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THE RELATION OF RORSCHACH PERSONALITY TRAITS TO TEACHING SUCCESS

being

A thesis presented to the Graduate Faculty of the Fort Hays Kansas State College in partial fulfillment of the requirements for the Degree of Master of Science

by

Harold L. Ellis, A. B. Fort Hays Kansas State College

Date Cifril 27, 1954 Approved A. B. Reek Major Professor

ACKNOWLEDGEMENTS

The writer wishes to express sincere appreciation to Dr. H. B. Reed, under whose direction this thesis was prepared, for his helpful suggestions and guidance. Acknowledgement must also be made to Dr. W. C. Wood who cooperated in preparing the teacher rating form, to Dr. Floyd B. Streeter for his advice and cooperation, and to my wife, Phyllis, for her help in checking statistical calculations and in final organization.



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INTRODUCTION

The study of psychology as a science would be of little value if it were not possible to utilize practically the theoretical techniques which have been learned. If this is possible, the different fields of psychology must work hand in hand. In this particular experiment the fields of experimental psychology, clinical psychology, and vocational guidance have been combined to attempt to give an indication of vocational success in a particular field. For many years psychologists and educators have desired some method by which they could foretell whether or not a given student would possess the desirable traits to become a successful teacher. In the past several years the branches of science dealing with persons and their adjustment and success have been receiving more attention in the subject of personality.

If then personality is important in the adjustment of the individual to his environment, would personality, or a particular type of personality adjustment live an answer to the question involved in foretelling success in various fields? The important role of personality in education his not been so much denied as neglected. The reason for this neglect has been the difficulty of measuring and evaluating personality factors objectively. ⁽³⁾ Though this is difficult, the Rorschach method can shed light on those personality traits that play a direct or indirect part in the social interactions between the individual and his environment. ⁽⁴⁾ Considering these factors this study was undertaken with the basic hypothesis that personality factors, as measured by the Rorschach Ink Blot Test, might be indicative of success in the field of teaching. In addition it was hoped that this study would stimulate further research in this area, and help future investigators avoid some of the important methodological inadequacies uncovered by this preliminary study.

PROBLEM

The general problem of this experiment was to investigate the relation of ratings of Rorschach Personality Traits to teaching success. The specific problems were as follows:

- 1. What pers hality factors seem to be prevalent in experienced teachers?
- 2. Are these same personality factors prevalent in practice-teaching students?
- 3. What is the correlation between personality traits and practice-teaching grades?
- 4. Can the measurement of personality be used in predicting teaching success?

MATERIALS

The materials used in this experiment consisted of a standard set of ten Rorschach Ink Blot cards, scoring sheets, location charts, response records, and a stop watch. A teacher-rating scale devised by Dr. H. B. Reed, Dr. W. C. Wood, and the writer was used to obtain an objective personality evaluation of each individual tested. The rating form is reproduced in the appendix of this paper.

EXPERIMENTAL PROCEDURE

When the subject entered the room he was asked to be seated and was given a brief history of the Rorsc'ach Test and the purpose of this experiment in order to insure rapport and cooperation. When the subject seemed to be at ease the following instructions were given:

I am going to show you the ten cards one at a time. You may hold the card if you wish, and you may keep it as long as you like. As you look at the card tell me what it could be for you. When you are finished with the card lay it face down on the table which will signify to me that you are finished. There is no time limit on this test so you may work quickly or take as long as you like.

If the subject asked for more specific instructions, such as; "may I turn the card," or "how much am I supposed to see," the experimenter said, "you may turn the card if you like," or "you may see as much or as little as you wish."

Each test was given individually, and eighty (60) per cent of the tests were given by the experimenter. The other twenty (20) per cent were given by graduate students in psychology at Fort Hays Kansas State College. All of the tests were scored and interpreted by the experimenter. Each response was recorded verbatim, giving card position, time of initial response, and total time.

Experienced teacher subjects were selected from the Summer School population at Fort Hays Kansas State College during the summer of 1951. They were selected on the basis

of years of experience (none had under three) and were about equally divided between primary and secondary teaching positions. A further factor influencing selection for final tabulation was the results of the teacher-rating form, which will be discussed later.

