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ABSTRACT

Primarily a longitudinal and quantitative analysis of achievement functioning, this experiment sought to identify factors which promote or impair the learning of individual children. The 683 Junior High students were divided into one of eight groups according to sex, race and whether their seventh grade Iowa Test of Basic Skills Composite score was above or below that expected from their Kindergarten Metropolitan Readiness Test performance. The incidence of males and females making unexpected gains (Ups) or losses (Downs) was approximately the same, but a significantly greater proportion of black children made greater than expected achievement gains. Thirty-three Up Ss were then matched with 33 Down Ss according to sex, race, and initial MRT score, and compared along a number of achievement and school-related dimensions in order to identify factors which tend to differentiate Ups and Downs within and between sex and race. Recommendations for further research and replication were provided and methods were suggested for implementing some results into classroom teaching techniques. (Author/SK)

Final Report

Project No. 1G041
Grant No. OEG-7-71-0024(509)

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AN ASSESSMENT OF THE DIFFERENCES BETWEEN HIGH AND LOW ACHIEVING STUDENTS

June 30, 1972

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U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Office of Education

National Center for Educational Research and Development
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U. S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE

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INTRODUCTION

During the last decade, educators have met little success in increasing the intellectual and academic gains of disadvantaged children (Coleman, et.al. 1966; Equal Educational Opportunities, 1969; Hannah Report, 1967). There may be two chief reasons for the apparent failure of compensatory programs: (1) the programs have characteristically implemented group-oriented enrichment, and (2) they have emphasized IQ gains. It is entirely possible that educational intervention may be more successful if emphasis is given to the motivations, values, aspiration and needs of individual children and their families, and if such steps seek to alter achievement patterns rather than IQ's (Scott and Sattel, 1971).

Educational intervention might be more successful if the educational enterprise examined the many ways in which individual students' total milieu may shape learning. This would require a shift from theory-weak empiricism of the past to better conceptual formulations and increased methodological sophistication. Independent theories which consider only single variables such as teacher-pupil ratio could thus give way to multivariate experimental designs which deal with the complex interactions which occur in home, school and community (Hermann, 1966).

A number of investigators have focused on achievement in terms of what Barnes (1955) identifies as a complex process of "crystallization" of achievement performances after first or second grade (Ahlstrom and Havighurst, 1971; Kerensky, 1967; Cratty, 1970). Shaw and McCuen (1960) found higher and lower achieving males significantly different beginning at grade three; however, with respect to females, those who later were to become low achievers tended to exceed the high achievers in grade point average through the fifth grade. At grade six the high achieving females attained a higher grade point average for the first time and the differences proportionately increased.

There is reason to believe that students' success-ratio within the classroom may be increased if we focus on the clusters of quasi-unique characteristics which influence achievement. When the child enters first grade at age six, for example, about two-thirds of IQ, but only one-third of achievement to age seventeen has been determined (Bloom, 1964). The interaction of IQ, achievement, and socio-economic circumstances are illustrated in one study which revealed that students from welfare (Aid to Families of Dependent Children: AFDC) homes achieved similar IQ's, but substantially lower achievement scores, than comparable children from non-AFDC homes (Scott and Damon, n.d.).

If the achievements of AFDC children reflect the impact of basic home conditions to greater extent than do IQ's, it seems reasonable to conclude that effective education will have to identify and cope with non-classroom factors upon which much of all children's learning may largely depend. What seems to be needed is a combination of naturalistic and case-study assessments which assess the growth of individual children within the context of various developmental periods and total milieu.

This study focuses on a single question: Why do some children make broad achievement advances while others make little if any academic gains? If answers can be found for this question, the schools should be in a better position to upgrade educational services for vulnerable as well as potentially gifted children. There is no question but that achievement differences of children vary widely. Using the Iowa Test of Basic Skills, Stewart (1970) found that average educational gains in fourth and fifth grade ranged from seven to sixteen months for students who were achieving two or more grades above actual grade placement and gains ranging from a loss of four months to a gain of eight months for students achieving one or more grades below their grade placement. We need to better understand why, and in what ways, some children learn more rapidly than others.

Other investigators have attempted to identify underachieving and vulnerable children early so as to strengthen conditions which are conducive to learning. When comparing successful with unsuccessful work-study boys Ahlstrom and Havighurst (1971) found that the unsuccessful boys had attended several different schools, and noted as have others (Davidson and Greenburg, 1967), that a good attendance record was significant for school achievement. Although the Coleman study (1966) found that, when socio-economic factors are statistically controlled, differences between schools account for only a small fraction of pupil achievement differences, Mayeske, et.al. (1972), using the same data, note that most school outcome measures become increasingly more predictable the longer the student stays in school.

To the writers' knowledge, however, no study has yet formulated sufficiently precise guidelines for operationalizing preventive education on the basis of quasi-unique influences within the total milieu of individual students or small groups of students. In their review of the literature, Mackler and Giddings (1965) concluded that very little is really known about the attainment of academic success among disadvantaged students except that it occurs with far more than chance frequency. On the other hand, Davidson and Greenberg (1967) searched the student records of 1,331 non-white students before finding 80 students who were academically successful. Scott (1970) noted that it was far more difficult to predict that later achievement of non-white students on the basis of reading readiness or teacher evaluation. He noted, however, that predictive coefficients for deprived children were particularly low if the children secured low readiness scores in kindergarten. From this, he suggested that subsequent research may reveal ways in which potentialities of vulnerable children may depend upon a comprehensive understanding of students' total environment. At the same time, he conjectured that there may be a need for a wide variety of strategies, depending upon the circumstances of individual children.

In sum, important questions are presently unanswerable. Why do some students achieve far less (or more) than what we would expect on the basis of test results or teacher assessment? In what manner do home, school, and community influence students' learning profiles, and how do those learning profiles shift during various developmental periods? This experiment seeks to identify environmental factors which promote or impede the learning of individual children, the development of which may facilitate the establishment of more effective action-oriented programs.

METHODOLOGY

The study which is reported here consists of two separate parts.

