

THE EFFECT OF AN UNANNOUNCED EXAMINATION  
UPON PERCEPTION AND LEARNING

by

Carroll F. MacDorman

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A Thesis

submitted to the faculty of the  
Department of Psychology  
in partial fulfillment of the  
requirements for the degree of  
MASTER OF ARTS  
in the Graduate College  
University of Arizona

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1954

Approved: \_\_\_\_\_

Director of Thesis

Date

*Charlotte J. Marquart* *May 13, 1954*

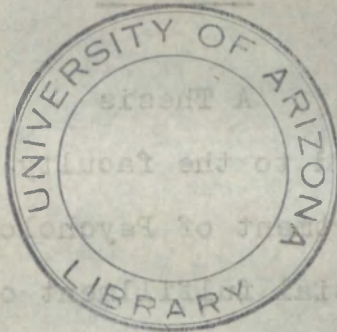
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## TABLE OF CONTENTS

	Page
INTRODUCTION . . . . .	1
STATEMENT OF PROBLEM . . . . .	8
METHODS OF STUDY . . . . .	9
PROCEDURE. . . . .	11
RESULTS. . . . .	20
CONCLUSIONS. . . . .	37
SUMMARY. . . . .	44
BIBLIOGRAPHY . . . . .	46

## LIST OF TABLES

Table	Page
I. THE AGE, EDUCATIONAL LEVEL AND SEX OF THE MEMBERS OF GROUP I. . . . .	13
II. THE AGE, EDUCATIONAL LEVEL AND SEX OF THE MEMBERS OF GROUP II . . . . .	18
III. THE NUMBER OF NONSENSE SYLLABLES LEARNED BY INDIVIDUAL MEMBERS OF GROUP I. . . . .	21
IV. THE NUMBER OF NONSENSE SYLLABLES LEARNED BY INDIVIDUAL MEMBERS OF GROUP II . . . . .	21
V. AVERAGE SCORES OBTAINED BY GROUP I ON THE <u>ROSENZWEIG PICTURE-FRUSTRATION STUDIES</u> , THE DIFFERENCE BETWEEN MEANS ON THE TWO SERIES, AND THE SIGNIFICANCE OF DIFFERENCES BETWEEN THE PRE-LECTURE AND POST-LECTURE SITUATIONS. . . . .	24
VI. AVERAGE SCORES OBTAINED BY GROUP II ON THE <u>ROSENZWEIG PICTURE-FRUSTRATION STUDIES</u> , THE DIFFERENCE BETWEEN MEANS ON THE TWO SERIES, AND THE SIGNIFICANCE OF DIFFERENCES BETWEEN THE FORE-TEST AND THE AFTER-TEST. . . . .	25
VII. INTERCORRELATIONS OF THE SIX SCORING CATEGORIES BETWEEN THE TWO HALVES OF THE <u>ROSENZWEIG PICTURE-FRUSTRATION STUDIES</u> . . . . .	27
VIII. RANK ORDER CORRELATION COEFFICIENTS FROM A COMPARISON OF THE "DIRECTION OF RESPONSE" SCORING CATEGORIES ON THE <u>ROSENZWEIG PICTURE-FRUSTRATION SERIES WITH THE SEVEN SCORING CATEGORIES ON THE <u>MMPI</u></u> . . . . .	29

LIST OF TABLES (contd.)

Table	Page
IX. RANK ORDER CORRELATION COEFFICIENTS FROM A COMPARISON OF THE "REACTION TYPE" SCORING CATEGORIES ON THE <u>ROSENZWEIG PICTURE-FRUSTRATION SERIES WITH THE SEVEN SCORING CATEGORIES ON THE MMPI.</u> . . . . .	30
X. SIGNIFICANT DIFFERENCES BETWEEN RANK ORDER CORRELATION COEFFICIENTS FROM A COMPARISON OF SIX SCORING CATEGORIES ON THE <u>ROSENZWEIG PICTURE-FRUSTRATION STUDIES WITH SEVEN SCORING CATEGORIES ON THE MINNESOTA MULTIPHASIC PERSONALITY INVENTORY</u> . . . . .	32
XI. RANK ORDER CORRELATION COEFFICIENTS FROM A COMPARISON OF THE SIX SCORING CATEGORIES ON THE <u>ROSEN-ZWEIG PICTURE-FRUSTRATION SERIES WITH SEVEN SCORING CATEGORIES ON THE MMPI FOR GROUP I.</u> . . . . .	34

## INTRODUCTION

Contemporary psychologists are well aware that sets, moods, needs, attitudes and other internal conditions may greatly affect perception. Murray's (13) study of the influence of fear upon children's estimates of the maliciousness of other personalities was a pioneer study in this area. Another early experimental study was contributed by Sanford (18). He studied the effect of hunger upon word association and the perception of ambiguous pictures. His children made twice as many food-related responses before meals as after meals. Levine, Chein and Murphy (10) obtained similar results for the effect of hunger upon the perception of ambiguous figures.

Proshansky (14) has shown that projective techniques can be useful for discovering the influence of human attitudes on perception. He found that liberals and conservatives, as determined by an attitude scale, could be detected from their descriptions of suitably chosen pictures.

Leuba and Lucas (9) studied the influence of three hypnotically induced attitudes--happiness, criticalness and anxiety--upon the perception of a series of six photographs. Three subjects were used in this experiment. The photographs were from current magazines, and pictured people

of college age in a variety of situations: attending a seminar, jitterbugging, digging in a swampy area, engaging in battle activities, and lying on a sunny campus. The authors interpreted the results as indicating that "(1) common sense and clinical insight are correct in assigning a major role to moods, feelings, and attitudes in the determination of intellectual processes; and that (2) even very brief descriptions of suitably chosen pictures show clearly the effects of dominant attitude" (9, p. 523).

More recently, experimenters have turned their attention to the study of the effects of experimentally induced stress upon the perception of pictures. A number of these experiments, including the one to be presented in this paper, have made use of the Rosenzweig Picture-Frustration Study.

