

TO DETERMINE THE EFFECT OF CERTAIN  
ENVIRONMENTAL CONDITIONS  
UPON STUDY

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## CHAPTER I

### INTRODUCTION

#### Introductory Comments

So much intellectual work is done nowadays in noisy surroundings that the determining of the effect of this noisy environment upon study becomes quite important.

It is said that Julius Caesar could dictate several letters at one time, each letter to a different copyist. Also, it is well known that an expert typist can copy ordinary material while thinking of something else, or a pianist can play a familiar piece while listening to a conversation. It is also true that when the typist is trying for speed, or the pianist is playing with great expressiveness, close attention must be given.

Advising students how best to study is a favorite pastime with many teachers. The author has on many occasions directed students to study in a quiet room, or never to study in close proximity to a radio over which a program is being received. It has been a customary practice for many years in most schools to permit no gum chewing at study or class periods.

The author has conducted this experiment to attempt to satisfy himself as to the validity of some of the common statements and to try to establish a few facts to serve as a guide in helping students to study.

#### Presentation of the Problem

The problem under consideration is to determine the effect of certain environmental conditions upon the process of studying. The conditions chosen were those which are common to school or home study conditions, namely: room confusion, chewing gum, classical music, popular music, news cast, and serial story.

This study attempts to answer the question, How much effect, positive or negative, will each of the above-mentioned environmental conditions have upon study?

#### Specific Procedure

The specific procedure of this investigation may be stated as follows: (1) to give a brief introductory statement, (2) to state the problem and explain how the experiment was conducted, (3) to determine the outcome of the experiment, (4) to form some tentative and possibly some definite conclusions based upon the investigation, and (5) to offer some suggestions for further consideration of this and other allied problems

Statement of the Problem and Explanation  
of How the Experiment Was Conducted

In this experiment the author does not attempt to determine the effect of all environmental conditions upon study. This would be an endless task. Only room confusion, chewing of gum, classical music, popular music, news cast, and the serial story were used.

This investigation includes the effect of the above-mentioned environmental conditions upon the study of general materials. The selections for study were from the book Learning to Live.<sup>1</sup>

Two groups of thirty freshmen students in Hardin College, Wichita Falls, Texas, were used. The method of experimentation may be outlined as follows: (1) the two groups were equated on the basis of the Otis Quick-Scoring Intelligence Test; (2) one group, the control group, studied in a normal, quiet study situation; (3) the other group, the experimental group, studied while the environmental conditions to be used in this study were introduced; (4) immediately after the study period of each group a twenty-question multiple-choice type test was administered; (5) switching between experimental and control groups on the various experiments was done to give more validity to the study.

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<sup>1</sup>Harry E. Tyler and others, Learning to Live.

### Examples of Similar Work

A large class of sophomores was given a mental ability test and divided into two matched groups. Each group contained ninety students. Some weeks afterwards these matched groups took another similar intelligence test, but this time one group, the experimental group, worked under distracting conditions, while the other group, the control group, worked under normal, quiet conditions. For distracting stimuli there were bells, buzzers, organ pipes, whistles, and other noise makers, intermittent music, a spotlight flashing around the room, and people moving roughly about, talking and carrying stage apparatus.

The control group, working in quiet, made 137.7 points and the experimental group working under distracting conditions made 133.9. A loss of 3.7 points through distraction was thus experienced. The author says:

The effect of distraction was very slight on the average, and none of the students broke down in the 19 minutes of intense work under severe distraction, although a few reported considerable strain.<sup>2</sup>

In another experiment, unequated groups were used. The same subjects worked sometimes under normal conditions and sometimes under distraction. The author concludes:

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<sup>2</sup>H. B. Hovey, "Effects of General Distraction on the Higher Thought Processes," American Journal of Psychology, XL (1928), 585-591.

The effect of distraction was slight, and that it could be warped one way or another by suggestion. If the subjects were led to believe that the sound of music would disturb their arithmetical work, they lost a little; but if they were led to believe music would help them they gained a little; without any suggestion they neither gained or lost.<sup>3</sup>

#### Sources of Data

The author had access to the North Texas State Teachers College Library in Denton, the Hardin College Library, and the Kemp Public Library of Wichita Falls, Texas. Publications such as the National Educational Association Journal, The Texas Outlook, The Bulletin of the National Association of Secondary School Principals, Journal of Genetic Psychology, American Journal of Psychology and others supplied some worth-while thoughts on the problem. Other data were obtained from two groups of freshman students in Hardin College, upon whom the experiment was performed. Valuable information and suggestions were obtained from personal conferences with James H. Dougherty and James F. Webb, Professors of Education, North Texas State Teachers College, Denton, Texas; James B. Boren, President of Hardin College, Wichita Falls, Texas; and D. L. Ligon, Dean of Hardin College, where the experiment was conducted.

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<sup>3</sup>K. H. Baker, "Pre-experimental Set in Distraction Experiments," Journal of Genetic Psychology, XVI (1937), 471-488.