PART I. The cumulative folders of all seventh, eighth and ninth grade students in the Waterloo Community School District's two fully integrated junior high schools were examined. Of these 1,237 students, the files of 638 [198 white males (WM), 121 black males (BM), 201 white females (WF), and 118 black females (BF)] contained both the Metropolitan Readiness Test (MRT) percentile score and the Iowa Test of Basic Skills (ITBS) seventh grade composite percentile score.

The 638 Ss were divided into three groups according to whether their ITBS score was higher than, similar to, or lower than that predicted by their MRT performances. It was felt that comparing the MRT, taken by Ss toward the end of the kindergarten year, with the seventh grade ITBS composite score, administered at midyear, would most accurately reflect patterns of elementary school (K-6) learning.

In order to compare MRT and ITBS scores, ITBS Iowa grade equivalents were converted to national percentile scores, and then both the MRT and ITBS national percentiles were converted to T scores.

In comparing the discrepancies between two achievement scores it was necessary to account for the "regression effect" (Thorndike, 1963) which refers to the likelihood that an extreme score on the MRT tends to be associated with a less extreme score on the ITBS.*

The explanation of this phenomenon rests in the fact that observed scores are determined by two factors, the true score and measurement error. Their sum is the obtained score. If we assume that measurement error is random, i.e. that no systematic factor influences the error in a particular direction, then the error component is not likely to influence as Ss achievement score in the same direction on the second measure and the S will consequently tend to be less extreme on the second score.

In order to allow for regression factors in identifying uniquely different within-S performances it was decided that Ss making gains of .7 or more of a s.d. would be identified as "ups;" those with losses of or exceeding .7 s.d. as "Downs;" and those who neither gained nor lost .7 or more s.d. as "Holds." The cut-off point of .7 was considered valid insomuch as when the split-half methods is employed

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*We are greatly indebted to Dr. A. N. Hieronymus, Director of the Iowa Basic Skills Testing Program at the University of Iowa for calling our attention to the regression effect and also for his personal and immediate attention to our need for current tables which would allow us to convert ITBS grade equivalents to national percentile norms and to national grade equivalents.

a difference of .5 s.d. in the ITBS Reading subtest, for example suggests that a S is performing at least one grade level above or below that predicted by his kindergarten performances on the MRT.

Ss were further differentiated according to sex (male and female) and race (black and white) which resulted in a total of twelve groups. There are a number of reasons for controlling for sex and race in a study of this nature. In the first place school related variables, such as ability and school performance may be more highly correlated for one group than another. Further, the absolute level of performance may tend to be higher for one group than another. This means that if the groups are not separated in analysis, the magnitude of significance between observed variables and school performances will not accurately reflect the true level for the groups separately.

It is also felt that variables predicting performance for one group may be different from variables predictive for another. Even if the same variables are involved for different groups, the direction of the relationship might differ. If the groups are not separated, these possibilities are obscured. Finally, past failure to control for sex and race differences in academic performance has greatly contributed to our present ignorance concerning the sources of these differences (Levin, 1965).

PART II. The second part of the study identified the course of academic change and specific environmental factors which influenced achievement in children who by seventh grade have shown either sharp gains or precipitious declines relative to their kindergarten achievement scores.

Up and Down Ss were matched according to three variables: race, sex and initial readiness score. The matching of Up and Down Ss according to MRT scores enabled the experimenters to compare Ss who begin first grade equally "ready;" but because of a combination of factors, half the Ss make achievement gains much greater than expected (Ups) while the other half make achievement gains much less than expected (Down).

It was possible to match 33 of the initial 54 Up Ss with an appropriate Down S, resulting in a total N of 66 (33 Ups; 33 Downs). The experimenters recognize that these procedure introduced all the limitations which accompany a study which utilizes only a few Ss. On the other hand, the small N permits consideration of factors which are often lost in an extensive study which employs many Ss. It can be noted, for example, that many of Piaget's contributions have come to us as a result of his observations of the behavior of his three children.

The matched pairs were then compared according to a series of items in the school cumulative records. These included: school absences (K-6); number of schools attended; incidence of AFDC families; number of siblings, third or fourth grade IQ on the California Test of Mental Maturity (CTMM); third grade performance on the Metropolitan Achievement Test (MAT); fourth, sixth and seventh grade performance on the ITBS; and fifth and seventh grade performances on the Iowa Silent Reading Test (ISRT).

With the assistance of personnel from the Waterloo Community Schools, a questionaire was devised (Appendix A) which was to be utilized in interviewing

parents of Ups and Downs on a completely voluntary basis. With this questionaire an attempt would be made to identify variables in school achievement which could be understood in light of home background factors (Coleman, 1966). However, after approximately one-third of the Ss' parents had been interviewed, a complaint was lodged and because of increasing racial unrest in the Waterloo Community and in spite of numerous and frequent attempts by administrators of the Waterloo Schools to allow us to resume, permission to continue was denied. Consequently, a significant portion of this study remains unavailable. This is particularly distressing in view of the evidence that school programming for individual differences might best be implemented through our improved understanding of home background.

RESULTS

PART I. As shown in Table 1, of the 638 Ss for whom both MRT and seventh grade ITBS composite scores were available, only 8.5 percent scored .7 or more s.d. higher on the ITBS than MRT (Ups); 40.2 percent experienced corresponding losses (Downs); 51.3 percent of the Ss' ITBS scores failed to exceed a difference of .7 s.d. from their original readiness measure.

When the Chi-square statistic is applied to the data in Table 1, no significant sex differences are revealed but race is highly significant ($X^2 = 16.4$; df = 2; $p < .001$) as a variable which determines the predictability of whether Ss tend toward making greater or less achievement gains than expected. In fact, with one degree of freedom, it is noted that black children experience proportionately more Ups (BM and BF percents of 14 and 11.9, compared to WM and WF percents of 5.5 and 6.0 respectively, $p < .01$) as well as fewer downs (BM and BF percents of 31.4 and 33.0, compared to WM and WF percents of 47.0 and 43.4 respectively, p .02). However, no significant racial differences emerged with respect to the incidence of "Holds" ($X^2 = .94$; df = 1, NS).

