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The Effect of Family Size, Sex of Siblings and Ordinal Position on Personality Characteristics

BRIAN KRUGER AND W. G. FRUEHLING

Abstract: This study was designed to analyze data available at Wartburg College with respect to the effects of family variables upon MMPI scores with the purpose of suggesting hypotheses which may be tested in future investigations. The subjects were Wartburg College freshmen entering in the fall of the school years 1963 and 1964. A 5% coefficient of risk was adopted. AxB factorial designs were employed in the analysis of the data. No significant results were obtained for the female subjects on any of the MMPI scales. Four hypotheses were indicated: (a) Males from large families tend to be more introverted than males from small families; (b) males from large families show more of a tendency toward depression than males from small families; (c) in small families, males having only brothers are generally less culturally and aesthetically inclined than those having sisters; (d) oldest males having only brothers seem to conform better socially and to have less difficulty with interpersonal relationships than other males.

This study was designed to analyze available data at Wartburg College in regard to the effects on MMPI scores of the variables, Ordinal Position in the family, Size of Family, and of Sex of Siblings, with the purpose of suggesting hypotheses, which may be tested in later investigations.

A number of investigators have studied the importance of ordinal position in the development of various personality characteristics. Schacter (1959) suggested the hypothesis that first-born individuals were more anxious and affiliatively dependent than later-born siblings. Cohen (1951) found the second-born child to be superior in intelligence, less neurotic, less introverted, more humorous, and more musical and cinema-loving than the first-born.

Several investigators have, in addition, included family size and/or sex of siblings in their studies. Koch (1958), in a study of two-child, urban, native born, white, intact families, found that: (1) children with a brother were less sensitive than those with a sister; (2) there were more signs of stimulation and stress among members of pairs in which siblings were different in sex than among siblings of the same sex; (3) second-borns were able to recover more readily than first-born from upsets and anger; (4) second-born males showed more nervous habits than first-borns; (5) first-borns were more self-confident than second-borns; and (6) among first-borns, children from opposite-sex

sibling pairs tended to have better health than those from same-sex pairs.

Schooler (1961), on a random sample of female schizophrenia in-patients, found an indication of a significantly higher rate of schizophrenia among last-borns than among first-borns in families of four or more siblings.

These studies have not, however, included any assessment of the interactions among the three variables, ordinal position, size of family, and sex of siblings, nor have they made use of standardized personality test results as criterion measures.

METHOD

Subjects

The subjects were selected from 693 freshmen entering Wartburg College, Waverly, Iowa, in the autumns of 1963 and 1964. This population of subjects was largely white, Protestant, rural (35-40% of their fathers were engaged in farming), and were middle-middle and lower-middle class socio-economically.

Data on the size of family, sex of siblings, and ordinal position were obtained from questionnaires and college records.

The MMPI was administered during the week preceding registration for the fall semester. Everyone was included in the group from which the subjects were randomly selected, excepting those whose scores on any of the four validity scales fell more than two standard deviations from the mean of the norm group. These scores indicate unreliable results on the clinical scales used in this study.

Design

Each subject was classified according to the following four variables: Sex, size of family, sex of siblings, and ordinal position. There were three categories for Size of Family: (a) two siblings; (b) three siblings; (c) four or more siblings. The categories for Sex of Siblings were: (a) all brothers; (b) all sisters; (c) both sexes. For Ordinal Position the categories were: (a) oldest; (b) youngest; (c) neither-oldest-nor-youngest.

Initially an attempt was made to use an AxBxC factorial design, in which the effects of ordinal position, size of family, and sex of sibling and their interactions were to be studied. It was discovered, however, that in some of the cells there were too few, or sometimes no subjects at all. The frequencies found for each cell are shown in Table 1.

Three independent AxB factorial designs were used for each sex. This change resulted in some loss of control of the third variable.