### Limitations of the Experiment

The experiment is limited. First, the experiment is limited in the study of general material; second, the experiment deals with only one age group; third, the experiment deals with only a few of the many environmental conditions which affect study; fourth, the experiment was carried on with a small group, perhaps too small to establish definite conclusions; fifth, the study was all made in one locality; sixth, only one length of study period was used; and seventh, the only basis for determining the effect of certain environmental conditions upon study used in this experiment was the learning of facts by reading.

## CHAPTER II

### THE EXPERIMENT ITSELF

The purposes of this chapter are, first, to describe the means of equating the groups; second, to describe briefly each of the six individual experiments which go to make up the whole; and third, to acquaint the reader with the exact procedure of setting up the study.

#### Means of Equating the Groups

The Otis Quick-Scoring Mental Ability Tests, for Senior High Schools and Colleges, were used as a basis for equating the two groups used in this study. From the variety of tests available, Form Gamma BM was used. Enough students were tested in each group so that two matched groups of thirty could be selected (see Table 1).

#### Other Test Data

Test 1, given to aid in determining the effect of room confusion in study; Test 2, given to aid in determining the effect of gum chewing upon study; Test 3, given to aid in determining the effect of listening to classical music upon study; Test 4, given to aid in determining the effect of listening to popular music upon study; Test 5,

given to aid in determining the effect of listening to a news cast upon study; and Test 6, given to aid in determining the effect of listening to a serial story upon study, were constructed to test knowledge of selected materials from the book Learning to Live, by Harry E. Tyler and others. (See Appendix for examples of these tests.)

#### Experimental Procedure

In this study, the effect of certain environmental conditions upon study is determined on the basis of learning facts by reading.

The whole study is made up of six small experiments. The first experiment was conducted to determine the effect of room confusion upon study. This experiment was conducted as follows: the equated groups, known as Group I and Group II, studied ten pages of selected material from the book Learning to Live by Harry E. Tyler and others, for twelve minutes. In the first experiment Group II was the control group and studied under normal, quiet conditions. As Group I studied, the room was confused by persons moving about and conversing, moving articles about in the room, occasional singing, which one might naturally do, persons entering and leaving the room, and other like situations common to a home with

several members. The two groups were equally motivated in that no attempt was made to cause one group to become more interested in the experiments than the other. The same instructions were given to both groups before study and before testing. A twenty-question multiple-choice test was given each group immediately after the study period for each group ended. Tests were taken under normal, quiet conditions. Table 2, in the following chapter, shows the results of this experiment.

The second experiment was carried out to determine the effect of the chewing of gum on study. Group I served as the control group and Group II, as the experimental group. Material for study and testing was taken from the same book as the first experiment, but different pages were used. Number of pages studied and time studied were the same as in the first experiment. Group I studied under normal, quiet conditions, but as Group II studied, each member of the group chewed gum. Instructions to Group I and II before studying for the experiment were the same. At the end of the study period each was given a twenty-question multiple-choice type test. Table 3, in the following chapter, shows the tabulated results of this experiment.

The third experiment was carried out to determine the effect of listening to classical music upon study.

Group I served as the control group and Group II as the experimental group. Material for study and testing was taken from the same book as in the previous experiments, but different pages were used. Number of pages studied and length of study period were the same as in previous experiments. Group I studied under normal, quiet conditions. While Group II studied, selections of classical music were played. Instructions given to Group I and Group II before study and testing were the same. At the end of the study period each group was given the same twenty-question multiple-choice type test. Table 4, in the following chapter, shows the tabulated results of this experiment.

The fourth experiment was carried out to determine the effect of listening to popular music on study. Group I was used as the experimental group and Group II served as the control group. Material for the study and testing was taken from the same book as the previous experiments, but different pages were used. Number of pages studied and time of the study period were the same as in previous experiments. Group II studied under normal, quiet conditions, but as Group I studied, selections of popular music were played. Instructions given to Groups I and II before study and testing were the same. At the end of the study period, each group was given the

same twenty-question multiple-choice type of test. Table 5, in the following chapter, shows the tabulated results of this experiment.

The fifth experiment was carried out to determine the effect of listening to a news cast on study. Group I served as the control group and Group II as the experimental group. Material for study and testing was taken from the same book as in the previous experiments, but different pages were used. Number of pages studied and length of study period were the same as in previous experiments. Group I studied under normal, quiet conditions. While Group II studied, a nationally known news cast was being given. Instructions given to Groups I and II before study and testing were the same. At the end of the study period, each group was given the same twenty-question multiple-choice type test. Table 6, in the following chapter, shows the tabulated results of this experiment.

The sixth experiment was carried out to determine the effect of listening to a serial story upon study. Group II served as the control group and Group I as the experimental group. Material for study and testing was taken from the same book as in the previous experiments, but different pages were used. Number of pages studied and length of study period were the same as in previous

experiments. Group II studied under normal, quiet conditions. While Group I studied, a well-known serial story was turned into the study room by means of radio. Instructions given to Groups I and II before study and testing were the same. At the end of the study period each group was given the same twenty-question multiple-choice type test.

## CHAPTER III

### INTERPRETATION OF EXPERIMENTS

This chapter is included to focus attention upon the results of the six experiments in this study, and to make some comparisons of the results. The results of all tests administered are included in tabulated form.