PART II. Table 2 indicated that Ss in each group began elementary school with almost identical readiness skills but that by the seventh grade two distinct achievement subgroups had been formed: Ups or Downs ($p < .001$ for WM, BM, WF; $p < .05$ for BF).

In Tables 3 through 6 within-group or between subgroup achievement patterns reveal the progressive achievement shifts which result in distinctly different achievement profiles by seventh grade.

An examination of mean T-scores suggests that a great deal of change has occurred in almost all achievement areas within three of the four groups prior to the third grade. MAT subtest which discriminate Ups and Downs within each group include: WM--Reading ($p < .01$) and Arithmetic ($p < .01$); BM--Word Recognition ($p < .01$) and Arithmetic ($p < .05$); WF--Word Recognition, Word Discrimination, Spelling, and Arithmetic (all $p < .001$) amd Reading ($p < .01$); BF--none significant.

With respect to the MAT subtest sensitivity, Word Recognition differentiates Ups and Downs for BM and WF; Word Discrimination for WF; Reading for WM and WF: Spelling for WF; and Arithmetic for WM, BM and WF.

By the fourth grade Ups and Downs have become significantly distinct subgroups within the WM and BM as well as WF Ss (Table 4). Black Female Ups and Downs differentiate significantly on the Reading Comprehension, Language and Arithmetic subtest of the ITBS (all p .05), but not on the Vocabulary and Work Study Skills subtests. By the sixth grade Ups and Downs of all groups differ significantly on all ITBS subtest (Table 5). For WM, BM, and WF Ss the strength of difference has increased and, for the first time, BF Ups and Downs differ significantly on all achievement measures.

Table 6 illustrates increased differentiation between Ups and Downs in nearly all achievement areas ($p < .001$ in all except BF Language, Arithmetic, and Work Study SkillsSubtests). It is noted that BF performances on Work Study Skills does not reach significance at the seventh grade level: this seems to result from the fact that Ups experienced no increase in grade equivalent from the sixth to seventh grades (5.8 in both), while Downs made modest gains during this one year period.

Table 7 indicates that ISRT distinguishes Ups and Downs among BM, WF and BF, but not WM, Ss at both the fifth and seventh grade levels.

The low N appears to have contributed to the fact that Table 8 cites only two differences in attendance patterns of Ups and Downs which reached statistical significance, and it should be noted that both these differences appear with respect to black males. However, the possibility that most extensive replicatory experimentation, employing a larger N, might yield statistical significance is suggested by the fact that in the 27 comparisons between the four groups of Ups and Downs, 18 revealed Downs to be more frequently absent.

Table 9 shows that black Downs were significantly more mobile than black Ups, but that no significant mobility differences were noted with the other three groups. It is also shown on Table 9 that black male Downs were, to a statistically significant extent, more representative of AFDC families than black male Ups but that this was not the case with Ss in the other three groups. Finally Table 9 discloses that white female Ups had significantly more siblings than white female Downs.

As illustrated in Table 10, in each group Ups secured higher IQs than Downs by third or fourth grade, but that the differences are significant only with males (WM, $p < .05$; BM, $p < .01$).

CONCLUSIONS

Primarily a longitudinal and quantitative analysis of achievement functioning, this research project sought to identify factors which promote or impair the learning of individual children. The first part of the study categorized seventh, eighth and ninth grade Ss in each of four groups (BM, WM, BF, WF). Each group was then divided into three subgroups (Ups, Downs, Holds) according to whether their seventh grade achievement performances were above, below or relatively equivalent to that predicted by a kindergarten readiness measure.

The incidence of girls and boys in the three subgroups was approximately the same. However, and contrary to a number of studies which suggest that schools are particularly negligent in facilitating the learning of minority group children (Coleman, 1966; Rosenfield and Hilton, 1971; Wilson, 1969), a significantly greater proportion of black, and not white, children made greater than expected achievement gains.

There may be several possible explanations for this finding. First, the situation may be unique to the Waterloo Community School District which has, for a number of years, attempted to upgrade minority group education (Stewart, 1972). It would seem that there should have been as many Ups as Downs, and the much greater incidence of both black and white Downs suggests the possibility that present compensatory educational procedures in Waterloo, stressing as they do largely disadvantaged students, may have lowered the general achievement opportunities for still larger numbers of both less disadvantaged and advantaged black and white students.

Secondly, there has been relatively little longitudinal research. Most educational research has been horizontal, with prediction of performance limited to one point in time. Contrasted to this, the longitudinal approach permits the exploration of predictor variable stability through time. This may explain why the MRT appears to be unsatisfactory as a long term predictive instrument for almost half (Ups plus Downs) of the sample.

As we have seen, Barnes proposes that achievement "crystallization" occurs after Ss were given the MRT and this would appear to explain some of the variance. Moreover, the data from this study suggest that achievement "crystallization" occurs at different developmental periods which may covary with sex and race. Replicatory longitudinal studies designed to get at this interaction, appear to be warranted.

Finally, personality variables have been shown to be related to school achievement (Moriarty, 1966; Ahlstrom and Havighurst, 1971; Kerensky, 1967; Tseng and Sonstegard, 1971) and the low predictability of the MRT may reflect the presence of personality and emotional factors which this study could not fully consider.

The second phase of the study identified factors which tend to differentiate Ups and Downs within and between race and sex.

WM Ups were differentiated from WM Downs by having: above average as compared to average IQs; higher Reading and Arithmetic achievement from third grade on; and increasingly greater achievement in all areas from fourth grade on.

BM Ups were differentiated from BM Downs by having: average as compared to below average IQ; progressively fewer absences which reached significance by sixth grade; less mobility as witnessed by their attending fewer schools; proportionately fewer families receiving AFDC payments; higher Word Recognition and Arithmetic skills from third grade on; and increasingly greater achievement in all areas from fourth grade on.

The finding that fourth grade IQ differentiates Ups and Downs among males is consistent with Cotler and Palmer's (1970) conclusion that intercorrelation scores between achievement and IQ data are somewhat higher for boys than girls (.84 contrasted with .73, using IQ and Composite ITBS score) for grades four through six.

