1954

An investigation of the imaginative productions of a selected group of college students

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AN INVESTIGATION OF THE IMAGINATIVE PRODUCTIONS OF A SELECTED GROUP OF COLLEGE STUDENTS

A Thesis

Presented to

the Faculty of the School of Education

College of the Pacific

In Partial Fulfillment

of the Requirements for the Degree

Master of Arts

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by

Harlan Wesley Wayne

June 1954

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INTRODUCTION

I. THE PROBLEM

Statement of the problem. The purpose of this study is to determine whether or not imaginative productivity can be significantly increased by the use of relatively obscured pictorial material as compared with the productions obtained through the use of a criterion set of pictorial materials.

Importance of the present study. A search of the literature on the Thematic Appreception Test (TAT) indicates that only one study of a nature similar to the present one has been made to date. It is hoped that the results of the present study, in conjunction with the former one, may prove useful to the clinical psychologist in the area of personality assessment.

Scope of the present study. This study is restricted to the use of photographic reproductions (facsimiles) of selected TAT pictures. The sample population of ninety-six male and female subjects was drawn exclusively from the College of the Pacific student body. The results are reported in terms of the significant differences of the

obtained means.

Limitations of the present study. The present study is limited by the following conditions: Only three of the possible nineteen cards were used as a basis for this study. This was due to the following considerations: (1) certain cards were eliminated because of their bizarre or unusual nature of contents; (2) nonfeasibility of satisfactory photographic reproduction; and (3) because of the differences between age levels for which these cards were designed and the mean age levels of the sample population groups.

The study is further limited by the rather small numbers in the sample population groups which might tend to make possible generalizations about the results subject to question.

II. DEFINITIONS OF TERMS USED

Facsimile. The term "facsimile" refers to a photographically reproduced TAT picture used in this study.

Production. The written material submitted by an individual concerning the contents of a facsimile is referred to as production.

Criterion (control) facsimile. The facsimile which was a photographic reproduction, without alteration of delineation, of the TAT card of which it is a duplicate shall be referred to as criterion (control) facsimile.

Experimental facsimile. The term "experimental facsimile" refers to the facsimile which was a photographic reproduction, having altered delineations, of the TAT card of which it is a duplicate.

Control group. Throughout the report of this investigation, the term "control group" shall be interpreted as meaning that portion of the sample population which viewed the criterion set of facsimiles only.

Experimental group. The term "experimental group" refers to that portion of the sample population which viewed the experimental set of facsimiles only.

III. REVIEW OF THE LITERATURE

Previous studies in this field. Weisskopf has reported the results of a study in which she investigated the relationship between an experimentally introduced physical characteristic of a set of TAT cards and the degree of imaginative productivity elicited as compared with

the same set of pictures not having the experimental variable. Her materials consisted of photographic reproductions of six TAT cards (numbers 1, 4, 6 BM, 7 GF, and 10). One set of facsimiles were made under conditions of reduced illumination, and another set of facsimiles of these same pictures were made under conditions of normal illumination so that they would be of the same intensity or brightness as the standard set of TAT pictures. In the experimental set of facsimiles, details were faint but clear.

She used the same thirty undergraduate college students for both the experimental and control situations. From this study she concluded that pictures of reduced intensity do not elicit a greater degree of imaginative productivity than do pictures of normal intensity.[1]

In another experiment Weisskopf sought to gather data on the relationship between the length of exposure time of certain TAT pictures and imaginative productivity. For this study she used thirty-two undergraduate college students, a different sample from those used in the first

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[1] Edith A. Weisskopf, "Experimental Study of the Effect of Brightness and Ambiguity on Projection in the TAT," Journal of Psychology, 29:407-16, 1950.

experiment. In order to introduce the experimental variable, the shortened length of exposure time, she projected the pictures onto a screen exposing them for only one fifth of a second using a photographic shutter to obtain the short exposure. For purposes of control, she used the same thirty-two college students. She exposed a set of pictures for five minutes. Decreased exposure time obtained through the use of the one fifth second exposure resulted in a lower degree of imaginative productivity. The difference in the two means, she reports, was significant beyond the 1 per cent level. From these studies Weisskopf seems to feel that the subjects do not tend to supplement their vague impressions by increased imaginative productivity.[2]

It may be well to note certain differences between the above and present studies: (1) the technique used in the presentation of the stimulus material, (2) the technique used in achieving the relative vagueness of the experimental material as compared with the control material, (3) the type of experimental variable employed, and (4) the sizes and composition of the sample populations. However,

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[2] Ibid., p. 413.

the present and above studies have in common the following: (1) the goal of seeking the relationship between the relative vagueness of stimulus material and imaginative productivity, (2) the use of facsimiles of selected TAT pictures which are in the first half of the 1943 series, and (3) the introduction of the experimental variable through the use of photographic techniques.