#### Tabulated Results

Table 1 shows the scores of Group I and Group II on the Otis Quick-Scoring Mental Ability Test which was used to equate the two groups who participated in this study. By noting the intelligence quotient of each student of Group I and the matched student in Group II, the reader can see a series of thirty matched pairs. The mean scores are included to give the reader a better view of the equality of the two groups.

Tables 2, 3, 4, 5, 6, 7, and 8 are included to show the results of the tests given in the six experiments.

From Table 2 it can be seen that Group I, the experimental group, answered an average of 15.66 questions correctly while Group II, the control group, answered an average of 16.1 questions correctly. The control group

TABLE 1

## INTELLIGENCE TEST SCORES OF GROUP I AND GROUP II

Group I		Group II	
Pupil	I. Q.	Pupil	I. Q.
1	129	1	125
2	127	2	125
3	123	3	119
4	119	4	115
5	116	5	115
6	115	6	114
7	115	7	112
8	111	8	108
9	109	9	108
10	108	10	107
11	108	11	107
12	108	12	107
13	107	13	105
14	107	14	104
15	107	15	102
16	105	16	102
17	105	17	101
18	105	18	100
19	105	19	100
20	102	20	98
21	102	21	98
22	102	22	98
23	101	23	97
24	101	24	96
25	100	25	96
26	99	26	95
27	98	27	90
28	94	28	90
29	92	29	88
30	87	30	88
Mean.....	106.9		104
Median.....	106		102
$\sigma$ .....	9.428		10.49

Critical ratio: 1.1

TABLE 2

**INTELLIGENCE TEST SCORES OF GROUP I AND GROUP II  
AND TEST SCORES TO DETERMINE THE EFFECT OF  
ROOM CONFUSION ON STUDY**

Group I (Experimental)			Group II (Control)		
Pupils	I. Q.	Test 1	Pupils	I. Q.	Test 1
1	129	13	1	125	17
2	127	16	2	125	16
3	123	16	3	119	18
4	119	18	4	115	14
5	116	19	5	115	19
6	115	16	6	114	18
7	115	18	7	112	19
8	111	16	8	108	16
9	109	15	9	108	16
10	108	16	10	107	17
11	108	10	11	107	19
12	108	17	12	107	17
13	107	17	13	105	16
14	107	18	14	104	16
15	107	14	15	102	19
16	105	14	16	102	16
17	105	17	17	101	14
18	105	19	18	100	16
19	105	14	19	100	16
20	102	19	20	98	16
21	102	13	21	98	17
22	102	13	22	98	15
23	101	16	23	97	18
24	101	15	24	96	14
25	100	11	25	96	14
26	99	19	26	95	15
27	98	15	27	90	14
28	94	16	28	90	13
29	92	16	29	88	12
30	87	14	30	88	16
Mean....	106.9	15.66		104	16.1
Median..	106	16		102	16
$\sigma$ .....	9.428	2.019		10.49	15.23

Critical ratio: 2

answered an average of .44 more questions correctly than the experimental group. The ratio of the difference between the mean scores and the probable error of the difference between the means is 2.

From Table 3 we see that the experimental group, Group II, answered an average of 14.3 questions correctly, while the control group, Group I, answered an average of 15.4 questions correctly. The control group answered an average of 1.1 more questions correctly than the experimental group. The ratio of the difference between the mean scores and the probable error of the difference between the means is 2.5.

Table 4 shows that in the experiment to determine the effect of listening to classical music on study with the experimental group, Group II, the average number of questions answered correctly was 15.1, and the average for the control group, Group I, was 16.63. The control group answered an average of 1.53 more questions correctly than the experimental group. The ratio of the difference between the mean scores and the probable error of the difference between the means is 2.9.

In Table 5 the experimental group, Group I, answered an average of 14.3 questions correctly, and the control group, Group II, answered an average of 16.3 questions correctly. The control group answered an average of two

TABLE 3

INTELLIGENCE TEST SCORES OF GROUP I AND GROUP II  
AND TEST SCORES TO DETERMINE THE EFFECT OF  
CHEWING GUM ON STUDY

Group I (Control)			Group II (Experimental)		
Pupils	I. Q.	Test 2	Pupils	I. Q.	Test 2
1	129	18	1	125	13
2	127	20	2	125	16
3	123	16	3	119	15
4	119	17	4	115	17
5	116	17	5	115	16
6	115	18	6	114	18
7	115	15	7	112	18
8	111	16	8	108	14
9	109	16	9	108	15
10	108	13	10	107	11
11	108	15	11	107	13
12	108	15	12	107	16
13	107	15	13	105	14
14	107	16	14	104	15
15	107	17	15	102	14
16	105	16	16	102	14
17	107	17	17	101	11
18	105	18	18	100	15
19	105	16	19	100	18
20	102	13	20	98	10
21	102	15	21	98	14
22	102	15	22	98	13
23	101	16	23	97	14
24	101	14	24	96	15
25	100	15	25	96	17
26	99	15	26	95	14
27	98	15	27	90	13
28	94	11	28	90	12
29	92	11	29	88	10
30	87	11	30	88	16
Mean....	106.9	15.4		104	14.3
Median..	106	15.5		102	14
$\sigma$ .....	9.428	2.059		10.49	2.214

