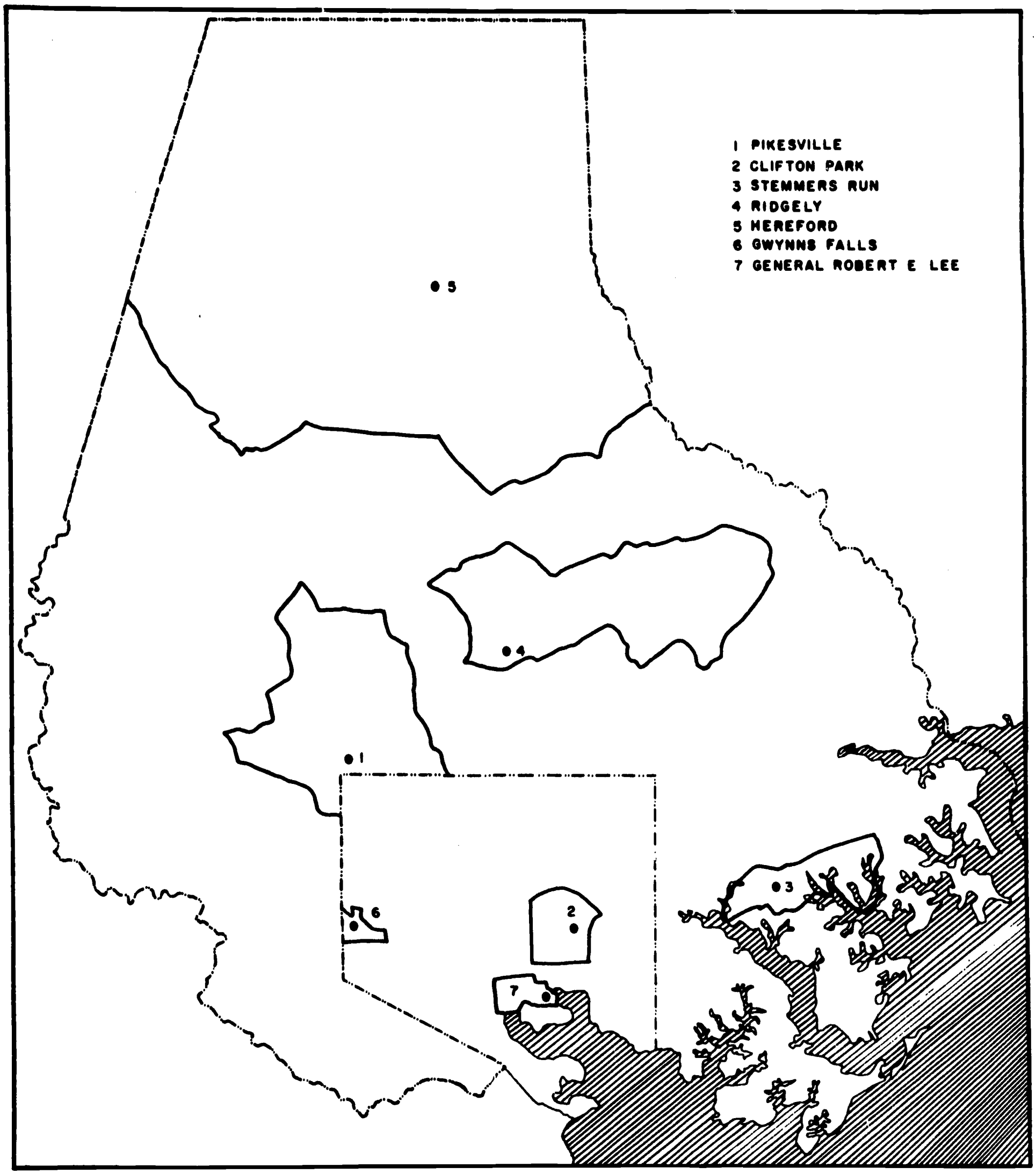
		n	Average Productivity Score	Average Test Anxiety Score	Correlation between Prod. and Anxiety
LOW IQ					
Black Inner City	Girls	30	210	188	-.29
	Boys	30	169	161	-.21
Black Blue Collar	Girls	22	221	171	-.13
	Boys	21	194	155	-.11
AVERAGE IQ					
White Inner City	Girls	16	323	154	.35
	Boys	14	277	138	.29
Black Blue Collar	Girls	30	330	152	-.01
	Boys	24	248	136	.11
White Blue Collar	Girls	30	297	175	-.34
	Boys	29	253	147	.37
White Rural	Girls	28	255	181	-.18
	Boys	29	196	158	-.13
White Middle Class	Girls	20	292	178	.07
	Boys	22	238	152	-.05
HIGH IQ					
White Blue Collar	Girls	30	344	153	-.19
	Boys	19	291	141	-.07
White Rural	Girls	30	297	154	.11
	Boys	20	265	132	-.04
White Middle Class	Girls	30	311	163	-.43*
	Boys	30	285	137	.14

