

Parental Practices and Innate Activity in Normal, Autistic, and Brain-Damaged Infants¹

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Infant care practices and innate activity are compared in a study of 96 families representing 33 autistic and early schizophrenic, 33 matched normal, and 30 subnormal children. Data from objectively rated interviews indicated that parents of psychotic and normal children were alike in infant care practices, total stimulation scores, and factor analytically derived scores. Parents of subnormals were the least stimulating and coldest, providing fewer contacts and less physical freedom to the infants than the other parents. Normal infants were more active but autistic and subnormal did not differ on any infant rating item. Infant factor scores showed that autistic and subnormal infants were most alike in the alertness factor, both below normal infants. Social factors did not differ. Brain damage indices were highest in subnormal and lowest in normal, all differing significantly. Results are discussed and interpreted to substantiate criticism of theories that attribute autism to parental or organic-environmental causation during infancy.

The causes of early infantile autism have been debated since Kanner (1943) first described the syndrome in the early 1940's. A review of 90 papers dealing primarily with etiology in three annotated bibliographies (Goldfarb, 1956; Tilton, DeMyer, & Loew, 1966; Bryson & Hingtgen, 1971) shows that nearly

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equal groups of authors favor one of the following three theoretical approaches: nonorganic, organic-environmental, or organic.³

The range of postulated parental deviations is wide, even though proponents of nonorganic theories generally see parents as "sicker" or the infants as "victims" of more extreme parent-handling practices than the proponents of organic-environmental theories. For example, Despert (1951) says that the schizophrenic child has been subjected to profound and complete parental rejection, and Szurek (1942) states that the psychotic child identifies with deviant parental personalities. Bettelheim (1967) describes the parents as being full of rage which leads to under- or overstimulation. The deficient manner of mothers' verbal and nonverbal communication (Clerk, 1961), inability of mother to let baby separate (Bosch, 1970; Mahler, 1965), maternal deprivation (Edelson, 1966), and inadequate parental reinforcement (Ferster, 1966) are other environmental deficiencies linked to causation.

Those who inveigh an organic-environmental cause see the parents as failing to give adequate assistance to a faulty infant (Hellersberg, 1957) through feeding failure (Soddy, 1964), inadequate tactile stimulation (Zaslow, 1967), or general stimulation failure (Ward, 1969). Goldfarb (1964) and Rutter (1971) propose that some schizophrenic or autistic children are brain-damaged and others are not, suggesting that "organic" children come from more adequate environments than "nonorganic" children. Another idea is that an inadequate mother creates such tension in the infant or fails to stimulate to such a degree (Salk, 1968) that subsequent, irreversible neurological damage follows.

Hingtgen and Bryson (1972) have criticized theoretical papers because the authors have not resorted to experimental studies and formulated few theories that generate testable hypotheses about clinical conditions that are often imprecisely defined. Others (Block, 1969; Taft, 1969) criticized studies focused on parents of psychotic children because of the experimenters' failures to have homogenous child samples, to equalize experience with child illness, to control for observer bias, and also overreliance on the maternal personality.

One consistent thread runs through the diverse nonorganic and organic-environmental theories about the contributions of parents to the etiology of early childhood schizophrenia and early infantile autism. The parents

³ Any review of the literature focused on etiology is complicated by problems concerning diagnosis because frequently the terms infantile autism, childhood schizophrenia, childhood psychosis and symbiotic psychosis are not differentially defined by the authors (DeMyer, Churchill, Pontius, & Gilkey, 1971). For the sake of brevity, no attempt will be made to distinguish the categories of psychoses in childhood in the review of theories focused on parental pathogenicity that follows. A more extensive presentation of the topic is made by Hingtgen and Bryson (1972).

are seen as mishandling the child early in life, generally during the course of the first year. From this observation a testable hypothesis can be formulated. If the nonorganic theorists are correct, control parents of normal children should be warmer, stimulate their infants more often, and use more appropriate infant care practices than matched experimental parents of autistic children. A second parental control group is necessary to test the idea that parents of autistic children fail to provide adequate stimulation to a faulty infant. Parents of subnormal, nonpsychotic children should stimulate their infants more than parents of autistic infants and at least as much as parents of normal infants. A third hypothesis pertains to the infants themselves. If the nonorganic theorists are correct, the autistic should resemble normal infants in terms of general alertness and other indices of activity but fail to establish comparable social relationships. Reported in this paper are the results of testing these hypotheses on 96 pairs of parents and their infants.