Each of the 24 pictures in the P-F Study illustrates a common frustrating situation for one of two individuals. This individual is always drawn on the right side of the picture. On the left side is another individual who is saying words which describe the frustrating situation more fully. Features and facial expressions are omitted to facilitate the projection of the feelings of the person viewing the pictures. There are sixteen ego-blocking situations; for example, one man is shown while being splashed by a car. Eight other pictures are designed



to involve the super ego by means of accusations, or charges. There is an added implication that blocking of the ego has already occurred. An example of this type of stimulus material is the picture in which the hostess is expressing consternation at a guest's having broken a favorite vase. An empty space above the figure on the right is provided so that the subject may write the first reply that comes into his mind. The instructions indicate that the subject is to identify himself with the frustrated individual in each pictured situation and project "his own bias in the replies given" (15, p. 166).

All but a few responses may be scored by combinations of two criteria, direction of aggression and reaction type. Aggression may be in three directions: (a) toward the environment (extrapunitive), (b) toward the self (intropunitive) and (c) toward no one (impunitive). This third direction is considered to exist when the subject says that no one is to blame or that the situation is not significant. The reaction type may also take three forms: (a) obstacle-dominance, in which the barrier causing the frustration is emphasized, (b) ego-dominance, when the defense of the subject's ego plays the important role and (c) need-persistence, in which the need for finding a solution for the problem is stressed.

As an aspect of a larger study of semistarvation and

rehabilitation, the P-F Study was used by Franklin and Brozek (3) for the purpose of assessing reactions to stress. They administered the Study to their subjects at the end of 24 weeks of semi-starvation and again after 12 weeks of rehabilitation. The results indicated that no test category on the P-F Study was significantly different in the two situations. However, they did not administer the Study before starvation.

French (4) utilized the P-F Study in connection with experimentally induced frustration. He manipulated examination grades as a means of inducing stress, lowering by two letter grades the earned grade of some students, raising some by the same amount, and keeping others unchanged. His results show that good students given low grades did not differ significantly in any response category from good students given their correct grades. Poor students given high grades showed significantly fewer intropunitive ego-defensive responses. The good students differed from the poor ones as a group in showing more intropunitive need-persistent and fewer extrapunitive responses. The author interpreted the results as lending support to the validity of the test. Many of French's subjects reported that responses given during the first administration of the test tended to influence their replies during the second administration.

In a reference to the above studies, Rosenzweig (16) suggests that the frustrating situations used did not bear sufficiently close relationship to the situations in the P-F Study. Holzberg and Posner (7) in commenting on the situations depicted in the P-F Study write: "What seems to be measured by the instrument in many instances is more an indication of how the individual thinks or fantasies rather than how he obeys overtly" (7, p. 767). They suggest that the humorous aspects of the P-F Study might be considered a vehicle for liberating aggression which might otherwise not be expressed overtly.

In connection with the above, it must be noted that the question of the relation of the various components of the P-F Study to indices arising from other measures has received little study. Falls and Blake (2) correlated a variety of measures, such as scales of the Minnesota Multiphasic Inventory and the Bernreuter Personality Inventory, with the extrapunitive, intropunitive and impunitive categories of the P-F Study. They used as subjects 25 college undergraduate and graduate students in psychology of high intelligence, scholastic aptitude and achievement. Of the 88 correlations obtained, three are significant at the one per cent level and five more are significant at the five per cent level of confidence.

Hanvik (5) analyzed the P-F Study scores and the MMPI scores of two groups of Veterans' Hospital patients. The two groups were designated "organic" and "functional." The latter group was made up of patients suffering from "low back pain" for which no organic etiology could be found. There were significant differences between the two groups on six of the 10 clinical MMPI scales scored: hypochondriasis, hysteria, depression, psychopathic deviate, psychasthenia and schizophrenia. On the P-F series, there were no significant differences between the mean scores for the "organics" and those of the "functionals." When the mean scores of all patients on the P-F scoring categories were correlated with the MMPI scores, nine significant correlation coefficients were obtained. The author interpreted these somewhat conflicting results as suggesting that the P-F Study and the MMPI are probably measuring some of the basic reaction patterns, but that the MMPI is measuring better whatever variables are crucial in the experiment. This was felt to be true because the MMPI was able to differentiate the two groups while the P-F Study was not able to do so.

Those experiments reported above in which experimentally induced frustration was used are suggestive of the wide variety of methods utilized by experimenters for the production of stress situations. One "real life" situation

which appears particularly adaptable as a method for producing stress is the unannounced examination. Quite frequently, students indicate that due to the tension created by the testing situation they block, and therefore, cannot recall the material being tested. In a social situation such as the classroom, there is a tendency to inhibit or repress the expression of frustration. On occasion, however, students of low frustration tolerance display compulsive behavior and may even find it impossible to take the examination.

## STATEMENT OF PROBLEM

This experiment is concerned with the effect of an unannounced examination upon perception and learning. It is an attempt to answer the question: Will the administration of an unannounced course examination alter responses on the Rosenzweig Picture Frustration Study and slow the rate of learning nonsense syllables?

A comparison will also be made between the scores on the Rosenzweig Picture-Frustration Study and the scores on the Minnesota Multiphasic Personality Inventory.

## METHODS OF STUDY

I. Nonsense Syllables. The two series of 12 paired nonsense syllables used in this study were compiled from the list given in Steven's Handbook of Experimental Psychology, Table 9 (19). Every syllable in this list meets three criteria. They had less than 70 per cent association value for Krueger's subjects, less than 50 per cent value for Glaze's subjects, and less than 20 per cent value for Hull's subjects. Using the method of list construction advised by Melton (12), 24 paired associates were selected, 12 for each list. The paired syllables were printed in black lettering on white show-cards four inches wide by nine inches long.

II. Rosenzweig Picture-Frustration Study. The P-F Study for adults used in this experiment consists of an eight-page booklet of 24 cartoon-like drawings. The booklets were cut into two parts. The first four pages, containing pictures one through 12, were stapled together, as were the other pages containing cartoons 13 through 24. The name of the test was hidden by masking tape.