Non-experienced subjects were selected from the practice teaching classes at the college, and from the student population at large who had, within the last year, declared education as their major field of study. Since nine of the subjects were not enrolled in practice teaching courses at the time of the experiment, all grades are not practice teaching grades. Those grades which are not practice teaching grades are grades from major-education courses. For purposes of clarification of terminology, all students will be spoken of in this paper as practice-teaching students.

As a means of obtaining an objective evaluation of personality and success of the experienced teachers a teacher-rating form was sent to the immediate superior of each teacher tested. It was attempted, in so far as possible, in this form to duplicate some of the personality traits measured by the Norschach Ink Blot Test. For example, item two on the rating form was formulated to indicate organizational ability, as measured by high level W on the Porschach. Item one on the rating-form, however was formulated to investigate

the relative degree of success of the teacher in the individual school system. When the rating forms were returned the separate items were weighted and subjected to a statistical analysis in order to determine statistically if this group fell within a normal population group. It was determined that they did vary significantly from a normal population group. Because of this we may assume that this group possess certain traits which are characteristic of the teaching profession. They can then, be used as a control group in an experiment for the purpose of discovering the possibility of predicting teaching success.

Below is a list of the Rorschach personality measures used and a brief interpretation of each. (1)

- 1. W-----the extent to which the subject utilized the whole blot in forming responses. This is supposed to be indicative of organizational ability and the subject's emphasis on abstract thinking.
- 2. D-----the extent to which the subject utilized the large, obvious details in forming responses. According to Rorschach theory this measures the subject's ability to see obvious details relevant to the solution of a problem.
- 3. Dd+d---the extent to which the subject utilized the small and very small details in forming responses. This is supposed to show how well the subject integrates the small parts of the situation to the total situation.
- 4. S-----the blank space areas utilized in forming a response. According to Rorschach the space responses refer to some kind of oposition tendency of the subject.

- 5. P-----the popular or common response given by the subject. This is supposed to be a measure of the extent to which the subject thinks like the majority of the population.
- 6. O-----reflects a marked degree of independence of the configurations of the P response, which allows the subject to manipulate them so as to bring forth new articulations and contents; in other words, originality.
- 7. F+F+---the responses determined by the good form qualities of the blot. This is one of the main factors by which we try to judge the subject's inner control. Total
- 8. F----includes F, F+, and also the poor form responses which are supposed to mean that the subject's critical reasoning faculties have been impaired by some factor which must be sought by further investigation of the record.
- 9. H-----the extent to which the subject sees human figures in the blots. The inclination to see complete human figures is usually considered to indicate a free and productive kird of interest.
- 10. A-----the extent to which the subject sees animal figures in the blots. This is supposed to be a measure of stereotypy in the subject's thinking.
- 11. Hd-----the extent to which the subject used parts of the blots to produce parts of human figures. This is said to indicate an anxious, cautious interest.
- 12. Ad----the extent to which the subject sees parts of animals in the blots. This may indicate a tendency to be critical.
- 13. C-----The extent to which the subject utilized pure color with no form involved in making a response. C represents either the extreme of impulsive and wild affectivity, or an abandonment of all control.