SUBJECTS

Detailed descriptions of the DeMyer-Churchill diagnostic criteria for children with infantile autism, early childhood schizophrenia, and for emotionally immature, subnormal or brain-damaged children (DeMyer et al., 1971) as well as details on the method of subject selection (Allen, DeMyer, Norton, Pontius, & Yang, 1971) are incorporated in studies published in the first volume of this journal. Briefly, 26 autistic and 7 schizophrenic children were matched with 33 normal children (NR) for age, sex, ordinal position in sibline, number and sex of sibs, race, socioeconomic status, and religion of parents. Since the 7 schizophrenic children had recently gone through a severe withdrawal period and had only minimal communicative speech, the entire group of psychotic children is identified in this study as "autistic" (AU). Before their third birthdays, all had symptoms of serious emotional withdrawal, poor control over emotional expression with a generally flat affect, minimal or no communicative speech, repetitive and nonfunctional object use, and no pretend play with other children. The mean age of the two matched child groups was 53.45 months for NR and 52.36 for the AU. In order to be included in the NR control group, neither the child nor his sibs should have ever required psychiatric or psychological treatment; the family physician and teacher judged that such child was normal. A psychiatrist then interviewed the index child to further assess his normalcy.

The 30 brain-damaged emotionally immature controls (EI) with a mean age of 53.5 months were referred by physicians for diagnosis and possible treatment

Table 1

Rating Items Pertaining to Infant Care, Stimulation and Infant Activity as Prime Questions Posed to Interviewed Parents

RI No.	Number of RA's	RI expressed as prime question
1	9	How did you feed the new baby? Breast or bottle? How long?
2	4	What else did you do while you fed the baby? Could you ever read or watch TV? How often could you do other things?
3	4	How often could you prop bottle?
4	5	How did you go about weaning? Did you train to cup? Gradually or abruptly? Did you ever have to punish for lapses?
5	5	How did the older children react after the baby was born? More demanding, babyish or withdrawn? Ignore? Play with baby?
6	5	Did you feel it was best to run to the child each time he cried at night or to leave him alone at times?
7	5	Did you feel it was best to run to the child each time he cried during the daytime or to leave him alone at times?
8	3	How did you try to keep up with your usual housework? Use play pen? How much does a clean house mean to you?
9	3	Did you feel more tired with the extra burden of a baby? How did you get relief from this tiredness?
10	5	General rating of mother's warmth toward the baby.*
11	3	Did you ever find yourself talking-singing to the baby when he was too little to understand you at all? How often? Do you think you should have talked to the baby more? Later?
12	3	Did you have time to spend with the baby except for that necessary for feeding, changing, and regular care? Do you think you should have spent more time?
13	3	How much did you cuddle the baby? How often?
14	3	How much did you rock the baby? How often?
15	5	Did you use a play pen for the baby? How much time of the day did the baby spend in the pen (or other method of immobilization)?
16	5	Tell me about your feelings when you first held baby in your arms? Sadness or regret? No feelings at all?
17	3	How did your feelings compare for this child and other children when you first held them?
18	5	Rater's judgment on affection father feels for this child (over child's life).
19	4	How much time did baby spend with people outside your immediate family. Were these people interested in him?
20	5	How much time during baby's first year did mother actually spend at home? How did baby sitters work out?
21	10	How much time was father (or father figure) at home?
22	5	Describe cuddliness of infant and toddler.
23	4	How did baby react to being taken off bottle or breast? Fussy? Refused food? Any other reaction? How long was he upset?
24	2	How did the baby respond when you first held him? Was his reaction different from that of your other children?
25	2	Did child raise arms to be picked up sometime during the first year.
26	4	How much attention did the baby want during the first 6 months? Did baby reject attention? How content was baby to be left alone?
27	3	How would you describe child's alertness as a baby? Did he notice various happenings? Did he seem alert to the meaning of various situations?
28	3	How did the child differ from his brothers and sisters in alertness as a baby?

