

Intellectuality in Parents of Psychotic, Subnormal, and Normal Children¹

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Due to etiological implications, parental intellectuality defined by 29 descriptive rating scales was compared in 96 families. Parents represented 33 autistic and schizophrenic children, 33 matched normals, and 30 subnormals. Data was obtained from objectively rated interviews, WAIS and other scales. All groups were alike in characteristics they sought in spouses and children, premarital interests, reading preferences, and life style. With the child's age, sex, ordinal position, race, religion and SES held constant, only one significant difference was found between parents of normal and autistic children. The latter emphasized academic success less in autistic than matched normals in their children. All parents of deviant children desired improvement in speech and relatedness, realistically deemphasizing intellectual achievement. Fathers' verbal IQs were significantly higher for autistic than subnormal groups. Parents of normals were significantly younger at child's birth, an unexpected finding implying a neurological link between autism and subnormality.

Kanner's first description of autistic children (1943) prompted many investigators and clinicians to identify the parents of such children with intellectuality and presume them to have above-average intelligence. Deemed more intellectual than parents of other mentally disturbed children, they were also thought to choose jobs and professions that emphasized ideation rather than contact with people and were described as preferring solitary activities.

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Rimland's first checklist (1964) included parental unsociability and high socioeconomic status (SES) as two of the traits indicative of infantile autism in the child. Lotter (1967) reported that parents of autistic subjects were superior in SES, intelligence, and education when compared with parents of other handicapped children manifesting some autistic features and also with the general population of Middlesex County, England. But while parents of autistic children may indeed be brighter, more affluent, and more successful than most other people, the relationship between these facts and the autistic symptoms of their children is not explained. Rimland (1964) theorized that the parents' superior intelligence may have "backfired" by yielding an offspring with a high capacity for superior intelligence but also a high vulnerability to stress. Another commonly held view is that such parents are "cold." Their preoccupations with ideational matters, it is believed, have led them to block normal infant-parent relationships and thus the normal identification of a child with his parent. And there are still proponents of theories that parents have molded their autistic child into a mechanistic individual, preoccupied with objects instead of people.

The pathogenicity of parental education and superior intellectuality in infantile autism is highly questionable. It is most convincingly contradicted by the scarcity of autism in siblings. To be "selectively pathogenic," the intellectuality of parents of autistic children would need to be conveyed differently to their sick child than to the healthy. If the autistic child is not mentally and physically dissimilar from his siblings, then a dissimilar "expression" of parental intellectuality might be responsible for some behavioral differences. But if such an autistic child is significantly different from his siblings (say, by virtue of neurological impairment), the intellectuality of his parents, even if differently expressed toward him, would have little effect in developing autism.

Experienced clinicians have reported encounters with "exceptional" parents of autistic children whose intellectuality was not outstanding. Some even theorized that Kanner might have described a less intelligent group of parents had his practice in the early 1940's embraced a much broader variety of patients.³ Considerations of similar nature and the historical significance of the concept that parental intellectuality may be responsible for infantile autism prompted us to interview and gather comparative data from 96 families and present our findings in this paper.

³In a recent personal communication, Dr. Kanner informed us that his clinical practice in the 1940's was *not* limited to upper socioeconomic classes.

SUBJECTS

The subjects comprised 33 autistic or young schizophrenic (AU) children and their parents, 30 mentally retarded or brain-damaged (subnormal) children with varying degrees of emotional disturbance (BD) and their parents, and 33 normal (NR) children and their parents. The children's life and behavioral data from standard subject description checklists devised by Churchill, Alpern, and DeMyer (1971) are given in Table 1.

Autistic

Twenty-six children met the DeMyer-Churchill diagnostic criteria for infantile autism (DeMyer, Churchill, Pontius, & Gilkey, 1971), and seven met such criteria for early childhood schizophrenia.⁴ However, since the seven had gone through an autistic period and had only minimal communicative speech at the time of data collection, the entire group of 33 was called autistic.

