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An investigation of card concepts using the holtzman inkblot technique form a as stimuli

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AN INVESTIGATION OF CARD CONCEPTS USING THE HOLTZMAN INKBLOT TECHNIQUE FORM A AS STIMULI

by

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CHAPTER I

THE INTRODUCTION

Herman Rorschach's book, Psychodiagnostik published in 1921, introduced what is probably the best known of the projective techniques. Rorschach's untimely death in 1922 left much of the development of the inkblot technique to others and during the decades that followed, the Rorschach blots "developed rapidly as the method par excellence for assessing the motivation, thought processes and basic personality structure of the individual." (7, p. 4) Beck, Klopfer and others, presented methods of scoring and interpretation. Both "attracted large followings of psychiatrists, clinical psychologists, and others concerned mainly with the psychodiagnosis of the abnormal personality" while "the main stream of academic psychology looked askance at the Rorschach movement, criticizing its cultist character and lack of scientific discipline." (7, p. 4)

World War II brought changes. Many young inexperienced psychiatrists and psychologists found themselves as psychodiagnosticians to meet the needs of the armed services. The Rorschach was an available technique and short courses and handbooks gave instruction to a large

number of individuals. Soon "the Rorschach technique was firmly established as the leading clinical instrument for psychodiagnosis . . ." (7, p. 4) Graduate training rapidly expanded following the war bringing together "the Rorschach movement and a major segment of academic psychology, a union that was not without painful conflict." (7, p. 4)

Numerous studies done by graduate students brought a deluge of criticism and "the realization that the Rorschach had inherent psychometric weaknesses." (7, p. 4) Zubin, one of the most critical, in a 1954 symposium charged the Rorschach with seven major failures among which were: "(1) failure to provide an objective scoring system free of arbitrary conventions and showing high inter-scorer agreement; (2) lack of satisfactory internal consistency on test-retest reliability; (3) failure to provide cogent evidence for clinical validity; (4) failure of the individual Rorschach scoring categories to relate to diagnosis; (5) lack of prognostic or predictive validity with respect to outcome of treatment or later behavior; (6) inability to differentiate between groups of normal subjects; and (7) failures to find any significant relationships between Rorschach scores and intelligence or creative ability." (7, p. 5) Most Rorschachers would disagree with Zubin and say that he exaggerated the Rorschach's failures. However, Holtzman comments in his book, "Nevertheless, even among the most enthusiastic advocates of the Rorschach there is increasing appreciation of the limitations of the method, especially when scored by conventional systems." (7, p. 5)

Holtzman, with these criticisms in mind, developed a new inkblot

technique that would yield more adequate quantification "while also preserving the rich qualitative projective material of the Rorschach." (7, p. 11) To Holtzman, it seemed that the major limitations of the Rorschach could be overcome by developing a new technique using more inkblots and a simplified procedure for administration. Without appreciably increasing the administration time, the number of inkblots could be increased if the subject was permitted only response per blot. Furthermore, if new blots were constructed, two or more parallel forms could be developed and standardized statistically. This technique would have several advantages over the Rorschach including: (1) a relatively constant number of responses for each subject; (2) each response would be given to an independent stimulus; (3) "a richer variety of stimuli would be capable of eliciting more information than the original 10 Rorschach blots; and (4) a parallel form of the inkblots could be constructed easily from item analysis data in the experimental phase of development and adequate estimates of reliability could be obtained independently for each major variable." (7, pp. 11-12)

In 1961, Holtzman, Thorpe, Swartz and Herron in their book, Inkblot Perception and Personality, introduced Holtzman's new inkblot technique, with information on its development, norms, reliability studies, correlates of inkblot scores and group differences. Since the H.I.T. is so recent, there has been little time for empirical investigation or clinical usage to compare Holtzman's blots with the Rorschach to determine whether it preserves the uniquely valuable projective quality of the Rorschach while meeting adequate standards of measurement.

One of the trends noted in recent decades has been the use of content analysis and symbolism rather than pure statistical analysis in the interpretation of certain Rorschach cards. Certain Rorschach cards (i.e. III, IV, VI, VII) have been designated respectively as "Social," "Father," "Mother," "Male," and "Female." Clinicians have been interpreting these cards as being symbolic of these concepts. The literature contains comments on this symbolism and there are a number of studies investigating the symbolic stimulus values of the Rorschach blots.

Survey of the Literature

One of the first references to a clinical interpretation of the stimulus properties of the Rorschach Inkblots appeared in Bochner and Halpern's book Clinical Application of the Rorschach Test in 1945. The authors comment on two of the cards:

> Card IV "the heavy male figure may suggest the father or authority in general; this may be pleasant or unpleasant. Its dark quality and overwhelming character are particularly disturbing to those for whom parental authority is still an unsolved problem." (2, p. 81)
>
> Card VII "the two female faces or even female figures (in reverse position dancing girls) as well as the generally soft light quality give this card a feminine quality, frequently with maternal implications." (2, p. 82)

Bochner and Halpern offer no evidence to these interpretive comments.

Meer and Singer (11) in a widely cited study asked fifty college fraternity men (after the Rorschach had been administered in the formal manner) to select a "Mother" and a "Father" card. They had hypothesized that Card IV would be chosen as the "Father" card and that Card VII would be chosen as the "Mother" card. From the results of the study,

Meer and Singer found that Card IV was selected as the "Father" card at the .01 level of confidence.

Charen (3) who felt that there was sparse evidence for interpreting certain Rorschach cards as being symbolic of parents, social, or male and female concepts asked over fifty patients to pick out the cards which reminded them most of their own parents. The patients selected these cards after the Rorschach had been administered in the usual manner. Charen found that his subjects tended to use all of the cards in such a manner that no distinction could be made between cards IV and VII and the other eight.

Rosen (15) repeated Meer and Singer's study using one hundred and eighty university psychology students. Unlike the previously mentioned studies, Rosen's subjects were naive (not administered the Rorschach beforehand). Rosen used a questionnaire in which the subjects were asked to select from the Rorschach blots, the card which most nearly brought to mind or association a "Father" symbol and a "Mother" symbol. The results were statistically significant for Cards IV and VII. However, there were marked individual differences in the symbolic meaning of all of the cards and the conclusion made from the study was that the Rorschach appeared to "consist of stimuli which have a partial but not a total symbolic community for subjects." (p. 244)

Sappenfield (18) gave a modified group Rorschach to fifty-three male and fifty-one female volunteer university students. The subjects were asked to indicate for each blot and each response whether it seemed to be masculine or feminine. Results indicated that five blots (i.e.,

I, IV, VI, VIII, and IX) have masculine stimulus values and three blots (i.e., III, IV, and VII) have feminine stimulus values. Sappenfield also found what was a significant association between the Masculine-Feminine stimulus values of the populars (Beck's) and the blots on which they occur. He felt that the Masculine-Feminine stimulus values found for many of the content categories were constant with psychoanalytic hypotheses concerning symbolism.

Hirschstein and Rabin (6) used two groups of male delinquents matched on intelligence and age, but differing in respect to availability of parents. There was a significant difference between the two groups on Cards IV and VII and this evidence was offered in support of Cards IV and VII as symbolizing parental figures.

Mayer and Binz (10) employed three groups of sixteen latency age boys each: a normal group and two groups of disturbed boys--one from intact homes, the other from disturbed homes, seen individually for two Rorschach administrations. During one session they matched either a male or female doll with each of the Rorschach blots and during the other they matched any combination of two males and two female dolls with each of the Rorschach Cards. Results of the study indicated that Cards IV and VI were significantly matched with male figures and Card X was significantly matched with female figures for the three combined groups (N = 48). No significant differences among the three groups were found with regard to preferential perception of sex on any of the Rorschach Cards. This last finding was contrary to expectation.

Pennington (12) investigated the card concepts using one hundred

subjects from the University of Texas and Trinity University. He, like Rosen, used Rorschach naive individuals who were instructed to select a "Father," "Mother," "Social," "Male," and "Female" card one at a time, from Rorschach blots randomly placed on a table. Pennington hypothesized that there would be no significant relationship found between the various card concepts in question and their clinical designation with one exception that Card III would be selected as the Social Card at a significant level. From the results, Pennington concluded that there seemed to be no significant relationship between what a clinician designates as symbolic and the card chosen by a given population as representing this symbol. He added that it is difficult to justify the assigning of a definite concept (i.e. "Father," "Mother," etc.) to any one card and that different cards have different meanings to different individuals.

The writer (5) recently replicated Pennington's study using sixty Rorschach naive subjects from psychology classes at the University of Richmond. In addition to the five concepts used by Pennington, the concept of Sex was added. Analysis of the data revealed that Cards III, IV, VI, and II were selected as "Social," "Father," "Male," and "Sex" cards respectively. Card VII was not selected at a significant level for any of the concepts. It was also noted that more than one card was selected to represent each of the concepts except "Father" and "Sex." The writer noted that her findings varied with Pennington's (Pennington used the .001 level, the writer used the 05 level) but agreed with results of other studies (Meer and Singer, Rosen, etc.) and suggested

that these relationships should be kept in mind even though Rorschach interpretation should be made in consideration of the total context.

Little, Rosen, Rabin and Kalmaro have recently investigated the connotations and meaning of Rorschach Blots using the Semantic differential developed by Osgood.

Little (9) had twenty men and twenty women complete nine semantic differential scales for the ten Rorschach Inkblots and for six concepts "Mother," "Father," "Men," "Woman," "People," and "Self." The scales: Large-Small, Strong-Weak, Heavy-Light, Good-Bad, Beautiful-Ugly, Sweet-Sour, Fast-Slow, Active-Passive and Hot-Cold represented the factors of Potency, Evaluation and Activity. Analysis of the data revealed the connotations of the Rorschach blots varied significantly among different cards. Achromatic cards generally were considered less active, less potent and "less good" than the chromatic cards. The connotations of the concepts "Mother" and "Woman," and "Father" were more similar to those of Blots VII and VI respectively than any other Rorschach inkblots for both sexes. Little comments that the data indicates "that there may be considered communality of connotation meaning for most of the stimuli" (9, p. 403) for both sexes.