*Rate after reading Interviews 2, 3, 5, and 8.

or, directly, as control subjects. All such children had interpersonal difficulties but were not withdrawn. Speech, if present, was not echolalic but communicative. Repetitive nonfunctional object use was minimal. Their Rimland and other autistic checklist scores (DeMyer et al., 1971) were significantly below those for AU children. Extensive neurological history and evaluation was obtained on each child.

METHOD

Operational Definitions and Measures

In this study, parental infant care and stimulation are constructs defined by a series of 21 rating items (RI), each containing from 3 to 10 (mean 4.6) rating alternatives (RA) describing the parents' reported approach to the child during infancy (first year of life). The RIs given in Table 1 are expressed in the form of questions posed to each interviewed parent. Subsequent questions, equivalent to RAs, were used when the primers failed to yield all desired information. All such rating items and alternatives were designed to measure the amount of direct parental physical stimulation of different infantile sensory modalities by cuddling, rocking, breast feeding, bottle propping, talking-singing to the infant, and also the availability of parents to provide stimulation and appropriate care to the infant (extra time devoted by mother to the infant and amount of time the parents spend at home). We also measured how much appropriate care and stimulation the parents might be predisposed to give through ratings on parental warmth, maternal feelings toward the newborn baby, and maternal energy level. The freedom given by the mother to the infant to investigate the environment and avail himself of varieties of stimulation, was measured by the amount of time she restricted him to a play pen or other restraining devices. Finally, we considered the infant's exposure to the family's social contacts.

Infant activity is a construct defined by 7 RIs (Nos. 22 through 28), each containing from 2 to 5 RAs (mean 3.4) covering infant cuddliness, reaction to weaning, response on first being held, raising arms to be picked up, courting attention, general alertness, and alertness in comparison to sibs. The goal was to choose infant behaviors which would most nearly reflect innate tendencies although, needless to say, the result would be only a rough approximation.

Procedure

Information on major aspects of parent and child-parent relations (how the parents reared their infants and the infants' innate activity) came from the

following four semistructured interviews: (1) "Eating and Sleeping" (mother alone); (2) "Social Skills, Emotional Expression, and Discipline" (parents together); (3) "Intellectual Development" (parents together); (4) "Grandparents, Childhood of Parents, and Marital Relationships" (both parents separately). The interviews were designed to elicit a maximum amount of information covering specified topics, while retaining the relaxed atmosphere and unrestrained speech of the clinical interview.

The RAs for each scale were assigned weightings by a psychologist, medical student, and psychiatrist comprising a panel of three judges. The rank order of each RA for each scale (representing minimum to maximum of each construct) was listed separately. For example, the five RAs describing "Infant Cuddliness" (RI No. 22) were:

- (1) Rejected or acted uncomfortably most of the time when held;
- (2) Accepted holding but content to be alone most of time;
- (3) Not particularly cuddly but liked and accepted holding;
- (4) Cuddly;
- (5) Clamored to be held ("never knew a stranger").

The judges listed RA (1) as representing "least cuddliness," and RA (5) as "most cuddliness."⁴ A compromise was mandatory in each case of disagreement. The weights were thus the final rank order numbers of RAs for each scale assigned by consensual agreement.

The midpoint of most parental scales was the least amount of acceptable stimulation or adequate infant care practice. For example, the 5 RAs pertaining to "maternal warmth" (RI 10) were:

- (1) Quite cold, unresponsive. Does not really like babies. Seemed to dislike and avoid some aspects of child's care. Did not enjoy baby;
- (2) Somewhat cold. Complained about extra work. Frequently involved with other things, e.g., housework, moving to new home;
- (3) Enjoyed baby but at times was involved with other things. Some indication of ignoring baby on occasion;
- (4) Quite warm. As below (5) with perhaps a few complaints, some indication of slight displeasure;
- (5) Very warm, loving. Enjoyed holding, cuddling, just being with baby. Expresses real delight with the child. Few complaints about any aspects of baby being unpleasant or creating too much work.

