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An Experimental Evaluation of a High School Psychology Course

Carl L. Vcella

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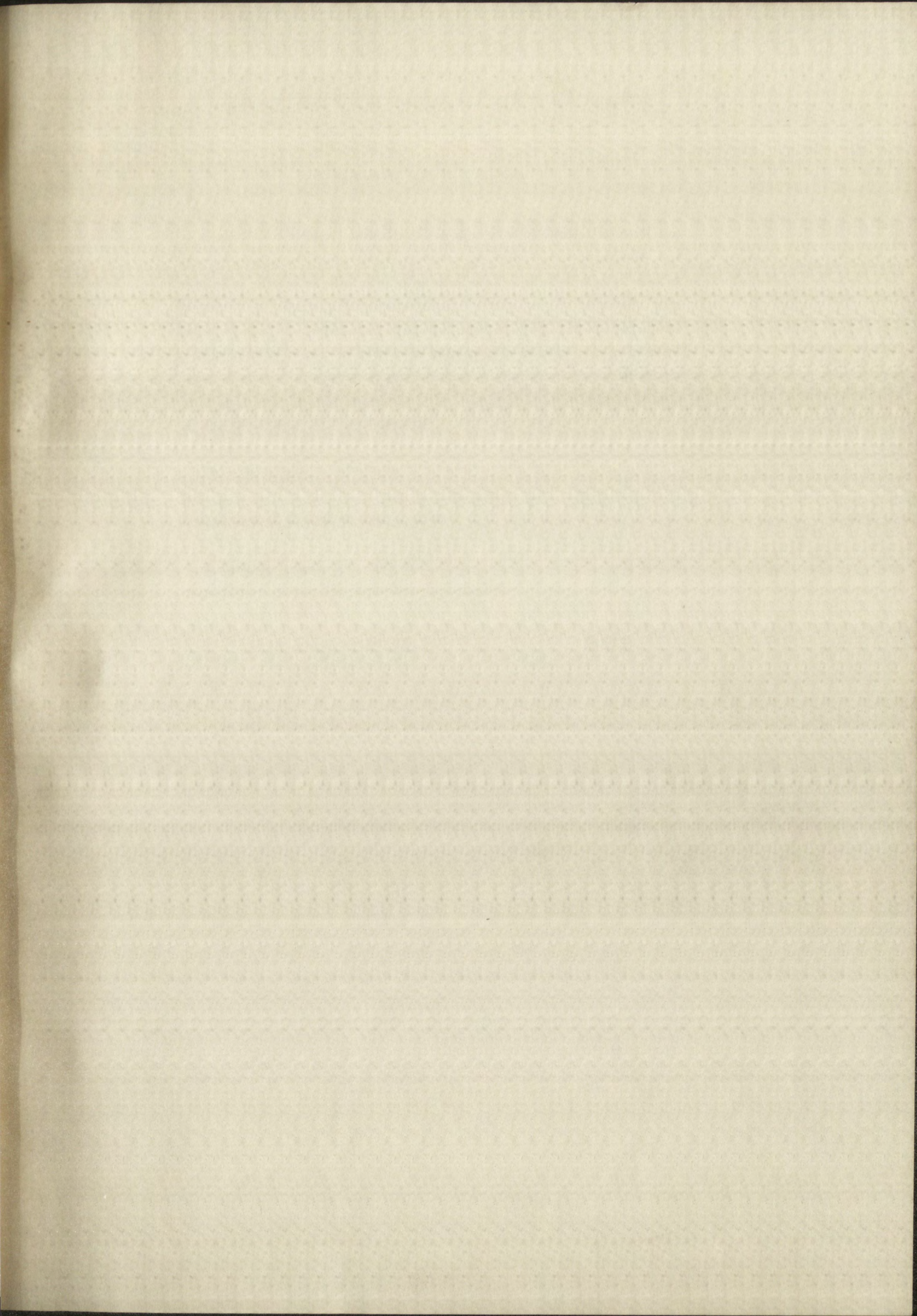
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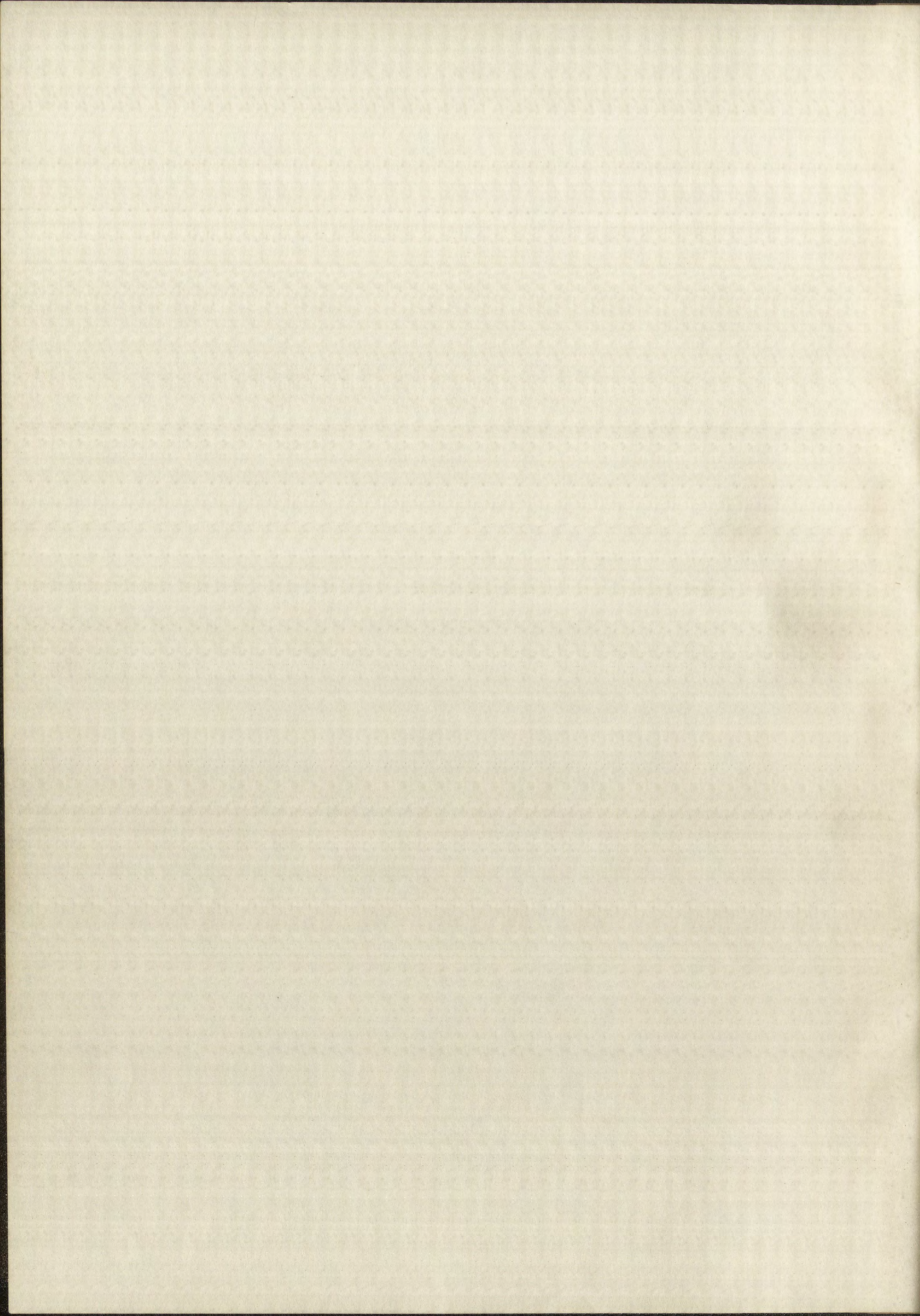
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AN EXPERIMENTAL EVALUATION OF A HIGH
SCHOOL PSYCHOLOGY COURSE

by

Carl L. Vcella

A Thesis

In partial fulfillment
of the Requirements for the
Degree of Master of Arts in
Education

University of New Mexico

June 1954

AN EXPERIMENTAL STUDY OF THE

RELATIONSHIP BETWEEN



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This thesis, directed and approved by the candidate's committee, has been accepted by the Graduate Committee of the University of New Mexico in partial fulfillment of the requirements for the degree of

MASTER OF ARTS

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CHAPTER I

THE PROBLEM AND ITS LITERATURE

For some time a controversy has existed concerning the merits of the teaching of psychology in high schools. Since little, if any, research has been done in this area, it was decided that an effort should be made to answer the question of the effectiveness of a high school psychology course. The outcomes of such a course may be evaluated in terms of (1) achievement and (2) adjustment. Accordingly, an experimental study into the nature of the effect in achievement and the effect in adjustment produced by a high school psychology course has been undertaken in this study.

I. THE PROBLEM

Statement of the problem. It was the purpose of this study to evaluate a high school psychology course as to its effectiveness in producing understanding in the more basic facts and theories of psychology, and, in addition, its importance in affecting personality adjustment.

Importance of the study. Since psychology courses are being offered in many high schools in the United States, it seems to be worth while to examine the value of such a course for high school students. Unfortunately, there are few objective evaluations of high school psychology courses.

THE PROBLEM AND ITS IMPORTANCE

For some time a controversy has existed concerning the merits of the teaching of psychology in high schools. Since 1910, it is true, psychology has been taught in high schools. It was decided that an effort should be made to answer the question of the effectiveness of a high school psychology course. The outcome of this course will be determined in terms of (1) achievement and (2) adjustment. Accordingly, an experimental study into the nature of the effect of psychology and the effect of adjustment, measured by a high school psychology course, has been conducted in this study.

1. THE PROBLEM

Statement of the problem. It was the purpose of this study to evaluate a high school psychology course as to its effectiveness in promoting understanding in the same field. Facts and theories of psychology, and, in addition, the importance in affecting personally adjustment.

Importance of the study. Since psychology courses

are being offered in many high schools in the United States, it seems to be worth while to examine the value of such a course for high school students. Unfortunately, there are few objective evaluations of high school psychology courses.

What literature does exist in this area is mainly of the popular magazine article type. Evidently, the evaluation of some phases of the public school curriculum seems to have been neglected, and before justification of a curriculum can be made, more than opinion is needed. A serious need, then, exists for experimental studies in curriculum evaluation in general and in this area in particular. It is felt that the very nature of the experimental evaluation of this study establishes its value.

Organization of the remainder of the study. The remainder of this chapter is composed of a discussion of the related literature. A separate chapter pertaining to the collection of data discusses the methods used in setting up an experimental group and a control group, and includes as well, a discussion of the factors observed and measured. In another chapter, the treatment of the data is carried out. It was found that because of the before-after nature of this evaluation, in order to assess the results of the study, a highly specialized form of statistical analysis had to be employed, the analysis of variance and covariance. In a final chapter a summary of the study is presented. A bibliography is included, as are appendices. The appendices present the actual analysis of the data along with the raw data for verification purposes.

What literature does exist in this area is scattered in
popular magazine articles, and the scientific literature of
some phases of the subject is somewhat neglected, and
been neglected, and better recognition of a subject can
be made, more than exists at present. A number of
exists for experimental studies in this area, and in
general and in this case in particular, it is not
very nature of the experimental work of this field
established its value.

Organization of the manuscript as a review

Outline of this chapter is composed of a discussion of the
related literature. A general review of the
collection of data is discussed, and a brief review of the
experimental work and a critical review, and a brief review of the
a discussion of the various methods and instruments used in the
chapter, the treatment of the data is given, and it is
found that because of the information nature of this review
tion, in order to secure the results of the study, it is
specialized form of statistical analysis, and it is
the analysis of variance and covariance. In a review of
a summary of the study is presented. A bibliography is
cluded, as are appendices. The appendices are
analysis of the data along with the review of the literature
purpose.

II. SURVEY OF RELATED LITERATURE

Very little has been written about the effectiveness of a high school psychology course. What studies have been made can be categorized into (1) experimental evaluations, and (2) student evaluations.

Experimental evaluations. An extremely pertinent study by Turney and Collins¹ was made in order to determine the measurable personality adjustment changes in the high-school students enrolled in a psychology course devoted primarily to "the psychology of personality improvement."² The objectives of the course were:

- (1) To secure the cooperation and develop the belief on the part of the student in the improvability of his own personality.
- (2) To formulate plans for the improvement of personality by analyzing personality into specific traits.
- (3) To provide the student with a knowledge of characteristic traits of individuals with strong, pleasing personalities.
- (4) To provide the student with a knowledge of psychological terms essential to the understanding of the literature in the field of personality.
- (5) To prevent personality disorders and to develop individuals with wholesome personalities, adjusted to their environment, and with worthwhile goals and a proper sense of values.³

¹ Austin H. Turney and Floyd I. Collins, "An Experiment in Improving the Personality of High School Seniors," Journal of Educational Psychology, 31:550-3, October, 1940.

² Ibid., p. 550.

³ Ibid., pp. 550-1.

Very little has been written about the effectiveness of a high school psychology course. Some of the data made can be categorized into (1) experimental studies, and (2) student evaluations.

Experimental studies

Study by Turner and Collins¹ was made in order to determine the measurable personality differences between high school students enrolled in a psychology course and those primarily in the psychology of personality course. The objectives of the course were:

- (1) To secure the cooperation and develop the self-reliance of the students in the laboratory.
- (2) To formulate plans for the improvement of personality by analyzing personality into a series of factors.
- (3) To provide the student with a knowledge of the basic facts of individuality and of the factors which determine personality.
- (4) To provide the student with a knowledge of the importance of personality in the field of psychology and to develop an interest in the study of personality.
- (5) To present personality disorders and to develop an understanding of the various causes and to develop an interest in the study of personality.

1. Austin K. Turner and Floyd L. Collins, "An experiment in improving the personality of high school students," Journal of Educational Psychology, 1920-21, October, 1921.

2. Ibid., p. 250.

3. Ibid., pp. 250-1.

The method used in class was directed study based upon planned units of psychology applied to the study of personality. These units were intended to provide the student with information that would enable him to recognize his own personality weaknesses and give him positive direction in developing a wholesome personality for himself.

The subject matter material for the course was taken from twenty-five reference books and was supplemented by magazine articles. The books used includes some rather difficult college texts and some popular books on personality or allied topics.

The tests used at the beginning and at the end of the school year were:

Personality Inventory by Robert G. Bernreuter.

Personality Schedule by L. L. Thurstone and Thelma Gwinn Thurstone.

Character Sketches by J. B. Maller.

Otis Self-administering Test of Mental Ability.

In the study under discussion an experimental group of 21 seniors were contrasted with a control group of 21 juniors. In order to check the test results, case-studies were made of all pupils in both groups. These were based upon observation, school marks, and interviews.

Turney and Collins⁴ found that in initial scores, the

⁴ Ibid., p. 552.

The method used in this study was designed to measure

planned units of psychology applied to the study of personality

These units were designed to provide the student with a

flow that would enable him to recognize the various

weaknesses and give him positive feedback in developing a

wholesome personality for himself.

The subject matter material for the course was taken

from twenty-five psychology books and was written in a

magazine articles. The books used included some of the

most college texts and some popular books on personality

or allied topics.

The tests used in the program were of the type

school year were

Personality Inventory by Sigmund Freud

Personality Inventory by Sigmund Freud

Gwynn Thersone

Character Inventory by Sigmund Freud

Self-Concept Inventory by Sigmund Freud

In the study, three inventories were used at intervals

El inventors were conducted with a control group of 25 subjects

In order to check the test results, case-studies were made

all pupils in both groups. These were based upon observation

school records, and interviews.

Turney and Collins found that in similar studies

averages were not identical; in some cases the experimental group average score indicated better adjustment; but, whereas the control group showed no marked tendency toward improvement, the experimental group showed definite improvement in all but one measured trait or characteristic, readiness to confide.

In the discussion, the authors point out that "Of course, not too much can be claimed for such an experiment. It would be desirable to have two groups identical in respect to maturity and on initial measures of the personality schedules."⁵

The authors state further that "It might be assumed that the gains made by the experimental group were the result of familiarity with the tests and of a knowledge of the significance of the items in them."⁶ It is then pointed out that there was no emphasis placed upon the measurement of personality, nor were the particular schedules available to the students. Also, that the test results were corroborated by case studies of both the experimental and control groups.

It seems, then, that this study indicates a possible change in personality adjustment as a result of a high-school psychology course in which personality was the main theme.

Pseudo-psychological beliefs were investigated by

⁵ Ibid., p. 553.

⁶ Loc. cit.

Engle.⁷ In this study, 402 students enrolled in psychology courses at four Indiana High Schools, served as an experimental group. Engle constructed a thirty-two item true-false test, the items of which were fairly common pseudo-psychological beliefs such as:

Criminal tendencies are inherited.
Nervous breakdowns are caused by weak nerves.
Studying difficult subjects such as mathematics and Latin sharpens one's mind and so makes one brighter.⁸

The test was administered at the beginning and at the end of the course. Statistical measures were presented in a table from which Engle concluded that significant effects occurred in the changing of the pseudo-psychological beliefs tested.

Engle states that:

...there are still discouragingly high percentages of pupils who, after a semester of study, are still unwilling to give up their beliefs in women's intuition, formal discipline, nervous breakdowns, the infallibility of aptitude tests, the value of graphology, the stimulating effect of alcohol, and instinctive parental love.⁹

Engle suggests that "more than one course should be devoted to the study of problems of psychology. Possibly psychological material should be introduced earlier in the high-school curriculum."¹⁰

⁷ T. L. Engle, "Pupils' Pseudo-Psychological Beliefs," Clearing House, 22:73-7, October, 1947.