Critical ratio: 2.5

TABLE 4

INTELLIGENCE TEST SCORES OF GROUP I AND GROUP II  
AND TEST SCORES TO DETERMINE THE EFFECT OF  
LISTENING TO CLASSICAL MUSIC ON STUDY

Group I (Control)			Group II (Experimental)		
Pupils	I. Q.	Test 3	Pupils	I. Q.	Test 3
1	129	18	1	125	17
2	127	17	2	125	16
3	123	14	3	119	17
4	119	18	4	115	14
5	118	16	5	115	18
6	115	17	6	114	16
7	115	16	7	112	17
8	111	16	8	108	12
9	109	16	9	108	14
10	108	17	10	107	18
11	108	14	11	107	16
12	108	19	12	107	16
13	107	20	13	105	17
14	107	18	14	104	15
15	107	14	15	102	14
16	105	14	16	102	14
17	105	17	17	101	14
18	105	16	18	100	16
19	105	18	19	100	17
20	102	17	20	98	12
21	102	16	21	98	16
22	102	16	22	98	18
23	101	20	23	97	13
24	101	19	24	96	10
25	100	17	25	96	18
26	99	16	26	95	15
27	98	16	27	90	12
28	94	11	28	90	10
29	92	18	29	88	16
30	87	18	30	88	16
Mean...	106.9	16.63		104	15.1
Median.	106	17		102	16
$\sigma$ .....	9.428	1.934		10.49	2.245

Critical ratio: 2.9

TABLE 5

**INTELLIGENCE TEST SCORES OF GROUP I AND GROUP II  
AND TEST SCORES TO DETERMINE THE EFFECT OF  
LISTENING TO POPULAR MUSIC ON STUDY**

Group I (Experimental)			Group II (Control)		
Pupils	I. Q.	Test 4	Pupils	I. Q.	Test 4
1	129	14	1	125	19
2	127	16	2	125	18
3	123	17	3	119	15
4	119	15	4	115	18
5	116	14	5	115	17
6	115	16	6	114	16
7	115	15	7	112	18
8	111	14	8	108	15
9	109	18	9	108	16
10	108	13	10	107	16
11	108	13	11	107	19
12	108	15	12	107	16
13	107	18	13	105	18
14	107	16	14	104	18
15	107	14	15	102	14
16	105	13	16	102	14
17	105	15	17	100	17
18	105	11	18	100	16
19	105	16	19	100	16
20	102	12	20	98	16
21	102	13	21	98	15
22	102	13	22	98	16
23	101	14	23	97	20
24	101	15	24	96	19
25	100	16	25	96	16
26	99	14	26	95	16
27	98	13	27	90	15
28	94	12	28	90	11
29	92	12	29	88	18
30	87	13	30	88	12
Mean....	106.9	14.3		104	16.3
Median..	106	14		102	16
$\sigma$ .....	9.428	1.04		10.49	2.023

Critical ratio: 4.7

more questions correctly than the experimental group. The ratio of the difference between the mean scores and the probable error of the difference between the means is 4.7.

Table 6 shows that the control group, Group I, answered an average of eighteen questions correctly, and the experimental group, Group II, answered an average of 16.3 questions correctly. The control group answered an average of 1.7 more questions than the experimental group, in so far as accuracy of answers was concerned. The ratio of the difference between the mean scores and the probable error of the difference between the means is 4.2.

In Table 7 we see that the experimental group, Group I, answered an average of 11.5 questions correctly, while the control group, Group II, averaged 15.53 correct answers. The control group answered an average of 4.03 more questions correctly than the experimental group. The ratio of the difference between the mean scores and the probable error of the difference between the means is 6.5.

#### Comparison of the Results

A comparison of the scores of the experimental groups with the scores of the control groups is shown in Table 8. The control groups answered an average of 53.7

TABLE 6

**INTELLIGENCE TEST SCORES OF GROUP I AND GROUP II  
AND TEST SCORES TO DETERMINE THE EFFECT OF  
LISTENING TO NEWS CASTS ON STUDY**

Group I (Control)			Group II (Experimental)		
Pupils	I. Q.	Test 5	Pupils	I. Q.	Test 5
1	129	20	1	125	18
2	127	17	2	125	17
3	123	18	3	119	15
4	119	20	4	115	17
4	116	20	5	115	17
6	115	19	6	114	17
7	115	19	7	112	20
8	111	14	8	108	18
9	109	20	9	108	16
10	108	18	10	107	16
11	108	11	11	107	19
12	108	18	12	107	18
13	107	18	13	105	19
14	107	19	14	104	17
15	107	19	15	102	15
16	105	17	16	102	15
17	105	17	17	101	17
18	105	16	18	100	16
19	105	18	19	100	17
20	102	20	20	98	15
21	102	17	21	98	16
22	102	17	22	98	18
23	101	20	23	97	15
24	101	17	24	96	12
25	100	19	25	96	17
26	99	17	26	95	12
27	98	18	27	90	12
28	94	19	28	90	11
29	92	19	29	88	19
30	87	18	30	88	17
Mean....	106.9	18		104	16.3
Median..	106	18		102	17
$\sigma$ .....	9.428	1.936		10.49	2.24