⁴For most rating scales, all judges listed the rank order of RAs in the same sequence as the originators of the scales.

The rater would consider RA (3) as representing an acceptably warm mother, RA (1) as representing the coldest mother, and RA (5) as the warmest.

Mean interview time for the entire series was 16.8 hours. The interviews were taped and converted into typescripts from which raters coded the information in accordance with the aforementioned rating scales. Rater reliability between two raters who had knowledge of the family and diagnosis was 80.0% if a one-step difference was accepted as agreement and 71.4% if exact agreement was required. A second team of raters who had no contacts with the family, no knowledge of the hypotheses, and no access to identifying data (removed for that purpose from the typescripts) achieved reliabilities of 78.6% and 75.2%. The blind ratings were used when knowledge of the child was not required for the RI. Items that did require subjective judgment always achieved lower interrater reliabilities (60% to 74%) than the more objective rating scales (79% to 90%).

Data Analysis

The analysis of data was based on two different methods.

Method 1. The first method involved computations of the means (of weightings) for each rating scale and each of the three groups. Such means were compared by t-tests using the paired difference t-test for the two matched pair groups (AU vs NR). All group means and significant differences for infant care and stimulation scales are given in Table 2 and for infant activity scales in Table 3. Total mean parental stimulation and infant activity scores were computed for each diagnostic group and also compared on the basis of t-tests.

Method 2. The second method involved a factor analysis of the rating items using the FACTOR program developed at the University of Miami (Clyde, Cramer, & Sherin, 1966). The selection of most meaningful factor scores was based on the UCLA program BMDX72 (Dixon, 1970) revised for use on IUPUI Research Computation Center 7040. The use of varimax rotation facilitated the process. The factors, together with loadings of the variables judged to contribute significantly to the definition of each factor, are given in Tables 4 and 5 which also show the results of t-tests for mean scores on each factor. Again, the EI group was compared with the two matched ones using the independent samples t-test, while the paired-difference t-test was applied to the AU and NR groups because of the imposed matching.

RESULTS

Method 1

Generally, NR parents obtained the highest rank order scores on most individual RIs and EI parents the lowest. However, AU parents did not often

Table 2
Differences in Care and Stimulation of Autistic, Normal and Emotionally Immature Infants

No.	Rating Item Abbreviated description	N of RA's	Weightings			Significant differences of t-tests		
			Means			AU x NR	AU x EI	NR x EI
			AU	NR	EI			
1.	Length of breast feeding	9	2.197	2.106	2.125	NS	NS	NS
2.	Mo attention to feeding infant	4	2.903	2.937	3.090	NS	NS	NS
3.	Frequency of bottle propping	4	3.000	2.818	2.780	NS	NS	NS
4.	Weaning method	5	2.733	2.500	1.842	NS	<.01	<.05
5.	Reaction of sibs to index baby	5	3.368	3.833	3.067	NS	<.01	<.01
6.	Parental response to night crying	5	4.033	3.567	2.435	NS	<.01	<.01
7.	Parental response to day crying	5	3.700	3.617	2.700	<.05	<.05	NS
8.	Mo focus on housework	3	2.516	2.788	2.681	<.05	NS	NS
9.	Mo energy level	3	2.438	2.727	2.087	NS	NS	<.01
10.	Mo warmth	5	3.818	3.697	3.083	NS	<.01	<.01
11.	Mo talk-sing	3	2.719	2.727	2.000	NS	<.01	<.01
12.	Mo extra time	3	2.156	2.636	1.727	<.01	NS	<.05
13.	Mo cuddling time	3	2.375	2.469	1.909	NS	NS	NS
14.	Mo rocking time	3	1.774	1.656	1.250	NS	NS	<.01
15.	Play pen time	5	2.871	3.407	2.286	NS	<.01	<.01
16.	Mo feeling when first holding	5	2.515	2.546	1.625	NS	NS	NS
17.	Mo feeling compared with sibs	3	1.800	1.967	1.625	NS	NS	<.01
18.	Fa affection for child	5	3.531	4.394	3.083	<.01	NS	NS
19.	Time with other people	4	1.727	2.030	1.875	NS	NS	NS
20.	Mo availability	5	4.515	4.455	4.875	NS	NS	NS
21.	Fa availability	10	8.636	8.000	9.375	NS	NS	NS
	Total mean infant stimulation	4.6	2.604†	2.680†	2.271†	NS	<.01	<.01