The best controlled design was the Ordinal-Position and Sex-of-Siblings design in which the Size-of-Family factor was held

Table 1. Available Subjects for 3x3x3 Designs showing the inadequate number in some cells

	Male Ss								
	Oldest			Neither			Youngest		
	All Brot.	Both Sexes	All Sis.	All Brot.	Both Sexes	All Sis.	All Brot.	Both Sexes	All Sis.
2 sibs	9	16	9	9	19	8	2	17	10
3 sibs	4	22	6	7	21	9	3	9	0
4 or more	2	19	1	0	29	1	0	10	1

	Female Ss								
	Oldest			Neither			Youngest		
	All Brot.	Both Sexes	All Sis.	All Brot.	Both Sexes	All Sis.	All Brot.	Both Sexes	All Sis.
2 sibs	5	15	10	9	15	9	5	13	7
3 sibs	4	14	5	5	18	4	4	5	2
4 or more	1	9	1	2	25	2	0	9	0

constant by limiting subjects to those having two or three siblings. This was a 3x3 factorial design in which Ordinal-Position effects were observed for the youngest, oldest, and neither-oldest-nor-youngest, and Sex-of-Siblings effects were observed for those whose siblings were all brothers, all sisters, and of both sexes. Interaction effects were also tested. See Study 1 of Table 2.

In the Ordinal-Position and Size-of-family design, the factor of Sex-of-Siblings was not controlled. Effects of Ordinal Position were observed for youngest, oldest, and neither-oldest-nor-youngest; Size-of-Family effects for two, three, and four or more siblings. See Study 2 in Table 2.

In the Size-of-Family and Sex-of-Siblings design, the factor of Ordinal Position was not controlled. The Size-of-Family classifications were those in which subjects had two and three siblings. Ordinal-Position classifications were oldest, youngest, and neither-oldest-nor-youngest. See Study 3 in Table 2.

The AxB factorial design requires that the number of subjects in corresponding cells be in the same proportion from row to row or from column to column. Therefore, after classifying the subjects and placing them in the appropriate cells of the designs, it was necessary to drop some from the study. In order to accomplish this, each row was arbitrarily determined to have the same number of subjects as the smallest cell previous to dismissal. Subjects were dropped by means of a table of random numbers. See Table 2 for the resulting number of subjects in each cell of each design.

The F-test was used in the analysis of the data. A 5% coefficient of risk was adopted for the statistical analysis.

RESULTS

The resultant F's and their corresponding degrees of freedom have been tabulated in Table 3.

Table 2. Number of Subjects in AxB Designs

<i>Study 1</i>	<i>The Effects of Ordinal Position and Sex of Siblings</i>					
	Male			Female		
	Oldest	Neither	Youngest	Oldest	Neither	Youngest
All Brothers	11	11	11	9	9	9
Both Sexes	26	26	26	18	18	18
All Sisters	10	10	10	9	9	9
<i>Study 2</i>	<i>The Effects of Ordinal Position and Size of Family</i>					
	Male			Female		
	Oldest	Neither	Youngest	Oldest	Neither	Youngest
2 Siblings	34	34	34	25	25	25
3 Siblings	12	12	12	11	11	11
4 or more	11	11	11	9	9	9
<i>Study 3</i>	<i>The Effects of Sex of Siblings and Size of Family</i>					
	Male		All		Female	
	All Brothers	Both Sexes	All Sisters	All Brothers	Both Sexes	All Sisters
2 Siblings	26	26	26	19	19	19
3 Siblings	14	14	14	11	11	11

The results of the F-tests which were significant at the 5% level and which are referred to in the discussion have been graphed. To determine which differences between pairs of means were significant, Duncan's Range Tests were conducted. The results were recorded below the graphs by the conventional method, that is, the means were ordered from high to low, and adjacent means not significantly different from each other were underscored. All means, correct to the nearest tenth of a point, were recorded on the graphs.

DISCUSSION

It is interesting to note that no significant differences or interactions were found for female subjects on any of the scales. Consequently attention is focused on the results obtained on the male subjects.