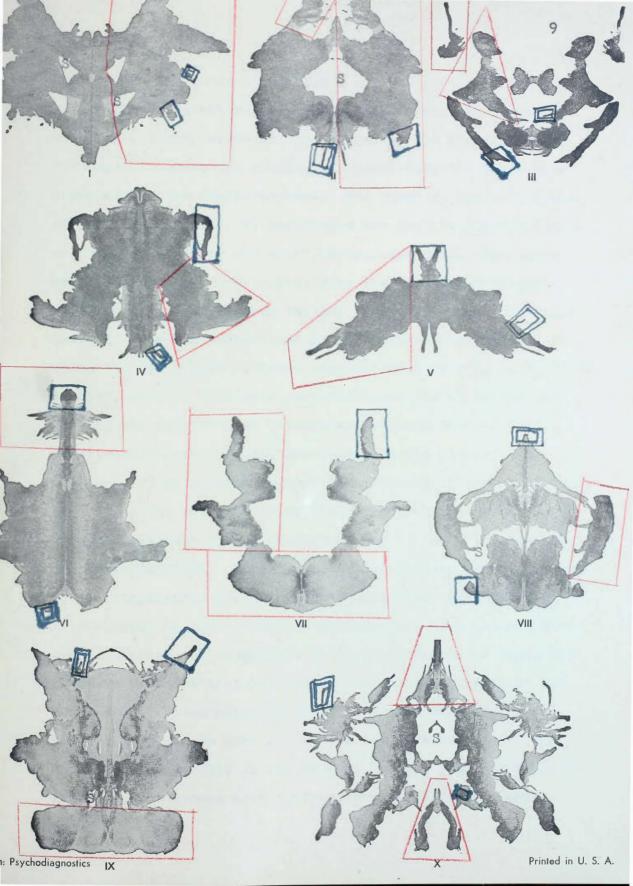
- 14. FC-----the extent to which the subject has used color which is strictly controlled by form (F). This means that the course of the subject's associative process in everyday life is guided by a factual assessment of reality, yet includes an appropriate expression of affect.
- 15. CF----the extent to which color takes precedence over form in the response. This is said to mean that the person tends to react emotionally to a stimulus to a great degree.
- 16. K-----is a pure chiaroscuro response. The subject utilizes the vague outlines of the greys to produce a response. Rorschach says that this indicates insecurity and anxiety of the free floating type.
- 17. FK+KF--are responses in which the form of the blot more or less control the subject's reaction to the shading of the greys. This could indicate an introspective attitude on the part of the subject.
 EV+
- 18. kF+k---are the responses derived from the shading within the blot. This reveals to some extent open insecurity or anxiety.

Fc+

- 19. cF+c---responses indicate that the subject considers the blot to have texture. All c responses seem to reflect some form of sensuality. The higher the F, the more refined the trait.
- 20. FM+m---these express animal movement and mechanical types of movement respectively. Rorschach states that this may mean that hostile inner forces are at work within the subject.
- 21. M-----the extent to which the subject sees human figures in movement. The presence of M usually indicates intelligence and maturity.
- 22. R-----the number of responses in each record. This is significant only when coupled with the quality of responses.

- 23. t-----the initial response time per card. Significant only at the extremes.
- 24. T-----total time. Significant only at the extremes.

In table I, a Rorschach location chart, is shown a more complete definition of some of the areas discussed in the above listing.⁽²⁾ The areas on the blots enclosed in red indicate a D (large detail) response. The areas enclosed in a single ink-line indicate a d (small detail) response. The areas enclosed in a double ink-line indicate a Dd (very small or unusual detail) response. A space (S) response is indicated by a typewritten S. Obviously not nearly all of the possible responses have been indicated, but only enough to make it clear to the reader what the different area symbols actually encompass.



RESULTS

The Rorschach records of the experienced teachers and practice-teaching students were scored by the Elopfer-Kelley method. (1) After the scoring was completed, the means were computed on each trait response. For example, the mean number of popular responses (?) per record for the experienced teachers was 6.73 and for the practice-teachers 5.10. The means were then examined statistically to see if any significant difference existed between the two groups on any of the traits. Table II presents these findings. The personality traits in which the two groups differed significantly were N. H. P. FK+KF. Fk+kF+k, and T. From this several things may be assumed regarding the relationship between experienced teachers and practice-teachers. First, the significantly higher human movement (M) production coupled with the higher human (I) production by the practice group indicates that the practice group is slightly more intellectual and has more imagination and human interest. Second, the higher popular (P) production by the experienced group indicates that this group confor s more closely to the customs of society than does the practice group. We can only speculate as to the reasons for this, but it seems probable that persons who do conform closely to the customs of the community in which they live and teach would be considered to be more successful teachers than those who do not conform. This is not saying, though, that the practice group may not become more conforming as they go out into a

community to live and teach. Third, the higher production of inner shading (Fk+kF+k) and vista (FK+KF) responses by the experienced group indicates that this group has more conflicts at the present time and has resolved more of its problems in the past than the practice group. This might be explained by the fact that the older group has more responsibilities, both financial, family, and personal, than does the younger grop as a whole. Also, being older, it has had more time to learn how to deal with and resolve its conflicts. Fourth, it is evident that the experienced group works more quickly than does the practice group. It is possible that since this group is older that it has learned how to work more quickly. In the other traits measured, namely, total responses (R), whole responses (W), large detail (D), unusual detail and small detail (Dd+d), space (S), original (C), good form (F+F+), total form (includes F-), animal responses (A), human detail responses (Hd), pure color (C), form controlled color (FC), color controlled form (CF), chiaroscuro (K), texture responses (Fc+cF+c), animal and mechanical movement responses (FM+m), and initial response time (t) there seems to be no significant variation between the two groups. It must be assumed then, that in these traits the two groups are closely similar to each other.

