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## A Study of Retardation in the Rosenwald School, Luling Texas, and Carver School, Lockhart, Texas Grades Nine Through Twelve

Eddie M. R. Bradley

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A STUDY OF RETARDATION IN THE ROSENWALD SCHOOL,  
LULING TEXAS, AND CARVER SCHOOL, LOCKHART, TEXAS  
GRADES NINE THROUGH TWELVE



BRADLEY

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A STUDY OF RETARDATION IN THE ROSENWALD SCHOOL, LULING  
TEXAS, AND CARVER SCHOOL, LOCKHART, TEXAS  
GRADES NINE THROUGH TWELVE

A Thesis  
Presented to  
The Graduate Division  
of  
Prairie View Agricultural and Mechanical College  
Prairie View, Texas

In Partial Fulfillment  
of the Requirements for the Degree  
Master of Science in Education

by  
Eddie M. R. Bradley  
August, 1950

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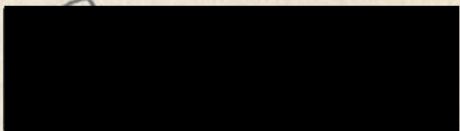
## PRAIRIE VIEW AGRICULTURAL AND MECHANICAL COLLEGE

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August                      1950

WE HEREBY RECOMMEND THAT THE REPORT PREPARED  
UNDER OUR SUPERVISION BY Eddie M. R. Bradley  
ENTITLED A Study of Retardation in The Rosenwald  
School, Luling, Texas, and Carver School, Lockhart,  
Texas, Grades Nine Through Twelve.  
BE ACCEPTED AS FULFILLING THIS PART OF THE REQUIRE-  
MENTS FOR THE DEGREE OF MASTER OF Science  
MAJORING IN Education

Major Professor



Dean of the Graduate  
School

Permission to publish this report or any part  
of it must be obtained from the Dean of the  
Graduate School.

## DEDICATION

This thesis is dedicated to  
my husband, Charles Bradley  
and  
to my daughter, Belma Francis



## ACKNOWLEDGMENTS

The writer wishes to express her gratitude to all who have assisted her directly or indirectly, in making possible this study. Especial appreciation is expressed to her advisor, Mr. H. J. Kinchelow, Veteran's Counselor at Prairie View Agricultural and Mechanical College, for advice and direction given in this investigation. Gratitude is also extended to Mr. J. B. Holland Visiting Professor at Prairie View, Dr. Walter I. Murray also Visiting Professor at Prairie View, Dr. Edward K. Weaver, Professor at Butler College, Tyler, Texas, and to Mr. R. A. Harrison, Principal, Luling High School, Luling, Texas, for giving freely of their encouragement and assistance.



## TABLE OF CONTENTS

<u>Chapter</u>		<u>Page</u>
I	INTRODUCTION. . . . .	11
	Statement of the problem . . . . .	12
	Problem analysis. . . . .	12
	Purpose of study. . . . .	12
	Scope of study . . . . .	13
	Source of Data . . . . .	14
	Definitions of Terms. . . . .	14
	Limitations and Delimitations of study . . . . .	15
	Limitations. . . . .	15
	Delimitations. . . . .	16
II	REVIEW OF LITERATURE . . . . .	17
	Mental abilities . . . . .	17
	Relation between environment and Heredity. . . . .	19
	Transportation . . . . .	20
	Health and retardation . . . . .	21
	Reading and retardation. . . . .	22
	Grouping and retardation . . . . .	23
	Acceleration and retardation . . . . .	25
	Continuous promotion . . . . .	26
	Student interest . . . . .	27
	The influence of promotion poli- cies on pupil growth and pro- gress . . . . .	28
	Means by which teachers may re- duce pupil failure. . . . .	30
	Extra class activities . . . . .	31
	Summary. . . . .	32
III	METHODS AND MATERIALS . . . . .	34
	Attendance . . . . .	35
	Academic progress. . . . .	36
	Health . . . . .	36
	Extra-class activities . . . . .	36

## TABLE OF CONTENTS.--Continued.

<u>Chapter</u>		<u>Page</u>
IV	ANALYSIS OF STUDY. . . . .	37
	Mental ability. . . . .	37
	Distance, mode of transportation, and school attendance. . . . .	42
	Academic progress . . . . .	48
	Extra-class activities. . . . .	58
	Summary of findings . . . . .	61
	To discover the relation, if any between mental ability and retardation . . . . .	61
	To discover the relation be- tween distance from school, the mode of transportation and re- tardation. . . . .	62
	To discover the relation be- tween students' interests and retardation . . . . .	63
	To discover the relation be- tween academic progress-age grade progress and retarda- tion. . . . .	63
	To discover the relation be- tween students home and family life and retardation. . . . .	63
	To discover the relation be- tween the students health and retardation . . . . .	64
	To discover the relation be- tween extra-class activities and retardation . . . . .	65
V	DISCUSSION . . . . .	65
	To discover the relation, if any between mental ability and retardation . . . . .	65
	To discover the relation be- tween distance from school, the mode of transportation and re- tardation . . . . .	66



TABLE OF CONTENTS.--Continued.

<u>Chapter</u>		<u>Page</u>
	To discover the relation between students' interests and retardation. . . . .	67
	To discover the relation between academic progress -age grade progress and retardation . . . . .	68
	To discover the relation between students home and family life and retardation . . . . .	69
	To discover the relation between the students health and retardation. . . . .	70
	To discover the relation between extra-class activities and retardation. . . . .	70
VI	SUMMARY . . . . .	72
	Findings . . . . .	73
	The relationship between mental ability and retardation. . . . .	73
	The relationship between distance and mode of transportation and retardation . . . . .	74
	The relationship between students' interest and retardation . . . . .	74
	The relationship between family life and retardation. . . . .	75
	The relationship of age - grade placement and retardation . . . . .	75
	The relationship of extra-class activities and retardation . . . . .	75
	Recommendations. . . . .	76



## TABLE OF CONTENTS.--Continued.

<u>Chapter</u>	<u>Page</u>
APPENDIX. . . . .	78
BIBLIOGRAPHY. . . . .	100

## LIST OF TABLES

<u>Table</u>		<u>Page</u>
1	INTELLIGENCE QUOTIENTS SCORES AND STATISTICS FOR NEGRO STUDENTS OF LOCKHART AND LULING HIGH SCHOOLS BASED ON THE NEW CALIFORNIA TEST OF MENTAL MATURITY (Form 47).....	40-41
2	DISTANCES TRAVELED BY UNDERAGE, NORMAL AND OVERAGE PUPILS OF LOCKHART AND LULING HIGH SCHOOLS.....	43
3	UNDER, NORMAL AND OVERAGE PUPILS WHO WORK ON THE FARM IN LOCKHART AND LULING HIGH SCHOOLS.....	45
4	NUMBER AND PER CENT OF LOCKHART AND LULING PUPILS ABSENT FROM SCHOOL TO WORK ON FARM.....	46
5	NUMBER AND PER CENT OF 9th THROUGH 12th GRADE PUPILS OF LOCKHART AND LULING HIGH SCHOOLS ABSENT FOR ALL CAUSES FOR THE YEAR OF 1949-1950.....	47
6	NUMBER OF YEARS IN SCHOOL AND GRADE PROGRESS OF LOCKHART AND LULING HIGH SCHOOL PUPILS.....	48-49
7	AGE-GRADE DISTRIBUTION FOR LOCKHART AND LULING HIGH SCHOOL PUPILS FOR THE SCHOOL YEAR OF 1949-50.....	50
8	ATTITUDES OF LOCKHART AND LULING HIGH SCHOOL STUDENTS CONCERNING THE CURRICULUM.....	52
9	COURSES NOT OFFERED IN THE LOCKHART AND LULING HIGH SCHOOLS DESIRED BY THE STUDENTS.....	53-54
10	FAMILY STATUS OF LOCKHART AND LULING HIGH SCHOOL PUPILS.....	55



## LIST OF TABLES.--Continued.

<u>Table</u>		<u>Page</u>
11	READING HABITS OF UNDERAGE, NORMAL, AND OVERAGE PUPILS OF LOCKHART AND LULING HIGH SCHOOLS.....	57
12	THE PHYSICAL DEFECTS OF UNDERAGE, OVERAGE, AND NORMAL PUPILS OF LOCK- HART AND LULING HIGH SCHOOLS.....	59
13	PARTICIPATION IN EXTRA CLASS ACTIVITIES BY PUPILS OF LOCKHART AND LULING HIGH SCHOOLS.....	60
14	INFLUENCE OF EXTRA CLASS ACTIVITIES UPON SCHOOL ATTENDANCE.....	61



## CHAPTER I

### INTRODUCTION

Educators throughout the United States are seriously concerned over the fact that a large number of students are unable to progress continuously from one grade to another, year after year. The problem of what to do with these retarded students is one of great importance to educators. The solution of the problem entails such factors as (1) costs to the school, (2) costs to the parent, and (3) intangible costs to the student in terms of mental hygiene. Moreover, retardation represents a loss of opportunity, which in turn results in discouragement and frustration on the part of the student, and often humiliation in his relationship with others. Reader (9) states:

The large financial waste which results from non-attendance becomes evident when it is realized that the cost of running a school is practically the same whether the pupils are in attendance or not. The greatest loss, however, is not the financial loss to the public. The greatest waste is the educational loss to the pupil. Non-attendance means that the pupil has been cheated of some of his rightful patrimony; it means that he has not been able to partake of all the

advantages which society has provided for him at great expense. A pupil does not fail, he falls behind in his work, becomes discouraged and desires to quit school. (9:26)

### Statement of the Problem

What are the factors influencing pupil retardation?

Problem Analysis:--The problem of this study encompasses several interrelated aspects:

1. To discover the relation, if any, between mental ability and retardation.
2. To discover the relation, if any, between the distance from school and the mode of transportation and retardation.
3. To discover the relation, if any, between the student's interests and retardation.
4. To discover the relation, if any, between the student's home, family life and retardation.
5. To discover the relation, if any, between academic progress in terms of age, grade placement and retardation.
6. To discover the relation, if any, between the student's physical health and retardation.
7. To discover the relation, if any, between the extent of student participation in extracurricular activities and retardation.

### Purpose of the Study

Experiences in the Carver School at Lockhart,



Texas and the Rosenwald School at Luling, Texas indicated that there were too many students who did not progress at the rate of one grade or class each year, and that some students did not progress a half grade per year. Information was needed to ascertain if the retarded students' failure to progress at the normal rate was due to poor scholastic aptitude or ability, and if the students' retardation was due to slow development or the lack of skill in the use of language and the communicative mechanisms. The administrators concerned in these two schools were desirous to discover if retardation resulted from conditions which were due to mental development that had failed to keep pace with the chronological development of the student. Also, there were instances where retardation may constitute a failure to attain satisfactory social relationships as would normally be expected at a given age or under given circumstances.

#### Scope of the Study

This study was limited to fifty-four high school pupils of the Rosenwald School, Luling, Texas and the forty-five high school pupils of Carver School, Lockhart, Texas. Its main concern is with an analysis of the age-grade placement of these pupils as compared with mental and other factors which may impede progress at the normal rate of one grade for each school



year.

### Source of Data

The data for this study were obtained from three sources:

1. Test scores obtained from the New California Short-Form Test of Mental Maturity, Advanced, 1947 form.
2. Questionnaire responses from the ninety-nine pupils who constitute the population of this study.
3. Documentary materials obtained from a review of related literature.

### Definition of terms

In an attempt to define or describe the mentally retarded pupil, one immediately is confronted with the different terminology found in literature dealing with such pupils. This study was concerned with the child who was intellectually retarded. The child, through special and individualized curricula can be sufficiently benefited to take a place in society, at least, as well as the dull normal person who has become adjusted. For the purposes of this study, these definitions, found in Good's Dictionary of Education (5) will be used.

1. Retardation - Progress in school at less than the normal rate of a grade or class per year or a half grade per semester. Failure to develop as rapidly or as far as the average. (5:349)



2. Educational Retardation - Failure to develop as rapidly or as far as the average in scholastic ability. (5:349)

3. Linguistic Retardation - Slow development in the use of language. (5:349)

4. Mental Retardation - A condition resulting from mental development that has failed to keep pace with the chronological age; may be manifested as dullness, backwardness, or even feeble-mindedness. (5:349)

5. Social Retardation - Failure to attain as satisfactory social relationships as would normally be expected at a given age or under given circumstances. (5:349)

6. Normal Age - The typical chronological age for average pupils for entering a given school grade, usually age six for grade one, seven for grade two, etc. (In schools in which pupils normally advance at the rate of one grade per year). (5:16)

7. Over Age - Older chronologically than is normal for entering a given grade. (5:285)

8. Under Age - A term applied to any pupil who is younger than the normal age for the grade in which he is enrolled. (5:435)

### Limitations and delimitations of the study

Limitations.--There were two basic limitations to this study. One was the inherent discrepancies found in standardized tests in measuring pupil ability. That is, the commercial tests used in psychometry and education in an attempt to measure intelligence and achievement are not standardized upon



Negro students. Hence, the results obtained were compared to standards for Whites rather than to a composite norm representing both groups.

The second limitation of the study is that much of the data was obtained from questionnaire responses. Responses to questionnaires can only be considered as the written testimony of the respondents and were not necessarily true in terms of their functioning beliefs and opinions. Hence, the responses represent only the stated beliefs and opinions of the respondents.

Delimitations.--This study included only those students who were enrolled in the ninth to twelfth grades inclusively to determine the extent of retardation in the Rosenwald School, Luling, Texas and the Carver School, Lockhart, Texas.