IV. A PREVIEW

The organization of the remainder of the thesis. Chapter II deals with a description of the materials, sources of the data, and the procedures employed in carrying out this study.

Chapter III contains a description of the results and statistical treatment accorded the data.

Chapter IV reviews the purpose, description of the materials, sample population, and findings of this study. Further, this chapter presents a statement of conclusions and recommendations for future study in this field.

Appendix A presents certain descriptive material and scores obtained for each individual participant in this study. Appendix B shows the experimental and control facsimiles used in this study.

CHAPTER II

METHOD OF PROCEDURE

The materials employed. For the purposes of providing additional descriptive and comparative data concerning the sample population and its components, the Otis Quick Scoring Mental Ability Test, Gamma Form C, 1939 revision, was administered to all participants in this study.[1]

The Thematic Apperception Test (TAT) was selected as an instrument for forming a basis for carrying out the present study because of its widespread and long usage. Henry A. Murray of the Harvard Psychological Clinic published a revision in 1943. It is from this revision that certain pictures were selected and facsimiles of these selections constructed.[2]

The selected pictures from which the facsimiles were constructed were chosen not only for probable dramatic interest, age and sex suitability, but also for suitability for presentation even after the introduction of the

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[1] Arthur S. Otis, Otis Quick Scoring Mental Ability Test (Younkers: World Book Company, 1939).

[2] Henry A. Murray, Thematic Apperception Test Manual (Cambridge, Massachusetts: Harvard University Printing Office, 1943).

experimental variable. The pictures finally selected were numbers two, four, and ten.[3] Picture number two depicts a country scene. In the foreground is a young woman with books in her hand, and in the background there is a man working in the field and an older woman looking on. Picture number four shows a woman clutching the shoulders of a man who looks as though he were trying to pull away. Picture number ten shows a woman's head against a man's shoulder.

A discussion of the rationale of the TAT is beyond the scope of this study. For such a discussion, the reader is referred to the TAT Manual.[4]

Construction of the facsimiles. The facsimiles presented to the control group were photographically reproduced on Kodabromide N2 paper. The exposure time was uniformly set at four seconds with the camera lens aperture set at f.8. The facsimiles were developed in Dektol, remaining in this solution for a period of two and one half minutes. The over-all dimensions and delineations of the facsimiles were the same as those of the original TAT cards.

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3 Appendix B, p. 49.

4 Murray, op. cit., p. 1.

The facsimiles presented to the experimental group were photographically reproduced on Kodabromide N2 paper. The exposure time was uniformly set at four seconds with the camera lens aperture set at f.5.6. The facsimiles were developed in Daktol for a period of two and one half minutes. The over-all dimensions, but not the delineations, were the same as those of the originals. The reduction in delineation of the experimental facsimiles was accomplished by the use of a lens diffusion instrument.

The sample population. The sample population employed in the present study was composed of ninety-six College of Pacific students. This sample was drawn from three classes: (1) a class in secondary teacher education, (2) a class in elementary teacher education, and (3) a class in general psychology. The sample was divided into a control and an experimental group. The determination of which group an individual would be assigned to was made on the basis of which set of facsimiles the individual received at the time of the study. For the purpose of providing additional descriptive material concerning the sample population and its components, the data was classified in terms of: (1) sex, (2) chronological age, (3) mental ability level as measured by the 1939 revision

of the Otis Quick Scoring Mental Ability Test, and (4) the academic year level of the individual participants.

Summaries and comparative data of the characteristics of the male and female components of the control and experimental groups are presented in Tables I through IX, pages 27 through 35, of Appendix A, arranged according to the above mentioned classification categories.

For the purpose of securing a more detailed comparison, the control and experimental groups were divided into their respective male and female components. The comparative group data were treated for statistical significance by the use of the formula for the standard error of the difference of the means as given by Garrett[5] (page 198): $\sqrt{\sigma_{M_1}^2 + \sigma_{M_2}^2}$, and the formula for the critical ratio employed by Garrett[6] (page 199): C.R. $\frac{D}{\sigma_D}$, where D is the difference of the two means and σ_D is the standard error of the difference of the two means. Because of the roughness of the initial data from which it was necessary to work, and since Garrett notes that the 0.05 significance level is sufficiently exacting for most

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5 Henry E. Garrett, Statistics in Psychology and Education (third edition; New York: Longmans, Green and Company, 1947), 487 pp.