WF Ups were differentiated from WF Downs by having some siblings, and increasingly greater achievement in all areas from third grade on.

BF Ups were distinguished from BF Downs by having: increasingly higher Reading Comprehension, Language, and Arithmetic skills from fourth grade on; all achievement areas higher in the sixth grade; and all but Work Study Skills were higher in the seventh grade.

Attempts at identifying home background factors through voluntary parental interviews were stalemated when complaint was issued to Waterloo school administrators who asked that the interviews be terminated. Only 22 of the 66 parents had been interviewed and it was thus impossible to assess the interview data.

RECOMMENDATIONS

This research must be viewed as a pilot study which suggests areas deserving more extensive investigation. The results indicate the significance of both personality and situational variables as they relate to school achievement. Moreover, they indicate that some variables may be specifically related to race and sex. Thus we find some evidence that after fourth grade absences of WM and BM, but not WF and BF, may be suggestive of sex-linked motivational factors. Why are there more absences among male, but not female, Downs? Additional study might also disclose whether BM from AFDC homes are more vulnerable than BF from AFDC homes. Another unanswered question concerns the evidence that mobility impairs the learning of BM to a greater extent than is the case with WM, WF, and BF.

The findings suggest that scores in some academic areas are more effective indicators of later achievement than scores in other areas. For example, arithmetic skills seem to be a major area of sensitivity. It is one of the first to discriminate Ups from Downs among all groups. If replication studies should bear this out, it might be feasible to provide children with first and second grade experiences rich in activities designed to develop arithmetic skills. Subsequent experimentations may disclose that more effective remediation might best be implemented if race and sex is given some consideration. Specifically, findings of this study indicate that in addition to arithmetic, word recognition may be an early priority in plans to individualize instructions.

BIBLIOGRAPHY

1. Ahlstrom, Winton M. and Havighurst, Robert J. 400 Losers. Jossey-Ross, Inc.: San Francisco, 1971.

2. Barnes, Paul J. "Prediction of Achievement in Grades One Through Four from Otis Quick-Scoring Mental Ability Tests: Alpha Short Form," Educational and Psychological Measurement, 1955, 15, 493-494.

3. Bloom, B.S. Stability and Change in Human Characteristics. New York: Wiley, 1964.

4. Coleman, James S., et. al. Equality of Educational Opportunity. Washington, D.C.: Department of Health, Education and Welfare, 1966.

5. Cotler, Sheldon and Palmor, Richard J. "The Relationship Among Sex, Sociometric Self, and Test Anxiety Factor and the Academic Achievement of Elementary School Children." Psychology in the Schools, 1970, (8), 3, 211-216.

6. Cratty, Bryant J. Perceptual and Motor Development in Infants and Children. MacMillin: New York, 1970.

7. Davidson, Helen and Greenberg, Judith. School Achievers from a Deprived Background. New York: City College of City University of N.Y., 1967.

8. "Equal Educational Opportunity." From the editors of the Havard Educational Review. Harvard University Press: Cambridge, Mass., 1969.

9. Hannah report. "Racial Isolation in the Public Schools." A handout paper from the U.S. Commission on Civil Rights, Washington, D.C.: U.S. Government Printing Office, 1967.

10. Hermann, Theodore (Ed.) "Psychologie der Erziehungsstile." Beitrage und Diskussionen des Braunschweiger Synposions (28.3-31, 2, 1966). Gottingen: Gogrefe Verlag, 1966.

11. Lavin, David E. The Prediction of Academic Performance. Wiley and Sons, Inc.: New York, 1967.

12. Kerensky, Vasil M. "Reported Self-Concept in Relation to Academic Achievement in an Inner City Setting," Dissertation Abstracts, 1967, 27, 2325-A.

13. Littell, W. "The WISC: Review of a Decade of Research." Psychological Bulletin, 1960, 57, 132-156.

14. Mackler, Bernard and Giddings, Morsley G. "Cultural Deprivation: A Study in Mythology." Teachers College Record, Vol. 66, No. 7, April, 1965, 608-613.

15. Mayeske, George W., et. al. A Study of Our Nation's Schools. U.S. Department of Health, Education, and Welfare/Office of Education: 1972.

16. Moriarty, Alice E. Constancy and IQ Change. Thomas Publishers: Springfield, Ill., 1966.

17. Rosenfeld, Michael and Hilton, Thomas L. "Negro-White Differences in Adolescent Educational Growth." American Educational Research Journal, March, 1971, 267-283.

18. Scott, Ralph and Damon, Robert. "The Relationship Between AFDC and School Achievement: Some Preliminary Observations." unpublished paper.

19. Scott, Ralph. "Perceptual Skills, General Intellectual Ability, Race, and Later Reading Achievement." The Reading Teacher, 23, 7, 1970, 660-668.

20. Scott, Ralph and Sattel, L. "School and Home: Not Either-or." Merrill-Palmer Quarterly, in press.

21. Shaw, Merville C., and McCuen, John T. "The Onset of Academic Underachievement in Bright Children." Journal of Educational Psychology, 1960, 51, 103-108.

22. Stewart, Duane. "Range of Performance of Students in Combination Class Room (4th and 5th) as Compared with Range of Performance of Students in the Same Schools when Students in Grade 4 Classrooms and Grade 5 Classrooms were Considered Separately." unpublished research summary to the Waterloo, Iowa, Community School District, April, 1970.

23. Stewart, Duane. "Waterloo Desegregation Proposal: Problems and Objectives." unpublished proposal to the Waterloo Community School District, 1972.

24. Tseng, M.S. and Sonstegard, M.A. "Identifying Preschool Children with Learning Problems." Proceedings, 79th. Annual Convention, APA, 1971, 563-564.

25. Thorndike, Robert L. The Concept of Over and Underachievement. Bureau of Publications, Teachers College, Columbia University: N.Y., 1963.

26. Weikart, David P. "Project: A Comparative Study of Three Preschool Curricula." A paper presented at the biennial meeting of the Society for Research in Child Development, Santa Monica, California, March, 1969.