*Significant beyond 5 percent level

Table 17. Correlations Between Productivity and Locus of Academic Control (Crandall's Scale)

			Boys Crandall			Girls Crandall		
			Success	Failure	n	Success	Failure	n
Inner City	B	LoIQ	.14	-.10	30	. 07	.19	30
		MedIQ	.10	-.05	30	.02	.09	41
	W	MedIQ	.02.	.18	14	.07	-.32	16
Blue Collar	B	LoIQ	.41	.27	20	.07	-.25	21
		MedIQ	.13	.22	25	.11	.07	30
	W	MedIQ	.13	.42	30	.02	.09	30
		HiIQ	.24	.25	19	.05.	.29.	30
Rural	W	MedIQ	-.07	-.12	29	-.07	.32	28
		HiIQ	-.11	-.07	20	.33	.18	30
Middle Class	W	MedIQ	.12	.24	22	-.05	-.19	20
		HiIQ	-.08	-.01	30	.03.	.05	30
Middle Class Jewish	W	MedIQ	.13	.14	21	-.03.	-.05	30
		HiIQ	-.04	.05	20	.10	-.22	16

Figure 1. School districts in Baltimore City (Schools 2, 6, 7) and in Baltimore County (Schools 1, 3, 4, 5) of schools whose students participated in the ninth-grade survey.



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Appendix

Instruments Used in The Ninth-Grade Survey

A 1. Instructions for Writing Curiosity Stories

A 2. Instructions for Writing Achievement Motivation Stories.

A 3. Test Anxiety (Mandler-Cowen)

A 4. Crandall Scale Questionnaire

A 5. Scoring for Crandall

A 6. Women's Role Questions

A1. Instructions for Writing Curiosity Stories

Code #_____

Date_____

Number of older brothers_____
Number of younger brothers_____
Number of older sisters_____
Number of younger sisters_____

"I think you will enjoy what we are going to do today. A group of people are collecting stories made up by young people. They want to know what kind of stories boys and girls your age can make up on their own when they really let their imagination go. They would appreciate your helping them by writing some imaginative stories.

I have some pictures to show you to help you get started. You can build each story around a picture. I will pass out a booklet containing 4 pictures, for basing 4 stories on, in a few moments.

It will help you to think out your story if you ask yourself when you look at the pictures:

What is going on? Who are the people?

What happened in the past to lead up to this situation?

What are the people thinking?

Do any of them want anything? What do they want?

What will happen afterwards? What will be done?

Now don't just stick to answering these questions. They are only a guide. Your imagination will supply the rest.

You don't have to worry about spelling and grammar. The stories will not be given a grade or anything of the sort, and no one connected with the school will see them. We are only interested in the type of stories boys and girls of your age can think up.

There are no right or wrong kinds of stories. Any kind of story is all right. Don't just describe how the picture looks, but write the story that comes to your mind when you look at the picture.

Remember, a story should have a beginning, a middle, and an end. You will need to write quickly because you will only have 5 minutes to write a story for each picture. I will tell you when the time is nearly up. Then try to finish off and tell us how it ends. If you don't finish by the time I say "stop" you will have a little time later to go back and finish it. We will begin each story on a new page. The important thing is to write an interesting and imaginative story which you make up yourself."

Following the instructions four separate sheets were provided in the booklet each with a set of questions at the top like those below. Pictures were in a separate booklet. The experimenter notified students about one minute before the end of the 5-minute story writing period.

" What is going on? Who are the people?
What happened in the past to lead up to this situation?
What are the people thinking?
Do any of them want anything? What do they want?
What will happen afterwards? What will be done?"

A2. INSTRUCTIONS FOR WRITING ACHIEVEMENT MOTIVATION STORIES

"This is a test of your creative imagination. I have some pictures to show you. You will have 20 seconds to look at each picture, and then about four minutes to make up a story about it. I have passed out a booklet with four pictures to help you get started. You can build each story around a picture. The same four questions are asked on each story-writing page.