6 Loc. cit.

research, this level was selected as the criterion for statistical significance for the purpose of this study.[7]

It is noted in Table I, page 27, that a comparison of the mean chronological age levels of the males and females in the control and experimental groups indicate differences which are statistically significant. A further analysis which compares mean chronological age levels of the males of the control and experimental groups is presented in Table II, page 28. In this table a statistically significant difference in the mean age levels is noted. Table III, page 29, presents a comparison of the mean chronological age levels of the females of the control and experimental groups. The indication here seems to be that no statistically significant difference exists.

There is a statistically significant difference between the mean academic year levels of the males and females of the control group, but not between the males and females of the experimental group. (See Table IV, page 30.) Table V, page 31, indicates a statistically significant difference between the mean academic year levels of the

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[7] Ibid., p. 203.

males of the control and experimental groups, while Table VI, page 32, indicates that such a relationship is lacking with respect to the mean difference in academic year levels of the females of the control and experimental groups.

No statistically significant differences exist between the males and females of the control and experimental groups, or the males of both groups, or the females of the control and experimental groups with respect to the mean mental ability levels of these groups. (See Tables VII, VIII, and IX, pages 33, 34, and 35, respectively.)

The procedure used in the present investigation. At the beginning of each hour in which the study was conducted, the following introductory remarks were made to both the control and experimental groups by the present investigator:

> This study is concerned with certain aspects of mental activity, the first to be dealt with will be a measure of mental ability and the second will be concerned with imaginative productivity.

Immediately after the Otis Test of Mental Ability was administered, the subjects took the TAT. The instructions for individual administrations as given by Murray in the Manual are:

> This is a test of imagination, one form of intelligence. I am going to show you some pictures, one at a time, and your task will be to make up as dramatic a

> story as you can for each. Tell what has led up to the event shown in the picture, describe what is happening at the moment, what the characters are feeling and thinking; and then give the outcome. Speak your thoughts as they come to your mind. Do you understand? Since you have fifty minutes for ten pictures, you can devote about five minutes to each story. Here is the first picture.[8]

These instructions were reworded in accordance with Murray's notation that the exact wording may be altered to suit the age, intelligence, and circumstance of the subject.[9]

The instructions used in the present study were worded to meet the circumstances of the group situation as indicated.

> The next part is a test of imagination, one form of intelligence. There are three photographs and your task will be to make up as dramatic a story as you can about each. Tell what has led up to the event shown in the photograph, describe what is happening at the moment, what the characters are feeling and thinking; and then give the outcome. Write your thoughts as they come to your mind. You will be allowed four minutes to write about each photograph. After you have written your story, please wait until told to proceed to the next one. Does everyone understand?

The control and experimental facsimiles were numbered according to the sequence of presentation to each respective group. The control and experimental facsimiles of TAT

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[8] Murray, loc. cit.

[9] Loc. cit.

card number two were presented first to each respective group so the serial number one was assigned to each of these respective facsimiles. Likewise, the control and experimental facsimiles of TAT card number four were the second to be presented to each respective group, and the serial number two was therefore assigned to these facsimiles. Finally, the control and experimental facsimiles of TAT card number ten were presented and the serial number three was given to these facsimiles.

The time used in each group session was prorated according to the following schedule: one minute for introductory remarks, one half hour for administration of the Otis, four minutes for writing each story, fifteen seconds for each of the two pauses between writing of the stories, and one minute for closing the sessions.

CHAPTER III

THE RESULTS OF THE STUDY

Presentation of the data. A study of Table X, page 36, indicates a comparison of the mean scores obtained by the males and females of the control and experimental groups respectively, in response to facsimile number one. The difference of 0.71 between the mean scores of the males and females of the control group does not appear to be statistically significant in view of the critical ratio of 0.153. Further study of this table indicates that the difference of 11.77 between the mean scores of the males and females of the experimental group obtained in response to experimental facsimile number one, likewise fails to show any statistically significant difference in view of the critical ratio of 1.89.

Table XI, page 37, which compares the mean scores of the males in the control and experimental groups, indicates that the difference of 18.46 is statistically significant as indicated by the critical ratio of 3.52.

Table XII, page 38, which compares the mean scores obtained by the females of the control and experimental groups, indicates that the difference of 5.98 is not statistically significant in view of the critical ratio of

1.24.