CHAPTER II  
REVIEW OF LITERATURE

The purpose of this chapter is to present related literature pertaining to the following subject areas: (1) To review literature on mental abilities and retardation; (2) to review the literature on environment and heredity and retardation; (3) to review the literature on distance from school, means of transportation and retardation; (4) to review the literature on health and retardation; (5) to review the literature on reading and retardation; (6) to review the literature on grouping and retardation; (7) to review the literature on acceleration and retardation; and (8) to review the literature on the administration of programs of promotion and retardation.

Mental abilities

It has long been held that the primary problem of retardation and pupil failure is due to the level of mental maturity or pupil ability.

In order to discover what is meant by



mental maturity or pupil ability it is necessary to review the literature, and to present the findings of authorities in the field. What constitutes mental ability is still largely in the realm of theory. In order to explore the various approaches to this problem, it is first necessary to discuss the concepts of intelligence. Intelligence will therefore be discussed under the following interrelated headings: (1) General definitions of intelligence; (2) the relative influence of environment and heredity of intelligence; (3) the educational-vocational differences in mental ability; and (5) special mental abilities of pupils.

Definitions of intelligence have been given by numerous authorities throughout the history of education and psychology. During the period from 1880 - 1900 the definition of intelligence was reflected in the attempts of educators to approach intelligence in behavioristic terms, or in terms of human sensory-motor responses and processes. It was assumed that sensory discrimination provided the key to intelligence. These attempts were preceded by the work of Francis Galton (4) who stated:

The only information that reaches us concerning outward events appears to pass through the avenues of our senses; and the more perceptive the senses are of the differences, the larger the field upon which our judgement and intelligence can act. (4:27)



Toward the end of the nineteenth century, Alfred Binet (16) became interested in the concept of intelligence which emphasized the more complex or highly organized mental activities, such as memory, association, judgement, and attention. In 1905, Binet wrote:

To judge well, to comprehend well, to reason well, these are essential activities of intelligence. (16:191)

Charles Spearman (11) has held that:

Intelligence consists of qualitative and quantitative principles called neo-genetic laws, and the expression of intelligence consists of the apprehension of experience, the education of relations, and the education of correlates. (11:43)

In 1927, Thorndike (12) conceived that:

Intelligence includes operations such as; attention, retention, recall, recognition, selection and rational thinking, abstraction, generalization, organization, inductive and deductive reasoning, together with knowledge and learning in general. (12:22)

#### Relation between environ- ment and Heredity

The concept of "environment" and "heredity" are abstractions that in human beings have not been found separable. They are important factors that influence human development.

Alfred Binet believed that intelligence was something which could be substantially raised or lowered by the influence of training. On the other hand,



Terman, the foremost exponent of the Binet Method in the English language, placed emphasis on heredity as the determiner of intelligence. According to Remmers and Gage (10):

The nature-nature controversy has been briefly examined. The issue could be phrased as follows: What methods, if any, are known at present by which the course of mental growth can be modified? The classroom teacher might find practical value in the discussion that; (1) the concept of intelligence or mental ability is culturally determined; (2) neither extreme "environmentalism" nor extreme "hereditarianism" is as correct as the middle point of view; (3) that intelligence tests should be interpreted in the light of the individual's background, environment, and training. (10:63)

### Transportation

Since 1874, the transportation of pupils at public expense has had a phenomenal growth.

In rural education the outstanding development during recent decades had been the consolidation of schools.

Ward G. Reeder (9) gives the following factors as contributors to the growth of school consolidation and pupil transportation:

1. The accumulating evidence that consolidation of schools provide better educational opportunities than one-teacher schools.

2. The widespread migration of people from the rural districts to the cities, leaving thousands of rural schools with such small pupil-teacher ratios that it has been deemed advisable to close them and to transport the pupils to other schools.



3. The enlarging of school districts, thus making easier the consolidation of schools. Thousands of school districts have merged during recent years.

4. The advent of the automobile and good highways, thus making it possible to bring pupils together quickly and safely over a distance of several miles.

5. The enactment of state laws which permit or require consolidation and transportation and which sometimes give state aid to them. (9:421-422)

State Legislators have recognized that transportation is a necessary element in the equalization of educational opportunity and have granted state aid for it the same as for instruction and other current expenses of the school.

#### Health and retardation

Sidney L. Pressey and Francis P. Robinson (8), in their recent publication of "Psychology and the Education," stated approximately two-thirds of all school children have some visual defects which if not corrected, may handicap both school work and play. Three per cent have defective hearing which handicaps the child in all his contacts with other people. Defects involving the nose and throat, such as, adenoids are also common. They may interfere with normal breathing; they usually lower vitality, and may adversely affect the growth and shape of the face. Deformities and blemishes may handicap the student physically and may



result in adjustment problems.

Pressey and Robinson (8) further assert:

In a given year, over half of any group of children are likely to be ill. The teacher must often be the first who notices evidence of illness. She is often the one most responsible for bringing about educational and psychological recovery after the illness is over.

Reasonable habits of diet, sleep, elimination, and recreation are important for health, both physical and mental.

The effects of health upon intellectual, as well as physical vigor, activity, and tone are of great importance and should be readily recognized. (8:60)

### Reading and retardation

In the past, high schools and colleges took for granted the reading ability of their students. Today an increasing number of secondary schools, colleges, and universities recognize that many of their students cannot do the reading expected of them. Hence, the importance of reading is clearly recognized by the elementary schools. In the primary grades, more time and effort are spent in teaching the art of reading than in any other subject of the school program.

Albert J. Harris (6) definitely states:

Poor reading is recognized as the most important single cause of retardation in the elementary school, although it in turn, may be due to low intelligence. (6:3)

H. L. Caswell (17) not only supports Harris' statement, but adds:



At the first and second grade levels, children are very rarely kept back for any reason other than failure in reading. Even as high as the seventh and eighth grades as many as 20 per cent of failures are directly attributable to failure in reading, besides the other failures in which inability to read a subject textbook has been a major cause of difficulty. (17:645)

More and more educators are realizing that they must provide for the teaching of reading. Continued emphasis must be placed upon the elementary years of the child's school life to better qualify him for reading in the future.

#### Grouping and retardation

Grouping has been considered as a process by which children might be placed in order that maximum educational development might proceed. Anything that serves as a hindrance to this development should be considered as a factor of retardation.

Kate G. Wofford (13) asserts that:

Grouping children on the basis of achievement in the performance of school work was one of the first types of instructional units. The grouping process began when a child entered school, usually at the age of six. He was placed in the grade classification of other six-year-olds, and if he were able to meet predetermined standards each year, he made an orderly progression with his group until he finally graduated for high school. If in any year, the child failed to meet the school's standards, he was retained, and required to repeat the grade.

This practice introduced into schools



the element of achievement as a basis for grouping. To repeat a grade was nearly always considered a humiliation by the retarded child, and his parents looked upon it as a disgrace to the family. Bad personality traits frequently developed as the result of such retardation. The child fretted because he was separated from his normal social group, often believed himself a failure. Because of these unfortunate concomitants of grouping children on the basis of achievement in school work, educators have attempted to devise plans that will allow children to proceed faster than others but would never "fail" a child no matter how slow he progresses.

The following by Kate Wofford further elucidates the point by asking the question:

What is a grade? The whole process of any phase of it is one long incline. How far up the incline is the child expected to go in one year? We could determine the progress children are expected to make were we able to measure each phase of development, and draw an average. How far the child will go toward this mark or beyond it depends upon innumerable factors; native ability, social background, emotional security, guidance and other items beyond mention.

The important thing is not to set up marks along the incline, of stages that must make the child march up to this point and mark time until the next term, but to guide each as courageously as we can as far along the incline as is possible for him to go happily and comfortable. (13:67)

Blanch Kent Verbeck (26) asserts that:

If a child should fail to make the grade up to the designated spot, he should not be expected to go back to the bottom and start plodding up again as is so common in our "failure and repeat" program. (26:167)



### Acceleration and retardation

In the elementary school, a common device for reducing the heterogeneity of the class is to eliminate the extremes of the distribution at promotion time. That is, a small number of the most capable pupils are allowed to "skip" a grade or a half grade, and usually a larger number of the least capable pupils are "failed" or "retained" in the same grade for another year or half year, as the case may be.

Witty and Wilkins (25) published a critical survey of the literature relating to acceleration and, in spite of certain limitations in the studies, concluded that:

Most reports show clearly that acceleration, when practiced, is associated with desirable adjustment in all types of development for which data have been assembled. (25:321)

Recent studies have attempted to determine the effect of acceleration upon the pupil's personality and social adjustments in high school and college. According to Terman (24), superior students who are advanced at accelerated rates make satisfactory adjustment.

The earlier they enter college, the better work they do there, at least down to an entrance age of fifteen years. (24:68)

Almost without exception, investigators report favorable results in accelerating students. Engle



(18) states that:

Accelerated students in high school, when compared with other students of their own chronological age, were at least as active socially as non-accelerated students. (18:532)

In 1943, Pressey (20) surveyed the literature regarding acceleration on the college level and commented that:

The great majority of accelerated students do well in school, are socially adjusted, do not suffer in health, and are not handicapped in after-school careers. (20:29)

In Henry Otto's (7) survey, the literature revealed that:

About 20 per cent of the repeaters do better and 40 per cent do worse than before. (7:232)

Otto concluded that if the objective of the modern school is the optimum development of its pupils, "non-promotion is not the way to get it."

Several studies have been reported during the last twenty-five years which indicate the value of trial promotions. An investigation by McKinney (19), for example, involving, 13,000 pupils, show a saving of about three out of every four repeaters.

#### Continuous promotion

Otto has proposed a somewhat theoretical but very suggestive promotion plan for the elementary school. His plan has been in successful operation in



several school systems for a number of years. His plan involves the following five essential features:

1. There would be available extensive data on an objective character on each child, so that he may be placed at all times in groups in which he can work to the best advantage in terms of his own developmental readiness.

2. There would be continuous pupil adjustment and progress with shifts from one group to another at any time during the year that a change would seem advisable.

3. The major classifications which take place in the ordinary school at the beginning of each term would be eliminated.

4. It would make possible longer teacher group relationship in which the same teacher works with the same group of children for two or three consecutive semesters or years.

5. The conventional competitive marking system would be replaced with extensive, objective, cumulative data on many aspects of the growth and development of each child. (7:244)

### Student interest

Much has been said in recent years about the part children's interest should play in curriculum-making. The curriculum is closely related to retardation since a number of students are retained each year because of lack of interest in the subjects offered.

Otto positively states that:

Children's interests constitute the raw materials and determine the conditions of education. They reveal the psychological position of the learner, but do not constitute trustworthy guides to the selection of curriculum content of the di-



rection in which the learner should go. The latter responsibilities rest with the teacher. From among the wide range of children's interests, the teacher must select those which have the largest potential values for education. At each age level, the curriculum should involve activities which are within the range of children's interests or which involve interests which can be easily and appropriately aroused. Interests are acquired and may be cultivated. The cultivation of wholesome interests is one of the functions of education. (7:250)

The influence of promotion policies on pupil growth and progress

Promotion policies vary widely in the schools of this country. A recent study by Brueckner (2) of non-promotion of pupils in 49 selected elementary schools in the state of New York showed:

The percentage of non-promotion for the systems varied from 1.8 per cent to 21 per cent, with a median for all schools of 8.5 per cent. The variation was much greater for individual grades, ranging for instance, in grade 4 from a school with no failures to another school with 54 per cent failure at this grade level. These differences are typical for the country as a whole. The effects of non-promotion on pupil progress are reflected by the amount of retardation. (2:74)

In 1934 Ayer (15) reported that:

Of a group of 12,000 Texas elementary school pupils, 56 per cent had not made normal progress. Similar evidence of a high rate of retardation is given in practically every school survey that has been published in recent years. The



trend, however, is in the direction of a reduction in the amount of retardation. (15:36)

The arguments that have been most frequently advanced for non-promotion are as stated by C. W. Saunders (21):

1. Repeating the work of a given grade will assure mastery of the subject matter taught at that grade level.

2. Non-promotion will result in the formation of a group of pupils at the next grade level that is more homogenous in ability and level of attainment, and hence problems of instruction will be reduced in so far as adapting the work to individual differences is concerned.

3. The threat of non-promotion will cause the pupil to make a greater effort to learn and thus assure a higher level of attainment. (21:44)

The fallacy of these assumptions have been established by a number of important experimental studies. After an analysis of the results of these investigations, Saunders drew the following conclusions which summarize very effectively the modern views on the undesirability of a policy of non-promotion of the traditional kind:

1. Non-promotion of pupils in order to assure mastery of subject matter is not justifiable procedure. Many children who are not promoted learn less than they would have learned had they been advanced to the next grade.

2. Non-promotion does not result in homogeneity of achievement within a grade.



3. Non-promotion cannot be justified in terms of discipline administered to the child or to his parents.

4. Non-promotion is an admission of inefficient teaching, inappropriate administrative practices, and inadequate educational planning.

5. Non-promotion because of inadequate mentality, insufficient attendance, imperfect health, or lack of emotional stability is not based on valid causes or reasons.

6. Non-promotion usually intensifies emotional instability of children.

7. Non-promotion has no place in a school in which children are properly motivated and work to the level of their individual capacities. (21:44)

Means by which teachers  
may reduce pupil failure

Barr, Burton and Brueckner (1) found from a report by 555 Superintendents of schools that the best means by which teachers may reduce failure, were in the order of their importance;

1. Using achievement and diagnostic tests followed up by special help and remedial work-test for deficiencies and diagnose pupil difficulties in each subject.

2. Giving individual attention to pupil needs and interests. Teachers sufficiently interested to learn to know pupils as individuals, to show sympathetic understanding, and give individual help during class periods and in personal conferences.

3. Grouping according to ability, providing differentiated courses of study, and applying teaching methods

suitable to each ability level.