Note.—RA = Rating Alternative; AU = Autistic; NR = Normal; EI = Emotionally Immature; Mo = mother(s); Fa = father(s). †SD-AU = .376; NR = .294; EI = .362.

differ significantly from NR while the EI differed from either NR, AU, or both groups.

The three groups of mothers were much alike in feeding methods during infancy in that they breast fed, on the average, a little over 2 months, attended to the feeding infants in equal measure, and seldom propped the bottle (RIs 1, 2, and 3). EI mothers reported significantly more abruptness and pressure on the infant to wean than AU and NR mothers who were alike in allowing the baby to return to breast or bottle at will, and applying little to moderate pressure to accept the cup.

The sibs of AU and NR index infants were significantly more friendly to the new infant and demanded less additional attention from the mother than did the sibs of EI. The greater number of older sibs in all three groups were described as making at least some friendly advances to the index babies (RI 5).

AU and NR parents were more responsive to day and night crying than EI parents (RIs 6 and 7). Most parents in all groups said they let the baby cry if they thought he was not sick, physically uncomfortable, or too distraught, but more EI parents were prone to let baby cry without ascertaining the cause.

While AU and EI mothers valued a clean house more than NR mothers, all mothers stated that they tried to balance the needs of the family and the house. More NR mothers said that the baby's needs and those of the family nearly always preempted housework (RI 8).

NR mothers were significantly more energetic than EI mothers only. AU mothers were midway in tiredness but did not differ significantly from either other group (RI 9). Both AU and NR mothers were judged subjectively by the raters to be about equal in general warmth toward the index infants but more warm than EI mothers (RI 10). Most mothers in all three groups were judged to be overall warm mothers during infancy.

AU and NR mothers did not differ on any of the four rating scales used to judge direct maternal stimulation of the index babies (RIs 11, 12, 13 and 14), while EI mothers were lower than one or both other groups on talking-singing, extra time with baby, and cuddling time. The groups did not differ in the amount of time spent in rocking the baby. All mothers rocked the baby less than they verbalized or cuddled.⁵

AU and NR mothers recalled more feeling when first holding the newborn index infants than EI mothers. Only a minority recalled feeling depressed, no

⁵ An interesting rater comment disclosed that many mothers in all three groups saw rocking as a poor infant-care practice. Mothers made such statements as "I wasn't going to get that started"; "Rocking spoils babies"; or "I wouldn't have a rocking chair in the house".

Table 3
Differences in Innate Infant Activity

Rating Item		Weightings			Significant differences of t-tests			
No.	Abbreviated description	No. of RA's	Means			AU x NR	AU x EI	NR x EI
			AU	NR	EI			
22.	Cuddliness	5	1.879	2.406	2.143	< .05	NS	NS
23.	Reaction to weaning	4	2.667	2.909	2.619	< .01	NS	< .01
24.	Neonate response to Mo	2	1.750	1.903	1.708	NS	NS	< .05
25.	Raise arms to be picked up	2	1.455	1.880	1.180	< .05	NS	< .01
26.	Need for attention	4	2.807	3.030	2.521	NS	NS	< .01
27.	Alertness	4	2.939	3.485	2.485	NS	NS	< .01
28.	Comparison with sibs' alertness	3	1.500	2.071	1.435	< .05	NS	< .01
<i>Total mean infant activity</i>		3.4	2.100	2.556	1.970	< .01	NS	< .01

Note.—RA = Rating Alternative; AU = Autistic; NR = Normal; EI = Emotionally Immature; Mo = mother.

feeling at all, or disliking the infant. Most mothers had difficulty in recalling any differences in feelings toward the index newborn infant and his sibs. All groups were alike in this respect (RIs 16 and 17).