27. Wilson, Alan B. The Consequences of Segregation: Academic Achievement in a Northern Community. Berkely: (Glendessary), Glendessary Press, 1969.

APPENDIX A

CHILD'S NAME_____ DATE TODAY_____

Child's Birthdate Day_____ Month_____ Year_____ Birthplace_____

Father's Name_____ Highest grade_____ Age_____ Birthplace_____

Mother's Name_____ Highest grade_____ Age_____ Birthplace_____

Adopted Father's Name_____ Age_____ Birthplace_____

Adopted Mother's Name_____ Age_____ Birthplace_____

Stepfather, Stepmother or Guardian_____ Age_____ Birthplace_____

Address where child now lives _____ Telephone No._____

Father's (Adopted Father's) Occupation _____

Present employment _____

Mother's (Adopted Mother's) Occupation_____

Present Employment (if working) _____

Income (Source of):

_____ 1. Earned wealth

_____ 2. Profits and fees

_____ 3. Salary (regular income--monthly or yearly)

_____ 4. Wages (hourly)

_____ 5. Private Relief

Number of rooms in house _____

School _____

Address _____

_____

Names of Brothers and Sisters Age Sex Disabilities Grade in School

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

Has the child been seen by any specialist? _____ What kind? _____

_____ When? _____ Findings? _____

_____

PE SURE TO CHECK MORE THAN ONE BOX UNDER A PARTICULAR TOPIC IF MORE THAN ONE OF THEM FITS YOUR CHILD'S BEHAVIOR

PASIC INFORMATION RECORD

Please pla ce a check mark ( ) in the box which nearly describes your child's behavior or the situation covered. Underline those words which fit.

1. Does the child ever have temper tantrums? ( ) Yes ( ) No
   If so, about how many times per month? 1 3 5 10 (circle estimated number)

2. Does the child
   ( ) sleep poorly
   ( ) toss and turn
   ( ) talk in sleep
   ( ) walk in sleep
   ( ) wake up crying at night
   ( ) have bad dreams

3. How does your child eat?
   ( ) overeats--stuffs self
   ( ) very well, excellent appetite
   ( ) fair--samll quantities, some dislikes, needs encouragement
   ( ) poorly--many food dislikes, has to be coaxed
   ( ) very serious eating problem--refuses most food, urging or forcing has to be used, vomits up meals, spits out food, meal time always a major problem.
   ( ) eats very often between meals
   ( ) now eats well, but once had a serious problem (age_____)
   ( ) table manners a definite problem

   child's height _____ child's weight_____lbs.

4. Is the child obedient to parents?
( ) is very obedient; can be depended on to follow all requests with little or no supervision
( ) fairly obedient; occasionally puts off or fails to do as told
( ) does not obey well ; often says "I won't" or promises and then does not do as told; requires continual watching and checking on; slow or resistant about doing things.
( ) very disobedient; hardly ever does as told; seems to make a point of doing the wrong things; defiant, or very undependable; resents all requests to do things.
( ) gets mixed up or confused about directions or requests

If the child obeys one parent but not the other, which one is obeyed?
Father ( ) Mother ( )

5. How often is the child usually punished?
( ) never
( ) once a week more or less
( ) once a day more or less
( ) several times each day

6. Who usually decides on and carries out the punishment? (If more than one person, put check in more than one box; underline person most responsible)
( ) mother
( ) father
( ) older brother
( ) older sister
( ) grandparent
( ) maid or housekeeper
( ) other person (who _____)

7. What does your child do on weekends, and who does he do it with? _____
_____

8. How does the child get along with other children? (check one that fits your child)
( ) has practically no playmates at all; explain if so _____
_____
( ) plays well with other children own age; enjoys it greatly
( ) dates with opposite sex
( ) plays with other children own age
( ) often gets into trouble with other children unless watched all the time
If child has trouble with others, how?
( ) hurts them
( ) is beat up or picked on by them
( ) afraid of them; can't hold his own with other children
( ) teased a lot by playmates and others own age
( ) influenced by bad companions to get into trouble or misbehavior
( ) is the leader in getting companions into trouble or mischief
( ) unpopular with other children; not invited to parties, not accepted by group, won't play with the other children in the neighborhood
( ) plays mostly with bigger children; prefers them to children own size
( ) plays mainly with smaller children; prefers them to own size
( ) plays mainly with children of opposite sex; prefers them to playmates of own se
( ) handicapped and has difficulty keeping up with children own size (example: deaf, blind, crippled, heart condition, cerebral palsy, rhumatic fever).

About how many times per week do other children come to play with this child in your house or yard? (estimate the average) _____

About how many times per week does your child go to the home of other children to play? (estimate the average) _____

9. If there are brothers and sisters, how does the child get along with them? (Check as many statements as apply correctly)
( ) no brothers or sisters, or none living with child
( ) gets along very well; great friends and companions
( ) fairly well, not much friction, they cooperate, spend some time together pleas.
( ) child quarrels considerably with one or more brothers or sisters (who_____)
( ) jealous of brother or sister
( ) feels or says some other child in the family is the favorite
( ) competes with other child in family; always trying to keep up with, surpass or belittle other child.
( ) child picked on or bossed by a brother or sister.
( ) child shares a room with one or more brothers or sisters (whom_____)
( ) criticizes other child very often, or "tattles" on other child.
( ) tries to boss or dominate a brother or sister.