All autistic children had symptoms of severe emotional withdrawal at evaluation. Typically serious withdrawal had been manifested as follows:

The child did not habitually stay near people, especially other children. Eye contact was of short duration, and the child looked through people rather than at them. He did not imitate their physical actions or play with other children even though he may have hovered at the edge of a group. He did not respond to other people's attempts to engage him in a simple conversation, although he may at times have given a clear indication of understanding uncomplicated speech, especially when it related to food, a favored object, or routine. Parents frequently described this child as one who stays in "his own little world," needing his parents only when in physical distress or if he wants or dislikes something. His signaling system under these conditions was rudimentary—only a cry, a tantrum, or leading the parent by the back of the hand. He did not signal by pointing or by serial pantomime as an aphasic child would. Between episodes of generalized and occasionally gross expressions of displeasure or pleasure, the child had a flat affect described by parents as a "don't care" attitude. At times, he "did not want his mother out of sight," and sought physical contact (clinging behavior) at every opportunity.

Speech, if present, had little or no communicative value. The children engaged in nonfunctional repetitive use of objects or of their own body but did not engage in role play. Their parents reported some peaks of performance in the

⁴See *Journal of Autism and Childhood Schizophrenia*, 1971, 1, page 179.

Table 1

Life and Behavioral Data for 33 Autistic, 30 Subnormal, and 33 Normal Children

| LIFE DATA | | | | | | | | | | |
|------------------------------|--------------------|------------|----------------------------|--------------------------------|-----------------------|-------|-------|--------------|--------|------|
| Subjects | Sex | | Chronological age (months) | | | Race | | Social class | | |
| | M | F | 0-35 | 36-59 | 60-83 | Black | White | Low | Middle | High |
| Autistic | 23 | 10 | 3 | 19 | 11 | 1 | 32 | 3 | 23 | 7 |
| Subnormal | 19 | 11 | 6 | 10 | 14 | 6 | 24 | 11 | 16 | 3 |
| Normal | 23 | 10 | 6 | 16 | 11 | 1 | 32 | 3 | 20 | 10 |
| EEG | | | | | Age of onset (months) | | | | | |
| Subjects | Normal | Borderline | Abnormal | Not available | Below 20 | 21-30 | 31-48 | 49-72 | | |
| Autistic | 8 | 6 | 17 | — | 9 | 22 | 1 | 1 | | |
| Subnormal | 17 | 2 | 10 | 1 | 13 | 16 | 1 | — | | |
| Normal | 33 | — | — | — | — | — | — | — | | |
| BEHAVIORAL DATA | | | | | | | | | | |
| Descriptive variable | Number of subjects | | | Descriptive variable | Number of subjects | | | | | |
| | AU | BD | NR | | AU | BD | NR | | | |
| <i>Intelligence quotient</i> | | | | <i>Nonverbal communication</i> | | | | | | |
| Over 109 | — | — | 9 | Good | 1 | 16 | 33 | | | |
| 90-109 | 1 | — | 22 | Fair | 25 | 9 | — | | | |
| 70-89 | 4 | 6 | 1 | Poor | 5 | 5 | — | | | |
| 50-69 | 7 | 9 | — | Not available | 2 | — | — | | | |
| 30-49 | 13 | 11 | — | | | | | | | |
| Below 30 | 6 | 2 | — | <i>Relationship impairment</i> | | | | | | |
| Not available | 2 | 2 | 1 | Age appropriate | — | 2 | 33 | | | |
| | | | | Abnormal not withdrawn | — | 20 | — | | | |
| <i>Social quotient</i> | | | | Mild withdrawn | 15 | 5 | — | | | |
| Over 109 | — | — | — | Moderate withdrawn | 15 | — | — | | | |
| 90-109 | 1 | — | — | Severe withdrawn | 3 | — | — | | | |
| 70-89 | 3 | 6 | — | Not available | — | 3 | — | | | |
| 50-69 | 5 | 8 | — | | | | | | | |
| 30-49 | 4 | 5 | — | <i>Stereotypic behavior</i> | | | | | | |
| Below 30 | — | 2 | — | None | — | 11 | 28 | | | |
| Not available | 20 | 9 | 33 | 25% of time | 6 | 11 | 5 | | | |
| | | | | 25-49% of time | 14 | 7 | — | | | |
| <i>Verbal communication</i> | | | | 50-75% of time | 7 | 1 | — | | | |
| Age appropriate | — | 1 | 33 | 75% of time | 6 | — | — | | | |
| Retarded | — | 8 | — | | | | | | | |
| Echolalia + communication | 6 | 4 | — | <i>Self injury</i> | | | | | | |
| Echolalia only | 1 | — | — | None | 17 | 19 | 32 | | | |
| Few words—communication | 1 | 5 | — | Mild | 14 | 9 | 1 | | | |
| Few words—noncommunication | 9 | 3 | — | Moderate | 1 | 2 | — | | | |
| No words | 16 | 8 | — | Severe | 1 | — | — | | | |
| Not available | — | 1 | — | | | | | | | |
| | | | | <i>Object use</i> | | | | | | |
| | | | | Normal | — | 4 | 33 | | | |
| | | | | Some unusual | 6 | 16 | — | | | |
| | | | | Much unusual | 24 | 8 | — | | | |
| | | | | Not available | 3 | 2 | — | | | |