⁸ Ibid., p. 75.

⁹ Ibid., p. 76.

¹⁰ Ibid., p. 77.

A study was made in 1944 that attempted to determine whether or not intelligence had an effect upon achievement in an elementary psychology course.¹¹ An achievement test was given at the beginning and at the end of the course. The Otis Test of Mental Ability was given during the semester. A rather specialized derivation of the coefficient of correlation was calculated. The coefficients so obtained were: (1) between the Otis and the pre-test, .556; (2) between the Otis and the post-test, .429; (3) between the Otis and the gain scores, -.039; (4) between the pre-test and the gain score, -.010; (5) between the post-test and the gain scores, .712.¹² Therefore, the main conclusion of the study under discussion was that improvement following teaching is largely dependent upon non-intellectual factors.¹³

Frandsen¹⁴ made a study of scores on tests in general psychology achieved by college freshmen, sophomores, and upper-class students. The results were tabulated in a short table. Frandsen concluded that "Comparisons between Sophomores and Freshmen [college] indicate that increases in maturity and perhaps ability are accompanied by small (not statistically

¹¹ H. B. Carlson; R. F. Fisher; and P. T. Young, "Improvement in Elementary Psychology as Related to Intelligence," Psychological Bulletin, 42:27-34, January, 1945.

¹² Ibid., p. 33.

¹³ Loc. cit.

¹⁴ A. Frandsen, "Psychology in the High-School Curriculum," School Review, 49:515-26, September, 1941.

A study was made in 1944 that attempted to determine whether or not intelligence and an effect upon reading in an elementary psychology course. In a subsequent test was given at the beginning and at the end of the course. The Otis Test of Mental Ability was given during the semester. Rather specialized correction of the Otis test was made. This was calculated. The coefficient of correlation between the Otis and the post-test, .4221 (3) between the Otis and the pre-test, -.0399 (4) between the pre-test and the post-test, -.010 (5) between the post-test and the Otis scores. Therefore, the main conclusion of the study was that improvement in reading was not dependent upon non-intelligence factors. Frandson's study was not as simple as it seemed. Psychology achieved its college degree, however, in order to be a student. The results were calculated in a similar manner. Frandson concluded that intelligence between mathematics and Frandson's College indicates that intelligence is not a percentage ability and is not a quality of mind (not a quality).

11 M. B. Carlsbach, M. A. Frandson, and J. E. Young, "Improvement in Elementary Psychology as Related to Intelligence," Psychological Bulletin, 45:124-32, June 1949.

12 1948, p. 33.

13 See 012.

14 A. Frandson, "Improvement in the High School Curriculum," School Review, 45:124-32, June 1949.

certain) increases in achievement in general psychology.¹⁵

In an article written by S. Edmund Stoddard, a paragraph was found which appears to be of some value to this study.

After 3 years of experimenting with psychology in high school [the article does not mention anything about the experiments] it seems a certainty that senior students are capable of understanding its basic concepts. The presentation of elementary abnormal psychology and mental hygiene has proved very successful. Almost any high school will have material for the construction of various types of apparatus which will materially aid the value of the course. It then seems a salient fact that the study of the effect of environment on the formation of our changing lives should be presented to senior high school students.¹⁶

Student evaluations. In a study made by T. L. Engle,¹⁷ 276 pupils in six high schools compared the value of psychology with that of six other fields. A rather involved questionnaire had each pupil rate subject-matter fields as to their effectiveness in contributing to certain objectives of secondary education (Citizenship, Vocational, Health, Leisure, Learning, Home Membership, and Personality). The benefit of each subject-matter field was rated independently of the others for each objective. The subject-matter fields rated

¹⁵ Ibid., p. 519.

¹⁶ S. Edmund Stoddard, "Psychology in Secondary Schools," School, Science and Mathematics, 41:471, May, 1941.

¹⁷ T. L. Engle, "Psychology," Clearing House, 21: 469-73, April, 1947.

certain) increases in efficiency in general technology.

In an article written by A. L. Kohnstamm, 1947, p. 10.

graph was found which showed a decrease in the

study.

After 3 years of experimental work in psychology in
high school the article does not mention any further
the experimental work. It seems a certain that certain
are capable of understanding the basic concepts of
presentation of information. The experimental work
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secondary education (L. Kohnstamm, 1947, p. 10).

Learning, Home Habits, and Personality. The results of

each subject-matter factor was rated in terms of the

others for each subject. The subject-matter factor

15 Ibid., p. 10.

16 S. L. Kohnstamm, "Psychology in Secondary
Schools," School Science and Mathematics, Vol. VII, 1947, p. 10.

17 T. L. Kohnstamm, "Psychology in Secondary
Schools," School Science and Mathematics, Vol. VII, 1947, p. 10.

469-75, April, 1947.

were Psychology, English, Foreign Language, History, Mathematics, Science, Commercial or Vocational. The results indicated that boys and girls believe that psychology, even in a one semester course, is more valuable in meeting some of the objectives of secondary education than are some other subject-matter fields to which more school time is devoted. Pupils would like to have more work in psychology offered in their high schools. Boys seem to be even more favorable toward psychology than are girls.

Burgum¹⁸ made a study of the high school psychology courses in North Dakota. His study concerned itself with the "felt benefits" of the course upon the students. He had a question inserted in the state examination in psychology given May, 1939. The question was stated as follows: "In a paragraph of 75-100 words, discuss the topic, The Value of Psychology. Name some specific ways in which your course has helped you."¹⁹

The specific ways in which the students reported help from the study of psychology were ranked. It is interesting to note that 313 students reported that their psychology course helps one to understand himself, his mental life, and behavior.²⁰ Also, 234 students mentioned that the study of

¹⁸ L. S. Burgum, "Value of High School Psychology," School and Society, 52:45-8, July, 1940.

¹⁹ Ibid., p. 47.

²⁰ Loc. cit.

psychology helps in personality development and adjustment.²¹ Eighteen values were mentioned.

No other studies were found of an experimental nature. On the other hand there are a great many articles written in which the authors' opinions are stated as to the efficacy of high school psychology courses. It is felt that these articles are not particularly related to the study under investigation since they furnish opinions only as to the advisability of teaching courses in psychology to high-school students. The paucity of experimental studies indicates a need for more work to be done in the way of curriculum evaluation for the area of psychology.

²¹ Loc. cit.

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evaluation for the area of psychology.

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CHAPTER II

METHOD OF THE STUDY

The problem of obtaining adequate data presented several difficulties. Measuring anything as nebulous as personality adjustment is very difficult. Therefore, the problem of choosing a suitable personality test for this study was very important. Another deficiency encountered was the lack of achievement tests in psychology. The following paragraphs deal with the methods used in solving these problems.

I. THE TESTS USED

Personality inventory. In choosing the test to be used, it was found necessary to consider the following four criteria: (1) reliability, (2) validity, (3) ease of scoring, and (4) cost. Of several possibilities the Heston Personal Adjustment Inventory was selected as the one to be used to measure adjustment. The factors measured by this inventory are, (1) analytical thinking, (2) sociability, (3) emotional stability, (4) confidence, (5) personal relations, and (6) home satisfaction. These factors are defined below.

Analytical thinking (A). "A" or analytical thinking was originally labeled intellectuality; however, since scores on this scale are not synonymous with intelligence, its name

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several difficulties. Assuming that the data are
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and (4) cost. Of several inventories the Human Relations
Adjustment Inventory was selected as the one to be used to
measure adjustment. The factors measured by this inventory
are, (1) analytical thinking, (2) responsibility, (3) emotional
stability, (4) confidence, (5) personal relations, and (6)
home satisfaction. These factors are defined below.

Analytical Thinking (A). "A" is analytical thinking
was originally labeled intellectual; however, since scores
on this scale are not synonymous with intelligence, the name

was changed to analytical thinking in order to remove the possibility of confusion of the name intellectuality with intelligence. "A" is more closely related to college aptitude and achievement than any of the other scales. A person high on "A" likes to be intellectually independent, thinks for himself, analyzes and theorizes a great deal, enjoys solving problems, likes carefully planned and detailed work, is persistent at tasks, and is serious as opposed to casual. Low scores suggest an uncritical acceptance of other's ideas, a willingness to avoid planning and thinking, and a dislike for creative or intellectual activities. "A" bears practically no relationship to any of the other five scales; it is a very independent measure.

Sociability (S). High degrees of this trait indicate extroversion in the social sense. A person with a high "S" score is more interested in people than in things, makes friends easily, converses readily and freely, feels he is a lively individual, enjoys social mixing, and frequently takes the lead in social participation. The low person is self-conscious, shy, and socially timid, has only a limited number of friends, and seeks the background on social occasions. He is the introvert who is lacking in social skills and/or inclinations. Sociability is more nearly related to confidence than to any of the other scales. "S" is least related to "A".

Emotional stability (E). High scores here typify

was changed to analytical thinking in order to remove the possibility of confusion of the name intelligence with intelligence. "A" is more closely related to college intelligence and achievement than any of the other scales. A person high on "A" likes to be intellectually independent, thinks for himself, analyzes and synthesizes a great deal, enjoys solving problems, likes carefully planned and detailed work, is persistent at tasks, and is serious in approach to work. Low scores suggest an unwillingness to accept responsibility, a willingness to avoid planning and thinking, and a dislike for creative or intellectual activities. The scale is not only no relationship to any of the other five scales, it is a very independent measure.

Sociality (B). High scores of this scale indicate extroversion in the social sense. A person with a high score is more interested in people than in things, likes to be with friends easily, converses readily and freely, is friendly to lively individuals, enjoys social mixing, and is usually the lead in social gatherings. The low person is self-conscious, shy, and socially timid, has only a limited number of friends, and seeks the protection of social recognition. It is the introvert who is lacking in social skills and/or in situations. Sociality is more highly related to extroversion than to any of the other scales. It is found related to "A".

Rationality (C). High scores indicate a high

persons who can remain in stable and uniform spirits, are not subject to apprehensive fears or worries, are not easily upset or frustrated, can relax and avoid tension, and see life in reality rather than through daydreams and uneasy retrospection. People low on "E" are easily disrupted by minor crises, are readily embarrassed, often feel tired and listless, are too impulsive and jittery, frequently feel thwarted, and suffer often from tension, worry, and uneasiness. Extremely low scores may indicate the traditional neurotic. Both confidence and personal relations appear highly correlated with "E".

Confidence (C). Persons scoring high on "C" make decisions readily, feel sure of the value of their own judgment, adjust easily to new or difficult situations, feel they enjoy the approval and favor of their associates, face the present and future optimistically rather than linger regretfully over the past, lack inferiority feelings, and are not dissatisfied with their physique and appearance. A high positive relationship has been observed between "C" and "E". People low on "C" distrust their ability, cannot make decisions satisfactorily, and display the traditional inferiority complex.

Personal relations (P). High scores on "P" indicate two basic attitudes: (1) feeling that other people are trustworthy and congenial, and (2) ability to refrain from

persons who can remain in stable and positive attitudes, and are not subject to apprehensive fears or worries, are not easily upset or frustrated, can withstand stress, tension, and are able to realize rather than through depression and negative reaction. People low on "G" are easily discouraged by their critics, are readily embarrassed, often feel tired and exhausted, are too impulsive and hasty, frequently feel threatened, and suffer often from tension, worry, and nervousness. People low scores may indicate the lack of confidence, both in themselves and in others, and a general feeling of being unloved and unloving.

Confidence (C). Persons scoring high on "C" are confident, feel sure of the value of their own decisions, adjust easily to new or difficult situations, and enjoy the approval and favor of their associates, friends, and family. They are optimistic about their own future and the future of the world, and are fully over the past, such as inferiority feelings, and are not dissatisfied with their physical and emotional condition. Positive relationships have been observed between "C" and "G". People low on "C" distrust their ability, cannot make decisions satisfactorily, and display the tendency to be largely complex.

Personal relations (R). High scores on "R" indicate two basic attitudes: (1) feeling that others are not worthy and congenial, and (2) ability to relate to others.

annoyance and irritation at behavior of others. Thus one who is high on "P" does not feel slighted by others, does not feel they misunderstand him or cast him in an inferior role, is not too critical of others, does not lose patience readily, and is not angered too frequently or too easily. He can see things fairly and impersonally. Persons low on this scale are touchy, suspicious, and easily irked by other people. A very low score might be partially indicative of paranoid trends. Caution is needed in the interpretation of an individual's "P" score, because it has the lowest reliability coefficient of any of the six scales.

Home satisfaction (H). On "H", a high score denotes pleasant family relations, an appreciation of desirable home conditions, a feeling of mutual understanding and respect, freedom from emotion-breeding home conflicts, and a healthy recognition of one's obligation to home and family. At the low extreme we find admissions of such difficulties as wishing for a different home, feeling that enjoyment can be found only away from home, conflicts with parents' ideas, family not considerate, parents too strict, domineering, or unsympathetic, or parents overly irritated or emotional. The "H" scale exhibits some positive correlation with all other scales except "A".

Reliability of the inventory. The reliability of the inventory was determined by the split-half method applied to

annoyance and irritation at behavior of others, and who
is high on "P" does not feel obliged to react, does not
feel they must respond to the behavior of others.
is not too critical of others, does not have excessive
and is not annoyed too frequently by the actions of others
things fairly and impersonally. Factors for the
are honesty, suspicion, and easily hurt by other people.
very low score might be partially indicative of
trends. Cautious is needed in the interpretation of an
individual's "P" score, because it has the lowest reliability
coefficient of any of the six scales.

Home Satisfaction (H). On "H," a high score indicates

pleasant family relations, an atmosphere of freedom, and
conditions, a feeling of control, and a feeling of
freedom from emotional distress. A high score indicates
recognition of one's obligations to family and home.
low extremes we find a situation of a person who is
for a different home, feeling that enjoyment can be found
only away from home, emotional distress, and a feeling
considerate, parents too strict, feeling of
or parents overly irritated or emotional. The "H" scale
indicates some positive correlation with all other scales
except "A".

Reliability of the Inventory. The reliability of the

inventory was determined by the split-half method. The

a sample of 100 students (fifty of each sex) from the 1947 freshman class at Anderson College.²² The reliability coefficients were found for the various scales. For "A" or analytical thinking the reliability coefficient was .855. For "S" or sociability it was .910. For "E", emotional stability, it was .862. For "C" or confidence it was .835. For "P", personal relations, it was .800. For "H" or home satisfaction it was .867.

Validity of the inventory. The validity of the adjustment inventory was approached in a threefold fashion: (1) the method of internal consistency, (2) the psychological meaningfulness of the component items, and (3) the method of validation against independent criteria.²³

During the initial construction phase of the inventory the method of internal consistency was used in order to retain items in the test that would have a high enough discrimination index. Three separate internal-consistency studies were performed, with the result that what items remained in the test had some meaningful stability, since they demonstrated continued significance in the three separate analyses.

The second method utilized in seeking to improve validity was the insistence that in connotation each statement

²² J. C. Heston, Manual for the Heston Personal Adjustment Inventory, New York: World Book, 1949, p. 25.

²³ Loc. cit.

a sample of 100 students. Fifty of each group were
freshman class at Indiana University. The other
fifty were from the various schools. The
analysis thinking the reliability coefficient was .85.
For "8" or associativity it was .81. For "9", explained
variability, it was .88. For "10" or content validity it was .85.
For "11", personal relations, it was .80. For "12" or
satisfaction it was .80.

Validity of the Inventory. The validity of the
Inventory was approached in a three-fold manner. The
method of internal consistency, (a) the reliability
coefficient of the component items, and (b) the method of
test-retest.
During the initial investigation of the Inventory
the method of internal consistency was used to obtain
items in the test that were a high enough reliability
index. These separate internal consistency indices were
formed, with the result that the items in the test
had some meaningful stability. Some items were
eliminated and the final test was formed.
The second method utilized in testing the
validity was the test-retest method. In connection with this

must be psychologically meaningful for the trait under consideration. An item was not assigned to a scale, no matter how high its statistical discrimination index, unless in its customary connotation it made "sense" for that scale. The author of the Personal Adjustment Inventory was helped here in part by the judgment of earlier authors of personality tests and in part by the judgment of the various counselors working with him in the De Pauw University Bureau of Testing and Research.

The third approach to validity was the method of validation against independent criteria. A series of studies was utilized in order to demonstrate the relation of test scores to specific independent criteria. In one study, counselors were asked to express their judgment as to their agreement with the inventory scores for 269 counselees.²⁴ The counselors were given more than one full semester to become acquainted with their students before they were given their scores and asked to express their judgments. With the exception of trait "H" (refused judgment in half the cases), the counselors agreed about 65 per cent of the times and disagreed about 10 per cent, refusing 25 per cent of the judgments. It is apparent that the inventory traits size up a student in somewhat the same manner as the faculty counselor knows him.

²⁴ Ibid., pp. 26-27.

must be psychologically meaningful for the student
situation. An idea was not mentioned as a whole, as before
how high the educational standards are, and in fact
outstandingly consistent in the student's mind. The
author of the personal adjustment inventory was helped
in part by the judgment of an expert in personality
tests and in part by the judgment of the various committees
working with him at the University of Illinois at Urbana
and Research.