1. What is happening? Who are the persons?

2. What had led up to this situation? That is, what has happened in the past?

3. What is being thought? What is wanted? By whom?

4. What will happen? What will be done?

These questions will guide your thinking and help you to cover all the parts of a plot in the time given. Plan to spend about a minute on each question. I will keep time and tell you when it is about time to go on to the next question for each story. You will have a little time to finish your story before I tell you to go on to the next picture. Do not go on the the next picture until I give the signal.

Obviously there are no right or wrong answers, so you may feel free to make up any kind of a story about the pictures that you choose. Try to make them interesting and dramatic, for this is a test of <u>creative imagination</u>. Do not merely describe the picture you see. Tell a story about it. Work as fast as you can in order to finish in time. Make them interesting. Are there any questions?"

Following the instructions, four separate sheets were provided in the booklet, each with four questions spaced at equal intervals down the page. The experimenter read these questions at intervals of one minute to pace the students in writing stories. The questions were: "1. What is happening? Who are the persons? 2. What had led up to this situation? That is, what has happened in the past? 3. What is being thought? What is wanted? By whom? 4. What will happen? What will be done?"

A3. THE TEST ANXIETY SCALE

THE JOHNS HOPKINS UNIVERSITY
Opinion Sheet

Code # _____ Date _____

Many people have been interested in how students feel about tests and about taking tests. This questionnaire is designed to let you tell us how you feel about them. We are particularly interested in how people differ in their feelings about tests.

The value of this questionnaire will in large part depend on how frank you are in stating your opinions, feelings, and attitudes. Needless to say, your answers to the questions will be kept strictly confidential; they will not be made known to any teacher or anyone else in the school system.

These questions may not be like any you have seen before. For each question there is a line and you are supposed to put a mark on the line to show how you feel. The question below about swimming shows how the questions are written.

I like to swim in the summer

Like very much — Midpoint — Do not like

You mark a vertical line to show how much you like to swim in the summer.

The midpoint is only to help you. Do not hesitate to put a mark on any point on the line as long as that mark shows the strength of your feelings.

Several kinds of tests are talked about in the questions. By "aptitude test" we mean the tests that all of you have probably taken at some time while in school like the Iowa tests. These are usually tests for which you cannot prepare and for which you cannot study. By "tests in a course" we mean the tests given to you during the term which your teacher announces in advance. These are tests covering material you have had in class; tests for which you can prepare. If we just say "tests" we mean all kinds of tests.

READ EVERY QUESTION CAREFULLY
ANSWER EVERY QUESTION
PLEASE DO TELL US HOW YOU REALLY FEEL

Answer the questions quickly. Do not spend too much time on any one question. You will have time to complete the questionnaire. Raise your hand if you have any questions and we will try to answer them. ANSWER THE QUESTIONS AS YOU FEEL.

GO AHEAD TO THE NEXT PAGE

1. I usually expect to do poorly on a test in a course.

Do not expect to do poorly	Midpoint	Expect to do poorly

2. Before taking an aptitude test, I feel fairly confident that I will do well.

Feel Confident	Midpoint	Do not feel confident

3. Before taking an aptitude test, I am aware of an uneasy feeling.

Do not feel uneasy	Midpoint	Feel uneasy

4. I find myself thinking about other things while taking a test.

Do not think about other things	Midpoint	Think about other things

5. Before taking an aptitude test, I tend to worry.

Tend to worry	Midpoint	Do not tend to worry

6. While taking an aptitude test, I do not perspire more than I do at other times in school.

Do not perspire	Midpoint	Perspire more than at other times

7. Before taking a test in a course, I feel fairly confident that I will do well.

Feel confident	Midpoint	Do not feel confident

8. After I have completed an aptitude test, I worry about how well I have done.

Worry about how well	Midpoint	Do not worry about how well I have done

9. While I am taking a test, I find that I cannot seem to sit still.

Sit still easily	Midpoint	Cannot sit still

10. When the teacher announces that a test is going to be given, I become afraid that I am going to fail - that I will do poorly.

Become afraid that I will fail	Midpoint	Do not become afraid that I will fail

11. While taking a hard test, I find that I tend to forget facts that I thought I knew very well.

Do not forget facts	Midpoint	Forget facts

12. Before taking a test, I worry about the possibility of failing it.

Do not worry about failing it	Midpoint	Worry about failing it

13. While taking an aptitude test, I wonder about how well I am doing.

Do not wonder about how well I am doing	Midpoint	Wonder about how well I am doing

14. Before taking a test in a course, I am aware of an uneasy feeling.

Do not feel uneasy	Midpoint	Feel uneasy

15. While taking a test in a course, I am aware that my heart is beating faster.

Heart beats faster	Midpoint	Heart does not beat faster

16. While taking an aptitude test, I worry about the possibility of failing it.

Worry about failing	Midpoint	Do not worry about failing

17. Before taking a test in a course, I tend to worry.

Tend to worry	Midpoint	Do not tend to worry

18. I expect myself to do better with difficult problems given as homework than with the same probelms given as a course test.