The results suggest certain hypotheses. The plan followed in this discussion section involves first stating the proposed hypothesis and then supporting this hypothesis with data from our study, which was significant not only at the 5% level but also at the 1% level.

Hypothesis 1: Males from large families tend to be more introverted than males from small families.

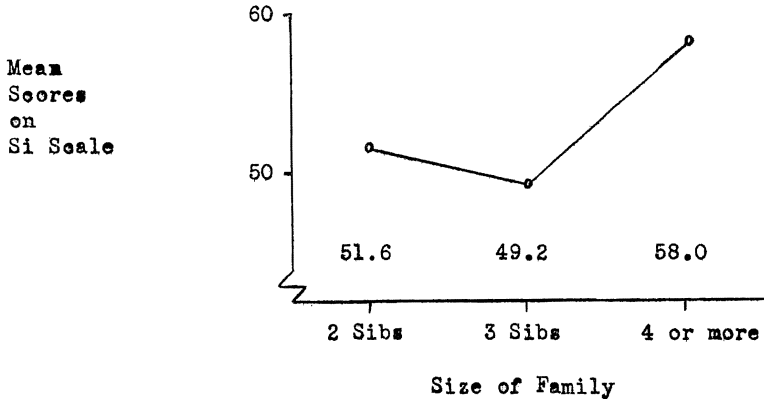
On the Ordinal-Position and Size-of-Family study a significant difference was found between subjects with 2 or 3 siblings and subjects of 4 or more siblings on the Social Introversion scale. High scores on this scale indicate tendencies towards introversion. This result is presented in Figure 1.

It is interesting to note that no significant differences were found on the Social Introversion scale for different ordinal posi-

Table 3. F Values for Factors Studied

Key: (O) Ordinal Position; (S) Sex of Siblings; (F) Size of Family											
df	Hs	D	Hy	MMPI SCALES		Pa	Pt	Sc	Ma	Si	
				PD	Mf						
				Male Subjects							
O	2/132	.12	.62	.25	.44	1.53	.09	.07	.25	.86	.50
S	2/132	.26	.54	.07	4.41*	3.69*	.87	.19	.50	2.33	.37
OxS	4/132	.96	.59	.20	2.71*	.43	.47	1.14	2.44*	.46	.68
O	2/162	.71	.81	.05	6.20*	.15	.32	.19	2.36	5.41*	1.18
F	2/162	.83	5.26*	.02	.91	4.16*	.67	5.32*	2.93	.13	10.65*
OxF	4/162	2.76*	.51	.02	1.01	1.02	.93	.49	.57	1.33	.23
S	2/111	.73	2.15	1.00	2.99	5.11*	.60	.81	.00	.35	1.07
F	2/111	.86	.21	.03	.05	.20	.01	.18	.19	.30	.08
SxF	4/111	.91	2.88*	1.47	.05	.83	.09	.14	.86	.13	.72
				Female Subjects							
O	2/ 99	.50	1.16	1.25	1.65	1.53	2.04	.62	.33	.23	1.29
S	2/ 99	.73	1.20	.06	.36	.31	1.47	.04	.16	.10	.22
OxS	4/ 99	.15	1.76	1.14	.57	1.16	.42	.43	.81	.39	1.04
O	2/126	.39	.07	.12	3.00	.39	.46	.47	.01	.13	1.92
F	2/126	.70	1.71	.57	1.19	.06	1.11	.50	1.66	.97	.66
OxF	4/126	1.12	2.14	1.13	.97	1.40	.32	.48	.33	.64	.41
S	2/ 81	.26	1.66	.58	.06	.41	.21	.28	.10	1.10	.33
F	2/ 81	.01	.20	.20	.04	.01	.00	.04	.02	.01	.15
SxF	4/ 81	.67	.41	.59	.65	1.93	.02	.09	.54	.54	.06

* Significant at the 5% level.



