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A Search for Important Stimulus Variables in the Early Family Relationships of Schizophrenic Patients

Robert F. Horner

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To the Graduate Council:

I am submitting herewith a dissertation written by Robert F. Horner entitled "A Search for Important Stimulus Variables in the Early Family Relationships of Schizophrenic Patients." I have examined the final electronic copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Psychology.

G. R. Pascal, Major Professor

We have read this dissertation and recommend its acceptance:

W.O. Jenkins, C.N. Sippelle, M.H. Moore, W.E. Cole

Accepted for the Council:

Carolyn R. Hodges

Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

April 18, 1961

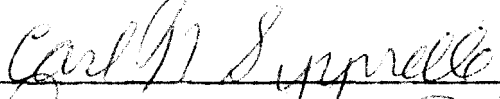
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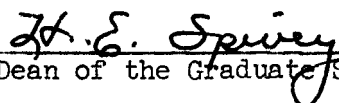








Accepted for the Council:


Acting Dean of the Graduate School

A SEARCH FOR IMPORTANT STIMULUS VARIABLES IN THE EARLY FAMILY
RELATIONSHIPS OF SCHIZOPHRENIC PATIENTS

A Dissertation
Presented to
the Graduate Council of
The University of Tennessee

In Partial Fulfillment
of the Requirements for the Degree
Doctor of Philosophy

by
Robert F. Horner

June 1961

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CHAPTER I

INTRODUCTION

Since Freud (1924) first placed emphasis on events of early years of life as bases for later neurosis, clinicians have generally accepted this hypothesis. However, evidence supporting the importance of early life experiences has come chiefly from clinical observations. Studies attempting to confirm or repudiate the hypothesis have been unsystematic and have produced conflicting results.

The Pascal-Jenkins Behavioral Scales (Pascal & Jenkins, 1960b) have provided a scientific, systematic method for investigating the relationship of early stimulus situations to adult behavior. The theory basic to the investigation of stimulus situations by this approach comes from psychologists such as Watson (1919), Smith and Guthrie (1921), and Hunter (1928) with their emphasis on the importance of learning in behavior, and from the "empty" organism position of Skinner (1938). The focus of interest is grossly observable stimuli outside the organism that have measurable behavioral correlates. The approach is strictly psychological. No assumptions can be made from the data concerning possible genetic, physiological or biochemical factors.

In the present study, the stimuli studied were important people in the early environment of individuals demonstrating

extremely deviant behavior in adult life. The rationale for attempting to find covariation between early stimulus situations and current deviant behavior is found in Pascal's (1959) hypothesis that the basis of stresses touching off deviant behavior is to be found in stimuli which have impinged on the organism in the past.

Specifically, it was the purpose of this study to investigate the stimulus situations presented by grandparents, parents, and siblings of schizophrenic subjects and their controls in the first ten years of life of these subjects and to isolate variables which differentiate the experimental and control groups. Schizophrenic patients were chosen primarily because they represent a large group of grossly deviant people. The data used in the study were based on reports of actual behavior of family members by schizophrenic subjects and their control subjects.

Hypotheses

1. Schizophrenic subjects will have more deviant early stimulus situations than control subjects.
2. Certain behaviorally defined variables in the early stimulus situations will emerge as significant factors in the etiology of grossly deviant adult behavior.

Review of the Literature

The majority of studies dealing with the influence of early family relationships in the development of schizophrenia later in life can be divided into three major methodological categories. These are: (1) clinical interview studies, (2) questionnaire studies, and (3) statistical studies.

Clinical Interview Studies

It was not until the early 1930's that the clinical history was systematically used in studies appearing in the literature on schizophrenia. Kasanin, Knight, and Sage (1934) studied forty-five cases of schizophrenia where histories of early childhood with the account of parent-child relationships were obtained. The authors found that in 60 per cent of these cases the attitude of the mother to the child was one of over-protection or rejection. However, the authors found only two cases of rejection. There was no mention of control subjects in the study. The focus was on attitudes rather than behavior.

Tietze (1949) studied twenty-five mothers of adult schizophrenic patients by the interview method. Her impressions were that all the mothers were domineering, restrictive with regard to libidinal gratification of their children, perfectionistic, over-solicitous, and dependent on approval by others. Rejection of children was obvious in nine cases. No control subjects were used. The

method of obtaining and analyzing the data was not specified. Terms such as "domineering" were not operationally defined.

In a study of fifty patients who became schizophrenic prior to age twenty-one, Lidz and Lidz (1949) employed case histories compiled by different psychiatrists in a psychiatric clinic. Twenty of the patients had lost a parent by death or separation prior to their nineteenth birthday. In nine cases, this was due to emotional illness. Twenty of thirty-three histories which had adequate data disclosed parents who were clearly incompatible. Twenty-three had at least one parent who, according to the authors, was grossly unstable. Eighteen of the patients had been reared in a manner described as clearly bizarre or deleterious. Only five seemed to have had reasonably stable homes. The writers stated also that paternal influence was harmful as frequently as maternal influence. No control subjects were used.

In one of the few studies of this type which employed control subjects, Prout and White (1950) compared life histories of twenty-five mothers of hospitalized male schizophrenics with twenty-five mothers of non-hospitalized males by the clinical interview method. The study failed to demonstrate over-protectiveness and over-solicitousness in the mothers of the schizophrenic patients. The method used to evaluate the data on maternal behavior or attitudes was not specified.

Reichard and Tillman (1950) reviewed the case histories of

seventy-nine schizophrenic patients of which thirteen were the authors' own cases and the remaining sixty-six reported in the literature. In 76 per cent of these cases the mother was the dominant parent. In 13 per cent of the cases the mothers were overtly rejecting, and in 63 per cent they were covertly rejecting but apparently over-protective. Only 15 per cent of the patients had domineering, sadistic, and rejecting fathers. No controls were used, nor did the authors state the method used in arriving at their conclusions other than describing the type of relationship.

Hotchkiss, Carmen, Ogilby, and Wesenfeld (1955) observed mothers of twenty-two young male schizophrenic subjects as visitors on hospital wards. On the basis of their observations the authors divided the mothers into the following categories: (1) over-solicitous, (2) sweet, indulgent, (3) seductive, (4) intent, controlled, quietly purposeful, and (5) removed, non-participating. The common conception of the over-solicitous, over-anxious, and domineering mother as a factor in the development of schizophrenia was not borne out. No control subjects were used. Whether or not visiting mothers represented an unbiased sample of mothers of schizophrenic patients was unknown.

A study utilizing interview data from thirty schizophrenic subjects, a healthy sibling, and their mothers was reported by Prout and White (1956). The experimenters desired to test the hypothesis that early traumata are significant in producing schizophrenia. They

found that the mothers recalled no disappointing or traumatic experiences common to the total population for the healthy siblings in eighteen cases. The mothers recalled no disappointing common experiences in the lives of the patients in only four cases. However, in only twelve instances did the children agree with the mothers' reports of what constituted a disappointment. They disagreed in forty-eight instances. The patients verbalized much more marked reactions to traumatic incidents than their healthy siblings. The investigators concluded that the reactions to traumata, not the traumata themselves, were different for patients and their siblings. They also concluded that there was a lack of reliability in selective recall on the part of the mothers studied which was probably due to their over-reaction to the patient's illness. The results of this study question the role of early trauma in producing schizophrenia. The authors implied that there is an hereditary factor which accounts for the difference in reactions by the schizophrenic.

In a study of sixteen fathers of hospitalized schizophrenic patients, Lidz, Parker, and Cornelison (1956) used the interview method to investigate family relationships. No control subjects were used. The investigators merely described the type of relationships which they felt existed on the basis of the interviews. They concluded that many of the fathers exerted seriously pathogenic influences upon the family structure and upon the rearing of the children. Three types of fathers were described: (1) fathers of schizophrenic

daughters who were constantly in conflict with their wives and who attempted to get their daughters to follow their own patterns, (2) fathers who could not endure the rivalry of a son and who impeded mothering and derogated their sons, and (3) fathers who were non-entities in the home.

Kohn and Clausen (1956) interviewed forty-five schizophrenic patients and their control subjects matched on the variables age, sex, and occupation. Interviews focused on the time the patients were thirteen and fourteen years of age. The subjects reported on the authority behavior of their parents. According to the investigators, interviews with parents of thirty-six of the patients resulted in data showing good similarity with that obtained from their schizophrenic offspring. In only one case was there a marked difference between the patient's report and the report of the parent as to parental authority behavior. Mothers of schizophrenic patients more frequently played a strong authority role and fathers more frequently played a weak authority role. The best feature of this study probably is the use of matched control subjects.

Four general criticisms can be made regarding the traditional historical approach used in the studies reviewed. With the exception of two studies, no control subjects were employed. The obvious danger of not using controls is that no standards are available by which to evaluate the data except the internalized standards of clinicians. A second criticism is that no systematic methods of gathering interview

data were cited by the experimenters, which makes replication difficult. A third point is the failure to concentrate on behavior, that is, to obtain specific incidents which could be rated with satisfactory objectivity and reliability. In the majority of these studies, the variables studied were not operational.

Questionnaire Studies

The use of the questionnaire to investigate early family relationships of the schizophrenic patient has been a relatively recent practice. Mark (1953) administered a questionnaire consisting of one hundred thirty-nine items related to child rearing to one hundred mothers of hospitalized schizophrenic patients. The items presented were innocuous expressions such as "a child should be seen and not heard." A control group of one hundred mothers of non-schizophrenic males was used. These mothers were visitors to general medical wards, womens' auxiliaries of veterans' organizations, volunteer group members, and private contacts. The group was comparable to the experimental group in age, religion, education, socio-economic status, and age of sons. The author concluded that the mothers of the schizophrenic patients were restrictive in the control of their children. The mothers' attitudes toward their schizophrenic sons reflected both excessive devotion and cool detachment.