4. Keeping work within grasp of pupils.
5. Learning about pupils home conditions and securing cooperation of parents.
6. Diagnosing reading difficulties of individual pupils and giving remedial treatment.
7. Creating an esprit de corps.
8. Improving teaching methods.
9. Providing thorough, purposeful, and motivated drill for accuracy.
10. Teaching pupils how to study and how to organize their work.
11. Improving health of children.
12. Giving individual instruction.
13. Securing better school attendance.
14. Improving one's professional training while in service.
15. Apply flexible promotion standards.
16. Arrange period for special help for pupils.
17. Having pupils keep their individual records of achievement. (1:526)

#### Extra class activities

There are a number of activities, that have been classified as extra-curricular. Civic clubs, home-room organizations, pupil self-government associations, welfare, housekeeping, social committees,



safety patrol, school savings bank, the school newspaper, all-school assemblies, special-interest clubs, intramural athletics, school receptions, picnics, and parties are among those most commonly found in the school today.

Henry J. Otto says:

Without question, extra-curricular functions in that they help to round out the many-sided development of children by affording types of educative experiences difficult to provide through the subject offering of the school. Extra-curricular activities afford additional opportunities for pupils to demonstrate initiative, leadership, self-expression, and good citizenship. (6:39)

### Summary

In summarizing what the literature has obviously indicated, it is probably safe to list these factors:

1. There is a definite relationship between mental ability and retardation.
2. That the effects of health upon intellectual activity are conceded as being of great importance.
3. That the relationship of promotion policies on pupil growth and progress is supported by research in the field.
4. That reading is probably one of the most common causes of retardation.
5. That intelligence tests should be interpreted in the light of the individual's background, environment and training.

6. That aims and outcomes of the scientific attitude toward continuous promotion is being emphasized more and more by educators.



Chapter III  
METHODS AND MATERIALS

Three procedures were used in this study by the writer to ascertain the facts concerning pupil retardation in the Negro High Schools of Lockhart and Luling, Texas. The data were obtained through (1) a review of pertinent literature, (2) the administration of an intelligence test, and (3) by constructing a questionnaire.

The writer found considerable reference material relative to pupil retardation and related areas. The literature cited will serve as a "frame of reference" giving the points of view of many authorities within this field.

The Rosenwald and Carver High Schools of Luling and Lockhart, Texas, respectively, have many retarded students. Hence, the writer employed as a second technique, a psychological instrument in attempt to ascertain the psychological causes of retardation For this purpose, the Short Form of the New California Test of Mental Maturity <sup>1</sup>/<sub>was used.</sub>

1/ See Appendix A.

A third technique used in this study was the formulation and administration of a questionnaire. A questionnaire <sup>2/</sup> was designed to ascertain the extent to which certain community and educative or environmental factors may contribute to student retardation.

The preliminary form of the questionnaire was submitted to the teaching staff of the institutions involved for their analysis, suggestions, and reactions.

The questionnaire was administered to fifty-four high school students at the Rosenwald School, Luling, Texas, and to forty-five high school students at the Carver School, Lockhart, Texas.

This instrument constituted the following areas which are a part of this study: (1) Attendance, (2) Academic Progress, (3) Health, and (4) Extra-Class Activities.

Attendance.--The state of Texas provides public schools for the children. In order to take advantage of this provision, it is necessary that every child attend school regularly.

The "attendance section of the questionnaire is concerned with the distance each respondent lives from school, and the approximate number of days he works per school year.

<sup>2/</sup> See Appendix B.



Academic progress.--This section of the questionnaire was designed to determine the age of each student when he entered school; the number of years he remained in each grade; and the reasons for his retainment. In addition, this section seeks further to determine what subjects are being offered that interest the students and which subjects the students feel should be offered by the school. It also seeks to determine the parents' attitude toward school, toward their children attending school regularly, and their attitude toward non-attendance. Finally it seeks to determine how many children are living in broken homes and to determine the student's study habits and library habits.

Health.--The effects of health upon the intellect, as well as the physical vigor, activity and tone are of great importance and should be readily recognized by the teacher.

The "health" section of the questionnaire seeks to find physical handicaps, health habits practiced, and illnesses that might have caused non-attendance, mental inability or elimination.

Extra-class activities.--This section of the questionnaire will indicate some of the extra-class activities that may attract the children, and tend to keep them in school, and possibly reduce retardation. They also may cause retardation.



## Chapter IV

### ANALYSIS OF STUDY

The purpose of this study was initiated to obtain as much information as possible on the causes of student retardation in the Rosenwald and Carver High Schools of Luling and Lockhart, Texas, respectively.

#### Mental abilities

In order to obtain the above information the writer administered a general intelligence test, designed and submitted a questionnaire to the students involved, and reviewed the pertinent literature in the field that would assist in answering the problems of the study.

The New California Short-Form Test of Mental Maturity (Advanced '47) was administered to secure reliable measurement and diagnostic information on the examinees in the study. The diagnostic profile was employed to show graphically the status of each examinee in non-language, language, and total mental ages in terms of intelligence quotients. It also included the chronological age and the actual grade placement status of each person in relation to mental age. This test yielded mental



ages and three intelligence quotients for general intelligence, verbal intelligence and non-verbal intelligence.

Table 1 indicates that the arithmetical mean of Lockhart and Luling examinees were 85.6 and 88.8, respectively. The critical ratio between the two groups was found by using the formula  $CR = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{s_1^2}{N_1} + \frac{s_2^2}{N_2}}}$ . Substituting the raw data into the formula it was found that the critical ratio or difference between the two groups of students equalled 1.86.

The mean intelligence quotient (I.Q.) for the ninth and tenth grade students of Lockhart High School was 88.5 as compared to the mean I. Q. of 82.1 for the eleventh grade students and 79.6 for the twelfth grade students.

The mean I. Q.'s for the ninth and tenth grade students of Luling High School had comparable I. Q. 's to the Lockhart students of the same grades. The respective I. Q. 's for the ninth and tenth grade students of Luling High School were 87.5 and 85.

Further analysis revealed that the eleventh and twelfth grade students of Lockhart High School had the respective mean I. Q. 's of 82.1 and 79.6 as compared to the Luling High School students of the same grades, whose mean I. Q. 's were 94.9 and 91.5. The critical ratio between the twelfth grade students

of the same high schools was found to be 11.2.

The data as found in Table 1 indicates that the eleventh and twelfth grade students of Luling High School were slightly superior to those students of the same grades in the Lockhart High School.







Table 1.--INTELLIGENCE QUOTIENTS SCORES AND STATISTICS FOR NEGRO STUDENTS OF LOCKHART AND LULING HIGH SCHOOLS BASED ON THE NEW CALIFORNIA TEST OF MENTAL MATURITY (Form 47). Con't.

	LOCKHART												LULING												TOTALS											
	Grades						Grades						Grades						Grades																	
	9	10	11	12	N	%	9	10	11	12	N	%	9	10	11	12	N	%	9	10	11	12	N	%												
A.M.	86.8	86.2	82.7	79.0	85.6	86.7	87.1	94.5	91.7	88.8	87.6	86.9	89.8	85.3	87.4																					
M.	88.5	88.5	82.1	79.6	85.8	87.5	85.0	94.9	91.5	89.3	88.8	86.5	89.7	85.7	87.8																					
MD.	92.3	85.5	80.5	80.2	84.4	91.0	85.0	93.5	94.8	91.0	89.3	85.2	91.0	84.3	86.8																					
SD.	13.6	8.5	6.4	12.9	18.4	18.8	8.4	8.0	12.5	24.2	18.9	22.5	14.3	18.6	28.0																					
N.	16	11	7	9	43	20	14	11	9	54	36	25	18	18	97																					

A.M.-- Arithmetical Mean; M-- Statistical Mean; MD-- Median; SD-- Standard Deviation; N-- Number



The writer constructed a questionnaire to be administered to fifty-four high school pupils at Luling, and forty-five pupils at Lockhart. Its purpose was to determine the attendance, academic progress, family status, and the health status of the pupils. It *sought* further to ascertain whether or not extra-class activities had any bearing upon school attendance.

Distance, mode of transportation and school attendance

The first question on the questionnaire was: "How far do you live from school?" Table 2 reveals that all of the underage group in Lockhart and five of those in the Luling group live less than two miles from school. Only two of the underage pupils ride the bus to school, or live far enough from school to be eligible to ride the school bus. In the overage group at Lockhart, there were 14 pupils or 31.8 per cent who live more than two miles from school. There were 13 or 23.6 per cent of the Luling High School pupils in the overage group who lived more than two miles from school and rode the bus.



Table 2.--DISTANCES TRAVELED BY UNDER, NORMAL AND OVERAGE PUPILS OF LOCKHART AND LULING HIGH SCHOOLS.

Group	LOCKHART						LULING						TOTAL	
	Less Than 2 Miles		More Than 2 Miles		Less Than 2 Miles		More Than 2 Miles		Less Than 2 Miles		More Than 2 Miles		More Than 2 Miles	
	No.	Cent	No.	Cent	No.	Cent	No.	Cent	No.	Cent	No.	Cent	No.	Cent
Under Age	2	4.6			5	9.1	2	3.6	7	7.1	2	2.0		
Normal	5	11.4	4	9.1	12	21.8	8	14.5	17	17.2	8	8.1	4	4.04
Over-age	13	29.6	14	13.8	6	13.6	12	23.6	3	5.5	25	25.3	28	28.3
Total	20	45.5	14	31.6	10	22.7	29	52.7	23	41.8	3	5.5	49	49.5
													38	38.4
													13	13.13



Question 4 requested: "Do you work on the farm?" Table 3 reveals that 33 or 74.99 per cent of the overage pupils at Lockhart missed school from 5 to 50 days to work on the farm. There were in the overage group only 6 or 10.91 per cent of the Luling High School pupils who missed school from 11 to 50 days to work on the farm.

The latter table also indicates that 23 or 52.27 per cent of the pupils at Lockhart High School missed more than 20 days from school. Whereas, 5 or 9.09 per cent of the Luling High School pupils missed more than 20 days from school.

Seven or approximately 16 per cent of the overage pupils at Lockhart High School missed more than 50 days of school. None of the Luling High School students missed school more than 40 days.

Table 3.--UNDER, NORMAL AND OVERAGE PUPILS WHO WORK ON THE FARM IN LOCKHART AND LULING HIGH SCHOOLS.

LOCKHART	UNDERAGE		NORMAL		OVERAGE	
	No.	Per Cent	No.	Per Cent	No.	Per Cent
<u>Days Missed</u>						
None	1	2.27				
1 - 5	1	2.27	1	2.27	1	2.27
6 - 10			1	2.27	5	11.36
11 - 20			3	6.82	4	9.09
21 - 30			1	2.27	7	15.91
31 - 40					8	18.18
41 - 50			2	4.55	1	2.27
More Than- 50			1	2.27	7	15.91
<b>Total</b>	<b>2</b>	<b>4.54</b>	<b>9</b>	<b>20.45</b>	<b>33</b>	<b>74.99</b>
<u>LULING</u>						
None	6	10.91	15	27.27	22	40.00
1 - 5						
6 - 10	1	1.82	1	1.82		
11 - 20			1	1.82	1	1.82
21 - 30			2	3.64	3	5.45
31 - 40			1	1.82	2	3.64
41 - 50						
More Than- 50						
<b>Total</b>	<b>7</b>	<b>12.73</b>	<b>20</b>	<b>36.37</b>	<b>28</b>	<b>50.91</b>
<b>Grand Total</b>	<b>9</b>	<b>9.09</b>	<b>29</b>	<b>29.29</b>	<b>61</b>	<b>61.61</b>



Give the approximate number of days missed from school each year was the next question considered. The responses to this question revealed 80 per cent of the high school pupils in the Lockhart High School missed more than 10 days each year to work on the farm, and 60 per cent of the students missed more than 20 days (Table 4). Eighty-five per cent of the Luling High School pupils did not miss school to work on the farm. Only 14.5 per cent missed school to work on the farm, and none of them missed more than 40 days each year.

Table 4.--NUMBER AND PER CENT OF LOCKHART AND LULING PUPILS ABSENT FROM SCHOOL TO WORK ON FARM.

No. of days absent	Lockhart		Luling		Total	
	No.	Per Cent	No.	Per Cent	No.	Per Cent
0	1	2.27	47	85.45	48	48.48
1 - 5	2	4.55	0		2	2.02
6 -10	6	13.64	3		6	6.06
11 -20	9	20.45	5	5.45	12	12.12
21 -30	8	18.18		9.09	13	13.13
31 -40	7	15.91			7	7.07
41 -50	1	2.27			1	1.01
More than 50	10	22.73			10	10.10
Totals	44	100.00	55	99.99	99	99.99



The record of the Teacher's Daily Register of the home room teachers in Lockhart and Luling High Schools indicates the total number of days each pupil was absent from school. The registers did not give reasons for the absences of the pupils (Table 5). Table 5 gives the actual number of days each pupil was absent for any reason, whereas in Tables 3 and 4, the data were estimates given by the pupil of days missed from school to work on the farm.

Table 5.--NUMBER AND PER CENT OF 9th THROUGH 12th GRADE PUPILS OF LOCKHART AND LULING HIGH SCHOOLS ABSENT FOR ALL CAUSES FOR THE YEAR OF 1949-1950 (Teachers Daily Registers of Lockhart and Luling High Schools of 1949-50) (23).

Days Absent	Number of Pupils	Per Cent	Number of Pupils	Per Cent	Number of Pupils	Per Cent
0	1	2.3	6	10.9	7	7.1
1 - 5	6	13.6	13	23.6	19	19.2
6 -10	12	27.3	6	10.9	18	18.2
11-20	18	40.8	14	25.4	32	32.3
21-30	4	9.1	5	9.1	9	9.1
31-40	0	0	7	12.7	7	7.1
41-50	0	0	4	7.3	4	4.0
More than 50	3	6.8	0	0	3	3.0
Total	44	99.9	55	99.9	99	100.0



Academic progress

This section of the questionnaire was to obtain the number of years each pupil had spent in school, and the grade progress of each pupil in the Lockhart and Luling High Schools. Its purpose was also to determine the number of students who liked the courses being offered, and the number of students who disliked the courses being offered and their reasons for disliking them.