Significant Differences	4 or more	2 Sibs	3 Sibs
	58.0	51.6	49.2

Fig. 1. Size-of-family Effects taken from Ordinal-Position and Size-of-Family Study Male Subjects Social Introversion (Si) Scale.

tions. This seems to be inconsistent with the results of the study of Cohen who found the second-born children to be less introverted than first-borns.

Hypothesis 2: Males from large families show more of a tendency toward depression than males from small families.

On the Ordinal-Position and Size-of-Family study, in the Depression scale a significant difference was found between subjects having 2 or 3 siblings and subjects with 4 or more siblings. The Depression scale reflects feelings of hopelessness, unworthiness, a lack of self-esteem, and a pessimistic view of life. This result is presented in Figure 2.

Hypothesis 3: In small families, males having only brothers are generally less culturally and aesthetically inclined than those having only sisters.

In the Sex-of-Siblings and Size-of-Family study and in the Ordinal Position and Sex-of-Sibling study, a significant difference on Masculinity-Femininity was found between males with all brothers and males with all sisters. High scores on this scale reflect cultural and aesthetic interests, passivity, and emotionality. Results are summarized in Figures 3 and 4.

Hypothesis 4: Oldest males having only brothers seem to conform better socially and to have less difficulty with interpersonal relationships than other males. The results, which provide support for Hypothesis 4 are summarized in Figures 5, 6 and 7.

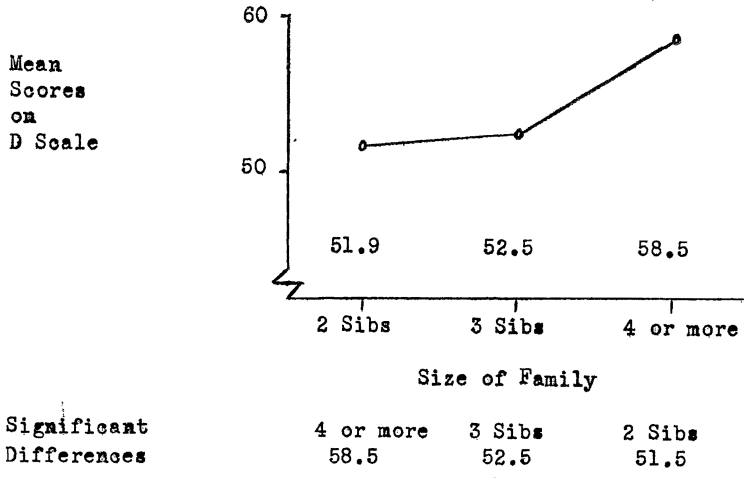


Fig. 2. Size-of-Family Effects taken from Ordinal-Position and Size-of-Family Study Male Subjects Depression (D) Scale.

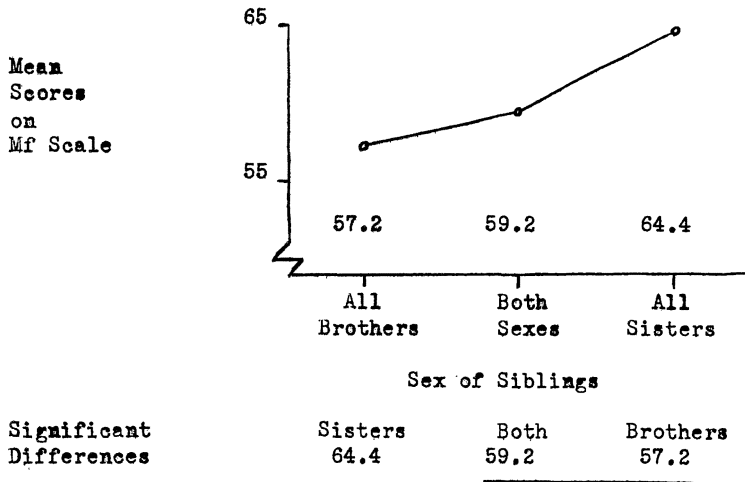


Fig. 3. Sex-of-Siblings Effects taken from Sex-of-Siblings and Size-of-Family Study Male Subjects Masculinity-femininity (Mf) Scale