MEANS AND CRUTICAL RATIOS OF THE NUMBER OF REST US S OF EXPERIENCED AND DRAC TRETEACTERS IN THE PRINCIPAL RORSCHACH FRATTS

Personality Traits	Experienced Teachers	Practice Teachers	Critical Ratio	Significant at %
R	38.23	34.55	.528	
Μ	1.40	2.30	-1.878	0 f.
W	10.73	10.25	.280	
D	17.97	18.30	081	
Dd+d	6.37	5.40	1.048	
S	•77	.60	.045	
Р	6.73	5.10	2.0l+3	.05
0	3.80	3.85	045	
F+F+	20.79	19.30	• 396	
Total F	21.63	19.35	•530	
Η	2.00	3.50	-2.245	.05
А	11.00	10.85	•089	
Hđ	1.43	2.10	830	
Ad	4.17	3.55	.452	
С	• 80	.115	1.050	
FC	2.17	2.35	293	
C It,	2.50	2.20	•61+3	
K	•53	•50	.126	
FK+KF	1.83	•70	1.752	•10
Fk+kF+k	.87	•70	1.826	• 3.0
Fc+cF+c	3.03	2.55	.841	
FM+m	3.20	3.10	.128	
t	12.37	15.34	-1.182	
Т	24.05	31.72	-1.765	.10

In order to answer the third question set up in the specific problems of this experiment a Pearson correlation was used to determine if any significant relationship existed between the Rorschach personality traits and practiceteaching grades. These findings are presented in table III. Grades seem to correlate significantly with six of the personality traits measured. These are popular responses (P), pure color (C), chiaroscuro (K), inner shading (Fk+kF+k), initial response time (t), and total time (T). The rest of the personality traits measured did not correlate significantly with grades. An interpretation of these results would indicate that the correlation of grades with popular responses (P) and pure color (C) are positive, that is, the higher P and C correspond to higher grades. Normally a high P is not associated with high intellectual achievements. However in this case it might be assumed that the high production of P would indicate that the student has integrated himself well into the classroom situation and conforms to what is expected by the instructor. The high production of C seems explainable only on the basis that most of the students giving pure color (C) responses were also enrolled in art courses. According to Mons (2), one must beware of attaching too much significance to the C response when it comes from a person who is an artist or one who is dealing with art. Chiaroscuro (K), inner shading (Fk+kF+k), initial response time (t), and total time (T)

are negatively correlated with grades. That is, high scores in these traits would seem to go hand in hand with low grades. This seems reasonable because a great amount of anxiety and insecurity would be expected to produce low grades. The same is true of initial response time (t) and total time (T). The student who reacts and works slowly would be expected to receive low grades. PEARSON CORRELATIONS BETWEEN PRACTICE CLAC ING GRADES AND RORSCHACH PERSONALIPY TRAITS A.D THEIR SIGHIFICANCE

Personality Trait	r Score	t Score	Significant at %
R	431	-2.020	n an far fin der fin annen eine eine eine eine eine eine e
Μ	181	780	
W	143	615	
D	.036	• 030	
Dd+d	217	962	
S	.119	•126	
Р	. 384	1.760	.01
0	132	1/20	
Total F	122	526	
H	.159	.683	
A	.114	•488	
Ha	312	-1.390	
Ad	004	023	
C	• 427	2,000	• Ori+
FC	.190	.821	
Cir	•134	•575	
Ι	735	-4.599	•01
-9K+1Zb	132	561	
Fk+kF+k	210	-2.380	•01
Fc+cF+c	•433	•532	
P∏1+ın	080	081	
t	522	-8.231	•01
Ţ	416	-1.740	•07