Freeman and Grayson (1955) administered a survey consisting of eighty-five general statements and cliches referring to parent-child

attitudes to visiting mothers of fifty schizophrenic patients in a Veterans Administration hospital. Control subjects were fifty mothers who had no children who had ever needed psychiatric treatment. These mothers were contacted by volunteer students in undergraduate psychology classes. The mothers of schizophrenic patients showed generally poorer parent-child attitudes than the mothers who served as controls. Items of the scale which were related to possessiveness differentiated the two groups at a significant probability level. Items relating to domination of the child by its mother did not significantly differentiate the two groups. Differences in education and socio-economic levels of the experimental and control groups were not considered by the authors.

Goldstein and Carr (1956) chose fifty-six items which Mark (1953) had found to be differentiating between mothers of schizophrenic patients and mothers of nonschizophrenic males. The items were selected for their relevance to the hypothesis that catatonic schizophrenic patients as children were criticized for their actions, while paranoid patients as children were criticized for their intentions and for lying. The questionnaire was administered to the mothers of twenty-six paranoid schizophrenic patients. The hypothesis was not supported by the results. Only three items differentiated the groups at a significant level. The results of the study were not surprising when the mixture of symptoms frequently found in specific diagnostic categories is considered. No control subjects

were used.

In an attempt to evaluate authoritarian patterns in the mothers of schizophrenic patients, Dworin and Wyant (1957) used Form 45 of the F (Fascism) Scale. The scale was administered to forty-three randomly selected male schizophrenic patients, the mothers of nineteen schizophrenic patients, and a control group of twenty-one women from the Veterans Administration Voluntary Service. None of the control subjects had schizophrenic children. The scale significantly differentiated patients from control subjects and mothers of schizophrenic patients from control subjects. Mothers of the patients emphasized obedience, discipline, gratitude, and respect for parents and avoidance of rebellious ideas. On the other hand, they also emphasized strength, achievement, working, fighting, and will-power. The authors concluded that the dependence-independence conflict appears to be an important factor in the etiology of schizophrenia. The use of volunteer workers as control subjects in the study might be questioned because of attitudes possibly peculiar to such a group.

Shepherd and Guthrie (1959) administered a questionnaire of one hundred items on parental attitudes to twenty mothers of male schizophrenic patients in a Veterans Administration hospital. These items covered attitudes on perceptions of self as wife and mother, perceptions and expectations of children, and ways of relating to children. Factor analysis suggested five general patterns of attitudes: (1) detached authoritarianism, (2) inadequacy and inconsistency,

(3) pervasive control, (4) sophisticated denial of inadequate mothering, and (5) annoyance and rejection.

Forty-two mothers of male and female patients with the diagnosis of schizophrenia were given the Parental Attitude Research Instrument (Schaefer & Bell, 1958) by Zuckerman, Oltean, and Monashkin (1958). Forty-two mothers who had only normal children served as controls and completed the questionnaire at church social and nursery school meetings. Some mothers of students from a night extension college were also used as controls. Only one difference between groups was significant. Mothers of schizophrenic patients scored significantly lower than controls on "strictness." The hypothesis that mothers of schizophrenic subjects have more severe parental attitudes was not supported. The authors pointed out that there were twenty scales in the PARI, and one significant item out of twenty-three could be a chance occurrence.

Freeman, Simmons, and Bergen (1959) used four items from the Shoben Parent-child Attitude Survey (Shoben, 1949) designed to measure possessiveness, which had significantly differentiated mothers of schizophrenic patients from mothers of males not requiring psychiatric care. The items were part of an extensive interview schedule. Female informants were all relatives, predominantly wives and mothers, of male patients who succeeded in remaining in the community after their release from a mental hospital sometime between November, 1954 and December, 1955. The responses of the mothers of schizophrenic

patients were compared with several other groups: (1) mothers of patients with other nonorganic disorders (mostly manic-depressive), (2) wives of schizophrenic patients, (3) wives of patients with other nonorganic disorders, and (4) other female relatives of schizophrenic patients (usually their sisters). No significant differences were found. However, "possessiveness" was found to be negatively associated with education on three of the four items. The authors suggest that these items reflect social class differences rather than possessiveness as a significant factor in schizophrenia. They question the control group used in Freeman and Grayson's (1955) study which found mothers of schizophrenic patients more possessive than their control subjects.

A study which does not strictly fall into any of the categories mentioned but which has some features in common with questionnaire studies was designed by Farina (1958) to investigate role dominance and conflict in parents of schizophrenic patients. Parents of three groups were studied: (1) schizophrenic patients with good premorbid adjustment, (2) schizophrenic patients with poor premorbid adjustment, and (3) tubercular patients. Parents of these groups were required to respond to twelve hypothetical situations related to problems of child rearing. They responded individually and then jointly with their spouses. Dominance was inferred from measures such as ratio of speaking time. Conflict was inferred from measures such as frequency of interruptions. In the good premorbid group the fathers were

strongly ascendant and the mothers were weak and submissive, with little overt discord present. In the poor premorbid group the mothers were markedly dominant, while the fathers showed a tendency toward submission. There was marked discord. In the control or tubercular group there was a slight tendency toward maternal dominance but sharing of authority was also present. There was little conflict. The methodology used in this study was clever, but the use of parents of tubercular patients as control subjects is questionable.

Although the majority of questionnaire studies investigating schizophrenia have used control subjects and have had the advantage of objective scoring, there are disadvantages to the method which should be considered. One question is whether or not there are differences between professed attitudes and the actual behavior of parents in the child-rearing situation. It is also quite possible that having schizophrenic children places parents on the defensive, the effect of which may be an alteration of their professed attitudes. The psychological sophistication gained from having a schizophrenic child is another uncontrolled factor. Not the least disadvantage of the questionnaire method is the lack of opportunity for follow-up when an area of deviancy is suggested by a particular item.

Statistical Studies

Statistical studies concerning deprivation in the family

relationships of schizophrenic patients have been rare. Plank (1953) examined the records of seventy-five hospitalized schizophrenic patients and found evidence for considerable impairment of the efficacy of their parents. The author noted that 31 per cent of the mothers and 46 per cent of the fathers were dead before the onset of schizophrenia in their children. Of the remaining parents on which there was sufficient information to classify them, 12 per cent of the mothers and 25 per cent of the fathers were effaced (absent from the home for a reason other than death or played a markedly diminished role). Thirty-three per cent of the mothers and 6 per cent of the fathers classified were placed in the category "otherwise defective," where some circumstance prevented the development of an effective father (or mother) figure. The remaining 24 per cent of the mothers and 23 per cent of the fathers were normal. No control subjects or normative data were used. Of the seventy-five mothers studied, there was insufficient information to classify twenty-six. Twenty-three of the seventy-five fathers were similarly treated. Socio-economic class may have been an important uncontrolled variable.

Oltman, McGarry, and Friedman (1952) gathered statistics on parental deprivation from the records of six hundred schizophrenic patients who had been admitted to a state hospital. Two hundred thirty hospital employees were used as control subjects. The experimenters believed that the economic, educational, and cultural backgrounds of the two groups were quite similar, but these variables

were not controlled. Parental deprivation was defined as the actual loss or deprivation of a parent prior to the subject's nineteenth birthday. No significant differences were found between the two groups in parental deprivation by desertion, separation, divorce, death, or psychosis. However, more psychosis occurred in parents of schizophrenic patients than in parents of control subjects.

Wahl (1956) extracted data from the case histories of five hundred sixty-eight male schizophrenic patients admitted to the United States Naval Hospital in Philadelphia and compared them with incidence data from one hundred thousand naval recruits. Judgment of the patient records by the author suggested that 50.3 per cent of the schizophrenic patients had suffered severe rejection or overprotection by one or both parents. As compared with 11.4 per cent of the control subjects, 41 per cent of the patients had lost a father or mother by death, divorce, or separation before the age of fifteen. The results of this study were in rather sharp contrast to those of Oltman et al. (1952).

Good statistical studies are needed but are difficult to accomplish. The few studies reported in the literature have shown conflicting results, possibly because of inadequate sampling techniques. If properly controlled, statistical studies should show whether very gross deprivation such as the early death of a parent is an important factor in the etiology of schizophrenia. Such studies do not tap the more subtle deprivations which may occur in family relationships.

The three general types of studies found in the literature have answered few questions concerning the existence or nature of important early influences in the etiology of schizophrenia. Many studies have yielded conflicting results. Two major methodological problems may have contributed to this inconsistency: (1) the lack of a systematic, easily replicated method of gathering and evaluating the data, and (2) the failure to obtain objective, behavioral data.

CHAPTER II

METHODOLOGY

The materials and methodology employed in this study were developed by Pascal and Jenkins (1960b). Minor modifications were necessary before the system could be used with a psychotic sample. Reliability and validity of the data are also discussed in this chapter.

Materials

The Pascal-Jenkins Behavioral Scales

The Pascal-Jenkins Behavioral Scales (Pascal & Jenkins, 1960b) were used to secure interview data for this study. Since the investigation concerned each subject's family members as stimuli during only the first ten years of his life, only that portion of the Scales was employed. It allowed systematic investigation of eight variables for each grandparent, sixteen variables for each parent, and eight variables for each of the two closest siblings of the subject. The Scales were designed to gather data by the "behavioral incident" technique. A "behavioral incident" is "a stimulus-response sequence in gross human behavior which endures so long as there is no radical change in the stimulus situation as defined by the responses of the subject to it" (Pascal & Jenkins, 1960b). The "behavioral incident" is closely related to the "critical incident" of Flanagan (1954), who defined it as "any observable human activity that is sufficiently

complete in itself to permit inferences to be made about the person performing the act." In the present study the "behavioral incident" was the means of gathering interview data from the subject. Reports of specific behavior of family members were obtained. For example, to obtain data pertaining to the variable "Displays of Affection by Mother" the subject was asked, "What happened when you came home from school in the afternoon and saw your mother?" The subject might reply that his mother kissed him. The interviewer then asked, "What happened then?" The subject might answer that she fixed something for him to eat, asked him what happened at school, and then let him go out to play. Data concerning the latency, frequency, and intensity of the behavior were also obtained. By gathering a sufficient number of relevant "behavioral incidents" it was possible in this instance to rate the variable "Displays of Affection" for the stimulus "Mother" on a scale of deviancy. Table I presents the variables and stimulus categories studied in this experiment.