The third step was to validate the results of
validation against independent criteria. A number of students
was utilized in order to determine the reliability of the
scores to specific independent criteria. In one study,
counselors were asked to express their judgment as to which
agreement with the necessary scores for the counselors.
The counselors were given more than one half hour to
some acquainted with their students before they were given
their scores and asked to express their judgment. With the
exception of trials "B" and "C" (which were the easiest)
the counselors agreed at 95 per cent of the trials and
disagreed about 10 per cent, which is a high level of
agreement. It is apparent that the inventory trials are of
a student in another way, and that the results are of
knows him.

In another study the trait scores of ninety-five upper-classmen were compared with ratings on these same traits.²⁵ Each subject was rated by seven close acquaintances on a graphic rating scale showing five steps or degrees per trait. In scoring the ratings, however, a ten-point scale was used to measure the strength of each rating, thus permitting more refinement of the data. Then coefficients of correlation between inventory scores and mean trait-ratings by acquaintances were computed. These correlations were found to be: $A = .46$; $P = .34$ and $H = .70$.

Further studies made, all of which lend evidence of validity to the inventory, were: (1) comparison of inventory trait scores and self-rating trait scores,²⁶ (2) the correlation of self-rating and mean ratings by acquaintances,²⁷ (3) correlation between scores made on the inventory to scores made on the Minnesota Multiphasic Personality Inventory,²⁸ (4) calculation of the critical ratios between the means made on the Heston Personal Adjustment Inventory for twenty college women leaders and twenty non-leaders,²⁹ (5) calculation of the critical ratios of the difference in means on the Inventory

²⁵ Ibid., p. 27.

²⁶ Ibid., p. 28.

²⁷ Loc. cit.

²⁸ Ibid., p. 29.

²⁹ Loc. cit.

In another study the self-esteem of fifteen upper-
classmen were compared with ratings on these same scales.²⁵
Each subject was rated by seven other students on a
graphic rating scale showing five steps or degrees of trait.
In scoring the ratings, however, a ten-point scale was used
to measure the strength of each rating. This point scale was
retinement of the data. This coefficient of correlation
between inventory scores and mean ratings by students
ranged from .40 to .70. These correlations were found to be
A = .46; P = .34 and R = .70.
Further studies made. 11 of which have shown of
validity to the inventory, were (1) comparison of inventory
trait scores and self-rating trait scores,²⁶ (2) comparison
of self-rating and mean ratings by students,²⁷ (3)
correlation between scores made on the inventory and scores
made on the Minnesota Psychiatric Symptom Inventory,²⁸
(4) calculation of the critical ratios between the mean scores
on the Heston Personal Adjustment Inventory for twenty college
women leaders and twenty non-leaders,²⁹ (5) calculation of the
critical ratios of the Heston Inventory in women on the inventory.

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- 25 Ibid., p. 27
 - 26 Ibid., p. 28
 - 27 Ibid., p. 29
 - 28 Ibid., p. 29
 - 29 Ibid., p. 30

for 884 college men and for seventy-three male reformatory inmates,³⁰ and (6) calculation of the coefficients of correlation between the Inventory scales and academic aptitude and achievement.³¹

Because of the results of all of the validation studies carried out, the inventory may be assumed to have some evidence of validity.

Achievement test. Another factor to be taken into consideration was the lack of any standardized achievement tests in psychology. It was necessary, therefore, to construct an achievement test. In constructing the test, questions of the true-false and multiple choice varieties were used. The questions were taken from final tests used in general psychology courses at the University of New Mexico. By selecting questions from five individual tests, each one devised by a different instructor, it was felt that a fairly representative achievement test was made. Validation studies on this test, however, were not attempted for this study.

Reliability of the achievement test. The reliability of the achievement test was calculated by the test-retest method. In computing the coefficient of reliability for the test, the control group only was used. The maximum likelihood

³⁰ Ibid., p. 30.

³¹ Ibid., p. 31.

For 884 college men and for seventy-three men in the military

inmates, 30 and (6) college men of the military and of the

relation between the inventory and the achievement test.

and achievement, 31

Because of the results of all of the correlation studies

carried out, the inventory was believed to have good validity

of validity.

Achievement test. Another factor to be taken into

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Reliability of the achievement test. The reliability

of the achievement test was estimated by the test-retest

method. In computing the coefficient of reliability for the

test, the control group only was used. The maximum like-

estimate found was .81. Therefore, it can be concluded that the scores obtained from the achievement test tend to be statistically reliable.

II. THE PROCEDURES USED IN COLLECTING DATA

The procedures used in collecting data were designed to accomplish two goals. One was to determine quantitatively the changes in personality adjustment scores on a comparative basis with a control group. The other was to measure achievement in some of the facts and basic principles of psychology. Therefore, in order to achieve these goals, it was necessary to set up an experimental group and a control group.

Description of the population tested. The experimental group was composed of students enrolled in two psychology classes at Highland High School, Albuquerque, New Mexico. They were all juniors and seniors. The control group consisted of juniors and seniors enrolled in chemistry classes at Highland High School. None of the control group had ever taken the course in psychology, nor did any of them enroll in the course that semester. Table I includes a description with regard to number and sex of the experimental and control groups.

TABLE I

DESCRIPTION OF THE EXPERIMENTAL GROUP AND OF
THE CONTROL GROUP WITH REGARD TO NUMBER AND SEX

	Boys	Girls	Total
Experimental group	22	26	48
Control group	37	8	45

The testing program. A pre-test, final test, testing program was adopted. It consisted of administering the achievement test and the Heston Personal Adjustment Inventory to both the experimental and the control groups twice during the semester. These were given the first and the last weeks of the semester. Therefore, two sets of scores, a pre-set and a final set, were obtained. Each set of scores consisted of total scores and sub-scores of the following: (1) achievement test, (2) analytical thinking, (3) sociability, (4) emotional stability, (5) confidence, (6) personal relations, and (7) home satisfaction. If any significant differences in results appeared between the experimental group and the control group, it would be possible to attribute the studying of psychology as the causative factor.

TABLE I

REPRESENTATION OF THE EXPERIMENTAL DATA AND OF
THE CONTROL GROUP WITH REGARD TO THE TEST

Experimental group	Boys	Girls	Total
Control group	12	10	22
Experimental group	12	10	22

The testing program

The program was adopted. It consisted of a preliminary test, an achievement test and the Boston Test. The preliminary test was given to both the experimental and the control groups before the semester. These were given the first and the last tests of the semester. The semester, two tests were given, a pre-test and a final test, were given. The test of achievement consisted of total scores and sub-scores as follows: (1) achievement test, (2) analytical thinking, (3) vocabulary, (4) spelling, (5) dictation, (6) oral expression, and (7) home satisfaction. At any time during the semester a revision appeared between the experimental group and the control group. It would be possible to make use the grouping of subjects as the comparative factor.

CHAPTER III

RESULTS OF THE STUDY

After all the data were collected, seven factors had been measured.

1. Analytical ability
2. Sociability
3. Emotionality
4. Confidence
5. Personal relations
6. Home adjustment
7. Achievement in psychology

It is to be noted that these seven factors were measured twice for each individual tested, once at the beginning of the semester, and again at the end of the semester. Also it should be kept in mind that two groups were involved; one, a control group of which no member was taking or had taken psychology; another, an experimental group all of whom were enrolled in psychology. In order to glean as much information as possible from the data it was decided that elementary statistical devices such as correlation, critical ratio, and the like would not suffice. Therefore a method was looked for that would analyze the data from a before-after viewpoint and would still make comparisons between a control group and an experimental group. A method was found in the analysis of variance and the analysis of covariance.

FACTORS IN THE STUDY

After all the data have been collected, the following factors have

been measured.

1. Analytical ability
2. Social ability
3. Emotional ability
4. Conscience
5. Personal relations
6. Home adjustment
7. Achievement in psychology

It is to be noted that these seven factors have

been measured for each individual subject, and the

analysis of the material, and again, the

Also it should be kept in mind that the

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ratio, and the like will be utilized. Therefore a

was looked for that would analyze the data from

viewpoint and would still make comparison

group and an experimental group. A method was

analysis of variance and the analysis of

The analysis of variance consists of breaking down the total sums of squares of deviations from the grand mean, whereas the analysis of covariance consists of breaking down the total sums of products of deviations.³² The analysis of variance and the analysis of covariance, then, have different functions according to the following discussion.

The function of the analysis of variance is to test the hypothesis as to whether two or more samples may be said to be random samples from the same normal homogeneous population with respect to their means.³³ The analysis of variance, it should be noted, is not confined to two different groups, but may be used for any number of groups providing the variances are homogeneous.

The function of the analysis of covariance is to test the hypothesis that there is no significant difference in the means of the final scores of the experimental and the control group when the effect of the inequalities on the initial scores of the two groups is eliminated.³⁴ In its operation, the analysis of covariance renders obsolete the necessity for rigidly matched groups, because the effect of the inequalities

³² Morton J. Keston, An Experimental Evaluation of the Efficacy of Two Methods of Teaching Music Appreciation. Unpublished Doctoral thesis, Univ. of Minn., 1949. p. 223.

³³ Palmer O. Johnson, Statistical Methods in Research. New York: Prentice-Hall, Inc., 1949. p. 211.

³⁴ Ibid., pp. 216-240.

The analysis of variance consists of finding the total sum of squares of deviations from the grand mean, whereas the analysis of covariance consists of finding the total sum of products of deviations. The analysis of variance and the analysis of covariance, then, differ in function according to the following distinction:

The function of the analysis of variance is to test the hypothesis as to whether the groups differ in their mean values. The analysis of covariance, on the other hand, is to test the hypothesis as to whether the groups differ in their mean values, after the effect of one or more extraneous variables has been removed. The analysis of covariance is to test the hypothesis that there is no significant difference in the means of the final scores of the experimental and the control groups when the effect of the extraneous variables has been removed. The analysis of covariance is to test the hypothesis that the two groups are equivalent in the scores of the two groups is equivalent. The analysis of covariance is to test the hypothesis that the two groups are equivalent in the scores of the two groups is equivalent.

32 Horton J. Keaton, An Experimental Investigation of the Effect of Two Methods of Teaching on the Retention of Material, unpublished Doctoral Thesis, Univ. of Kansas, 1929, p. 123.

33 Palmer G. Johnson, Experimental Methods in Psychology, New York: Prentice-Hall, Inc., 1924, p. 111.

34 Ibid., pp. 216-240.

between original scores of the experimental and control groups may be eliminated as a variable in the experiment. This is done by adjusting the sum of the squares on the final scores so that the effect of the inequalities in the initial scores of the two groups on the final scores has been removed or eliminated statistically. The procedure is essentially that involved in determining the linear regression of a dependent variable upon one, or the linear combination, of a number of independent variables.³⁵

Similarly, the effects of inequalities of other factors, such as intelligence, socio-economic status, and the like on the final scores may be eliminated by the appropriate adjustments. These adjustments on the final sums of squares of the variable under consideration came about through the analysis of the sum of the cross products of this variable and the other variable whose effect is to be eliminated. Thus, the analysis of covariance is referred to as an analysis of sums of cross products; whereas, the analysis of variance is referred to as an analysis of sums of squares.³⁶

This hypothesis is tested by the analysis of variance and covariance on the data of this study. Table II includes the data necessary for the analysis. The initial test scores are referred to as "X"; the final test scores are referred to

³⁵ Keston, op. cit., p. 225.

³⁶ Loc. cit.

between original scores of the experimental group and control group may be eliminated as a result of the experimental error. This is done by adjusting the two sets of scores in the final scores so that the effect of the experimental error is eliminated. The procedure is as follows: or eliminated statistically. The procedure is as follows: that involved in determining the linear regression of a dependent variable upon one or more independent variables, or number of independent variables.

Similarly, the effect of independent variables, such as intelligence, social-economic status, and the like, on the final scores may be eliminated by the following procedure: Hence, these adjustments on the final scores are referred to as variable under consideration and about which the analysis of the sum of the cross products of the final scores of the dependent variable whose effect is to be eliminated. This is the analysis of covariance. The analysis of variance is of cross products; hence, the analysis of variance is referred to as an analysis of sum of squares.

This hypothesis is tested by the analysis of variance and covariance on the basis of the study. It is indicated the data necessary for the analysis. The initial test scores are referred to as "X", the final test scores are referred to as "Y".

35 Reason, pp. 111, 112.

36 Loc. cit.

TABLE II

SUMS, SUMS OF SQUARES, SUMS OF CROSS PRODUCTS, AND DEVIATION SCORES FOR ANALYSIS OF VARIANCE AND COVARIANCE WITH INITIAL ACHIEVEMENT TEST SCORES FOR THE GROUP AS A WHOLE HELD CONSTANT

RAW SCORES--Achievement					
	N	$\sum x^2$	$\sum x$	$\sum y^2$	$\sum xy$
Experimental	48	717,895	5,829	921,103	6,621
Control	45	582,927	5,085	545,967	4,883
Sum	93	1,300,822	10,914	1,467,070	11,504
DEVIATION SCORES					
	$\sum x^2$	$\sum y^2$	$\sum xy$		
Experimental	10,035.82	7,818.82	6,810.32		
Control	8,322.00	16,107.25	10,195.00		
Sum	18,357.82	23,926.07	17,005.32		
Total	20,011.30	44,037.57	22,771.94		

as "Y". The cross product is, of course, "XY".

The procedure at the outset is similar to that of the analysis of variance. Deviation scores must be calculated. The section of Table III so labeled contains the results of these calculations. For example, the deviation sum of squares for the initial test of the experimental group was calculated in the following manner:

$$\sum x^2 = \sum X^2 - \frac{(\sum X)^2}{N}$$

(deviation sum of squares) (raw sum of squares) (correction term)

Similarly, the deviation sum of squares for the final scores of the experimental group was calculated in much the same manner:

$$\sum y^2 = \sum Y^2 - \frac{(\sum Y)^2}{N}$$

(deviation sum of squares) (raw sum of squares) (correction term)

and,

$$\sum xy = \sum XY - \frac{(\sum X)(\sum Y)}{N}$$

(deviation sum of products) (raw sum of products) (correction term)

A very important distinction must always be borne in mind between "sum" and "total" in the analysis of variance and the analysis of covariance processes. The term "sum" refers to the result of the simple addition of quantities which is the sum of the deviation scores of the experimental group and the control group. In the analysis of variance this "sum of squares" is referred to as the "within sums of squares."

The term "total"; however, refers to a quantity which is not a simple sum but to one which has been calculated from

as \bar{y} . The error ϵ_i is defined as $y_i - \bar{y}$. The procedure in the usual analysis of variance is to calculate the total sum of squares, the sum of squares due to the treatment, and the sum of squares due to the error.

The analysis of variance is based on the following assumptions: (1) The observations are independent. (2) The observations are normally distributed. (3) The variance of the observations is constant.

For the total sum of squares, we have the following formula:
$$\sum_{i=1}^n (y_i - \bar{y})^2 = \sum_{i=1}^n y_i^2 - n\bar{y}^2$$
 (deviation sum of squares) (sum of squares)

Similarly, the deviation sum of squares for the treatment is given by:
$$\sum_{j=1}^k n_j (\bar{y}_j - \bar{y})^2 = \sum_{j=1}^k n_j \bar{y}_j^2 - n\bar{y}^2$$
 (deviation sum of squares) (sum of squares)

and,
$$\sum_{i=1}^n (y_i - \bar{y}_j)^2 = \sum_{i=1}^n y_i^2 - \sum_{j=1}^k n_j \bar{y}_j^2$$
 (deviation sum of squares) (sum of squares)

The total sum of squares is the sum of the deviation sum of squares for the treatment and the deviation sum of squares for the error.
$$\sum_{i=1}^n (y_i - \bar{y})^2 = \sum_{j=1}^k n_j (\bar{y}_j - \bar{y})^2 + \sum_{i=1}^n (y_i - \bar{y}_j)^2$$
 (deviation sum of squares) (deviation sum of squares) (deviation sum of squares)

A very important result in the analysis of variance is the decomposition of the total sum of squares into the sum of squares due to the treatment and the sum of squares due to the error. This is known as the decomposition of the total sum of squares. The decomposition of the total sum of squares is a very important result in the analysis of variance. It allows us to test the null hypothesis that the treatment has no effect on the response. The decomposition of the total sum of squares is a very important result in the analysis of variance. It allows us to test the null hypothesis that the treatment has no effect on the response.

The decomposition of the total sum of squares is a very important result in the analysis of variance. It allows us to test the null hypothesis that the treatment has no effect on the response. The decomposition of the total sum of squares is a very important result in the analysis of variance. It allows us to test the null hypothesis that the treatment has no effect on the response.

the sum of the raw scores. Thus the "total" has been calculated from the "sum" in the raw scores table just as the deviation scores for the experimental and control groups were calculated from the experimental and control sums of squares. The total consists of the sum of squares within groups plus the sum of squares between means of groups.

Up to this point, the analysis does not differ from that of the analysis of variance. However, it must be remembered that the dependent variable, $\sum y^2$, for each group, whether experimental or control, or combined, has been influenced by the initial scores, but possibly in unequal ways for the two groups. The important feature of the analysis of variance and covariance is that the final test scores may be freed of the influence of the initial test scores by adjusting the final test scores. The quantity, $\sum y^2$, must be adjusted in each row of the analysis of variance and covariance table. The "within sum of squares" and the "total sum of squares" are adjusted each with its own regression coefficient. The adjusted "between sum of squares" is obtained by subtracting the adjusted "within sum of squares" from the adjusted "total sum of squares." The general formula for these adjustments is:

$$\sum y'^2 = \sum x^2 - \frac{(\sum xy)^2}{\sum x^2}$$

where $\sum y'^2$ represents the adjusted sum of squares.