A general rating scored for the father's affection for the index child throughout his life indicated that AU and NR fathers did not differ while EI fathers were judged less affectionate (RI 18).

The time spent in meaningful relations with extended family and friends did not differ among groups. Most infants had been exposed to at least sporadic monthly visits (RI 19). Most mothers did not leave home for work. If they did, a satisfactory substitute was available (RI 20). Fathers were also available to the infants in equal measures among the three groups (RI 21).

Analysis of the individual RIs given in Table 3 shows striking similarities between EI and AU infants while NR infants differed from one or both other groups on all 7 infant activity items. AU infants were less cuddly than NR infants only. Few AU infants were described as rejecting or uncomfortable when parents tried to hold them. Many AU and EI infants were indifferent about being held. Most NR infants were described as somewhat cuddly. The EI neonates were more often than either NR or AU neonates described as "different," in some manner, from their sibs shortly after birth. These differences ranged from physical of varying import to a maternal subjective feeling that the neonate was just "different somehow." More NR infants raised their arms to be held and

liked more attention (as opposed to physical cuddling) than AU and EI infants who did not differ in these respects.

With respect to general alertness (the parents were asked if the infant was "normally" alert and interested in the environment), NR infants were described as "very alert" or "alert" significantly more often than EI babies and more often, but not significantly, than AU babies. Responses to the second question concerning alertness ("How did the child differ from his brothers and sisters in alertness as a baby?") showed that parents of AU and EI infants were much alike in seeing their index babies as less alert and bright than their sibs. No NR infant was described as less alert than his siblings.

Total stimulation scores for EI parents were significantly lower than those for the NR and AU parents. A different result was obtained from the comparison of group total infant activity scores as NR infants were significantly higher than both AU and EI infants.

Method 2

Factor analysis yielded the following five meaningful parental care factor groups:

Factor I—Cuddling mother—warm parents.

Factor II—Feeding mother; stay-at-home parents.

Factor III—Sociable-feeling mother; warm father.

Factor IV—Responsive parents.

Factor V—Freedom-giving, energetic mother.

The contributing RIs and loadings are given in Table 4.

Table 4 indicates that Factor I was higher in the NR only vis-a-vis the EI parents. Factor II did not differ in any group, while Factor III was significantly lower in the EI parents. Factor IV was significantly higher in AU than in EI parents, and Factor V higher in NR and AU mothers than in EI mothers.

The analysis of infant activity items yielded three meaningful factors: Factor A—Sociable baby, Factor B—Alert baby, and Factor C—Responsive baby. The first, as shown in Table 5, consisted of infantile demand for attention, infant cuddliness, and raising arms to be picked up; the second, of general alertness, comparison of index baby's alertness with siblings, ease of weaning, and cuddliness; and the third, of first response to mother and raising arms to be picked up.

The infant factor scores differed significantly only on Factor I. The NR were significantly higher than either AU or EI infants who did not differ.

Table 4

Parental Care and Stimulation Factor Identification, Loadings, and Scores

Factor identification	Factor Loadings			Factor scores				
	Rating item			Group	Mean	Results of t-tests		
	No.	Abbreviated description	Loading			AU vs NR	AU vs EI	NR vs EI
I. Cuddling Mo; warm parents	13	Cuddling time	.853	AU NR EI	0.03082 0.23539 -0.36729	NS	NS	<.05
	12	Extra time with baby	.766					
	10	Maternal warmth	.595					
	14	Rocking	.562					
	11	Talk-sing	.369					
	18	Fa warmth	.340					
	20	Mo home	.330					
II. Feeding Mo; stay-at-home parents	1	Breast feeding	.797	AU NR EI	0.20245 -0.13770 0.02583	NS	NS	NS
	3	Prop bottle	.688					
	21	Fa home	.559					
	20	Mo home	.520					
III. Sociable-feeling Mo; warm Fa	19	Other adult	.645	AU NR EI	0.03336 0.031967 -0.48525	NS	<.05	<.01
	17	First feeling compared	.651					
	16	First feeling	.557					
	11	Talk-sing	.519					
	4	Weaning method	.417					
	18	Fa warmth	.441					
IV. Responsive parents	7	Day cry response	.767	AU NR EI	0.33124 -0.01112 -0.44033	NS	<.01	NS
	6	Night cry response	.716					
	2	Attention-feeding	.505					
	14	Rocking	.359					
	21	Fa home	-.341					
	4	Weaning method	.318					
V. Freedom-giving, energetic Mo	15	Play pen time	.760	AU NR EI	0.12055 0.36942 -0.67383	NS	<.01	<.001
	9	Maternal energy	.605					
	5	Sib response	.469					
	11	Talk-sing	.347					
	6	Night cry response	.327					
	17	First feeling compared	-.314					

