

THE EFFECTIVENESS OF CERTAIN REMEDIAL PROCEDURES
AS THEY INFLUENCE READING PERFORMANCE AND
PERSONALITY ADJUSTMENT

by

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INTRODUCTION

Purpose of the Study

The general purpose is to study the effectiveness of certain remedial reading procedures and their relationship to reading performance and personality adjustment.

In developing the major purpose of the study the following questions were considered:

1. In what way do the remedial reading procedures affect reading performance?
2. Are there any personality correlates of reading speed and comprehension?
3. Does the mental function of "paying attention" or concentration affect reading performance?
4. What are some of the psychological aspects of people who have reading problems?

An attempt was made in this study to discover some of the factors that influence reading performance.

Need for the Study

Reading performance at all levels of the educational system has grasped the interest of educators, psychologists, ophthalmologists, and many others connected with education. This is evident from the vast amount of literature on the subject as well as the increasing numbers of remedial reading programs, special reading clinics and the addition of a staff member to the faculty who devotes the major portion of his time to reading problems. The fact that many colleges include reading tests in their freshman

aptitude battery is to be noted. Studies at other colleges and universities indicate that from 10 to 20 percent of the members of any entering class have reading disability (1).

Most of the literature and major research have been based upon the mechanical aspects of reading and perception. The mechanical aspects for the most part deal with refractive error, ocular movements, size of print, arrangement of the page, fixations per line and regression. Research regarding these aspects of reading involve the apprehension of printed symbols and involves but little of the process of comprehension. The process of apprehension is a motor activity in which the stimulus, the symbol, is received and transmitted. Comprehension involves the perception of the symbols and the arrangement of them so that they may be understood. Understanding requires the knowledge of the causes and effects as well as acquaintance and experience.

Apparently it has been assumed that once visual stimuli are perceived the process of comprehension takes place. Is this an accurate picture of the process? Do other factors influence comprehension as well?

It would seem that certain personality factors and certain reading procedures influence reading performance. Since the rapid development of personnel bureaus in our schools has taken place and the emphasis upon individual counseling is one of the primary considerations of these bureaus, further investigation is needed to ascertain the effect of remedial procedures upon reading performance and personality adjustment. In order to counsel more effectively, research is needed concerning psychological factors in

reading performance.

With the many techniques in counseling and guidance, continual research must be made to determine the value of these techniques. Larsen and Feder (2) in a study of common and differential factors in reading and hearing comprehension have this to say:

Despite the fact that the meaning the reader derives from the printed page depends upon the central process of comprehension, relatively little study has been made of the psychological factors in this process.

Allport (3) supports this view:

Visual factors, even extreme deviations, it is found, do not in themselves cause maladjustment. They enter into the motivation stream of life, furnishing incentive to compensation, alibis for failure...

In a study at Dartmouth College (4) the following is reported:

It was found that visual defects are not related directly to the severity of the symptoms or to the performances and gains measured by tests and grades. Some other influences, then, are important.

Further research is needed upon the effectiveness of certain remedial reading procedures and the psychological factors in the process.

Limits of the Study

The group studied was the remedial reading class at Kansas State College. The group met on the average of four times a week during a six-week period of the second semester of the school year 1946-1947. All of the students, 25 in number, attended voluntarily.

The selective process, determined by the personal interview, test scores, and questionnaire, limited the number who were permitted to enroll in the clinic.

The group in the reading clinic was primarily composed of

men. The ratio of men students to women students enrolled in the clinic was five men students to one woman student. The ratio is the same for the total college enrollment. No adequate study of sex differences could be made because of limited numbers.

The observable behavior was limited to the one hour a day the students spent in the clinic and to a few personal counseling contacts.

Limitations imposed by the time of day, the nature of the material read and number of interviews influenced the reactions of the group to the procedures employed in the clinic.

RELATED STUDIES

In one of the Dartmouth studies (4) it was found that ocular defects and conditions cannot be separated from their psychological importance. They must be considered as a part of the total individual and form a definite part of the motivational pattern of the individual. They also came to the conclusion that regardless of the pattern of visual condition from refractive errors, aniseikonic errors, and motor anomalies to perfect vision that the individual motivational pattern is the principal factor in determining the adjustment.

Allport (5) gives a brief description of motivation as follows:

Somehow in the process of maturing the manifold potentialities and dispositions of childhood coalesce into sharper, more distinctive motivational systems. *Pari passu* with their emergence these systems take upon themselves effective driving power, operating as mature, autonomous motives quite different in aim and in character from the motivational systems of juvenile years, and very different indeed from the crude organic tensions of infancy.

A preliminary study conducted by the Dartmouth Eye Institute (1) reports that nervousness, either tension or depression, does not correlate with ocular defect except in the case of aniseikonia. The authors of the above study assume that other factors limit reading performance and must be of importance. In the same study, critical ratios were calculated between ocular defects and reading performance, between ocular defects and academic points, between ocular defects and eye movement records, and no significant differences were found. The conclusion was reached that correction of ocular defects does not guarantee increased ability in reading or greater academic achievement except, again, in aniseikonia.