Rosen (16) used group administration and slide projection of Rorschach blots with fifty-seven naive college sophomores, twenty-nine male clinicians, and seven female clinicians. The subjects were asked to apply fifteen semantic-differential scales to each of the Rorschach blots and to each of eleven concepts which included black color and chromatic color and nine common Rorschach responses intended to embody

various determinants. Results showed that inkblots differed significantly on all the scales used and that they are quite multidimensional in connotations but were consistent with standard clinical hypothesis and findings from other studies (i.e., Blot III was seen as happy, healthy, active, fast, exciting, etc.; Blot IV was bad, dirty, cruel, heavy, strong, rugged, cold, ferocious, masculine, etc.; and Blot VII was seen as clean, clear, light, active, and exciting). In general, clinicians and students displayed high agreement on the scales. Some differences existed between male students and male clinicians and Rosen explains this as reflecting the clinicians' tendency to see some cards as having greater value, potency, activity and excitement.

Rabin (13) had twenty-eight male and thirty-eight female college students check 20 items of the semantic-differential on a seven-point scale for each of the ten Rorschach blots. Analysis of the data by a Chi-square technique permitted the following conclusions: (1) no card was described in exactly the same terms despite considerable overlap in the meaning of some pairs of cards; (2) there was considerable range in the number of adjectives which described any one card. Cards IV and VII had the most commonality of meaning whereas Card VI had the least. (3) Cards IV and VII had almost perfectly opposite meanings. (4) The group considered the chromatic cards as more pleasing and in primarily positive terms. (5) There were no sex differences in the attribution of meanings to the cards. Rabin noted that though each blot may have a unique meaning to each subject, there were considerable areas of agreement which indicates a commonality of the meaning. He comments that

adjective descriptions of the cards based on the semantic-differential scales supports the hypotheses on symbolism used by Rorschach workers. Card IV which has been designated clinically as the "Father" card was described as large, ugly, strong, cruel, sad, ferocious, heavy, active, rugged, etc.; and Card VII often designated as the "Mother" card was seen as good, beautiful, weak, clean, kind, peaceful, light, clear, smooth, delicate, etc. However no inkling as to sexual symbolism was obtained for Card VI whose only significant adjective was large. Rabin's study did not directly test the "Mother" and "Father" hypotheses for Cards IV and VII but his results support Kalmaro's findings.

Kalmaro (8) investigated the hypothesis concerning the designation of Card IV as the "Father" card and Card VII as the "Mother" card utilizing the semantic differential developed by Osgood. Rorschach Cards IV and VII and the concepts "Father" and "Mother" were presented in randomized order to eighty college students (40 men and 40 women) who rated them on seven bipolar scales (i.e., hard-soft, large-small, rough-smooth, strong-weak, strict-permissive, masculine-femine, aggressive-retiring) which stressed the potency factor. The hypotheses were supported. Card IV like "Father" was somewhat harder, larger, stronger, more strict, masculine and more aggressive than was Card VII which like "Mother" shifted towards the soft, small, weak, permissive, and feminine direction. Kalmaro interpreted these results as indicating that Card IV and Card VII are associated symbolically, indirectly, with the father and mother figure respectively. The author noted that while the hypotheses were supported, the extent to which Cards IV and VII are directed

to "Father" and "Mother" per se remains unspecified.

The literature cited above includes comments, clinical observations, and empirical studies which vary both in designs and populations sampled. The majority of the literature deals with hypotheses concerning "Father" and "Mother" or "Masculine" and "Feminine" symbolism in the Rorschach. It is interesting to note that with the exception of Charen and Pennington, the literature generally supports the symbolic concepts Rorschach workers have designated to certain Rorschach cards. Clinical and empirical evidence suggests that although the individual inkblots are unique in meaning to individual subjects there are areas of agreement indicating a communality of meaning in the Rorschach. Since the Holtzman Inkblot Technique and the Rorschach are similar in nature and purpose, the possibility of symbolism on certain concepts being related to certain H.I.T. blots, such as have been found to be related to certain Rorschach cards, is suggested. The purpose of the present study was to investigate whether symbolic concepts can be demonstrated on the Holtzmanblots as they have been related empirically to certain Rorschach blots.

CHAPTER II

THE PROCEDURE

Purpose of the Study

The purpose of this study was to investigate, experimentally, whether symbolism or certain concepts, already empirically related to the Rorschach, are also associated with certain H.I.T. Blots.

Population

One hundred and forty-five H.I.T. naive individuals were drawn from available psychology classes at The University of Richmond, Virginia. Four groups of subjects, one hundred women and forty-five men, participated in the experiment during regular class periods. The number of subjects in each group ranged from twenty-five to forty-four. The age range for the men was 18 years to 30 years with a mean age level of 21 years and 5 months. The range of the female population was from 18 years to 22 years with a mean age of 20 years and 2 months. Both groups ranged in education from college sophomores to college seniors, with the greatest majority of subjects falling into the sophomore category.

Apparatus

The entire experimental procedure was carried out in regular classrooms during regularly scheduled class periods. Each of the Form A H.I.T. blots was projected on a screen by means of an Opaque Projector operated by the investigator. The projected blot images were approximately 2 1/2 feet x 3 1/2 feet. All blots were rated on a five point scale for degree of relationship to suggested concepts. All ratings were made on a standard answer sheet containing the following instructions:

> Look at the answer sheet.
> You are going to rate 45 blots on the concepts you see on your answer sheet.
> Notice you will be asked to decide if each blot has any association with the notions "father," or with "mother" or with "sex" and so forth. You can see these listed on your answer sheet.
> Some blots will not suggest any of these concepts to you. But perhaps some of the blots may.
> What you will do is to observe a blot, then judge whether there are any associations between the blot and each of the concepts, "father," "mother," "social," "sex," etc.
> Then you will see the next blot and make judgements about that blot--and so on until you have judged 45 blots.
>
> Indicate your judgements as follows:
>
> 1. indicates the blot obviously and very strongly suggests the concept.
> 2. indicates the blot could suggest this concept but the association is not very strong.
> 3. indicates the blot may possibly suggest the concept, but only very slightly so.
> 4. indicates no obvious suggestions of the concept and most likely does not arousethe concept.
> 5. indicates the blot very definitely does not suggest the concept; there is no possible connection with the concept.

Procedure

Each subject was presented with an answer sheet and asked to read

the instructions. After the investigator had made sure that all subjects understood the instructions, two preliminary blots (x and y included with Form A) were presented. Those were not rated, in order for the subjects to become familiar with the task and the experimental procedure. Following the presentation of these trial blots, the forty-five blots in Form A were presented and subjects were instructed to note each blot for each of the seven concepts: "Father," "Mother," "Social," "Male," "Female," "Sex," and "Frightening or Fear Arousing." Each blot was exposed for 15 seconds and was followed by a 30 second interval to allow time to complete the ratings.

CHAPTER III

THE RESULTS

The results for each blot were analyzed for two factors: (1) differences in ratings over all concepts between men and women, and (2) differences in ratings between the seven concepts (i.e., "Father," "Mother," "Social," "Male," "Female," "Sex," and "Frightening or Fear Arousing"). To analyze these differences a Two Factor Analysis of Variance for repeated measures and unequal number of subjects* was computed on each of the 45 blots. (18, pp. 376-378) The .05 level of confidence was selected as the significant level. All of the blots except Card 20 had one or more significant F ratios. These significant results were analyzed by tests or individual comparisons on the main factors: sex and concept differences (18, pp. 377-378) and tests on simple main effects for the interaction of the two factors (18, pp. 306-312).

Table I shows the Sum of the Mean Ratings for Men and Women on each of the 45 blots over all concepts. The men's ratings were higher

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*The population sampled included 45 men and 100 women.

TABLE I

THE SUM OF THE MEAN RATINGS FOR MEN AND WOMEN ON CONCEPTS ON THE HOLTZMAN INKBLOTS FORM A

Blot Number	Mean for Men	Mean for Women
1	28.04	24.96
2	27.67	25.17
3	28.13	27.07
4	28.77	27.27
5	29.89	28.40
6	27.41	23.78
7	28.02	26.10
8	29.76	27.03
9	28.60	27.11
10	25.40	24.41
11	29.23	27.04
12	27.34	25.49
13	31.37	29.66
14	27.90	25.77
15	29.49	26.76
16	28.16	26.58
17	28.30	25.67
18	27.71	26.48
19	24.01	23.15
20	29.64	28.33
21	28.76	26.76
22	28.87	27.10
23	31.09	29.13
24	31.58	29.83
25	25.81	23.75
26	29.22	28.30
27	28.45	26.33
28	29.14	27.37
29	29.15	28.13
30	31.26	29.16
31	28.41	27.48
32	28.81	27.45
33	29.79	28.68
34	25.56	24.39
35	29.95	27.67
36	30.85	29.56
37	28.39	27.43
38	30.46	27.87
39	27.41	26.28
40	30.73	28.72
41	26.81	25.78
42	28.44	27.15
43	29.82	29.46
44	28.74	26.37
45	26.97	25.42

TABLE II

SIGNIFICANT DIFFERENCES BETWEEN MEN AND WOMEN IN MEAN RATINGS ON CONCEPTS ON THE HOLTZMAN INKBLOTS FORM A

Blot Number	F Ratio
1	17.08**
2	21.12**
3	1.43
4	7.34**
5	1.84
6	13.00**
7	3.11
8	2.29
9	2.07
10	.76
11	6.43*
12	1.25
13	8.48**
14	4.94*
15	7.31
16	2.42
17	.06
18	2.76
19	.73
20	2.39
21	5.76*
22	2.73
23	8.58**
24	3.89
25	3.61
26	14.60**
27	5.38*
28	4.21*
29	1.31
30	5.00*
31	.89
32	2.17
33	2.12
34	1.83
35	5.50*
36	2.36
37	.92
38	7.49**
39	1.16
40	7.32**
41	1.78
42	1.60
43	.17
44	5.92*
45	2.34

p = .01 **
p = .05 *

The probability of getting 18 significant F Ratios out of 45 is .001.

than the women's on all of the blots--thus they rated the blots as looking less like the concepts than the women. Table II gives the F Ratios for the Differences Between Men and Women on Concepts on each of the 45 blots. Men's ratings differed from women's ratings at the 5% level of confidence on 18 of the blots. Blots 1, 2, 4, 6, 11, 13, 14, 15, 21, 23, 26, 27, 28, 30, 35, 38, 40, and 44 showed significant differences in ratings between the sexes at the 5% level of confidence and of these blots. Blots 1, 2, 4, 6, 13, 15, 23, 26, 38, and 40 also showed a significant difference at the 1% confidence level.