Significant interaction effects were found in the Ordinal-Position and Sex-of-Siblings study on the Psychopathic Deviate scale. In this same study a significant difference was found between males having only brother and males having only sisters. The former group scored significantly lower on the Psychopathic Deviate scale. Also, in the Ordinal-Position and Size-of-Family study, a significant difference was found between the oldest and those in other Ordinal Positions. The group which consistently scored lowest was the group made up of the oldest with

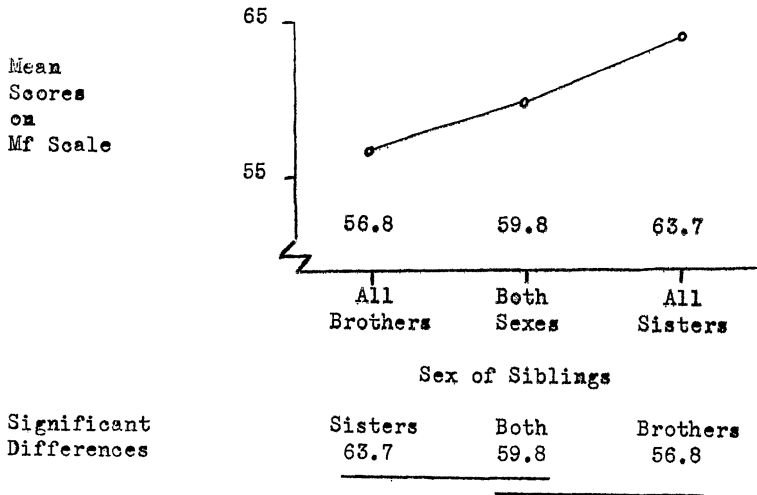


Fig. 4. Sex-of-Siblings Effects taken from Ordinal-Position and Sex-of-Siblings Study Male Subjects Masculinity-femininity (Mf) Scale.

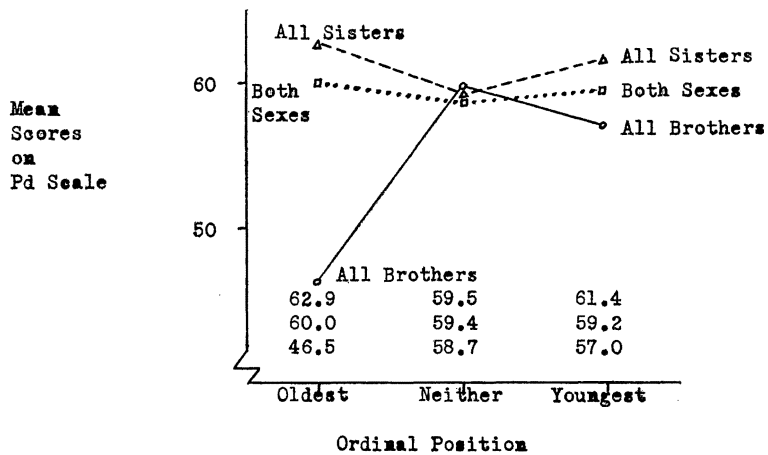
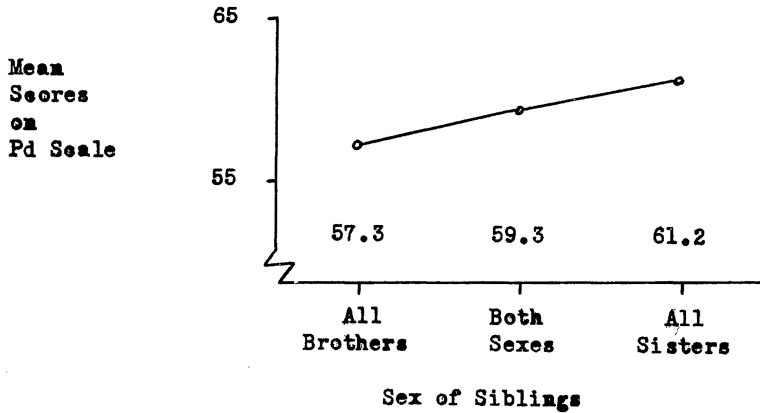