Table 6 reveals that 68.18 per cent of the pupils "Below Grade Level" at Lockhart High School had been in school from 9 to 14 years. The table also indicates that 65.44 per cent of the "Below Grade Level" pupils at Luling have been in school from 1 to 14 years. Fifteen or 34.09 per cent of the pupils at Lockhart High School had spent 12 to 14 years in school. Sixteen or 29.06 per cent of Luling High School pupils had spent 12 to 14 years in school.

Table 6.--NUMBER OF YEARS IN SCHOOL AND GRADE PROGRESS OF LOCKHART AND LULING HIGH SCHOOL PUPILS.

L O C K H A R T						
Years in School	Above Grade Level		Normal Grade Level		Below Grade Level	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
9	1	2.27	3	6.82	1	2.27
10	2	4.55	4	9.09	7	15.91
11	1	2.27	2	4.55	7	15.91
12			1	2.27	8	18.18
13					4	9.09
14					3	6.82
Total	4	9.09	10	22.73	30	68.18



Table 6.--NUMBER OF YEARS IN SCHOOL AND GRADE PROGRESS OF LOCKHART AND LULING HIGH SCHOOL PUPILS.--Continued.

L U L I N G						
Years in School	Above Grade Level		Normal Grade Level		Below Grade Level	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
8	1	1.82				
9			3	5.45		
10			2	3.64	11	20.00
11	2	3.64	6	10.91	9	16.36
12			5	9.09	9	16.36
13					3	5.45
14					4	7.27
Total	3	5.46	16	29.09	36	65.44
Grand Total	7	7.07	26	26.26	66	66.66

The next question considered was the age-grade distribution of the students. It was found that eleven or 57.9 per cent of the seniors of Lockhart and Luling High Schools were overage. (Table 7)

Further analysis revealed that 7 or 77.7 per cent of Lockhart pupils were overage for their grade placement. Luling had 4 high school pupils or 40 per cent of the senior class in the overage group. In both schools, there were 2 pupils who were in the proper age grade group in the twelfth grade. In Lockhart, there were no underage pupils, while in Luling, there were 4 underage pupils in the twelfth grade.

In grade eleven of Lockhart High School there was one student at the proper grade-level, whereas in Lu-



Table 7.---AGE-GRADE DISTRIBUTION FOR LOCKHART AND LULING HIGH SCHOOL PUPILS FOR THE SCHOOL YEAR OF 1949-50.

	LOCKHART						LULING						TOTAL																			
	9		10		11		12		9		10		11		12		Grade															
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%														
A							1	10.0									1	3.7														
B	3	17.7					7	35.0	1	6.7	1	9.1					10	27.0	1	4.0	1	5.3										
C	5	29.4	3	50.0	2	25.0											7	55.0	3	20.0												
D	5	29.4	3	50.0	1	12.5											5	15.0	7	46.7	3	73.7	4	40.0	3	21.6	10	40.0	9	47.4	4	21.1
E	4	23.5	1	10.0	4	50.0	2	22.2	2	10.0	2	13.3	1	9.1			2	10.0	2	13.3	1	9.1	2	20.0	6	16.2	5	12.0	5	26.5	4	21.1
F			2	20.0	1	12.5	3	33.3									2	13.3	1	9.1	1	9.1	1	10.0			4	16.0	2	10.5	4	21.0
G			1	10.0			1	11.1									1	10.0			1	10.0					1	4.0			2	10.5
H							3	33.3									3	33.3			2	10.0									5	26.3
T	17	100.0	10	100.0	8	100.0	9	99.9	20	100.0	15	99.9	11	100.0	10	100.0	37	99.9	25	100.0	19	100.0	19	100.0	57	99.9	25	100.0	19	100.0	19	100.0

X= Age; A= 13; B= 14; C= 15; D= 16; E= 17; F= 18; G= 19; H= 20; T= Total



ling High School, there were eight pupils who were in the proper grade level.

In the tenth grade, Lockhart and Luling High Schools each had 3 students who were at the proper grade level.

It was found that 32 students in the Lockhart High School liked the courses being offered, and 13 students who disliked the courses for various reasons. "Poor foundation" was listed by 5 students as the reason for their disliking the subjects. "Study Trouble," "Too difficult," "lack of understanding," and "not interesting" each were listed by 2 pupils. (Table 8).

Thirty-seven students in the Luling High School liked the courses being offered, and 18 students disliked the courses. "Poor foundation" was listed by 8 of the students, and "not interested" was listed by only 1 student.



Table 8.--ATTITUDES OF LOCKHART AND LULLING HIGH SCHOOL STUDENTS CONCERNING THE CURRICULUM.

Attitudes of Students toward the curriculum	LOCKHART		LULLING	
	Dislike Courses Number of Students	Like Courses Number of Students	Dislike Courses Number of Students	Like Courses Number of Students
Satisfied with courses		32		37
Not Interesting	2		4	
Not Interested			1	
Poor Foundation	5		8	
Comprehension	2		0	
Too Difficult	2		3	
Study Trouble	2		2	
Total	13	32	18	37



The list of courses that the students of Lockhart and Luling High Schools would like to have in their curriculum are typing, music, chemistry, science, and Spanish (Table 9).

It was found that 14 courses were desired by the students which were not offered by the high schools. Typing was listed as the first choice by 22 Lockhart High School students, music second, and chemistry third. None of the Lockhart High School students expressed a desire to take economics, physical education, and Latin.

The Luling High School students also chose typing as their first choice. Chemistry was listed as second, and music third. None of the Luling High School students wished to take French and Sociology.

Table 9.--COURSES NOT OFFERED IN THE LOCKHART AND LULING HIGH SCHOOLS DESIRED BY THE STUDENTS.

Courses Students Desire	Number of Students	
	LOCKHART	LULING
Science	4	8
Chemistry	12	15
Biology	8	
Shorthand	3	6
Typing	22	26
Music	16	12
Trigonometry	1	2



Table 9.--COURSES NOT OFFERED IN THE LOCKHART AND LULING HIGH SCHOOLS DESIRED BY THE STUDENTS.--  
Continued.

Courses Students Desire	Number of Students	
	LOCKHART	LULING
Spanish	5	7
French	1	
Latin		1
Art	4	1
Physical Edu- cation		1
Sociology	1	
Economics		1

Analysis of family status of Lockhart and Luling High School pupils revealed that 58 of the 99 pupils considered in this study were living with both parents (Table 10.)

In Lockhart High School, 23 of the pupils lived with both parents, 8 lived with the mother, 4 lived with the father, 6 lived with grandparents and 3 lived with guardians. Of those students studied in the Luling High School, 13 lived with the mother, 1 lived with the father. Four were responsible to the grandparents, and 1 lived with a guardian. Thirty-five students lived with both

parents.

Table 10.--FAMILY STATUS OF LOCKHART AND LULING HIGH SCHOOL PUPILS.

<u>Parents or Guardians</u>							
<u>School</u>	<u>Mother and Father</u>	<u>Mother</u>	<u>Father</u>	<u>Grand Parents</u>	<u>Other</u>	<u>No Ans.</u>	<u>Total</u>
Lockhart	23	8	4	6	3	0	44
Luling	35	13	1	4	1	1	55
Total	58	21	5	10	4	1	99

Reading habits of the underage, normal, and overage groups of Luling and Lockhart High School pupils were considered next on the questionnaire (Table 11).

Table 11 was made from the answers to questions 3, 5, and 6 which were as follows; (3) "Do you enjoy browsing through the books in the library?" (5) "Do you read the magazines that come to the library?" and (6) "Do you read a daily newspaper?" The following formula was used in determining what constituted extensively, occasionally, and seldom or never:



Three positive answers constituted extensively.

Two positive answers constituted occasionally.

One or no positive answers constituted seldom or never.

In the underage group, Lockhart had 2 pupils who read extensively, whereas Luling had 3 who read extensively. Luling had 2 who read occasionally, and 2 who seldom or never read. In the normal group, there were 3 Lockhart High School pupils who read extensively, 3 who read occasionally and 3 who seldom or never read. In Luling High School, there were 5 who read extensively, 9 who read occasionally, and 6 who seldom or never read. In the overage group, Lockhart High School had 6 pupils who read extensively, 13 who read occasionally, and 14 who seldom or never read. In the overage group of Luling High School, there were 5 who read extensively, 11 who read occasionally, and 12 who seldom or never read.

This section of the questionnaire was to determine the number of pupils with physical defects, and to determine whether or not these defects were or could be related to retardation.

Table 11.--READING HABITS OF UNDERAGE, NORMAL AND OVERAGE PUPILS OF LOCKHART AND LULING HIGH SCHOOLS

	LOCKHART			LULING			TOTAL											
	Exten- sively	Seldom or Never	%	Exten- sively	Seldom or Never	%	Occa- sionally	Exten- sively	Seldom or Never	%	Occa- sionally	Exten- sively	Seldom or Never	%				
No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%					
Under- age	2	4.6		3	5.5	2	3.6	5	5.1	2	2.0	2	2.02					
Normal	3	6.8	5	6.8	5	9.1	9	16.4	6	10.9	8	8.1	12	12.1	9	9.09		
Average	6	13.6	13	29.6	14	13.8	5	9.1	11	20.0	12	21.8	11	11.1	24	24.2	26	26.26
Total	11	25.0	16	36.4	17	38.6	13	23.6	22	40.0	20	36.4	24	24.2	38	38.4	37	37.37



Table 12 reveals that 36 per cent of the Lockhart High School pupils of the overage group had physical defects; whereas only 14.3 per cent of Luling High School pupils of the same group had physical defects. There were 21 overage Lockhart pupils without physical defects, and 24 Luling pupils without defects.

#### Extra class activities

Analysis of extra class activities as found on the questionnaire revealed that soft ball and basketball were the most popular activities with the high school pupils of both Lockhart and Luling High Schools (Table 13). Thirty-four Lockhart High School pupils participated in soft ball; 30 participated in basketball and 17 participated in musical activities. Debate and volleyball appeared to be the least popular of all the extra class activities. Basketball was chosen as the popular sport by 25 Luling High School pupils; soft ball chosen by 24 pupils ranked second; and volleyball ranked third in popularity with the Luling High School pupils.







Table 13.--PARTICIPATION IN EXTRA CLASS ACTIVITIES  
BY PUPILS OF LOCKHART AND LULING HIGH SCHOOLS.

School	A	B	C	D	E	F	G	H	I	J
Lockhart	3	16	0	30	2	16	34	0	17	4
Luling	7	18	21	25	7	8	24	4	16	0
Total	10	34	21	55	9	24	58	4	33	4

A = Track B = Football C = Volleyball D = Basketball  
E = Tennis F = Baseball G = Softball H = Debate  
Chorus = I J = Drama.

Further analysis of the extent to which extra-class activities had on retardation revealed that 20 or 44.4 per cent of the Lockhart High School pupils would not attend school at all if there were no extra-class activities. It was also revealed that 23 or 42.59 per cent of the Luling High School group would not attend school if there were no extra-class activities (Table 14). However, approximately 57 per cent of the students of Luling High School would not be influenced by extra class activities as compared to 56 per cent of the students of Lockhart High School.



Table 14.--INFLUENCE OF EXTRA CLASS ACTIVITIES UPON SCHOOL ATTENDANCE.

School	No. of Students Not Influenced by Ex- tra Class Activities		No. of Students Not Influenced by Ex- tra Class Activities	
	Number	Per Cent	Number	Per Cent
Lock- Hart	25	55.6	20	44.4
Luling	31	57.41	23	42.59
Total	56	56.57	43	43.43

#### Summary of findings

An analysis of the results of retardation of the high school pupils of Lockhart and Luling has been made. The following factors influencing "pupil retardation" in the high schools at Lockhart and Luling respectively are:

1. To discover the relation, if any, between mental ability and retardation.

A. The 98 students studied as a group are homogeneous, in that little or no differences were revealed in their intelligence quotients.

B. The mean I. Q. 's of the ninth and tenth grade students of Luling and Lockhart were comparable.

C. The critical ratio between the eleventh grade



students of Luling and Lockhart High Schools was found to be 2.0, and the critical ratio between the students of the twelfth grades of the same schools was 11.2.

D. The analysis revealed that the Luling High School students in the eleventh and twelfth grades were slightly superior mentally than those students of Lockhart High School in the same grades.

2. To discover the relation, if any, between distance from school, the mode of transportation and retardation.

A. All of the underage group at Lockhart, and 5 of the same group at Luling lived less than 2 miles from school.

B. In the overage group at Lockhart, there were 14 pupils or 31.82 per cent who lived more than two miles from school, and who rode the bus.

C. In the overage group at Luling, there were 28 pupils or 28.28 per cent who lived more than two miles from school, and who rode the bus.

D. Farm work causes 60 per cent of the Lockhart High School Students to miss school.

3. To discover the relation, if any, between students' interests and retardation.

A. Non attendance is a direct cause of retardation.

B. Thirty-seven or 37.37 per cent of the Lockhart and Luling High School students seldom or never read.

C. Thirteen students in the Lockhart High School



disliked the courses offered them.

D. The Lockhart and Luling High School students listed typing, chemistry, music, science, and Spanish as courses they would like to have offered to them.

4. To discover the relation, if any, between academic progress in terms of age-grade placement and retardation.

A. Sixty-six or 66.66 per cent of Lockhart and Luling High School students are "below grade level," and have been in school from 9 to 14 years.