SUMMARY

To summarize, the writer has tried to present in this paper statistical evidence of the relationship between Rorschach personality traits and teaching success. Also, an attempt was made to present statistical evidence for relationships between Rorschach personality traits and practice-teaching grades. These attempts were only partially successful. Significant differences were found to exist between experienced teachers and practice-teachers in popular responses (P), human movement (M), human responses (H), inner shading (Fk+kF+k), vista (FK+KF), and total time (T). In the other traits measured, total responses (R), whole responses (W), large details (D), small and unusual details (Dd+d), space responses (S), original responses (0), good form responses (F+F+), total form responses (including F-), animal responses (A), human detail responses (Hd), animal detail responses (Ad), pure color (C), form controlled color (FC), color controlled form (CF), chiaroscuro (K), texture responses (Fc+cF+c), animal and mechanical movement (FM+m), and initial response time (t) there seems to be no significant difference between groups. Since in this study two groups were being compared with the possibility of picking successful teachers from the practice group, one would be led to believe that the traits in which the two groups do not vary, plus the traits in which the experienced group seem to be significantly higher than the practice group, would be the traits that are desired in teaching prospects.

The following are the Rorschach traits in which experienced teachers have a higher number of responses than the practice teachers: Total responses (R), whole responses (W). small and unusual responses (Dd+d), space responses (3), popular responses (P), good form responses $(\mathbb{P}+\mathbb{P}+)$, total form responses (including F-), animal responses (A), animal detail responses (Ad), pure color responses (C), color controlled form responses (CF), chiaroscuro (K), vista responses (C+KF), inner shading responses (Fk+kF+k), testure responses (Fc+cF+c). and animal and mechanical movement responses (.R.+m). The following traits are the ones in which the practice-teachers have a higher number of responses than the experienced group: Human movement responses (M), large detail responses (D), original responses (0), human responses (B), human detail responses (Hd), form controlled color responses (FC), initial response time (t), and total time ('). This does not rean however that the higher the number of responses, the higher level the record. In the traits in which the two groups differed significantly, namely, human movement (M), popular responses (P), human responses (H), vista responses (FT+KF), inner shading responses (Fk+kF+k), and total time (") the varience was divided as to superiority between the two groups. In the traits mentioned above in which the two groups do not vary significantly, they may be said to have common abilities, or to be alike.

Correlations between Rorschach personality traits and practice-teaching grades bear out what might normally be expected. That is, significant correlations between popular responses (P), pure color (C), chiaroscuro (K), inner shading responses (Fk+kF+k), initial response time (t), and total time (T) were found. The student receiving higher grades can be expected to work more quickly, have few anxieties, and conform to the classroom situation. Some of the more important traits measured on the Rorschach, such as whole responses (W), human movement responses (M), form responses (F), and human responses (H) showed no significant correlation with practice-teaching grades.

LIMITATIONS AND FURTHER RESEARCH

In view of the fact that few significant results were obtained, the limitations of this experiment should be considered.

The first and foremost limitation is the difficulty of assigning quantitative values to Rorschach personality traits. Personality traits are difficult to isolate for the purposes of statistical evaluation since each personality trait is inseparable from the total personality and in operation is dependent upon the total configuration of the personality and environment. Also, after conducting this experiment, the writer feels that many of the Rorschach measures should have would have been been sub-divided so that a finer evaluation is possible. For example, the whole blot response (U) should have been broken down into W+, W, and W-. In this way the quality of a whole response could be indicated.

Another limitation lies in a possible sampling error. All of the experienced teachers came from a localized segment of teacher population, namely that of Western Kansas. It is not only possible, but probable, that this group does not reoresent the teacher population as a whole. Even if the study is to remain localized, it would be better if the teachers used could come from all over the state of Kansas. Also, both the experimental and control groups were made up of too few subjects.