The authors stated that altho no significant differences were found that correction of ocular defects afforded some help.

Larsen and Feder (2) came to the conclusion after studying 150 university freshmen at the University of Iowa that:

The future course of effective teaching and remedial work must undoubtedly be influenced by knowledge of the psychological elements of which comprehension skills are composed.

Blake and Dearborn (6), in a study on the improvement of reading habits, found that a number of factors were involved in reading disability. The character of the reading disability was of primary importance. At Smith College and the University of Chicago they reported greater numbers deficient in the rate of reading than in comprehension.

From the foregoing studies the fact is evident that further research is needed in the field of remedial reading procedures. The study of personality adjustments may be an important part in the correction of reading difficulties.

METHODS OF PROCEDURE

Experimental Method

The method that is used in this study is the experimental method. Experiment involves the setting up of a situation that can be controlled and observed so that various factors may be isolated. The experiment must be such that repetition may be made. Careful recording of such data must be made and then submitted to various statistical methods. Conclusions and generalizations from the study of the data are finally made.

Descriptive analysis of the information regarding students enrolled in the reading clinic and certain intra-group comparisons were made. The test-retest method of study was used on certain of the data.

Scholastic ability as measured by freshman entrance tests was used to indicate the range of ability within the group and to set certain limits for admittance to the clinic. Scores on a reading test were studied for indications of the level of reading performance.

Certain conclusions and generalizations were made concerning the influence of certain reading procedures on personality adjustment.

Selection of Students

Each semester the Counseling Bureau of Kansas State College conducts a remedial reading clinic for those students who voluntarily choose to attend. The group of students selected for study was one of these clinical groups.

Students desiring this service reported to the bureau and were told the hours and meeting place of the clinic. At the first meeting of the group, about 50 students indicated a desire to begin remedial procedures. The general methods of procedure were explained and a short orientation talk was given concerning the nature of reading difficulties.

Several tests were administered to determine the scholastic ability, level of reading comprehension and reading speed, general personality adjustment and the need of remedial work.

An interview with a trained counselor was required before the final admittance to the clinic was granted. The counselor, in the personal interview, used an outline prepared by the writer to help in determining the need for remedial treatment.

In diagnosing the problem many factors were taken into consideration, the first being the general level of academic ability. Two tests were used as checks upon this factor. In the selection process the student had to rank in the range of intelligence that is considered feasible for college training. For the most part the intelligence quotients on the Wechsler-Bellevue were 110 or above.

Another important diagnostic tool was the Individual Record form used by the Counseling Bureau. The record form is a history of the student's family background, physical well-being, his statement of personal problems, and his statement of interests. Material found in this form was useful to the counselors in diagnosing the problem.

Past achievement is another important factor in aiding the

counselor in his diagnosis. Records of previous high school and college achievements were studied for clues. Any notes in the cumulative records helped in the process of diagnosis.

Special aptitudes and disabilities revealed by the test scores indicated whether or not remedial procedures were necessary. The reading test scores indicating rate of reading and level of comprehension were especially valuable in locating difficulties. The vocabulary limitations as measured by the Wechsler-Bellevue, as well as the other tests of the scale, gave evidence of any impairment or mal-function. Other aids in determining disabilities were a rough screening test for ocular defects and a questionnaire of personal reading habits.

Special emphasis upon personal adjustment was taken into consideration. Two tests which give measures of personal adjustment were used by the counselors to determine areas of mal-adjustment. In studying and diagnosing problems, this important area of personality adjustment must be carefully analyzed.

In developing a clear clinical picture, the counselors were alert to the above factors in analyzing the data. The large amount of information that had been collected had to be synthesized for each student. The counselor diagnosed the problem after he had made a careful analysis of the data.

The selection described above was responsible for a reduced number of students that attended the clinic. Illness and a lack of interest contributed to a further reduction in the number of students.

The Counseling Interview

The counseling interview was a means of obtaining information, giving information and a therapy technique in some cases. Each student was told of the opportunity to see a personal counselor during the time the reading clinic was in session and after he had been admitted to the clinic.

Various counseling procedures were employed by the counselors. When possible the client-centered approach was used. This approach allows for the full expression of the client's feelings and is a successful method used by counselors to help the client gain insight into his problem as well as release tension. A short description as stated by Rogers (7) is as follows:

Effective counseling consists of a definitely structured permissive relationship which allows the client to gain an understanding of himself to a degree which enables him to take positive steps in the light of his new orientation.

Certain conditions must be met in order that the non-directive, client-centered technique may be most effective. The client must be under a strong enough tension to take positive steps in solving his problem. The client must be able to cope with his situation and be independent of family control. If the client is of suitable age and intelligence and is in a position to accept help, counseling then may be indicated.

A free, permissive relationship should exist between the counselor and the client. Limits should be observed regarding the time and length of appointment and the responsibility must be placed on the student for attacking the problem. The relationship between the counselor and the student must be one of acceptance by the coun-

selor of anything the student might say. In this approach the counselor does not use any technique that resembles coercion or authority.