III. The Course Examination. The examination used in the experiment was printed on white bond paper ( $8\frac{1}{2}'' \times 11''$ ). Two extra blank sheets were stapled to each copy. A repro-

duction of the test is given below:

Dec. 17, 1953

Name \_\_\_\_\_

Psychology 125a

1. What precisely do the Freudians mean by the concept of repression; and, what is the present status of research on the phenomenon?
2. State Hull's goal reinforcement theory. Indicate by experimental evidence the present status of the theory. That is, what evidence do we have favoring the theory, and what evidence against it?
3. How, if I wish to improve my speed of learning, can I do so? Support each generalization by experimental evidence.



## PROCEDURE

The 25 subjects employed in this experiment were obtained from two laboratory sections of an upper-division experimental psychology course at the University of Arizona. Early in the semester each member of the class had been assigned a code number so that he could engage anonymously in experiments, and had taken the Minnesota Multiphasic Personality Inventory.

This experiment was conducted on two separate afternoons. The first afternoon, Laboratory Section I (12 members) was divided into two sub-groups (A and B) with six subjects in each group. The members of Section I will be called Group I, and the two sub-groups I-A and I-B. The subjects will be referred to by the group letter followed by a subject letter (a through f). For example, the first member of Group I-A will be assigned the symbol I-A-a.

The following procedure was used in choosing the subjects for the two sub-groups. Beginning with the student in the first seat of the front row and progressing to the back of the room, numbers one through 12 were assigned. The even-numbered subjects were assigned to Group I-A, and the odd-numbered subjects to Group I-B.

Table I gives the age, educational level and sex of the members of Group I.

Inspection of this table shows that Group I-A contained three male and three female subjects. Five of the subjects were upper-division undergraduates, and one was a graduate student. The median-age of the group was 20.5 years.

There were three males and three females in Group I-B. Four of the subjects were upper-division undergraduates, and two were graduate students. The median-age for Group I-B was 25.5 years.

The experimental procedure for the control group is given below:

- Part I Four presentations of a series of 12 paired nonsense syllables with an immediate paired-associate type test.
- Part II Administration of 12 pictures from the Rosenzweig Picture-Frustration Study.
- Part III A 30-minute lecture by the instructor covering course material.
- Part IV Four presentations of a series of 12 paired nonsense syllables with an immediate paired-associate type test.
- Part V Administration of the remaining 12 pictures from the Rosenzweig Picture-Study.

In Part I of the experiment, the subjects learned the nonsense syllables and were given a paired-associate type

TABLE I  
THE AGE, EDUCATIONAL LEVEL AND SEX OF  
THE MEMBERS OF GROUP I

Group I-A				Group I-B			
Subject	Age	Education	Sex	Subject	Age	Education	Sex
a	21	Graduate	F	a	21	Senior	M
b	19	Junior	F	b	43	Senior	F
c	20	Senior	M	c	19	Senior	F
d	20	Senior	F	d	21	Junior	M
e	22	Senior	M	e	30	Graduate	M
f	22	Senior	M	f	32	Graduate	F
Median-age = 20.5				Median-age = 25.5			

test. The following instructions were given to both Group I-A and Group I-B:

1. "Please take a blank sheet of paper and put your code number and group letter on it in the upper right-hand corner. If you have forgotten your code number, you may consult the code number envelopes." (Time was allowed for checking the envelopes.)

2. "Group A subjects will remain in their seats and face me, while Group B subjects will go to the back of the room and take seats facing the back wall of the room."

3. "I shall give four presentations of a series of 12 paired nonsense syllables to Group A, while Dr. Marquart gives four presentations of another list of syllables to Group B in the back of the room. The rate of presentation will be approximately five seconds for each syllable."

4. "During the fifth presentation, the recall test, one syllable will be covered and the other exposed. You are to write the syllable associated with the one exposed. Please number your pages vertically on the right-hand side from one through 12."

Time was allowed for the exchange of seats.

The experimenter presented List 2 of the nonsense syllables to Group A, while the instructor presented List I to Group B. The cards were presented manually. The backs of the cards were coded in order to facilitate the change in serial presentation for each of the learning trials. Both the experimenter and the instructor presented the two lists in such a manner that card number one was first on the first presentation, number three was first

on the second presentation, number six was first on the third presentation, and number nine was first on the fourth learning trial. Other than this, the sequence of cards was the same throughout the learning series. An irregular, but predetermined order of presentation was used for the test.

Immediately after the test, the papers containing the responses of the subjects were collected, and the members of Group I-B were instructed to return to their usual places in the laboratory. Both groups were then given 12 pictures from the P-F Study (Part II of the experiment). The subjects in Group I-A received the first 12 pictures, while the subjects in Group I-B were given the pictures numbered from 13 through 24.

The experimenter gave the following instructions:

1. "The subjects in Group A will please fill out the blank spaces appearing on the cover of this booklet. Put your code number and group letter in the name space, and your age, sex, and educational classification in the appropriate blanks."
2. "Each subject in Group B will please put his code number and group letter on the right hand corner above picture number 14."
3. "In each of the pictures in this leaflet two people are shown talking to each other. The words said by one person are always given. Imagine what the other person in the picture would answer and write in the blank box the very first reply that comes into your mind. Work as fast as you can" (17).

After all of the members of the two groups had finished the P-F Study, the instructor gave a thirty minute lecture covering course material. The lecture constituted Part III of the experiment.

At the close of the lecture, the subjects were given four presentations of the second series of 12 paired nonsense syllables followed by a test. Those subjects who had formerly learned List I now learned List II, while those who had formerly learned List II now learned List I. Group I-A was given List I in the front of the room by the experimenter, while Group I-B was given List 2 in the back of the room by the instructor.

Part V of the experiment, the administration of the remaining 12 pictures from the P-F Study, was given immediately after the test. In this administration of the Study, the subjects of Group I-A were given the pages containing the pictures 13 through 24, and the subjects of Group I-B received the pages containing pictures one through 12. Seating arrangements were the same as in Part II. The verbal instructions in regard to filling out the blanks on the front of the leaflet were directed to Group I-B, and the subjects in Group I-A were told to place the code number and the group letter in the upper right-hand corner above picture 14. The instructions taken from the front page of the leaflet were read to

both groups again.