The University of Tennessee Deprivation Scale

The University of Tennessee Deprivation Scale (Pascal & Jenkins, 1960b) was used to assess the adequacy of subjects' current functioning. It consists of sixteen items concerning social, occupational, religious, and emotional support or deprivation which a subject is currently experiencing. The items are: employment, income, debts, fear, wife, parents, children, other relatives, church, other

TABLE I
VARIABLES AND STIMULUS CATEGORIES STUDIED

Variables	Stimulus Categories			
	Grandparents	Mother	Father	Siblings
Frequency of Contact	X	X	X	X
Active Play with <u>S</u>	X	X	X	X
Restraints on <u>S</u>	X	X	X	X
Physical Punishment	X	X	X	X
Displays of Affection	X	X	X	X
Deviant Behavior	X	X	X	X
Physical Health		X	X	
Religiosity	X	X	X	
Gregariousness		X	X	
Intellectualism		X	X	
Variability of Habitat		X	X	
Parental Status		X	X	
Provider		X	X	
Compatibility with Spouse		X	X	
Compatibility with Sibs				X
Appropriateness of Sexual Role		X	X	
Alcohol Consumption	X	X	X	X

organizations, friends, job participation, job status, status (other), residence, and education. A deprivation score is obtainable on the basis of one point for each variable on which there is evidence of deprivation. A high score suggests that the subject is gaining little support from his environment and is probably beset by serious emotional difficulties. A low score suggests satisfactory current functioning. Data for the Scale is obtained by the "behavioral incident" technique.

The Alcoholism Scale

The Alcoholism Scale (Jenkins & Davis, 1957) consists of eight items which assess the extent of a subject's alcohol consumption. The amount, frequency, quality, and after-effects of alcohol imbibing are covered by the Scale. The items are: amount consumed, variety of alcohol, rate of drinking, time between drinking periods, behavioral changes with drinking, conditions of drinking, after-effects of drinking, and long-range consequences of drinking. Specific instances of behavior are obtained as the basis for judgment in rating the subject "good" or "poor" on each item of the Scale. If the judgment is "poor" on a particular item, a score of "one" is given for that item. If the judgement is "good", a score of "zero" is given. A high score is indicative of alcoholism. The Alcoholism Scale was used in this study to prevent contamination of the population sample by factors peculiar to alcoholics. Alcoholic subjects were also excluded to allow comparison of

results of this study with research (Pascal & Jenkins, 1960a) on early family relationships of alcoholics.

Subjects

This study consisted of two experiments, each of which employed ten hospitalized male schizophrenic patients from the Tuscaloosa, Alabama Veterans Administration Hospital and ten matched control subjects from the community. Subjects were matched on the variables sex, age, education, absence of alcohol problems, and occupation. In order to minimize possible organic factors due to aging, subjects older than fifty years were not used. All experimental subjects had a current diagnosis of schizophrenia, and in almost all cases their recorded behavior on medical records was unquestionably of psychotic proportions. The University of Tennessee Deprivation Scale (Pascal & Jenkins, 1960b) was used as an additional check on these subjects' levels of functioning. The selection of subjects who were verbal enough to respond adequately in the interview situation was a necessary step. This selective factor undoubtedly resulted in a more intact group than the general hospitalized schizophrenic population. One experimental subject was eliminated from the sample because he complained of severe memory loss for many remote and recent events. All subjects in the experimental group were privileged patients on open wards.

Control subjects were selected from the community on the basis

of the matching variables and the absence of any history of psychiatric treatment. One control subject was eliminated from the sample because of a history of psychiatric treatment. All control subjects were checked for adequate current functioning by the University of Tennessee Deprivation Scale. This step excluded control subjects with severe psychological deficit. One control subject was dropped when he received a score of seven on the sixteen-point Scale. Table II and Table III present the sample characteristics of the experimental and control groups for Experiment I. Table IV and Table V present the population characteristics of the experimental and control groups for Experiment II. Comparison of the tables for each experiment suggests that the groups are very similar on matched variables.

Procedure

Experiment I

Each subject was interviewed individually by the experimenter.

Directions to subjects were as follows:

I want to find out more about what happens to people when they are growing up. Perhaps this will aid in understanding and help others. I would like for you to help me by telling about your life before you were ten years of age. You may have some trouble remembering some things, but do the best you can.

At this point the experimenter answered any questions which the subject asked and reassured him if he appeared anxious about the interview. This procedure was necessary for the establishment of rapport. Confidentiality of the data was assured. The directions were then continued:

TABLE II
POPULATION CHARACTERISTICS OF EXPERIMENTAL GROUP FOR EXPERIMENT I

Ss	Age	Education	Vocation	Alcohol Scale Score	Deprivation Scale Score
1	36	12	Shipping Clerk	1	7
2	25	15	Student	0	8
3	30	8	Ordnance Inspector	3	7
4	33	16	Real Estate Agent	1	6
5	29	15	School Teacher	2	9
6	33	9	Electrician	2	6
7	39	17	Structural Draftsman	0	7
8	45	12	Steel Worker	2	5
9	39	12	Accountant	2	9
10	23	14	Student	2	9
Mean	33.1	13		1.5	7.3
Range	23-45	9-17		0-3	5-9

TABLE III
POPULATION CHARACTERISTICS OF CONTROL GROUP FOR EXPERIMENT I

Ss	Age	Education	Vocation	Alcohol Scale Score	Deprivation Scale Score
1	39	12	Line Foreman	0	0
2	22	14	Student	1	1
3	32	8	Auto Mechanic	0	2
4	33	16	Drug Salesman	0	0
5	30	15	Supply Sergeant	1	2
6	34	10	Auto Salesman	1	3
7	36	17	School Administrator	0	0
8	48	12	Barber	1	0
9	39	13	Teacher	2	1
10	26	15	Student	1	3
Mean	33.7	13.2		0.7	1.2
Range	22-48	8-17		0-2	0-3

TABLE IV
POPULATION CHARACTERISTICS OF EXPERIMENTAL GROUP FOR EXPERIMENT II

Ss	Age	Education	Vocation	Alcohol Scale Score	Deprivation Scale Score
1	29	14	Student	0	10
2	41	14	Army Captain	1	9
3	32	12	Furniture Salesman	1	7
4	24	8	Soldier	1	9
5	35	8	Body Repairman	2	7
6	40	10	Painter	0	10
7	41	8	Farmer	2	10
8	33	12	Postal Clerk	0	8
9	36	16	Newspaper Reporter	1	8
10	41	7	Carpenter	2	11
Mean	35.2	10.9		1	8.9
Range	24-41	7-16		0-2	7-11

TABLE V
POPULATION CHARACTERISTICS OF CONTROL GROUP FOR EXPERIMENT II

Ss	Age	Education	Vocation	Alcohol Scale Score	Deprivation Scale Score
1	31	12	Clothing Salesman	2	1
2	42	13	Bookkeeper	1	0
3	31	12	Produce Manager	0	1
4	24	9	Maintenance Mechanic	0	2
5	38	8	Sheet Metal Shop Owner	1	1
6	40	12	Storeroom Clerk	0	0
7	42	11	Maintenance Mechanic	1	2
8	36	12	Hospital Aide	0	0
9	33	16	Accountant	1	1
10	41	9	Policeman	0	2
Mean	35.8	11.4		.6	1
Range	24-42	8-16		0-2	0-2

Before we begin the history of your first ten years, I would like to know more about your recent experiences.

For experimental subjects, the directions were modified at this point to read as follows:

Before we begin the history of your first ten years, I would like to know more about you just prior to your coming to the hospital.

A brief cross-sectional history of the subject was taken from which the Alcoholism Scale (Jenkins & Davis, 1957) and the University of Tennessee Deprivation Scale (Pascal & Jenkins, 1960b) were completed. The Alcoholism Scale was used to screen out subjects with serious alcoholic problems so they would not contaminate the sample. The Deprivation Scale was used as a criterion of adequate functioning for control subjects and as one of the measures of severe psychological deficit in the experimental subjects. Control subjects who received a Deprivation Scale score of "five" or more were excluded.

The Pascal-Jenkins Behavioral Scales (hereafter referred to as P-J Scale) were used to investigate the stimulus situations presented by grandparents, parents, and siblings of the ten experimental and ten control subjects during their first ten years of life. Eight variables for each grandparent, sixteen variables for each parent, and eight variables for each of the two closest siblings of each subject were investigated by obtaining behavioral incidents. Behavioral incidents concerning each variable were elicited until the experimenter was satisfied that they were adequate for rating the variable, or until the subject's memory of incidents for the variable was exhausted.

Interviews were recorded on tape. The time necessary to obtain sufficient data varied but averaged three hours per subject.

From the taped interviews typescripts were produced from which clues to the identities were carefully removed. Two clinical psychologists who were previously trained in the use of the method served as judges. Each variable was rated on a three-point scale according to the deviancy of the behavior described in the interview. A rating of "three" was given if the behavior was appropriate for the sub-culture and a rating of "one" was given for markedly deviant behavior for the sub-culture. "Two" was used as an intermediate rating, indicating some, but not marked deviancy. When the behavior was considered insufficient for rating purposes a "no data" (ND) category was used. The use of the "no data" category was a rare event. A "does not apply" (DA) category was used when the variable was not appropriate for the stimulus situation, e.g. punishment of a much older sibling by a younger sibling. A "zero" rating was assigned when the stimulus was absent, e.g. a grandparent not living. The judges accomplished their ratings independently. Each variable was rated independently before a judge moved to the next variable in the Scale. Control subjects and experimental subjects were rated randomly to minimize bias.

Experiment II

The procedure of Experiment I was followed in Experiment II. However, different judges were used for rating purposes in this experiment. The new judges were trained in the use of the P-J Scales before making

their ratings of the data. Interview data for both experiments are on file at the Psychological Service Center of the University of Tennessee.