Note.—AU = Autistic; NR = Normal; EI = Emotionally Immature; Mo = mother('s); Fa = father('s).

DISCUSSION

Infant Care Practices and Stimulation

The picture of the cold, overintellectualized, nonstimulating AU parent is not confirmed by this study. In this respect, an earlier study presented in this journal (Allen et al., 1971) is in full accord with the present one. While there are some differences pertaining to individual infant care items between NR and AU parents, there are no differences on total stimulation or factor analytically derived scores, most sensitive of all tests. Parents of EI children were the least stimulating, least warm, provided fewer outside social contacts and less physical freedom for their index infants. The most likely reason for this difference is the

Table 5

Infant Activity Factor Identification, Loadings, and Scores

Factor identification	Factor Loadings			Factor scores				
	Rating item		Loading	Group	Mean	Results of t-tests		
	No.	Abbreviated description				AU vs NR	AU vs EI	NR vs EI
A. Sociable	26	Want attention	.867	AU	-0.10388	NS	NS	NS
	22	Cuddly	.775	NR	0.24094			
	25	Raise arms	.492	EI	-0.18842			
B. Alert	27	Alert	.785	AU NR EI	-0.19921 0.37918 0.30625	<.05	NS	<.01
	28	Comparison with sibs	.754					
	23	Ease of weaning	.624					
C. Responsive	22	Cuddly	.328	AU NR EI	-0.04881 0.25982 -0.28983	NS	NS	NS
	24	First response	.916					
	25	Raise arms	.636					

Note.—AU = Autistic; NR = Normal; EI = Emotionally Immature.

extensive matching of AU and NR parents who were similar in socioeconomic status, race, religion, number of children in the family, education, IQ, and ordinal position of the index child. All such variables may strongly influence parental attitudes, the way infants are reared, or even the way parents talk about the way they reared their infants. Because of the large pool of families required for matching by pairs for 8 different variables, we could not match the subnormal parents to the other two groups.⁶ Consequently, this group differed in socioeconomic status, education, race, and measured intelligence of fathers (Allen et al., 1971); the children's age was matched for all three groups. The value of extensive subject matching in investigations of parental attitudes and child care practices appears to be clearly demonstrated by this study.

Other features that limit generalization of the findings are inherent in the measuring instrument and our need to rely on memories of 96 pairs of observers who were probably biased and unsystematic. However, the protection of raters from their own biases and from those of the principal investigator was fairly

⁶Over 1,000 normal families were contacted to match the NR and AU parents and children. Such a large pool for the subnormal children in the appropriate age range (2 to 6½ years) did not exist in our locality.

thorough and the coding of data was as consistent as possible from subject to subject. Many important subtleties of parent-infant care practices and of innate infant activities could not be detected from interview data. However, many other interview studies which have strongly influenced theories of parental causation and subsequent treatment of parents and their autistic children were not as well controlled and devoid of bias as this one.

Fewer paternal and infant activity items were used than maternal items. The fathers' participation in infant care was limited, in fact so limited that only mothers were used in the interviews for observations concerning feeding, toileting, sleeping, and cuddling. However, since the majority of fathers were interested in the social and intellectual development of their infants, the ratings pertaining to such behavior reflected observations of both parents. It also proved difficult for most parents to remember more infant activity items than were included, although there were some other infant behaviors that we now wish we had inquired about.