On the second afternoon, Laboratory Section II (13 members) was divided into two sub-groups (A and B). The members of this section will be referred to as Group II, and the two sub-groups as II-A and II-B. The subjects in Group II-A will be designated by the letters a through f, and the subjects in Group II-B by the letters a through g. The procedure for selecting the members of Group II-A and Group II-B was the same as that used in selecting the subjects for the two sub-groups on the previous afternoon. Group II-A contained six subjects, while Group II-B contained seven subjects.

Table II gives the age, educational level and sex of the members of Group II.

There were four males and two females in Group II-A. Five of the subjects were upper-division undergraduates, and one was a graduate student. The median-age for the group was 21.0 years.

Group II-B contained seven males and one female. Six of the subjects were upper-division undergraduates. The group also contained one graduate student. The median-age for the group was 23.0 years.

The experimental procedure for the experimental group follows:

Part I      Four presentations of a series of 12

TABLE II

THE AGE, EDUCATIONAL LEVEL AND SEX OF  
THE MEMBERS OF GROUP II

Group II-A				Group II-B			
Subject	Age	Education	Sex	Subject	Age	Education	Sex
a	21	Senior	F	a	21	Graduate	M
b	21	Junior	M	b	39	Senior	M
c	30	Senior	M	c	23	Senior	M
d	37	Graduate	M	d	28	Junior	M
e	19	Junior	F	e	21	Senior	M
f	21	Senior	M	f	30	Senior	M
				g	20	Senior	F
Median-age = 21.0				Median-age = 23.0			



paired nonsense syllables with an immediate paired-associate type test.

- Part II Administration of 12 pictures from the Rosenzweig Picture-Frustration Study.
- Part III A 30-minute examination by the instructor covering course material.
- Part IV Four presentations of a series of 12 paired nonsense syllables with an immediate paired-associate type test.
- Part V Administration of the remaining 12 pictures from the Rosenzweig Picture-Frustration Study.
- Part VI Collection of Subject Reaction Reports.

There were only two variations in the experimental design for Group II from that used with Group I. Part III for Group II consisted of an unannounced course examination in place of the 30 minute lecture given Group I the previous afternoon. The instructor had constructed the examination, and took charge of its administration throughout the 30-minute interval. The experimenter took his usual place in the laboratory and was tested along with the subjects in Groups II-A and II-B.

After the administration of the 12 remaining pictures from the P-F Study (Part V), the members of Group II were requested to submit in writing their reactions to the afternoon's activity (Part VI of the experiment).

## RESULTS

I. Comparisons of the number of nonsense syllables learned: The data of Groups I and II for the first and second examinations on the nonsense syllables (Parts I and IV of the experiment) are given in Tables III and IV. The Fisher t-test applied to the data indicates that there were no significant changes in the number of nonsense syllables learned during the first and second learning series.

An inspection of the average numbers of syllables learned by the two sub-groups on each day shows more rapid learning when the instructor exposed the syllables than when the experimenter did so. The mean of Group I-A, Test I, when the nonsense syllables were presented by the experimenter, was 1.83. The mean of Group I-B, Test I, was 4.17. In the latter situation the instructor presented the list. The difference of 2.34 between the two means approaches the .05 level of significance ( $t = 1.92$ ;  $df = 10$ ).

II. Rosenzweig Picture-Frustration Comparisons: The P-F Study was scored for all dimensions according to the instructions and scoring samples given in the Revised Scoring Manual (15). All of the studies were scored three different times and on three separate occasions. For the

TABLE III

THE NUMBER OF NONSENSE SYLLABLES LEARNED BY  
INDIVIDUAL MEMBERS OF GROUP I

Sub- ject	Group I-A		Group I-B	
	Test I * (List II)	Test II * (List I)	Test I ** (List I)	Test II ** (List II)
a	2	2	5	8
b	6	8	7	2
c	0	0	2	2
d	0	1	3	3
e	3	1	3	5
f	0	3	3	5
Ave.	1.83	2.50	4.17	4.17
*	Test given by the experimenter			
**	Test given by the instructor			

TABLE IV

THE NUMBER OF NONSENSE SYLLABLES LEARNED BY  
INDIVIDUAL MEMBERS OF GROUP II

Sub- ject	Group II-A		Group II-B	
	Test I * (List II)	Test II * (List I)	Test I ** (List I)	Test II ** (List II)
a	6	4	1	2
b	2	3	3	0
c	2	4	2	0
d	3	3	3	9
e	3	4	4	2
f	2	1	9	12
g			1	2
Ave.	3.00	3.17	3.28	3.86
*	Test given by the experimenter			
**	Test given by instructor			

first scoring, the pictures were analyzed without any attempt to assemble the correct halves or to place them in their proper sub-groups. Two weeks later each half-booklet was scored for a single item before proceeding to the next one. A week later, the two halves of the booklet belonging to each subject were assembled and scored completely before proceeding to the next one. A comparison of the results obtained from the separate scorings indicated very slight variations between them. The results of the third scoring procedure are reported in this study.

The fifteen possible scoring categories available in the P-F Study include: (See page 3 of this report.)

A. Nine possible combinations of

1. Direction of Response

- a. Extrapunitive (E), in which the aggression is turned onto the environment
- b. Intropunitive (I), in which the aggression is turned by the subject upon himself
- c. Impunitive (M), in which the aggression is evaded in an attempt to gloss over the frustration

2. Types of Response

- a. Obstacle-Dominance (O-D), in which the barrier occasioning the frustration stands out
- b. Ego-Defense (E-D), in which the ego of the subject predominates

- c. Need-Persistence (N-P), in which the solution for the frustrating is emphasized
- B. The totals for the three directions (extra-punitive, intropunitive and impunitive)
- C. The totals for the three reactions (obstacle-dominance, ego-defense and need-persistence)

The average scores for the totals of direction of response and type of response on the Picture-Frustration studies were computed for both Groups I and II. Table V presents the means of Group I (A and B) for the series of pictures given before and after the lecture, the difference in these means and the significance of differences. The means of Group II (A and B) for the series of pictures given before and after the examination, the difference in means and the significance of differences are shown in Table VI. Using Fisher "t" for the significance of a difference in the means of related measures, five of the differences between means were found to be significant.