Reliability and Validity

Reliability of Judges' Ratings

In Experiment I two randomly selected interviews from the patient group and two randomly selected interviews from the control group were used in checking the agreement of the two judges' ratings. The "no data" (ND) category, the "does not apply" (DA) category, and the "stimulus not present" or "zero" category were not used in the reliability study. Table VI presents the per cent agreement between the two judges rating variables for the four cases from Experiment I. The judges had perfect agreement in 75 per cent of their ratings. In only 2 per cent of their ratings was there disagreement by as much as two points. Thus, for one judge to assign a rating of marked deviancy and the other judge to assign a rating of expectancy to the same behavior was a rare event.

The reliability of ratings for Experiment II was checked by following the same procedure. Table VII presents the results. The two judges for Experiment II achieved perfect agreement for 89 per cent of their ratings. They disagreed by as much as two points in only 1 per cent of their ratings.

The results of this reliability study are in essential agreement with those of previous studies (Pascal & Jenkins, 1960a; Pascal

TABLE VI

PER CENT AGREEMENT BETWEEN INDEPENDENT JUDGES IN
 RATING VARIABLES OF THE PASCAL-JENKINS
 BEHAVIORAL SCALES FOR EXPERIMENT I

Subject	Per cent complete agreement	Per cent differing by one point	Per cent differing by two points
1	82	16	2
2	59	39	2
3	68	30	2
4	90	10	0
Total	75	23	2

TABLE VII
 PER CENT AGREEMENT BETWEEN INDEPENDENT JUDGES IN RATING
 VARIABLES OF THE PASCAL-JENKINS BEHAVIORAL SCALES
 FOR EXPERIMENT II

Subject	Per cent complete agreement	Per cent differing by one point	Per cent differing by two points
1	83	16	1
2	94	6	0
3	94	6	0
4	86	14	0
Total	89	10	1

& Jenkins, 1960b) employing the P-J Scales.

Reliability of the Data

Kinsey (1948; 1953) demonstrated acceptable reliability of interview data with subjects who gave very personal data such as sex habits. The present study involved investigation of material which was considered generally less threatening than the behavior investigated by Kinsey. However, the material elicited from the patient groups could not be accepted without a check of its reliability.

Four experimental subjects (two from Experiment I and two from Experiment II) who remained hospitalized were interviewed a second time. The elapsed time between the first and second interviews with these subjects varied between eight and twelve months. The stimulus category "Father" was arbitrarily chosen as a sample of the data on which to check reliability. Subjects were encouraged not to try to recall the initial interview, but merely to attempt recall of behavioral incidents from their early years. The procedure of the repeated interviews was similar to the first interviews with the exception of using only one stimulus category (Father).

Typescripts were made of the interviews and the data were rated by the judges. As in the case of the initial ratings the judges were unaware of the subjects' identities. The ratings for the repeated interviews were compared with those of stimulus category "Father" from the initial interviews and percentages of agreement computed. Table VIII presents the results of the reliability of data

TABLE VIII

RELIABILITY OF DATA AS DEMONSTRATED BY PER CENT AGREEMENT OF
JUDGES' RATINGS ON INITIAL AND REPEATED INTERVIEWS
FOR EXPERIMENT I

Judge	Case	Per cent complete agreement	Per cent differing by one point	Per cent differing by two points
1	A	75	25	0
	B	75	19	6
2	A	75	25	0
	B	63	31	6
Total		72	25	3

study for Experiment I. The judges' ratings of the interviews show high agreement. For case "A" there were no ratings on the repeated interview by either judge which differed by as much as two scale points from the initial ratings. There was 75 per cent complete agreement, and in 25 per cent of the cases there was a difference of one point in scale deviancy. For case "B" only 6 per cent of the ratings differed by as much as two points. This represents one variable on which both judges rated the behavior as "markedly deviant" on the repeated interview, but had rated the behavior as "expectancy" on the initial interview.

The results of the reliability of data study for Experiment II is presented in Table IX. No ratings on repeated interviews differed by as much as two points from the ratings on the initial interviews. The percentage of perfect agreement ranged from 60 per cent to 93 per cent with the remainder representing differences of one point or mild disagreement between judges' initial ratings and their ratings on the repeated interviews.

The results of the study suggest that acceptable reliability was obtained on repeated interviews for both experiments. Where differences occurred in deviancy of behavior elicited in the two interviews, they were small. The figures in Table VIII and Table IX are probably conservative estimates of the reliability of the data. The factor of reliability of judges may have accounted for part of the disagreement.

TABLE IX

RELIABILITY OF DATA AS DEMONSTRATED BY PER CENT AGREEMENT OF
JUDGES' RATINGS ON INITIAL AND REPEATED INTERVIEWS
FOR EXPERIMENT II

Judge	Case	Per cent complete agreement	Per cent differing by one point	Per cent differing by two points
1	A	87	13	0
	B	60	40	0
2	A	87	13	0
	B	93	7	0
Total		82	18	0

Validity of the Data

There is no absolute test of the validity of data gathered in interviews such as this study employed. Kinsey (1948; 1953) encountered essentially the same problem and found a partial solution in comparing reports of spouses. However, he was unable to validate his data on early sexual behavior in this manner. Checking validity might be accomplished by interviews with collaterals (siblings, parents, and other relatives), but this practice has been questioned by at least two groups of investigators of this area of research. Prout and White (1956) found a lack of reliability in selective recall when mothers, their schizophrenic offspring, and a nonschizophrenic sibling of each patient were asked to recall traumatic early experiences. Reichard and Tillman (1950) stated, "Rarely can one learn about rejection from the parents themselves. When confronted by the calamity of schizophrenia, they are motivated by an understandable human need to cover up and try to persuade themselves, as well as others, that all is normal and that they are quite at a loss to comprehend what has happened." The frequent nonavailability of collaterals constitutes another problem for this approach in validating the data.

In this study it was possible to use other checks for validity. The internal consistency of the data provided a guide as each interview was accomplished. Where contradictory information was obtained, it was questioned and clarified whenever possible before the interview was terminated. Clinical records and social histories, when available,

were checked and compared with interview data.

As Kinsey (1948) pointed out, retake interviews do not provide a test of validity, but similarity of repeated and initial interviews suggests that the data are based on fact. Similarity of initial and repeated interviews in this study was demonstrated in the reliability section.

The behavioral incident technique insures the validity of many data which might otherwise be questioned. If a subject is able to give incidents of actual behavior and the frequency, duration, and intensity of such incidents rather than mere opinions and feelings, his statements are much more apt to be based on fact.

Interviewer Bias

The experimenter knew in every case whether he was interviewing an experimental subject or a control subject. To minimize bias, every effort was made to investigate the same stimulus situations for each subject so that the conditions of a relatively standardized interview were closely approximated. Many of the data investigated required a numerical estimate by the subject and as a result were relatively free of bias. The option of deviating from the usual interview pattern was preserved, however. This afforded opportunity for following leads if it appeared that significant material could be gained by further investigation. Thus, the advantages of the open-end interview were retained while bias was minimized.

One of the major contributions of the behavioral incident technique was thought to be its resistance to bias through obtaining reports of actual behavior rather than relying on impressions of the subject or the experimenter. The considerable experience and training of the experimenter in the use of the P-J Scales as a research tool was also considered a factor which minimized bias.

Bias of Judges

Interview data were gathered systematically, variable by variable, in the order of the P-J Scales. For the sake of convenience, typescripts were prepared which followed the same order. Judges did not know whether they were rating a control subject or an experimental subject because clues to their identities were removed. The judges were instructed and trained to rate the behavior under each variable as though it was out of context. Each variable was rated separately before the judges continued to the next variable on the interview. This method was followed in order to minimize contamination of one variable by another in the judges ratings. However, the existence of some bias or halo effect was suspected under these conditions. Seven interviews, three from experimental subjects and four from control subjects, were randomly selected from Experiment I for a study of the effect of bias. The ratings of variables "Active Play," "Punishment," "Deviant Behavior," "Gregariousness," "Religiosity," "Provider," and "Compatibility with Spouse" were chosen on rational grounds as those most likely to be influenced by data encountered elsewhere in the

history by the judges. The data under these variables from the seven interviews were rated out of context by two additional judges trained in the Pascal-Jenkins method. These ratings were compared with the ratings made in context by the original judges. In 60 per cent of the ratings there was perfect agreement by the four judges. In 34 per cent of the ratings there was disagreement by one scale point and in 6 per cent of the ratings there was disagreement by two points. In almost every case where disagreement occurred only one judge disagreed while the remaining three were in agreement. Thus, the percentages do not adequately reflect the extent of agreement. The high agreement suggests that the bias effect was rather small.

The nineteen cases where disagreement occurred were examined further for evidence of bias on the part of the judges who rated the behavior in context. If a halo or bias effect was operating, the judges who rated the variables in context should have found the experimental histories more deviant and the control histories less deviant than the judges who rated the variables out of context. Table X presents the number of times the variables were rated more deviant by each pair of judges. It also shows whether these ratings were on experimental or control histories. The results suggest that the judges who rated in context had a tendency to score both experimental and control histories as more deviant than the other judges. The team of judges who rated the variables out of context were more conservative in their estimates of deviancy for both experimental and control histories. Beyond their general tendency to rate both control and

TABLE X
RATING PATTERNS OF JUDGES WHERE DISAGREEMENT OCCURRED ON
RATINGS MADE IN CONTEXT AND OUT OF CONTEXT FOR
EXPERIMENTAL AND CONTROL SUBJECTS

Group	No. of variables judged more deviant when in context	No. of variables judged more deviant when out of context
Experimental	6	1
Control	8	4
Total	14	5

experimental histories as more deviant, the judges who rated in context were slightly "harder" on the experimental histories in this sample. This suggests a mild but insignificant bias effect was generated by the practice of rating variables in context.