The structure of the counseling situation is of importance and the adherence to these limits must be strictly observed. Often clients, especially children, will test these limits, but the counselor must adhere to them in order to maintain the confidence of the client.

The directive approach to counseling was another method used. The main difference between the direct and non-direct approach is the role of the counselor. The counselor accepts the major responsibility for solving the problem and in doing so often defines the problem in his own terms. During the interview the counselor also directs the conversation which often keeps the client from making a true statement about himself.

The counselor suggests ways and means of solving the problem and often carries a part of the work in doing so.

Complete use of this technique was not made by the counselors who worked in the reading clinic. For example, the counselor never accepted the responsibility for solving the problem. However, information was given and suggestions as to study-habits and methods of reading were made. If the counselor felt that the student needed an ocular examination, it was suggested to him. Other suggestions of direct action were made but it was clearly defined that the student was mainly responsible in solving his problem. At other times reassurance was given to the student by pointing out improvements noted during the clinic.

Directive or non-directive counseling techniques were used

by the counselors, depending upon their judgments as to the most effective means of helping the student.

Group Counseling

Group counseling was another method used. Group counseling consists of a discussion period in which members of a group participate. The leader used the technique of reflecting the attitudes expressed by the individuals in the group. Generally, some starting point such as a magazine article or a topic suggested by one of the group is used for the basis of discussion.

These sessions gave students the opportunity to express themselves, to be accepted, and to gain a new understanding of themselves.

Selection and Description of Test Instruments

The staff of the Counseling Bureau spent much time in deciding upon the tests to be used for the reading clinic students. It was finally decided that a measure of general intelligence, one of reading speed and comprehension, one of scholastic ability, an interest test, and two personality tests should be administered as well as a rough screening test for ocular defects.

The test to measure general intelligence was the Wechsler-Bellevue Scale (S). The Bellevue scales give a measure of intelligence that provides an intelligence quotient. The test is divided into 11 subtests that tap various mental functions. The division into subtests is useful in the diagnosis of some of the problems of mental functioning and was chosen because of this fea-

ture.

The 11 subtests and the functions they tap as described by Rapaport (9) are listed below:

Information: general range of subject's information, alertness to world about him, cultural predilection, memory.

Comprehension: judgment, common sense, ability to apply information to a reality situation.

Digit Span: attention to verbal material, number memory.

Arithmetical Reasoning: concentration on verbal material, arithmetic ability.

Similarities: verbal concept formation, ability to mobilize information and logic in an appropriate manner.

Picture Arrangement: "social intelligence," ability to comprehend and size up a total situation, especially social.

Picture Completion: ability to differentiate essential from non-essential, concentration acting upon visually perceived material.

Block Design: synthetic and analytical ability, visual motor coordination, visual organization.

Digit Symbol: test of psychomotor speed, attention acting upon visually perceived material, visual motor coordination, ability to learn a new task of the spatial motor type.

Vocabulary: true mental level, reflects original wealth of education, environment, early arrest of development.

The raw scores on the subtests are converted into standard scores. The central tendency for each of the subtests is compared to the standard score for the vocabulary subtest. This procedure is explained by Torrance (10). The pattern of the central tendencies is determined by the individual's development and reveals intra-individual comparisons. The deviations from the central tendency reveal some of the intellectual functioning and personality organization. This may be an impairment or an uneven development

of the function but gives the tendency of development. Rapaport (9) describes vocabulary as follows:

Vocabulary has long been known to be a fair representation of the intelligence level and to remain relatively unimpaired by maladjustment. Vocabulary is one of the most stable and least deteriorating aspects of intelligence and may be accepted as the true level.

The negative deviations are noted and the general interpretation is that the particular mental spect tapped is not functioning up to full capacity. The amount of deviation is used in diagnosing forms of maladjustment.

An arbitrary score of zero is assigned to the standard score of the vocabulary subtest and any deviation of the other subtest standard scores is plotted on a scattergram. The scattergram gives a picture of the mental functions tapped by the test.

The American Council on Education, Psychological Examination, 1945 edition, (11) was used to determine scholastic ability. The test is composed of six subtests and is scored to give a "Q" score which is a measure of quantitative ability and an "L" score which is a measure of linguistic ability. Any wide difference between the two scores may indicate the area in which the subject is weak. The two scores are combined to give a total score which is used generally as a means of comparing the level of scholastic ability of the subject with those with whom he will be competing.

The Cooperative English test form C₂S was used to measure reading speed and reading comprehension. The test is divided into two parts. Part one is a vocabulary test and part two has a section for computing reading speed and the level of reading comprehension. Part two was used to obtain a test-retest measure and was also used as one of the selective measures before the student was admitted

to the reading clinic. Part one was not given since vocabulary scores were found on other tests. Also, by giving part two only, the time element was standard for the group. In administering the test in two parts the subject may begin to work on part two when he completes part one, thereby giving faster readers an advantage. By limiting the test to part two this advantage is eliminated and a more accurate measure of reading speed and comprehension is obtained.