B. Sixty-eight per cent of Lockhart's students are "Below grade level."

C. Fifty-five per cent of Luling's students are "below grade level."

5. To discover the relation, if any, between the students home and family life, and retardation.

A. Twenty-three of the Lockhart High School students lived with both parents, 12 lived with either the mother or the father, and 6 lived with their grandparents.

B. In the Luling High School group, 35 students lived with both parents, 14 lived with either the mother or father, and 4 lived with their grandparents.

6. To discover the relation, if any, between the students' physical health and retardation.

A. Thirty-six per cent of the Lockhart High School pupils were in the "overage" group and had physical defects.



B. In the Luling High School "overage" group, there were 14.29 per cent of the pupils with physical defects.

7. To discover the relation, if any, between the extent of pupil participation in extra-class activities and retardation.

A. Thirty-four Lockhart High School pupils participated in softball, 30 participated in basketball, and 17 participated in musical activities.

B. In the Luling High School group, 25 pupils participated in basketball, 24 pupils participated in softball, and volleyball ranked third in popularity.

C. Forty-three or 43.43 per cent of both Lockhart and Luling High School pupils would not attend school if there were no extra-class activities.

Chapter V  
DISCUSSION

As previously stated, the test results obtained from the "Short-Form New California Test of Mental Maturity '49" provided data for this study. The questionnaire constructed provided additional information needed. In this chapter, the writer will discuss the data as analyzed from the previous chapter in conjunction with the related literature as presented in Chapter II.

To discover the relation, if any, between mental ability and retardation

The 98 students studied as a group were homogeneous in that, little or no differences were revealed in their intelligence quotients. The arithmetical mean of Lockhart and Luling examinees were 85.6 and 88.8 respectively. A hypothesis based upon the assumption that there was a difference in the mean intelligence quotients of the students of the two schools was used. The critical ratio, found by using the formula  $CR = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{\sigma_1^2}{N_1} + \frac{\sigma_2^2}{N_2}}}$  showed that the difference was 1.86. The hypothesis was rejected, thus,



the composite intelligence quotients revealed little or no difference between the two groups of examinees of Luling and Lockhart.

The mean intelligence quotients of the ninth and tenth grades of Luling and Lockhart High Schools were comparable. The critical ratio between these two groups revealed little or no difference; hence, another hypothesis was set up in that there was no difference in the mean intelligence quotients of the eleventh grade students. This hypothesis also had to be rejected, after finding that the critical ratio was 2.0. Further analysis revealed that the critical ratio of the twelfth grade students of the same schools was 11.2. The Luling High School students of the eleventh and twelfth grades were found to be slightly superior to those students of the Lockhart High School in the same grades.

To discover the relation, if any, between distance from school, the mode of transportation, and retardation.

In this investigation, it was rather evident that distance from school, and the mode of transportation contributed largely to retardation. All of the under age group at Lockhart, and 5 of the same group at Luling lived less than two miles from school. In the "overage" group at Luling, there were



28 pupils or 28.28 per cent who lived more than two miles from school, and who rode the bus. Non-attendance is a contributing factor in retardation as this study has revealed. Those students who lived more than two miles from school, and who depended upon bus transportation to and from school were overage, and retarded to a greater extent than those who lived less than two miles from school, and who did not depend upon bus transportation.

Further analysis revealed that farm work caused 60 per cent of the Lockhart High School students to have poor school attendance. Only 6 or 10.91 per cent of the Luling High School students missed school to work on the farm. The difference may be that the Luling High School students' parents might be more financially secure than those parents of the Lockhart region. Even though the Luling High School students did not miss many days from school working on the farm, a sharp contrast was shown in Table 4, that 33 Luling students missed more than 10 days from school each year. It was shown also that many students missed school for reasons other than to work on the farm.

To discover the relation, if any, between students' interest and retardation.

It was clearly shown that many students missed school for reasons other than to work on the farm. Lack



of interest was the interpretation of the writer for so many absentees from both schools.

There appears to be a definite relation between the reading habits and retardation in the Lockhart and Luling High Schools in that the data revealed that 37.37 per cent of the Lockhart and Luling High School students seldom or never read. These data are significant in that many students of both Lockhart and Luling High Schools are not interested in reading.

A further analysis indicated that the Lockhart and Luling High School students did not like many of the courses offered in the curriculum. Thirteen students in the Lockhart High School disliked the courses, and 18 Luling High School students disliked the courses offered them. Both groups, Lockhart and Luling listed typing, chemistry, science, music, and Spanish as some of the courses which they desire to take.

To discover the relation, if any, between academic progress in terms of age-grade placement and retardation.

This investigation revealed that 68.18 per cent of the students in the "below grade level" at Lockhart High School had been in School from 9 to 14 years, and 55 per cent of the Luling "below grade level"



group had been in school from 10 to 14 years. Further analysis revealed that 15 or 34.09 per cent of the students at Lockhart had spent 12 to 14 years in school, whereas, 16 or 29.08 per cent of the Luling High School students had spent 12 to 14 years in school. It is noticeable that Lockhart High School had 13 per cent more students in the "below grade level" than Luling High School.

To discover the relation, if any, between the students' home, and family life, and retardation.

A similarity was shown in the family status of the Lockhart and Luling High School groups in that 58 of the 99 students considered in this study lived with both parents. Twenty-three students of the Lockhart High School lived with both parents, 12 lived with either the mother or the father and 6 lived with their grandparents. In the Luling High School group, 35 students lived with both parents, 14 lived with either the mother or the father, and 4 lived with their grandparents. The Lockhart and Luling groups had only 4 pupils who lived with other guardians. Hence, the family status of the Lockhart and Luling High School students appears to be satisfactory, as well as similar, in that most of them lived with members of their immediate families.



To discover the relation, if any, between the students, physical health, and retardation.

It was rather evident, in this study, that physical defects were definitely related to retardation. Thirty-six per cent of the Lockhart High School "over age" students had physical defects, and only 14.29 per cent of the same group at the Luling High School had physical defects. The above findings indicate that the Luling "over age" groups physical health was better than the same group of students at Lockhart. Also, Lockhart and Luling High Schools' "over age" groups had many students who did not have any physical defects.

To discover the relation, if any, between the extent of pupil participation in extra-class activities and retardation.

The fact that extra-class activities play an important part in the school curriculums of the Luling and Lockhart High Schools, is confirmed by all of the students of both groups participating in at least one extra-class activity. Thirty-four Lockhart High School pupils participated in softball, 30 participated in basketball, and 17 participated in music activities. In the Luling High School group 25 pupils participated in basketball, 24 participated in softball, and volleyball ranked third in popularity. The



above findings indicate that softball, basketball, volleyball, and musical activities were the favorite extra-class activities of both Luling and Lockhart High School students. Further analysis of this investigation revealed that 43 pupils or 43.43 per cent of the Luling and Lockhart High School pupils would not attend school at all if there were no extra-class activities in the curriculum. The importance of extra-class activities in the curriculum, provides additional outlets for the students. Apparently, extra-class activities induce some of the students to attend school who would otherwise remain at home.



## Chapter VI

### SUMMARY

To secure data for this study, the "New California Test of Mental Maturity Short-Form '47" was administered to 98 high school students of the Rosenwald School, Luling, Texas, and Carver School, Lockhart, Texas. A questionnaire was also constructed and administered to 99 students of the same schools.

The data obtained from the examinees and respondents were used to determine the factors influencing pupil retardation. The problem of this study encompassed several inter-related aspects:

1. To discover the relation, if any, between mental ability and retardation.
2. To discover the relation, if any, between the distance from school and the mode of transportation, and retardation.
3. To discover the relation, if any, between the students' interests and retardation.
4. To discover the relation, if any, between the students' home, family life, and

retardation.

5. To discover the relation, if any, between academic progress in terms of age-grade placement and retardation.

6. To discover the relation, if any, between the students' physical health and retardation.

7. To discover the relation, if any, between the extent of student participation in extra-class activities and retardation.

The information and data obtained from these students provided partial answers to the basic problems of this study.

### Findings

#### The relationship between mental ability and retardation.

1. The 99 students who were studied as a group were homogeneous.
2. The mean intelligence quotients of the ninth and tenth grade students of Lockhart and Luling High Schools were comparable.
3. The eleventh and twelfth grade students of Luling High School were found to be slightly superior in mental ability to those students of Lockhart High School of the same



grades.

The relationship between distance and mode of transportation to retardation.

1. Most of the "overage" students at both schools lived more than 2 miles from school, and rode the bus.

2. All of the "underage" students at Lockhart, and 5 at Luling live less than 2 miles from school and do not ride the bus.

3. Farm work causes 60 per cent of the Lockhart High School students to miss school.

4. Non-attendance is a direct cause of retardation at Lockhart and Luling High School.

The relationship between students' interest and retardation.

1. The Lockhart and Luling High School students are not interested in reading.

2. Thirty-one students of the Lockhart and Luling High Schools did not like the subjects offered them.

3. Chemistry, typing, science, music, and Spanish were listed by the students of both schools, as subjects they desired to take.



The relationship between family life of students and retardation.

1. The family status of the Lockhart and Luling High School pupils was similar and satisfactory.

2. Most of the students of both schools lived with members of their immediate families.

The relationship of age - grade placement and retardation.

1. Sixty-six pupils or 66.66 per cent of the Lockhart and Luling High School students are "below grade level," and have been in school from 9 to 14 years.

2. Lockhart had 13 per cent more of her students in the "below grade level" than her neighboring school had.

The relationship of health and retardation.

1. Thirty-six per cent of the "overage" group at Lockhart, and 14.29 per cent of the same group at Luling had physical defects.

2. More than two-thirds of the "overage" group of each school had no physical defects.

The relationship of extra-class activities and retardation.

1. All of the pupils of Lockhart and Luling participated in at least one extra-class activity.



2. Forty-three or 45.43 per cent of the Lockhart and Luling High School students would not attend school at all if there were no extra-class activities provided in the curriculum.

### Recommendations

The findings, as a result of the analysis of the data obtained from this study have been presented and the following recommendations are proposed to correct the inadequacies as are found in Lockhart and Luling High Schools.

1. That additional research be extended in a problem similar to the one investigated by the writer in which a larger sample is used.

2. That adequate bus transportation be provided for those pupils who live more than two miles from school.

3. That special teachers be provided for the retarded children with physical defects.

4. That the administrators of Lockhart and Luling High Schools introduce the "Split-Session" period of enrollment into both sys-

tems, in lieu of the regular month session. Thereby, reducing absenteeism of students who are compelled to work on the farm with their parents.

5. That provisions for larger and better equipped school libraries be given to the high schools concerned in the study.

6. That the libraries be staffed with adequate personnel to satisfy the needs of the schools.

7. To offer a variety of courses in the curriculum to fit the needs and interests of the students.

8. A county-wide health program should be provided, which should include the services of a county nurse and doctor.



## APPENDIX

## APPENDIX TABLE OF CONTENTS

Appendix		Page
A	THE NEW CALIFORNIA TEST OF MENTAL MATURITY 1947 SHORT FORM AS ADMINISTERED TO LOCKHART AND LULING HIGH SCHOOL STUDENTS.....	80
B	QUESTIONNAIRE ADMINISTERED TO LOCKHART AND LULING HIGH SCHOOL STUDENTS.....	89
C	MASTER SHEET FOR DATA ON THE CALIFORNIA MENTAL MATURITY TEST ADMINISTERED TO LOCKHART AND LULING HIGH SCHOOL STUDENTS.....	96
D	MASTER SHEET FOR DATA ON THE QUESTIONNAIRE ADMINISTERED TO THE LOCKHART AND LULING HIGH SCHOOL STUDENTS.....	98



APPENDIX A.--THE NEW CALIFORNIA  
TEST OF MENTAL MATURITY AS  
ADMINISTERED TO LOCKHART AND  
LULING HIGH SCHOOL STUDENTS.



# NEW CALIFORNIA SHORT-FORM TEST OF MENTAL MATURITY

## ADVANCED '47 S-FORM

Devised by Elizabeth T. Sullivan, Willis W. Clark, and Ernest W. Tiegs

Name..... Occupation or Grade.....

Date..... Age..... Birthday..... Sex: M-F

Instructor or Examiner..... Business or Institution.....