CHAPTER III

RESULTS

Introduction

The Binomial Expansion and the Arrangement Technique (Jenkins, 1956) were employed as the most appropriate statistical devices for the matched-pair design of this study. These techniques yield adequate information and promote understanding of the data.

The results of the two experiments are reported separately. Summary data are presented in this chapter; raw data are presented in the Appendixes.

In analyzing the data many "zero" (stimulus not present) ratings were encountered for the stimulus categories "grandparents" and "siblings." Following the method of Pascal and Jenkins (1960a), single ratings for these categories were obtained by averaging the ratings for each variable for all stimuli in each category. For example, if two grandparents were dead and two had ratings of "three," the total of ratings would be six (two "zeros" and two "threes"). The average rating would be 1.5. This procedure was followed in both experiments.

Experiment I

The mean ratings for the stimulus categories "grandparents," "mother," "father," and "siblings" for experimental and control subjects are presented in Table XI. When experimental subjects and

TABLE XI
SUMMARY OF MEAN STIMULUS RATINGS FOR EXPERIMENTAL
AND CONTROL SUBJECTS FOR EXPERIMENT I

Stimulus	Experimental Subjects	Control Subjects	P Value
Grandparents	.8	1.7	.114
Mother	2.2	2.8	.001
Father	2.1	2.7	.001
Siblings	1.8	2.5	.011
Totals	1.7	2.4	.0002

NOTE: 3 = expectancy, 1 = marked deviancy, 2 = intermediate

control subjects were compared across all variables, the probability levels shown in Table XI resulted. Total means and the total probability (all ratings for experimental subjects compared with all ratings for control subjects) are also shown. Experimental subjects received significantly lower ratings (indicating greater deprivation) than control subjects on the stimulus categories "mother," "father," and "siblings." The raw data and means from which Table XI was derived may be found in Tables XVII, XVIII, IX, and XX of the Appendix.

Table XII presents the probabilities by variable and stimulus category when experimental subjects and control subjects were compared. The totals in the right hand column represent the probabilities obtained when experimentals and controls were compared across all stimulus categories for each variable. For example, the number of reversals under "Frequency of Contact" for "grandparents," "mother," "father," and "siblings" were totaled and the appropriate probability level selected from a Sign Test table for an N of forty. This N is admittedly somewhat spuriously high.

For Experiment I, acceptable total levels of significance ($P = .02$) were obtained for all variables except "Physical Punishment," "Physical Health," "Variability of Habitat," "Provider," "Sexual Role," and "Alcohol Behavior." For all variables there was a trend toward greater deprivation for experimental subjects than for control subjects, although some of the trends were weak. The stimuli "mother" and "father" emerged as the more significant categories.

TABLE XII
PROBABILITY VALUES BY VARIABLE AND STIMULUS CATEGORY
FOR EXPERIMENT I

Variable	Grand- parents	Mother	Father	Sibs	Total
Frequency of contact	.172	.114	.055	.172	.005
Active play	.114	.001	.006	.033	.001
Restraints	.055	.033	.172	DA	.005
Punishment	.172	.033	.172	DA	.025
Affection	.055	.055	.033	.020	.005
Deviant behavior	.172	.114	.114	.090	.005
Physical health		.377	.500		.331
Religiosity	.055	.114	.114		.005
Gregariousness		.114	.033		.006
Intellectualism		.033	.011		.0006
Variability of habitat		.172	.172		.039
Parental status		.055	.033		.004
Provider		.500	.275		.251
Compatibility with spouse		.033	.011		.0006
Sexual role		.114	.275		.057
Alcohol behavior	.172	.377	.275	DA	.175
Compatibility with sib				.011	.011
Totals	.114	.001	.001	.011	.0002

Experiment II

The mean ratings for the stimulus categories "grandparents," "mother," "father," and "siblings" for Experiment II are presented in Table XIII. The probability figures in the table resulted when experimental subjects and control subjects were compared across all variables for each category. Total means and the total probability are also shown. The table indicates that experimental subjects received significantly lower ratings (suggesting greater deprivation) than control subjects. The raw data and means from which Table XIII was derived may be found in Tables XXI, XXII, XXIII, and XXIV of the Appendix.

Table XIV presents the probabilities by variable and stimulus category when experimental subjects and their controls were compared. For Experiment II, acceptable total levels of significance ($P = .02$) were obtained for the variables "Active Play," "Displays of Affection," "Gregariousness," "Provider," and "Compatibility with Spouse." Strong trends emerged for the variables "Frequency of Contact," "Restrains," "Physical Punishment," "Deviant Behavior," "Religiosity," and "Parental Status." As in Experiment I, there was a trend toward greater deprivation for experimental subjects than control subjects on all variables. The stimulus category "siblings" did not significantly differentiate experimental and control subjects in Experiment II. The stimulus category "grandparents" failed to reach acceptable levels of significance in either experiment.

TABLE XIII
SUMMARY OF MEAN STIMULUS RATINGS FOR EXPERIMENTAL
AND CONTROL SUBJECTS FOR EXPERIMENT II

Stimulus	Experimental Subjects	Control Subjects	P Value
Grandparents	1.1	1.4	.172
Mother	2.3	3.0	.001
Father	2.4	2.9	.001
Siblings	2.2	2.5	.172
Totals	2.0	2.5	.002

NOTE: 3 = expectancy, 1 = marked deviancy, 2 = intermediate

TABLE XIV
PROBABILITY VALUES BY VARIABLE AND STIMULUS CATEGORY
FOR EXPERIMENT II

Variable	Grand- parents	Mother	Father	Sibs	Total
Frequency of contact	.377	.500	.172	.377	.060
Active play	.114	.033	.033	.172	.001
Restraints	.500	.114	.114	DA	.030
Punishment	.500	.114	.055	DA	.025
Affection	.114	.055	.006	.377	.005
Deviant behavior	.275	.055	.055	.500	.025
Physical health		.275	.377		.191
Religiosity	.377	.033	.377		.050
Gregariousness		.172	.033		.014
Intellectualism		.172	-.438		.455
Variability of habitat		.275	.377		.191
Parental status		.172	.114		.021
Provider		.114	.055		.018
Compatibility with spouse		.055	.055		.006
Sexual role		.275	.172		.094
Alcohol behavior	.377	.500	.275		.212
Compatibility with sib				.500	.500
Totals	.172	.001	.001	.172	.002

Results Summary for Experiment I and Experiment II

Table XV presents by stimulus category the means of variables which were significant ($P < .06$) for both experiments. The probability values for these variables are presented in Table XVI. For both experiments, the variables "Active Play," "Displays of Affection," and "Compatibility with Spouse" emerged as significant factors in the behavior of parents of experimental subjects. "Gregariousness" was significant for "father" across both experiments, but not for "mother." Although these variables did not in every case reach traditionally acceptable levels of significance, uncombined probabilities of the order .055 in both experiments were considered quite acceptable. In the last column in Table XVI are presented the probability values selected from a binomial table with an N of 20 when the number of reversals were counted in both experiments for the listed variables and stimulus categories.

TABLE XV

COMBINED MEANS OF VARIABLES BY STIMULUS CATEGORY SIGNIFICANT
IN BOTH EXPERIMENT I AND EXPERIMENT II

Variable	Mother		Father		Means	
	E	C	E	C	E	C
Active play	1.7	2.8	1.9	2.9	1.8	2.9
Displays of affection	2.1	2.9	2.0	2.9	2.1	2.9
Gregariousness			2.2	2.8		
Compatibility with spouse	2.0	2.9	2.1	2.9	2.1	2.9
Mean	1.9	2.8	2.1	2.9	2.0	2.9

NOTE: 3 = expectancy, 1 = marked deviancy, 2 = intermediate

TABLE XVI

PROBABILITIES BY STIMULUS CATEGORY OF VARIABLES SIGNIFICANT
FOR BOTH EXPERIMENT I AND EXPERIMENT II

Variable	Experiment I		Experiment II		Experiment I & II	
	Mother	Father	Mother	Father	Mother	Father
Active play	.001	.006	.033	.033	.0001	.0002
Displays of affection	.055	.033	.055	.006	.006	.0002
Gregariousness		.033		.033		.001
Compatibility with spouse	.033	.011	.055	.055	.004	.001

CHAPTER IV

DISCUSSION, SUMMARY AND CONCLUSIONS

Discussion

The findings of this study strongly suggest a relationship between the early family background of the experimental population and its adult behavior. A generally more unfavorable early environment for the schizophrenic sample was found, with certain variables and stimulus categories emerging which were particularly significant. Parents and parental surrogates appear to have been the most powerful stimuli which impinged upon the sample in the early years. Grandparents and siblings were less important in shaping later behavior. The types of behavior by the parents which appeared to be the most significant concerned close interaction with their children, spouses, and others. Parents of the children who later became schizophrenic spent significantly less time playing with their offspring or taking part in any type of recreational activity which involved close mutual participation. They showed less affection for their children in terms of physical contact (hugging, kissing, and holding) and verbal expression. The fathers were less gregarious than the fathers of controls. They visited less, had fewer callers, and generally had fewer social outlets than fathers of the nonschizophrenic sample. There was significantly more marital discord (quarreling, fighting, and separating) between parents of schizophrenics than between parents of controls.

These variables ("Active Play," "Displays of Affection," "Gregariousness," and "Compatibility with Spouse") all involve behavior through which a child may learn patterns of close association and interaction with others in his environment.

It is interesting to compare these results with findings of other studies. Pascal and Jenkins (1960b), using essentially the same techniques with ten psychotic patients and their controls, also found significant general deprivation by parents of the experimental group when all variables were combined. Thus, in three experiments with a total of thirty psychotic subjects this relationship was found to be significant.

Many writers have stressed the mother's influence in the etiology of schizophrenia. The present study emphasizes the importance of the father as well as the mother in the early years of the child. Lidz, Parker, and Cornelison (1956) also noted the father's importance and suggested that there is no one type of father whose offspring becomes schizophrenic. However, that such fathers do have certain behavior in common is suggested by the results of this experiment. In another study, Lidz and Lidz (1949) found evidence of the incompatibility of parents of schizophrenics which this experiment found statistically significant.