According to Table V, Group I-B had a significant increase in the Need-Persistence category after the lecture, whereas, the subjects of Group II-A, Table VI, had a significant decrease in the same category after the unannounced examination. The mean of the Need-Persistence category of Group I-B prior to the lecture was 2.25 (median = 1.75). After the lecture, the mean for the same

TABLE V

AVERAGE SCORES OBTAINED BY GROUP I ON THE ROSENZWEIG  
PICTURE-FRUSTRATION STUDIES, THE DIFFERENCE  
 BETWEEN MEANS ON THE TWO SERIES, AND THE  
 SIGNIFICANCE OF DIFFERENCES BETWEEN  
 THE PRE-LECTURE AND POST-LECTURE  
 SITUATIONS

Scoring Category	Group I-A		D	Group I-B		D
	Pictures 1-12++	Pictures 13-24#		Pictures 1-12++	Pictures 13-24#	
	Means	Means		Means	Means	
E	6.24	6.41	+ .17	6.75	6.83	+ .08
I	2.25	2.59	+ .34	1.75	2.59	+ .84
M	3.33	2.99	- .34	3.50	2.83	- .67
O-D	2.91	3.24	+ .33	2.33	1.76	- .57
E-D	6.24	6.50	+ .26	7.42	6.16	-1.26
N-P	2.67	2.25	- .42	2.25	4.33	+2.08*

++ Series of P-F pictures administered before lecture

# Series of P-F pictures administered after lecture

\* Significant at .05 level

TABLE VI

AVERAGE SCORES OBTAINED BY GROUP II ON THE ROSENZWEIG  
PICTURE-FRUSTRATION STUDIES, THE DIFFERENCE  
 BETWEEN MEANS ON THE TWO SERIES, AND THE  
 SIGNIFICANCE OF DIFFERENCES BETWEEN  
 THE FORE-TEST AND THE AFTER-TEST

Scoring Category	Group II-A			Group II-B		
	Pictures 1-12++	Pictures 13-24#	D	Pictures 1-12++	Pictures 13-24#	D
	Means	Means		Means	Means	
E	5.75	7.33	+ 1.58	3.28	5.56	+ 2.28*
I	3.09	1.83	- 1.26	3.07	3.07	
M	3.17	2.94	- .33	4.50	2.71	- 1.79**
O-D	1.83	1.92	+ .09	2.93	1.14	- 1.79*
E-D	6.25	7.83	- 1.58	5.20	6.15	+ .95
N-P	3.92	2.25	- 1.67**	2.72	4.05	+ 1.33

++ Series of P-F pictures administered before the unannounced examination

# Series of P-F pictures administered after the unannounced examination

\* Significant at the .02 level

\*\* Significant at the .05 level

category was 4.33 (median = 4.50). The difference of 2.08 between the two means is significant at the .05 level ( $t = 2.77$ ;  $df = 5$ ). The mean for the need-persistence category of Group II-A prior to the unannounced examination was 3.92 (median = 4.75). After the examination the mean for the same category was 2.25 (median = 2.50). The 1.67 difference between means is significant at the .05 level ( $t = 3.28$ ;  $df = 5$ ).

Table VI shows that after the unannounced examination there was a significant increase in the extrapunitive category for Group II-B, and a significant decrease in both the impunitive and obstacle-dominance categories for the same group.

III. Reliability coefficients for the Picture-Frustration Study: Table VII presents the intercorrelations of the six scoring categories between the two halves of the P-F Study for Group I. This data may not serve as an ideal reliability measure since the lecture given during the interval might have influenced the subjects in their responses. However, it is felt that some indication of reliability is possible from these intercorrelations. The rank-difference correlation coefficients range from .10 for the intropunitive category to .63 for the ego-defense category.



TABLE VII  
 INTERCORRELATIONS OF THE SIX SCORING CATEGORIES  
 BETWEEN THE TWO HALVES OF THE ROSENZWEIG  
PICTURE-FRUSTRATION STUDIES  
 FOR GROUP I.

Scoring Category	Correlation Coefficients
Extrapunitive	.17
Intropunitive	.10
Impunitive	.47
Ego-Defense	.63
Obstacle-Dominance	.28
Need-Persistence	.49

IV. Minnesota Multiphasic Personality Inventory Comparisons: The percentage-scores of Groups I and II in the six scoring categories of the two halves of the P-F Study considered separately were compared with the scores of the same groups in the seven scoring categories on the MMPI.

The rank order correlation coefficients obtained are given in Tables VIII and IX. An inspection of these tables shows that out of the 336 rank order correlation coefficients computed, 32 were significant (critical ratio 3.0 or above). Eighteen of the significant correlation coefficients were derived from the "direction of response" comparisons with the MMPI scoring categories, while 14 were obtained from the "reaction type" comparisons.

As an example of the use of these tables, prior to the lecture, there were seven significant coefficients resulting from a comparison of the P-F Study "direction of response" categories with the MMPI categories for Group I-A (Table VIII). These were: extrapunitive-hypochondriasis .77, extrapunitive-hysteria .73, extrapunitive-psychopathic deviate .83, extrapunitive-paranoia .76, extrapunitive-schizophrenia .81, impunitive-hypochondriasis -.78 and impunitive-schizophrenia -.91. The above extrapunitive-MMPI significant correlations represent the largest number of such comparisons for any

TABLE VIII

RANK ORDER CORRELATION COEFFICIENTS FROM A COMPARISON  
 OF THE "DIRECTION OF RESPONSE" SCORING CATEGORIES  
 ON THE ROSENZWEIG PICTURE-FRUSTRATION SERIES  
 WITH THE SEVEN SCORING CATEGORIES  
 ON THE MMPI