Note.—AU = autistic children; BD = brain damaged (subnormal) children; NR = normal children.

intellectual, perceptual, perceptual-motor, or gross motor function at or near age level. At the time of data collection, we regarded anamnesis as the most reliable source for judging whether there were peaks of performance near age level. However, our assumptions that meager performance on standardized tests was due to negativism and withdrawal in the child have been subsequently modified (Churchill, 1969; Alpern & Kimberlin, 1970; DeMyer, Norton, & Barton, 1971). Within one or two years prior to data collection, all early schizophrenic children had the same types of symptoms as the autistic children. But in time, they acquired some communicative speech (with a preponderance of non-communicative) and some functional, as well as repetitive, nonfunctional use of objects. Their withdrawal symptoms were somewhat less severe than those of autistic children.

Subnormal Controls

The BD control group comprised 30 children referred to our Center for diagnosis and possible treatment of suspected psychosis. Their interaction difficulties ranged from consistently responsive to angry to somewhat withdrawn. Speech, when present, might have been below age level in complexity but communicative in content. If no speech was present, children communicated by gesture. Some had typical aphasic patterns. Use of objects and role play varied but some functional object use was generally present and commensurate in complexity with mental age. All BD children had problems in relating to people.⁵ Their mean age was 53.51 months.

Because the number of BD children referred to the Center during the period of data collection was relatively small, it was not possible to match their families with those of AU children. Among the 30 were 3 who came from fatherless families.

Parents of BD children constituted an important control group because experience with developmental failure was similar to that of parents of AU children. Variables that appeared to matter most in terms of parental stress and anxiety were the developmental failure and emotional disturbance of the AU and BD children and the ensuing parental fears of exposing themselves to a searching inquiry by professional interviewers.

Normal Controls

The 33 controls were carefully matched with AU children for age, ordinal position in sibline, number and sex of sibs, race, sex, SES, and religion. The

⁵Their Rimland raw autistic checklist scores were significantly below those for AU children.

mean age of the two matched groups was 53.45 months for NR and 52.36 for AU children. Only 8 of the age matches were more than 6 months apart, and none were over 12 months apart.

Singletons, first, last, and also those between first and last in the sibline were always matched. A child that was second in the sibline was matched with one that was second or third; a third or higher with one also third or higher. The sex composition of sibline in the normal family was the same (mixed or homogeneous) as that in the matching autistic family. Each family of NR controls was also matched with respect to race and SES, the latter assessed on the basis of Warner's seven categories (Warner, Meeker, & Eels, 1949). Twenty-one families were in the same and 12 in adjacent socioeconomic categories. With respect to religion, 21 were matched exactly, and 12 for the dominant religion at home.⁶

Criteria for normalcy were met if none of the children in the control family required psychiatric or psychological treatment and the index child was judged normal by his family physician and teacher. Each NR index child was interviewed and "cleared" by our research psychiatrist.

METHOD

Operational Definitions and Measures

Parental intellectuality can be defined as a quality related to involvement or focus on some solitary intellectual activity such as thinking, reading, and solving abstract problems as opposed to feeling and relating to people. In this study, intellectuality was defined by a series of descriptive rating scales detailing parental preferences or disapproval of personal characteristics in themselves and other family members, statements of importance of intellectual achievement in their children, retrospective views of their academic standards, attitudes and achievements in school, premarital interests or characteristics sought in friends, and reading material currently in the home. Also included were raters' opinions of the primary life orientation of each parent and of each father's occupational status. Finally, we added to our selection of measures the results of verbal IQs based on WAIS vocabulary subtest and data on age at child's birth.