Table XIII, page 39, which presents the results obtained by the males and females of the control and experimental groups in response to the control and experimental facsimiles number two, indicates that the difference of 5.46 in the mean scores obtained by the males and females of the control group is not statistically significant as the critical ratio of 1.07 falls short of meeting the criterion at the 0.05 level of confidence. However, further inspection of this table indicates that the difference of 10.23 between the mean scores of the males and females of the experimental group is statistically significant since the critical ratio of 2.20 exceeds the criterion at the 0.05 level of confidence.

Table XIV, page 40, indicates a difference of 20.73 between the scores obtained by the males of the control and experimental groups in response to control and experimental facsimiles number two, respectively. As indicated by the critical ratio of 4.78, the difference noted is statistically significant. In contrast to this result, Table XV, page 41, indicates that the difference of 5.04 between the mean scores obtained by the females of both groups, in response to their respective facsimiles (number two), is not statistically significant (critical ratio--0.935).

Table XVI, page 42, presents the results obtained by the males and females of both the control and experimental groups in response to the respective control and experimental facsimiles number three. It indicates a difference in mean scores of 2.06 obtained by the males and females in the control group, which it is to be noted, is not statistically significant (critical ratio--0.55). Further study of this table indicates that the difference of 10.60 between the mean scores obtained by the males and females of the experimental group is statistically significant (critical ratio--2.11).

Table XVII, page 43, indicates a difference of 15.85 between the mean scores of the males of the control and experimental groups in response to the respective control and experimental facsimiles number three. This difference, shown by a critical ratio of 4.1, is statistically significant. In contrast, Table XVIII, page 44, indicates a difference of 3.19 between the mean scores of the females of the control and experimental groups in response to the respective facimiles number three. The difference, in this instance, is not indicated as being statistically significant (critical ratio--0.649).

Further analysis of the results of this study in terms of the chronological age levels, academic year levels,

or mental ability levels, does not appear feasible, in the opinion of this investigator, due to the small numbers of individuals in any one subdivision of these categories.

CHAPTER IV

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

I. SUMMARY

The purpose of this study is to compare the imaginative productions of selected college students presented with pictorial materials differing in definition of content. The comparison was made in terms of the mean number of words per production written by the control and experimental groups.

The study is limited by the small number of individuals employed for the purpose of making the comparisons under study. It is further limited by the fact that only three TAT cards could be used as a basis for study. Also, the necessary use of facsimiles of these cards rather than the actual cards themselves conceivably might reduce the possibility of the application of the results of this study in a situation where it might be desirable to study the effect of a reduction of definition of the contents of the TAT cards.

The materials under study in this investigation were two sets of facsimiles of TAT cards number two, four, and ten. The first set, exactly duplicating the above mentioned TAT cards, was used for control purposes. The second, or

experimental set, did not exactly duplicate these TAT cards in that they were characterized by a reduction in the definition of the pictorial contents.

The sample population of ninety-six College of Pacific students was divided into a control and experimental group. Each group was further divided according to sex. The control group consists of twenty-eight males and twenty-four females, and the experimental group of twenty-two males and twenty-two females.

The mean age levels of the males and females of the control group are 22.75 and 19.91 years respectively. For the males and females of the experimental group, the mean age levels are 22.04 and 20.04 years respectively.

The mean academic year levels of the males and females of the control group are 4.2 and 2.7 years respectively, and for the males and females of the experimental group they are 3.1 and 2.6 years respectively.

The mean mental ability levels of the males and females of the control group are 59.60 and 59.16 respectively, as measured by the Otis Quick Scoring Test of Mental Ability (Gamma Test: Form C, 1939 revision). The males and females of the experimental group attained scores of 54.18 and 54.90 respectively on this instrument.

An over-all inspection of the results seem to indicate that with respect to facsimiles number one, two, and three, no statistically significant difference exists between the production scores of the males and females of the control group. For the males and females of the experimental group, a statistically significant difference does appear relative to facsimiles number two and three. In the difference in mean production scores of the males and females relative to facsimile number one, no statistically significant difference appears to exist.

When the males and females are matched according to sex, i.e., males compared with males, and females with females, the differences in production scores for facsimiles number one, two, and three show statistical significance for the male comparisons, while no statistical significance is shown in the female comparisons.

II. CONCLUSIONS

In the opinion of the present investigator, the results of the present study seem to indicate that pictorial materials of reduced definition of contents do not tend to elicit a quantitatively greater degree of imaginative productivity than do pictorial materials of normal definition.

The present findings, like Weisskopf's conclusion concerning the effect of reduced intensity of pictorial material on imaginative productivity, seem to indicate that reductions in the degree of a physical property of pictorial materials do not result in increased imaginative productivity.

III. RECOMMENDATIONS FOR FURTHER STUDY

It is suggested that there be an extension of this study using larger numbers of males and females, with the inclusion also of a larger selection of TAT cards.