Parental "over-protection" and "rejection" have often been mentioned as factors in the etiology of schizophrenia. These factors are difficult to assess because they usually are not defined in terms.

of behavior. The variable "Restraints" as behaviorally defined by Pascal and Jenkins (1960b) might be related to "over-protection." This variable was not significant for the present study. The behavior subsumed under the variable "Displays of Affection" by parents might assess the factor referred to in some studies as "rejection." "Displays of Affection" was a highly significant variable for the sample of schizophrenics investigated in this study, suggesting that by withholding overt behavior such as hugging, kissing, and holding the parents, in effect, "rejected" their children.

Schizophrenics appear to suffer the greatest deficit in close, interpersonal relationships. The results of this study suggest the hypotheses that as children, these schizophrenic subjects had little opportunity to experience the behavioral manifestations of close relationships with their parents or to observe such behavior in their parents' relations with others. The suggested implications for child rearing are obvious. Close interaction of parents with their children in play and recreational activities would seem to be highly desirable. Affectionate behavior by their parents may well shape children's ability to give and to receive affection from others. Parental compatibility probably serves as a model for future marital relationships of the child. The expectancies of the child are almost certainly influenced. Social skills may be learned in part by observing parents' social behavior.

This study lends experimental support to the observations of clinicians who for many years have noted the apparent relationship

between early parental influences and the later behavior of offspring. The results do not imply that the variables isolated are the only significant variables in the relationship. It would be surprising if future research did not find others. Furthermore, the possibility of genetic and biochemical factors as contributing components in psychosis cannot be ruled out on the basis of this study.

Future research in the area of early relationships of schizophrenic patients might focus on the significant variables which have emerged for this sample. One possibility for additional research is a more intensive investigation of the variables which reached significance in an attempt to further define them in terms of behavior.

Research on the validity of interview data secured from schizophrenic patients is needed. Although reliable collaterals are difficult to locate, securing them may eventually be necessary to answer the question of validity.

A study of workhouse alcoholics by Pascal and Jenkins (1960a) found marked deprivation by parents of the alcoholic subjects in their early years. More deprivation occurred for this relatively low socioeconomic group than for the schizophrenic subjects of this study. The alcoholic group of Pascal and Jenkins and the schizophrenic group of this study had certain significant variables in common. "Active Play with Subject," "Displays of Affection toward Subject," and "Compatibility with Spouse" were significant for both alcoholics and schizophrenics. However, additional variables were significant in the early experience of the alcoholic subjects which

were not significant for the schizophrenic sample. Research with other deviant groups utilizing this method might determine whether or not they have essentially similar forms of early deprivation or if distinctly different patterns exist. If the latter is true, perhaps the behavioral definition of the parent who predisposes his child to schizophrenia and other deviant behavior can eventually be written.

Summary and Conclusions

Ten male schizophrenic patients and their control subjects were matched on the variables age, education, and socioeconomic status by occupation. The Pascal-Jenkins Behavioral Scales (Pascal & Jenkins, 1960b) were used to investigate the stimulus situations presented by grandparents, parents, and siblings in the first ten years of the subjects' lives. The experiment was replicated with ten additional experimental subjects and their controls.

The stimulus categories "Mother" and "Father" were found to be highly significant in both experiments. This suggested that the schizophrenic patients had more general deprivation of needs by parents in the early years. Specifically defined variables significant across both experiments were "Active Play with Subject," "Displays of Affection by Parents," "Gregariousness of Father," and "Compatibility of Parents." There was a strong trend toward significance for the variable "Deviant Behavior by Parents."

The study suggests the hypothesis that in the early years the schizophrenic patients had little opportunity to experience close

interpersonal contacts with their parents, were deprived of affection by them, and learned withdrawal and other maladaptive social responses through the influence of their behavior.

The usefulness of the method for further research and possible directions such research might take were suggested.

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APPENDIXES

TABLE XVII

AVERAGE RATINGS OF SUBJECTS' GRANDPARENTS ON EIGHT VARIABLES FOR EXPERIMENT I

S Pairs	Frequency of Contact		Active Play		Restraints		Physical Punishment		Displays of Affection		Deviant Behavior		Alcohol		Relig- iosity		Mean	
	E	C	E	C	E	C	E	C	E	C	E	C	E	C	E	C	E	C
1	0.0	2.0	0.0	1.9	0.0	2.1	0.0	2.3	0.0	2.1	0.0	2.1	0.0	2.1	0.0	2.0	0.0	2.1
2	3.0	2.3	2.3	2.1	2.6	2.3	2.8	2.3	2.8	2.1	2.5	2.3	3.0	2.3	2.8	2.3	2.7	2.3
3	0.5	0.0	0.4	0.0	0.5	0.0	0.8	0.0	0.8	0.0	0.5	0.0	0.8	0.0	0.8	0.0	0.6	0.0
4	0.8	0.8	0.3	0.8	0.4	0.8	0.6	0.8	0.6	0.8	0.5	0.8	0.8	0.8	0.6	0.8	0.6	0.8
5	0.6	0.6	0.3	0.3	0.5	0.6	0.8	0.6	0.4	0.6	0.8	0.5	0.8	0.8	0.5	0.8	0.6	0.6
6	1.0	2.5	0.5	2.6	1.4	2.8	1.3	3.0	0.9	2.9	1.5	3.0	1.5	3.0	1.5	3.0	1.2	2.9
7	1.4	2.1	0.5	1.3	1.4	2.3	1.4	2.3	0.9	2.3	1.5	2.3	1.5	2.3	1.0	2.0	1.2	2.1
8	0.6	1.5	0.5	1.5	0.8	1.5	0.8	1.5	0.8	1.4	0.8	1.5	0.8	1.5	0.8	1.5	0.7	1.5
9	0.0	1.5	0.0	1.2	0.0	1.4	0.0	1.5	0.0	1.5	0.0	1.5	0.0	1.5	0.0	1.2	0.0	1.4
10	0.6	2.8	0.6	2.5	0.5	3.0	0.8	3.0	0.8	2.9	0.8	3.0	0.8	3.0	0.8	3.0	0.7	2.9
Mean	0.9	1.6	0.5	1.4	0.8	1.7	0.9	1.7	0.8	1.7	0.9	1.7	1.0	1.7	0.9	1.7	0.8	1.7
P	.172		.114		.055		.172		.055		.172		.172		.055			

TABLE XVIII

RATINGS OF SUBJECTS' MOTHERS ON SIXTEEN VARIABLES FOR EXPERIMENT I

S Pairs	Frequency of Contact		Active Play		Restraints		Physical Punishment		Displays of Affection		Deviant Behavior		Physical Health		Relig- iosity	
	E	C	E	C	E	C	E	C	E	C	E	C	E	C	E	C
1	3.0	3.0	1.0	3.0	1.5	3.0	1.0	2.5	1.0	3.0	1.0	3.0	2.0	3.0	3.0	3.0
2	1.5	3.0	1.0	3.0	2.0	3.0	1.0	3.0	2.0	3.0	1.5	3.0	2.5	3.0	2.0	2.5
3	2.5	3.0	1.0	2.0	1.0	3.0	1.0	3.0	1.5	2.0	1.0	2.5	3.0	3.0	1.0	2.0
4	3.0	3.0	1.0	3.0	2.0	2.5	2.0	2.5	3.0	3.0	2.0	2.0	3.0	3.0	3.0	3.0
5	2.5	3.0	1.0	1.5	1.5	2.5	2.0	2.0	1.5	3.0	1.0	3.0	2.5	3.0	1.5	3.0
6	2.0	3.0	1.0	3.0	2.5	2.0	2.5	2.5	2.0	3.0	2.0	2.0	1.5	1.5	1.5	3.0
7	3.0	3.0	1.0	3.0	1.5	3.0	1.0	2.0	2.0	2.0	2.5	2.0	3.0	2.0	3.0	3.0
8	3.0	3.0	1.5	3.0	3.0	3.0	2.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
9	3.0	3.0	1.0	2.0	2.0	3.0	2.5	2.5	1.0	3.0	2.0	3.0	3.0	3.0	2.5	3.0
10	2.0	3.0	1.0	3.0	2.5	3.0	2.5	3.0	2.5	2.5	2.0	3.0	3.0	3.0	3.0	3.0
Mean	2.6	3.0	1.5	2.7	1.9	2.8	1.9	2.6	2.0	2.8	1.8	2.7	2.7	2.8	2.4	2.9
P	.114		.001		.033		.033		.055		.114		.377		.114	

TABLE XVIII (Continued)

RATINGS OF SUBJECTS' MOTHERS ON SIXTEEN VARIABLES FOR EXPERIMENT I

S Pairs	Gregariousness		Intellectualism		Variability of Habitat		Parental Status		Provider		Compatibil- ity with Spouse		Sexual Role		Alcohol		Mean	
	E	C	E	C	E	C	E	C	E	C	E	C	E	C	E	C	E	C
1	2.5	3.0	2.0	3.0	2.5	2.5	2.0	2.5	3.0	3.0	1.5	3.0	2.5	3.0	3.0	3.0	2.0	2.9
2	2.0	3.0	2.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	1.5	3.0	2.5	3.0	3.0	3.0	2.0	3.0
3	2.5	2.0	1.5	2.0	1.0	3.0	1.5	1.5	2.5	2.5	1.0	3.0	2.0	3.0	1.0	3.0	1.6	2.5
4	3.0	3.0	3.0	3.0	2.0	3.0	3.0	2.5	3.0	3.0	2.0	2.0	3.0	3.0	3.0	3.0	2.6	2.8
5	2.0	3.0	1.0	1.5	3.0	3.0	2.0	3.0	3.0	2.5	2.0	3.0	2.5	2.5	1.5	3.0	1.9	2.7
6	2.5	3.0	1.5	2.0	1.5	3.0	2.5	3.0	3.0	3.0	2.0	3.0	2.5	3.0	3.0	3.0	2.1	2.7
7	2.0	3.0	2.5	2.5	3.0	3.0	2.0	3.0	3.0	3.0	1.5	3.0	2.0	3.0	3.0	3.0	2.3	2.7
8	2.5	3.0	2.0	2.5	2.5	3.0	2.5	3.0	3.0	3.0	2.5	3.0	3.0	3.0	3.0	3.0	2.7	3.0
9	1.5	3.0	2.0	2.5	1.5	3.0	2.0	3.0	3.0	3.0	1.0	3.0	3.0	3.0	3.0	3.0	2.1	2.9
10	3.0	2.0	3.0	3.0	3.0	2.5	3.0	3.0	2.5	3.0	3.0	2.0	3.0	3.0	3.0	3.0	2.6	2.8
Mean	2.3	2.8	2.1	2.5	2.3	2.9	2.3	2.8	2.9	2.9	1.8	2.8	2.6	3.0	2.7	3.0	2.2	2.8
P	.114		.033		.172		.055		.500		.033		.114		.377			