The next analysis for differences in ratings on the concepts indicated that all of the blots except 20, 26, 30, and 31 had significant F Ratios on concepts.* Eighteen blots (i.e. 3, 6, 8, 9, 11, 15, 16, 17, 18, 19, 21, 25, 31, 34, 42, 43, 44, and 45) had interaction effects and the data on these blots were analyzed with the appropriate simple effects tests. Tables III, IV, V, and VI present, respectively, the means for Men and Women on the "Father" Concept, Individual Comparisons Between the "Father" Concept and Other Concepts, F Ratios Between Sexes on the Father Concept, and F Ratios Between Concepts for Men and Women. Table VI will also be discussed in relation to the other concepts.

In comparing the mean ratings given by men and those given by women on the "Father" concept with the mean ratings on the other concepts ("Mother," "Social," "Male," "Female," "Sex," and "Frightening or Fear Arousing") certain significant differences were obtained: Blots 5,

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*Card 20 had no significant results and Card 31 had only interaction results.

TABLE III

MEAN RATINGS FOR MEN AND WOMEN ON THE FATHER CONCEPT

Blot Number	Men	Women
1	4.31	4.04
2	4.33	3.95
3	4.51	4.44
4	4.58	4.23
5	4.33	4.06
6	4.31	3.80
7	4.53	4.16
8	4.51	4.09
9	4.42	4.22
10	3.82	3.86
11	4.56	4.07
12	4.56	4.27
13	4.82	4.36
14	4.31	4.14
15	4.53	3.98
16	4.69	4.19
17	4.47	3.98
18	4.44	4.21
19	4.56	4.10
20	4.31	4.28
21	4.42	3.96
22	4.27	4.18
23	4.62	4.44
24	4.60	4.38
25	4.38	3.80
26	4.49	4.42
27	4.62	4.15
28	4.56	4.43
29	4.47	4.18
30	4.62	4.10
31	4.33	4.28
32	4.42	4.35
33	4.36	4.26
34	4.22	3.89
35	4.33	4.28
36	4.56	4.42
37	4.53	4.40
38	4.60	4.28
39	4.33	4.14
40	4.64	4.49
41	4.51	4.20
42	4.69	4.21
43	4.53	4.43
44	4.71	4.15
45	4.22	3.99

TABLE IV

SIGNIFICANT F RATIOS IN INDIVIDUAL COMPARISONS OF THE SUM OF THE MEAN RATINGS OF THE FATHER CONCEPT WITH THE MEAN RATINGS ON THE OTHER CONCEPTS

Blot No.	Mother	Social	Male	Female	Sex	Frightening
1		8.53	25.27	45.16	88.13	12.74
2		70.94	67.22	61.25	32.94	47.02
4		176.26	31.20	21.42	28.82	146.78
5	37.50	55.21	43.74	11.21	18.72	11.21
7	31.74	112.67	52.81	346.56	213.61	3.84
10		116.05	98.78	90.32	58.03	95.92
12		666.77	95.57	165.82	46.37	19.80
13	7.61	80.02	2.45	50.14	23.47	
14		104.31	112.93	75.60	35.22	8.80
22		29.76	26.41	6.40	28.06	54.06
23		5.26	13.22	17.56	10.00	176.40
24	6.61	96.8	32.51	3.20	3.20	46.51
27		272.73	53.60	52.80	33.40	2.72
28	63.62	249.62	25.62	188.48	15.30	7.62
29	13.50	54.00	61.44			204.17
32		60.02	87.02	97.66	91.51	24.02
33		228.01	5.26			8.10
35		12.10	4.22	37.06	12.10	29.76
36		37.24	21.83	8.18	6.63	72.01
37	2.41	371.31	65.34	154.03	109.23	8.17
38		44.58	39.11	78.75	40.18	8.26
39	20.00	192.20	15.61	110.45	72.20	
40	2.77	52.99	56.89	2.78	3.39	504.12
41		305.23	88.91	305.33	109.92	

F = 2.10 is significant at the .05 level.
F = 2.80 is significant at the .01 level.

TABLE V

F RATIOS BETWEEN MEN AND WOMEN ON THE FATHER CONCEPT

Blot Number	F Ratio
3	.08
6	4.01*
8	3.23
9	.72
11	4.30*
15	5.74*
16	3.61
17	3.83
18	.87
19	3.05
21	3.81
25	6.06*
31	.05
34	2.00
42	4.00*
43	.24
44	5.25*
45	.91

* F is significant at the .05 level.

TABLE VI

F RATIOS BETWEEN CONCEPTS FOR MEN AND WOMEN

Blot Number	Men	Women
3	4.04	9.79
6	3.57	2.65
8	3.76	7.09
9	2.69	9.51
11	5.32	3.72
15	5.57	12.71
16	5.94	4.61
17	7.68	18.30
18	4.90	8.95
19	29.00	44.41
21	4.99	9.14
25	28.26	38.71
31	2.23	13.40
34	25.93	39.99
42	20.66	34.91
43	3.44	10.86
44	8.63	17.75
45	18.93	33.12

F = 2.10 at the .05 level.
F = 2.80 at the .01 level.

7, 13, 24, 28, 29, 37, 39, and 40 showed significant differences between ratings on "Father" and "Mother"; Blots 1, 2, 4, 5, 7, 12-14, 22-24, 27-29, 32, 33, and 35-41 showed significant differences between the "Father," and the "Social" and "Male" concept ratings. Significant differences in ratings were also obtained between the "Father" and "Female" and "Sex" concepts on Blots 1, 2, 4, 5, 7, 10, 12-14, 22-24, 27-29, 32, 33, and 35-41. The ratings between the "Frightening or Fear Arousing" and "Father" concepts were significantly different on Blots 1, 2, 4, 5, 7, 10, 12, 14, 22-24, 27-29, 32, 33, 35-38, and 40. Sex differences between ratings on the "Father" concept were also significant for Blots 6, 11, 15, 21, 42, and 44.*

Table III presents the mean ratings for Men and Women on the "Father" Concept. Women's ratings were generally lower than men's. Data in Table III indicate that the blots did not strongly suggest "Father" to the judges.

Tables VII, VIII, and IX present the results for the "Mother" concept. In comparing the concepts individually Blots 5, 7, 13, 24, 28, 29, 37, 39, and 40 were rated significantly different on the "Mother" and "Father" concepts. "Mother" and "Social" differed on Blots 1, 2, 4, 5, 7, 10, 12-14, 22-24, 27-29, 32, 33, and 35-41. "Female" and "Frightening or Fear Arousing" were also rated significantly on the above

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*With regard to the number of statistics computed, Analysis of Variance, Individual Comparisons and Tests for Simple Effect, the number of significant F ratios is above that expected at the .05 level of confidence. (16, pp. 172-175)

TABLE VII

MEAN RATINGS FOR MEN AND WOMEN ON THE MOTHER CONCEPT

Blot Number	Men	Women
1	4.51	3.94
2	4.18	3.95
3	4.22	4.00
4	4.42	4.41
5	4.64	4.50
6	4.16	3.53
7	4.20	3.80
8	4.53	4.25
9	4.42	4.17
10	3.87	3.74
11	4.49	4.22
12	4.53	4.18
13	4.71	4.10
14	4.42	4.12
15	4.67	4.04
16	4.31	4.06
17	4.36	3.91
18	4.29	4.32
19	4.44	4.17
20	4.51	4.23
21	4.53	4.15
22	4.47	4.06
23	4.78	4.44
24	4.74	4.43
25	4.36	3.76
26	4.47	4.49
27	4.53	4.03
28	4.11	3.84
29	4.67	4.43
30	4.69	4.30
31	4.38	4.47
32	4.44	4.44
33	4.51	4.19
34	4.27	3.98
35	4.31	4.25
36	4.67	4.45
37	4.42	4.32
38	4.44	4.28
39	4.11	3.76
40	4.76	4.56
41	4.47	4.11
42	4.00	3.39
43	4.58	4.50
44	4.07	3.50
45	4.44	3.92

TABLE VIII

SIGNIFICANT F RATIOS IN INDIVIDUAL COMPARISONS OF THE SUM OF THE MEAN RATINGS OF THE MOTHER CONCEPT WITH THE MEAN RATINGS ON THE OTHER CONCEPTS

Blot No.	Father	Social	Male	Female	Sex	Frightening
1		45.16	30.70	52.32	98.03	2.70
2		53.36	50.14	45.00	21.36	32.94
4		180.13	32.85	22.93	30.40	150.32
5	37.50	183.71	162.24	7.71	3.23	89.71
7	31.74	24.8067	2.67	168.54	80.67	57.66
10		107.63	88.95	80.93	50.55	106.13
12		62.56	80.40	145.64	36.00	13.25
13	7.61	38.27		18.69	4.36	15.02
14		117.38	126.52	86.79	42.98	12.88
22		37.06	33.31	10.00	35.16	63.76
23		12.66	24.03	29.76	19.60	211.60
24	6.61	154.01	68.45			88.20
27		235.88	38.01	37.34	21.38	7.88
28	63.62	61.20	8.49	33.09	16.52	27.20
29	13.5	121.50	132.54	22.43	12.33	322.67
32		74.26	104.01	115.60	108.90	33.31
33		247.51	6.56	3.91		4.90
35		9.51	2.76	32.40	9.51	25.60
36		55.31	36.08	17.60	15.28	96.44
37	2.41	313.93	42.67	117.93	79.21	
38		28.35	24.03	56.64	24.86	2.31
39	20.00	88.20		36.45	16.20	16.20
40	2.78	80.03	84.81	11.11	12.31	581.7508
41		276.10	73.48	276.10	92.68	2.50

F = 2.10 is significant at the .05 level.
F = 2.80 is significant at the .01 level.