⁶Over 1,000 families were contacted to satisfy these extensive matching criteria. Newspaper stories, advertisements and direct solicitations at community group meetings yielded the required number of suitable volunteers. All were paid for their participation in this study. Possibly the most important difference between the NR and two other parental groups was their awareness of being chosen because their children were normal, and prompted to expose themselves due to their success rather than failure with children. Such variables could not be matched.

Table 2
Descriptive Rating Items and Alternatives for Assessments of Parental Intellectuality

| RATING ITEMS | | | |
|---|--------------------------------|-----------------------------------|--------------------------------|
| Item | RI No. | Item | RI No. |
| <i>Personal characteristics</i> | | <i>Attitude toward school</i> | |
| M wants in second husband | 1 | M's general | 14 |
| F wants in second wife | 2 | F's general | 15 |
| M likes in Ch | 3 | <i>Achievement in school</i> | |
| F likes in Ch | 4 | F's grades | 16 |
| M dislikes in Ch | 5 | <i>Premarital interests</i> | |
| F dislikes in Ch | 6 | M's as girl | 17 |
| <i>Importance of intellectual achievement</i> | | F's as boy | 18 |
| In sick or index Ch* | 7 | <i>Characteristics of friends</i> | |
| In other Ch* | 8 | F's sought in girls | 19 |
| Index Ch cf. with other Ch† | 9 | <i>Reading material</i> | |
| BD cf. with other Ch** | 10 | Habitually read by P | 20 |
| AU cf. with other Ch** | 11 | <i>Primary life orientation</i> | |
| <i>Academic standards</i> | | Of M | 21 |
| M's for herself | 12 | Of F | 22 |
| F's for himself | 13 | | |
| RATING ALTERNATIVES | | | |
| For RI 1 | | For RI 2 | |
| 1 Physical | 2 Good mixer | 1 Physical | 2 Good mixer |
| ③ Intellectual | ④ Material advantage | ③ Intellectual | ④ Material advantage |
| 5 Good F | 6 Kind to M | 5 Good M | |
| For RI's 5 and 6 | | For RI's 7 and 8 | |
| 1 Physical | 2 Personality (temper, apathy) | ① Highly important | 2 Important among other traits |
| ③ Lack intelligence | 4 Poor health | 3 Do not care if Ch bright | |
| 5 Negative growth qualities | | | |
| For RI's 14 and 15 | | For RI 16 | |
| ① Strongly positive | 2 Positive (liked) | ① A's | ② Mostly B's |
| 3 Neutral or ambivalent | 4 Disliked more than liked | 3 B's and C's | 4 Poor (D's) |
| 5 Strongly negative | | 5 Failure | |
| For RI 19 | | For RI 20 | |
| 1 Personality | ② Intelligence | 1 Women's fashions | 2 General interest, literature |
| 3 Common interests | 4 Physical characteristics | 3 News | 4 Home and gardening |
| 5 Social background | 6 Did not matter | 5 Special interest | 6 Occupational or professional |
| | | For RI's 21 and 22 | |
| | | 1 Other people | 2 Activities |
| | | 3 Objects | ④ Ideas |

Note.—Circled rating alternatives represent initial predictions denoting choices or preferences of parents of autistic children. RI = rating item; M = mother(s); F = father(s); P = parent(s); Ch = child(ren); AU = autistic child(ren); BD = brain damaged child(ren); *to all P; †to P of NR Ch; **to P of either BD or AU.

Of the 29 rating items (RI) utilized for this study, 22 provided a discernible range of responses (alternatives) which enabled us to devise 3 to 6 rating alternatives (RA) for each RI. Such descriptive items and alternatives are detailed in Table 2.

Whenever possible, our RAs were identical for RIs that were similar except for applicability to either the mother or father. For 1 of the 22 items (RI 20—reading material), the alternatives encompassed a broadly delineated but fairly meaningful selection adopted from a standard directory of periodicals.

The remaining RIs, all readily measurable in standard units (e.g., years) or values (e.g., IQs) are given below:

- RI 23 Years of education achieved by mother
- RI 24 Years of education achieved by father
- RI 25 Occupational scale for father
- RI 26 Mother's verbal IQ
- RI 27 Father's verbal IQ
- RI 28 Mother's age at child's birth
- RI 29 Father's age at child's birth

RI 25 was adopted from the North-Hatt occupational scale for fathers (Reiss, 1965).