TEST FACTORS	Possible Score	Examinee's Score	Mo. Yr.	DIAGNOSTIC PROFILE (Chart scores here)												Percentile Rank								
				Mental Age																				
				120	132	144	156	168	180	192	204	216	228	240	300		360							
				10	11	12	13	14	15	16	17	18	19	20	25	30								
Spatial Relationships . . .	35			10		15			20			25			30	35								
1. Sensing Right and Left*	20	*		10	11	12	13	14	15	16	17	18	19		20									
2. Manipulation of Areas*	15	*		2		3		4		5	6	7	8	9	10	11	12	13	14	15				
Logical Reasoning . . .	30					10			15			20			25			30						
3. Similarities*	15	*		6		7		8		9		10		11	12	13	14							
4. Inference . . . . .	15			2	3	4	5	6	7	8	9	10	11	12	13	14	15							
Numerical Reasoning . . .	30			5					10			15			20		25	30						
5. Number Series*	15	*		2			3		4		5	6	7	8	9	10	15							
6. Numerical Quantity . .	15			3		4		5		6		7	8	9	10	11	12	13	14	15				
Vocabulary (Test 7) . . .	50			1	2	5	6	7	8	9	10	11	12	13	14	15	20	25	30	40	45	48		
Total Mental Factors . . .	145			21	27	33	40		48		56		64		71		78	85	92		122	140		
Language Factors . . . . .	80			5	8	10		14		18		23		28		33		37	42	46		66	77	
(4+6+7)																								
Non-Language Factors . . .	65			16	19	22		26		30		33		36		38		41	43	46		56	63	
(1+2+3+5)																								
Chronological Age . . . .				120	132	144	MOS.	156		168		180		192		204		216	228	240		300	360	
Actual Grade Placement				10	11	12	YEARS	13		14		15		16		17		18	19	20		25	30	
Grade examinee is in.				5.0	6.0	7.0		8.0		9.0		10.0		11.0		12.0		13.0	14.0	16.0				
				10	11	12		13		14		15		16		17		18	19	20		25	30	
				120	132	144		156		168		180		192		204		216	228	240		300	360	

\*Non-Language Tests

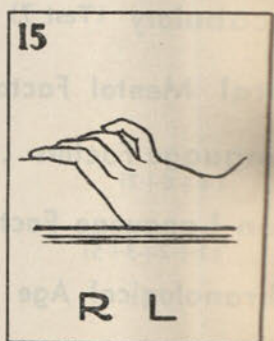
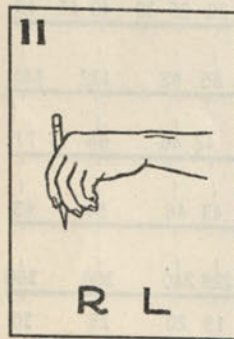
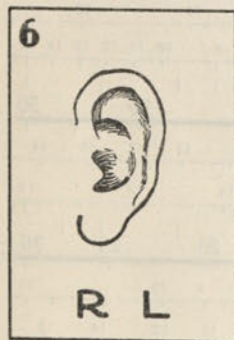
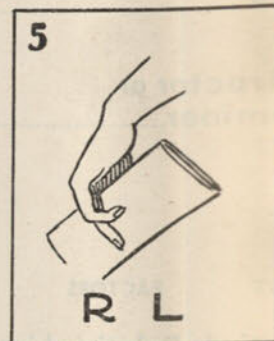
SUMMARY OF DATA	Score	M. A.	÷	C. A.	=	I. Q.
Total Mental Factors . . .	_____	_____		_____		_____
Language Factors . . . . .	_____	_____		_____		_____
Non-Language Factors . . .	_____	_____		_____		_____



TEST 1.

Directions: Put a circle around the letter R in all rights. Put a circle around the letter L in all lefts.

82



Test 1. Score (number right) .....



Directions: In each row find a drawing that is either the same drawing or different views of the first drawing. Put an X on the line under this drawing and put the number of the drawing you mark on the line to the right.

A

1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_ 4 \_\_\_\_\_ A

1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_ 4 \_\_\_\_\_ 1

2

1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_ 4 \_\_\_\_\_ 2

3

1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_ 4 \_\_\_\_\_ 3

4

1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_ 4 \_\_\_\_\_ 4

5

1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_ 4 \_\_\_\_\_ 5

6

1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_ 4 \_\_\_\_\_ 6

7

1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_ 4 \_\_\_\_\_ 7

8

1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_ 4 \_\_\_\_\_ 8

9

1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_ 4 \_\_\_\_\_ 9

10

1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_ 4 \_\_\_\_\_ 10

11

1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_ 4 \_\_\_\_\_ 11

12

1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_ 4 \_\_\_\_\_ 12

13

1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_ 4 \_\_\_\_\_ 13

14

1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_ 4 \_\_\_\_\_ 14

15

1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_ 4 \_\_\_\_\_ 15

Test 2. Score (number right).....



Directions: The first three objects in each row are alike in some way. Find another object in the same row that belongs with them. Put an X on the line under it and put the number of the object you mark on the line to the right.

<p>A</p>  <p>1 _____ 2 _____ 3 _____ 4 _____ A</p>	 <p>1 _____ 2 _____ 3 _____ 4 _____</p>	<p>8</p>  <p>1 _____ 2 _____ 3 _____ 4 _____</p>	 <p>1 _____ 2 _____ 3 _____ 4 _____</p>
<p>1</p>  <p>1 _____ 2 _____ 3 _____ 4 _____ 1</p>	 <p>1 _____ 2 _____ 3 _____ 4 _____</p>	<p>9</p>  <p>1 _____ 2 _____ 3 _____ 4 _____</p>	 <p>1 _____ 2 _____ 3 _____ 4 _____</p>
<p>2</p>  <p>1 _____ 2 _____ 3 _____ 4 _____ 2</p>	 <p>1 _____ 2 _____ 3 _____ 4 _____</p>	<p>10</p>  <p>1 _____ 2 _____ 3 _____ 4 _____</p>	 <p>1 _____ 2 _____ 3 _____ 4 _____</p>
<p>3</p>  <p>1 _____ 2 _____ 3 _____ 4 _____ 3</p>	 <p>1 _____ 2 _____ 3 _____ 4 _____</p>	<p>11</p>  <p>1 _____ 2 _____ 3 _____ 4 _____</p>	 <p>1 _____ 2 _____ 3 _____ 4 _____</p>
<p>4</p>  <p>1 _____ 2 _____ 3 _____ 4 _____ 4</p>	 <p>1 _____ 2 _____ 3 _____ 4 _____</p>	<p>12</p>  <p>1 _____ 2 _____ 3 _____ 4 _____</p>	 <p>1 _____ 2 _____ 3 _____ 4 _____</p>
<p>5</p>  <p>1 _____ 2 _____ 3 _____ 4 _____ 5</p>	 <p>1 _____ 2 _____ 3 _____ 4 _____</p>	<p>13</p>  <p>1 _____ 2 _____ 3 _____ 4 _____</p>	 <p>1 _____ 2 _____ 3 _____ 4 _____</p>
<p>6</p>  <p>1 _____ 2 _____ 3 _____ 4 _____ 6</p>	 <p>1 _____ 2 _____ 3 _____ 4 _____ 14</p>	<p>14</p>  <p>1 _____ 2 _____ 3 _____ 4 _____</p>	 <p>1 _____ 2 _____ 3 _____ 4 _____</p>
<p>7</p>  <p>1 _____ 2 _____ 3 _____ 4 _____ 7</p>	 <p>1 _____ 2 _____ 3 _____ 4 _____ 15</p>	<p>15</p>  <p>1 _____ 2 _____ 3 _____ 4 _____</p>	 <p>1 _____ 2 _____ 3 _____ 4 _____</p>

Test 3. Score (number right).....



**Directions:** Read each group of statements and draw a line under the correct logical answer. Write the number of this answer on the line to the right.

0. All four-footed creatures are animals.  
All horses are four-footed. Therefore

- <sup>1</sup> Creatures other than horses can walk
- <sup>2</sup> All horses can walk
- <sup>3</sup> All horses are animals

3 0

1. Elm Street is parallel to Oak Street.  
Oak Street is parallel to Palm Avenue.  
Therefore

- <sup>1</sup> Elm Street crosses Palm Avenue
- <sup>2</sup> Palm Avenue is longer than Elm Street
- <sup>3</sup> Elm Street is parallel to Palm Avenue

\_\_\_\_\_ 1

2. George Washington was a skillful general.  
George Washington was President of the  
United States. Therefore

- <sup>1</sup> Skillful generals make good presidents
- <sup>2</sup> A President of the United States was a skillful general
- <sup>3</sup> Good presidents make skillful generals

\_\_\_\_\_ 2

3. If he steers toward the land he will be  
wrecked; and if he steers toward the open sea  
he will be wrecked; but, he must steer either  
toward the land or toward the open sea.  
Therefore

- <sup>1</sup> He should head for the open sea
- <sup>2</sup> The coast is dangerous for ships
- <sup>3</sup> He will be wrecked

\_\_\_\_\_ 3

4. If the wind changes it will either grow  
warmer or it will storm.  
The wind does not change. Therefore

- <sup>1</sup> It will probably grow warmer
- <sup>2</sup> The conclusion is uncertain
- <sup>3</sup> It will not grow warmer nor will it storm

\_\_\_\_\_ 4

5. X is younger than Y.  
Y is younger than Z. Therefore

- <sup>1</sup> Y is younger than X
- <sup>2</sup> X is younger than Z
- <sup>3</sup> Y has lived longer than Z

\_\_\_\_\_ 5

6. All circles are round figures.  
The figure is not round. Therefore

- <sup>1</sup> It is oval
- <sup>2</sup> It is either a square or a triangle
- <sup>3</sup> It is not a circle

\_\_\_\_\_ 6

7. A is situated to the east of B.  
B is situated to the east of C. Therefore

- <sup>1</sup> C is situated close to A
- <sup>2</sup> A is situated to the east of C
- <sup>3</sup> C is nearer to A than to B

\_\_\_\_\_ 7

8. If he is to complete his high school course,  
he must avoid wasting his energy and his  
money.

But he will not avoid wasting his energy, or he  
will not avoid wasting his money. Therefore

- <sup>1</sup> He will not complete his high school course
- <sup>2</sup> He will be sorry some day
- <sup>3</sup> He should be criticized for not doing better

\_\_\_\_\_ 8

9. If the students are in error, your refusal to  
listen to their side is unreasonable.  
If they are not in error, your refusal is unjust.  
But, the students are in error or they are not.  
Therefore

- <sup>1</sup> Your refusal is justifiable
- <sup>2</sup> Your refusal is either unreasonable or it is unjust
- <sup>3</sup> Your refusal may be reconsidered later

\_\_\_\_\_ 9

10. Three boys are up on a ladder,  
Tom is farther up the ladder than Paul.  
Jim is farther up than Tom.

Which boy is in the middle position on the  
ladder?

- <sup>1</sup> Tom
- <sup>2</sup> Paul
- <sup>3</sup> Jim

\_\_\_\_\_ 10

11. A is either B or C or D.  
A is not B. Therefore

- <sup>1</sup> A is C
- <sup>2</sup> A is either C or D
- <sup>3</sup> The conclusion is uncertain

\_\_\_\_\_ 11

12. If he were loyal he would not speak un-  
kindly of his family in earnest.

If he were wise he would not speak unkindly  
of them in jest.

Either he speaks unkindly in earnest or in jest.  
Therefore

- <sup>1</sup> He is either not loyal or not wise
- <sup>2</sup> He is unkind
- <sup>3</sup> The conclusion is uncertain

\_\_\_\_\_ 12

13. If A is B, E is F; if C is D, G is H.  
Either A is B or C is D. Therefore

- <sup>1</sup> A is F or C is H
- <sup>2</sup> Either E is F or G is H
- <sup>3</sup> The conclusion is uncertain

\_\_\_\_\_ 13

14. A is between B and C.  
B is between C and D. Therefore

- <sup>1</sup> A is not between C and D
- <sup>2</sup> A is between B and D
- <sup>3</sup> A is nearer to B than to D

\_\_\_\_\_ 14

15. Five cities (P, Q, R, S, and T) are in the  
same state. S is between P and Q. T is between  
P and S. R is the same distance from P and T  
and S is the same distance from P and Q.  
Therefore

- <sup>1</sup> Q is nearer to T than to S
- <sup>2</sup> R is nearer to Q than to P
- <sup>3</sup> T is nearer to P than to Q

\_\_\_\_\_ 15



Directions: In each row of numbers below, there is one that is wrong. Find this wrong number among the answer numbers on the right, and write its letter on the line to the right. In Sample A, the wrong number is 9, so letter *c* is written on the line to the right.

Sample:

- A. 2 4 6 8 9 10
- (1). 18 15 13 12 9 6 3
- (2). 1/2 0 1 2 4 8 16
- (3). 4 5 7 10 11 13 14 16 17 19
- (4). 56 49 43 38 35 34 31 29
- (5). 7 9 10 13 16 19
- (6). 27 25 22 17 12 7
- (7). 3 5 6 11 12 14 15 19 20 21
- (8). 37 34 31 29 27 24 22 21 19
- (9). 1 2 4 7 11 15 16 22
- (10). 18 21 19 22 20 22 23 21 24

Answers

- A. a 10 b 6 c 9 d 2 e 8 C A
- a 13 b 12 c 6 d 3 e 9 \_\_\_\_\_ 1
- a 1 b 1/2 c 0 d 8 e 16 \_\_\_\_\_ 2
- a 16 b 5 c 19 d 17 e 14 \_\_\_\_\_ 3
- a 31 b 38 c 35 d 29 e 43 \_\_\_\_\_ 4
- a 10 b 9 c 13 d 7 e 19 \_\_\_\_\_ 5
- a 27 b 22 c 25 d 12 e 17 \_\_\_\_\_ 6
- a 19 b 21 c 15 d 14 e 20 \_\_\_\_\_ 7
- a 31 b 27 c 21 d 37 e 22 \_\_\_\_\_ 8
- a 22 b 7 c 15 d 1 e 16 \_\_\_\_\_ 9
- a 18 b 23 c 21 d 20 e 22 \_\_\_\_\_ 10

Go right on with the following until told to stop. In each row of numbers below, the numbers increase or decrease in accordance with a definite series of whole numbers. Decide what numbers are missing, find them among the answers at the right, and write the letter of your choice for the correct answer on the line to the right. In Sample B, the missing numbers are 4, 12, so letter *c* is written on the line to the right.

Sample:

- B. 2 .... 7 9 .... 14 17
- (11). 15 16 18 .... 21 .... 24 25 ....
- (12). 17 19 .... .... 23 .... 26 28 29
- (13). 27 29 .... 28 .... 27 24 .... 23
- (14). 60 .... 55 51 49 .... .... 40 37
- (15). 48 .... 44 41 .... 36 34 .... 28

Answers

- a 3, 11 b 4, 11 c 4, 12 d 5, 11 e 3, 12 C B
- a 20, 23, 27 b 19, 22, 27 c 19, 23, 29  
d 20, 22, 26 e 19, 23, 27 \_\_\_\_\_ 11
- a 21, 22, 24 b 20, 21, 25 c 20, 21, 24  
d 20, 22, 25 e 21, 22, 25 \_\_\_\_\_ 12
- a 22, 24, 26 b 21, 25, 27 c 22, 25, 26  
d 25, 26, 25 e 26, 25, 26 \_\_\_\_\_ 13
- a 57, 45, 43 b 59, 45, 42 c 58, 46, 42  
d 58, 45, 42 e 56, 46, 41 \_\_\_\_\_ 14
- a 46, 38, 31 b 45, 39, 30 c 46, 39, 31  
d 47, 38, 42 e 47, 39, 30 \_\_\_\_\_ 15

Test 5, Score (number right).....