The final step in the analysis of variance and covariance is to run an F test on the residual or adjusted mean

the sum of the squares, from the "sum" in the regression equation
 from the experimental and control sums of squares. The total
 consists of the sum of squares within groups and the sum of
 squares between means of groups.

Up to this point, the analysis has been done from
 that of the analysis of variance. However, it must be re-
 membered that the dependent variable, Y , has been given
 whether experimental or control, or adjusted. The analysis
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 for the two groups. The important feature of the analysis
 of variance and covariance is that the final scores may
 be freed of the influence of the initial scores by
 adjusting the final test scores. The quantity $\sum (Y - \bar{Y})^2$ must be
 adjusted in each row of the analysis of variance and covariance
 table. The "within group" and "total" sums of
 squares are adjusted each with its own regression adjustment.
 The adjusted "between sum of squares" is obtained by sub-
 tracting the adjusted "within sum of squares" from the
 "total sum of squares." The general formula for the
 adjustment is:

$$\sum (Y - \bar{Y})^2 - \frac{(\sum Y)^2}{N} = \sum Y^2 - \frac{(\sum Y)^2}{N}$$

where $\sum Y^2$ represents the adjusted sum of squares.
 The final step in the analysis of variance and co-
 variance is to run an F test on the adjusted or adjusted

squares. Table III includes a summary of these values and indicates the necessary calculations. It may be noted from the table that one degree of freedom is lost in the adjustment process.

The tabled values of F with degrees of freedom 1 and 56 are 4.02 (5 per cent level) and 7.12 (1 per cent level).³⁷ The F value obtained in Table III, however, is 110.79 which is beyond the tabled value of F at the 1 per cent level. Therefore, the F ratio obtained is not a chance value, but a significant one. The hypothesis that there is no significant difference in the means of the final scores of the experimental and the control group when the effect of the inequalities on the initial scores of the two groups is eliminated can now be rejected, at least for the achievement scores. Therefore, there is a significant difference between the mean final scores of the experimental group and the control group on the final achievement test after the effects of the initial achievement test scores have been removed. In terms of the experiment performed this means that a significant degree of achievement in psychology was attained by the experimental group.

The remaining data were subjected to the analysis of variance and to the analysis of covariance in the same manner as described in the preceding pages. When comparing the

³⁷ George W. Snedecor, Statistical Methods. Ames, Iowa: Iowa State College Press, 1946. p. 225.

agrees. Table III indicates a survey of these values and indicates the necessary calculations. It may be noted that the table that one knows of is lost in the process, went process.

The table value of F with degrees of freedom 1 and 50 are 4.02 (5 per cent level) and 7.12 (1 per cent level). The F value obtained in Table III, however, is 110.75 which is beyond the table value and F is not a significant value. Therefore, the F ratio obtained is not a significant one. The t -test indicates that there is no significant difference in the mean of the two groups. The experimental and the control group show the effect of the inquilinism on the F ratio. The F ratio is eliminated can now be rejected. At least for the moment. Therefore, there is a significant difference between the mean final scores of the experimental group and the control group on F ratio. The F ratio is eliminated of the initial achievement test scores was not significant. Terms of the experiment part and this means that a significant degree of achievement in psychology was obtained by the experimental group.

The remaining data were subjected to the analysis of variance and to the analysis of covariance in the same manner as described in the preceding pages. It is observed that

TABLE III

ANALYSIS OF VARIANCE AND COVARIANCE OF ACHIEVEMENT TEST SCORES HOLDING INITIAL
ACHIEVEMENT TEST SCORES CONSTANT

Source of Variance	df	$\sum y^2$	$\sum x^2$	$\sum xy$	Adjusted or reduced			Hypothesis
					df	Sum of Squares	Mean Square	F
Within	92	23,926.07	18,357.82	17,005.32	91	8,173.61	89.81	
Between	1	20,111.50	1,653.48	5,766.62	1	9,950.54	9,950.54	
								110.79 Rejected
Total	93	44,037.57	20,011.30	22,771.94	92	18,124.15		

experimental group as a whole with the control group as a whole, F ratios for the various factors under consideration were obtained. These F ratios are presented in Table IV.

It is possible to evaluate these F ratios in terms of the null hypothesis being tested. The null hypothesis states that there is no significant difference in the means of the final scores of the experimental and the control group when the effect of the inequalities on the initial scores of the two groups is eliminated. Thus, if the F ratio exceeds the 5 per cent level and the 1 per cent level, then the hypothesis must be rejected. If the F ratio does not exceed the 1 and 5 per cent levels of chance, the hypothesis is accepted. Applying this to the F ratios in Table IV, one sees that the only F ratio of any significance for the groups as a whole is in achievement. Evidently, a student benefits from taking a high school psychology course in gains of achievement in subject matter rather than in terms of better adjustment.

The results of this study do not seem surprising nor disappointing when one considers the organization of the psychology course being evaluated. The type of psychology course taught was patterned in much the same fashion as an introductory college course. Emphasis was not placed upon personality problems or improvement, but was placed upon achievement of facts and upon the understanding of various psychological theories. Therefore, the results do parallel what is to be expected from the course. Since no statistical

TABLE IV

F RATIOS AND THE EVALUATION OF THE HYPOTHESIS FOR THE
EXPERIMENTAL GROUP AND CONTROL GROUP AS A WHOLE

Factor	F ratio	Hypothesis
Achievement	110.79	rejected
Analytical thinking	1.61	accepted
Sociability	1.34	accepted
Emotional stability	55.11	accepted
Confidence	16.94	accepted
Personal relations	2.12	accepted
Home satisfaction	3.11	accepted

TABLE IV

RELATIONSHIP BETWEEN THE FACTORS OF THE PERSONALITY AND THE EXPERIMENTAL SCORES AND CORRELATION COEFFICIENTS

Factor	Y factor	Experimental score
Achievement	12.73	12.73
Analytical thinking	11.01	11.01
Sociality	11.38	11.38
Emotional stability	11.11	11.11
Confidence	10.94	10.94
Personal relations	8.13	8.13
Home satisfaction	7.41	7.41

evidence was gleaned which would indicate improvement in personality adjustment, it seems advisable at this time to discuss the nature of personality adjustment in terms of needs and to indicate the difficulties that are present in changing adjustment patterns.

To suppose that significant personality changes would occur in the short interval of one semester suggests a naive acceptance of the efficacy of therapeutic methods. Adjustment patterns are extremely complicated affairs. Kuhlen states that:

The human organism is so complex and his behavioral history so obscure, even to the individual himself, that the reasons for the appearance and adoption of particular modes of response are often not apparent even after diligent study.³⁸

Adjustment patterns can be interpreted as reactions related to the satisfaction of needs. The satisfaction of a need produces a sense of well being to an individual. Well-adjusted people have learned to satisfy their needs in ways that are less tension producing than that of poorly-adjusted people. Various writers present their own formulations of the needs and motives of individuals. Symonds³⁹ urges that there are two basic needs--security and adequacy. Maslow⁴⁰

³⁸ Raymond G. Kuhlen, The Psychology of Adolescent Development. New York: Harper & Brothers, 1952. p. 240.

³⁹ P. M. Symonds, The Dynamics of Human Adjustment. New York: D. Appleton-Century Company, 1946. p. 35.

⁴⁰ A. H. Maslow, "A Theory of Human Motivation," Psychological Review, 1943. 50:370-396.

evidence was planned with a specific hypothesis in mind. The results of the study are presented in the following table. The results of the study are presented in the following table. The results of the study are presented in the following table.

To suppose that a single factor is responsible for the occurrence of the behavior is to suppose that the behavior is a simple function of that factor. The results of the study are presented in the following table. The results of the study are presented in the following table. The results of the study are presented in the following table.

that:

The human organism is a complex system. The results of the study are presented in the following table. The results of the study are presented in the following table. The results of the study are presented in the following table.

Adjustment patterns have been identified as a function of the individual's needs. The results of the study are presented in the following table. The results of the study are presented in the following table. The results of the study are presented in the following table.

38 Raymond C. Barker, The Psychology of Adjustment, New York: Harper & Brothers, 1928, p. 38.

39 P. M. Symonds, The Psychology of Human Adjustment, New York: D. Appleton-Century Company, 1929, p. 39.

40 A. D. Barker, The Psychology of Human Adjustment, New York: D. Appleton-Century Company, 1929, p. 40.

discusses needs in terms of a hierarchy of five levels of priority, lower level needs taking priority over higher level needs. Murray⁴¹ lists a substantial number of needs and presses.

For our purposes we need to know the characteristic needs of adolescence. Kuhlen⁴² lists what appear to be the more important motives and needs characterizing the adolescent period. These are:

(1) The Need for Status and Acceptance. This need represents the common need for a secure position and a sense of belongingness in one's home and family, in one's actual or desired social set, or among one's colleagues at school or work.

(2) The Desire for Independence. Especially is this need important in America where a great premium is placed upon individual initiative.

(3) Vocation and Material Motives. Some of the most serious problems of adolescence and adult life grow out of the inability of young people to clarify sufficiently their vocational goals so that intelligent action can be taken toward achieving them.

(4) Adherence to Codes and Ideals. ...Moral beliefs, codes of honesty, sex codes, group loyalty, ideals of courtesy, law observance, ideals of beauty, the perfect life, religious virtue, attitudes of admiration, hate, contempt, or pity toward various national or minority groups -- these and many other personal values too numerous to mention contribute to the attitudinal complex often labeled a "value system" which plays a highly significant role in a person's motivational make-up.

(5) The Need for Understanding and "Completeness". ...That some motivation exists to explore issues and to achieve understanding is suggested by the numerous occasions on which young people discuss such questions as truth, beauty, religion, and ideals of one kind or another in "bull sessions."

⁴¹ H. A. Murray, Exploration in Personality. Oxford University Press, 1938. p. 28.

⁴² Kuhlen, op. cit. pp. 243-247.

(6) Sex and Other Biological Needs. ...Since the sex drive is not so readily satisfied in the American culture as is the tissue need for food and water, it may be expected that it will exert more pressure upon behavior generally than do other creature needs.

(7) Habits as Motives. ...A habit or set of habits, once established, tends to carry its own motive power.

The needs listed by Kuhlen are both conscious and unconscious. Kuhlen states that:

...Separate listing and separate discussion of needs does not imply that there are separate motives. A "motive" or "need" is by no means a psychological entity. Any Aspect of behavior tends to be determined not by a single "motive," but by the total motivational situation. Some "motives" will reinforce each other, and some will be in conflict. And what constitutes an important motive for one individual may be relatively lacking for another.⁴³

It is apparent from the foregoing discussion of needs that adjustment is no simple matter, that before adjustment patterns are changed methods of satisfying needs will be learned more adequately. This procedure seems to require time along with gains in insight into one's adjustment patterns. The high school course in psychology investigated for this study did involve the achievement of understanding facts and theories of psychology. It is felt that this achievement must necessarily lead to more insight into one's own adjustment reactions than maturity alone. Upon examining some of the needs involved in adjustment reactions one can see the complex nature of adjustment changes. The adjustment reactions present in the students before taking the course in psychology are also present, for the most part, at the end of the

⁴³ Ibid., p. 243.

(6) ... and ...
sex drive is not so readily ...
children as is the ...
be expected that it will ...
behavior generally ...
(7) ...
once established ...

The needs listed by ...

unconscious ...

... separate ...
not easily ...
"need" is ...
of behavior ...
but by the ...
will reinforce ...
And what constitutes ...
anal may be ...

It is apparent ...

that adjustment is ...
patterns are ...

learned more ...

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The high school ...

study did involve ...

theories of ...

necessarily lead to ...

reactions than ...

needs involved in ...

nature of adjustment ...

present in the ...

are also present, ...

course. However, the knowledge of facts and theories of behavior undoubtedly will aid the students in the future. How much it will aid them is still a matter for speculation. It would be interesting to devise an experimental situation in which a follow-up study could someday be conducted. Because of the gains in achievement it seems that psychology courses have a deserved place in the high-school curriculum.

In summarizing this chapter, upon subjecting the seven sets of data to the analysis of variance and covariance, only one set, the achievement scores, showed a significance in improvement. The other six sets, personality scores, showed slight increases that are not statistically significant. In terms of the experiment performed, one can then formulate the statement that studying an introductory course in psychology results in more gains in achievement than in better adjustment. The results of this study, therefore, give evidence to support the view that psychology should be taught in high schools.

course. However, the knowledge of the fact that the behavior and ability will not be affected by the fact that much it will be then is still a matter for consideration. It would be interesting to know an experimental situation in which a follow-up study could be made of the gains in achievement in reading in contrast to the gains in achievement in other subjects. It has been observed that in the high school curriculum in mathematics the student's gain in achievement is never seen of him in the analysis of a class and examination only one set, the achievement is not shown a slight increase in improvement. The other set, however, is usually shown slight increase in achievement and not at all in achievement. In terms of the experiment for reading, one set showed to indicate the significant difference in achievement in psychology, reading in high school, and in achievement in better adjustment. The results of the study, however, have evidence to suggest that the achievement in reading is higher in high schools.

CHAPTER IV

SUMMARY AND CONCLUSIONS

The purpose of this study as stated at the outset was to evaluate a high-school psychology course in order to determine the effect in achievement and the effect in adjustment of the course upon the students enrolled. In order to accomplish this, it was necessary to set up a control group along with an experimental group and to test both groups before the experiment and after the experiment. To assess achievement it was decided that an achievement test composed of items found in the final examinations of introductory college courses in general psychology would need to be utilized, since no standardized published test could be obtained. To assess adjustment the Heston Personality Inventory was decided upon because it had norms for high school seniors, it has the advantage of being relatively inexpensive, it is a group test, it can be scored by hand, and it furnishes scores for six factors of adjustment.

The groups were tested with the achievement test and the personality inventory at the beginning of the semester and again at the end. It was hypothesized that any significant differences in results could be attributed to the effect of the psychology course on the students enrolled in it. It was decided that since the null hypothesis to be tested involved the determining of the significance of score changes,

the analysis of variance and the analysis of covariance would have to be utilized. Consequently, the data were subjected to these analyses. From these statistical treatments it was concluded that the psychology course investigated was instrumental in affecting significant gains of achievement in some of the facts and principles of psychology. It also was determined that the psychology course tested did very little to effect personality adjustment. These results were to be expected because of the nature of the organization of the course. As for improvement in adjustment inventory performance, it was decided that in view of the degree of performance attributed to personality behavior patterns related to needs, that the time lapse of one semester was not long enough to measure personality changes due to achievement in psychological facts and insight into one's own adjustment mechanisms. Because of the gains in achievement and the probable effect of these gains in producing useful insights relevant to one's own self, it appears that psychology courses have a place in the high-school curriculum.

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APPENDIX A: CALCULATED DATA

APPENDIX A: COLLECTED DATA

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SUMS, SUMS OF SQUARE, SUMS OF CROSS PRODUCTS, AND DEVIATION
 SCORES FOR ANALYSIS OF VARIANCE AND COVARIANCE WITH INITIAL
 ACHIEVEMENT TEST SCORES FOR THE GROUPS AS A WHOLE HELD CONSTANT

RAW SCORES--Achievement					
	N	$\sum X^2$	$\sum X$	$\sum Y^2$	$\sum XY$
Experimental	48	717,895	5,829	921,103	810,848
Control	45	582,927	5,085	545,967	561,974
Sum	93	1,300,822	10,914	1,467,070	1,372,822

DEVIATION SCORES			
	$\sum X^2$	$\sum Y^2$	$\sum XY$
Experimental	10,035.82	7,818.82	6,810.32
Control	8,322.00	16,107.25	10,195.00
Sum	18,357.82	23,926.07	17,005.32
Total	20,011.30	44,037.57	22,771.94

ANALYSIS OF VARIANCE AND COVARIANCE OF ACHIEVEMENT TEST SCORES HOLDING INITIAL
ACHIEVEMENT TEST SCORES CONSTANT

Source of Variance	df	$\sum Y^2$	$\sum X^2$	$\sum XY$	Adjusted or reduced			Hypothesis
					df	Sum of Squares	Mean Square	F
Within	92	23,926.07	18,357.82	17,005.32	91	8,173.61	89.81	
Between	1	20,111.50	1,653.48	5,766.62	1	9,950.54	9,950.54	
								110.79 Rejected
Total	93	44,037.57	20,011.30	22,771.94	92	18,124.15		

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF PLANT INDUSTRY

Report to the Secretary

1917

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SUMS, SUMS OF SQUARES, SUMS OF CROSS PRODUCTS, AND DEVIATION
 SCORES FOR ANALYSIS OF VARIANCE AND COVARIANCE WITH INITIAL
 ANALYTICAL THINKING TEST SCORES FOR THE GROUP AS A WHOLE HELD CONSTANT

RAW SCORES---Analytical Thinking					
	N	$\sum X^2$	$\sum X$	$\sum Y^2$	$\sum Y$ $\sum XY$
Experimental	48	71,990	1,314	90,162	1,540 70,266
Control	45	76,848	1,414	69,661	1,317 61,001
Sum	93	148,838	2,728	159,823	2,857 131,267

DEVIATION SCORES			
	$\sum X^2$	$\sum Y^2$	$\sum XY$
Experimental	36,019.25	40,753.67	28,108.50
Control	32,416.98	31,116.80	19,617.94
Sum	68,436.23	71,870.47	47,726.44
Total	68,816.66	72,054.74	47,461.67