The Strong's Interest Blank for Men, revised, (12) was the instrument used to measure interests of the group. The blank consists of 400 questions and the subject is to choose one of three responses: like, indifferent or dislike. Interests of the subjects are compared to the interests of those who are successful in some forty occupations that have been worked out by Strong (12) and his associates. Non-occupation keys that consist of occupation level, interest maturity and masculinity-femininity are also computed and compared.

The women enrolled in the reading clinic were given the Strong's Interest Blank for Men, revised, as suggested by Darley (13) who says:

For the able, potential "career" girl in college, there is both clinical and research evidence for the wisdom of using the Strong blank for men in addition to the blank for women to get a clearer picture of range of interests.

One of the personality tests used was the Minnesota Personality Inventory. The student rates himself by responding to the questions in one of five different degrees: strongly agree, agree, undecided, disagree, strongly disagree. Five factors of personality are measured. Darley and McNamara (14) found that morale, social adjustment, family relations, emotionality, and economic conservatism were five factors in personality. On each scale extremely high or low scores are considered significant.

The Minnesota Multiphasic Personality Inventory constructed by Hathaway and McKinley (15) was the second personality measure. The test is designed to give in a single test, scores on some of the important phases of personality. The subject is asked to assert some 550 cards into three categories: true, false and cannot say. The personality characteristics that scores have been standardized for are: hypochondriasis, depression, hysteria, psychopathic personality, masculinity-femininity, paranoia, psychasthenia, schizophrenia and hypomania. Three other scales to determine the validity of the responses are used in interpreting the scale.

The screening test of ocular defects was the Keystone Visual Survey Telebinocular (16). The subject is given several cards with various symbols on them and asked to tell the examiner what he sees. The test is a monocular visual acuity test but administered with both eyes open. In many cases any suppressing or blocking of the subject is disclosed. The telebinocular provides information at both the near point and far point and gives a general picture of the subject's visual efficiency.

Procedures Used in the Clinic

Numerous methods and procedures were used in the clinic to encourage reading comprehension and reading speed. The clinic met in two sections for a period of an hour, four days a week. One section met at three o'clock and the other section at four o'clock in the afternoon. The clinic was in session during a period of six weeks. The clinician in charge would select the articles and would make questions over the material. The material was selected from magazines such as the Reader's Digest, Reader's Scope and Magazine Digest.

attitudes expressed by the student were reflected. Complete acceptance of the students as individuals was practiced by all who aided in the clinic.

The clinician did not act as a referee or as a judge but allowed positive or negative feelings and attitudes of the students to be expressed. The discussion did not always impinge upon the reading material. If the students wanted to discuss some other topic the discussion would follow the suggested subject.

DESCRIPTION OF THE STUDENTS

Due to the selective processes described before, the group of students that were studied numbered 25. Table 1 shows the distribution of students according to classification:

Table 1. Classification of students enrolled in the clinic.

Classification	Number	Men	Women
Freshman	13	7	6
Sophomore	7	7	0
Junior	3	3	0
Senior ¹	1	1	0
Graduate	<u>1</u>	<u>1</u>	<u>0</u>
Total	25	19	6

The average age of the group was 22 years to the nearest birthday. Three were over 30 years of age and seven were under 20 years of age. The group was composed of 20 male students and five female students. The normal distribution of men students to women students in the total college enrollment is about five men to one woman. All students were willing to cooperate with the clinical procedures and all had voluntarily sought the help of the clinic.

The mean intelligence scores for the group was found to be 120 I.Q. points on the Wechsler-Bellevue scales. The range of I. Q. scores for the group were from 98 to 139. The subtests were compared for scatter from their own central tendency to the mean of

¹The senior student had already received a degree in architectural engineering.

the vocabulary subtest. The following table shows the results of the comparison:

Table 2. Vocabulary scattergram.

Subtests	Deviations														
	-7	-6	-5	-4	-3	-2	-1	-0	1	2	3	4	5	6	7
Comprehension															X
Information											X				
Digit span							X								
Arithmetic								X							
Similarities												X			
Picture arrangement							X								
Picture completion												X			
Block design													X		
Object assembly										X					
Digit symbol								X							

In the above table the subtest mean weighted scores of the various subtests are compared to the mean weighted vocabulary subtest score. In the comparison a zero score is arbitrarily assigned to the vocabulary score. Any deviation, either positive or negative from the vocabulary score, is plotted on the vocabulary scattergram. Negative deviations indicated the extent to which the mental function tapped by the subtest has been developed or impaired.

The scores of the group compared above indicates that, as a group, they are not functioning up to the "true" level in four of the areas. These areas are noted by a negative deviation from the zero column. Further discussion of the meaning of scatter will be discussed under the findings from the Wechsler-Bellevue Scale.

There is an obvious discrepancy between the "L" and the "Q" scores on the American Council on Education Psychological Examination. This difference suggests that the quantitative judgments are perhaps better than the linguistic judgments of the group. The following table is a breakdown of the scores made by the group into quantitative, linguistic and total scores:

Table 3. Scores made by reading clinic students on the American Council on Education Psychological Examination, 1945 edition.

