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ABSTRACT

The annotated bibliography on early childhood psychosis (infantile autism, childhood schizophrenia, and related disorders) contains 424 entries (books, journal articles, conference and research reports) dating from 1964 through the first 6 months of 1970, which pertain to theory, research, and treatment. Number of entries for each subject is noted in parentheses. The following topics serve to organize the entries: descriptive studies (36), differential diagnosis (27), family characteristics (21), behavioral characteristics (19), followup studies (13), intellectual development (12), perceptual processes (28), language (20), neurobiological correlates (seven), drug studies (12), electroencephalogram studies (13), skeletal, cell, biochemical, and other studies (19), psychotherapy (50), behavior therapy (78), educational programs (20), evaluation of therapy (six), and theory (43). Included is an author index. (GW)

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Early Childhood Psychosis

Annotated Bibliography 1964-1969

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EARLY CHILDHOOD PSYCHOSIS:
INFANTILE AUTISM, CHILDHOOD SCHIZOPHRENIA AND RELATED DISORDERS

An Annotated Bibliography

1964 to 1969

Prepared by

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FOREWORD

The mental health needs of children--in research, services, and training--are at the top of the list of NIMH priorities for the seventies. The young deserve the highest possible quality of life we are able to give them. Today children are faced with what adults see as almost insurmountable problems: drug abuse, alcohol abuse, frustration, alienation, violence, and other internal and external pressures. The time of the child has come and the Nation must be willing to give more attention to the children themselves--and to their proper care. Providing adequate and accessible mental health care to children everywhere in our country, whether they live in a small community or an urban ghetto, is the most important job ahead.

Early childhood psychosis--perhaps the most serious of the mental health problems of children--is an enigma whose complexity is mirrored in the many terms used to describe it. Labels such as "infantile autism," "childhood schizophrenia," or "atypical child" have been applied to children who are unresponsive to their environment, lacking in speech to varying degrees, exhibiting either deficient or special cognitive abilities, and observed to be engaging in stereotyped behavior. Interpretations of these conditions encompass a range of theory from the rigidly organic to the strictly interpersonal. Increasingly, conjecture has given way to scientific investigation. With each new study it becomes more necessary to bring together diverse opinions.

This bibliography contains a current and comprehensive compilation of the relevant literature pertaining to theory, research, and treatment, without emphasis on any specific school of thought. It should be a useful tool for those who work to alleviate suffering caused by childhood psychosis.

Bertram S. Brown, M.D.
Director
National Institute of Mental Health

PREFACE

The rapid expansion of the literature on childhood psychosis has made it increasingly difficult for individual investigators to keep informed of recent developments. Indicative of new research trends are the intensive study of perceptual processes, the introduction of behavior modification techniques, and the shift in emphasis from psychogenic hypotheses to the search for organic factors. To facilitate the dissemination of this new information, we have prepared the current annotated bibliography which contains over 400 abstracts of articles (1964-1969) on infantile autism, childhood schizophrenia, and related disorders, subdivided according to their major emphasis.

This bibliography may be used with those of W. Goldfarb and M. Dorsen (Annotated Bibliography of Childhood Schizophrenia and Related Disorders, New York: Basic Books, 1956) and J. Tilton, M. DeMyer, and L. Loew (Annotated Bibliography on Childhood Schizophrenia: 1955-1964, New York: Grune & Stratton, 1966) to provide a complete reference guide through 1969. Although the latter bibliography contained a portion of the 1964 references, we have covered the entire year in the present work, in addition to articles appearing during the first 6 months of 1970. No work of this type ever succeeds in including all relevant references. We would appreciate information concerning articles which were overlooked so that they may be included in subsequent annual supplements. Readers who are interested in receiving supplements may submit their names and addresses to one of the authors for addition to the mailing list.

We thank Drs. M. K. DeMyer, J. I. Nurnberger, and D. F. Moore for their support and Katherine Mitchell for her assistance during this project. Phil Enz, Judith Smith, and Janet Allen of the LaRue D. Carter Memorial Hospital Medical Library were extremely helpful in obtaining the necessary references. Special thanks are due to Lynn Jenkins for her superlative technical skill during all stages of the preparation of this bibliography.