ANALYSIS OF VARIANCE AND COVARIANCE OF ANALYTICAL THINKING SCORES
HOLDING INITIAL ANALYTICAL THINKING SCORES CONSTANT

Source of Variance	df	$\sum y^2$	$\sum x^2$	$\sum xy$	Sum of Squares	Mean Square	F	Hypothesis
Within	92	71,870.47	68,436.23	47,726.44	91 38,586.74	424.03		
Between	1	184.27	380.43	264.77	1 683.77	683.77	1.61	Accepted
Total	93	72,054.74	68,816.66	47,461.67	92 39,270.51			

SUMS, SUMS OF SQUARES, SUMS OF CROSS PRODUCTS, AND DEVIATION
 SCORES FOR ANALYSIS OF VARIANCE AND COVARIANCE WITH INITIAL
 SOCIABILITY TEST SCORES FOR THE GROUP AS A WHOLE HELD CONSTANT

RAW SCORES--Sociability				
	$\sum X^2$	$\sum X$	$\sum Y$	$\sum XY$
Experimental	48	154,438	2,436	172,538
Control	45	101,490	1,756	117,623
Sum	93	255,928	4,192	290,161
DEVIATION SCORES				
	$\sum x^2$	$\sum y^2$		$\sum xy$
Experimental	30,811.00	29,747.92		19,381.50
Control	32,966.98	35,958.80		26,741.40
Sum	63,777.98	65,706.72		46,122.90
Total	66,972.48	69,018.80		49,375.66

ANALYSIS OF VARIANCE AND COVARIANCE OF SOCIABILITY SCORES
HOLDING INITIAL SOCIABILITY SCORES CONSTANT

Source of Variance	df	$\sum y^2$	$\sum x^2$	$\sum xy$	Adjusted or reduced			Hypothesis
					df	Sum of Squares	Mean Square	F
Within	92	65,706.72	63,777.98	46,122.90	91	32,351.61	355.55	
Between	1	3,312.08	3,194.50	3,252.76	1	264.84	264.84	1.34 Accepted
Total	93	66,972.48	66,972.48	49,375.66	92	32,616.45		

SUMS, SUMS OF SQUARES, SUMS OF CROSS PRODUCTS, AND DEVIATION
 SCORES FOR ANALYSIS OF VARIANCE AND COVARIANCE WITH INITIAL
 EMOTIONAL STABILITY TEST SCORES FOR THE GROUP AS A WHOLE HELD CONSTANT

RAW SCORES---Emotional Stability					
	N	$\sum x^2$	$\sum x$	$\sum y^2$	$\sum xy$
Experimental	48	235,444	3,142	259,018	228,453
Control	45	165,073	2,376	202,485	170,984
Sum	93	400,517	5,518	461,503	399,437

DEVIATION SCORES			
	$\sum x^2$	$\sum y^2$	$\sum xy$
Experimental	29,773.92	41,935.00	17,153.50
Control	39,620.20	43,946.32	29,955.20
Sum	69,394.12	85,881.32	47,108.70
Total	73,115.66	87,328.80	49,429.67

ANALYSIS OF VARIANCE AND COVARIANCE OF EMOTIONAL STABILITY SCORES
HOLDING INITIAL SOCIABILITY SCORES CONSTANT

Source of Variance	df	$\sum Y^2$	$\sum X^2$	$\sum XY$	Adjusted or reduced			Hypothesis
					Sum of Squares	df	Mean Square	
Within	92	85,881.32	69,394.12	47,108.70	53,901.24	91	592.32	
Between	1	1,447.48	3,721.54	2,320.97	10.75	1	10.75	55.1 Accepted
Total	93	87,328.80	73,115.66	49,429.67	53,911.99	92		

SUMS, SUMS OF SQUARES, SUMS OF CROSS PRODUCTS, AND DEVIATION
 SCORES FOR ANALYSIS OF VARIANCE AND COVARIANCE WITH INITIAL
 CONFIDENCE SCORES FOR THE GROUP AS A WHOLE HELD CONSTANT

RAW SCORES--Confidence					
	N	$\sum x^2$	$\sum x$	$\sum y$	$\sum xy$
Experimental	48	137,369	2,305	2,626	148,105
Control	45	99,988	1,864	2,180	108,386
Sum	93	237,357	4,169	4,806	256,491

DEVIATION SCORES			
	$\sum x^2$	$\sum y^2$	$\sum xy$
Experimental	26,680.98	40,087.92	22,002.30
Control	22,776.80	28,805.12	18,085.56
Sum	49,457.78	68,893.04	40,087.86
Total	50,469.25	69,804.33	41,047.84

ANALYSIS OF VARIANCE AND COVARIANCE OF CONFIDENCE SCORES
HOLDING INITIAL CONFIDENCE SCORES CONSTANT

Source of Variance	df	$\sum Y^2$	$\sum X^2$	$\sum XY$	Adjusted or reduced			Hypothesis
					df	Sum of Squares	Mean Square	F
Within	92	68,893.04	49,457.78	40,087.86	91	36,399.95	325.32	
Between	1	911.29	1,011.47	959.98	1	19.20	19.20	16.94 Accepted
Total	93	69,804.33	50,469.25	41,047.84	92	36,419.15		

SUMS, SUMS OF SQUARES, SUMS OF CROSS PRODUCTS, AND DEVIATION
 SCORES FOR ANALYSIS OF VARIANCE AND COVARIANCE WITH INITIAL
 PERSONAL RELATIONS SCORES FOR THE GROUP AS A WHOLE HELD CONSTANT

RAW SCORES--Personal Relations					
	N	$\sum X^2$	$\sum X$	$\sum Y^2$	$\sum XY$
Experimental	48	128,960	2,118	166,506	2,368
Control	45	121,137	1,988	179,139	2,543
Sum	93	250,097	4,106	345,645	4,911
DEVIATION SCORES					
	$\sum x^2$	$\sum y^2$	$\sum xy$		
Experimental	35,503.25	49,684.67	26,868.00		
Control	33,311.58	35,431.25	21,866.92		
Sum	68,814.83	85,115.92	48,734.92		
Total	68,814.89	86,312.52	48,743.71		

ANALYSIS OF VARIANCE AND COVARIANCE OF PERSONAL RELATIONS
SCORES HOLDING INITIAL PERSONAL RELATIONS SCORES CONSTANT

Source of Variance	df	$\sum Y^2$	$\sum X^2$	$\sum XY$	Adjusted or reduced			Hypothesis
					df	Sum of Squares	Mean Square	F
Within	92	85,115.92	68,814.83	48,734.92	91	50,601.67	556.06	
Between	1	1,196.60	.06	8.79	1	1,184.18	1,184.18	2.12 Accepted
Total	93	86,312.52	68,814.89	48,743.71	92	51,785.85		

SUMS, SUMS OF SQUARES, SUMS OF CROSS PRODUCTS, AND DEVIATION
 SCORES FOR ANALYSIS OF VARIANCE AND COVARIANCE WITH INITIAL
 HOME SATISFACTION SCORES FOR THE GROUP AS A WHOLE HELD CONSTANT

RAW SCORES--Home Satisfaction					
	N	$\sum x^2$	$\sum x$	$\sum y^2$	$\sum xy$
Experimental	48	180,385	2,463	179,203	2,377
Control	45	190,166	2,506	227,600	2,776
Sum	93	370,551	4,969	406,803	5,153
DEVIATION SCORES					
	$\sum x^2$	$\sum y^2$	$\sum xy$		
Experimental	54,002.32	61,492.00	43,679.19		
Control	50,609.65	56,351.65	40,055.65		
Sum	104,611.97	117,843.65	83,734.84		
Total	105,056.68	121,282.48	84,971.66		

ANALYSIS OF VARIANCE AND COVARIANCE OF HOME SATISFACTION
SCORES HOLDING INITIAL HOME SATISFACTION SCORES CONSTANT

Source of Variance	df	$\sum y^2$	$\sum xy$	$\sum x^2$	Adjusted or reduced			Hypothesis
					df	Sum of Squares	Mean Square	F
Within	92	117,843.65	83,734.84	104,611.97	91	50,819.54	558.45	
Between	1	3,438.83	1,236.82	444.71	1	1,736.40	1,736.40	
3.11 Accepted								
Total	93	121,282.48	84,971.66	105,056.68	92	52,555.94		

ПОЛТАВСКАЯ ЕПАРХИЯ ПО ПОСЛАНИЮ СВА СЪВѢЩАНІЯ ПО СЪВѢЩАНІЮ
 ПРАВИЛО СЪВѢЩАНІЯ ПОЛТАВСКАЯ ЕПАРХИЯ СЪВѢЩАНІЮ СЪВѢЩАНІЮ

Должность по Службѣ

Должность	по числу	по числу	по числу	по числу	по числу	по числу
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24.832	42.813.02	19	79.112,401	48.457,60	23.246,711	59
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04.257,1	04.257,1	1	17.444	23.257,1	23.257,1	1
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Должность 11.1

49.222,52	89	69.220,201	23.179,43	64.222,121	29	1.111
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РЕШЕНИЕ
 ПРАВИЛО
 СЪВѢЩАНІЮ

APPENDIX B: RAW DATA

ATKINS & SONS

MANCHESTER

ERASE BOND

THE

RAW SCORES FOR EXPERIMENTAL GROUP

523

Case	Achieve-		Heston Personal Adjustment Inventory											
	ment		A		S		E		C		P		H	
	1	2	1	2	1	2	1	2	1	2	1	2	1	2
1	123	141	7	29	76	69	86	76	49	88	75	50	96	98
2	107	127	0	12	33	51	77	51	40	55	11	15	29	12
3	132	141	46	53	30	4	82	23	31	8	13	5	4	2
4	125	141	19	19	73	87	66	90	69	40	34	30	88	98
5	128	145	6	16	65	73	94	76	53	43	50	50	79	96
6	132	143	29	29	8	26	62	84	15	21	5	67	38	94
7	145	162	76	53	73	85	62	76	35	69	75	75	59	84
8	121	137	5	12	34	34	51	99	34	92	87	91	99	84
9	120	137	2	35	15	30	56	77	35	55	15	45	17	19
10	157	166	29	19	81	46	82	56	32	12	39	15	59	23
11	114	133	1	4	21	69	39	99	31	94	18	96	6	53
12	151	162	15	15	25	10	82	90	49	49	50	60	47	6
13	125	156	64	76	65	69	44	56	26	32	23	18	23	17
14	135	150	1	3	83	73	56	51	35	26	38	67	27	29
15	130	125	15	2	81	69	99	99	91	98	99	99	99	99
16	121	138	64	19	69	65	99	91	95	88	87	91	98	94
17	127	130	19	15	39	92	66	84	1	74	15	18	8	31
18	141	151	15	2	26	34	56	56	35	66	23	60	47	59
19	111	118	29	35	46	51	72	77	91	76	75	75	99	59
20	106	142	3	1	3	19	39	77	10	21	17	30	38	43
21	100	135	2	2	59	51	90	48	83	88	78	23	38	57
22	102	120	0	23	34	56	98	72	12	17	34	3	84	17
23	154	150	39	86	21	76	16	34	10	43	50	78	7	19
24	118	127	5	3	65	73	39	21	43	49	39	45	14	10

Case ment		Admission										Discharge									
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1	123	141	7	29	76	62	86	76	49	66	82	123	141	7	29	76	62	86	76	49	66
2	107	127	6	12	37	21	77	31	40	22	11	107	127	6	12	37	21	77	31	40	22
3	132	141	66	23	30	4	63	73	21	18	13	132	141	66	23	30	4	63	73	21	18
4	125	141	19	19	73	87	66	90	69	46	24	125	141	19	19	73	87	66	90	69	46
5	128	142	6	16	62	73	64	76	23	23	20	128	142	6	16	62	73	64	76	23	20
6	135	143	62	22	6	26	62	34	12	11	2	135	143	62	22	6	26	62	34	12	11
7	142	142	76	23	73	62	62	76	22	62	22	142	142	76	23	73	62	62	76	22	62
8	141	137	3	12	34	34	21	29	24	22	67	141	137	3	12	34	34	21	29	24	67
9	120	137	2	32	12	10	26	77	22	22	12	120	137	2	32	12	10	26	77	22	12
10	127	146	29	19	61	46	62	26	22	12	12	127	146	29	19	61	46	62	26	22	12
11	114	133	1	4	21	69	29	29	21	24	16	114	133	1	4	21	69	29	29	21	24
12	121	142	12	12	22	10	62	20	49	22	20	121	142	12	12	22	10	62	20	49	22
13	122	126	64	76	62	62	44	26	26	22	18	122	126	64	76	62	62	44	26	26	22
14	122	120	1	7	83	73	26	21	22	66	28	122	120	1	7	83	73	26	21	22	66
15	130	122	12	2	81	69	29	29	21	22	28	130	122	12	2	81	69	29	29	21	22
16	121	136	64	19	69	62	29	21	22	83	27	121	136	64	19	69	62	29	21	22	83
17	127	130	19	12	29	22	66	64	1	24	12	127	130	19	12	29	22	66	64	1	24
18	141	121	12	2	26	24	26	22	22	22	22	141	121	12	2	26	24	26	22	22	22
19	111	118	22	22	46	21	73	77	21	76	72	111	118	22	22	46	21	73	77	21	76
20	106	142	3	1	3	12	77	10	21	12	12	106	142	3	1	3	12	77	10	21	12
21	100	122	2	2	22	21	20	48	62	82	29	100	122	2	2	22	21	20	48	62	82
22	102	120	0	23	24	26	28	22	12	12	24	102	120	0	23	24	26	28	22	12	24
23	124	120	22	22	22	21	16	24	10	42	20	124	120	22	22	22	21	16	24	10	42
24	118	127	2	2	62	73	20	21	42	49	20	118	127	2	2	62	73	20	21	42	49

RAW SCORES FOR EXPERIMENTAL GROUP (cont.)

Case	Achieve-		Heston Personal Adjustment Inventory											
	ment		A		B		E		C		P		H	
	1	2	1	2	1	2	1	2	1	2	1	2	1	2
25	132	155	93	85	56	33	48	19	21	2	25	11	21	14
26	127	140	15	53	59	76	98	94	76	83	45	60	65	57
27	110	120	86	99	14	4	41	7	78	32	11	7	63	27
28	107	137	18	21	57	69	91	96	66	73	75	84	96	99
29	118	143	33	73	78	48	79	91	82	82	57	80	94	99
30	152	148	85	88	78	74	20	60	8	42	11	11	11	17
31	118	147	38	29	48	74	60	99	50	89	57	95	96	99
32	107	138	14	8	92	96	79	83	78	73	57	80	14	27
33	133	124	14	11	48	65	99	99	82	96	96	95	99	99
34	127	137	38	14	69	53	99	99	96	96	70	64	75	70
35	124	129	6	4	53	65	60	83	66	93	70	93	57	94
36	115	135	44	26	60	65	79	97	84	78	30	38	75	63
37	121	130	6	6	91	57	12	28	37	32	8	9	8	11
38	108	123	26	49	80	65	83	83	60	37	80	44	17	13
39	91	109	8	29	69	95	85	91	60	82	44	89	23	17
40	115	128	14	38	4	6	7	60	1	11	8	11	6	14
41	106	123	18	33	44	78	34	20	26	42	15	38	63	75
42	121	157	44	18	6	8	83	97	66	66	93	96	99	99
43	125	153	81	81	57	83	53	96	39	66	57	80	80	99
44	124	144	29	3	74	40	85	24	42	9	18	7	17	6
45	96	120	18	18	40	21	41	24	53	37	14	14	3	23
46	116	141	96	98	83	60	85	85	53	60	75	9	65	7
47	99	123	3	81	26	44	67	15	42	32	38	36	65	14
48	123	140	2	11	23	33	41	7	29	9	38	9	48	27

Case Name									
1	2	3	4	5	6	7	8	9	10
25	132	133	134	135	136	137	138	139	140
26	137	138	139	140	141	142	143	144	145
27	140	141	142	143	144	145	146	147	148
28	147	148	149	150	151	152	153	154	155
29	148	149	150	151	152	153	154	155	156
30	152	153	154	155	156	157	158	159	160
31	156	157	158	159	160	161	162	163	164
32	157	158	159	160	161	162	163	164	165
33	159	160	161	162	163	164	165	166	167
34	167	168	169	170	171	172	173	174	175
35	168	169	170	171	172	173	174	175	176
36	172	173	174	175	176	177	178	179	180
37	173	174	175	176	177	178	179	180	181
38	178	179	180	181	182	183	184	185	186
39	179	180	181	182	183	184	185	186	187
40	182	183	184	185	186	187	188	189	190
41	186	187	188	189	190	191	192	193	194
42	187	188	189	190	191	192	193	194	195
43	192	193	194	195	196	197	198	199	200
44	193	194	195	196	197	198	199	200	201
45	198	199	200	201	202	203	204	205	206
46	199	200	201	202	203	204	205	206	207
47	202	203	204	205	206	207	208	209	210
48	203	204	205	206	207	208	209	210	211