	Mean raw scores of reading clinic group.	Percentile rank of freshman September 1946
"Q" scores	49.22	81
"L" scores	60.60	49
Total scores	100.30	47

Results of the Cooperative English Test C₂S of Reading Comprehension give a measure of reading speed and comprehension. Results of part two are shown in the following table.

Table 4. Comparison of reading clinic students to freshmen at Kansas State College using the Cooperative English Test C₂S Reading Comprehension.

Measure	Mean raw score of clinical group	Sigma	Percentile rank of freshman
Level of comprehension	16.18	11.06	44
Speed of reading	12.82	7.24	39

The above scores indicate that the group was reading below the average for the freshman class. Reading speed seems to follow the pattern reported by Blake and Dearborn (6) that deficiencies in reading speed are more numerous than deficiencies in reading comprehension.

An interesting comparison was made in a short study of the reading scores of the entering class of September, 1946, with reading scores of ninety other colleges similar to Kansas State College. The other colleges are described as Type II institutions by the American Council on Education. The following table compares Kansas State College freshmen with the other colleges.

Table 5. Comparison of scores on the Cooperative English Test C₂S between entering freshman at Kansas State College and freshman in 90 Type II colleges.

Measure	Raw scores of students: Kansas State College	Scaled scores	Percentile ranks at Kansas State College	Percentile ranks in Type II colleges
Speed of reading	11	48	25	14
	17	54	50	31
	25	60	75	53
	61	86	100	99
Level of comprehension	9	50	25	21
	14	54	50	36
	19	60	75	59
	50	75	100	96

Table 5 indicates that for the same raw and scaled scores the entering freshman students at Kansas State College do not read as well as the average student in Type II colleges. Students making a raw score of 17 at Kansas State College rank at the 50th percentile while a score of 17 is equivalent to a percentile rank of 31 in institutions of similar standards. It would seem that the reading performance of students entering the freshman class at Kansas State College are in general below the average of entering students at similar institutions.

A preliminary questionnaire was filled out by the students which was inquiry of ocular defects, use of spectacles, evidences of fatigue and length of time they were able to read at one time

without tiring. Table 6 gives the questions in detail and the results.

Table 6 Reading questionnaire and responses.

Questions	Yes	No	
1. Do your eyes bother you?	15	8	
2. Does bright light hurt your eyes?	15	8	
3. Do you wear glasses?	9	14	
a. Do you know what condition they correct?	8	15	
4. How do your eyes feel during a movie?			
Blur	Burn	Feel tired	All right
1	2	4	15
5. How long a period can you read at one time without tiring?		(Average was 2 hours)	
6. Is it hard work for you to read?	13	10	
7. Do you have considerable visual distress?	4	19	
8. Do your eyes give you headaches?	8	15	
9. Do you get car, train or seasick?	4	19	
10. Do you frequently feel fatigued or sleepy?	19	4	

Almost two-thirds of the group claimed that their eyes bothered them to some degree. Four-fifths complained of feeling tired and sleepy when they read and over half said that it was hard work for them to read. Even with correction of ocular defects something in their adjustment to reading was below average.

The Keystone Visual Survey Telebinocular, the rough screening test for ocular defects, did not reveal many ocular conditions that warranted special examinations by oculists. The majority of

the students had been examined by oculists within a period of a year previous to their enrollment in the reading clinic, so few were advised to seek further examinations.

FINDINGS

The Cooperative English Test, C₂S Reading Comprehension

Significant increases in the speed of reading and the level of the reading comprehension were found in the reading clinic group at the end of the six-weeks period. Evidently the influence of the remedial procedures used in the clinic was responsible for the increase. At the beginning of the clinic the students in the group ranked below the average in the two reading functions as measured by the Cooperative Reading Test. The fact that the average for the freshman class was below the average of Type II institutions further indicated poor reading performance since the clinical group ranked below the freshman average.

After six weeks in the reading clinic and under the influence of the remedial procedures the retest results gave critical scores that were significant. The following table gives the test-retest results:

Table 7. Results of the test-retest scores on the Cooperative English Test, C₂S, Reading Comprehension.

Measure	Mean raw scores	Sigma	Retest mean raw scores	Sigma	Critical ratio
Speed of reading	16.18	11.06	22.50	11.82	2.00
Level of comprehension	12.82	7.24	17.04	10.06	1.67

Speed of reading increased at the five percent level of confidence and it may be assumed that the increase is significant.

Level of comprehension increased to a level that is above the average for entering freshmen. Students in the reading clinic who increased both in speed and comprehension are now more able to compete with students of their same scholastic ability.

Wechsler-Bellevue Scales

Significant deviations were found between the mean vocabulary subtest score and the mean score on the digit span and picture arrangement subtests. The subtests on the Wechsler-Bellevue test of general intelligence were compared for scatter from their own central tendency. By this means any negative deviation from the mean vocabulary score indicated impairment of the mental aspect measured by each subtest.