TABLE IX

F RATIOS BETWEEN MEN AND WOMEN ON THE MOTHER CONCEPT

Blot Number	F Ratio
3	.77
6	6.01*
8	1.46
9	.02
11	29.63**
15	7.30**
16	.86
17	3.21
18	.02
19	1.11
21	2.62
25	6.44*
31	41.45**
34	1.49
42	6.49*
43	.00
44	5.36*
45	4.61*

p = .01 **
p = .05 *

mentioned Blots with the exception of Blot 24 for "Female" and Blot 37 for "Frightening or Fear Arousing." The "Male" concept like the "Social" concept differed significantly from the "Mother" concept on all of the Blots except 13 and 39 as did the "Sex" concept which differed from all of the above mentioned Blots except 24 and 33. There were significant differences between sexes on all the concept ratings. Men tend to rate the blots higher for "Mother" but all data were high and indicate that the "Mother" concept like the "Father" concept does not seem to be associated with any of the blots.

The differences between the "Social" concept and other concepts were also compared (See Table XI for results). The "Social concept differed from the "Mother" and "Father" concepts on Blots 1, 2, 4, 5, 7, 10, 12-14, 22-24, 27-29, 32, 33, and 35-40, and from "Frightening or Fear Arousing" on Blots 1, 2, 5, 7, 10, 12-14, 22-24, 27-29, 32, 33, and 35-41. "Male" and "Female" differed respectively from "Social" on Blots 4, 7, 12, 13, 24, 27, 28, 32, 33, 35-37, 39, and 41 and 4, 5, 7, 12-14, 22-24, 27-29, 32, 33, and 35-40 as did the "Sex" concept on Blots 1, 2, 4, 5, 7, 10, 12-14, 24, 27-29, 32, 33, 36, 37, and 39-41. There were significant sex differences between ratings on the "Social" concept as indicated in Table XII. Most of the mean ratings (See Table X) indicated only a possible suggestion of the "Social" concept. However, Blots 12, 19, 25, 27, 34, and 35 all had low mean ratings for both sexes indicating that an association between these blots and the "Social" concept does exist.

Tables XIII, XIV, and XV present the results for the "Male"

TABLE X

MEAN RATINGS FOR MEN AND WOMEN ON THE SOCIAL CONCEPT

Blot Number	Men	Women
1	3.93	3.21
2	3.91	3.24
3	3.91	3.54
4	3.62	3.36
5	3.87	3.61
6	3.47	3.06
7	3.91	3.48
8	3.87	3.49
9	3.76	3.56
10	3.31	2.87
11	4.16	3.88
12	2.67	2.33
13	4.09	3.89
14	3.51	3.46
15	4.27	3.49
16	3.87	3.54
17	3.29	3.02
18	3.29	3.45
19	2.33	2.19
20	4.11	3.81
21	3.49	3.21
22	3.87	3.89
23	4.62	4.15
24	4.16	3.94
25	2.33	2.48
26	4.33	4.15
27	2.93	2.84
28	3.62	3.31
29	4.07	3.68
30	3.96	3.75
31	4.04	4.07
32	4.04	3.75
33	3.42	3.29
34	2.16	2.66
35	4.22	3.95
36	4.20	4.14
37	3.42	3.15
38	4.24	3.85
39	3.33	3.28
40	4.27	4.03
41	3.07	2.99
42	3.78	3.58
43	4.11	3.98
44	3.64	3.61
45	2.60	2.75

TABLE XI

SIGNIFICANT F RATIOS IN INDIVIDUAL COMPARISONS OF THE SUM OF THE MEAN RATINGS OF THE SOCIAL CONCEPT WITH THE MEAN RATINGS ON THE OTHER CONCEPTS

Blot No.	Father	Mother	Male	Female	Sex	Frightening
1	38.53	45.16			10.12	25.79
2	70.94	53.36			7.20	2.45
4	176.26	180.13	59.14	74.53	62.53	
5	55.21	183.71		116.16	138.24	16.67
7	112.67	24.81	11.21	64.03	16.01	158.11
10	116.05	107.63			10.68	427.50
12	666.77	625.64	257.47	167.56	361.47	456.77
13	80.02	38.27	54.45	3.47	16.81	101.25
14	104.31	117.38		2.30	18.30	52.50
22	29.76	37.06		8.56		3.60
23	5.26	12.66		3.60		120.76
24	96.80	154.01	17.11	135.20	135.20	9.11
27	272.73	235.88	84.51	85.53	115.23	330.00
28	249.63	61.20	11.52	4.29	141.32	170.00
29	54.00	121.50		39.53	56.43	48.17
32	60.02	74.26	2.50	4.56	3.31	8.10
33	228.01	247.51	164.02	189.22	242.56	322.06
35	12.10	9.51	2.02	6.81		3.91
36	37.24	55.31	2.04	10.51	12.44	5.68
37	371.31	313.93	125.13	47.04	77.76	269.34
38	44.58	28.35		4.83		14.46
39	192.20	88.20	98.27	11.25	28.80	180.00
40	52.99	84.81		27.69	29.57	230.20
41			64.71		48.85	381.20

F = 2.10 is significant at the .05 level.
F = 2.80 is significant at the .01 level.

TABLE XII

F RATIOS BETWEEN MEN AND WOMEN ON THE SOCIAL CONCEPT

Blot Number	F Ratio
3	2.39
6	2.54
8	2.57
9	.67
11	1.39
15	11.21**
16	1.55
17	1.17
18	.41
19	.30
21	1.62
25	3.90*
31	.01
34	4.40*
42	.68
43	.38
44	.02
45	.35

p = .01 **
p = .05 *

TABLE XIII

MEAN RATINGS FOR MEN AND WOMEN ON THE MALE CONCEPT

Blot Number	Men	Women
1	3.96	3.41
2	3.78	3.40
3	4.20	4.26
4	4.22	3.82
5	3.87	3.71
6	3.80	3.10
7	4.09	3.71
8	4.36	3.56
9	4.27	3.86
10	3.42	2.89
11	4.40	3.70
12	3.87	3.51
13	4.71	4.26
14	3.64	3.27
15	3.78	3.51
16	4.13	3.78
17	3.87	3.36
18	4.00	3.57
19	3.17	2.65
20	4.29	3.95
21	3.91	3.67
22	4.02	3.78
23	4.47	4.13
24	4.31	4.16
25	3.20	2.76
26	4.24	3.83
27	3.77	3.67
28	4.16	4.17
29	3.88	3.81
30	4.53	4.23
31	4.02	3.48
32	4.04	3.55
33	4.22	4.11
34	3.02	2.55
35	4.47	3.88
36	4.40	4.09
37	3.98	3.96
38	4.33	3.81
39	4.04	3.90
40	4.24	4.03
41	3.76	3.52
42	4.56	4.33
43	3.98	3.75
44	4.42	3.70
45	3.33	3.12

TABLE XIV

SIGNIFICANT F RATIOS IN INDIVIDUAL COMPARISONS OF THE SUM OF THE MEAN RATINGS OF THE MALE CONCEPT WITH THE MEAN RATINGS ON THE OTHER CONCEPTS

Blot No.	Father	Mother	Social	Female	Sex	Frightening
1	25.27	30.69		2.87	19.01	15.20
2	67.22	50.14			6.05	
4	31.20	32.85	59.14			42.63
5	43.74	162.24		99.23	119.71	10.67
7	52.81	2.67	11.21	128.81	54.00	85.13
10	98.78	88.95			5.39	389.39
12	95.57	80.40	257.47	9.62	8.80	29.82
13	2.45		54.45	30.42	10.76	7.20
14	112.93	126.52		3.73	22.02	58.67
22	26.41	33.31		6.81		4.90
23	13.22	24.02				93.02
24	32.51	68.45	17.11	56.11	56.11	
27	53.60	38.01	84.51		2.38	80.51
28	25.62	8.49	11.52	75.11		5.29
29	61.44	132.54		45.93	64.03	41.61
32	87.02	104.01	2.50			19.60
33	5.26	8.56	164.02		7.66	26.41
35	4.22	2.76		16.26		11.56
36	21.83	36.08		3.28	4.40	14.54
37	65.34	42.67		18.73	5.61	27.31
38	39.11	24.03		6.86		11.43
39	15.61		98.27	43.02	20.67	12.27
40	56.89	84.81		30.53	32.65	222.31
41	88.91	73.48	64.71	64.71		103.11

F = 2.10 is significant at the .05 level.
F = 2.80 is significant at the .01 level.

TABLE XV

F RATIOS BETWEEN MEN AND WOMEN ON THE MALE CONCEPT

Blot Number	F Ratio
3	.06
6	7.52**
8	11.49**
9	2.90
11	1.05
15	1.33
16	1.81
17	5.19*
18	2.91
19	4.10*
21	1.04
25	3.19
31	165.12**
34	97.49**
42	.89
43	1.15
44	8.70**
45	.76

p = .01 **
p = .05 *

concept. This concept differed significantly in ratings from the "Father" concept on the following Blots: 1, 2, 4, 5, 7, 10, 12-14, 22-24, 27-29, 32, 33, and 35-41. The "Male" and "Mother" concepts differed on all of the above Blots except 13 and 39, and the "Male" and "Frightening or Fear Arousing" differed on all except Blots 2 and 24. Significant differences between ratings for "Social" and "Male" were obtained on Blots 4, 7, 12, 13, 24, 27, 28, 32, 33, 39 and 41, as were ratings for "Sex" and "Male" on Blots 1, 5, 7, 12-14, 22, 24, 28, 29, and 35-41. In comparing "Female" and "Male" ratings on Cards 1, 2, 5, 7, 10, 12-14, 24, 27, 29, 33, 36, 37, 40, and 41 differed significantly. Significant sex differences in ratings on the "Male" concept were also yielded on Cards 6, 8, 17, 19, 31, 34, and 44. Men rated the blots as being only possibly associated or not associated with "Male." Women generally rated the blots as having only a possible association with the "Male" concept, but Cards 10, 19, 25, and 34 had means low enough to indicate an association between these blots and this concept. These results suggest that sex differences can be important in blot associations or responses and that women associate the "Male" concept with Blots 10, 19, 25, and 34 much more than do men.