RAW SCORES FOR CONTROL GROUP

54

Case	Achievement		Heston Personal Adjustment Inventory											
			A		B		E		C		P		H	
	1	2	1	2	1	2	1	2	1	2	1	2	1	2
1	118	113	15	39	42	65	28	39	59	35	60	34	75	96
2	108	101	2	23	39	13	98	76	49	74	25	23	75	84
3	129	125	58	7	10	5	84	99	88	66	67	60	84	99
4	136	118	15	15	69	73	97	99	91	88	96	91	84	75
5	136	143	15	2	10	2	23	19	17	5	15	39	19	43
6	99	133	64	58	25	39	77	86	69	91	45	96	94	99
7	112	112	29	3	73	33	51	48	40	31	30	18	5	15
8	154	148	53	53	46	42	19	19	36	40	75	60	59	59
9	93	78	26	29	74	83	94	94	82	78	89	89	96	91
10	117	123	67	4	65	33	53	24	26	42	38	64	48	8
11	88	111	67	90	78	83	53	91	82	84	9	57	34	44
12	107	105	1	4	69	96	93	93	73	96	88	89	99	99
13	118	118	6	4	2	17	12	60	6	17	9	30	44	96
14	85	75	29	14	21	33	29	29	26	39	38	44	17	24
15	122	114	0	3	26	31	71	53	42	32	75	38	80	99
16	107	117	81	85	48	80	20	13	29	14	14	9	11	14
17	111	111	81	92	48	17	53	46	45	29	57	52	42	48
18	118	119	81	86	40	44	91	91	42	43	64	88	99	99
19	116	106	86	26	69	83	93	91	50	53	52	88	23	2
20	114	111	61	33	78	80	60	96	66	82	80	80	99	96
21	103	105	2	14	40	40	44	91	39	50	80	84	91	99
22	108	110	21	26	6	57	24	15	45	78	14	89	65	42
23	95	113	6	3	40	65	96	79	17	55	44	44	11	14
24	107	83	3	2	8	11	79	29	32	42	38	38	94	23

Case	Achievement		Heston Personal Adjustment Inventory											
			A		S		E		C		P		H	
	1	2	1	2	1	2	1	2	1	2	1	2	1	2
25	103	102	18	14	8	7	15	91	14	32	18	64	24	48
26	108	106	18	6	31	33	71	85	42	60	64	75	51	87
27	132	127	44	88	11	23	46	44	73	11	7	84	13	75
28	106	86	86	26	0	11	44	93	9	53	3	18	29	17
29	114	120	11	44	8	40	34	77	24	29	44	84	1	65
30	140	133	44	61	57	53	46	53	50	73	30	57	65	87
31	113	100	49	38	26	33	34	46	22	26	26	13	96	99
32	90	75	1	6	26	33	83	96	53	82	70	84	38	99
33	109	116	38	29	3	3	34	46	26	39	44	44	2	3
34	113	107	33	26	31	33	7	7	17	12	6	11	30	23
35	98	98	44	49	78	80	91	91	53	53	64	64	91	99
36	111	109	8	33	31	53	60	61	53	73	44	75	94	94
37	106	106	38	21	6	4	7	8	22	14	26	54	57	65
38	112	82	8	38	0	14	13	20	1	17	14	15	17	23
39	110	100	11	4	80	57	98	97	53	84	88	93	99	99
40	114	92	3	2	53	31	28	79	32	50	64	75	52	13
41	114	99	4	14	69	74	94	93	53	73	80	89	99	99
42	129	130	49	38	60	26	41	28	39	37	22	44	75	80
43	117	115	4	6	3	1	29	29	1	5	8	11	10	10
44	122	105	11	38	57	88	46	34	39	45	7	9	24	29
45	123	104	29	21	92	95	13	13	37	50	57	64	91	94

APPENDIX C: ACHIEVEMENT TEST

OFFICE OF THE ATTORNEY GENERAL

RECEIVED

RECEIVED

RECEIVED

Directions: Place an x in the appropriate column, true or false. Answer all questions. There is no subtraction for wrong answers.

- | True | False | |
|-------|-------|--|
| _____ | _____ | 1. <input checked="" type="checkbox"/> Dreams are simply accidental occurrences during sleep; the frequent bizarre nature of dreams indicate that they have nothing to do with one's personality. |
| _____ | _____ | 2. Most birthmarks are caused by the desires and emotional experiences of the mother during pregnancy. |
| _____ | _____ | 3. Feeble-mindedness tends to be inherited in man. |
| _____ | _____ | 4. Variations in the output of insulin, the hormone produced by the Islands of Langerhans (pancreas), cause variations in the individual's level of blood sugar, which in turn affect mental functioning and mood. |
| _____ | _____ | 5. <input checked="" type="checkbox"/> There is no nerve connection between the mother and the fetus. |
| _____ | _____ | 6. <input checked="" type="checkbox"/> The adrenal gland appears to be a master gland which exerts a controlling influence on all of the others. |
| _____ | _____ | 7. Generally, one lives in conformance to the group code, but it seldom becomes a part of his personality. |
| _____ | _____ | 8. <input checked="" type="checkbox"/> Infants at birth are unable to distinguish between different tastes and odors. |
| _____ | _____ | 9. The mentally deficient tend to be smaller in size and less healthy than average or superior children. |
| _____ | _____ | 10. <input checked="" type="checkbox"/> An individual's personality is simply the sum of his personality traits. |
| _____ | _____ | 11. Modern studies of individual differences demonstrate conclusively that individuals do not fall into definite types or classes. |
| _____ | _____ | 12. The highest order of the feeble-minded are the morons. |
| _____ | _____ | 13. <input checked="" type="checkbox"/> According to psychologists, some individuals simply have no personality. |
| _____ | _____ | 14. All reliable tests must necessarily be valid. |
| _____ | _____ | 15. The thyroid gland controls the amount of glucose or blood sugar in the blood. |

Directions: Please read the following carefully, then on
the lines provided, answer the questions. There are no
penalties for wrong answers.

- | | | |
|---|-------|-------|
| 1. Please are clearly indicated, occurring during sleep; the frequency of these is-
dicate that they have nothing to do with any
personality. | _____ | _____ |
| 2. Most physicals are caused by the disease and
essential experience of the person during
pregnancy. | _____ | _____ |
| 3. Psychologicals tend to be inherited in man. | _____ | _____ |
| 4. Variations in the output of insulin, the hormone
produced by the islands of Langerhans (pancreas),
cause variations in the individual's level of
blood sugar, which is a direct result of emotion-
ing and mood. | _____ | _____ |
| 5. There is no true connection between the mother
and the fetus. | _____ | _____ |
| 6. The adrenal gland appears to be a master gland
which exerts a controlling influence on all of the
others. | _____ | _____ |
| 7. Generally, one lives in accordance to the group
code, but it seldom becomes a part of his person-
ality. | _____ | _____ |
| 8. Infants at birth are unable to distinguish be-
tween different tastes and odors. | _____ | _____ |
| 9. The mentally deficient tend to be smaller in
size and less healthy than average of superior
children. | _____ | _____ |
| 10. An individual's personality is largely the sum
of his personality traits. | _____ | _____ |
| 11. Modern studies of individual differences ex-
onerate conclusively that individuals do not
fall into definite types of classes. | _____ | _____ |
| 12. The highest order of the technological are the
monom. | _____ | _____ |
| 13. According to psychologists, some individuals
simply have no personality. | _____ | _____ |
| 14. All reliable tests must necessarily be valid. | _____ | _____ |
| 15. The thyroid gland controls the amount of
glucose or blood sugar in the blood. | _____ | _____ |

- | True | False | |
|-------|-------|---|
| _____ | _____ | 16. Improving the environment for all alike would tend to make individuals equal. |
| _____ | _____ | 17. The range, median, and mean are the most commonly used measures of central tendency. |
| _____ | _____ | 18. Hardwork is frequently the cause of nervous breakdowns. |
| _____ | _____ | 19. When a person gains knowledge of the factors which caused his personality difficulties he is automatically cured of those difficulties. |
| _____ | _____ | 20. The more intelligent a person, the greater the probability that he will adjust appropriately in new situations. |
| _____ | _____ | 21. Children are more readily conditioned than adults. |
| _____ | _____ | 22. An idea or wish denied to consciousness is said to be repressed. |
| _____ | _____ | 23. Generally speaking, a child's I.Q. increases as he grows older. |
| _____ | _____ | 24. Frustration may refer either to the goal which you fail to reach or the feeling you have when you cannot attain the goal. |
| _____ | _____ | 25. In hypothyroidism, although the individual becomes physically sluggish, his I.Q. is virtually unaffected. |
| _____ | _____ | 26. Any child with an I.Q. of 70 or less must have had a defective heredity. |
| _____ | _____ | 27. To maintain adjustment, it is wise to avoid or to learn to tolerate frustration. |
| _____ | _____ | 28. Freud was a practicing psychiatrist and the "father of psychoanalysis." |
| _____ | _____ | 29. There is a tendency for superiority and inferiority to run in families. |
| _____ | _____ | 30. Adrenalin is produced in the outer layers of the adrenal glands. |
| _____ | _____ | 31. The hormones themselves are a potent source of energy. |
| _____ | _____ | 32. A shift from an inferior to a superior environment usually results in an increase in I.Q. |

True False

16. In view of the circumstances, it is likely that the defendant is guilty of the crime charged.

17. The evidence is such that the defendant is guilty of the crime charged.

18. The evidence is such that the defendant is guilty of the crime charged.

19. When a person is found guilty of a crime, it is the duty of the court to impose a sentence which is commensurate with the gravity of the offense.

20. The defendant is guilty of the crime charged, and the evidence is such that the defendant is guilty of the crime charged.

21. The evidence is such that the defendant is guilty of the crime charged.

22. The evidence is such that the defendant is guilty of the crime charged.

23. The evidence is such that the defendant is guilty of the crime charged.

24. The evidence is such that the defendant is guilty of the crime charged.

25. The evidence is such that the defendant is guilty of the crime charged.

26. The evidence is such that the defendant is guilty of the crime charged.

27. The evidence is such that the defendant is guilty of the crime charged.

28. The evidence is such that the defendant is guilty of the crime charged.

29. The evidence is such that the defendant is guilty of the crime charged.

30. The evidence is such that the defendant is guilty of the crime charged.

31. The evidence is such that the defendant is guilty of the crime charged.

32. The evidence is such that the defendant is guilty of the crime charged.

- | True | False | |
|-------|-------|---|
| _____ | _____ | 33. A person who expresses the view that genius will overcome all obstacles is stating an environmentalistic position. |
| _____ | _____ | 34. [✓] It makes no sense to ask whether heredity or environment is more important in the development and behavior of a single individual. |
| _____ | _____ | 35. Treatment with glutamic acid raises the feeble-minded person to normal intellectual status. |
| _____ | _____ | 36. Most psychologists agree that it is a more healthy personality indication for children to get into mild trouble occasionally than to maintain perfect conduct all the time. |
| _____ | _____ | 37. [✓] Both physiological and social factors involved in personality differences can be traced back to heredity and environment. |
| _____ | _____ | 38. The I.Q. of the mentally dull individual tends to decrease with advancing age. |
| _____ | _____ | 39. If society should provide ample opportunity for all individual differences in intelligence and achievement would disappear. |
| _____ | _____ | 40. All hormones have an excitatory effect. |
| _____ | _____ | 41. Group test results are not as accurate as individual test results. |
| _____ | _____ | 42. [✓] All behavior may be considered adjustive behavior. |
| _____ | _____ | 43. [✓] The term motive implies some direction or orientation toward a certain type of goal. |
| _____ | _____ | 44. [✓] Attempts to classify all personalities into a relatively few types have been highly successful and meaningful. |
| _____ | _____ | 45. [✓] Fraternal twins have identical hereditary make-up. |
| _____ | _____ | 46. [✓] People are motivated to drink alcoholic beverages because such beverages are physiological stimulants. |
| _____ | _____ | 47. Some infectious diseases produce marked changes in personality characteristics. |
| _____ | _____ | 48. Emotional problems usually force us to think with great clearness and coherence. |
| _____ | _____ | 49. Maternal behavior in the rat is an example of a tropism |

True False

- 1. A person who...

- 2. It is...

- 3. The...

- 4. The...

- 5. The...

- 6. The...

- 7. The...

- 8. The...

- 9. The...

- 10. The...

- 11. The...

- 12. The...

- 13. The...

- 14. The...

- 15. The...

- 16. The...

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- 58. The...

- 59. The...

- 60. The...

- 61. The...

- 62. The...

- 63. The...

- 64. The...

- 65. The...

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- 100. The...

- | True | False | |
|-------|-------|---|
| _____ | _____ | 50. It is safer to make predictions from low intelligence test scores than from high scores. |
| _____ | _____ | 51. Mongolism may be prevented by the injection of suitable hormones. |
| _____ | _____ | 52. [✓] Instinct and drive are practically synonymous. |
| _____ | _____ | 53. [✓] Projective techniques represent the most objective attempts to measure personality. |
| _____ | _____ | 54. Psychologists have succeeded in training babies to walk months before they would ordinarily. |
| _____ | _____ | 55. Psychology was mental philosophy before it became a science. |
| _____ | _____ | 56. Some educational practices are actually responsible for the development of undesirable personality characteristics. |
| _____ | _____ | 57. A person with high native capacity tends to select an environment compatible with his capacity. |
| _____ | _____ | 58. [✓] Graphology is concerned with reading character from bumps on the head. |
| _____ | _____ | 59. [✓] Breaking a habit is easiest if a new and desirable habit is acquired to take its place. |
| _____ | _____ | 60. The boy who blames the bat when he strikes out is using the dynamism known as sublimation. |
| _____ | _____ | 61. Basically, the methods of psychology are like those of other sciences. |
| _____ | _____ | 62. Studies of motivation in industry indicate that money is the most powerful of all incentives. |
| _____ | _____ | 63. Beginning to walk is more dependent upon maturation than upon encouragement to walk. |
| _____ | _____ | 64. There are two general types of glands in the human body, the ductless glands and the endocrine glands. |
| _____ | _____ | 65. [✓] It is possible to list and describe in detail all the motives responsible for human behavior. |
| _____ | _____ | 66. Reproof is a more effective teaching device than praise. |
| _____ | _____ | 67. A scientific study can be repeated for verification. |
| _____ | _____ | 68. [✓] In general, adult fears are more practical than those reported by children and adolescents. |

50. It is easier to make good friends than to be liked by many people.	True	False
51. Most people are not as intelligent as they appear to be.		
52. Instincts and drives are genetically determined.		
53. Two people cannot be friends if they have different personalities.		
54. Psychological tests are used to measure intelligence.		
55. Psychology was started by Wilhelm Wundt.		
56. Some educational practices are actually responsible for the development of intelligence.		
57. A person with high native capacity tends to select an environment compatible with his capacity.		
58. Psychology is concerned with studying behavior from within the mind.		
59. Breaking a habit is easier if a new and desirable habit is acquired to take its place.		
60. The only way to know the mind when he studies out is value the evidence known as intuition.		
61. Behavior is the result of psychology and the study of other sciences.		
62. Studies of motivation in industry indicate that money is the most powerful of all incentives.		
63. Behavior is also a more important than motivation in determining behavior.		
64. There are two general types of science in the human body: the physical science and the behavioral science.		
65. It is possible to lift and describe in detail all the motives responsible for human behavior.		
66. Repressal is a more effective learning device than practice.		
67. A scientific study can be repeated for verification.		
68. In general, adult learning is more successful than that reported by children and adolescents.		

- | True | False | |
|-------|-------|---|
| _____ | _____ | 69. Adrenalin seems to play an emergency role in the body. |
| _____ | _____ | 70. Remembering and thinking are types of behavior. |
| _____ | _____ | 71. Emotional expressions which differ from one culture to another are learned expressions. |
| _____ | _____ | 72. Insanity and other pathological conditions occur more frequently among geniuses than among average individuals. |
| _____ | _____ | 73. A response is always a reaction to a stimulus. |
| _____ | _____ | 74. The combination of genes that a child receives is a matter of chance. |
| _____ | _____ | 75. The gland whose malfunction produces midgets or giants is the pituitary gland. |
| _____ | _____ | 76. Most observations of the behavior of others occur under conditions that would be acceptable to science. |
| _____ | _____ | 77. The well adjusted person is one who is never frustrated. |
| _____ | _____ | 78. The betterment of the human race through selective breeding is called eugenics. |
| _____ | _____ | 79. The stronger the stimulus the greater the number of nerve fibers stimulated. |
| _____ | _____ | 80. The left hemisphere of the brain controls the right side of the body. |
| _____ | _____ | 81. Involuntary attention requires no conscious effort. |
| _____ | _____ | 82. The tendency to blame one's shortcomings upon others or on outside conditions is called projection. |
| _____ | _____ | 83. The nervous system is easily fatigued. |
| _____ | _____ | 84. Voluntary attention sustained over a long time will result in boredom. |
| _____ | _____ | 85. Projective techniques refer to test situations wherein the individual to be tested answers rather specific questions about himself. |
| _____ | _____ | 86. The love of a parent for a child and the love of a child for a parent is something which can be taken for granted and therefore needs no constant nourishing. |

69. Afferent fibers seem to play an important role in the body.	True	False
70. Efferent fibers and afferent fibers are types of neurons.		
71. Efferent fibers are responsible for the control of the body's activities.		
72. Efferent fibers are responsible for the control of the body's activities.		
73. A response to a stimulus is called a reflex.		
74. The combination of afferent and efferent fibers is called a reflex.		
75. The afferent fibers are responsible for the control of the body's activities.		
76. Efferent fibers are responsible for the control of the body's activities.		
77. The afferent fibers are responsible for the control of the body's activities.		
78. The efferent fibers are responsible for the control of the body's activities.		
79. The afferent fibers are responsible for the control of the body's activities.		
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98. The efferent fibers are responsible for the control of the body's activities.		
99. The afferent fibers are responsible for the control of the body's activities.		
100. The efferent fibers are responsible for the control of the body's activities.		