It is worth noting that despite the lower stimulation scores of EI parents in comparison with other groups, most of such parents were judged by the raters to be at least average for most measures when the midpoint of the weighting range was used as a point of reference.⁷ As exceptions, EI parents did report harsher and more abrupt weaning methods and less tactile and verbal stimulation of infants, with respect to the midpoint of scales as well as in comparison with other groups.

Our interpretation of the results indicates that most parents in all three groups are rather "average" people in the way they recall and recount their infant care practices. The qualitative and quantitative infant care differences reported by parents of EI subnormal children may be due to important demographic differences.

Infant Activity

All infant activity items differentiated NR infants from one or from both other groups. Without exception, the differences indicated that NR infants were more active. Such infants were also cuddly, easy to wean, even as neonates responsive to parents, courting attention, and as alert as their sibs to environmental happenings. In contrast, AU and EI infants did not differ significantly on a single item (including social and intelligence items) despite

differences in infant rearing methods reported by their parents. Some interesting trends, that might have been significant if more sensitive measures than parental recollection were available, were in evidence. For example, there was some suggestion in the rank order of scores that AU infants were less cuddly but somewhat brighter than EI infants.

When we subjected the infant activity data to the more sensitive test of comparing factor analytic scores, lowered alertness emerged as the single most important way in which AU and EI were alike but differed from NR infants. Each of the social variables of "cuddliness" and "raising arms to be picked up" loaded on two separate infant factors. However, cuddliness correlated most highly with infantile need for attention and *these social items did not differentiate any infant groups*, even though the rank order of the "Sociable Baby" scores was highest for NR and lowest for AU.⁸

COMMENT

Neither parental nor the parental-biological theories of causation are supported by the results of this investigation. We did not identify in the AU parents any specific defects in infantile acceptance, nurturing warmth, feeding, tactile stimulation, or general stimulation. Instead, the findings of lowered alertness and more signs of overt brain damage in AU infants (in comparison to NR infants) support the idea of neurological defects in autistic as well as in subnormal children. This theory of causation is even more compelling when we call to mind the high rate of gross EEG abnormalities (DeMyer, 1972), the failure of most autistic children to learn efficiently even when highly motivated (Hingtgen & Churchill, 1971; Hudson & DeMyer, 1968), the identification of specific sensory-motor integration difficulties which are remarkably consistent from performance to performance in each child but differ in quality and severity in various autistic children (Bryson, 1972; Hingtgen & Churchill, 1971). Autistic children also have more overt signs of brain damage than normal children (DeMyer, 1972). In these ways autistic children do not differ from other subnormal children. The way they do differ from the subnormal is in being more withdrawn from people, having less communicative speech (DeMyer, Bryson, & Churchill, 1972) and being more deficient in copying the body motions of other people (DeMyer, Alpern, Barton, DeMyer, Churchill, Hingtgen, Bryson, Pontius,

⁸ Interestingly, the other infant item that correlated most highly with "alertness" was "ease of weaning". Switching from a bottle or breast to the cup is an important learned adaptation for the infant. His ability to make the switch without undue upset may have some connection with general intelligence as well as the state of his visual-motor coordination and maternal weaning methods.

⁷ A comparison of mean RI scores with the number of weightings in Table 2 will verify this observation.

& Kimberlin, 1972). The profound central language disturbances (Churchill, 1972) coupled with various sensory-motor integration difficulties make it difficult for the autistic child to establish verbal or nonverbal communication with other people. Subnormal children have fewer difficulties with language and imitation and thus can use other humans, at an earlier age, as helpful agents to facilitate understanding of the environment.

Churchill (1971) has demonstrated that both autistic and nonpsychotic children react in a normal way emotionally to experiences of success and failure. He indicated that in order to learn the simplest task in which the autistic child needs to use a deficient sensory-motor or language modality, such child must be guided through each step of the performance even when the motivation is high. For most autistic children, the natural environment of their home and neighborhood is too complicated for them to predict and control. Negativism, temper tantrums, withdrawal and learning avoidance, even for activities that are within the autistic child's capacity, are the natural consequences of a continuous series of failures in trying to master the environment. When placed in a situation where conditions are so contrived that he can be successful, the autistic child responds with alacrity to the learning of simple adaptive tasks and looks less "autistic" and less withdrawn.

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