Critical ratio: 4.2

TABLE 7

INTELLIGENCE TEST SCORES FOR GROUP I AND GROUP II  
AND TEST SCORES TO DETERMINE THE EFFECT OF  
LISTENING TO A SERIAL STORY ON STUDY

Group I (Experimental)			Group II (Control)		
Pupils	I. Q.	Test 6	Pupils	I. Q.	Test 6
1	129	16	1	125	16
2	127	15	2	125	19
3	123	14	3	119	20
4	119	15	4	115	18
5	116	13	5	115	17
6	115	12	6	114	20
7	115	8	7	112	17
8	111	10	8	108	16
9	109	12	9	108	17
10	108	13	10	107	15
11	108	18	11	107	18
12	108	12	12	107	15
13	107	14	13	105	17
14	107	11	14	104	16
15	107-	11	15	102	15-
16	105	10	16	102	14
17	105	11	17	101	15
18	105	9	18	100	12
19	105	8	19	100	16
20	102	12	20	98	15
21	102	14	21	98	14
22	102	12	22	98	12
23	101	10	23	98	15
24	101	8	24	96	16
25	100	9	25	96	15
26	99	11	26	95	12
27	98	10	27	90	13
28	94	9	28	90	14
29	92	10	29	88	15
30	87	8	30	88	12
Mean....	106.9	11.5		104	15.53
Median..	106	11		102	15
$\sigma$ .....	9.428	2.52		10.49	2.18

Critical ratio: 6.5

TABLE 8

THE TOTAL NUMBER OF QUESTIONS ANSWERED BY  
EXPERIMENTAL AND CONTROL GROUPS ON EACH  
TEST, AND THE PER CENT THAT NUMBER IS  
OF THE TOTAL POSSIBLE ANSWERS

Test No.	Experimental Groups		Control Groups	
	Correct Answers	Total Possible	Correct Answers	Total Possible
1	470	600	483	600
2	431	600	462	600
3	454	600	499	600
4	488	600	539	600
5	430	600	490	600
6	345	600	466	600
Total.	2,618	3,600	2,939	3,600'
Per cent correct	72.7		81.6	
Mean..	436.3		490	
$\sigma$ ....	46.02		26.03	

Critical ratio: 2.5

more questions correctly than the experimental groups.  
The ratio of the difference between the mean scores and  
the probable error of the difference between the means is  
2.5.

Taking Tables 2, 3, 4, 5, 6, 7, and 8 for comparison, the writer notes, first, that in each of the six experiments the experimental groups answered fewer questions correctly than the control groups; second, that listening to a serial story has the greatest distracting effect upon study; third, that room confusion has the least distracting effect upon study; and fourth, that the effect of listening to popular music upon study, listening to a news cast upon study, and listening to a serial story upon study assumes statistical importance because each has a critical ratio of above 4.0.

## CHAPTER IV

### SUMMARY AND SUGGESTIONS

In the foregoing chapters the writer has attempted, first, to make an introductory comment, present the problem, and explain the method of study; second, to give the sources of data and explain the experimental procedure; and third, to give the results in tabulated form and to make some comparisons.

It is the purpose of this chapter, first, to give a summary of findings; second, to list some tentative conclusions; and third, to list some suggestions for further study.

#### Summary of Findings

Of the six environmental conditions studied, according to this study listening to a serial story has the greatest distracting effect upon study. The experimental groups answered an average of 4.03 fewer questions correctly than the control group. The critical ratio of 6.5 gives this statistical importance. Other environmental conditions in the order of their statistical importance in the relation to their influence upon study are as follows:

1. Popular music -- experimental group answered an average of two fewer questions correctly than the control group, with a critical ratio of 4.7.

2. Listening to a news cast -- experimental groups answered an average of 1.7 fewer questions correctly with a critical ratio of 4.2.

3. Classical music - experimental group answered an average of 1.53 fewer questions correctly, with a critical ratio of 2.9.

4. Chewing gum -- experimental group answered an average of 1.1 fewer questions correctly, with a critical ratio of 2.5

#### Some Tentative Conclusions

The results of this study lead to some tentative conclusions:

1. Of the six environmental conditions studied, according to this study all have some distracting effect upon study.

2. In this study the serial story shows to have such a distracting effect upon study that it might be advisable for students to arrange for their study at times when serial stories are not coming in over the radio. It might also be advisable for parents' study groups to consider the effect of the serial story upon study so as

to be able to make better arrangements for the proper study time for children.

3. Since, in this study, all six of the experimental conditions proved to have had at least a slight distracting effect upon study, it would be well for any student who wishes to study efficiently to determine something of the effect of each of these and other environmental conditions upon himself.

4. Since, according to this study, the chewing of gum and room confusion have a rather small negative effect upon study, it might not be necessary for teachers and parents to give as much attention to these conditions as has been customary.