July, 1970

C. Q. Bryson, M.S.
J. N. Hingtgen, Ph.D.

CONTENTS

| | |
|------------------------------------------------|-----|
| FOREWORD | |
| PREFACE | |
| I. THE SYNDROME | |
| Descriptive Studies | 1 |
| Differential Diagnosis | 9 |
| Family Characteristics | 16 |
| Behavioral Characteristics | 21 |
| Follow-up Studies | 27 |
| II. INTELLECTUAL DEVELOPMENT | 31 |
| III. PERCEPTUAL PROCESSES | 35 |
| IV. LANGUAGE | 44 |
| V. NEUROBIOLOGICAL CORRELATES | |
| Pre- and Peri-natal Factors | 50 |
| Drug Studies | 53 |
| EEG Studies | 57 |
| Skeletal, Cell, Biochemical, and Other Studies | 61 |
| VI. TREATMENT | |
| Psychotherapy | 66 |
| Behavior Therapy | 78 |
| Educational Programs | 99 |
| Evaluations of Therapy | 104 |
| VII. THEORY | 106 |
| AUTHOR INDEX | 117 |

I. THE SYNDROME

Descriptive Studies

1. -----, Childhood autism. The Canadian Medical Association Journal, 99: 187-189, 1968.

A brief discussion of several recent studies of autism is presented with the conclusions that: (1) the prevalence of autism is higher than previously suspected; (2) there is no relationship to schizophrenia; (3) parents of autistics are likely to be of higher intelligence and higher economic classes; (4) an organic rather than psychogenic etiology is suggested; (5) bizarre behavior diminishes in a stimulating environment; and (6) although the effectiveness of psychoanalytic treatment has not been proven, psychodynamically oriented personnel appear to be effective.

2. Churchill, E. W.; Alpern, G. D.; and DeMyer, M. K., eds., Infantile Autism: Proceedings of the Indiana University Colloquium. Springfield: Thomas, 1970.

The editors present a collection of papers read at a colloquium on infantile autism covering problem areas of description, diagnosis, treatment, and research strategy. Also included are edited summaries of the discussions following the presentations. (Individual articles are cited under the respective subject areas in this bibliography.)

3. Despert, J. L. Schizophrenia in Children. New York: Robert Brunner, Inc., 1968.

The author presents a collection of her papers on childhood schizophrenia dealing with: (1) prevalence and onset; (2) early identification and possible methods of prevention; (3) differential diagnosis; (4) comparisons of the thought processes of schizophrenic and young normal children; (5) etiological factors; and (6) psychotherapy. Brief case histories are presented to illustrate the factors discussed.

4. Duffy, J. H. Childhood schizophrenia. Medical Records Annual, 57:344-345, 1964.
5. Eberhardy, F. The view from "the couch." Journal of Child Psychology and Psychiatry, 8:257-263, 1967.

A mother describes her experiences with an autistic boy and their confrontations with therapists and psychiatric social workers. She denies

the accusation that parents of autistic children wish that their children did not exist, and asks therapists and counsellors to be more understanding and less accusative of parents' confused position.

6. Furneaux, B. The autistic child. New Education, Feb., 1966.
7. Gibson, D. Early infantile autism; Symptom and syndrome. Canadian Psychologist, 9:36-39, 1964.

Comparisons of case record data were made between 60 autistics of CA 4 to 12 yrs. and IQ 15 to 60 and 100 brain-injured control children within the same CA and IQ range. Fathers of autistics had higher educational levels than fathers of brain-injured. In comparing organic and nonorganic cases of autism, there were no differences in parental educational level, children's IQ, or frequency of autistic symptoms. The author concludes that autism is caused by a variety of organic factors, but that the behavioral symptoms characteristic of autistic children are defensive reactions to parental expectations.

8. Goldfarb, W. An investigation of childhood schizophrenia. Archives of General Psychiatry, 11:620-634, 1964.

Projects conducted over a 10-yr. period are reviewed. The author presents his diagnostic criteria for childhood schizophrenia and evidence of deficits in the use of distance receptors, in the ability to organize sensory stimuli, and in the ability to execute adaptive acts. He distinguishes between organic and nonorganic schizophrenia on the basis of neurological findings and reports that organics function at a lower level than nonorganics, even though the families of organics are much more adequate than the families of nonorganics.

9. Hingtgen, J. N.; and Bryson, C. Q. Recent developments in the study of early childhood psychoses: Infantile autism, childhood schizophrenia and related disorders. Research Report No. 10, Clinical Research Center for Early Childhood Schizophrenia, Indianapolis, Indiana, 1970.

Recent studies (1964-1969) of early childhood psychoses are reviewed and evaluated in the areas of description, intelligence, perception, language, neurobiological correlates, treatment, and theory.