	Group I-A Pictures (1-12)(13-24)		Group I-B Pictures (13-24)(1-12)		Group II-A Pictures (1-12)(13-24)		Group II-B Pictures (13-24)(1-12)	
	A	B	A	B	C	D	C	D
	Extrapunitive (E)							
Hs	.77*	.20	.44	.44	.09	.34	-.44	-.50
D	.37	.20	-.24	-.73*	.09	.34	.33	.13
Hy	.73*	.19	.17	.21	.47	.27	.14	-.68
Pd	.83*	.60	-.24	.96*	.19	.43	.12	-.08
Pa	.76*	.53	.27	.56	.26	-.40	-.54	-.32
Pt	.67	.33	-.47	.60	-.20	.20	-.70*	.56
Sc	.81*	.27	.01	.56	-.30	.17	-.65	-.30
	Intropunitive (I)							
Hs	.14	.11	-.41	-.04	.00	.61	.56	.33
D	.09	.26	-.37	-.26	.05	.61	-.21	.32
Hy	.33	.36	.30	.13	-.27	.73*	.54	.60
Pd	-.14	.17	.01	-.81*	.01	.36	.58	-.08
Pa	.07	-.63	.49	.43	-.10	.71*	.71*	.80*
Pt	.39	-.16	.51	-.86*	.39	.37	.68	.29
Sc	.36	.30	.57	-.74*	.47	.30	.88	.43
	Impunitive (M)							
Hs	-.78*	-.24	-.14	-.64	.37	-.61	.58	.47
D	-.47	-.21	.54	.03	.37	-.61	-.40	-.37
Hy	-.83	-.24	.04	-.36	.13	-.56	.33	-.03
Pd	-.28	-.73*	.21	-.18	.47	-.61	.17	-.06
Pa	-.43	-.31	-.31	-.08	.13	.13	.49	-.64
Pt	-.69	-.19	.19	.10	.64	-.44	.56	-.32
Sc	-.91*	-.31	-.26	-.14	.66	-.24	.59	-.19

A = Series of P-F pictures administered before the lecture

B = Series of P-F pictures administered after the lecture

C = Series of P-F pictures administered before the unannounced examination

D = Series of P-F pictures administered after the unannounced examination

\* = Significant rank order correlation coefficients

TABLE IX

RANK ORDER CORRELATION COEFFICIENTS FROM A COMPARISON  
OF THE "REACTION TYPE" SCORING CATEGORIES ON THE  
ROSENZWEIG PICTURE-FRUSTRATION SERIES WITH  
THE SEVEN SCORING CATEGORIES ON THE MMPI

	Group I-A Pictures (1-12)(13-24)		Group I-B Pictures (13-24)(1-12)		Group II-A Pictures (1-12)(13-24)		Group II-B Pictures (13-24)(1-12)	
	A	B	A	B	C	D	C	D
Obstacle-Dominance (O-D)								
Hs	-.51	-.37	-.20	-.31	.11	-.53	.37	.55
D	.20	.29	-.18	.44	.11	-.53	.00	.62
Hy	-.53	-.10	.03	.08	.59	-.13	.61	.43
Pd	-.43	-.02	.20	.43	.19	-.57	.19	.29
Pa	-.17	-.11	-.18	.18	.59	.24	.20	.29
Pt	-.06	.27	.47	.50	-.16	.44	-.07	.25
Sc	-.48	.01	.13	.07	-.31	-.74*	.42	.46
Ego-Defense (E-D)								
Hs	.10	.11	.56	.64	-.50	.46	-.27	-.66
D	.33	.06	.42	.77*	-.50	.45	-.08	.73*
Hy	.13	.02	.21	.30	-.36	.43	-.26	-.84*
Pd	.70*	.31	.64	.81*	-.61	-.08	.70*	-.37
Pa	.29	.71*	.60	.51	-.14	.26	-.34	-.28
Pt	.21	.41	.26	.41	-.77*	.08	-.28	-.07
Sc	.23	.13	.46	.49	-.73*	.11	-.55	-.61
Need-Persistence (N-P)								
Hs	.09	.33	-.27	-.20	.13	.19	.17	.94*
D	.31	-.10	-.24	-.61	.13	.19	.49	-.59
Hy	.13	.27	.09	-.03	.21	-.13	-.25	.87*
Pd	-.54	-.04	-.68	-.91*	.30	.41	-.03	.42
Pa	-.07	-.26	-.56	-.44	-.37	-.20	.46	.26
Pt	.01	.01	-.41	-.68	.57	.66	.38	-.04
Sc	.04	.14	-.61	-.61	.61	.76*	.21	.68

A = Series of P-F pictures administered before the lecture

B = Series of P-F pictures administered after the lecture

C = Series of P-F pictures administered before the unannounced examination

D = Series of P-F pictures administered after the unannounced examination

\* = Significant rank order correlation coefficients

of the four groups used in this experiment. After the lecture there was only one significant comparison for Group I-A: intro-punitive-psychopathic deviate  $-.73$ . The latter comparison was not significant before the lecture.

In order to determine if the lecture and examination intervals produced significant changes, the differences between the pre- and post-lecture rank order comparisons were tested for significance. Table X presents all significant intercorrelations obtained. For Group I-B the difference of  $1.20$  between the pre- and post-lecture extrapunitive-psychopathic deviate comparisons was significant at the  $.05$  level ( $t = 2.73$ ;  $df = 5$ ). The same group had two other significant changes: the difference of  $1.37$  between the intro-punitive-psychasthenia comparisons was significant at the  $.02$  level ( $t = 3.70$ ;  $df = 5$ ), as was the  $1.31$  difference between the intro-punitive-schizophrenia comparisons ( $t = 3.45$ ;  $df = 5$ ). For Group II-B, after the examination, there were changes in the extrapunitive-psychasthenia and need-persistence-hysteria comparisons. The former gave a difference of  $1.26$  which was significant at the  $.05$  level ( $t = 3.41$ ;  $df = 6$ ), while the latter yielded a difference of  $1.12$  which was significant at the  $.02$  level of confidence ( $t = 2.73$ ;  $df = 6$ ). The difference of  $1.13$  between the impunitive-paranoia

TABLE X

SIGNIFICANT DIFFERENCES BETWEEN RANK ORDER CORRELATION COEFFICIENTS FROM A COMPARISON OF SIX SCORING CATEGORIES ON THE ROSENZWEIG PICTURE-FRUSTRATION STUDIES WITH SEVEN SCORING CATEGORIES ON THE MINNESOTA MULTIPHASIC PERSONALITY INVENTORY