Results relating to the "Female" concept are presented in Tables XVI, XVII, and XVIII. The "Father" and "Female" concepts differed significantly on 21 blots (1, 2, 4, 5, 7, 10, 12-14, 22-24, 27, 28, 32, and 35-41). The "Mother" concept differed significantly from the "Female" concept on Cards 1, 2, 4, 5, 7, 10, 12-14, 22, 23, 27-29, 32, 33, and 35-41. The "Female" and "Social" concepts differed on Blots 4, 5, 7,

TABLE XVI

MEAN RATINGS FOR MEN AND WOMEN ON THE FEMALE CONCEPT

Blot Number	Men	Women
1	3.73	3.31
2	3.89	3.34
3	3.78	3.67
4	4.20	3.97
5	4.47	4.33
6	3.60	2.84
7	3.31	3.10
8	4.33	3.90
9	3.87	3.95
10	3.29	3.08
11	4.06	3.75
12	3.69	3.23
13	4.11	4.12
14	3.78	3.41
15	4.33	3.78
16	3.89	3.54
17	3.80	3.48
18	3.56	3.64
19	2.96	2.92
20	4.11	4.01
21	4.24	3.76
22	4.42	3.71
23	4.31	4.22
24	4.67	4.47
25	3.49	3.26
26	4.13	4.05
27	4.02	3.43
28	3.93	3.27
29	4.24	4.28
30	4.73	4.41
31	3.93	3.74
32	3.87	3.65
33	4.33	4.12
34	3.67	3.49
35	4.16	3.68
36	4.49	4.19
37	3.82	3.59
38	4.16	3.67
39	3.60	3.46
40	4.62	4.32
41	3.16	2.86
42	2.93	2.98
43	3.98	4.39
44	3.44	3.17
45	3.87	3.29

TABLE XVII

SIGNIFICANT F RATIOS IN INDIVIDUAL COMPARISONS OF THE SUM OF THE MEAN RATINGS OF THE FEMALE CONCEPT WITH THE MEAN RATINGS ON THE OTHER CONCEPTS

Blot No.	Father	Mother	Social	Male	Sex	Frightening
1	45.16	52.32		2.87	7.12	31.27
2	61.25	45.00		6.05	4.36	
4	21.42	22.93	74.53			5.58
5	11.21	7.71	116.16	99.23		44.83
7	346.56	168.54	64.03	128.61	16.01	423.36
10	90.32	80.93			3.56	372.40
12	165.82	145.64	167.56	9.62	147.27	71.02
13	50.14	18.69	3.47	30.42	5.00	67.22
14	75.60	86.79	2.30	3.73	7.62	32.80
22	6.40	10.00	8.56	6.81	7.66	23.26
23	17.56	29.76	3.60			82.66
24	3.20		135.20	56.11		74.11
27	52.80	37.34	85.53		2.21	79.53
28	188.48	33.09	4.29	75.11	96.38	120.29
29		22.43	39.53	45.93		174.96
32	97.66	115.60	4.56			24.81
33		3.91	189.22		3.31	17.56
35	37.06	32.40	6.80	16.26	6.81	
36	8.18	17.60	10.51	3.28		31.64
37	154.03	117.93	47.04	18.72	3.84	91.26
38	78.75	56.64	4.83	6.86	6.43	36.01
39	110.45	36.45	11.25	43.02	4.05	101.25
40	2.78	11.11	27.69	30.53		132.07
41	305.33	276.10		64.71	52.61	340.87

F = 2.10 is significant at the .05 level.
F = 2.80 is significant at the .01 level.

TABLE XVIII

F RATIOS BETWEEN MEN AND WOMEN ON THE FEMALE CONCEPT

Blot Number	F Ratio
3	.18
6	13.82**
8	3.41
9	.12
11	1.83
15	65.57**
16	1.76
17	1.66
18	.11
19	.02
21	4.19*
25	59.43**
31	.70
34	.57
42	.04
43	3.77
44	1.26
45	5.58*

p = .01 **
p = .05 *

12-14, 22-24, 27-29, 32, 33, and 35-40. The "Frightening or Fear Arousing" and "Female" concepts had significant differences in ratings on Blots 1, 4, 5, 7, 10, 12-14, 22-24, 27-29, 32, 33, and 36-41. Significant differences were also noted between "Male" and "Female" on Blots 1, 2, 5, 7, 12-14, 22, 24, 29, and 35-41, and between "Sex" and "Female" on Blots 1, 2, 7, 10, 12-14, 22, 27, 28, 33, 35, 37-39, and 41. Significant sex differences were also noted on Blots 6, 8, 15, 21, 25, 43, and 45. Means for both Men and Women for the "Female" concept are presented in Table XVI. Mean ratings generally indicate only a possible association or no association of the concept to most of the Blots. Women, however, rated Cards 6 and 41 as having an association with the "Female" concept, and both men and women associated "Female" with Blots 19 and 42.

Table XX presents the Individual Comparisons of the "Sex" Concept with the other Concepts. Significant differences between "Father" and "Sex" were noted on Cards 1, 2, 4, 5, 7, 10, 12-14, 22-24, 27, 28, and 35-41, and between "Mother" and "Sex" on Blots 1, 2, 4, 5, 7, 10, 12-14, 22, 23, 27-29, 32, and 35-41. The "Social" concept differed significantly in ratings from the "Sex" concept on 20 Blots (1, 2, 4, 5, 7, 10, 12-14, 24, 27-29, 32, 33, 36, 37, and 39-41) as did the "Frightening or Fear Arousing" concept on 21 Blots (1, 4, 5, 7, 10, 12-14, 22-24, 27, 29, 32, 33, and 35-41). The "Male concept was rated significantly different from the "Sex" concept on 16 Blots (1, 2, 5, 7, 10, 12-14, 24, 27, 28, 33, 35, 37-39, and 41). Significant sex differences on the "Sex" concept occurred on Blots 6, 8, and 18. Both sexes rated all of the Blots as having only a possible association or no association with the

TABLE XIX

MEAN RATINGS FOR MEN AND WOMEN ON THE SEX CONCEPT

Blot Number	Men	Women
1	3.47	3.05
2	3.82	3.69
3	3.93	3.70
4	4.13	3.94
5	4.60	4.32
6	3.91	3.00
7	3.40	3.50
8	4.36	3.79
9	3.93	3.97
10	3.18	3.42
11	4.09	3.71
12	3.89	3.93
13	4.29	4.29
14	4.02	3.57
15	3.82	3.55
16	3.96	3.64
17	4.04	3.56
18	3.89	3.94
19	2.42	3.16
20	4.20	4.04
21	4.13	3.97
22	4.04	3.74
23	4.38	4.28
24	4.64	4.50
25	3.56	3.37
26	4.20	4.20
27	4.00	3.72
28	4.36	4.12
29	4.40	4.27
30	4.60	4.34
31	3.80	3.68
32	3.76	3.80
33	4.31	4.37
34	3.69	3.71
35	4.24	3.93
36	4.42	4.29
37	3.84	3.81
38	3.33	3.80
39	3.69	3.64
40	4.60	4.32
41	3.40	3.72
42	3.64	3.97
43	4.22	4.34
44	4.02	3.69
45	4.13	3.89

TABLE XX

SIGNIFICANT F RATIOS IN INDIVIDUAL COMPARISONS OF THE SUM OF THE MEAN RATINGS OF THE SEX CONCEPT WITH THE MEAN RATINGS ON THE OTHER CONCEPTS

Blot No.	Father	Mother	Social	Male	Female	Frightening
1	88.13	98.02	10.12	19.01	7.12	68.21
2	32.94	21.36	7.20	6.05	4.36	
4	28.82	30.40	62.53			45.52
5	18.73	3.23	138.24	119.71		58.91
7	213.61	80.67	16.01	54.00	16.01	274.73
10	58.03	50.55	10.67	5.38	3.56	303.16
12	46.37	36.00	361.47	8.80	147.27	5.57
13	23.47	4.36	16.81	10.76	5.00	35.56
14	35.22	42.98	18.30	22.02	7.62	8.80
22	28.06	35.16			7.66	4.22
23	10.00	19.60				102.40
24	3.20		135.20	56.11		74.11
27	33.41	21.38	115.23	2.38	2.21	55.23
28	15.30	16.52	141.32		96.38	
29		12.33	56.43	64.03		208.86
32	91.51	108.90	3.31			21.76
33			242.56	7.66	3.31	5.62
35	12.10	9.51			6.81	3.91
36	6.63	15.28	12.44	4.40		34.94
37	109.23	79.21	77.76	5.61	3.84	57.66
38	40.18	24.86			6.43	12.01
39	72.20	16.20	28.80	20.67	4.05	64.80
40	3.39	12.31	29.57	32.65		524.81
41	109.92	92.68	48.85		52.61	125.65

F = 2.10 is significant at the .05 level.
F = 2.80 is significant at the .01 level.

TABLE XXI

F RATIOS BETWEEN MEN AND WOMEN ON THE SEX CONCEPT

Blot Number	F Ratio
3	.85
6	12.75**
8	5.80*
9	.02
11	2.62
15	1.34
16	1.44
17	3.79
18	.04
19	8.01**
21	.48
25	.63
31	.27
34	.01
42	1.84
43	.31
44	.18
45	.99

p = .01 **
p = .05 *

"Sex" concept except Blot 19 which the men associated with the "Sex" concept.