5. The distracting effect of popular music, classical music, and the news cast may not be great enough to offset the value they are to the individual.

6. More study of the effect of the environmental conditions upon study is needed.

#### Suggestions for Further Study

The writer suggests that a study of the effect of these, and other, environmental conditions upon study could be made with larger groups of students, studying the same type of materials as those used in these experiments, or other types of materials if preferred.

A study might also be made to determine the relationship between mental ability and the effect of certain environmental conditions upon study. Another study which might be made is to determine the relationship between the age and sex of the student and the effect of certain environmental conditions upon study.

## APPENDIX

### TEST I

1. Negative emotional habits are 1. selfishness 2. honor 3. unchecked fear and anger 4. self-pity.
2. Temper tantrums do 1. give one authority 2. accomplish desired results 3. rule most people 4. destroy the good will of others.
3. Anger is of value when it 1. causes hurt feelings 2. arouses energy 3. in the form of indignation at injustice 4. causes harsh words.
4. We should strive to live 1. without anger 2. with controlled anger 3. with uncontrolled anger 4. alone.
5. Worry is a form of 1. thinking 2. working 3. fear 4. problem solving.
6. People who are superstitious 1. fear 2. do clear thinking 3. do not worry 4. have good luck.
7. Fear comes from 1. knowledge 2. ignorance 3. thinking 4. worrying.
8. Moods are 1. uncontrolled 2. wise to tolerate 3. our milder emotions 4. a form of insanity.
9. With all expressions of feeling or mood the problem is to 1. get rid of all feelings 2. regulate and direct as needed 3. working 4. studying.
10. Emotions play a vastly important role in 1. eating 2. music and drama 3. studying 4. ironing.
11. Pride in achievement unchecked is 1. honor 2. fear 3. conceit 4. joy.
12. Feelings are of great value to us if they are 1. constructive 2. controlled 3. uncontrolled 4. harsh.

13. Our world today is 1. going to the dogs 2. unselfish 3. highly social 4. pessimistic.
14. A common difficulty of those who do not easily mingle socially is that 1. they have never gained interest in people 2. like the wrong people 3. are ashamed 4. too busy.
15. People who have progressed socially have learned 1. to dance or sing 2. control their temper 3. solve problems 4. give and take.
16. If you are to develop socially in a pleasing manner you should 1. be kind 2. think 3. work 4. gain a genuine interest in others.
17. We work toward fundamental happiness when we 1. use to good advantages whatever capacities we have 2. work long hours 3. play often 4. direct others.
18. If we would grow in understanding of life we should 1. work hard 2. control ourselves 3. set up goals toward which to strive 4. study people.
19. Human activities are essentially 1. wrong 2. wasted energy 3. purposeful 4. problem solving.
20. Habits are activities which 1. we use with little conscious effort 2. are usually bad 3. get us into trouble 4. we use to speed work.

## TEST II

1. The learning of many people has failed to 1. provide a constructive understanding of life 2. make them wealthy 3. make them philosophers 4. give them happiness.
2. The more 1. wealth we acquire, 2. we read and study 3. effective our habits of meeting trivial problems 4 we rest, the more likely we shall be to meet the major problems of life.
3. One way that people hit upon trying to cope with a problem is that of 1. refusing to admit there is a problem 2. getting help from others 3. going into a rage 4. asking a fortune teller.
4. This habit of refusing to admit problems takes the form of 1. insanity 2. introversion 3. daydreaming 4. walking.
5. With the "sour grapes" method of problem attack one usually 1. fools the public 2. finishes the problem 3. gets excited 4. fools himself.
6. Rationalizing is a form of 1. self excusing 2. thinking 3. instructing 4. talking in facing a problem.
7. The main point in developing serene confidence is to 1. learn to face life's problems as they arise, 2. study science 3. work unceasingly 4. try the "sour grapes" method.
8. Skillful problem solving means first 1. attack swiftly 2. worry over it 3. ask someone else to do it for you 4. recognize the problem.
9. The second thing to be done in skillful problem solving is 1. alibi 2. swift procedure 3. collecting all pertinent facts 4. stall for time.
10. It is wise for all persons to 1. be pessimistic 2. develop perspective 3. be over confident 4. judge tomorrow by today.
11. A good slogan to follow is 1. do unto others before they do unto you 2. trust only yourself 3. the best is yet to be 4. look back and not forward.

12. All persons should 1. develop a sense of humor  
2. learn to draw 3. develop his figure 4. learn to fly in order to be contented.
13. Character is the product of all habits 1. of thinking, feeling and doing 2. working and playing  
3. eating and resting 4. singing and dancing.
14. The persons who find life the hardest and least worthwhile are those of 1. deep convictions 2. the "ostrich habit" 3. religious nature 4. pessimistic attitudes.
15. On matters of religious nature young people should 1. simply believe what they are told 2. ask sensible questions when in doubt 3. forget it 4. search the scriptures.
16. In order to answer your questions you must know 1. what other peoples believe 2. math 3. English  
4. how to ask questions.
17. A third help in developing personal convictions may come through the study of 1. ethics 2. English  
3. Spanish 4. reading.
18. All persons should have 1. identical outlooks on life 2. wealth 3. differing opinions on life 4. social status.
19. Biologically and physically to live is to 1. change  
2. have ideas 3. make a living 4. work.
20. Any creature must be continually undergoing 1. hardships 2. problems 3. adaptation to environment  
4. growth.