The digit span test is one of attention. A score below the mean vocabulary score indicates a lack of ability to do work that requires concentrated effort. If the digit span score is significantly below that of the vocabulary score any further effort at concentration does not help in the individual's effort to pay attention. The ability to pay attention may be described as the free mobilization of energies which are not tied up with any particular emotion, interest or drive, but are often at the free disposal of the Ego to be utilized in thinking and dealing with reality. Wechsler (8) and Rapaport (9) hold that attention suffers first under anxiety and depression. In reading the individual does not have the ability to devote himself to the theme of the material and be carried along with the stream of the article without being carried off into other streams of thought. It is dif-

difficult for one to listen to and digest a lecture without effort or participation in a conversation without discovering that he is missing part of it.

Deviations between the means of the vocabulary subtest and the digit span and picture arrangement subtest were found to be significant as indicated by a critical ratio of 2.63 in the former and 2.10 in the latter. It may be assumed at the five percent level of confidence that these differences are not due to chance.

The picture arrangement test measures ability to comprehend and size up a total situation. It is a good measure of social intelligence according to Rapaport (9). The test according to Wechsler (8) involves planning and anticipation and implies both attention and judgment. Social intelligence as defined by Bingham (17) is as follows: "Social intelligence is the ability to understand and manage people and to act wisely in human relations."

The picture arrangement test is a good indicator of the subject's ability to comprehend the whole situation. It is necessary that the subject understand the total situation before he can effectively complete the task. Before a subject does well in a reading performance task he should be able to see the task as a whole. Apparently the subjects in the reading clinic are impaired in the ability to see the reading task as a whole and are not functioning up to their full capacity.

A positive correlation of .831 was found between the digit span test and the social adjustment scores of the Minnesota Personality Inventory. A similar positive correlation of .910 was found between picture arrangement and social adjustment scores. The correlations between picture arrangement and social adjustment

indicate the social intelligence of the clinical group was low. Apparently the tests give a measure of the same aspects. Table 8 indicates the scores made by the clinical group.

Table 8. Mean weighted scores on the Wechsler-Bellevue.

Subtest	Mean	Sigma	Standard error	Actual Deviation
Comprehension	13.76	1.76	.355	+ 1.44
Information	12.04	1.96	.400	- 0.28
Digit span	10.20	3.67	.339	- 1.66
Arithmetic	11.52	----	.869	- 0.50
Similarities	13.04	2.26	.482	+ 0.72
Picture arrangement	10.96	2.53	.515	- 1.36
Picture completion	13.20	0.72	.147	+ 0.88
Object assembly	12.64	1.57	.321	+ 0.32
Block design	13.92	1.44	.296	+ 1.20
Digit symbol	11.68	2.34	.486	- 0.64
Vocabulary	12.32	1.66	.339	0.00

Minnesota Personality Inventory

A significant gain was made in the area of social adjustment as measured by the test-retest method. This substantial gain is indicated by a critical score of 2.62 and it may be assumed at the one percent level of confidence that the increase is significant and not due to chance.

The Minnesota Personality Inventory was administered to

the students in the reading clinic at the beginning of the six-weeks period and again at the close of the clinic. The differences were compared to determine any change that might have been made during the period of the clinic. The following table will show the scores made at the beginning of the clinic and the comparison with the group at the University of Minnesota on which it was standardized. The norms are set by the authors of the test.

Table 9. Comparison of scores on the Minnesota Personality Inventory between the clinical group and the norm group.

Scale	Mean raw scores	Percentile ranks norm group for same raw score	Retest mean raw scores	Percentile ranks of norm group for same raw score
Morale	171.00	60	173.50	70
Social adjustment	198.30	21	221.10	41
Family adjustment	140.30	55	142.30	57
Emotional-ity	163.50	60	161.10	55
Economic conservatism	105.10	48	107.10	55

The above scores indicate that the increases in percentile ranks were made in four areas. The tendency in morale, family adjustment, social adjustment and economic conservatism is to better adjustment.

Critical ratios between test and retest scores are shown in Table 10.

Table 10. Critical ratios between test and retest scores on the Minnesota Personality Inventory.

Scale	Critical ratio
Morale	.633
Social adjustment	2.62
Family adjustment	.373
Emotionality	.369
Economic conservatism	.626

Strong's Interest Blank for Men, Revised

The interests of the clinical group apparently were not as high as adult men in general or college freshmen as indicated by the non-occupational key of occupational level. The mean scores on the occupational level key for students in the reading clinic were computed and compared to a norm group which are described by Strong (12) as men in general. The findings were that the reading clinic group ranked at the thirty-sixth percentile. When compared to the Stanford University freshman norms the reading clinic students ranked at the eighth percentile.

Other non-occupational keys indicated that the interest maturity in the clinical group was below average. Table 11 compares the clinical group to their average age group with men in general.

Table 11. Interest maturity scores of reading clinic students compared with the average age group for men in general.