It would seem to be desirable to investigate the degree of imaginative productivity elicited by a standard set of TAT cards and a set of photographic facsimiles of those cards.

It is recommended that a study be made of sex differences in the degree of imaginative productivity elicited by pictorial materials of normal and reduced definition.

It is suggested that an investigation be made in which the definition of pictorial materials is systematically varied in order to determine if an optimal level of imaginative productivity can be established.

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APPENDIX A

TABLE I

COMPARISON OF THE CHRONOLOGICAL AGE LEVELS OF THE MALE AND FEMALE COMPONENTS OF THE CONTROL AND EXPERIMENTAL GROUPS

Components	No.	Mean Chron. Age	Standard Deviation	Difference of Means	Standard error of Difference	Critical Ratio
Control Group						
Male	28	22.75	2.13	2.84	0.17	16.70
Female	24	19.91	1.67			
Experimental Group						
Male	22	22.04	2.57	2.00	0.69	2.89
Female	22	20.04	1.86			

TABLE II

COMPARISON OF THE MEAN CHRONOLOGICAL AGE LEVELS OF THE MALE COMPONENTS OF THE CONTROL AND EXPERIMENTAL GROUPS

Components	No.	Mean Chron. Age	Standard Deviation	Difference of Means	Standard error of Difference	Critical Ratio
Male						
Control Group	28	22.75	2.13			
Experimental Group	22	22.04	2.57	0.71	0.219	3.24

TABLE III

COMPARISON OF THE MEAN CHRONOLOGICAL AGE LEVELS OF THE FEMALE COMPONENTS OF THE CONTROL AND EXPERIMENTAL GROUPS

Components	No.	Mean Chron. Age	Standard Deviation	Difference in Means	Standard error of Difference	Critical Ratio
Female						
Control Group	24	19.91	1.67			
Experimental Group	22	20.04	1.86	0.13	0.535	0.243

TABLE IV

COMPARISON OF THE MEAN ACADEMIC YEAR LEVELS OF THE MALE AND FEMALE COMPONENTS OF THE CONTROL AND EXPERIMENTAL GROUPS

Components	No.	Mean Academic Year Level	Standard Deviation	Difference in Means	Standard error of Difference	Critical Ratio
Control Group						
Male	28	4.2	1.06	1.5	0.34	4.41
Female	24	2.7	1.30			
Experimental Group						
Male	22	3.1	1.28	0.5	0.414	1.19
Female	22	2.6	1.40			

TABLE V

COMPARISON OF THE MEAN ACADEMIC YEAR LEVELS OF THE MALE COMPONENTS OF THE CONTROL AND EXPERIMENTAL GROUPS

Components	No.	Mean Academic Year Level	Standard Deviation	Difference in Means	Standard error of Difference	Critical Ratio
Male						
Control Group	28	4.2	1.06	0.1	0.346	0.242
Experimental Group	22	3.1	1.28			

TABLE VI

COMPARISON OF THE MEAN ACADEMIC YEAR LEVELS OF THE FEMALE COMPONENTS OF THE CONTROL AND EXPERIMENTAL GROUPS

Components	No.	Mean Academic Year Level	Standard Deviation	Difference in Means	Standard error of Difference	Critical Ratio
Female						
Control Group	24	2.7	1.30			
				0.1	0.414	1.19
Experimental Group	22	2.6	1.40			

TABLE VII

COMPARISON OF THE MEAN MENTAL ABILITY LEVELS OF THE MALE AND FEMALE COMPONENTS OF THE CONTROL AND EXPERIMENTAL GROUPS

Components	No.	Mean Mental Ability Level	Standard Deviation	Difference in Means	Standard error of Difference	Critical Ratio
Control Group						
Male	28	59.60	11.04	0.44	2.78	0.16
Female	24	59.16	8.55			
Experimental Group						
Male	22	54.18	10.31	0.72	3.18	0.23
Female	22	54.90	10.24			

TABLE VIII

COMPARISON OF THE MEAN MENTAL ABILITY LEVELS OF THE MALE COMPONENTS OF THE CONTROL AND EXPERIMENTAL GROUPS

Components	No.	Mean Mental Ability Level	Standard Deviation	Difference in Means	Standard error of Difference	Critical Ratio
Male						
Control Group	28	59.60	11.04			
				5.42	3.08	1.76
Experimental Group	22	54.18	10.31			