Tentative Predictions

If the premise of superior intellectuality of parents of AU children was to be accepted, the "intellectual" ratings of such parents would have significantly exceeded those of other parents in our study. Further, the lower ratings of BD and NR control parents should not differ significantly from each other. We proceeded to predict the choices and preferences of parents of AU children, basing such tentative predictions on their anticipated inclination to emphasize academic and intellectual goals and pursuits, as young people and also presently, in themselves and their families. We also expected the AU group to evidence higher achievements in education, higher verbal IQs and a higher rank on the occupational scale. However, the parents' age at BD children's birth was expected to be older than that of AU or NR. In Table 2, the RAs with which most such parents were expected to identify are circled.

Procedure

Interviewing. Principal information came from 3 of 11 semi-structured interviews designed to elicit informative data on the intellectual, physical, social,

and emotional development of the child, on the social situation of the immediate and extended families, parent's marital relationship, siblings' development, gynecological and obstetric history of mothers, and also the history of physical and mental illness in the family. One such interview commenced the series. The second, which yielded most observations pertaining to the child's intellectual development and parental school history, was administered about midway. The remaining data was obtained from a searching interview (last in the series) focused on parental and marital relations in the immediate and extended families.

Mean interview time was 16.8 hours per parent couple. Interviewers were psychologists, psychiatrists, and a nursery school teacher with extensive experience in interviewing mothers of preschool children.

The interview questions, direct as well as indirect, were designed to achieve maximum structure while allowing the interviewer some freedom in eliciting the maximum response from parents. Thus, when a high proportion of parents failed to respond to a direct question concerning the personal characteristics in a second spouse, the same question was appropriately restructured and rephrased. Each principal question in a topic was asked in the same way of each parent. Whenever necessary, several probes were given to elicit the required data. Finally, every effort was made to achieve spontaneity in all responding parents. All interviews were recorded on magnetic tape and transcribed for specified use by authorized professionals on a strictly confidential basis.

Rating. The confidential typescripts were rated by two raters who achieved an overall inter-rater reliability of 73.5% (based on exact agreement) for interviews pertaining to the intellectual development of the child and intellectual orientation of parents. The more subjective ratings (all of which had five steps arranged on a continuum) from interviews pertaining to parental relationships allowed an agreement of 89.3% if a one-step difference was allowed and of 63.7% if an exact agreement was required. Rating scales were so designed that parent's answers were rated at both a literal and a subjective level.

To check for rater bias, two different teams of raters completed the ratings. One team participated in data collection and had a full set of information about the child. The other did not participate in data collection and rated typescripts from which all information about the child was deleted; that team could score only those ratings for which information about the child was not necessary. Both teams of raters achieved virtually the same agreement levels.

Data Analysis

Parental responses and raters' evaluations of parental responses were cross tabulated for the matched pairs. The following schema illustrates a comparison

of AU parents with their matched NR controls in reference to statements of importance of intellectual achievement in the child.⁷

| | | | | |
|----------|---|--------|---|---|
| | | NORMAL | | |
| | | C | B | A |
| AUTISTIC | A | 2 | 7 | |
| | B | 5 | 8 | 1 |
| | C | 6 | 5 | |

The significance of the difference was tested by applying the sign test (Dixon & Massey, 1957), i.e., obtaining the probability of a 6 to 14 split (for 20 pairs outside the shaded squares) when the average probability was an even split. Contrary to prediction, the result indicated that fewer parents emphasized academic or intellectual success for their AU children than NR parents for their normal matched controls.

The BD control was compared with the other two groups by means of the exact probability test (Finney, Latscha, Bennett, & Hsu, 1963) for cases where comparisons were 2×2 contingency tables. For continuous variables, the matched groups were compared by the paired samples t-test and the unmatched groups by the independent samples t-test. Cells were generally too small for Chi^2 comparisons and the RAs had to be collapsed.⁸

⁷Response A denotes "Do not care if child is high achiever," B stands for "Believe it important, but not more so than other traits," and C for "Believe it more important than other traits." A responses totaled 9 for AU and 1 for NR parents; B responses, 14 for AU and 20 for NR; and C responses, 10 for AU and 12 for NR parents. Numbers within the shaded squares ($5 + 8 = 13$) show matched pairs for AU and NR parents who gave the same response. Those outside such squares ($N = 20$) show pairs with different responses. The three numbers above the shaded squares ($N = 14$) represent AU parents whose responses were less "intellectual" than those given by matched controls. Numbers below the shaded squares ($N = 6$) represent NR parents who gave less "intellectual" responses than matched AU parents.