## TEST III

1. As a child grows older he is taught to do useful tasks in the home 1. to save parents' money 2. for exercise 3. to become a member of the family 4. to make an allowance.
2. For right parent-child relationship each should be viewed 1. objectively as other friends 2. with child advantages 3. parental control 4. selfishness.
3. One of the greatest needs in anyone's life for true happiness is to feel 1. healthy 2. of value to someone 3. joyful 4. honored.
4. A most important way for you to help your parents adjust to your growing up is to 1. work hard 2. act pleasant 3. be shy with them 4. express your appreciation for things they do.
5. Rebellious actions towards parents as a youth matures show 1. immaturity 2. fast growth 3. selfishness 4. honesty.
6. A truly mature person evaluates with equal care suggestions from all other people and considers them all 1. impersonally and objectively 2. personally 3. independently 4. wisely.
7. It is vital to the happiness of the family that each member be treated as 1. his age signifies 2. an individual personality 3. as he acts 4. as he wishes.
8. The problem parent is distressing because they wish to 1. make the child mature 2. keep the child an infant type 3. be unkind in word and deed 4. show their authority.
9. Overpossessive parents show poor parental adjustment by 1. insisting that child marry too early 2. having him work too hard 3. by physical punishment 4. by bossing and blaming.
10. A parent may be immature and maladjusted because of 1. physical size 2. no money 3. poor nutrition 4. being spoiled in childhood.

11. It is the youth's privilege to 1. criticize his parents 2. argue with them over trivial matters 3. ask unnecessary questions 4. be friends and pals with his parents.
12. As a youth grows up he should consider his parents 1. old fashioned 2. harshly 3. objectively 4. kindly.
13. One of the things most difficult for a parent is to 1. let his child grow up 2. make money 3. buy a house 4. educate his children.
14. A child with a "problem parent" often 1. matures earlier 2. works harder 3. is not intelligent 4. hates his parents.
15. Parents and children can be real friends if 1. they realize that they both have the same basic psychological needs 2. they have each a car 3. they each have work 4. they don't talk too much.
16. Those whose parents are immature will have to 1. work for a living 2. be unkind 3. leave home 4. take more share of adult responsibilities.
17. A parent who insists that "no young person could act like that and be my child" is 1. only talking 2. nagging 3. overpossessive 4. insane.
18. Parents who try to keep a child dependent on them are 1. ignorant 2. unread 3. few 4. immature.
19. A good way of working together as a family is 1. helping to plan the family budget 2. being unselfish 3. getting a job 4. going to school.
20. Parent criticism is usually based on 1. selfishness 2. honesty 3. love for child 4. ignorance of situation.

## TEST IV

1. A college environment makes an ideal laboratory for  
1. learning to sing 2. learning to ski 3. learning  
to live with others 4. learning unselfishness.
2. The art of 1. painting portraits 2. dancing 3. con-  
quering others 4. getting along with people is tre-  
mendously important.
3. The fact that one marriage in every five ends in di-  
vorce is a manifestation of 1. selfish individuals  
2. ignorant people 3. divorce courts 4. social mal-  
adjustment.
4. To "get along" with other people is important in  
1. working math 2. singing a song 3. keeping books  
4. keeping a job.
5. All of us like to be 1. first 2. liked by others  
3. a speaker 4. an artist.
6. To really "get along" with people one must 1. con-  
tinually smile 2. speak loudly 3. be a personal  
friend of everyone 4. develop adequate and appro-  
priate responses to others.
7. How you adjust your behavior depends upon 1. your  
parents 2. your teachers 3. your boy friend 4. with  
whom you wish to be popular.
8. As we grow older we find that everyone has 1. some-  
thing to offer you 2. a grudge 3. a car 4. no ideals.
9. Those who claim that they are utterly indifferent to  
the attitudes of others, 1. are trying to deceive  
their associates and themselves 2. are merely self-  
ish 3. are egotistical 4. are pessimistic.
10. Students who feign indifference to social approval  
do so 1. because of fear 2. because of some malad-  
justments in their own lives 3. because of parental  
control 4. because of science.
11. A person feeling inadequate socially tends to 1. be  
emotionally upset 2. obese 3. pessimistic 4. poorly  
groomed.