Directions: Work these problems on a blank sheet of paper. Write the letter of the answer on the line to the right. The correct answer for the first problem (A) is b.

- A. If a man earned \$25.00 and spent \$10.00, how much money did he have left?  
 Ans.: a \$5 b \$15 c \$20 d \$10  b  A
1. How many picture post cards can you buy for 15 cents at the rate of 3 for 5 cents?  
 Ans.: a 9 b 3 c 15 d 34  c  1
2. How many feet of railroad track can be laid with 750 ties if 25 ties are needed for each 50 feet?  
 Ans.: a 1250 b 1500 c 325 d 30  c  2
3. What number if multiplied by 3, is 2 times 9?  
 Ans.: a 3 b 9 c 18 d 6  c  3
4. A sample rug is 12 inches long and 9 inches wide. How long will a larger rug of the same proportions be if it is 36 inches wide?  
 Ans.: a 108 in. b 48 in. c 15 in. d 36 in.  a  4
5. What is the number which if divided by 4, is  $\frac{1}{6}$  of 72?  
 Ans.: a 12 b 18 c 48 d 3  a  5
6. A high school student borrowed \$75.00 for one year at 6% to start a chicken ranch. How many little chickens must he sell at 10 cents each to pay back the money he borrowed with interest?  
 Ans.: a 45 b 450 c 750 d 795  b  6
7. A dealer allowed an old customer a discount of 10% on the marked price of book cases. What is the marked price of a book case for which this customer paid him \$36.00?  
 Ans.: a \$40 b \$32.40 c \$3.60 d \$39.60  a  7
8. A circular flower bed 7 feet in diameter is to be bordered by plants set one foot apart. What will be the cost of the plants at the rate of 2 for 15 cents? (Circumference of a circle is about  $3\frac{1}{7}$  times the diameter.)  
 Ans.: a 52¢ b \$1.65 c 70¢ d \$1.57 $\frac{1}{2}$   b  8
9. A man placed four stepping stones one foot square in a row in a section of his garden so that there were equal spaces on all four sides of each of the stones. If the section was 3 feet wide, how long was it?  
 Ans.: a 12 ft. b 3 ft. c 9 ft. d 8 ft.  a  9

10. Ben lives 1.5 miles east of the library. James lives 2.5 miles directly west of the library. On a scale of  $\frac{1}{2}$  inch = 1 quarter mile, how many inches will represent the distance between the boys' houses?  
 Ans.: a 8 in. b 16 in. c 6 in. d 2 in.  b  10
11. What is the number which if added to 5 is 3 less than  $\frac{1}{3}$  of  $\frac{3}{5}$  of 60?  
 Ans.: a  $\frac{1}{2}$  b 9 c 4 d 12  c  11
12. A gallon of water weighs 8.4 pounds. A gallon of gasoline weighs 68 per cent as much as a gallon of water. A pilot flying the air mail carried 50 gallons. How many pounds did this gasoline weigh?  
 Ans.: a 285 b 285.6 c 278.6 d 380  b  12
13. A coffee shop buys a blend of coffee composed of  $\frac{2}{3}$  of Grade A at 60 cents a pound and  $\frac{1}{3}$  of Grade B at 30 cents a pound. If they change the mixture, using  $\frac{1}{3}$  of Grade A and  $\frac{2}{3}$  of Grade B, how much will they save on every 10 pounds of coffee?  
 Ans.: a 3¢ b 10¢ c 30¢ d \$1.00  a  13
14. A man's will provides that his estate of \$15,000.00 should be divided as follows:  $\frac{2}{5}$  to his wife and  $\frac{1}{5}$  each to three children, except that in the event any of the children were deceased, their share should be divided equally between the remaining children and the wife. Two children were killed in an automobile accident. How much did the remaining child receive from the estate?  
 Ans.: a  $\frac{1}{5}$  b \$6000.00 c \$4500 d \$5000  b  14
15. If a set of tires for one automobile costs one-half of what a set costs for another automobile; and if three sets of the cheaper tires last only as long as two sets of the more expensive kind, the total cost of the cheaper tires during a given period will average what fraction or per cent of the cost of the more expensive kind?  
 Ans.: a  $\frac{1}{3}$  or 33 $\frac{1}{3}$ % b  $\frac{1}{2}$  or 50%  
 c  $\frac{3}{4}$  or 75% d  $1\frac{1}{2}$ %  c  15



Directions: Draw a line under the word which means the same or about the same as the first word. Write the number of this word on the line to the right, as:

- |                  |                |                 |   |    |
|------------------|----------------|-----------------|---|----|
| 0. blossom       | 1 tree         | 2 vine          |   |    |
|                  | 3 flower       | 4 garden        | 3 | 0  |
| 1. inefficient   | 1 avoidable    | 2 quarrelsome   |   |    |
|                  | 3 incompetent  | 4 unruly        |   | 1  |
| 2. confiscate    | 1 assert       | 2 seize         |   |    |
|                  | 3 compile      | 4 comfort       |   | 2  |
| 3. malign        | 1 insure       | 2 muffle        |   |    |
|                  | 3 slander      | 4 invade        |   | 3  |
| 4. whimsical     | 1 accurate     | 2 fashionable   |   |    |
|                  | 3 weighty      | 4 fanciful      |   | 4  |
| 5. avarice       | 1 virtue       | 2 prominence    |   |    |
|                  | 3 greed        | 4 honor         |   | 5  |
| 6. eradicate     | 1 destroy      | 2 vacate        |   |    |
|                  | 3 use          | 4 solve         |   | 6  |
| 7. impeachment   | 1 precedent    | 2 settlement    |   |    |
|                  | 3 resignation  | 4 accusation    |   | 7  |
| 8. discordant    | 1 clashing     | 2 despondent    |   |    |
|                  | 3 unsteady     | 4 distinctive   |   | 8  |
| 9. titanic       | 1 reddish      | 2 acid          |   |    |
|                  | 3 large        | 4 ancient       |   | 9  |
| 10. edict        | 1 decree       | 2 diction       |   |    |
|                  | 3 sovereign    | 4 edition       |   | 10 |
| 11. recumbent    | 1 cumbersome   | 2 curved        |   |    |
|                  | 3 reclining    | 4 saving        |   | 11 |
| 12. caprice      | 1 action       | 2 whim          |   |    |
|                  | 3 capture      | 4 tact          |   | 12 |
| 13. expedite     | 1 expel        | 2 dictate       |   |    |
|                  | 3 delay        | 4 hasten        |   | 13 |
| 14. loquacious   | 1 talkative    | 2 logical       |   |    |
|                  | 3 legal        | 4 delicious     |   | 14 |
| 15. idiosyncrasy | 1 irritability | 2 peculiarity   |   |    |
|                  | 3 office       | 4 imbecility    |   | 15 |
| 16. perfidious   | 1 treacherous  | 2 fragrant      |   |    |
|                  | 3 studious     | 4 responsible   |   | 16 |
| 17. artifice     | 1 artless      | 2 hate          |   |    |
|                  | 3 definition   | 4 device        |   | 17 |
| 18. anomaly      | 1 ceremony     | 2 illness       |   |    |
|                  | 3 irregularity | 4 normal        |   | 18 |
| 19. reciprocal   | 1 charming     | 2 mutual        |   |    |
|                  | 3 agreeable    | 4 meditative    |   | 19 |
| 20. travesty     | 1 burlesque    | 2 tragedy       |   |    |
|                  | 3 meeting      | 4 hotel         |   | 20 |
| 21. obtuse       | 1 pointed      | 2 reversible    |   |    |
|                  | 3 blunt        | 4 objectionable |   | 21 |
| 22. abstemious   | 1 stormy       | 2 excessive     |   |    |
|                  | 3 mournful     | 4 temperate     |   | 22 |
| 23. tangent      | 1 blend        | 2 agent         |   |    |
|                  | 3 touching     | 4 sensing       |   | 23 |
| 24. extraneous   | 1 extra        | 2 foreign       |   |    |
|                  | 3 transparent  | 4 noisy         |   | 24 |
| 25. erudite      | 1 crude        | 2 learned       |   |    |
|                  | 3 rugged       | 4 polite        |   | 25 |
| 26. ameliorate   | 1 improve      | 2 harden        |   |    |
|                  | 3 dilute       | 4 decorate      |   | 26 |
| 27. malapert     | 1 sick         | 2 lazy          |   |    |
|                  | 3 slow         | 4 saucy         |   | 27 |
| 28. opulence     | 1 jewel        | 2 generosity    |   |    |
|                  | 3 wealth       | 4 honor         |   | 28 |
| 29. urbanity     | 1 loyalty      | 2 refinement    |   |    |
|                  | 3 weakness     | 4 barbarism     |   | 29 |
| 30. propinquity  | 1 nearness     | 2 curiosity     |   |    |
|                  | 3 diligence    | 4 propriety     |   | 30 |
| 31. trajectory   | 1 court        | 2 project       |   |    |
|                  | 3 area         | 4 curve         |   | 31 |
| 32. corollary    | 1 crown        | 2 inference     |   |    |
|                  | 3 enclosure    | 4 supersede     |   | 32 |
| 33. ostensible   | 1 actual       | 2 available     |   |    |
|                  | 3 genuine      | 4 pretended     |   | 33 |
| 34. salient      | 1 salty        | 2 outstanding   |   |    |
|                  | 3 merciful     | 4 agreeable     |   | 34 |
| 35. probity      | 1 uprightness  | 2 interference  |   |    |
|                  | 3 suspicion    | 4 weight        |   | 35 |
| 36. acephalous   | 1 false        | 2 warlike       |   |    |
|                  | 3 headless     | 4 sensible      |   | 36 |
| 37. porphyry     | 1 papyrus      | 2 rock          |   |    |
|                  | 3 cave         | 4 manuscript    |   | 37 |
| 38. strident     | 1 muscular     | 2 shrill        |   |    |
|                  | 3 battered     | 4 strong        |   | 38 |
| 39. effete       | 1 exhausted    | 2 festive       |   |    |
|                  | 3 fragile      | 4 plentiful     |   | 39 |
| 40. tyro         | 1 scold        | 2 village       |   |    |
|                  | 3 law          | 4 beginner      |   | 40 |
| 41. perimeter    | 1 measure      | 2 instrument    |   |    |
|                  | 3 boundary     | 4 difficulty    |   | 41 |
| 42. diurnal      | 1 seasonable   | 2 occasional    |   |    |
|                  | 3 timely       | 4 daily         |   | 42 |
| 43. obloquy      | 1 disaster     | 2 blame         |   |    |
|                  | 3 pride        | 4 obligation    |   | 43 |
| 44. eyot         | 1 island       | 2 lake          |   |    |
|                  | 3 river        | 4 insect        |   | 44 |
| 45. detritus     | 1 fossil       | 2 dextrous      |   |    |
|                  | 3 fragment     | 4 poem          |   | 45 |
| 46. palladium    | 1 burden       | 2 safeguard     |   |    |
|                  | 3 title        | 4 residence     |   | 46 |
| 47. quiddity     | 1 oddity       | 2 doubt         |   |    |
|                  | 3 essence      | 4 presence      |   | 47 |
| 48. ambient      | 1 uncertain    | 2 surrounding   |   |    |
|                  | 3 surprising   | 4 well-wishing  |   | 48 |
| 49. orrery       | 1 book         | 2 prophecy      |   |    |
|                  | 3 apparatus    | 4 error         |   | 49 |
| 50. syzygy       | 1 separation   | 2 choice        |   |    |
|                  | 3 conjunction  | 4 nonsense      |   | 50 |

Test 7. Score (number right).....



APPENDIX B.--QUESTIONNAIRE ADMINISTERED  
TO LOCKHART AND LULING HIGH SCHOOL  
STUDENTS.



## LOCKHART, TEXAS

TO : High School Students of Rosenwald School - Lu-  
ling, Texas and of Carver School - Lockhart, Tex.

FROM : Mrs. Eddie M. R. Bradley

PURPOSE :

To aid in gathering data for a "Study of Retardation" in the two High Schools in Caldwell County.

I sincerely hope each recipient of the questionnaire will give to each item his profound thought and be accurate in his response; hence, assisting me to alleviate many of the problems that will confront me in making this study.

The information given on this questionnaire will be kept confidential.

---

Name \_\_\_\_\_ Age \_\_\_\_\_ Grade \_\_\_\_\_

### 1. Attendance

#### Distance from school and mode of transportation

1. How far do you live from school? Number of blocks or miles \_\_\_\_\_
2. Do you ride the bus to school? Yes \_\_\_\_\_ no \_\_\_\_\_
3. Do you live on the farm? Yes \_\_\_\_\_ no \_\_\_\_\_
4. Do you work on the farm during the school term?  
Yes \_\_\_\_\_ no \_\_\_\_\_
5. If the answer to 4 is yes, give the approximate number of days missed each year \_\_\_\_\_ days.

### II. Academic Progress

- A. How old were you when you started to school?
- B. How many years did you remain in each grade?