Standard score for students and men in general	Percentile rank for men in general
51.3	56

The scale is so constructed that a high occupational level score on an individual blank indicates that his interests are similar to the interests of executives and professional men. A low score indicates that the individual has the general interests of unskilled workmen.

Apparently the interests of the group were fairly well stabilized.

- Further evidence of the interests of the group was determined by the interest pattern method suggested by Darley (13). A clinical pattern analysis of interest test scores for the purpose of interpretation has been worked out by Darley (13).

For the individual interest profile the primary interest pattern is the interest type for which the subject has a majority of A and B+ scores. The secondary interest pattern is one in which there is a majority of B+ and B scores. The interest types are classified into several areas which are scientific, verbal, welfare uplift, business contact, business detail, and certified public accountant.

Three trained counselors examined the individual interest profiles to determine the interest pattern for each individual. Agreement was reached by all counselors on twenty-two of the twenty-three cases. Twelve had primary interest patterns and ten did not. Only one had a secondary interest pattern and five had tertiary interest patterns. The number in the clinical group having primary interest patterns was unusual.

In a study of the frequency of interest patterns Darley (13) found that six percent of the cases had primary interest patterns and no other patterns. Forty-six percent of the cases had primary

interest patterns in combination with other patterns.

Assignments and Grade Point Average

The students enrolled in the clinic apparently did not have lower grade averages because of the additional load imposed by four hours each week by attending the reading clinic. The grade point averages for the first semester and the second semester were studied to determine any change. Approximately the same number of hours were carried in both semesters and no significant change in grade point average was found.

Table 12 shows assignments, classification, grade points and averages for the two semesters.

Table 12. Assignment, classification and grade point averages for students enrolled in the reading clinic.

Case No.	Classification	School	First semester			Second semester			Gr. point average
			Hours	Grade points	Gr. point average	Hours	Grade points	Gr. point average	
1	Sophomore	Engineering	0	0	0.000	14	5	.214	
2	Freshman	Agriculture	0	0	0.000	15	54	2.000	
3	Freshman	Home Economics	15	7	.466	12	11	.916	
4	Freshman	Agriculture	9	10	1.11	14	18	1.28	
5	Sophomore	Veterinary							
		Medicine	13	21	1.615	19	31	1.72	
6	Sophomore	Arts & Science	11	6	.545	15	6	.400	
7	Freshman	Engineering	16	34	2.125	15	26	1.92	
8	Junior	Arts & Science	0	0	0.000	14	38	2.71	
9	Freshman	Home Economics	4	6	1.500	5	7	1.40	
10	Freshman	Home Economics	14	16	1.142	14	20	1.44	
11	Freshman	Home Economics	15	32	2.133	15	37	2.46	
12	Sophomore	Agriculture	15	23	1.533	13	10	.71	
13	Freshman	Engineering	16	16	1.000	19	22	1.22	
14	Freshman	Home Economics	15	32	2.133	15	26	1.73	
15	Sophomore	Engineering	19	32	1.684	16	34	2.12	
16	Junior	Agriculture	15	39	2.600	17	40	2.34	
17	Senior	Engineering	12	36	3.000	16	53	2.06	
18	Freshman	Home Economics	16	3	.187	12 $\frac{1}{2}$	6 $\frac{1}{2}$.500	
19	Freshman	Agriculture	15	12	.800	13	11	.927	
20	Junior	Arts & Science	18	9	.500	15	21	1.400	
21	Sophomore	Arts & Science	9	9	1.000	12	16	1.33	
22	Sophomore	Veterinary							
		Medicine	12	24	2.000	18	31	1.72	
23	Freshman	Engineering	15	12	.500	17	17	1.000	
24	Freshman	Arts & Science	15	9	.600	15	21	1.400	
TOTAL			280	388	(Aver) 1.308	348	519	(Aver) 1.638	

SUMMARY AND CONCLUSIONS

The lack of published research concerning remedial reading procedures and their influence upon reading speed and comprehension as well as personality adjustment was considered before undertaking the study. The various aspects of reading performance have been widely studied with regard to perceiving written material but little study has been done in regard to the psychological processes involved.

The methods of procedure and the techniques involved in carrying on the work of the reading clinic were those accepted as good clinical methods.

Tests of scholastic aptitude used in selecting the student indicated that those in the reading clinic were average or above average in scholastic ability for success in college. Evidence that the clinical group was below average in verbal and linguistic ability was found in the results of the American Council on Education, Psychological Examination. Quantitative scores made by the clinical group were higher than the average quantitative scores made by the freshman class of 1946 which indicate that the reading clinic group is better qualified to work in quantitative terms than in verbal terms.

Significant gains were made in reading speed and reading comprehension as measured by the Cooperative Reading Test. Critical ratios were computed between test and retest scores and were found to be 2.10. Evidently the reading procedures used in the clinic were partly responsible for the gains in reading performance.