- | True | False | |
|-------|-------|--|
| _____ | _____ | 87. Adrenalin tends to produce the same physiological effects that are observed in strong emotional reactions. |
| _____ | _____ | 88. Illusions are false sensations. |
| _____ | _____ | 89. Self respect and confidence develop in large measure in a child through parental approval. |
| _____ | _____ | 90. A child should be allowed sufficient freedom to explore his environment even though such exploration may from time to time result in minor injuries. |
| _____ | _____ | 91. Intense stimulation of any sense organ may produce pain. |
| _____ | _____ | 92. There is no actual movement of figures on the screen in motion pictures. |
| _____ | _____ | 93. There is a tendency on the part of the layman to consider as universal those motives prevalent in his own society. |
| _____ | _____ | 94. Aggressive acts should be punished with aggressive acts. |
| _____ | _____ | 95. Pain sensitive spots on the skin are evenly distributed over the entire cutaneous area. |
| _____ | _____ | 96. One's ability to observe may be improved through practice. |
| _____ | _____ | 97. Extended periods of emotion are called moods. |
| _____ | _____ | 98. The sour grapes reaction is an example of rationalization. |
| _____ | _____ | 99. A neuron is a bundle of nerve fibers. |
| _____ | _____ | 100. Adequate observation is basic to effective learning. |
| _____ | _____ | 101. The eyes tend to be the most emotionally expressive part of the face. |
| _____ | _____ | 102. Soldiers who become blind or paralyzed before battle are usually suffering from hysteria. |
| _____ | _____ | 103. Some psychological traits are produced purely by heredity. |
| _____ | _____ | 104. All learned reactions result in desirable changes in the individual. |
| _____ | _____ | 105. There are very sharp and distinct limits which separate the feeble-minded individual from the normal. |

Time Value

87. Commercial value of property is determined by its utility in the market.

88. The value of property is determined by its utility in the market.

89. The value of property is determined by its utility in the market.

90. The value of property is determined by its utility in the market.

91. The value of property is determined by its utility in the market.

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105. The value of property is determined by its utility in the market.

106. The value of property is determined by its utility in the market.

107. The value of property is determined by its utility in the market.

- | True | False | |
|-------|-------|--|
| _____ | _____ | 106. Emotional reactions appear to be the result of maturation and learning. |
| _____ | _____ | 107. Girls receive more of their hereditary factors from their mothers than from their fathers. |
| _____ | _____ | 108. Only voluntary reactions may be conditioned. |
| _____ | _____ | 109. Instinctive reactions are more common in human beings than in animals. |
| _____ | _____ | 110. Where identical elements are present, transfer will be negative. |
| _____ | _____ | 111. Each sperm produced by the same individual contains the same combination of genes. |
| _____ | _____ | 112. All learning curves show a very rapid rise at the beginning of the learning period. |
| _____ | _____ | 113. The elimination of one habit is facilitated if we acquire another habit which is applicable to the same situation. |
| _____ | _____ | 114. More women are color blind than men. |
| _____ | _____ | 115. The male has a Y-chromosome in every body cell. |
| _____ | _____ | 116. No one can improve beyond his physiological limit of learning. |
| _____ | _____ | 117. Growth and development of intelligence is an important factor in explaining fears of children. |
| _____ | _____ | 118. The fast learners appear to retain better than the slow learners. |
| _____ | _____ | 119. All behavior developing after birth may be attributed to learning. |
| _____ | _____ | 120. Moderate use of alcohol tends to increase efficiency slightly in most mental performances. |
| _____ | _____ | 121. The first signs of independence in an individual are shown in early adolescence. |
| _____ | _____ | 122. The sucking of a bottle by a baby is a conditioned response. |
| _____ | _____ | 123. The fruit fly is widely used in genetic studies because it contains the same number of chromosomes as man. |
| _____ | _____ | 124. Learning efficiency is usually increased when one studies with the deliberate intention of remembering what he reads. |

True False

106. Emotional reactions appear to be the result of neurotransmitter functioning.

107. Girls receive more of their hormonal feedback from their ovaries than their hypothalamus.

108. Only voluntary reactions can be conditioned.

109. Involuntary reactions are more common in humans during the first three months.

110. There is a direct relationship between the level of the will be satisfied.

111. Each speech produced by the oral cavity contains but a small fraction of the total.

112. All human behavior has a very high probability of the behavior being.

113. The elimination of one habit is facilitated if an opposite reaction habit is established to the same situation.

114. More women are likely than men.

115. The male has a Y-chromosome in every body cell.

116. No one can improve beyond the biological limit of learning.

117. Growth and development of the brain is an important factor in establishing the brain.

118. The first language appears to be learned from the first experience.

119. All behavior developed after birth can be attributed to learning.

120. Moderate use of alcohol tends to impair efficiency slightly in most mental performance.

121. The first signs of intelligence in an infant are shown in early development.

122. The collection of words by a baby is a conditioned response.

123. The first 12 months of life are crucial in establishing the brain's capacity for learning.

124. Learning efficiency is directly related to the amount of time spent with the material.

Learning that is not...

- | | | |
|-------|-------|---|
| True | False | 125. It is not a good idea to deal with aggressive behavior by punishing the child. |
| _____ | _____ | |
| _____ | _____ | 126. It is possible in the laboratory to produce what amounts to a nervous breakdown in animals. |
| _____ | _____ | |
| _____ | _____ | 127. The determiners of hereditary characteristics are carried in the nucleus of the germ cell. |
| _____ | _____ | |
| _____ | _____ | 128. The length of the immediate memory span may be increased indefinitely by proper training. |
| _____ | _____ | |
| _____ | _____ | 129. In general, aggression will reduce frustration. |
| _____ | _____ | |
| _____ | _____ | 130. Eidetic images occur principally in children. |
| _____ | _____ | |
| _____ | _____ | 131. Insight is a term important in Gestalt theory of learning. |
| _____ | _____ | |
| _____ | _____ | 132. Overlearning is one of the most effective devices to guard against loss by forgetting. |
| _____ | _____ | |
| _____ | _____ | 133. The greater the maturity level, the less practice is needed to achieve a given level of performance. |
| _____ | _____ | |
| _____ | _____ | 134. Forgetting occurs most rapidly in the hours immediately following learning. |
| _____ | _____ | |
| _____ | _____ | 135. Excessive daydreaming usually indicates an unwillingness to accept reality. |
| _____ | _____ | |
| _____ | _____ | 136. In the human species, the female has the so-called Y-chromosome. |
| _____ | _____ | |
| _____ | _____ | 137. The fact that you cannot teach a one-year-old child to read shows the importance of maturation. |
| _____ | _____ | |
| _____ | _____ | 138. Mnemonic systems represent the most effective aids for the improvement of memory. |
| _____ | _____ | |
| _____ | _____ | 139. A child of eight years of age may be said to fear snakes because of unpleasant associations with snakes some time in the past. |
| _____ | _____ | |
| _____ | _____ | 140. Psychology is frequently used in advertising and salesmanship. |
| _____ | _____ | |
| _____ | _____ | 141. The sense of touch begins to function before the senses of taste and smell. |
| _____ | _____ | |
| _____ | _____ | 142. Most thinking is spontaneous, unmotivated activity. |
| _____ | _____ | |

- | True | False | |
|-------|-------|--|
| _____ | _____ | 143. A child goes into a negative phase of development for the first time about the sixth year of life. |
| _____ | _____ | 144. The scientific psychologist is able to provide the answer to any problem in the field of human relations. |
| _____ | _____ | 145. A correlation coefficient varies in value from 0 to plus or minus 1.00. |
| _____ | _____ | 146. Man is the only animal capable of reasoning. |
| _____ | _____ | 147. The modern point of view in child psychology is to maintain a rigorous routine or schedule with respect to feeding, sleeping, etc. |
| _____ | _____ | 148. Gene mutation provides the basis for the modification of the species. |
| _____ | _____ | 149. Identical human twins both develop from a single fertilized egg and have identical heredities. |
| _____ | _____ | 150. Daydreaming in children is a type of activity that should be discouraged whenever it appears. |
| _____ | _____ | 151. From the modern psychological point of view, if a child were provided with everything he might desire, but if such a child were denied a good measure of affection and love, one might well predict that a child with abnormal emotional tendencies would result. |
| _____ | _____ | 152. The combination which is particularly dangerous is the Rh minus mother who carries Rh positive fetuses. |
| _____ | _____ | 153. An individual test may be either verbal or non-verbal. |
| _____ | _____ | 154. No learning takes place in the absence of deliberate intention to learn. |
| _____ | _____ | 155. In general, pleasant materials are learned more readily than unpleasant materials. |
| _____ | _____ | 156. Suddenness of appearance is a criterion of insight. |
| _____ | _____ | 157. Most abnormal people are classified as such because they are unable to make adequate adjustments to society. |

149. A white rose into a red rose, the color of love, is a metaphor for the change in the heart.	True	False
150. The metaphor of the heart as a battlefield is a common one in literature.		
151. The metaphor of the heart as a battlefield is a common one in literature.		
152. The metaphor of the heart as a battlefield is a common one in literature.		
153. The metaphor of the heart as a battlefield is a common one in literature.		
154. The metaphor of the heart as a battlefield is a common one in literature.		
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170. The metaphor of the heart as a battlefield is a common one in literature.		
171. The metaphor of the heart as a battlefield is a common one in literature.		
172. The metaphor of the heart as a battlefield is a common one in literature.		
173. The metaphor of the heart as a battlefield is a common one in literature.		
174. The metaphor of the heart as a battlefield is a common one in literature.		
175. The metaphor of the heart as a battlefield is a common one in literature.		
176. The metaphor of the heart as a battlefield is a common one in literature.		
177. The metaphor of the heart as a battlefield is a common one in literature.		
178. The metaphor of the heart as a battlefield is a common one in literature.		
179. The metaphor of the heart as a battlefield is a common one in literature.		
180. The metaphor of the heart as a battlefield is a common one in literature.		

- True False 158. Identical twins reared apart are no more different in intelligence than are identical twins reared in the same home.

159. There is considerable evidence that no one ever completely forgets anything.

160. Many of the children's problems which are distressing to the parents are developmental rather than chronic and will disappear in a short time.

161. Psychology has been thoroughly scientific from its earliest beginnings.

162. Practically any level of mentality can be found in all social and economic groups.

163. Human traits may be divided into those depending solely on heredity and those depending solely on environment.

164. The coefficient of correlation is a statistical measure of relationship.

165. Evidence indicated that transfer of learning is accounted for by the disciplining of mental faculties.

166. Feeble-minded women are more apt to escape notice in our society than feeble-minded men.

167. Either sluggishness or heightened activity may be caused by a thyroid disturbance.

168. Repression is active by unconscious forgetting of unpleasant or painful things.

Multiple choice. Directions: Put the letter of the best answer in the space before the question.

169. Men, as compared to women, (a) have greater general intelligence (b) are inferior in mechanical and mathematical tests (c) both of these (d) none of these.

170. The most important single social agency in shaping the growing personality is (a) the school (b) the home (c) the church (d) the gang.

True False
151. Intellectual training requires special aptitude in some
children. It is intelligence that is important
rather than the mere amount of training.

152. There is considerable evidence to show that the
average child is a "late bloomer" in his intellectual
development.

153. Many of the children's "delinquent" acts are
actually attempts to attract attention and to
obtain affection from the adults around them.

154. The child's behavior is largely a result of
the child's own nature and is not primarily
a result of his environment.

155. The child's behavior is largely a result of
the child's own nature and is not primarily
a result of his environment.

156. The child's behavior is largely a result of
the child's own nature and is not primarily
a result of his environment.

157. The child's behavior is largely a result of
the child's own nature and is not primarily
a result of his environment.

158. The child's behavior is largely a result of
the child's own nature and is not primarily
a result of his environment.

159. The child's behavior is largely a result of
the child's own nature and is not primarily
a result of his environment.

160. The child's behavior is largely a result of
the child's own nature and is not primarily
a result of his environment.

161. The child's behavior is largely a result of
the child's own nature and is not primarily
a result of his environment.

Multiple choice. Write the letter of the best
answer in the space before the question.

162. Many are concerned for the child's physical
intelligence (a) and for his intellectual and
mathematical growth (b) but for his social growth (c) none of these.

163. The most important single factor in the child's
growth is heredity (a) the environment (b) the child's
(c) the child's own nature.

171. Psychology is that branch of science which deals with (a) mind and body (b) nervous system, muscles, and glands (c) behavior and experience (d) groups and institutions.
172. The basic idea underlying all projective tests is that (a) differences in the way people perceive the world are few (b) perception is an important human function (c) each human personality is unique (d) how we perceive the world very largely reflects what we are.
173. John is 18 years old and has a Stanford-Binet M.A. of 15. His I.Q. will be (a) 83 (b) 100 (c) 110 (d) 120.
174. Use of the lie detector makes it possible to (a) prove that guilt exists (b) determine the truth or falsity of a response (c) determine the general emotional stability of subjects (d) detect emotional responses to verbal stimuli.
175. The individual who developed the methods and concepts now known as psychoanalysis was (a) Pinel (b) Charcot (c) Freud (d) Mesmer.
176. The endocrine gland most definitely involved in emotional reactions is the (a) Thyroid (b) Pituitary (c) Thymus (d) Adrenal.
177. Destruction of the right optic tract would lead to (a) total blindness in the left eye (b) total blindness in the right eye (c) total blindness of both eyes (d) partial blindness of both eyes.
178. Responsible for most of our personality traits would be (a) deliberate training (b) trial and error (c) glandular secretions (d) physical attractiveness.
179. The following condition results from pituitary malfunction: (a) dwarfism (b) giantism (c) acromegaly (d) all of these.
180. Instruction in the most efficient techniques of study produces improvement in (a) superior individuals (b) average individuals (c) inferior individuals (d) most individuals.
181. The development of intelligence tests resulted from an interest in (a) physiological psychology (b) consciousness (c) behavior (d) individual differences.

171. Psychology is the study of the mind and behavior. It is a science that seeks to understand the processes of the mind and how they relate to behavior. (a) Psychology is the study of the mind and behavior. (b) Psychology is the study of the mind and behavior. (c) Psychology is the study of the mind and behavior. (d) Psychology is the study of the mind and behavior. (e) Psychology is the study of the mind and behavior.

172. The basic unit of psychology is the individual. It is the study of the individual and how they relate to the environment. (a) The basic unit of psychology is the individual. (b) The basic unit of psychology is the individual. (c) The basic unit of psychology is the individual. (d) The basic unit of psychology is the individual. (e) The basic unit of psychology is the individual.

173. John is 17 years old and has a 12th grade education. He is a student at the University of California, Los Angeles. (a) John is 17 years old and has a 12th grade education. (b) John is 17 years old and has a 12th grade education. (c) John is 17 years old and has a 12th grade education. (d) John is 17 years old and has a 12th grade education. (e) John is 17 years old and has a 12th grade education.

174. One of the basic principles of psychology is the study of the individual. It is the study of the individual and how they relate to the environment. (a) One of the basic principles of psychology is the study of the individual. (b) One of the basic principles of psychology is the study of the individual. (c) One of the basic principles of psychology is the study of the individual. (d) One of the basic principles of psychology is the study of the individual. (e) One of the basic principles of psychology is the study of the individual.

175. The individual is the basic unit of psychology. It is the study of the individual and how they relate to the environment. (a) The individual is the basic unit of psychology. (b) The individual is the basic unit of psychology. (c) The individual is the basic unit of psychology. (d) The individual is the basic unit of psychology. (e) The individual is the basic unit of psychology.

176. The individual is the basic unit of psychology. It is the study of the individual and how they relate to the environment. (a) The individual is the basic unit of psychology. (b) The individual is the basic unit of psychology. (c) The individual is the basic unit of psychology. (d) The individual is the basic unit of psychology. (e) The individual is the basic unit of psychology.

177. The individual is the basic unit of psychology. It is the study of the individual and how they relate to the environment. (a) The individual is the basic unit of psychology. (b) The individual is the basic unit of psychology. (c) The individual is the basic unit of psychology. (d) The individual is the basic unit of psychology. (e) The individual is the basic unit of psychology.

178. The individual is the basic unit of psychology. It is the study of the individual and how they relate to the environment. (a) The individual is the basic unit of psychology. (b) The individual is the basic unit of psychology. (c) The individual is the basic unit of psychology. (d) The individual is the basic unit of psychology. (e) The individual is the basic unit of psychology.

179. The individual is the basic unit of psychology. It is the study of the individual and how they relate to the environment. (a) The individual is the basic unit of psychology. (b) The individual is the basic unit of psychology. (c) The individual is the basic unit of psychology. (d) The individual is the basic unit of psychology. (e) The individual is the basic unit of psychology.

180. The individual is the basic unit of psychology. It is the study of the individual and how they relate to the environment. (a) The individual is the basic unit of psychology. (b) The individual is the basic unit of psychology. (c) The individual is the basic unit of psychology. (d) The individual is the basic unit of psychology. (e) The individual is the basic unit of psychology.

181. The individual is the basic unit of psychology. It is the study of the individual and how they relate to the environment. (a) The individual is the basic unit of psychology. (b) The individual is the basic unit of psychology. (c) The individual is the basic unit of psychology. (d) The individual is the basic unit of psychology. (e) The individual is the basic unit of psychology.