12. In any emotional disturbance the healthy functioning of the 1. eyes 2. teeth 3. skin 4. organism is upset.
13. Any feeling of inferiority which results in any type of social maladjustment is termed as 1. inferiority complex 2. ignorance 3. maladjustment 4. fear.
14. Feeling of inferiority may be caused by 1. faulty training 2. unwise persons 3. reading 4. working.
15. Traits as tallness are 1. individual differences 2. hard to fit 3. unhappy traits 4. inferiorities.
16. An inferiority complex is a sign of 1. selfishness 2. physical growth 3. unwise choices 4. associates.
17. A help in overcoming an inferiority complex is to 1. tell others about it 2. try to forget others 3. face social situations with the idea of succeeding 4. keep notes on yourself.
18. Outgrowths of an inferiority complex are 1. well groomed hair 2. quiet voice 3. extreme dress 4. kindness.
19. To seek friends only for selfish gain hurts your 1. entire social relationship 2. friends 3. teachers and parents 4. education.
20. The more you know how to "get along" the more 1. money you have 2. the more joy you bring to others 3. the longer you will live 4. the more optimistic you will become.

## TEST V

1. People judge you by 1. your clothing 2. your church affiliation 3. rules 4. by what you do and say.
2. You should be 1. consistent 2. snobbish 3. friendly 4. old fashioned in your behavior at all times.
3. Plan to spend some of your time 1. gossiping 2. primping 3. pouting 4. alone.
4. One of the first impressions for good appearance is 1. fine clothes 2. neat finger nails 3. good health 4. right colors.
5. To be a well-dressed student one must be 1. richly dressed 2. meet the requirements of good taste 3. wear a hat 4. carry a handkerchief.
6. A basic essential of good health is 1. good posture 2. good tooth paste 3. cologne 4. good facial features.
7. A genuine interest in others makes 1. a real smile 2. problems 3. a posture 4. an appearance easy to produce.
8. Your voice is 1. an interpreter of yourself 2. an asset 3. too shrill 4. too low.
9. To have a good voice one must 1. have lessons 2. study voice 3. be calm and poised 4. uncomfortable.
10. Correct speech is an indication of 1. must study 2. fear 3. calmness 4. clear thinking.
11. The first requisites to adequate expression are 1. textbooks 2. good grammar and pronunciation 3. loud and shrill voice 4. difficult practice periods.
12. Another help for adequate expression is 1. a good vocabulary 2. a good textbook 3. teachers 4. movies.
13. No one really likes 1. a conversationalist 2. an educated person 3. a gossip 4. an orator.

14. Enlarging the range of our ideas is 1. gossip  
2. ego theme 3. "we" theme 4. an enriching and happy  
experience.
15. Your responsibilities as a conversationalist involve  
the ability to 1. gossip 2. talk intelligently on  
any topic 3. write well 4. orate.
16. It is wise to keep informed of 1. the gossip 2. the  
international and national news 3. latest styles,  
4. all mistakes of others.
17. An art to be cultivated is 1. drama 2. wise sayings  
3. listening 4. painting.
18. Try to keep all controversial discussion as 1. emo-  
tional 2. loud 3. heated 4. unemotional as possible.
19. The rules of good manners are based on 1. good  
voice and pronunciation 2. consideration of other  
people's comfort and welfare 3. appearances 4. con-  
duct.
20. Do not attach too much importance to 1. walking  
2. convention 3. deceit 4. voice.

## TEST VI

1. People are 1. gregarious 2. separated 3. unwise  
4. fearful.
2. Antisocial persons seek 1. society 2. to be alone  
3. unwise friends 4. for money.
3. The punishment dreaded most by a convict is 1. starv-  
ing 2. beating 3. working 4. solitary confinement.
4. It is the maladjusted individual who cannot 1. adapt  
himself to the group 2. read 3. think deeply 4. see  
ahead.
5. Membership in a self-centered group is better than  
1. no membership 2. political groups 3. clubs  
4. community centers.
6. A person may develop his personality through 1. work-  
ing 2. resting 3. group contact 4. being alone.
7. Groups which occupy contiguous geographical areas  
are called 1. clubs 2. societies 3. communities  
4. cities.
8. One of the factors affecting urban development is  
the 1. train 2. auto 3. mules 4. religion.
9. Every community has assumed responsibility for the  
1. clothing 2. food supply 3. protection 4. religion  
of its members.
10. The philosophy of police protection concerns itself  
more and more with 1. prevention 2. money 3. crimes  
4. psychology.
11. Community indifference brings about less efficient  
1. cars 2. time tables 3. protective departments  
4. movies.
12. Standards of law enforcement rise as to 1. money-  
making schemes 2. political ventures 3. community  
standards 4. policemen.
13. The personnel of the fire departments is wholly se-  
lected from those with 1. highest scores on civil  
service examinations 2. finest dispositions 3. long  
records 4. best experience.

14. Health of communities is a 1. civic concern 2. physicians' concern 3. club concern 4. school concern.
15. One of the most important contributions to modern civilization is 1. Rotary Club 2. cars 3. public education 4. waterways.
16. Because education is largely paid for from 1. federal taxes and funds 2. local funds 3. state funds 4. organization funds, there are wide differences in educational opportunity.
17. Too many social activities are 1. harmful 2. helpful 3. stimulating 4. useless.
18. The declining interest in organized religion is a 1. valuable thing 2. community problem 3. sin 4. new idea.
19. Community life is 1. inescapable 2. escapable 3. unwise 4. antisocial.
20. Civilization is the 1. means 2. value 3. ends 4. ideals by which we live.

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