TABLE IX

COMPARISON OF THE MEAN MENTAL ABILITY LEVELS OF THE FEMALE COMPONENTS OF THE CONTROL AND EXPERIMENTAL GROUPS

Components	No.	Mean Mental Ability Level	Standard Deviation	Difference in Means	Standard error of Difference	Critical Ratio
Female						
Control Group	24	59.16	8.55			
				4.26	2.86	1.49
Experimental Group	22	54.90	10.24			

TABLE X

COMPARISON OF THE MEAN SCORES OBTAINED BY THE MALES AND FEMALES OF THE CONTROL AND EXPERIMENTAL GROUPS IN RESPONSE TO FACSIMILE NUMBER ONE

Components	No.	Mean Response Score	Standard Deviation	Difference in Means	Standard error of Difference	Critical Ratio
Control Group						
Male	28	58.46	17.2	0.71	4.65	0.153
Female	24	57.75	15.7			
Experimental Group						
Male	22	40.00	18.65	11.77	6.25	1.89
Female	22	51.77	21.79			

TABLE XI

COMPARISON OF THE MEAN SCORES OBTAINED BY THE MALE COMPONENTS OF THE CONTROL AND EXPERIMENTAL GROUPS IN RESPONSE TO FACSIMILE NUMBER ONE

Components	No.	Mean Response Score	Standard Deviation	Difference in Means	Standard error of Difference	Critical Ratio
Male						
Control Group	28	58.46	17.2	18.46	5.23	3.52
Experimental Group	22	40.00	18.65			

TABLE XII

COMPARISON OF THE MEAN SCORES OBTAINED BY THE FEMALE COMPONENTS OF THE CONTROL AND EXPERIMENTAL GROUPS IN RESPONSE TO FACSIMILE NUMBER ONE

Components	No.	Mean Response Score	Standard Deviation	Difference in Means	Standard error of Difference	Critical Ratio
Female						
Control Group	24	57.75	15.78			
				5.98	4.83	1.24
Experimental Group	22	51.77	21.79			

TABLE XIII

COMPARISON OF THE MEAN SCORES OBTAINED BY THE MALES AND FEMALES OF THE CONTROL AND EXPERIMENTAL GROUPS IN RESPONSE TO FACSIMILE NUMBER TWO

Components	No.	Mean Response Score	Standard Deviation	Difference in Means	Standard error of Difference	Critical Ratio
Control Group						
Male	28	56.00	16.7	5.46	5.09	1.07
Female	24	50.54	19.0			
Experimental Group						
Male	22	35.27	13.30	10.23	4.65	2.20
Female	22	45.50	16.67			

TABLE XIV

COMPARISON OF THE MEAN SCORES OBTAINED BY THE MALE COMPONENTS OF THE CONTROL AND EXPERIMENTAL GROUPS IN RESPONSE TO FACSIMILE NUMBER TWO

Components	No.	Mean Response Score	Standard Deviation	Difference in Means	Standard error of Difference	Critical Ratio
Male						
Control Group	28	56.00	16.73	20.73	4.34	4.78
Experimental Group	22	35.27	13.30			

TABLE XV

COMPARISON OF THE MEAN SCORES OBTAINED BY THE FEMALE COMPONENTS OF THE CONTROL AND EXPERIMENTAL GROUPS IN RESPONSE TO FACSIMILE NUMBER TWO

Components	No.	Mean Response Score	Standard Deviation	Difference in Means	Standard error of Difference	Critical Ratio
Female						
Control Group	24	50.54	19.00	5.04	5.38	0.935
Experimental Group	22	45.50	16.67			

TABLE XVI

COMPARISON OF THE MEAN SCORES OBTAINED BY THE MALES AND FEMALES OF THE CONTROL AND EXPERIMENTAL GROUPS IN RESPONSE TO FACSIMILE NUMBER THREE

Components	No.	Mean Response Score	Standard Deviation	Difference in Means	Standard error of Difference	Critical Ratio
Control Group						
Male	28	48.35	12.28	2.06	3.71	0.55
Female	24	46.29	13.71			
Experimental Group						
Male	22	32.50	13.96	10.60	5.04	2.11
Female	22	43.10	18.35			

TABLE XVII

COMPARISON OF THE MEAN SCORES OBTAINED BY THE MALE COMPONENTS OF THE CONTROL AND EXPERIMENTAL GROUPS IN RESPONSE TO FACSIMILE NUMBER THREE

Components	No.	Mean Response Score	Standard Deviation	Difference in Means	Standard error of Difference	Critical Ratio
Male						
Control Group	28	48.35	12.28	15.85	3.86	4.1
Experimental Group	22	32.50	13.96			