In this writer's opinion there is much opportunity in this field for further research. It is felt that a study which would include a third group, a group of unsuccessful teachers would be of much value. If this type of study could be made it could be determined whether unsuccessful teachers varied significantly in their personality adjustment from successful teachers, and would also give us another basis of comparison for predictability. Also, there should be, in order for further research to be successful, some method of statistically evaluating the Rorschach which would permit the experimenter to more adequately evaluate the personality traits measured. Then, we must consider the reliability of the teacher-rating form used in this study to determine success. In

many cases the immediate superior of the teacher in question was a county superintendent who had only very scant contact with the teacher. It is possible that a teacher-rating scale could be devised which would, both quantitatively and qualitatively, give us a better picture of just what a successful teacher is. This in itself encompasses a broad field of research. Another distinct possibility presents itself also. This is the possibility of a check of some type being run on the present experimental group in from five to ter years to see how many of them are considered to be successful teachers. In this way the validity of the present comparisons could be checked. The raw data from this study could be used to fa-110 cilitate a study of this type. This raw data is included in the appendix of this paper. It is also felt that a great deal of the value of this study is as a preliminary study for someone who wishes to investigate the problem further.

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The Rorschach used as a vocational measuring insturment.

TAFLE IV

TEACHER RATING FORM

Name of Instructor

Check one trait in each series of statements which best seems to describe the instructor you are rating.

- I. General success rating of this instructor in your school system.
 - 1. Extremely successful
 - 2. Moderately successful
 - 3. Hoderately unsuccessful
 - 4. Unsuccessful
 - 5. Undecided
- II. Which of the methods of organizing work given below best describes this instructor?
 - 1. Ormanizes for semester and school year
 - 2. Organizes for unit of several weeks
 - 3. Organizes haphazardly
 - 4. Indicates lack of organizing ability
- III. In sizing up a situation the instructor
 - 1. Sees the relationship between all parts of the situation
 - 2. Sees only the more obvious details
 - 3. Seldom sizes up the situation correctly
 - IV. Imagination (new ideas brought forth for the good of the school)

Has many new ideas which are good
 Has some new ideas which are good
 Has few new ideas
 Has no new ideas

- V. Creativeness (ability to use new ideas offectively)
 - 1. Effectively puts new ideas into use
 - 2. Has some difficulty putting new ideas into use without outside help
 - 3. Cannot utilize new ideas

VI. Ability and readiness to accept new ideas

- 1. Accepts readily after investigation
- 2. Slow to accept
- 3. Accepts too readily and does not investigate first
- 4. Almost never accepts new ideas
- VII. Attention to details
 - 1. Prefers to work on projects where attention to small or minor details is not important
 - 2. Examines details as well as the total situation
 - 3. Carefully examines all details, usually to the neglect of the total situation

VIII. Stability

- 1. Very stable, does not act impulsively
- 2. Steady except under stress
- 3. Very changeable, moody, becomes excited easily, or acts upon impulse
- IX. Extroversion-Introversion
 - 1. Is primarily interested in people and thingswants action
 - 2. Interested not only in action, but also in proper planning--is practical
 - 3. Interested in ideas, thinking, and studying, and not much interested in people and action.
- X. Intellectual Maturity
 - 1. Thinks for himself and does not accept suggestions without examination--takes on responsibility readily
 - 2. Accepts suggestions or ideas if they appear reasonable
 - 3. Accepts suggestions uncritically or childlike--avoids responsibility

XI. Anxiety

- 1. Seems free from worry and anxiety
- 2. Worries just enough to get work done well
- 3. Seems anxious and worried about things-fearful about not getting work accomplished effectively

- XII. Does this person seem to feel secure and safe about his home, job, future, etc.?
 - 1. Seems very secure
 - 2. Seems fairly secure
 - 3. Seems fairly insecure 4. Seems very insecure

XIII. Insight

- 1. Understands his difficulties and those of others
- 2. Understands the difficulties of others but not of himself
- 3. Has little understanding of his own limitations and those of others

XIV. Tact

- 1. In dealing with people is always careful to be pleasing and non-offensive
- 2. Frank but not offensive
- 3. Very brusk and says what he thinks regardless of whether it is offensive or pleasant