10. Does the child ever earn any money by working for it?
( ) regularly ( ) once in a while ( ) practically never

If so, how?_____

_____

11. Speech behavior
( ) doesn't talk enough, even though able to; too quiet
( ) talks too much; is annoying at times
( ) lisps
( ) stutters or stammers
( ) speech is "Jerky"--not smooth
( ) talks too fast
( ) talks easily, but words not distinct and clear
( ) talks in strained, high-pitched or hoarse voice
( ) talks very loudly--yells a lot
( ) whines a lot; or complains about many things or people
( ) uses bad language, swear, "cusses"
( ) often interrupts others during conversations
( ) may not Hear well; often asks others to repeat what is said, or seems not to understand what is said to him
( ) has had hearing checked during past year (if so, where?_____)
( ) anything else unusual or peculiar about speech _____

12. Has your child any nervous habits?
( ) squinting or blinking
( ) thumb sucking
( ) chewing on pencils or clothes
( ) biting or picking fingernails
( ) scratching self often
( ) gritting teeth during sleep
( ) pulling or twisting hair
( ) squirming or wriggling about
( ) tics (jerking of muscles, "making faces")
( ) unusual gestures or mannerisms

13. Child's interests and use of time:
( ) a few interests; plays some games; amuses self a few minutes at a time, but not very long; gets tired of new toys after a few days; or listens to radio or T.V. many hours a day.
( ) about average number of interests for age; enjoys play with other children; knows some games or enjoys playing with some other toys for a fair length of time; if adolescent, movies, baseball games, light reading, listening to radio, watching T.V., runs about with a gang of friends or "dates."
( ) many interests; keeps self busy for several hours every day without much difficulty; hard to get child away from play to eat or go to sleep, etc.; if in school, reads news and current events, etc.
( ) unusual interest development for age; engages in one or more active hobbies for long periods with considerable skill, plans activities ahead, organizes contructive group activities, reads important books, studies seriously subjects besides school assignments, plays with toys creatively. Child never has enough time to do all the things likes.
( ) strong interest development, but "lopsided," not well balanced; for example: spends too much time reading (a "bookworm"), or spends all of time with the "gang;" interested in dangerous activiites or peculiar ideas; spends too much time going study with just one girl-friend or boy-friend; fascinated by playing with fire, guns, speeding in cars; power, religion, money, his appearance, clothes, health or diseases, death, "crime;" spends too much time on school work.

What are the child's favorite activities and interests, if any?

_____

_____

14. What do you anticipate your child will be doing ten years from now?

_____

_____

What does your child expect to be doing ten years from now?

_____

_____

15. Child's adjustment to school:
If child is between 5 and 18, check all items which apply
( ) child is making excellent academic progress; grades better than average
( ) is making about average grades and progress
( ) is making slow progress in school; poor grades
( ) has failed (Not been promoted)
( ) once ( ) twice ( ) 3 times, since beginning school

( ) is excused from certain classes in school (example: physical ed.)
( ) is sometimes truant from school (plays hookey)
( ) dislikes school in general
( ) behavior or conduct at school a problem
( ) has trouble with other children going to or from school
( ) worries a lot about failing in school
( ) bored with school because it is too easy
( ) child daydreams much of the time
( ) very stubborn, willful; or shows a negative attitude much of the time.
( ) dislikes school in general

16. Please complete the following statements True or False.

1. Too much nonsense goes on in school _____
2. School can be very boring at times _____
3. There's too much importance placed on grades _____
4. Most pupils learn what they have to learn, not because they want to learn _____
5. Too much of what we have to study does not make sense _____
6. Pupils have to keep reading and studying the same old things over and over _____
7. Teachers expect too much of pupils _____
8. Most pupils are not interested in learning _____
9. Some pupils are always making fun of other pupils in the classroom _____
10. Teachers are too bossy _____
11. Teachers always seem to like some pupils better than others _____
12. Pupils do not have much freedom in school _____
13. Teachers really do not understand children _____
14. Pupils are treated fairly in school _____

17. Child seems to dislike to be home:
( ) often is late or misses meals; seldom plays at home; is away much of the time without letting parents know where
( ) child complains a lot or criticizes home
( ) or often finds fault with parents

18. Does the child imitate or strongly resemble some other person or persons in behavior or personality? Whom, and how?_____

_____

19. Do you sometimes believe that when your child is home from school sick he really may not be sick but not want to go to school?_____

20. Family health:
A. How and past year.
( ) exceptionally healthy, very strong, sturdy, practically never ill
( ) better than average; rarely ill and then only one minor illness
( ) average; occasional colds during past year, or a few minor illnesses
( ) below average; one or more illnesses of two weeks or longer; or many severe colds, low vitality
( ) very poor health, suffers from a serious illness, or very frail and easily or often sick, or needed two or major operations, etc.

23. How effective have these community agencies been in helping you raise your child?

	No need to use	not helpful	somewhat	moderately	very harmful
YMCA					
YWCA					
police department					
social welfare					
schools					
office of the Mayor					
fire department					
chamber of commerce					
businesses					
major industries (Deere, Rath, etc.)					
Boy Scouts-Cub Scouts					
Girl Scouts-Brownies					
Campfire Girls					
Hi-Y					
4-H Club					
any athletic team at school					
any boys or girls club					
any hobby club					

24. Child's condition at birth:
Was head misshapen_____; if so, describe:

Was child blue or black in color_____; if so, describe:

Was child yellow in color (jaundiced)_____if so, describe:

Did child breathe easily at birth_____; if not, describe:

Did child have any injuries at birth_____; if so, describe:

Did child cry excessively during the first few months_____if so, describe:

Was his cry unusual_____; if so, describe:

Did he practically never cry_____.

Did child require any special medical attention or hospitalization during the first month_____; if so, describe:

What was the birthweight?_____

25. Comments. If you have information you think might be important that was not covered by the above, please write it in here.

B. History of health:
List all diseases child has had since birth, including measles, whooping cough, etc., and mention if there was a fever or rash, or any striking change in the child following the illness.

Type of unusual illness or accidents (include all hospitalization)

Type	Age	Time lost from school	Severity of illness
1.			
2.			
3.			
4.			
5.			
6.			

C. Does the child have any of those fairly often or all the time?

( ) indigestion	( ) sinus trouble	( ) complains of aches and pain
( ) constipation	( ) nervous spells	
( ) diarrhea	( ) allergies	( ) eye strain or trouble seeing
( ) colds	( ) asthma	
( ) dizzy spells	( ) hay fever	( ) acne or skin rashes
( ) headaches	( ) vomit food	( ) run a temperature
( ) seem overtired	( ) ear infections	( ) perspire even in cool weather
( ) weak or lacking in pep		

21. How many times have family members been hospitalized?
Has any family member of close friend of the child dies? If so, who and when?