⁸Thus prompting a comparison of one with all other ratings or a split by collapsing two and three rating contingencies.

RESULTS

The personal characteristics stressed or desired by parents in a second spouse and preferred or disliked in children are detailed in Table 3. Nearly all parents in all groups failed to indicate a preference for an intelligent or an intellectually oriented spouse. The only exceptions were one mother and one father. All mothers overwhelmingly wanted a husband who was kind and easy going at home. Most fathers wanted a "good mother" and only four in the NR group emphasized physical beauty. No differences were additionally noted in the personality characteristics deemed most desirable in their children. Most parents preferred responsiveness, agreeableness, and helpfulness, regardless of the child's diagnosis. Those characteristics found least desirable in children by mothers varied among the groups but not in the predicted direction. Mothers of BD children stressed lack of intelligence significantly more often than mothers of

Table 3
Personal Characteristics Desired in
Second Spouse and Children

| Group | Rating alternatives chosen for | | | | | |
|-----------|--------------------------------|------|------|------|-----------|------|
| | RI 1 | RI 2 | RI 3 | RI 4 | RI 5 | RI 6 |
| AU M's | 6 | | 2 | | 2 | |
| AU F's | | 5* | | 2 | | 2 |
| BD M's | 6 | | 2 | | 3 | |
| BD F's | | 5 | | 2 | | 2 |
| NR M's | 6 | | 2 | | 2 | |
| NR F's | | 5 | | 2 | | 2 |
| | Significance of difference | | | | | |
| NR vs. BD | NS | NS | NS | NS | $p < .01$ | NS |
| NR vs. AU | NS | NS | NS | NS | NS | NS |
| BD vs. AU | NS | NS | NS | NS | $p < 0.5$ | NS |

Note.—RI = rating item (see Table 2); AU = autistic; BD = brain damaged; NR = normal; M = mother; F = father.

*Also alternative 1.

either AU or NR children.⁹ All groups of fathers predominantly disliked such traits as temper tantrums, apathy, and hyperactivity.

Contrary to predictions, parents of AU emphasized academic success in their sick children less than parents of NR in their matched controls (RI 7, $p < .05$). Parents of AU and BD did not differ in their expectations and goals for their developmentally deviant children. Both groups wished for an improvement in relations with people or acquisition of speech in their sick children. However, for their other children, most desired high academic and intellectual achievement as well as other desirable character traits. All groups were alike in their emphasis on academic success for normal children.

Parents in the NR group expected about the same intellectual achievement of the index child as of their other children. AU parents did not expect more of the sick than of their healthy children. In fact, they expected less, even to a greater degree than BD parents of their deviant children (RI 10, $p = .062$).

The replies which described parental attitudes and achievements at school and their interests as young people were somewhat mixed. While mothers of AU children did not try as hard and liked school less than mothers of NR children, they were somewhat better educated than the latter (see Table 4). Difference between mothers of AU and BD children in how much they tried or liked school were not in evidence, but the former were significantly ($p < .01$) better educated. The fathers' academic standards for themselves and their reported grades did not differ, but the NR achieved more education than the AU (not significantly, $p < .10$) and BD (significantly, $p < .05$) groups.

Mothers' premarital preferences as girls did not differ in the three groups; each was about equally divided between social and solitary interests. Fathers were also similar as boys, most choosing sports and rarely seeking intelligence in the girls they dated before marriage. Intellectual girls and boys in our three groups were the exceptions.

The material habitually read at home was essentially similar. However, parents of NR children read more periodicals than either of the other groups, subscribing to 4.6 per household, while the households of AU and BD children had 2.6 and 2.8 periodicals respectively.¹⁰

Raters' choices denoting the primary orientation of life style for each parent did not distinguish the three groups. Most mothers were oriented toward other

⁹This finding may be due to the fact that many mothers of AU children believe that the intelligence of such children is basically normal.