TABLE XVIII

COMPARISON OF THE MEAN SCORES OBTAINED BY THE FEMALE COMPONENTS OF THE CONTROL AND EXPERIMENTAL GROUPS IN RESPONSE TO FACSIMILE NUMBER THREE

Components	No.	Mean Response Score	Standard Deviation	Difference in Means	Standard error of Difference	Critical Ratio
Female						
Control Group	24	46.29	13.71	3.19	4.92	0.649
Experimental Group	22	43.10	18.35			

TABLE XIX

INDIVIDUAL DATA FOR THE MALES OF THE CONTROL GROUP

Number	Age	Academic Year	Otis	Number of words in response to facsimile number 1	2	3
1	23	5	51	74	40	47
3	24	5	70	39	25	35
4	21	4	75	68	35	78
5	25	5	40	52	53	28
7	25	5	75	48	52	45
10	23	5	63	49	73	64
11	23	5	57	60	75	59
13	24	5	41	55	55	40
16	23	5	45	12	47	58
17	24	5	64	69	86	61
20	21	4	60	89	79	52
21	26	5	57	59	71	56
22	25	5	62	72	62	58
24	20	4	71	58	63	40
25	21	4	74	41	49	44
26	24	5	63	75	47	44
27	22	5	56	64	53	63
28	26	5	57	80	69	50
29	23	5	68	48	29	52
35	22	4	38	32	29	35
101	20	3	71	83	73	58
103	21	4	46	57	55	40
105	24	3	72	49	65	50
108	23	4	48	65	86	57
113	21	3	71	38	38	32
115	19	2	56	67	51	30
123	18	1	62	81	55	50
137	26	3	56	53	33	28

TABLE XX

INDIVIDUAL DATA FOR THE MALES OF THE EXPERIMENTAL GROUP

Number	Age	Academic Year	Otis	Number of words in response to facsimile number 1	2	3
40	26	4	36	32	28	22
47	23	4	50	34	19	26
49	24	5	50	29	25	23
51	20	4	49	36	25	52
54	25	4	54	18	27	27
56	21	4	75	29	31	32
57	26	5	60	26	44	28
58	25	4	51	32	58	30
59	23	4	42	23	14	10
141	25	3	36	35	30	12
145	20	1	50	63	37	35
151	24	1	67	36	33	29
153	18	1	50	27	43	46
159	19	2	50	26	30	21
160	21	3	44	11	28	21
162	24	4	58	39	14	29
163	22	3	69	66	55	49
164	21	3	54	46	49	53
165	18	1	64	55	38	37
166	21	4	54	67	34	43
172	20	3	68	71	54	26
175	19	2	61	79	60	64

TABLE XXI

INDIVIDUAL DATA OF THE FEMALES OF THE CONTROL GROUP

Number	Age	Academic Year	Otis	Number of words in response to facsimile number		
				1	2	3
8	21	4	59	67	82	40
14	22	5	63	44	52	33
15	21	4	44	51	72	41
19	21	4	59	76	29	50
23	21	5	70	57	76	72
30	22	4	66	29	56	49
31	21	4	63	50	46	47
33	21	4	49	42	15	48
34	22	4	50	68	16	24
37	21	4	56	71	29	26
114	18	2	75	71	53	50
119	21	2	50	73	29	48
120	17	1	38	79	79	51
122	18	1	61	74	62	72
126	18	1	70	51	47	29
128	20	3	57	34	57	33
129	21	3	64	70	58	52
130	19	3	67	37	46	30
131	18	1	61	51	65	61
132	18	1	57	62	80	73
133	18	1	57	50	55	46
138	17	1	66	38	39	40
139	20	2	62	55	40	44
140	19	3	56	86	30	52

TABLE XXII

INDIVIDUAL DATA OF THE FEMALES OF THE EXPERIMENTAL GROUP

Number	Age	Academic Year	Otis	Number of words in response to facsimile number 1	2	3
38	22	4	41	51	47	49
41	21	4	64	69	46	37
42	21	4	47	46	54	29
43	22	4	53	69	59	79
44	22	5	58	56	56	55
45	22	4	54	18	30	23
52	21	4	57	37	40	37
55	21	4	39	10	24	22
62	22	4	41	20	14	13
143	19	1	50	46	43	39
144	18	1	63	70	44	59
146	19	2	59	71	46	38
147	24	4	62	71	50	63
148	17	1	60	66	40	38
149	18	1	50	38	34	30
155	20	2	38	86	72	28
156	19	2	53	66	44	29
157	19	2	46	52	30	34
167	20	2	61	90	86	75
169	18	1	75	72	68	68
173	18	1	65	67	67	56
174	18	1	72	68	47	63