22. How often do you attend school functions?_____
talk with school personnel?_____
attend PTA?_____
have parent-teacher conferences?_____
open house?_____
class plays?_____
other?_____

TABLE 1

PERCENTAGE OF STUDENTS RECORDING ACHIEVEMENT GAINS (UPS), LOSSES (DOWNS) OR STABILITY (HOLDS) FROM KINDERGARTEN (MRT) THROUGH SEVENTH GRADE (ITBS)

Group		Ups	Holds	Downs
White males	(N198)	5.5	47.5	47.0
Negro males	(N121)	14.0	54.5	31.4
White female	(N201)	6.0	50.6	43.4
Negro female	(N118)	11.9	55.1	33.0
Total	(N638)	8.5	51.3	40.2

TABLE 2

MEAN T SCORES AND t RATIOS, Ss KINDERGARTEN MRT AND SEVENTH GRADE ITBS

		White male Up N= 7 Down N= 7	Black male Up N= 8 Down N= 8	White female Up N= 11 Down N= 11	Black female Up N= 7 Down N= 7
MRT Mean T-Score	Up	49.7	44.1	50.4	44.4
	Down	49.6	44.1	51.0	45.0
	df	12	14	20	12
	t	.05	.00	.22	.19
ITBS Mean T-Score	Up	59.3	54.8	60.1	53.3
	Down	38.3	34.8	39.1	38.9
	df	12	14	20	12
	t	6.6**	12.4**	6.9**	3.4*

Code: *= .05
**= .01
***= .001

TABLE 3

Ss THIRD GRADE MAT SUBTEST T-SCORES

		White male Up N= 6 Down N= 6	Black male Up N= 3 Down N= 4	White female Up N= 4 Down N= 5	Black female Up N=-5 Down N= 5
Word Recognition	Up	52.5	61.5	57.5	51.3
	Down	44.0	46.8	44.0	48.0
	df	10	5	7	8
	t	1.95	4.67**	5.58***	.74
Word Discrimination	Up	52.7	58.5	57.4	52.0
	Down	44.2	45.6	42.0	45.4
	df	10	5	7	8
	t	1.92	1.55	7.46***	1.37
Reading	Up	52.8	56.0	58.1	52.7
	Down	40.3	45.0	40.0	43.3
	df	10	5	7	8
	t	3.66**	1.72	4.62**	2.08
Spelling	Up	50.3	54.5	57.8	59.0
	Down	43.3	46.6	41.0	46.3
	df	10	5	7	8
	t	1.50	1.84	7.20***	2.15
Arithmetic	Up	55.0	53.0	54.2	45.7
	Down	44.7	40.8	36.0	39.7
	df	10	5	7	8
	t	3.19**	2.92*	8.05***	1.57

Code: *= .05
**= .01
***= .001

TABLE 4

MEANS OF Ss FOURTH GRADE ITBS GRADE EQUIVALENT SCORES

		White male Up N= 7 Down N= 7	Black male Up N= 8 Down N= 8	White female Up N= 9 Down N= 10	Black female Up N= 6 Down N= 7
Vocabulary	Up	44.0	46.0	46.3	36.7
	Down	27.0	26.0	30.7	29.0
	df	12	14	17	11
	t	4.37***	4.85***	4.25***	1.78
Reading Comprehension	Up	48.0	43.0	48.2	39.0
	Down	28.0	25.0	29.4	27.0
	df	12	14	17	11
	t	3.84**	3.66**	4.54***	2.29*
Language	Up	38.0	42.0	50.1	43.0
	Down	25.0	25.0	30.6	27.0
	df	12	14	19	11
	t	2.51*	5.46***	4.71***	2.94*
Work Study Skills	Up	44.0	39.0	45.0	38.0
	Down	27.0	26.0	30.1	29.0
	df	12	14	19	11
	t	5.57***	4.79***	4.36***	1.58
Arithmetic	Up	43.0	40.0	43.45	37.0
	Down	28.0	28.0	30.7	23.0
	df	12	14	19	11
	t	3.70**	4.22***	4.12***	2.78*
Total	Up	43.0	44.0	47.2	39.0
	Down	27.0	26.0	30.7	28.0
	df	12	14	17	28
	t	4.40***	5.70***	5.11***	2.14*

Code: *= .05
**= .01
***= .001

TABLE 5

MEANS OF Ss SIXTH GRADE ITBS GRADE EQUIVALENT SCORES

		White male Up N= 7 Down N= 7	Black male Up N= 8 Down N= 8	White female Up N= 10 Down N= 10	Black female Up N= 7 Down N= 7
Vocabulary	Up	67.0	70.0	67.7	52.0
	Down	40.0	42.0	42.7	40.0
	df	12	14	18	12
	t	5.45***	4.69***	4.39***	2.25*
Reading Comprehension	Up	75.0	63.0	69.4	65.0
	Down	46.0	44.0	46.2	39.0
	df	12	14	18	12
	t	5.78***	4.83***	4.71***	5.15***
Language	Up	66.0	62.0	70.9	63.0
	Down	39.0	39.0	41.2	40.0
	df	12	14	19	12
	t	3.97***	5.50***	6.55***	3.55**
Work Study Skills	Up	73.0	60.0	67.45	58.0
	Down	49.0	39.0	43.4	41.0
	df	12	14	18	12
	t	4.80***	3.55**	4.99***	3.42**
Arithmetic	Up	70.0	60.0	64.0	51.0
	Down	48 0	43.0	44.0	29.0
	df	12	14	18	12
	t	4.99***	3.86***	5.10***	3.13**
Total	Up	70.0	63.0	68.0	58.0
	Down	44.0	41.0	43.8	40.0
	df	12	14	18	12
	t	6.43***	5.70***	6.54***	4.08***