## LOCKHART, TEXAS.--Cont.

<u>Grade</u>	<u>No. years in grade</u>	<u>Reason</u>
First	_____	1. _____
		2. _____
		3. _____
Second	_____	1. _____
		2. _____
		3. _____
Third	_____	1. _____
		2. _____
		3. _____
Fourth	_____	1. _____
		2. _____
		3. _____
Fifth	_____	1. _____
		2. _____
		3. _____
Sixth	_____	1. _____
		2. _____
		3. _____
Seventh	_____	1. _____
		2. _____
		3. _____
Eighth	_____	1. _____
		2. _____
		3. _____



## LOCKHART, TEXAS.--Cont.

<u>Grade</u>	<u>No. Years in grade</u>		<u>Reason</u>
Ninth	_____	1.	_____
		2.	_____
		3.	_____
Tenth	_____	1.	_____
		2.	_____
		3.	_____
Eleventh	_____	1.	_____
		2.	_____
		3.	_____
Twelfth	_____	1.	_____
		2.	_____
		3.	_____

B. Do you like all of the courses you are taking?

Yes \_\_\_\_\_ no \_\_\_\_\_

If your answer is no, list the courses you do not like and give reasons.

1.	Course	1.	Reason
_____	_____	_____	_____
2.	_____	2.	_____
3.	_____	3.	_____

C.

1. List the courses you should like to take that are not being offered. 1. \_\_\_\_\_ 2. \_\_\_\_\_

3. \_\_\_\_\_ 4. \_\_\_\_\_ 5. \_\_\_\_\_



D. Parents

1. What is the attitude of your parents toward School? \_\_\_\_\_
2. Do your parents insist that you attend school daily? Yes \_\_\_\_\_ no \_\_\_\_\_
3. Do your parents approve of your missing school for petty reasons? Yes \_\_\_\_\_ no \_\_\_\_\_
4. What are your parents reaction when you miss school? \_\_\_\_\_  
\_\_\_\_\_
5. With whom do you live? Mother and father?  
Mother? \_\_\_\_\_ Father? \_\_\_\_\_ Grand Parents? \_\_\_\_\_  
Others? \_\_\_\_\_

## E.

Study

1. Do you like to study? Yes \_\_\_\_\_ no \_\_\_\_\_
2. Do you prefer studying at school rather than at home? Yes \_\_\_\_\_ no \_\_\_\_\_
3. If your answer to 2 is yes, give reasons.  
1. \_\_\_\_\_ 2. \_\_\_\_\_ 3. \_\_\_\_\_
4. Do you enjoy home work? Yes \_\_\_\_\_ no \_\_\_\_\_  
Why? \_\_\_\_\_

## F.

Library

1. Is your library well equipped? Yes \_\_\_\_\_ no \_\_\_\_\_
2. How many volumes? \_\_\_\_\_



3. Do you enjoy browsing through the books in the library? Yes \_\_\_\_\_ no \_\_\_\_\_
4. What kind of books do you like to read?  
Classics \_\_\_\_\_ Fiction \_\_\_\_\_
5. Do you read the magazines that come to the Library? Yes \_\_\_\_\_ no \_\_\_\_\_
6. Do you read a daily newspaper? Yes \_\_\_\_\_ no \_\_\_\_\_

### III. Health

#### A. Physical

1. Do you have any physical handicaps? Yes \_\_\_\_\_  
no \_\_\_\_\_
2. If your answer to 1 is yes. What kind?  
1. \_\_\_\_\_ 2. \_\_\_\_\_ 3. \_\_\_\_\_
3. Have you ever had a serious case of illness?  
Yes \_\_\_\_\_ no \_\_\_\_\_ If yes, give nature of  
illness \_\_\_\_\_  
\_\_\_\_\_
4. Do you ever go to the Doctor and Dentist for a check up? Doctor? Yes \_\_\_\_\_ Dentist? Yes \_\_\_\_\_  
Doctor No \_\_\_\_\_ Dentist? no \_\_\_\_\_
5. Do you sleep alone? Yes \_\_\_\_\_ no \_\_\_\_\_
6. Do you have a good appetite? Yes \_\_\_\_\_ no \_\_\_\_\_
7. Do you like milk? Yes \_\_\_\_\_ no \_\_\_\_\_
8. Do you eat between meals? Yes \_\_\_\_\_ no \_\_\_\_\_
9. Do you bring lunch to school? Yes \_\_\_\_\_ no \_\_\_\_\_  
Of what foods does your lunch consist? 1. \_\_\_\_\_



2. \_\_\_\_\_ 3. \_\_\_\_\_ 4. \_\_\_\_\_

10. How many hours do you sleep each night?

\_\_\_\_\_

## IV.

Extra class Activities

1. Underscore the activities in which you Participate: Track, basketball, football, vollyball, tennis, baseball, softball, debate, chorus, others \_\_\_\_\_
2. Do you like competitive games? Yes \_\_\_ no \_\_\_
3. Do you enjoy school on days when you can not participate in any of these activities? Yes \_\_\_\_\_ no \_\_\_\_\_
4. Would you go to school if there was nothing to do except study and go to classes? Yes \_\_\_\_\_ no \_\_\_\_\_



APPENDIX D.--MASTER SHEET FOR  
DATA ON THE QUESTIONNAIRE  
ADMINISTERED TO THE LOCK-  
HART AND LULING HIGH SCHOOL  
STUDENTS.







APPENDIX. C.--MASTER SHEET FOR  
DATA ON THE CALIFORNIA MENTAL  
MATURITY TEST ADMINISTERED  
TO LOCKHART AND LULING HIGH  
SCHOOL STUDENTS.



THE DATA OBTAINED FROM CALIFORNIA TEST OF MENTAL MATURITY FOR LULING AND LOCKHART HIGH SCHOOLS

**LULING**

CASE NUMBER	M. A.									PERCENTILE RANK FOR AGE								
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		
1	F	186	192	184	140	82	86	79		15	9	3	11	38	17	21		
2	F	176	116	126	116	62	90	42		6	6	3	2	19	7	12		
3	F	176	160	168	168	100	64	98		18	10	8	7	41	11	30		
4	F	145	178	174	178	100	106	106		14	14	9	12	23	21	32		
5	F	182	174	168	184	100	42	101		23	14	7	0	52	18	54		
6	F	175	164	160	180	94	108	86		13	14	4	11	47	23	24		
7	M	228	162	149	160	84	85	83		14	13	8	4	44	17	27		
8	M	180	164	168	188	80	72	87		14	9	4	4	33	7	24		
9	M	172	168	158	170	64	96	70		17	14	10	34	18	14	14		
10	M	214	164	168	180	85	88	38		14	14	10	4	45	16	27		
11	M	84	162	156	156	54	91	85		17	14	6	8	44	18	24		
12	M	171	172	184	168	100	109	87		13	19	4	11	49	24	23		
13	M	177	164	156	180	81	77	85		21	6	2	4	33	9	24		
14	M	168	182	174	170	49	45	73		12	6	4	1	27	4	21		
15	M	148	120	120	120	42	42	42		7	9	3	2	21	5	16		
16	M	167	164	154	172	98	93	103		21	3	5	6	45	14	31		
17	M	181	172	144	182	98	93	101		11	14	10	7	50	17	33		
18	M	108	174	168	198	92	80	103		22	20	7	4	55	18	37		
19	M	169	172	184	180	91	97	79		11	17	9	12	40	23	24		
20	M	184	172	184	168	93	100	89		19	15	4	12	52	24	28		
21	F	228	160	168	168	83	88	77		14	14	4	7	41	18	23		
22	F	195	172	184	150	90	92	76		17	10	5	17	49	25	44		
23	F	187	166	174	160	90	93	84		14	14	4	10	46	21	27		
24	F	221	164	152	140	77	79	73		11	14	4	5	34	13	21		
25	F	183	166	174	168	116	119	93		6	7	6	18	34	20	14		
26	F	193	132	144	144	46	75	64		9	14	2	2	27	10	17		
27	F	218	162	174	164	84	92	75		13	12	5	14	44	22	22		
28	F	193	118	204	184	103	104	94		23	10	6	18	47	23	34		
29	M	182	164	174	154	85	92	81		14	14	2	15	47	19	24		
30	M	218	162	184	182	84	92	49		3	14	3	13	43	24	19		
31	M	191	184	192	172	97	101	90		20	18	8	14	50	28	31		
32	M	195	184	170	204	82	89	107		29	16	10	6	37	19	38		
33	M	195	168	184	180	88	92	76		15	14	3	14	46	24	24		
34	M	199	160	172	164	83	89	75		14	11	4	11	42	20	22		
35	F	203	198	208	184	103	104	83		6	14	6	14	44	30	14		
36	F	258	196	208	184	103	104	82		21	20	11	14	64	34	34		
37	F	194	164	174	182	83	93	79		12	18	7	12	46	21	28		
38	F	202	176	174	184	92	93	94		21	20	5	6	54	21	33		
39	F	203	182	184	182	93	94	93		22	20	3	13	58	25	33		
40	M	204	188	198	174	94	101	92		21	17	11	12	41	29	32		
41	M	198	190	186	198	99	98	103		21	15	12	15	43	24	37		
42	M	170	164	194	192	115	114	113		22	21	19	7	45	29	34		
43	M	194	176	180	178	92	93	93		21	21	7	4	49	23	36		
44	M	198	164	172	174	92	60	93		25	16	0	5	46	21	37		
45	M	208	160	140	162	60	63	93		23	17	5	3	48	13	38		
46	F	205	164	168	168	88	88	84		19	14	4	5	46	18	28		
47	F	211	176	172	184	92	90	94		23	15	4	12	54	20	34		
48	F	202	174	182	182	92	93	84		16	15	4	18	59	27	28		
49	M	231	214	220	212	115	125	110		26	20	10	20	76	36	40		
50	M	194	188	187	187	98	97	91		19	17	10	14	42	27	38		
51	M	244	152	148	154	79	86	11		10	18	3	8	38	16	20		
52	M	202	184	174	198	93	92	103		22	16	7	11	58	21	37		
53	M	208	180	204	168	94	107	88		16	20	10	15	43	33	30		
54	M	227	152	150	140	79	76	83		18	15	3	5	39	12	27		

**LOCKHART**

CASE NUMBER	M. A.									PERCENTILE RANK FOR AGE								
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		
33	F	194	188	184	184	97	94	93		17	16	14	11	16	14	16		
34	F	176	164	164	168	103	110	94		19	13	10	11	19	89	30		
35	F	168	150	148	152	79	77	78		11	11	2	6	34	11	15		
36	F	174	184	184	234	104	93	159		23	13	4	10	62	18	46		
37	F	208	152	154	198	79	81	77		11	6	5	7	37	14	23		
38	F	181	140	148	152	86	92	63		17	11	7	6	43	18	28		
39	F	200	160	154	166	83	81	87		20	15	2	4	44	16	30		
40	F	177	168	172	164	94	97	91		17	16	4	7	48	19	29		
41	F	184	176	174	184	93	93	100		18	19	10	11	53	21	34		
42	M	203	184	174	186	93	89	97		23	18	7	9	57	22	35		
43	M	192	172	174	144	93	94	89		20	14	3	11	80	21	29		
44	M	192	168	160	154	87	93	80		19	9	4	14	46	73	25		
45	M	212	182	182	170	84	10	66		19	18	7	2	43	13	30		
46	M	183	182	160	168	83	87	88		18	13	4	4	38	18	23		
47	M	202	150	140	158	76	83	71		18	16	5	7	34	14	20		
48	M	193	182	194	140	79	75	83		20	10	2	5	37	10	27		
49	F	193	160	162	160	83	84	83		13	17	3	6	43	16	27		
50	F	197	160	178	150	83	84	78		18	15	7	8	49	22	23		
51	F	244	162	172	152	64	89	79		16	14	3	10	43	19	24		
52	F	216	160	164	158	83	84	79		17	19	4	9	48	17	28		
53	F	212	148	144	172	67	85	89		20	14	9	6	48	17	31		
54	F	227	158	180	144	62	74	85		16	18	4	4	41	13	29		
55	M	191	172	180	164	90	94	85		21	14	3	11	57	23	26		
56	M	186	174	181	168	93	98	89		18	17	8	12	58	35	30		
57	M	197	212	222	192	110	115	100		23	21	12	19	79	39	34		
58	M	189	184	184	172	97	98	91		20	20	5	12	97	24	34		
59	F	189	150	168	158	79	85	67		12	13	4	6	35	18	17		
60	F	204	142	134	134	61	61	81		14	11	6	4	44	16	24		
61	M	204	190	194	110	75	81	87		11	6	4	4	29	14	19		
62	M	214	180	184	140	78	81	72		14	11	1	7	35	14	21		
63	M	214	174	176	162	90	94	84		20	17	3	10	50	21	24		
64	F	232	110	120	110	87	82	87		9	3	1	2	15	8	10		
65	F	208	184	174	192	95	91	100		21	17	9	11	58	22	34		
66	F	228	132	134	120	46	61	62		5	13	4	5	27	14	13		
67	F	224	150	148	160	76	77	83		17	10	4	3	36	11	27		
68	M	250	130	136	132	74	64	79		23	9	2	2	34	9	27		
69	M	232	152	144	158	79	76	89		16	11	5	4	36	11	27		
70	M	216	180	184	172	93	93	89		21	9	12	14	84	28	31		
71	M	241	172	180	140	91	97	83		19	17	10	7	53	24	27		
72	M	214	162	144	164	84	75	85		19	16	3	4	44	10	34		
73	M	217	160	148	164	85	77	92		21	21	2	1	45	11	34		

**LEGEND**

- 1 SEX
- 2 CHRONOLOGICAL AGE
- 3 TOTAL MENTAL FACTORS
- 4 LANGUAGE
- 5 NON-LANGUAGE
- 6 TOTAL MENTAL FACTORS
- 7 NON-LANGUAGE
- 8 NON-LANGUAGE
- 9 MEMORY
- 10 SPATIAL RELATIONSHIP
- 11 LOGICAL REASONING
- 12 NUMERICAL REASONING
- 13 VOCABULARY
- 14 TOTAL MENTAL FACTORS
- 15 LANGUAGE



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