Fig. 5. Interaction Effects taken from Ordinal-Position and Six-of-Siblings Study Male Subjects Psychopathic Deviate (Pd) Scale

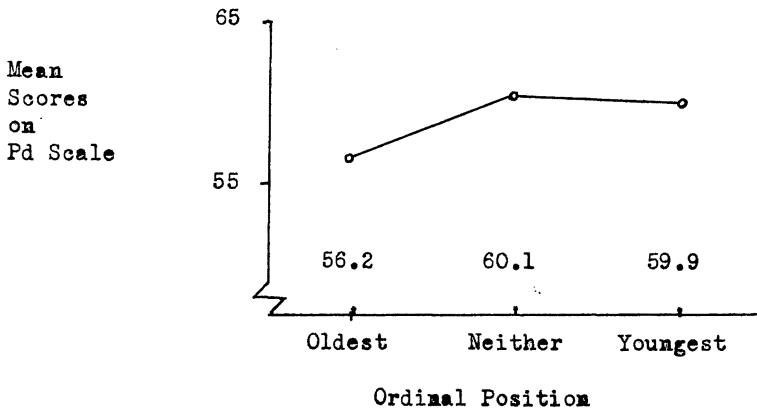
only brothers. The Psychopathic Deviate scale measures emotional shallowness in interpersonal relations, a disregard for rules of social conduct, and an inability to profit from past experience.

The reader should be aware of certain difficulties resulting from the adopted design. In each of the AxB studies the third variable was not controlled and may have had a significant effect on the results.



Significant Differences	Sisters	Both	Brothers
	61.2	59.3	57.3

Fig. 6. Sex-of-Siblings Effects taken from Ordinal-Position and Sex-of-Siblings Study Male Subjects Psychopathic Deviate (Pd) Scale.



Significant Differences	Neither	Youngest	Oldest
	60.1	59.9	56.2

Fig. 7. Ordinal-Position Effects taken from Ordinal-Position and Size-of-Family Study Male Subjects Psychopathic Deviate (Pd) Scale.

There is actually a correlation among the variables studied. Use of the factorial design, however, requires that the number of subjects in the corresponding cells be in the same proportion from row to row or from column to column. By dropping subjects these variables were made independent variables.

This investigation has been conducted as a pilot study with the hope that further research in these areas will be pursued.

Such research may very well reveal hitherto unsuspected relationships of these factors—birth order, family size, and sex of siblings—to certain traits and interests among siblings in various family constellations.

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Psychological Scaling of Language Development of Children

DOROTHY SHERMAN, THOMAS SHRINER and FRANKLIN SILVERMAN

Abstract: Certain aspects of the use of psychological rating scale methods for measuring degrees of language development in the speech of children are evaluated. That typed samples from children's speech can be scaled reliably is demonstrated. Comparisons are made among correlation coefficients which were obtained for the purpose of estimating relationships among three measures of language development for the same set of 50 samples of children's language: structural complexity scores obtained by analysis of the samples; scale values of intricacy of language usage obtained by the psychological scaling method of Equal-Appearing Intervals; and mean estimates of age derived from sophisticated observers' judgments. The conclusion was drawn that psychological scaling of various aspects of children's language could provide new and useful tools for the study of and the assessment of children's language development.

The basic problem is to evaluate certain aspects of the use of psychological rating-scale methods for the purpose of measuring the degrees of language development exhibited in samples of children's speech. Both for experimental and clinical purposes a method for assessing children's language development is often needed by those who are concerned with speech pathologies. Presently, however, no single measure has been used which appears to be completely satisfactory for this purpose.