¹⁰Most likely, the presence of an abnormal child at home tended to limit the time available for reading.

people, while fathers' orientations were divided between people and sports. Only 9 parents, scattered among the 3 groups, were rated as primarily intellectual, idea-oriented people.

Since the SES of AU and NR groups was matched on the basis of Warner's (1949) system before the latter parents were interviewed, there was no significant difference between them when occupations were compared on the North-Hatt scale (Reiss, 1965). Parents of NR rated only two points above those of AU children, both ranking significantly higher than BD parents. The only significant difference in verbal IQs was between the fathers of AU and BD children, with means of the former group about 15% higher. The mothers and fathers of AU and BD children were significantly older than parents of NR children as shown in Table 4.

Table 4
Selected Indexes in Comparative Assessment of Parental
Intellectuality

| RI No. | Variable | Parent | Group means | | | Significance of difference | | |
|--------|------------------------|--------|-------------|--------|--------|----------------------------|------------------|------------------|
| | | | AU (1) | BD (2) | NR (3) | <i>p</i> 3 vs. 2 | <i>p</i> 3 vs. 1 | <i>p</i> 2 vs. 1 |
| 23 | Years of education | M | 13.1 | 11.7 | 12.8 | <.05 | NS | NS |
| 24 | Years of education | F | 13.8 | 12.1 | 14.2 | <.01 | NS | <.05 |
| 25 | Occupational scale* | F | 68.6 | 61.8 | 70.6 | <.01 | NS | <.01 |
| 26 | Verbal IQ [†] | M | 109.0 | 103.8 | 108.9 | NS | NS | NS |
| 27 | Verbal IQ [†] | F | 116.0 | 100.5 | 108.0 | NS | NS | <.01 |
| 28 | Age at Ch's birth | M | 28.1 | 26.4 | 24.6 | NS | <.01 | NS |
| 29 | Age at Ch's birth | F | 30.6 | 30.1 | 26.7 | <.05 | <.05 | NS |

Note.—RI = rating item (see Table 2); AU = autistic; BD = brain damaged; NR = normal; M = mother; F = father.

*Based on the North-Hatt scale.

[†]Based on WAIS.

DISCUSSION

The careful matching of parents in the AU and NR groups with respect to SES, religion, and race, and of their children on ordinal position, age, and sex, is an important condition for evaluating intellectual differences. All such variables influence the intellectuality and measured intelligence of parents as well as their expectations of a given child. With these variables held constant, only one difference in intellectuality between AU and NR parent groups could be detected; that difference was not in the predicted direction. However, when the

groups were not matched, as in the case of the significantly less educated or affluent BD parents, several significant differences in measured intelligence, SES, schooling, and even in expressed desires (for their abnormal child's intellectual accomplishment) were in evidence. The finding that verbal IQs of AU fathers were above the IQs of BD fathers and the lack of substantive difference between the IQs of mothers in these two groups does not clarify the relationship between measured parental intelligence and autism. It merely highlights the need for an additional study to compare the IQs of AU and BD parents matched for education and SES.¹¹

Several limitations of this study are noteworthy. Because so much data, especially historical and highly personal information, was obtained from parental reports, no validation procedures were possible. Essentially this study compared parental statements about themselves and information which raters deduced both literally and subjectively from the interviews. Nevertheless, the raters' subjective impressions, based on carefully examined transcripts, agreed with what parents had to say about themselves. To such extent, the parent's remarks are validated. An interview study is at best a rather crude instrument capable of missing important subtleties related to intellectuality that may be differently expressed toward the AU child.

Within such limitations, the parents of all groups did not differ significantly with respect to their stated intellectual expectations of their children. The one important exception was the lack of emphasis by the parents of AU and BI children on high intellectual or academic achievements as goals for their deviant or "sick" children. Instead, recognizing the child's difficulties, they wished primarily for improvements in speech and relationships with others, thus setting sensible and logical goals for most such children.

Our results confirm the findings of Lotter (1967) that parents of AU children come from higher socioeconomic classes than those of BD children. They fail to confirm findings that mothers of AU children as a group have a higher measured intelligence than those of subnormal children. The findings of Kikuchi et al. (1970) concerning the higher intelligence of AU fathers and the average intelligence of the mothers tend to agree with ours, even though the two studies are dissimilar in several ways. This study does not explain why children with an initial diagnosis of infantile autism have better educated parents, fathers with higher measured intelligence, and families in the upper SES, unlike children with an initial diagnosis of brain damage or mental retardation.