182. Jones occupies a humble clerical position where he is obliged to take orders from overbearing superiors. At home he is a strict disciplinarian. This is an example of (a) rationalization (b) compensation (c) fantasy (d) regression.
183. The most reliable information concerning the intelligence of an individual results from use of (a) a long group test (b) a short group test (c) an individual test (d) a verbal test.
184. The best distribution of practice periods seems to be (a) long, concentrated periods (b) continuous work until problem is learned (c) short practice periods distributed over considerable time (d) none of these.
185. Newborn infants show (a) mass reactions (b) reflex reactions (c) emotional reactions (d) all of these.
186. The external response which usually goes with anger is usually (a) approach (b) retreat (c) destruction (d) flight.
187. A hereditary characteristic is said to be recessive when (a) it is not transmissible to offspring (b) it represents a defect (c) its appearance depends on the presence of two like genes (d) it passes through the maternal line.
188. The Stanford-Binet test would be best used for (a) the deaf (b) children (c) the foreign (d) adults.
189. Eggs and sperm differ from other cells in that they contain (a) only half as many chromosomes (b) 24 genes apiece (c) sex chromosomes (d) hereditary factors.
190. The intelligence test considered most valid for adults is the (a) Stanford-Binet (b) Army Alpha (c) Grace Arthur (d) Wechsler-Bellvue.
191. Intellectual superiority is typically associated with (a) tendencies toward insanity (b) inferior physique (c) emotional instability (d) superior earnings.
192. If you have just finished studying for a test, interference will be least if the studying material is followed by (a) learning of similar material (b) sleep (c) learning of non-similar material (d) non-learning activity.

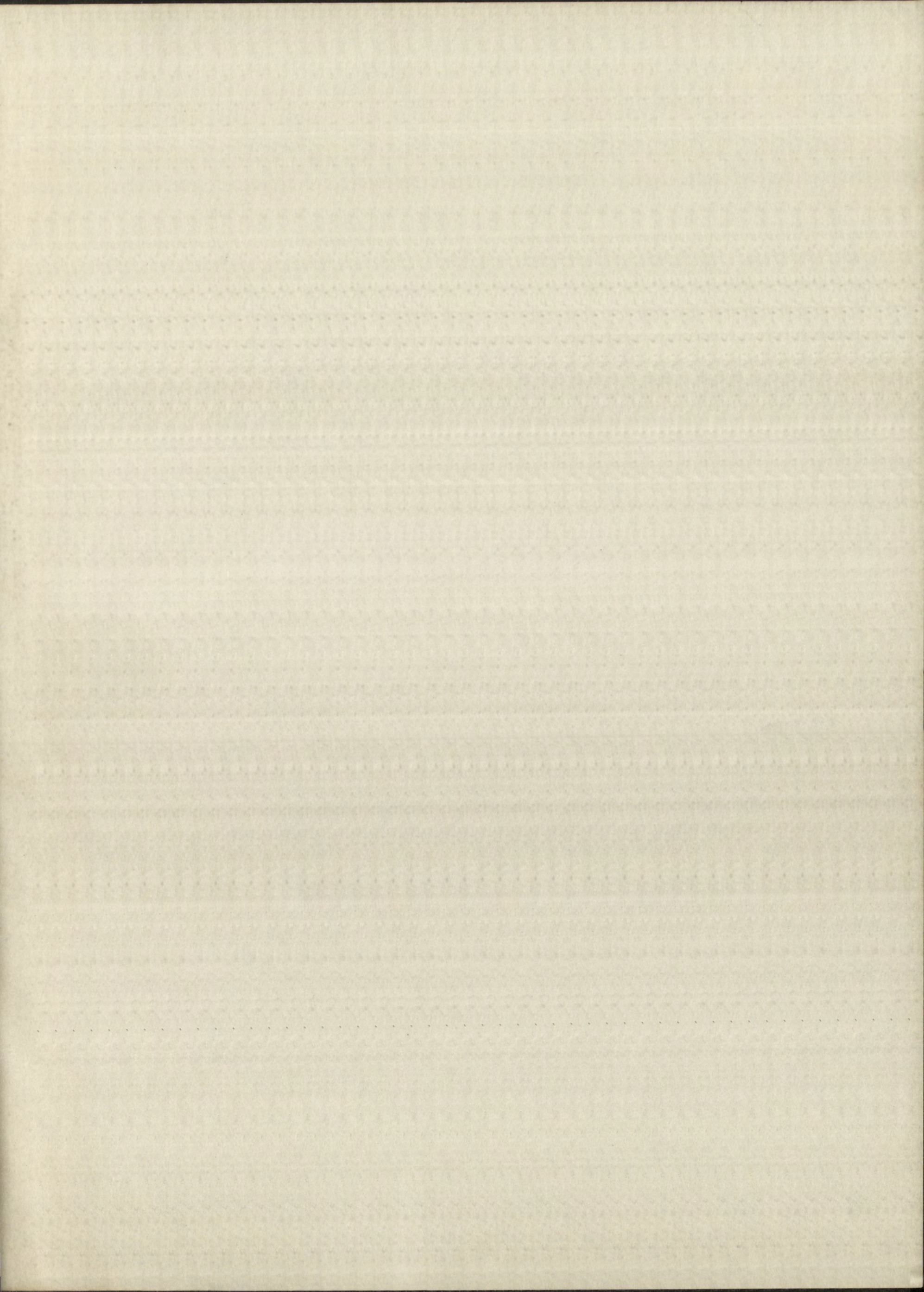
193. Children in the same family differ from each other and from their parents, even in inheritable traits. One reason for this is that (a) the same chromosomes act differently in different people (b) chromosomes are changed by the environment after birth (c) each child receives a different combination of chromosomes from his parents (d) some chromosomes deteriorate immediately after conception.
194. The fear of darkness is probably (a) instinctive (b) acquired (c) hereditary in nature (d) a hereditary vestige.
195. The cell division which produces the reproductive cells is called (a) gene mutation (b) reduction division (c) mitosis (d) spermatogenesis.
196. Conditioning (a) is a laboratory phenomenon very rare in real life (b) is very common in everyday life (c) is theoretically limited to a very few reflexes and responses (d) none of these.
197. The years of a child's life that are of particular significance in the development of emotional tendencies are (a) 5-7 (b) the first few years of life (c) 3-4 (d) 6-9.
198. A chromosome is a string of (a) nuclei (b) ova (c) spermatazoa (d) genes.
199. The score on a test received by most members of a class is known as the (a) average (b) mean (c) mode (d) median.
200. The most effective method of emotional retraining would be (a) social limitation (b) verbal appeal (c) reconditioning (d) ridicule.
201. The extent to which a measuring instrument actually measures what it purports to measure is known as its (a) reliability (b) genuineness (c) validity (d) trustworthiness.
202. The lowest level of feeble-mindedness is the (a) idiot (b) moron (c) dull normal (d) imbecile.
203. What percentage of the population would you expect to have I.Q.'s ranging from 100 to 155 (a) 63% (b) 49% (c) 38% (d) 24%.

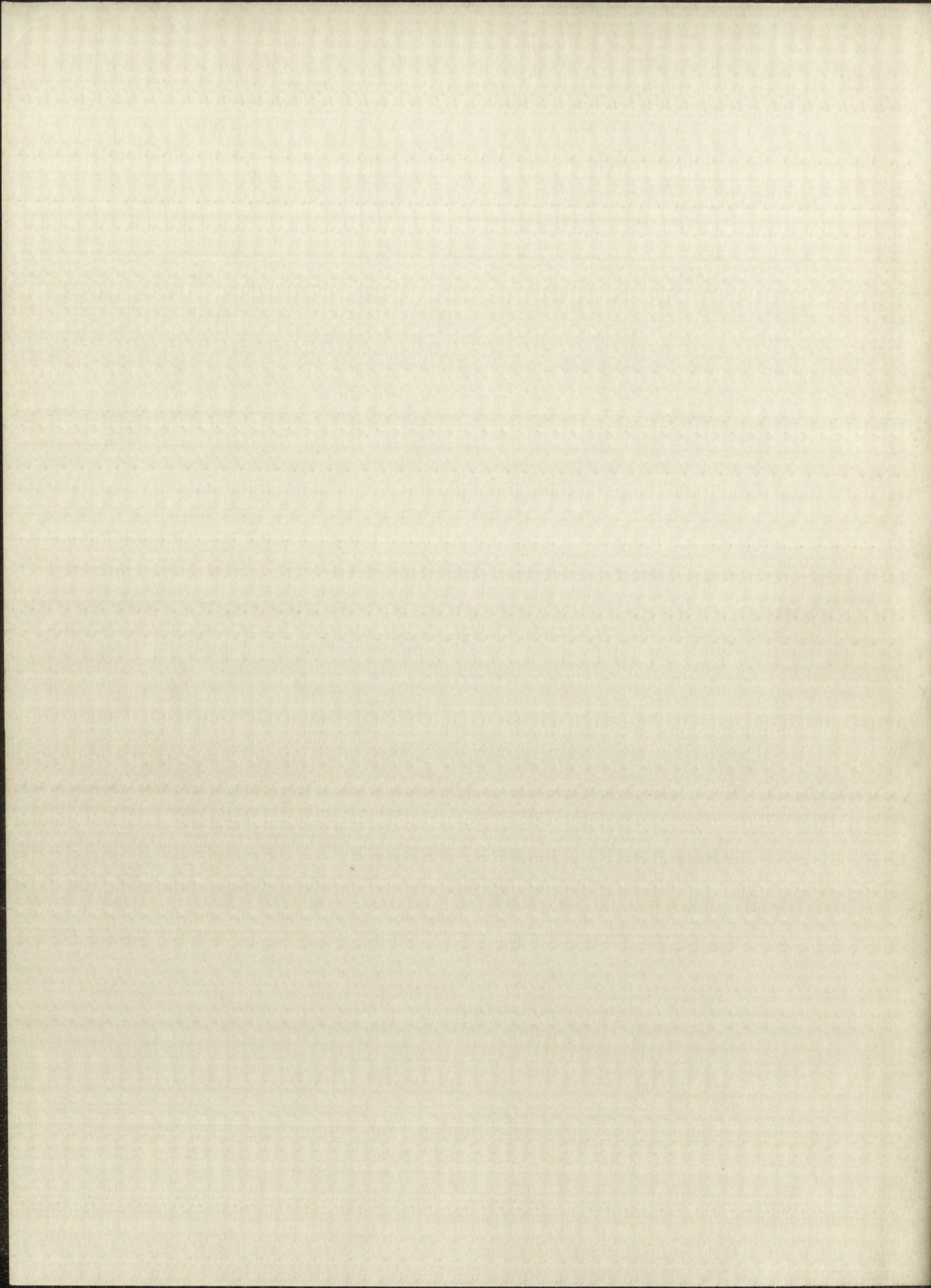
193. Children in the same family differ from each other and from their parents even in identical twins. One reason for this is that (a) the same environment is not necessarily in identical twins (b) the same environment is changed by the environment after birth (c) each child receives a different combination of chromosomes from his parents (d) some chromosomes are inherited immediately after conception.
194. The fear of darkness in young children is (a) instinctive (b) acquired (c) hereditary (d) a combination of these.
195. The self division which produces the reproductive cells is called (a) meiosis (b) mitosis (c) cytokinesis (d) spermatogenesis.
196. Conditioned reflexes are (a) learned (b) inherited (c) both (a) and (b) (d) none of these.
197. The years of a child's life that are of particular significance in the development of emotional behavior are (a) 5-7 (b) the first few years of life (c) 7-9 (d) 6-9.
198. A chromosome is a thread of (a) nucleic acid (b) protein (c) phospholipid (d) lipid.
199. The term "instinct" is best defined as (a) a response of a class of known as (b) a response of a class of unknown as (c) a response of a class of unknown as (d) a response of a class of unknown as.
200. The most effective method of emotional behavior would be (a) social interaction (b) verbal support (c) reinforcement (d) withdrawal.
201. The extent to which a measurement instrument actually measures what it purports to measure is known as its (a) reliability (b) validity (c) consistency (d) worthiness.
202. The lowest level of responsiveness in the (a) infant (b) young (c) adult (d) elderly.
203. What percentage of the population would you expect to have 1.1" a range from 1.0 to 1.2 (a) 50% (b) 25% (c) 33% (d) 20%.

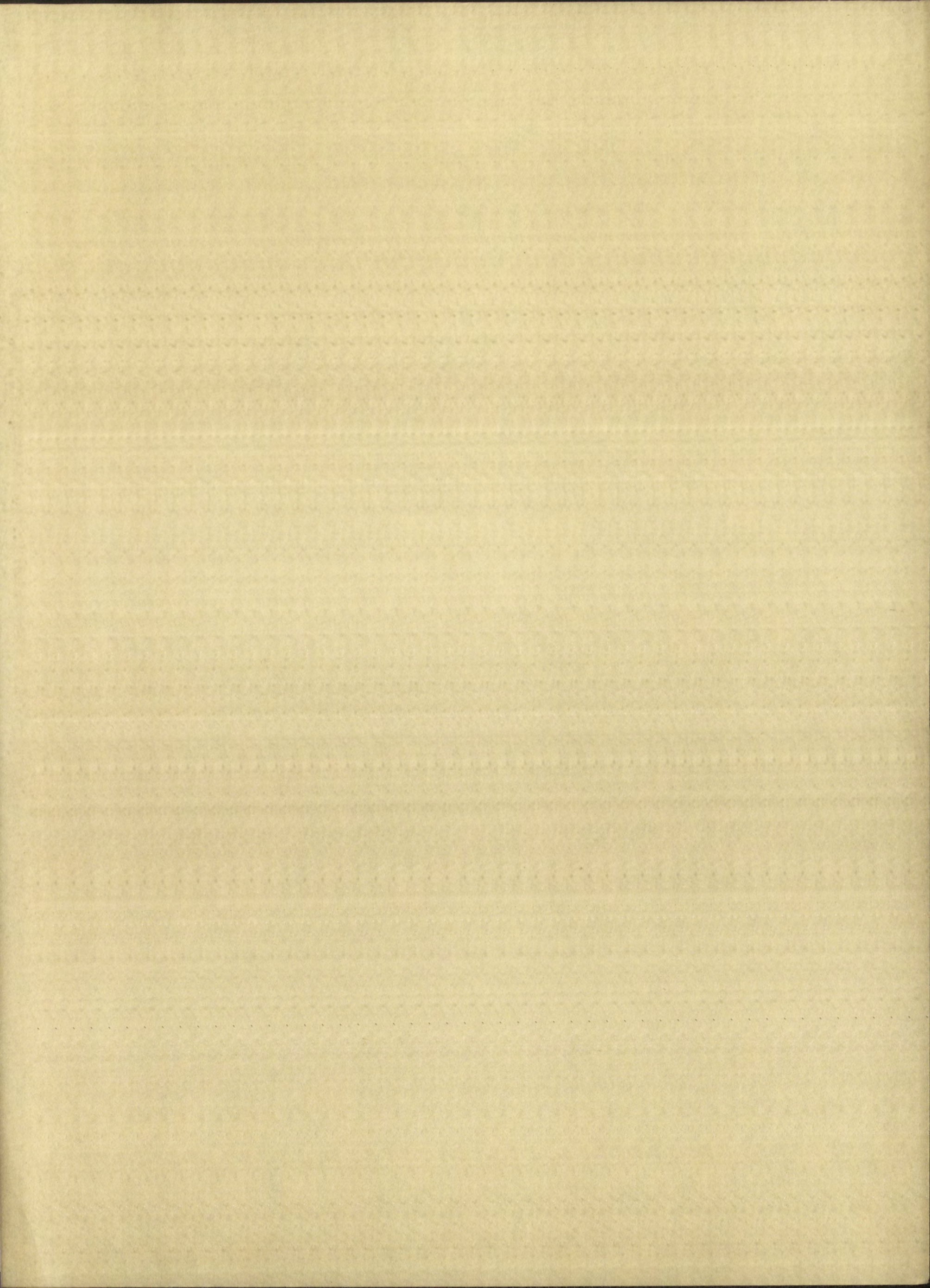
204. If grouped according to type, most individuals would be classed as (a) introverts (b) extroverts (c) extroverted introverts (d) ambiverts.
205. In interpreting emotional reactions in human adults, the most expressive cues are furnished by (a) the eyes (b) the mouth (c) the hands (d) the voice.
206. Modern physicians and psychologists agree that during the first year of life the child should be (a) held to a rigid feeding schedule (b) as continuously satisfied as possible (c) ignored (d) allowed to cry, for fear of spoiling him.
207. Fast learners (a) retain better than slow learners (b) do not retain as well as slow learners (c) do not differ from slow learners in retention (d) there is no correlation between high speed learning and relative degree of retention.
208. Most of what one forgets is forgotten (a) very shortly after the learning period (b) about a week after the learning period (c) about a month after the learning period (d) about two months after the learning period.
209. Every nucleus of every cell of the human body (except) the reproductive cells) contains (a) 4 chromosomes (b) 24 chromosomes (c) 48 chromosomes (d) over 1000 chromosomes.
210. The X-chromosome (a) is carried by all eggs (b) is carried by approximately one-half of the sperms (c) both of these statements are correct (d) neither of these statements is correct.
211. The investigator credited with the first scientific examination of conditioning is (a) Thorndike (b) Bechterev (c) Pavlov (d) Woodworth.

204. It is shown that the...
205. In the...
206. Modern...
207. The...
208. The...
209. Every...
210. The...
211. The...

[Handwritten signature]







IMPORTANT!

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