Tables XXII, XXIII, and XXIV present the data for the "Frightening or Fear Arousing" concept. The following results were yielded: the "Father" concept differed significantly from the "Frightening or Fear Arousing" concept on 21 blots (1, 2, 4, 5, 7, 10, 12, 14, 22-24, 27-29, 32, 33, 35-38, and 40), and the "Mother" concept differed on 22 blots (1, 2, 4, 5, 7, 10, 12-14, 22-24, 27-29, 32, 33, 35, 36, 38-41). The "Social" concept differed on all of the blots (i.e., Blots 1, 2, 4, 5, 7, 10, 12-14, 22-24, 27-29, 32, 33, 35-41) except Blot 4 as did the "Male" concept on all except Blots 2 and 23. Blots 2 and 35 were the only blots not significantly different in ratings between the "Female" and "Sex" concepts. The "Frightening or Fear Arousing" concept differed from "Sex" on 21 blots (1, 4, 5, 7, 10, 12-14, 22-24, 28, 29, 32, 33, and 35-41). Significant sex differences were also noted on Blots 8, 15, 17, and 42.

Mean ratings for men and women on the "Frightening or Fear Arousing" concept are presented in Table XXII. Both groups gave the blots high ratings on this concept which suggests only a possible association or no association. The only exception was an association of "Frightening or Fear Arousing" with Blot 40 by the women.

TABLE XXII

MEAN RATINGS FOR MEN AND WOMEN ON THE FRIGHTENING OR FEAR AROUSING CONCEPT

Blot Number	Men	Women
1	4.13	4.00
2	3.76	3.60
3	3.58	3.46
4	3.60	3.54
5	4.11	3.87
6	4.16	4.45
7	4.58	4.35
8	3.80	3.97
9	3.93	3.38
10	4.51	4.52
11	3.47	3.71
12	4.13	4.04
13	4.69	4.64
14	4.22	3.80
15	4.09	4.41
16	3.31	3.83
17	4.47	4.36
18	4.24	3.35
19	4.13	3.96
20	4.11	4.01
21	4.04	4.04
22	3.78	3.74
23	3.91	3.47
24	4.42	3.95
25	4.49	4.32
26	3.36	3.16
27	4.58	4.49
28	4.40	4.23
29	3.42	3.48
30	4.13	4.03
31	3.91	3.76
32	4.24	3.91
33	4.64	4.34
34	4.53	4.11
35	4.22	3.70
36	4.11	3.98
37	4.38	4.20
38	4.36	4.18
39	4.31	4.10
40	3.60	2.97*
41	4.44	4.38
42	4.84	4.69
43	4.42	3.99
44	4.44	4.55
45	4.38	4.46

TABLE XXIII

SIGNIFICANT F RATIOS IN INDIVIDUAL COMPARISONS OF THE SUM OF THE MEAN RATINGS OF THE FRIGHTENING OR FEAR AROUSING CONCEPT WITH THE MEAN RATINGS ON THE OTHER CONCEPTS

Blot No.	Father	Mother	Social	Male	Female	Sex
1	12.74	2.69	25.79	15.20	31.27	68.21
2	47.02	32.94	2.45			
4	146.78	150.32		42.63	5.58	45.52
5	11.21	89.71	16.67	10.67	44.83	58.91
7	3.84	57.66	158.11	85.13	423.36	274.73
10	95.92	106.13	427.50	389.39	372.400	303.16
12	19.80	13.25	456.77	29.82	71.02	5.57
13		15.02	101.25	7.20	67.22	35.56
14	8.81	12.88	52.50	58.67	32.81	8.80
22	54.06	63.76	3.60	4.90	23.25	4.22
23	176.40	211.60	120.76	93.02	82.66	102.40
24	46.51	88.20	9.11		74.11	74.11
27	2.73	7.88	330.00	80.51	79.53	55.23
28	7.62	27.20	170.00	5.29	120.29	
29	204.17	322.67	48.17	41.61	174.96	208.86
32	24.02	33.31	8.10	19.60	24.81	21.76
33	8.10	4.90	322.06	26.41	17.56	5.62
35	29.76	25.60	3.91	11.56		3.91
36	72.01	96.44	5.68	14.54	31.64	34.94
37	8.17		269.34	27.31	91.26	57.66
38	8.26	2.31	14.46	11.43	36.01	12.01
39		16.20	180.00	12.27	101.25	64.80
40	504.12	581.75	230.20	222.31	432.07	524.81
41		2.50	331.20	103.11	340.87	125.65

F = 2.10 is significant at the .05 level.
F = 2.80 is significant at the .01 level.

TABLE XXIV

F RATIOS BETWEEN MEN AND WOMEN ON THE FRIGHTENING OR FEAR AROUSING CONCEPT

Blot Number	F Ratio
3	.22
6	1.33
8	.41
9	5.37*
11	1.08
15	1.92
16	3.90*
17	.18
18	12.60**
19	.44
21	.00
25	.52
31	.42
34	3.25
42	.40
43	4.14*
44	.19
45	.11

p = .01 **
p = .05 *

CHAPTER IV

THE DISCUSSION

The results of this investigation on the possible associations of the "Father," "Mother," "Social," "Male," "Female," "Sex," and "Frightening or Fear Arousing" Concepts with any of the Holtzman Inkblots yielded many significant F ratios relating to sex and concept differences in ratings. The analysis of sex differences revealed that the blots have less association to the concepts for men than for women. (This was not true, however, for all of the concepts or all of the blots.) Individual ratings ranged from 1-5 with some of the blots having a strong association to certain concepts to a large number of judges. However, no group mean for either sex was low enough (1.99 or less) to suggest a very strong association between any of the blots and concepts over a large number of judges. Thirty-eight of the blots were rated as having only a possible association or no association. The other seven blots (i.e. 13, 23, 24, 26, 30, 36, and 40) had high means indicating no possible association between these blots and five or more of the concepts investigated. (See Table III, VII, X, XIII, XVI, XIX, and XXII)

Concept analysis revealed many significant differences between

ratings of the different concepts on the same blot.* Sex differences between ratings on the same concepts were also significant for a number of the blots (See Tables V, IX, XII, XV, XVIII, XXI, and XXIV). In reviewing the results in relation to the concepts investigated, the findings can be summarized as follows:

The "Father" concept generally was not associated with any of the blots. Means for both men and women indicated only a possible association or no association between this concept and the Holtzman Inkblots. The "Father" concept had significantly different ratings from the other concepts investigated on most of the blots.

The "Mother" concept was judged to have only a possible association or no association with the blots. This concept was given significantly different ratings from the other concepts on the blots.

The "Social" concept was associated with Blots 12, 19, 25, 27, 34, and 45 by both men and women (See Table X). Significant differences between the way the men and women rated this concept were also noted on Blots 25 and 34 which were associated with the "Social" concept.

Men and women generally rated the Holtzman Inkblots as having only a possible association or no association with the "Male" concept. However, four blots, Blots 10, 19, 25, and 34, were associated with the "Male" concept by the women. Again, it appears that sex differences were important in blot interpretation on these four cards.

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*Both Individual Comparisons and tests on Simple Effects yielded this result.

The "Female" concept was generally given only a possible association or no association by both men and women. Blots 19 and 42, however, were associated with the "Female" concept by both sexes and Blots 6 and 41 were also associated with this concept by the women.

The "Sex" concept, like the "Mother" and "Father" concepts, was generally given only a possible association or no association with the Holtzman Blots. The one exception was Card 19 which was judged as resembling the "Sex" concept by men only.

The "Frightening or Fear Arousing" concept was associated with Blot 40 by the women while men judged this blot as having only a possible association. The remainder of the Holtzman Blots were judged by both sexes as only possibly resembling the "Frightening or Fear Arousing" concept or as having no resemblance at all.

One of the trends within the last few decades has been to use content analysis and symbolism rather than statistical analysis in Rorschach interpretation. The literature includes many comments and empirical investigations on symbolism related to the Rorschach Blots. Rorschach himself in his book, Psychodiagnostics, had written, "The Content of the interpretations offers little indication as to the content of the psyche until it is considered in relation to the psychogram" (14, p. 120). The results of the present investigation seem to support Rorschach's statement about content interpretation. Most of the concepts frequently alleged to be related to the Rorschach blots were judged not to be associated to the Holtzman Blots. There were no "Mother" or "Father" blots and "Male," "Sex," and "Fear Arousing or Frightening"

blots were limited to one or the other sex rather than both sexes. Blots 19 and 42 were judged "Female" Blots, and Blots 12, 19, 25, 27, 34, and 45 were judged "Social" Blots by both men and women judges in the investigation. Three blots were associated with more than one concept. Blot 19 was associated with the "Social" and "Female" concepts by both sexes and with the "Male" concept by women and the "Sex" concept by men. Blot 25 was associated with the "Social" concept by both men and women and with the "Male" concept by women as was Blot 34. This would seem to cause some confusion as to which interpretation these blots should be given, and it brings up the question of how valuable content analysis or symbolism is in relation to the factors involved in blot interpretation. Certainly the results of this study should not be taken as a final one. It may well be that college students differ somewhat from other populations in relating symbolism to inkblots and it would seem wise to repeat this investigation or to conduct a similar one with subjects drawn from other populations.

CHAPTER V

THE SUMMARY

The present study was conducted to investigate whether symbolic concepts, already empirically related to the Rorschach, are also related to certain Holtzman Inkblots. One hundred women and forty-five men from the University of Richmond were asked to rate each of the 45 Blots in Form A on the following concepts: "Father," "Mother," "Social," "Male," "Female," "Sex," and "Frightening or Fear Arousing." Blots were projected on a screen and ratings were made on a five-point scale to indicate: (1) a strong association, (2) an association but not a strong one, (3) only a possible association, (4) no obvious association, and (5) no possible association. Data were analyzed by Analysis of Variance.

The results may be summarized as follows:

The "Mother" and "Father" concepts were not related to any of the Holtzman Inkblots.

The "Social" concept was associated by judges of both sexes on Blots 12, 19, 25, 27, 34, and 45.

The "Male" concept was associated with Blots 10, 19, 25, and 34 by women only.

The "Female" concept was associated with Blots 19 and 42 by both men and women and with Blots 6 and 41 by women only.

The "Sex" concept was associated with Blot 19 by men only.

The "Frightening or Fear Arousing" concept was associated with Blot 40 by women only.