INDIVIDUAL RECORD RESPONSES

CONTROL GROUP

Sub-			Total									
ject	W 14.5	 20	Dd+d 7	S 0	P 7	0	F+F+	F	H 1	<u>A</u>	Hd 3	Ad
1	14•2		1	0	(0	25	29	T	13	3	5
2	10.0	53	20	5	12	11	58	62	5	26	4	11
3	8.5	34	28	0	7	7	29	31	4	8	3	22
4	6.5	6	2	0	6	l	7	9	l	9	0	2
5	7.5	22	26	3	9	13	33	33	3	12	l	13
6	8.0	17	3	l	5	l	19	19	l	5	2	4
7	5.0	7	0	0	4	3	7	7	4	5	0	0
8	7.0	26	5	0	7	2	26	27	l	16	0	0
9	5.0	11	0	0	6	0	8	9	0	5	0	0
10	14.5	17	0	0	7	5	16	16	2	12	l	0
11	7.5	18	0	0	6	0	13	13	l	8	0	0
12	9.0	11	3	0	6	l	10	10	2	5	0	l
13	6.0	10	l	0	6	l	6	6	l	11	0	l
14	6.0	22	12	0	11	8	25	25	6	18	2	2
15	12.5	9	3	0	3	l	19	20	0	10	0	4
16	18.5	53	52	4	7	14	73	73	0	13	0	26
17	2.5	13	15	l	6	0	20	21	l	4	0	8
18	8.0	1	0	0	6	l	l	3	l	5	l	0
19	3.5	5	0	0	4	0	8	9	0	9	0	0
20	20.0	17	l	0	12	4	20	20	5	10	3	0
21	9.0	2	0	0	5	4	4	4	2	8	0	0

INDIVIDUAL RECORD RESPONSES

CONTROL GROUP

Sub-	Sub- Total												
ject		D	Dd+d	S	P	0	F+F+	F	H	Α	Hd	Ad	
22	17.5	8	0	0	10	4	10	10	6	5	0	2	
23	10.0	11	1	0	4	2	1 2	12	2	2	0	0	
24	18.5	11	1	1	6	5	17	17	3	13	1	0	
25	4.5	25	7	0	9	3	22	22	3	14	5	6	
26	5.5	8	1	0	7	0	11	12	0	9	2	l	
27	10.5	6	0	0	5	0	7	7	2	5	0	0	
28	20.5	19	8	0	5	5	30	30	1	6	1	11	
29	5.0	43	14	1	8	13	34	34	2	26	3	7	
30	6.0	29	46	7	6	3	63	63	0	14	0	13	

INDIVIDUAL RECORD RESPONSES

CONTROL GROUP

Sub-	0	The				k+Fk						
ject l	C I	FC 3	CF 5	K O	FK+KF O	kF 0	cF 3	FM+m O	M	R 43	t 6.3	T 12.4
2	l	6	l	0	5	l	8	7	l	90	6.3	21.2
3	2	5	5	2	4	3	6	7	5	72	7.0	25.7
4	0	l	l	0	0	l	0	3	l	16	16.3	42.7
5	l	3	l	0	2	2	5	10	3	60	11.0	44.2
6	2	0	l	2	l	0	3	2	0	30	9.7	21.8
7	0	1	0	0	l	0	l	l	2	13	18.3	17.3
8	l	2	2	0	0	l	l	4	l	39	14.2	36.5
9	l	l	l	0	Q	1	2	2	0	17	10.4	17.6
10	0	3	8	0	0	0	1	3	2	33	18.3	48.7
11	l	0	3	0	3	0	2	4	l	26	9.3	20.4
12	l	5	3	0	2	0	3	0	0	24	25.9	38.0
13	0	0	2	0	0	0	4	6	l	19	8.0	21.2
14.	l	2	3	0	4	0	3	3	1	42	5.0	11.1
15	2	0	2	0	l	0	2	l	0	28	7.7	17.8
16	2	8	5	3	15	8	5	9	0	129	7.7	22.0
17	4	2	3	0	0	0	3	0	0	33	4.2	8.9
18	0	0	l	0	0	2	l	3	l	11	18.0	22.9
19	0	0	l	0	0	0	0	0	0	10	21.2	24.9
20	0	3	6	2	0	0	4	3	4	43	4.2	23.1
21	0	l	0	0	0	0	1	4	2	13	12.3	27.3