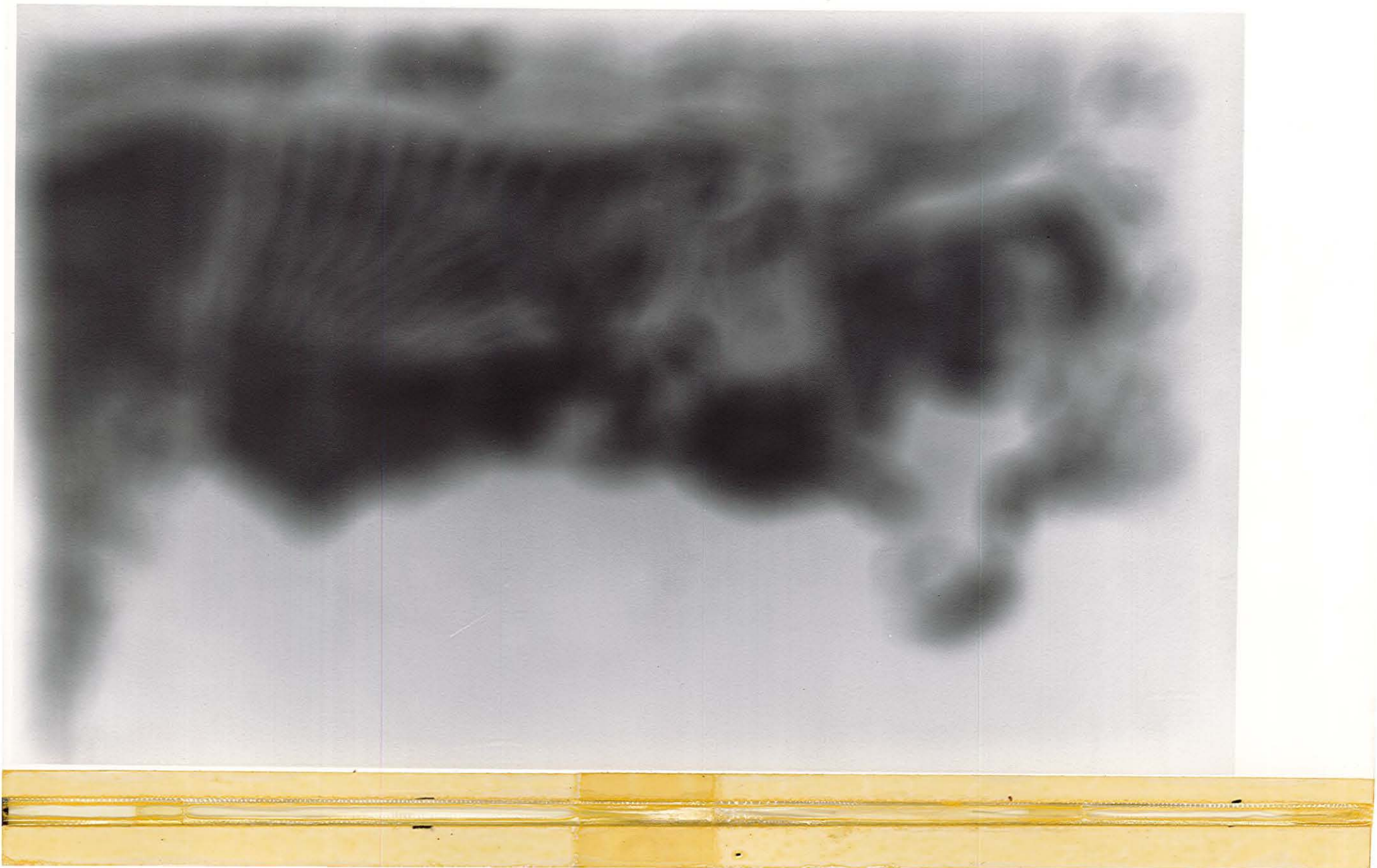
APPENDIX B

CONTROL FACSIMILE NUMBER ONE

(TAT CARD NUMBER TWO)

EXPERIMENTAL FACSIMILE NUMBER ONE

(TAT CARD NUMBER TWO)



CONTROL FACSIMILE NUMBER TWO

(TAT CARD NUMBER FOUR)

EXPERIMENTAL FACSIMILE NUMBER TWO

(TAT CARD NUMBER FOUR)

CONTROL FACSIMILE NUMBER THREE

(TAT CARD NUMBER TEN)

EXPERIMENTAL FACSIMILE NUMBER THREE

(TAT CARD NUMBER TEN)