Do better with the problems on a test	Midpoint	Do better with the problems given as homework

19. After I have completed a test in a course, I worry about how well I have done.

Worry about how well I have done	Midpoint	Do not worry

20. Before I begin to answer the questions on a test in a course, I am aware that my heart is beating faster.

Heart does not beat faster	Midpoint	Heart beats faster

21. After taking a test in a course, I do not feel very confident that I have done my best.

Do not feel confident	Midpoint	Feel very confident

22. While taking a test in a course, I find it difficult to concentrate on the questions because I am concerned with how well I am doing.

Do not find it difficult to concentrate	Midpoint	Find it difficult to concentrate

23. I feel that how I do on a course test shows what I really know in the subject.

Does not show what I know	Midpoint	Shows what I really know

24. While taking a test in a course, I find myself thinking about how well I am doing on it.

Do not think about how well I am doing	Midpoint	Think about how well I am doing

25. While taking a test in a course, I worry about the possibility of failing it.

Worry about failing	Midpoint	Do not worry about failing

26. Sometimes while taking a test, my mind goes blank.

Mind does not go blank	Midpoint	Mind goes blank

27. After taking a test in a course, I feel fairly confident that I have done well.

Do not feel confident	Midpoint	Feel confident

28. Before I begin an aptitude test, I often feel that I cannot do well.

Feel that I cannot do well	Midpoint	Feel that I can do well

29. Even though I prepare for a course examination, I expect to do poorly on it.

Expect to do poorly	Midpoint	Do not expect to do poorly

30. While taking a test in a course, I wonder about how well I am doing.

Do not think about how well I am doing	Midpoint	Wonder about how well I am doing

31. I usually expect to do poorly on a course test.

Expect to do poorly	Midpoint	Expect to do well

32. While taking an aptitude test, I am aware that my heart is beating faster.

Heart beats faster	Midpoint	Heart does not beat faster

A4. THE CRANDALL (IAR) SCALE
LOCUS OF ACADEMIC CONTROL

Code Number_____ Date_____

Below are 34 questions or statements. For each one, two possible answers are given. Put a checkmark before the answer that best describes what happens to you or how you feel. There are no right or wrong answers. Your answers will not be shown to anyone in your school or anyone connected with the school.

REMEMBER - Choose one and only one alternative for each question.

1. When you don't do well on a test at school, is it

_____a. because the test was especially hard, or

_____b. because you didn't study for it?

2. If your parents tell you that you are bright or clever is this

_____a. because they are feeling good, or

_____b. because of something you did?

3. When you lose at a game of cards or checkers, does it usually happen

_____a. because the other player is good at the game, or

_____b. because you don't play well?

4. Suppose your parents say you are doing well in school. Is this likely to happen

_____a. because your school work is good, or

_____b. because they are in a good mood?

5. When you learn something easily in school, is it usually

_____a. because you paid close attention, or

_____b. because the teacher explained it clearly?

6. Suppose you study to become a teacher, scientist, or doctor and you fail. Do you think this would happen

_____a. because you didn't work hard enough, or

_____b. because you needed some help, and other people didn't give to you?

7. Suppose you are explaining how to play a game to a friend and he learns quickly. Would that happen more often

_____a. because you explained it well, or

_____b. because he was able to understand it?

8. If a boy or girl tells you that you are dumb, is it more likely that they say that

_____a. because they are mad at you, or

_____b. because what you did really wasn't very bright?

9. If a teacher says to you, "Try to do better," would it be

_____a. because this is something she might say to get pupils to try harder, or

_____b. because your work wasn't as good as usual?

10. If you solve a puzzle quickly, is it

_____a. because it wasn't a very hard puzzle, or

_____b. because you worked on it carefully?

11. If a teacher didn't promote you to the next grade, would it probably be

_____a. because she "had it in for you" or

_____b. because your school work wasn't good enough

12. When you read a story and can't remember much of it, is it usually

_____a. because the story wasn't well written, or

_____b. because you weren't interested in the story?

13. If people think you're bright or clever, is it

_____a. because they happen to like you, or

_____b. because you usually act that way?

14. Suppose you did better than usual in a subject at school. Would it probably happen

_____a. because you tried harder, or

_____b. because someone helped you?

15. When you forget something you heard in class, is it

_____a. because the teacher didn't explain it very well, or

_____b. because you didn't try very hard to remember?

16. Suppose you weren't sure about the answer to a question your teacher asked you, but your answer turned out to be right. Is it likely to happen