TABLE XIX

RATINGS OF SUBJECTS' FATHERS ON SIXTEEN VARIABLES FOR EXPERIMENT I

S Pairs	Frequency of Contact		Active Play		Restraints		Physical Punishment		Displays of Affection		Deviant Behavior		Physical Health		Relig- iosity	
	E	C	E	C	E	C	E	C	E	C	E	C	E	C	E	C
1	1.5	2.5	2.5	3.0	2.0	3.0	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.0	1.5	2.5
2	3.0	2.0	2.0	2.5	2.0	3.0	1.0	3.0	1.0	3.0	2.0	3.0	3.0	2.5	2.5	2.0
3	1.0	3.0	1.0	2.0	1.5	1.5	2.5	2.0	1.5	1.5	2.0	2.5	2.5	3.0	1.0	2.5
4	1.5	3.0	1.0	3.0	1.5	3.0	2.0	3.0	2.0	3.0	2.5	3.0	3.0	3.0	3.0	3.0
5	1.0	1.5	1.0	1.0	2.0	2.0	2.5	2.5	2.0	2.5	3.0	2.5	3.0	3.0	1.0	1.5
6	2.5	3.0	2.0	3.0	2.0	3.0	1.5	3.0	1.0	3.0	2.0	3.0	2.5	3.0	2.0	3.0
7	3.0	3.0	2.0	3.0	2.5	1.0	1.0	2.0	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.0
8	3.0	3.0	1.5	3.0	2.0	2.5	1.5	3.0	2.5	3.0	3.0	3.0	3.0	3.0	2.0	3.0
9	1.0	3.0	1.0	3.0	2.0	3.0	1.0	2.5	1.0	3.0	1.5	2.0	3.0	2.5	1.5	3.0
10	1.0	2.0	2.0	3.0	2.5	2.0	2.3	1.5	2.0	3.0	1.5	3.0	1.5	3.0	2.5	2.5
Mean	1.9	2.6	1.6	2.7	2.0	2.4	1.8	2.5	1.9	2.8	2.4	2.8	2.8	2.9	2.0	2.6
P	.055		.006		.172		.172		.033		.114		.500		.114	

TABLE XIX (Continued)

RATINGS OF SUBJECTS' FATHERS ON SIXTEEN VARIABLES FOR EXPERIMENT I

S Pairs	Gregariousness		Intellectualism		Variability of Habitat		Parental Status		Provider		Compatibil- ity with Spouse		Sex Role		Alcohol		Mean	
	E	C	E	C	E	C	E	C	E	C	E	C	E	C	E	C	E	C
1	2.0	3.0	2.0	2.0	2.5	2.5	2.5	3.0	3.0	3.0	2.0	3.0	2.5	3.0	2.0	3.0	2.3	2.8
2	2.0	3.0	2.0	3.0	3.0	3.0	2.0	3.0	1.5	3.0	1.0	3.0	3.0	3.0	3.0	3.0	2.1	2.8
3	2.0	2.0	1.5	2.0	1.0	3.0	2.0	2.0	3.0	2.0	1.0	3.0	3.0	3.0	1.0	3.0	1.7	2.4
4	2.0	2.0	2.5	2.5	2.0	3.0	2.0	2.5	3.0	3.0	2.0	2.5	3.0	2.5	2.0	3.0	2.2	2.8
5	1.0	2.0	1.0	2.0	3.0	3.0	2.0	2.5	2.5	2.5	2.0	2.5	2.5	3.0	2.5	2.0	2.0	2.3
6	1.5	2.0	1.5	2.0	1.5	3.0	2.0	3.0	2.0	3.0	2.0	3.0	3.0	3.0	3.0	3.0	2.0	2.9
7	2.0	2.5	2.0	2.5	3.0	3.0	3.0	3.0	3.0	3.0	1.5	3.0	1.5	3.0	3.0	3.0	2.4	2.7
8	3.0	3.0	2.5	3.0	2.5	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.6	2.9
9	1.5	3.0	1.5	2.0	1.5	3.0	1.5	3.0	1.5	3.0	1.0	3.0	3.0	3.0	1.0	3.0	1.5	2.8
10	1.8	3.0	2.3	3.0	3.0	2.5	2.8	3.0	2.5	3.0	2.0	2.0	2.0	3.0	2.0	2.0	2.2	2.6
Mean	1.9	2.6	1.9	2.4	2.3	2.9	2.3	2.8	2.5	2.9	1.8	2.8	2.7	2.9	2.3	2.8	2.1	2.7
P	.033		.011		.172		.033		.275		.011		.275		.275			

TABLE XX
AVERAGE RATINGS OF SUBJECTS' SIBLINGS FOR EXPERIMENT I

S Pairs	Frequency of Contact		Active Play		Restraints		Physical Punishment		Displays of Affection		Deviant Behavior		Compati- bility with Sib		Alcohol		Mean	
	E	C	E	C	E	C	E	C	E	C	E	C	E	C	E	C	E	C
1	2.5	3.0	2.5	2.5	DA	DA	DA	DA	2.3	2.8	2.8	3.0	2.3	2.8	DA	DA	2.5	2.8
2	2.5	2.8	1.8	2.5	DA	DA	DA	DA	2.0	2.8	2.8	3.0	1.0	2.8	DA	DA	2.0	2.8
3	3.0	3.0	2.5	3.0	DA	DA	DA	DA	2.3	2.3	3.0	2.5	2.3	2.5	DA	DA	2.6	2.7
4	1.5	2.5	1.0	2.5	DA	3.0	DA	3.0	1.0	3.0	1.0	3.0	1.0	3.0	DA	3.0	1.1	2.9
5	3.0	2.8	2.8	3.0	DA	3.0	DA	3.0	2.0	3.0	2.5	3.0	2.5	3.0	DA	3.0	2.6	3.0
6	1.5	2.5	1.3	2.5	DA	DA	DA	DA	1.0	2.0	1.5	2.8	0.8	2.0	DA	DA	1.2	2.4
7	1.5	2.8	1.0	2.3	DA	DA	DA	DA	1.0	2.5	1.5	3.0	1.5	2.5	DA	DA	1.3	2.6
8	3.0	2.5	2.5	2.3	2.8	DA	3.0	DA	2.8	2.8	3.0	2.5	3.0	2.8	3.0	DA	2.9	2.6
9	1.5	1.5	1.0	1.5	DA	DA	DA	DA	1.0	ND	1.5	ND	1.3	1.5	DA	DA	1.3	1.5
10	0.5	1.5	0.8	1.5	DA	DA	DA	DA	0.8	1.5	1.0	1.5	0.5	1.3	DA	DA	0.7	1.5
Mean	2.1	2.5	1.7	2.4	2.8	3.0	3.0	3.0	1.6	2.5	2.1	2.7	1.6	2.4	3.0	3.0	1.8	2.5
P	.172		.033		-		-		.020		.090		.011		-			

TABLE XXI

AVERAGE RATINGS OF SUBJECTS' GRANDPARENTS ON EIGHT VARIABLES FOR EXPERIMENT II

S Pairs	Frequency of Contact		Active Play		Restraints		Physical Punishment		Displays of Affection		Deviant Behavior		Alcohol		Relig- iosity		Mean	
	E	C	E	C	E	C	E	C	E	C	E	C	E	C	E	C	E	C
1	1.2	1.5	1.0	1.5	1.5	1.5	1.5	1.5	1.1	1.5	1.0	1.5	1.5	1.5	0.8	1.5	1.2	1.5
2	2.3	1.0	1.9	1.5	2.3	1.5	2.3	1.5	2.3	1.5	2.3	1.5	2.3	1.5	2.1	1.5	2.2	1.4
3	0.6	0.8	0.4	0.8	0.5	0.8	0.8	0.8	0.5	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.8
4	0.0	1.2	0.0	1.0	0.0	1.4	0.0	1.5	0.0	1.5	0.0	1.5	0.0	1.5	0.0	1.4	0.0	1.4
5	1.5	1.4	1.0	1.1	1.5	1.5	1.5	1.5	1.0	1.4	1.5	1.5	1.5	1.5	1.4	1.1	1.4	1.4
6	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
7	2.3	2.3	1.6	2.1	2.3	2.0	2.3	2.3	1.8	2.3	1.9	2.1	1.9	2.3	2.0	2.3	2.0	2.2
8	1.1	3.0	1.0	2.0	1.5	2.8	1.5	3.0	1.4	2.5	1.3	2.9	1.5	3.0	1.3	2.4	1.3	2.7
9	0.0	0.8	0.0	0.4	0.0	0.6	0.0	0.8	0.0	0.8	0.0	0.5	0.0	0.8	0.0	0.6	0.0	0.7
10	1.4	0.8	1.3	0.4	1.5	0.6	1.5	0.8	1.5	0.8	1.5	0.8	1.5	0.8	1.3	0.8	1.4	0.7
Mean	1.1	1.4	0.9	1.2	1.2	1.4	1.2	1.5	1.0	1.4	1.1	1.4	1.2	1.5	1.1	1.3	1.1	1.4
P	.377		.114		.500		.500		.114		.275		.377		.377			