It was also noted Blots 19, 25, and 34 were associated with more than one concept. Rorschach had indicated that content interpretation was valuable only when considered in relation to the more formal scoring factors, and the writer feels that the present study's results support this.

THE APPENDIX

ANALYSIS OF VARIANCE SUMMARY TABLES FOR FORM A OF THE HOLTZMAN INKBLOTS

ANALYSIS OF VARIANCE CARD 1

Source of Variation	dF	MS	F
Between Subjects	144		
Sex Differences	1	42.35	17.08**
Subjects w. groups	143	2.48	
Within Subjects	870		
Concepts	6	17.21	7.29**
Sex Differences x Concepts	6	1.01	.004
Concepts x subjects w. groups	858	2.36	
Total	1014		

ANALYSIS OF VARIANCE CARD 2

Source of Variation	dF	MS	F
Between Subjects	144		
Sex Differences	1	76.25	21.12**
Subjects w. groups	143	3.61	
Within Subjects	870		
Concepts	6	14.69	13.12**
Sex Differences x Concepts	6	1.96	1.75
Concepts x subjects w. groups	858	1.12	
Total	1014		

$F(1, 143) = 3.91$ $p = .01^{**}$
$F(6, 858) = 2.10$ $p = .05^{*}$

ANALYSIS OF VARIANCE CARD 3

Source of Variation	dF	MS	F
Between Subjects	144		
Sex Differences	1	5.02	1.43
Subjects w. groups	143	3.51	
Within Subjects	870		
Concepts	6	17.77	12.43**
Sex Differences x Concepts	6	5.24	3.66**
Concepts x subjects w. groups	858	1.43	
Total	1014		

ANALYSIS OF VARIANCE CARD 4

Source of Variation	dF	MS	F
Between Subjects	144		
Sex Differences	1	26.64	7.34**
Subjects w. groups	143	3.63	
Within Subjects	870		
Concepts	6	15.82	13.07**
Sex Differences x Concepts	6	1.12	.93
Concepts x subjects w. groups	858	1.21	
Total	1014		

F (1, 143) = 3.91
F (6, 858) = 2.10

p = .01**
p = .05*

ANALYSIS OF VARIANCE CARD 5

Source of Variation	dF	MS	F
Between Subjects	144		
Sex Differences	1	9.91	1.84
Subjects w. groups	143	5.39	
Within Subjects	870		
Concepts	6	16.33	17.01**
Sex Differences x Concepts	6	.13	.14
Concepts x subjects w. groups	858	.96	
Total	1014		

ANALYSIS OF VARIANCE CARD 6

Source of Variation	dF	MS	F
Between Subjects	144		
Sex Differences	1	57.58	13.00**
Subjects w. groups	143	4.43	
Within Subjects	870		
Concepts	6	11.29	9.18**
Sex Differences x Concepts	6	4.80	3.90**
Concepts x subjects w. groups	858	1.23	
Total	1014		

F (1, 143) = 3.91
F (6, 858) = 2.10

p = .01**
p = .05*

ANALYSIS OF VARIANCE CARD 7

Source of Variation	dF	MS	F
Between Subjects	144		
Sex Differences	1	16.44	3.11
Subjects w. groups	143	5.29	
Within Subjects	870		
Concepts	6	25.97	28.54**
Sex Differences x Concepts	6	1.08	1.19
Concepts x subjects w. groups	858	.91	
Total	1014		

ANALYSIS OF VARIANCE CARD 8

Source of Variation	dF	MS	F
Between Subjects	144		
Sex Differences	1	33.29	2.29
Subjects w. groups	143	14.51	
Within Subjects	870		
Concepts	6	7.46	7.11**
Sex Differences x Concepts	6	2.55	2.43*
Concepts x subjects w. groups	858	1.05	
Total	1014		

$F(1, 143) = 3.91$ $p = .01^{**}$
$F(6, 858) = 2.10$ $p = .05^{*}$

ANALYSIS OF VARIANCE CARD 9

Source of Variation	dF	MS	F
Between Subjects	144		
Sex Differences	1	10.54	2.07
Subjects w. groups	143	5.09	
Within Subjects	870		
Concepts	6	9.08	19.17**
Sex Differences x Concepts	6	11.69	11.81**
Concepts x subjects w. groups	858	.99	
Total	1014		

ANALYSIS OF VARIANCE CARD 10

Source of Variation	dF	MS	F
Between Subjects	144		
Sex Differences	1	4.38	.76
Subjects w. groups	143	5.75	
Within Subjects	870		
Concepts	6	34.08	28.17**
Sex Differences x Concepts	6	2.45	2.02
Concepts x subjects w. groups	858	1.21	
Total	1014		

$F(1, 143) = 3.91$ $p = .01^{**}$
$F(6, 858) = 2.10$ $p = .05^{*}$

ANALYSIS OF VARIANCE CARD 11

Source of Variation	dF	MS	F
Between Subjects	144		
Sex Differences	1	21.41	6.43*
Subjects w. groups	143	3.33	
Within Subjects	870		
Concepts	6	7.71	6.70**
Sex Differences x Concepts	6	3.46	3.01**
Concepts x Subjects w. groups	858	1.15	
Total	1014		

ANALYSIS OF VARIANCE CARD 12

Source of Variation	dF	MS	F
Between Subjects	144		
Sex Differences	1	6.35	1.25
Subjects w. groups	143	5.10	
Within Subjects	870		
Concepts	6	53.90	3.88**
Sex Differences x Concepts	6	2.55	1.83
Concepts x Subjects w. groups	858	1.39	
Total	1014		

$F(1, 143) = 3.91$ $p = .01^{**}$
$F(6, 858) = 2.10$ $p = .05^{*}$

ANALYSIS OF VARIANCE CARD 13

Source of Variation	dF	MS	F
Between Subjects	144		
Sex Differences	1	13.06	8.48*
Subjects w. groups	143	1.54	
Within Subjects	870		
Concepts	6	8.50	7.59**
Sex Differences x Concepts	6	1.36	1.21
Concepts x Subjects w. groups	858	1.12	
Total	1014		

ANALYSIS OF VARIANCE CARD 14

Source of Variation	dF	MS	F
Between Subjects	144		
Sex Differences	1	20.25	4.94*
Subjects w. groups	143	4.10	
Within Subjects	870		
Concepts	6	14.54	8.51**
Sex Differences x Concepts	6	.66	.49
Concepts x Subjects w. groups	858	1.34	
Total	1014		

$F(1, 143) = 3.91$ $p = .01^{**}$
$F(6, 858) = 2.10$ $p = .05^{*}$

ANALYSIS OF VARIANCE CARD 15

Source of Variation	dF	MS	F
Between Subjects	144		
Sex Differences	1	33.27	7.31*
Subjects w. groups	143	4.55	
Within Subjects	870		
Concepts	6	10.29	11.19**
Sex Differences x Concepts	6	4.13	4.49**
Concepts x Subjects w. groups	858	.92	
Total	1014		

ANALYSIS OF VARIANCE CARD 16

Source of Variation	dF	MS	F
Between Subjects	144		
Sex Differences	1	11.14	2.42
Subjects w. groups	143	4.60	
Within Subjects	870		
Concepts	6	11.80	8.55**
Sex Differences x Concepts	6	3.56	2.58*
Concepts x Subjects w. groups	858	1.38	
Total	1014		

$F(1, 143) = 3.91$ $p = .01^{**}$
$F(6, 858) = 2.10$ $p = .05^{*}$

ANALYSIS OF VARIANCE CARD 17

Source of Variation	dF	MS	F
Between Subjects	144		
Sex Differences	1	.31	.06
Subjects w. groups	143	5.00	
Within Subjects	870		
Concepts	6	18.36	16.84**
Sex Differences x Concepts	6	5.79	5.31**
Concepts x Subjects w. groups	858	1.09	
Total	1014		

ANALYSIS OF VARIANCE CARD 18

Source of Variation	dF	MS	F
Between Subjects	144		
Sex Differences	1	6.76	2.76
Subjects w. groups	143	2.45	
Within Subjects	870		
Concepts	6	15.29	9.56**
Sex Differences x Concepts	6	4.42	2.76*
Concepts x Subjects w. groups	858	1.60	
Total	1014		

$F(1, 143) = 3.91$ $p = .01$**
$F(6, 858) = 2.10$ $p = .05$*

ANALYSIS OF VARIANCE CARD 19

Source of Variation	dF	MS	F
Between Subjects	144		
Sex Differences	1	3.29	.73
Subjects w. groups	143	4.51	
Within Subjects	870		
Concepts	6	87.84	64.12**
Sex Differences x Concepts	6	5.45	3.98**
Concepts x Subjects w. groups	858	1.37	
Total	1014		

ANALYSIS OF VARIANCE CARD 20

Source of Variation	dF	MS	F
Between Subjects	144		
Sex Differences	1	7.66	2.39
Subjects w. groups	143	3.21	
Within Subjects	870		
Concepts	6	1.67	1.65
Sex Differences x Concepts	6	1.34	1.33
Concepts x Subjects w. groups	858	1.01	
Total	1014		

$F(1, 143) = 3.91$ $p = .01^{**}$
$F(6, 858) = 2.10$ $p = .05^{*}$

ANALYSIS OF VARIANCE CARD 21

Source of Variation	dF	MS	F
Between Subjects	144		
Sex Differences	1	17.86	5.76*
Subjects w. groups	143	3.99	
Within Subjects	870		
Concepts	6	12.80	11.74**
Sex Differences x Concepts	6	7.48	6.86**
Concepts x. Subjects w. groups	858	1.09	
Total	1014		

ANALYSIS OF VARIANCE CARD 22

Source of Variation	dF	MS	F
Between Subjects	144		
Sex Differences	1	13.98	2.73
Subjects w. groups	143	5.13	
Within Subjects	870		
Concepts	6	4.57	4.52**
Sex Differences x Concepts	6	1.99	1.97
Concepts x Subjects w. groups	858	1.01	
Total	1014		