_____a. because she wasn't as particular as usual, or

_____b. because you gave the best answer you could think of?

17. When you find it hard to work arithmetic or math problems at school, is it

_____a. because you didn't study well enough before you tried them, or

_____b. because the teacher gave problems that were too hard?

18. When you do well on a test at school, is it more likely to be

_____a. because you studied for it, or

_____b. because the test was especially easy?

19. If your parents tell you you're acting silly and not thinking clearly, is it more likely to be

_____a. because of something you did, or

_____b. because they happen to be feeling cranky?

20. When you win at a game of cards or checkers, does it happen

_____a. because you play real well, or

_____b. because the other person doesn't play well?

21. Suppose your parents say you aren't doing well in school. Is this more likely to happen

_____a. because your work isn't very good, or

_____b. because they are feeling cranky?

22. When you have trouble understanding something in school, is it usually

_____a. because the teacher didn't explain it clearly, or

_____b. because you didn't listen carefully?

23. Suppose you became a famous teacher, scientist or doctor. Do you think this would happen

_____a. because other people helped you when you needed it, or

_____b. because you worked very hard?

24. Suppose you are showing a friend how to play a game and he has trouble learning. Would that happen

_____a. because he wasn't able to understand how to play, or

_____b. because you couldn't explain it well?

25. If a boy or girl tells you that you are bright, is it usually

_____a. because you though up a good idea, or

_____b. because they like you?

26. If a teacher says to you, "Your work is fine", is it

_____a. something teachers usually say to encourage pupils, or

_____b. because you did a good job?

27. If you can't work a puzzle, is it more likely to happen

_____a. because you are not especially good at working puzzles, or

_____b. because the instructions weren't written clearly enough?

28. If a teacher promotes you to the next grade, would it probably be

_____a. because the teacher liked you, or

_____b. because of the school work you did?

29. When you read a story and remember most of it, is it usually

_____a. because you were interested in the story, or

_____b. because the story was well written?

30. If people don't think you're bright or clever

_____a. can you make them change their mind if you try to, or

_____b. are there some people who will think you're not very bright no matter what you do?

31. Suppose you don't do as well as usual in a subject at school. Would this probably happen

_____a. because you weren't as careful as usual, or

_____b. because somebody bothered you and kept you from working?

32. When you remember something you heard in class, is it usually

_____a. because you tried hard to remember, or

_____b. because the teacher explained it well?

33. Suppose you're not sure about the answer to a question your teacher asks you and the answer you give turns out to be wrong. It it likely to happen

_____a. because she was more particular than usual, or

_____b. because you answered too quickly?

34. When you find it easy to work arithmetic or math problems at school, is it usually

_____a. because the teacher gave you especially easy problems, or

_____b. because you studied your book well before you tried them?

Scoring for Crandall Scale

Success	Failure
2 b	1 b
4 a	3 b
5 a	6 a
7 a	8 b
10 b	9 b
13 b	11 b
14 b	12 b
16 b	15 b
18 a	17 a
20 a	19 a
23 b	21 a
25 a	22 a
26 b	24 b
28 b	27 a
29 a	30 a
32 a	31 a
34 b	33 b

Women's Role Questions

Check one and only one answer to the statements below.

Also tell how strongly you feel about the answer you check.

1. What do you think women should be like?

_____ Women should do many things including being leaders in politics, the professions and business (the same work as men).

_____ Women should center their lives in the home and family and their jobs should be in such fields as teacher, nursing and secretarial service (different work from men).

Check how strong you feel about your answer.

(very weak) ___1___ ___2___ ___3___ ___4___ (strong)

2. How do you think women see the world?

_____ Women are interested in things but not usually to the point of following them up seriously. Working on problems isn't what they get satisfaction from.

_____ Women are curious about many things, try to learn more about these things, and get a lot of satisfaction from working on problems.

Check how strongly you feel about your answer.

(very weak) ___1___ ___2___ ___3___ ___4___ (strong)

3. What do you think women should do?

_____ It is not a good idea for women to work. They should devote themselves to their home and family.

_____ It is a good idea for women to work. They don't have to devote themselves only to their home and family.

Check how strongly you feel about your answer.

(very weak) ___1___ ___2___ ___3___ ___4___ (strong)