TABLE XXII

RATINGS OF SUBJECTS' MOTHERS ON SIXTEEN VARIABLES FOR EXPERIMENT II

Pairs	Frequency of Contact		Active Play		Restraints		Physical Punishment		Displays of Affection		Deviant Behavior		Physical Health		Religiosity	
	E	C	E	C	E	C	E	C	E	C	E	C	E	C	E	C
1	3.0	2.0	1.0	3.0	3.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	3.0	3.0	2.0	3.0
2	3.0	3.0	2.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
3	3.0	3.0	2.0	3.0	3.0	3.0	3.0	3.0	2.5	3.0	3.0	3.0	3.0	3.0	3.0	3.0
4	0.0	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0	3.0
5	3.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0	1.5	3.0	3.0	3.0	3.0	3.0	2.5	3.0
6	3.0	3.0	3.0	3.0	2.0	3.0	2.5	3.0	3.0	3.0	2.0	3.0	3.0	3.0	2.5	3.0
7	3.0	2.5	2.5	3.0	3.0	3.0	3.0	3.0	3.0	3.0	1.0	3.0	3.0	3.0	3.0	3.0
8	3.0	3.0	3.0	2.0	2.5	3.0	2.5	2.5	2.0	3.0	2.0	3.0	2.0	3.0	1.5	3.0
9	2.0	3.0	1.3	3.0	2.0	3.0	1.0	3.0	1.0	3.0	2.0	3.0	2.0	3.0	1.0	3.0
10	3.0	3.0	1.5	3.0	3.0	3.0	2.0	3.0	3.0	3.0	2.5	3.0	3.0	3.0	1.5	3.0
Mean	2.6	2.9	1.8	2.9	2.4	3.0	2.2	3.0	2.1	3.0	2.2	3.0	2.5	3.0	2.0	3.0
P	.500		.033		.114		.114		.055		.055		.275		.033	

TABLE XXII (Continued)

RATINGS OF SUBJECTS' MOTHERS ON SIXTEEN VARIABLES FOR EXPERIMENT II

S Pairs	Gregari- ousness		Intellec- tualism		Variability of Habitat		Parental Status		Provider		Compatibil- ity with Spouse		Sexual Role		Alcohol		Mean	
	E	C	E	C	E	C	E	C	E	C	E	C	E	C	E	C	E	C
1	2.0	3.0	2.0	3.0	3.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0	3.0	3.0	3.0	3.0	2.4	2.9
2	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.9	3.0
3	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.9	3.0
4	0.0	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0	3.0
5	2.5	3.0	3.0	3.0	2.0	3.0	3.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	3.0	3.0	2.5	3.0
6	3.0	3.0	3.0	3.0	3.0	2.5	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.8	3.0
7	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	2.8	3.0
8	3.0	3.0	3.0	2.5	2.0	2.5	2.0	2.5	2.5	3.0	2.0	3.0	1.5	3.0	3.0	3.0	2.3	2.8
9	2.5	3.0	2.0	2.5	2.5	3.0	3.0	3.0	2.0	3.0	2.0	3.0	3.0	3.0	3.0	3.0	2.0	3.0
10	3.0	3.0	3.0	3.0	3.0	3.0	2.0	3.0	2.0	3.0	1.0	2.5	3.0	3.0	3.0	3.0	2.5	3.0
Mean	2.5	3.0	2.5	2.9	2.5	2.9	2.4	3.0	2.4	3.0	2.1	3.0	2.6	3.0	2.7	3.0	2.3	3.0
P	.172		.172		.275		.172		.114		.055		.275		.500			

TABLE XXIII

RATINGS OF SUBJECTS' FATHERS ON SIXTEEN VARIABLES FOR EXPERIMENT II

<u>S</u> Pairs	Frequency of Contact		Active Play		Restraints		Physical Punishment		Displays of Affection		Deviant Behavior		Physical Health		Relig- iosity	
	E	C	E	C	E	C	E	C	E	C	E	C	E	C	E	C
1	3.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
2	3.0	3.0	2.0	3.0	2.5	3.0	1.5	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
3	2.0	3.0	2.0	3.0	3.0	3.0	2.0	3.0	1.5	3.0	2.0	3.0	3.0	3.0	2.5	3.0
4	2.5	3.0	3.0	3.0	3.0	3.0	3.0	2.0	2.5	3.0	2.0	3.0	1.5	3.0	2.0	2.5
5	2.0	2.5	2.5	2.5	3.0	3.0	1.5	2.0	2.0	3.0	2.0	2.5	2.0	3.0	2.0	1.5
6	3.0	3.0	2.5	3.0	3.0	3.0	2.0	3.0	2.5	3.0	3.0	3.0	3.0	3.0	3.0	3.0
7	2.5	2.5	3.0	3.0	2.5	3.0	2.5	2.0	2.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
8	3.0	3.0	2.0	3.0	2.0	3.0	1.5	3.0	2.0	3.0	2.5	3.0	3.0	3.0	3.0	2.5
9	3.0	3.0	2.0	3.0	3.0	3.0	1.5	3.0	2.0	3.0	2.5	3.0	3.0	3.0	1.0	3.0
10	1.0	3.0	1.0	3.0	1.5	3.0	1.0	3.0	1.0	3.0	1.0	3.0	3.0	3.0	1.0	3.0
Mean	2.5	2.9	2.2	3.0	2.6	3.0	1.9	2.7	2.1	3.0	2.4	3.0	2.8	3.0	2.4	2.8
	.172		.033		.114		.055		.006		.055		.377		.377	

TABLE XXIII (Continued)

RATINGS OF SUBJECTS' FATHERS ON SIXTEEN VARIABLES FOR EXPERIMENT II'

S Pairs	Gregari- ousness		Intellec- tualism		Variability of Habitat		Parental Status		Provider		Compatibil- ity with Spouse		Sexual Role		Alcohol		Mean	
	E	C	E	C	E	C	E	C	E	C	E	C	E	C	E	C	E	C
1	2.5	3.0	2.5	3.0	3.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0	3.0	3.0	3.0	3.0	2.5	3.0
2	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.8	3.0
3	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.5	3.0	1.0	3.0	2.5	3.0
4	1.5	3.0	3.0	3.0	3.0	3.0	1.5	3.0	2.0	3.0	1.0	3.0	2.5	3.0	3.0	2.5	2.3	2.9
5	2.0	3.0	3.0	2.5	2.0	3.0	2.0	3.0	1.5	3.0	2.0	3.0	3.0	3.0	1.5	3.0	2.1	2.7
6	3.0	3.0	3.0	3.0	3.0	2.5	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.5	3.0	2.8	3.0
7	2.5	3.0	3.0	2.0	3.0	3.0	2.5	3.0	2.5	3.0	3.0	3.0	2.0	3.0	3.0	3.0	2.7	2.8
8	2.0	3.0	3.0	2.0	2.0	2.5	2.0	2.0	2.0	2.5	2.0	3.0	1.5	3.0	3.0	3.0	2.3	2.8
9	2.0	2.5	3.0	3.0	2.5	3.0	3.0	3.0	3.0	3.0	2.0	3.0	3.0	3.0	3.0	3.0	2.5	3.0
10	2.5	3.0	2.0	3.0	3.0	3.0	1.5	3.0	1.0	3.0	1.0	2.5	3.0	3.0	1.0	2.0	1.6	2.6
Mean	2.4	3.0	2.9	2.8	2.8	2.9	2.4	2.9	2.3	3.0	2.3	3.0	2.7	3.0	2.4	2.9	2.4	2.9
P	.033		-		.377		.114		.055		.055		.172		.275			

TABLE XXIV

AVERAGE RATINGS OF SUBJECTS' SIBLINGS FOR EXPERIMENT II

S Pairs	Frequency of Contact		Active Play		Restraints		Physical Punishment		Displays of Affection		Deviant Behavior		Compati- bility with Sib		Alcohol		Mean	
	E	C	E	C	E	C	E	C	E	C	E	C	E	C	E	C	E	C
1	3.0	3.0	3.0	3.0	DA	DA	DA	DA	2.8	3.0	2.5	3.0	3.0	3.0	DA	DA	1.4	3.0
2	1.5	3.0	1.5	3.0	1.5	DA	DA	DA	1.5	3.0	1.5	2.8	1.5	3.0	1.5	DA	1.5	3.0
3	1.5	3.0	1.5	2.5	1.5	DA	DA	DA	1.5	3.0	1.5	3.0	1.5	3.0	DA	DA	1.5	2.9
4	1.5	3.0	1.5	2.8	DA	DA	DA	DA	1.5	3.0	1.5	2.8	1.5	2.8	DA	DA	1.5	2.9
5	3.0	1.5	3.0	1.5	DA	DA	DA	DA	3.0	1.5	2.3	1.5	3.0	1.0	DA	DA	2.9	1.4
6	3.0	3.0	3.0	3.0	DA	DA	DA	DA	3.0	3.0	3.0	2.8	3.0	3.0	DA	DA	3.0	3.0
7	3.0	3.0	2.5	3.0	DA	DA	DA	DA	2.5	3.0	3.0	3.0	ND	3.0	DA	DA	2.8	3.0
8	2.8	3.0	2.5	3.0	DA	DA	DA	DA	3.0	3.0	3.0	3.0	2.8	2.5	DA	DA	2.8	2.9
9	1.5	0.0	1.5	0.0	DA	DA	DA	0.0	1.3	0.0	1.5	0.0	1.0	0.0	DA	0.0	1.4	0.0
10	3.0	3.0	2.8	3.0	DA	DA	DA	DA	3.0	2.5	3.0	2.5	3.0	3.0	DA	DA	2.9	2.9
Mean	2.4	2.6	2.3	2.5	1.5	1.5	DA	DA	2.3	2.4	2.3	2.4	2.3	2.4	DA	DA	2.2	2.5
P	.377		.172		-		-		.377		.500		.500		-			