INDIVIDUAL RECORD RESPONSES

COLTRAL GROUP

Sub-	C ·	ΠC	CF	v	FK+KF	k+Fk+ kF	c+Fc+ cF	FM +m	м	R	+	Т
ject 22	C .	2			2	0	3	1	<u>M</u>		t 10.3	
23	0	2	3	0	l	l	l	l	2	23	10.6	16.8
24	0	3	2	0	2	0	2	4	2	32	11.1	17.3
25	l	3	1	0	0	0	4	3	3	37	17.6	29.8
26	0	1	0	0	0	0	3	0	0	16	21.9	22.6
27	2	1	2	0	1	0	2	0	2	17	11.6	19.6
2 8	0	0	5	0	5	0	1	2	l	44	23.4	29.4
29	0	6	5	2	0	6	10	4	l	68	6.1	13.1
30	l	l	l	3	7	0	5	7	0	88	17.3	26.6

INDIVIDUAL RECORD RESPONSES

EXPERIMENTAL GROUP

Sub- jec		D	Dd+d	S	Р	0	T F+F+	otal F	H	A	Hd	Ad
1	3.0	25	17	0	P 5	1	29	29	3	10	3	9
2	3.0	13	2	2	4	2	10	10	2	4	2	0
3	9.0	41	9	2	1 5	13	34	34	6	24	l	2
4	4.5	10	3	0	8	l	1 4	1 4	1	9	0	2
5	9.5	8	0	l	2	3	4	4	3	4	0	0
6	23.0	7	l	0	6	l	11	11	5	12	l	2
7	2.0	18	9	l	4	3	18	18	1	9	l	9
8	3.0	6	2	0	4	l	9	9	0	6	0	4
9	23.0	8	0	3	6	l	24	24	0	13	l	3
10	2 2.5	10	l	0	7	2	16	16	6	17	l	2
11	1.5	21	8	l	4	5	18	19	5	8	5	4
12	4.5	38	2	0	5	2	28	28	7	17	4	7
13	6.5	10	3	0	4	3	6	6	3	7	0	0
1 4	5.5	14	4	0	4	6	12	12	9	7	l	l
15	5.5	24	3	0	3	4	16	16	2	9	l	2
16	13.0	3	0	0	l	3	9	9	2	3	0	2
17	1 4.0	25	5	2	7	5	31	31	2	12	l	6
18	9.5	3	0	0	2	0	11	11	2	7	0	1
19	4.5	28	6	0	7	5	19	19	7	15	7	2
20	20.0	54	31	0	4	12	68	68	4	24	13	13

INDIVIDUAL RECORD RESPONSES

EXPERIMENTAL GROUP

Sub- ject	С	FC	CF	K	FK+KF	k+Fk+ kF	c+Fc- cF	⊦ FM+M	Μ	R	t	T
1	1	4	2	0	0	2	6	1	1	46	5.7	15.3
2	0	3	2	l	l	0	3	0	1	21	46.5	56.1
3	0	2	4	2	2	0	5	8	3	62	5.7	17.9
4	0	0	0	0	0	0	3	1	l	19	10.6	27.0
5	0	l	l	l	4	0	3	3	3	20	28.5	52.8
6	l	2	4	l	0	0	2	7	5	34	12.0	15.1
7	0	l	3	0	0	2	4	1	l	30	9.5	23.4
8	0	0	0	0	0	0	2	1	0	12	29.3	48.3
9	l	3	5	1	0	l	l	0	0	36	11.1	21.6
10	l	l	5	l	0	0	2	5	3	34	6.9	24.5
11	0	0	l	0	0	l	4	5	4	3 3	9.6	23.6
12	2	4	2	0	0	l	3	4	3	47	3.6	14.0
13	l	3	4	l	0	0	2	1	3	21	5.3	17.2
14	0	2	0	1	0	l	2	2	5	25	23.2	36.5
1 5	2	6	0	2	2	l	l	3	1	34	24.3	63.2
16	0	0	2	0	0	0	0	3	2	16	36.3	68.0
17	0	7	3	0	0	0	3	l	1	47	11.1	16.0
18	0	0	0	0	0	0	l	l	0	13	7.8	25.0
19	0	4	l	0	0	0	4	7	4	40	19.6	45.0
20	0	3	6	0	3	5	0	8	5	101	10.1	23.0