Code: *= .05
**= .01
***= .001

TABLE 6

MEANS OF Ss SEVENTH GRADE ITBS GRADE EQUIVALENT SCORES

		White male Up N = 7 Down N = 7	Black male Up N = 8 Down N = 8	White female Up N = 11 Down N = 11	Black female Up N = 7 Down N = 7
Vocabulary	Up	84.0	80.0	81.4	73.0
	Down	49.0	45.0	46.1	43.0
	df	12	14	20	12
	t	5.58***	5.08***	5.56***	5.70***
Reading Comprehension	Up	82.0	77.0	80.5	77.0
	Down	52.0	47.0	40.2	48.0
	df	12	14	20	12
	t	5.05***	8.58***	5.62***	4.66***
Language	Up	73.0	72.0	83.0	72.0
	Down	45.0	39.0	46.0	43.0
	df	12	14	20	12
	t	4.10***	8.74***	7.24***	3.74***
Work Study Skills	Up	88.0	70.0	80.0	58.0
	Down	50.0	44.0	50.0	43.0
	df	12	14	20	12
	t	5.82***	8.21***	6.18***	1.39
Arithmetic	Up	84.0	69.0	78.0	67.0
	Down	54.0	47.0	51.0	51.0
	df	12	14	20	12
	t	5.36***	4.26***	6.80***	3.79***
Total	Up	82.0	74.0	81.0	71.0
	Down	50.0	44.0	49.0	44.0
	df	12	14	20	12
	t	6.60***	13.37***	7.46***	6.68***

Code: * = .05
** = .01
*** = .001

TABLE 7

T-SCORE MEANS OF Ss FIFTH AND SEVENTH GRADE TSRT

		White male Up N = 4 Down N = 5	Black male Up N = 8 Down N = 8	White female Up N = 10 Down N = 11	Black female Up N = 7 Down N = 7
Fifth Grade TSRT	Up	54.2	53.1	58.2	52.1
	Down	37.0	35.0	40.2	41.0
	df	9	9	16	6
	t	2.25	3.46*	4.05***	2.03*
Seventh Grade TSRT	Up	55.6	60.0	61.7	55.4
	Down	47.0	40.0	40.2	44.0
	df	9	9	16	6
	t	2.18	4.42***	4.23***	2.70*

Code: * = .05
** = .01
*** = .001

TABLE 8

MEAN NUMBER OF DAYS ABSENT, UPS AND DOWNS, KINDERGARTEN THROUGH SIXTH GRADE

		White male Up N = 7 Down N = 7	Black male Up N = 8 Down N = 8	White female Up N = 11 Down N = 11	Black female Up N = 7 Down N = 7
Kindergarten	Up	8.1	12.4	11.8	8.9
	Down	7.1	17.71	14.3	10.6
	df	12	14	20	12
	t	.45	1.01	.51	.46
First Grade	Up	8.21	7.9	9.3	6.9
	Down	9.0	6.6	12.4	5.7
	df	12	14	20	12
	t	.17	.51	.80	.52
Second Grade	Up	8.4	5.9	9.6	7.6
	Down	6.8	9.1	10.4	6.6
	df	12	14	20	12
	t	.45	.87	.20	.32
Third Grade	Up	4.7	6.1	8.8	5.4
	Down	12.6	6.9	8.8	5.2
	df	12	14	20	12
	t	2.14	.27	.02	.13
Total 1-3	Up	21.0	19.9	27.4	20.0
	Down	28.4	22.5	34.0	15.9
	df	12	14	20	12
	t	.93	.40	.79	.65
Fourth Grade	Up	3.8	2.8	5.4	4.6
	Down	10.5	6.4	4.1	4.8
	df	12	14	20	12
	t	1.86	1.80	.78	.11
Fifth Grade	Up	6.14	4.3	6.4	5.6
	Down	8.3	9.5	5.0	5.7
	df	12	14	20	12
	t	.68	1.83	.48	.14
Sixth Grade	Up	4.9	1.4	2.4	3.2
	Down	7.9	10.4	8.2	3.9
	df	12	14	20	12
	t	.83	2.26*	.23	.48
Total 4-6	Up	14.9	8.5	19.4	12.2
	Down	26.7	26.3	17.3	14.4
	df	12	14	20	12
	t	1.66	2.47*	.31	.56
Total 1-6	Up	37.7	28.4	46.8	33.0
	Down	55.0	50.1	52.0	30.2
	df	12	14	20	12
	t	1.46	1.69	.36	.30

Code: * = .05
** = .01
*** = .001

TABLE 9

MEANS OF NUMBER OF SCHOOLS ATTENDED, FAMILIES RECEIVING ADC PAYMENTS AND SIBLING RELATIONSHIPS

		White male Up N = 7 Down N = 7	Black male Up N = 8 Down N = 8	White female Up N = 11 Down N = 11	Black female Up N = 7 Down N = 7
Number of Elementary Schools Attended	Up	1.7	1.1	1.7	1.7
	Down	1.8	2.1	1.4	1.8
	df	12	14	20	12
	t	.37	2.69*	.80	.40
Families Receiving AFDC Payments	Up	0.0	0.0	0.0	.14
	Down	0.0	.50	0.0	.14
	df	12	14	20	12
	t	----	2.65*	---	0.0
Number of Brothers	Up	3.0	2.0	1.1	1.5
	Down	2.3	2.0	.5	1.6
	df	12	14	20	12
	t	.76	0.0	1.61	.22
Number of Sisters	Up	1.0	1.2	1.4	1.8
	Down	1.8	2.6	.5	2.2
	df	12	14	20	12
	t	.96	1.48	1.91	.49
Total Number of Siblings	Up	4.0	3.2	2.4	3.3
	Down	4.2	4.6	1.0	4.5
	df	12	14	20	12
	t	.12	1.03	2.40*	1.02

Code: * = .05
** = .01
*** = .001

TABLE 10

Ss THIRD OR FOURTH GRADE CTMM IQ'S

		White male Up N = 7 Down N = 7	Black male Up N = 8 Down N = 8	White female Up N = 11 Down N = 11	Black female Up N = 7 Down N = 7
CTMM I.Q.	Up	115.6	103.8	111.2	99.0
	Down	96.4	83.4	103.6	92.0
	df	12	14	20	12
	t	2.67*	4.48**	1.48	.98

Code: * = .05
** = .01
*** = .001