¹¹Of some interest is also the difference between the IQs of fathers and mothers in the AU group (unlike in the NR group). Such higher WAIS ratings of fathers were also reported by Japanese investigators (Kikuchi, et al., 1970).

The differences in comparisons involving age of parents at birth of index children assume greater significance in view of the careful matching of NR and AU children to secure similarities in age of child, position and number in sibline. Such variables should have substantially controlled for parental age. The finding that parents of AU and BD children are older than those of NR children tends to suggest an akin biological factor related to the age of parents. Possibly, such a factor may be in part responsible for the symptoms in some children.

EEG studies by White, DeMyer, and DeMyer (1964) and Creak and Pampiglione (1969) revealed a high incidence of clearly abnormal records in both AU and BD children. Alpern and Kimberlin (1970) and DeMyer et al. (1971) have demonstrated the feasibility of obtaining reliable and valid intelligence and adaptive quotient measurements in both groups of children (often called untestable), showing a similarity in the preponderance of low IQs. Thus, the unexpected results showing a greater maternal and paternal age in the AU in contrast with the carefully matched normal group yield an additional bit of evidence that links autistic children more closely with subnormal than normal children in terms of neurological integrity.

REFERENCES

- Alpern, G. D., & Kimberlin, C. C. Short intelligence test ranging from infancy levels through childhood levels for use with the retarded. *American Journal of Mental Deficiency*, 1970, 75, 65-71.
- Churchill, D. W. Psychotic children and behavior modification. *American Journal of Psychiatry*, 1969, 125, 139-144.
- Churchill, D. W., Alpern, G. D., & DeMyer, M. K. Standard subject description checklist: descriptions, definitions, and instructions. In D. W. Churchill, G. D. Alpern, & M. K. DeMyer (Eds.), *Infantile Autism: Proceedings of the Indiana University Colloquium*. Springfield, Ill.: Charles C Thomas, 1971.
- Creak, M., & Pampiglione, G. Clinical and EEG studies on a group of 35 psychotic children. *Developmental Medicine and Child Neurology*, 1969, 11, 218-227.
- DeMyer, M. K., Norton, J. A., & Barton, S. Social and adaptive behaviors of autistic children as measured in a structured psychiatric interview. In D. W. Churchill, G. D. Alpern, & M. K. DeMyer (Eds.), *Infantile Autism: Proceedings of the Indiana University Colloquium*, Springfield, Ill.: Charles C Thomas, 1971.
- DeMyer, M. K., Churchill, D. W., Pontius, W., & Gilkey, K. M. A comparison of five diagnostic systems for childhood schizophrenia and infantile autism. *Journal of Autism and Childhood Schizophrenia*, 1971, 1, 175-189.
- Hixon, W. J., & Massey, F. J., Jr. *Introduction to statistical analysis*. New York: McGraw-Hill, 1957.

- Finney, D. J., Latscha, R., Bennett, B. M., & Hsu, P. *Tables for testing significance in a 2 x 2 contingency table*. London: Cambridge University Press, 1963.
- Kanner, L. Autistic disturbances of affective contact. *Nervous Child*, 1943, 2, 217-250.
- Kikuchi, M., Morimoto, Y., Machida, S., Yamazaki, A., Yogashi, Y., Shtara, M., Saito, Y., Ito, N., & Hamada, M. Family dynamics of autistic children: Report on parental intelligence. *Psychiatria et Neurologica Japonica*, 1970, 72, 639.
- Lotter, V. Epidemiology of autistic conditions in young children. II. Some characteristics of the parents and children. *Social Psychiatry*, 1967, 1, 163-173.
- Reiss, A. J., Jr. *Occupations and social status*. New York: Free Press, 1965.
- Rimland, B. *Infantile autism*. New York: Appleton-Century-Crofts, 1964.
- Warner, L., Meeker, M., & Eels, K. *Social class in America*. Chicago: Science Research Associates, 1949.
- White, P. T., DeMyer, W., & DeMyer, M. K. EEG abnormalities in early childhood schizophrenia: A double-blind study of psychiatrically disturbed and normal children during promazine sedation. *American Journal of Psychiatry*, 1964, 120, 950-958.