Group	P-F Category	MMPI Category	Pictures 13-24* rhos	Pictures 1-12** rhos	t	df	level of sig.
I-B	E	Pd	-.24	.96	1.20	2.73	5 .05
I-B	I	Pt	.51	-.86	1.37	3.70	5 .02
I-B	I	Sc	.57	-.74	1.31	3.45	5 .02
II-B	E	Pt	-.70	.56	1.26	3.41	6 .02
II-B	M	Pa	.49	-.64	1.13	2.75	6 .05
II-B	E-D	Pa	.70	-.37	1.07	2.48	6 .05
II-B	N-P	D	.49	-.59	1.08	2.51	6 .05
II-B	N-P	Hy	-.25	.87	1.12	2.73	6 .05

\* Series of P-F pictures administered before the lecture (Group I-B) or before the unannounced examination (Group II-B)

\*\* Series of P-F pictures administered after the lecture (Group I-B) or after the unannounced examination (Group II-B)

pre- and post-examination comparisons was significant at the .05 level ( $t = 2.75$ ;  $df = 6$ ). Both the ego-defense-paranoia difference of 1.07 ( $t = 2.48$ ;  $df = 6$ ) and the need-persistence-depression differences of 1.08 ( $t = 2.51$ ;  $df = 6$ ) were significant at the .05 level of confidence.

Table XI presents the rank order correlation coefficients obtained from a comparison of the six scoring categories on the MMPI and the combined halves of the P-F Study for Group I. This comparison may not be ideal since the lecture could have influenced the responses given by the subjects on the second half of the P-F Study. However, it affords a larger number of subjects and responses on the P-F Study. All of the extrapunitive comparisons with the MMPI categories are in a positive direction, ranging from .25 for the extrapunitive-depression comparison to .69 for the extrapunitive-psychopathic deviate comparison. The majority of the intropunitive, impunitive, obstacle-dominance and need-persistence comparisons with the MMPI categories for this combined group are in a negative direction. All of the ego-defense-MMPI comparisons are positive, ranging from .14 for the ego-defense-hysteria comparison to .51 for the ego-defense-psychopathic deviate comparison. The need-persistence-psychasthenia coefficient of  $-.69$  is the largest negative correlation obtained, and the extrapunitive-

TABLE XI

RANK ORDER CORRELATION COEFFICIENTS FROM A COMPARISON  
 OF THE SIX SCORING CATEGORIES ON THE  
ROSENZWEIG PICTURE-FRUSTRATION SERIES  
 WITH SEVEN SCORING CATEGORIES  
 ON THE MMPI FOR GROUP I

Pictures (1-24) Extrapunitive (E)		Pictures (1-24) Obstacle-Dominance (O-D)	
Hs	.59	Hs	-.09
D	.25	D	.22
Hy	.53	Hy	-.19
Pd	.69	Pd	-.22
Pa	.56	Pa	-.06
Pt	.43	Pt	.36
Sc	.56	Sc	.17
Intropunitive (I)		Ego-Defense (E-D)	
Hs	-.19	Hs	.32
D	-.13	D	.43
Hy	.04	Hy	.14
Pd	-.20	Pd	.51
Pa	-.35	Pa	.48
Pt	-.19	Pt	.48
Sc	.01	Sc	.36
Impunitive (M)		Need-Persistence (N-P)	
Hs	-.43	Hs	-.27
D	-.03	D	-.44
Hy	-.57	Hy	-.02
Pd	-.57	Pd	-.41
Pa	-.34	Pa	-.47
Pt	-.28	Pt	-.69
Sc	-.51	Sc	-.50



psychopathic deviate coefficient of  $+0.69$  is the largest positive coefficient obtained.

I. Subject Reaction Reports: The Subject Reaction Reports reveal that two of the Group II-A subjects and three of the Group II-B subjects were convinced the examination given by the instructor in Part III of the experiment was a real test. Four of the subjects in Group II-A and three of the subjects in Group II-B were skeptical that the examination was real. One subject in Group II-B was fairly certain that the test was designed to produce an attitude and that it was not real.

Sample Reaction Reports are quoted below:

A. Idea that the examination was real:

1. "I felt that it was a real exam, but a low blow. As for the nonsense syllables--eh!"
2. "I took it quite seriously. I was and am still quite bitter. As a parting word I have but two--Oh Hell!!!"

B. Skeptical that the examination was real:

1. "I didn't know whether to believe it or not. I thought, however, if it was going to be counted it was unfair. This teed me off, and I became quite irritated."
2. "When the exam was first announced, I was a little skeptical of its being real. However, as it progressed, my feelings were mixed. I became angry at myself for not having studied the material, and less and less angry at the instructor

for giving the test."

C. Fairly certain the examination was not real:

1. "It was fun from start to finish. I enjoyed it. I was not prepared for the exam, but I felt it didn't matter too much, that perhaps it might all be a part of an experiment."

## CONCLUSIONS

The results of this experiment revealed no significant changes in the learning of nonsense syllables after the unannounced examination. However, in all cases, the subjects learned the syllables more rapidly when they were exposed by the instructor than when the experimenter did so. This is suggestive of an important prestige or personality variable that might well be the subject of further study.

It was assumed that the P-F Study measures to some extent what its name implies, and that the unannounced examination would produce a stressful situation. Therefore, it was expected that the responses of the P-F series presented after the unannounced examination would show significant differences in the scoring categories. The above statement rests upon the assumption proposed by French (4) in the study mentioned in the introduction (p. 4). He indicated that if the P-F Study measures the reactions to a stressful situation, then either the inducing or reducing of stress should influence test scores provided it can be assumed that varying the degree of a subject's stress strengthens the tendency to make one kind

of response as against another and does not simply affect the intensity of all response tendencies equally. The total score on the P-F Study is fixed. A change in score in any one category necessarily means a change in some other.

In the present experiment, scores on the extrapunitive category increased significantly in the post-examination situation (Group II-B), while those on the impunitive category decreased significantly. This indicates an increase in the tendency to turn aggression toward the environment, and at the same time, a decrease in the tendency to evade or gloss over the frustration. For the same situation, there was a decrease in the obstacle-dominance category, which shows that the subjects had less tendency to emphasize the barrier occasioning the frustration. There were positive increases in the other reaction type categories; however, they were not significant. The need-persistence category after the examination had a significant decrease (Group II-A). This decrease, when compared with the significant increase in the same category after the lecture (Group I-B), brings up the question of the reliability of the P-F Study. The low reliability coefficients obtained from the intercorrelations of the two halves of the P-F Study might be a reasonable explanation for the apparent inconsistencies in measurement. It was suggested earlier that these coefficients

themselves may not be ideal since the lecture might have influenced the subjects in their replies.