Results from a study of the Wechsler-Bellevue Scales suggest

that the group was impaired in certain mental functions. Significant differences were found between vocabulary subtest and between digit span and picture arrangement subtest scores. The impairment as shown by the vocabulary scattergram points out that the group was not functioning on a level comparable to its ability. The important findings of significant differences between the subtest scores indicate that the clinical group did not have the ability to pay attention.

The inability to pay attention to verbal stimuli is shown by the negative deviation of the digit span scores. In reading the individual does not have the ability to be carried along with the stream of the book and is constantly discovering that he is missing the theme of the material. Reading on the college level for the most part requires concentrated effort. The lack of this ability in the reading clinic group was obvious in the scores on digit span. Since attention is first affected by anxiety and depression the tendency is suggested by the low scores.

Lack of the ability to size up total situations and to make appropriate reactions is shown by the findings of the picture arrangement subtest when compared to the vocabulary subtest. In reading comprehension the ability to utilize the information at hand and to make wise judgments is impaired when the individual makes significantly lower scores on this subtest. Social intelligence is also affected as it involves the capacity to size up total situations and to make wise judgments.

The findings from the study of the subtests suggest that personality adjustment is important in reading performance. Impairment of some of the mental functions such as the ability to pay attention,

the capacity to size up total situations and the ability to make wise judgments, influence reading performance.

A problem of personality adjustment was suggested by low scores on the social adjustment key of the Minnesota Personality Inventory. Significantly higher scores on this key were made after six weeks under the influence of the remedial procedures used in the reading clinic. The fact that they were free to express any attitude or feeling in the reading clinic enabled them to get at some of the causes that impair personality adjustment. The remedial procedures of group counseling apparently aided in the social adjustment. The tendency toward higher scores on morale, family adjustment and economic conservatism as indicated by the retest scores was found. This was an unexpected outcome and suggests the need for further investigation.

The study suggests other areas and problems for further research. Further and more complete study could be made as to the role of group counseling upon reading performance and personality adjustment. Indications were that group counseling assumed an important role in the improvement of reading performance and personality adjustment and a detailed research needs to be made in this field.

Another research project as to the influence of individual counseling upon reading performance related to personality adjustment could well be made. Personal counseling has been proved to be effective in personality adjustment but the relationship between reading performance and personality adjustment needs to be more fully investigated.

The general conclusion was reached that certain remedial reading procedures improve reading speed and comprehension as well as social adjustment. The procedures described in this study are effective in a clinical situation that is designed to improve reading speed and comprehension.

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LITERATURE CITED

- (1) Imus, H. A., J. W. M. Rothney and R. M. Bear.
An evaluation of visual factors in reading. Hanover.
Dartmouth College Publications. 120 p. 1938.
- (2) Larsen, Robert P. and D. D. Feder.
Common and differential factors in reading and hearing
comprehension. Jour. Ed. Psych. XXXI:241. 1940.
- (3) Allport, Gordon W.
The use of personal documents in psychological science.
Social Science Research Council Bul. 49. 1942.
- (4) Bender, Irving E., H. A. Imus, J. W. M. Rothney, Camilla
Kemple and Mary R. England.
Motivation and visual factors. Hanover. Dartmouth
College Publications. 369 p. 1942.
- (5) Allport, Gordon W.
Personality, a psychological interpretation. New York.
Henry Holt and Co. 588 p. 1937.
- (6) Blake, M. B. and W. F. Dearborn.
The improvement of reading habits. Jour. of Higher Ed.
VI:83-84. Feb. 1935.
- (7) Rogers, Carl A.
Counseling and psychotherapy. Boston. Houghton-Mifflin
Co. 445 p. 1942.
- (8) Wechsler, David A.
Measurement of adult intelligence. Baltimore. Williams-
Wilkins. 258 p. 1944.
- (9) Rapaport, David.
Diagnostic psychological testing. Josiah Macy Founda-
tion. I:571. 1944.
- (10) Torrance, Paul A.
Abbreviated guide for interpretation the Wechsler-Belle-
vue Scales. (Unpublished study of Kansas State College).
23p. 1946.
- (11) Thurstone, L. L. and Thelma Gwinn Thurstone.
Manual of instruction American Council on Education
Psychological Examination. 1945 edit. Washington, D. C.
8 p. 1945.
- (12) Strong, Jr., and Edward K. Strong.
Vocational interest of men and women. Stanford Univ.
Stanford Univ. Press. 746 p. 1937.

- (13) Darley, John G.
Clinical aspects and interpretation of the Strong Vocation Interest Blank. New York. The Psychological Corp. 71 p. 1941.
- (14) Darley, John G. and W. J. McNamara.
Factor analysis in the establishment of new personality tests. Jour. Ed. Psych. 31. Nov. 5, 1940.
- (15) Hathaway, Starke R. and J. C. McKinley.
The Minnesota multiphasic personality inventory. New York. The Psychological Corp. 16 p. 1943.
- (16) Betts, Emmett A.
The prevention and correction of reading difficulties. Evanston. Row, Peterson and Co. 402 p. 1936.
- (17) Bingham, Walter van Dyke.
Aptitudes and aptitude testing. New York. Harper. 390 p. 1941.