F (1, 143) = 3.91 $p = .01^{**}$
F (6, 858) = 2.10 $p = .05^{*}$

ANALYSIS OF VARIANCE CARD 23

Source of Variation	dF	MS	F
Between Subjects	144		
Sex Differences	1	17.15	8.58**
Subjects w. groups	143	2.00	
Within Subjects	870		
Concepts	6	11.05	11.28**
Sex Differences x Concepts	6	.77	.76
Concepts x Subjects w. group	858	.98	
Total	1014		

ANALYSIS OF VARIANCE CARD 24

Source of Variation	dF	MS	F
Between Subjects	144		
Sex Differences	1	13.67	3.89
Subjects w. groups	143	3.54	
Within Subjects	870		
Concepts	6	6.30	12.12**
Sex Differences x Concepts	6	.44	.85
Concepts x Subjects w. groups	858	.52	
Total	1014		

F (1, 143) = 3.91
F (6, 858) = 2.10

p = .01**
p = .05*

ANALYSIS OF VARIANCE CARD 25

Source of Variation	dF	MS	F
Between Subjects	144		
Sex Differences	1	18.94	3.61
Subjects w. groups	143	5.24	
Within Subjects	870		
Concepts	6	61.58	70.54**
Sex Differences x Concepts	6	23.04	26.39**
Concepts x Subjects w. group	858	.87	
Total	1014		

ANALYSIS OF VARIANCE CARD 26

Source of Variation	dF	MS	F
Between Subjects	144		
Sex Differences	1	37.81	14.60**
Subjects w. groups	143	2.59	
Within Subjects	870		
Concepts	6	21.03	1.95
Sex Differences x Concepts	6	.69	.64
Concepts x Subjects w. groups	858	1.08	
Total	1014		

$F(1, 143) = 3.91$ $p = .01^{**}$
$F(6, 858) = 2.10$ $p = .05^{*}$

ANALYSIS OF VARIANCE CARD 27

Source of Variation	dF	MS	F
Between Subjects	144		
Sex Differences	1	20.06	5.38*
Subjects w. groups	143	3.73	
Within Subjects	870		
Concepts	6	39.10	18.98**
Sex Differences x Concepts	6	.51	.25
Concepts x Subjects w. groups	858	2.06	
Total	1014		

ANALYSIS OF VARIANCE CARD 28

Source of Variation	dF	MS	F
Between Subjects	144		
Sex Differences	1	13.99	4.21*
Subjects w. groups	143	3.32	
Within Subjects	870		
Concepts	6	18.06	17.04**
Sex Differences x Concepts	6	1.16	1.09
Concepts x Subjects w. groups	858	1.06	
Total	1014		

$F(1, 143) = 3.91$ $p = .01^{**}$
$F(6, 858) = 2.10$ $p = .05^{*}$

ANALYSIS OF VARIANCE CARD 29

Source of Variation	dF	MS	F
Between Subjects	144		
Sex Differences	1	4.64	1.31
Subjects w. groups	143	3.53	
Within Subjects	870		
Concepts	6	18.16	20.45**
Sex Differences x Concepts	6	.90	.99
Concepts x Subjects w. groups	858	.91	
Total	1014		

ANALYSIS OF VARIANCE CARD 30

Source of Variation	dF	MS	F
Between Subjects	144		
Sex Differences	1	19.69	5.00*
Subjects w. groups	143	3.94	
Within Subjects	870		
Concepts	6	8.22	1.11
Sex Differences x Concepts	6	.56	
Concepts x Subjects w. groups	858	.74	
Total	1014		

F (1, 143) = 3.91 $p = .01^{**}$
F (6, 858) = 2.10 $p = .05^{*}$

ANALYSIS OF VARIANCE CARD 31

Source of Variation	dF	MS	F
Between Subjects	144		
Sex Differences	1	3.86	.89
Subjects w. groups	143	4.32	
Within Subjects	870		
Concepts	6	9.60	10.11**
Sex Differences x Concepts	6	2.25	2.37*
Concepts x Subjects w. groups	858	.95	
Total	1014		

ANALYSIS OF VARIANCE CARD 32

Source of Variation	dF	MS	F
Between Subjects	144		
Sex Differences	1	8.26	2.17
Subjects w. groups	143	3.80	
Within Subjects	870		
Concepts	6	10.50	10.29**
Sex Differences x Concepts	6	1.17	1.15
Concepts x Subjects w. groups	858	1.02	
Total	1014		

$F(1, 143) = 3.91$ $p = .01^{**}$
$F(6, 858) = 2.10$ $p = .05^{*}$

ANALYSIS OF VARIANCE CARD 33

Source of Variation	dF	MS	F
Between Subjects	144		
Sex Differences	1	5.50	2.12
Subjects w. groups	143	2.60	
Within Subjects	870		
Concepts	6	17.72	17.37**
Sex Differences x Concepts	6	.54	.53
Concepts x Subjects w. groups	858	1.02	
Total	1014		

ANALYSIS OF VARIANCE CARD 34

Source of Variation	dF	MS	F
Between Subjects	144		
Sex Differences	1	6.12	1.83
Subjects w. groups	143	3.35	
Within Subjects	870		
Concepts	6	64.26	54.00**
Sex Differences x Concepts	6	4.55	3.82**
Concepts x Subjects w. groups	858	1.19	
Total	1014		

$F(1, 143) = 3.91$ $p = .01^{**}$
$F(6, 858) = 2.10$ $p = .05^{*}$

ANALYSIS OF VARIANCE CARD 35

Source of Variation	dF	MS	F
Between Subjects	144		
Sex Differences	1	23.21	5.50*
Subjects w. groups	143	4.22	
Within Subjects	870		
Concepts	6	2.72	2.99**
Sex Differences x Concepts	6	1.57	1.72
Concepts x Subjects w. groups	858	.91	
Total	1014		

ANALYSIS OF VARIANCE CARD 36

Source of Variation	dF	MS	F
Between Subjects	144		
Sex Differences	1	7.42	2.36
Subjects w. groups	143	3.14	
Within Subjects	870		
Concepts	6	4.00	5.63**
Sex Differences x Concepts	6	.28	.39
Concepts x Subjects w. groups	858	.71	
Total	1014		

$F(1, 143) = 3.91$ $p = .01^{**}$
$F(6, 858) = 2.10$ $p = .05^{*}$

ANALYSIS OF VARIANCE CARD 37

Source of Variation	dF	MS	F
Between Subjects	144		
Sex Differences	1	4.11	.92
Subjects w. groups	143	4.49	
Within Subjects	870		
Concepts	6	22.21	24.14**
Sex Differences x Concepts	6	.29	.32
Concepts x Subjects w. groups	858	.92	
Total	1014		

ANALYSIS OF VARIANCE CARD 38

Source of Variation	dF	MS	F
Between Subjects	144		
Sex Differences	1	29.94	7.49**
Subjects w. groups	143	4.00	
Within Subjects	870		
Concepts	6	4.60	5.23**
Sex Differences x Concepts	6	.83	.94
Concepts x Subjects w. groups	858	.88	
Total	1014		

$F(1, 143) = 3.91$ $p = .01^{**}$
$F(6, 858) = 2.10$ $p = .05^{*}$

ANALYSIS OF VARIANCE CARD 39

Source of Variation	dF	MS	F
Between Subjects	144		
Sex Differences	1	5.70	1.16
Subjects w. groups	143	4.91	
Within Subjects	870		
Concepts	6	15.17	13.42**
Sex Differences x Concepts	6	.34	.30
Concepts x Subjects w. groups	858	1.13	
Total	1014		

ANALYSIS OF VARIANCE CARD 40

Source of Variation	dF	MS	F
Between Subjects	144		
Sex Differences	1	21.15	7.32**
Subjects w. groups	143	2.89	
Within Subjects	870		
Concepts	6	27.38	34.22**
Sex Differences x Concepts	6	.80	1.00
Concepts x Subjects w. groups	858	.80	
Total	1014		

$F(1, 143) = 3.91$ $p = .01^{**}$
$F(6, 858) = 2.10$ $p = .05^{*}$

ANALYSIS OF VARIANCE CARD 41

Source of Variation	dF	MS	F
Between Subjects	144		
Sex Differences	1	4.74	1.78
Subjects w. groups	143	2.67	
Within Subjects	870		
Concepts	6	45.98	31.71**
Sex Differences x Concepts	6	1.74	1.20
Concepts x Subjects w. groups	858	1.45	
Total	1014		

ANALYSIS OF VARIANCE CARD 42

Source of Variation	dF	MS	F
Between Subjects	144		
Sex Differences	1	7.43	1.60
Subjects w. groups	143	4.63	
Within Subjects	870		
Concepts	6	48.03	47.55**
Sex Differences x Concepts	6	3.08	3.05**
Concepts x Subjects w. groups	858	1.01	
Total	1014		

$F(1, 143) = 3.91$ $p = .01^{**}$
$F(6, 858) = 2.10$ $p = .05^{*}$

ANALYSIS OF VARIANCE CARD 43

Source of Variation	dF	MS	F
Between Subjects	144		
Sex Differences	1	.58	.17
Subjects w. groups	143	3.38	
Within Subjects	870		
Concepts	6	7.45	8.87**
Sex Differences x Concepts	6	2.23	2.65*
Concepts x Subjects w. groups	858	.84	
Total	1014		

ANALYSIS OF VARIANCE CARD 44

Source of Variation	dF	MS	F
Between Subjects	144		
Sex Differences	1	25.08	5.92*
Subjects w. groups	143	4.24	
Within Subjects	870		
Concepts	6	22.84	19.86**
Sex Differences x Concepts	6	2.86	2.49*
Concepts x Subjects w. groups	858	1.15	
Total	1014		

F (1, 143) = 3.91
F (6, 858) = 2.10

p = .01**
p = .05*

ANALYSIS OF VARIANCE CARD 45

Source of Variation	dF	MS	F
Between Subjects	144		
Sex Differences	1	11.01	2.34
Subjects w. groups	143	4.71	
Within Subjects	870		
Concepts	6	47.50	44.81**
Sex Differences x Concepts	6	2.33	2.20*
Concepts x Subjects w. groups	858	1.06	
Total	1014		

F (1, 143) = 3.91 p = .01**
F (6, 858) = 2.10 p = .05*

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Vita

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