The P-F Study, as in the case of a number of other projective techniques, is paradoxical in that it has an objective scoring system, similar to that of a psychometric device. To be completely consistent, one might question whether the scoring of projective instruments, segment by segment, does not violate their supposed Gestalt character. The stimuli in the P-F Study, considered a projective method, should be taken as a configuration which cannot be analyzed into its various segments without loss of meaning in the process. If this is true, the reliability of the P-F Study cannot be determined by the split-half method. The two "halves" are not equal and would not necessarily correlate highly with each other if the projective method lives up to its configurational design. Apparently, Rosenzweig has seen fit to violate the Gestalt nature of projective instruments by assigning objective units to the responses made by the subjects. If such objective methods of scoring exist and are recommended, they are going to be used. If they are going to be used, they should meet the reliability requirements of the psychometric device.

Taylor (20) conducted an investigation of the

reliability of the P-F Study, using 250 subjects. He found, when he gave the entire test as a unit, low reliability values in the six scoring categories. The reliability coefficients for his sample were: extrapunitive .58, intro-punitive .22, impunitive .39, ego-defense .33, obstacle-dominance .10, and need-persistence .55. For the same categories, the estimates derived from the present study were: extrapunitive .17, intro-punitive .10, impunitive .47, ego-defense .63, obstacle-dominance .28 and need-persistence .49.

In the present study, of the 336 rank order correlation coefficients computed from a comparison of the MMPI scoring categories with those on the P-F Study, 32, or approximately 10 per cent were significant. This, considering the large number of coefficients computed, may still be nothing more than a chance relationship.

There is little experimental basis for interpreting the above significant coefficients. Hybl and Stagner (8) have indicated that psychopaths and neurotics in stressful situations have a high proportion of intro-punitive responses on the P-F Study. On the other hand, schizophrenics have more impunitive responses. Assuming the validity of the MMPI as a diagnostic instrument for the purpose of analysis, an examination of the results of this study fail to lend support to Hybl and Stagner's state-

ments. The intropunitive-psychopathic deviate comparisons, and the intropunitive-psychasthenia comparisons were not significant in the post-examination situation. None of the impunitive-schizophrenic comparisons in this study were significant in a positive direction after the examination--all of them were in a negative direction.

In the Falls and Blake study (2) reported earlier (p. 5), eight coefficients out of 88, or nine per cent, were significant. Thus, the results of the two studies for the relationship between scores on the MMPI and the P-F Study are similar. Falls and Blake analyzed the significant and "almost significant" correlations for trends, concluding that the relationships were generally consistent with theoretical expectancy. The same type of analysis might well be made in the present study. However, this experiment, as well as the study of Falls and Blake, is made suspect by the few subjects used and their test-wise sophistication. The latter statement in regard to the present study seems borne out in the Reaction Reports. These reports present three dissimilar views in regard to the whole experimental set-up: belief in the reality of the unannounced examination, skepticism of its reality, and disbelief (in the case of one subject) in its reality.

In view of the test-wise sophistication of the sub-

jects, the diverse Reaction Reports, and the apparent low reliability of the two halves of the P-F Study, it is interesting to note that there were five significant changes in the pre- and post-examination comparison (Table X, p. 30). There is no available clinical or experimental material relative to the meaning of these significant changes as was the case in the intro-punitive-psychasthenia comparisons (see p. 39). Hanvik (5) has stated that the significant comparisons in his study indicate that both the MMPI and the P-F Study measure basic reaction patterns. If his statement is true in the present study, the measurement of these basic reaction patterns appears to be highly inconsistent. This can be noted by the fact that there were also three significant changes after the lecture.

To compare the P-F Study with the MMPI involves the investigator in a circular type of argument. The MMPI has been used with success when administered to clinical patients, but as Cronbach (1) points out, it has not been found trustworthy when given to college students. He indicates that many college students earn scores which are indicative of abnormality, although these students are known to be adequately adjusted. He suggests that this is an example of the undesirability of applying a test validated on one population to a different type of group.



The comparisons presented here are made with those statements in mind. At best they can be only preliminary and suggestive. The essential postulates underlying the P-F Study, viewed as a projective instrument, are response dominance, configuration dominance, and individual norms. However, in the construction of the P-F Study, Rosenzweig implied that the personality theory underlying the projective methods cannot be used in isolation from the relevant aspects of the general experimental and psychometric points of view. The results of the comparisons made in the present study indicate that the traditional criteria of test construction and standardization, reliability and validity, must be recast if they are to overcome the difficulties inherent in the analysis of such an instrument as the P-F Study.

## SUMMARY

This experiment attempted to measure the effect of an unannounced examination upon the perception of pictures and the learning of nonsense syllables. The 25 subjects used were divided into Group I (A and B) and Group II (A and B). The subjects in the former group were given one series of nonsense syllables and half of the Rosenzweig Picture-Frustration Study prior to a 30-minute lecture, and another series of nonsense syllables and the balance of the P-F Study after the lecture. Much the same procedure was used with Group II (A and B); however, in their case, an unannounced examination replaced the lecture.

The results indicate that there were no significant changes in the learning of nonsense syllables for the subjects after the unannounced examination. There were conflicting significant changes in scores on the P-F Study after the lecture and the examination. The conflicting results may be attributable to the low correlation between the two halves of the P-F Study, the test-wise sophistication of the subjects, and the fact that the experimental situation was viewed differently by various subjects.

The scores on the P-F Study were compared with the

scores of the subjects on the MMPI. Out of 336 rank order correlation coefficients computed, 32, or approximately 10 per cent, were significant. It is possible that an equal number of significant comparisons could have been obtained by chance. The results of these comparisons indicate that there are some significant relations between scores on the MMPI and the P-F Study. However, the significant relations as measured by this study do not appear to be consistent.

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