10. Huesca, F. P. Aportacion al estudio de las psicosis infantiles. In: Lopez Ibor, J. J., ed., Proceedings of the Fourth World Congress of Psychiatry, 1966, Part 3. New York: Excerpta Medica Foundation, 1968.

11. Ishii, T.; and Asaoka, M. A case study of the autistic psychopath. Japanese Journal of Child Psychiatry, 8:187-195, 1967.

Three case histories of autistic psychopaths are presented which suggest common traits of an inability to communicate sympathetically with others and a total reliance on a world of fantasy. (English summary)

12. Ishii, T.; and Wakabayashii, S. A consideration regarding the desire for maintenance of sameness in early infantile autism. Japanese Journal of Child Psychiatry, 8:427-432, 1967.

An obsessive desire for maintenance of sameness is characteristic of autistic children, but this concept could probably be better described as the adherence to a particular pattern of behavior. The substance of "sameness" changes with intellectual development. Various attitudes demonstrated by autistic children and recognized as phenomena of "sameness" can be grouped in 4 categories: (1) fine motor coordination; (2) devotion to favorite objects; (3) rigidly fixed manner of doing things; and (4) devotion to their own animistic fantasies. (English summary)

13. Kysar, J. E. The two camps in child psychiatry: A report from a psychiatrist-father of an autistic and retarded child. American Journal of Psychiatry, 125:103-109, 1968.

A psychiatrist-father describes his experiences with his autistic and retarded son and suggests that the psychogenic theory of etiology is seriously destructive from the family viewpoint.

14. Lauder, M. An autistic child. In: Wing, J. K., ed., Early Childhood Autism: Clinical, Educational and Social Aspects. London: Pergamon Press, 1966.

A mother describes her experiences in raising an autistic child.

15. Lotter, V. Epidemiology of autistic conditions in young children. I. Prevalence. Social Psychiatry, 1:124-137, 1966.

The entire 8 to 10-yr. old population of the County of Middlesex was screened to identify children with autistic behavior by use of behavior questionnaires, case records, and interviews with selected children and informants. Thirty-two autistic and 22 nonautistic handicapped children were identified, yielding a prevalence rate of 4.5 per 10,000. Twenty-two autistics had gradual onset from an early age, while 10 had some period of normal development. 15.6% of the autistics obtained IQs above 80, 15.6% obtained IQs between 55 and 79, and 68.8% obtained IQs below 55. The behavior questionnaires and 3 sample case studies are included.

16. Lutz, J. Zum verstandnis des autismus infantum als einer Ich-bewusstseins, Ich-aktivitats, und Ich-einprogungsstorung. (Towards a better understanding of infantile autism as a disturbance of ego-consciousness, ego-activity, and ego-imprint.) Acta Paedopsychiatrica, 35:161-177, 1968.

Autistic children are characterized not only by object-relation disorders, but by intrapsychical disturbances, marking autism as a disintegration of personality. The concept of autism as ego disturbance provides a valuable starting point for therapy and orthoeducation. (English summary)

17. Marco, F.; and Pertejo, J. Aportacion a las psicosis infantiles. In: Lopez Ibor, J. J., ed., Proceedings of the Fourth World Congress of Psychiatry, 1966, Part 3. New York: Excerpta Medica Foundation, 1968.
18. Menolascino, F. Emotional disturbances in mentally retarded children. Archives of General Psychiatry, 19:456-464, 1968.

Experiences with 256 children who had been judged to be both emotionally disturbed and mentally retarded indicated that psychiatric disorders in young mentally retarded children were relatively frequent occurrences, and differed qualitatively from disorders noted in non-retarded children. The authors suggest that there is an urgent need to evolve more specific methods of treatment for large groups of multiply-handicapped young children and that the management aspects and psychiatric treatment of emotional disturbances in mentally retarded children has been largely neglected.

19. Mnukhim, S.; Zelenetskaya, A.; and Isaev, D. O sindrome "rannego detskogo autizma" ili sindrome Kanner u detei. (On the syndrome of "early childhood autism" or Kanner's syndrome in children.) Zhurnal Neuropatologii i Psykhiatrii, 67:1501-1506, 1967.

Observations were made over a 5-yr. period on a group of 36 male and 8 female autistic children, CA 2 to 14 yrs. Characteristic disorders of the group included concrete thinking and prolonged inability to master reading, writing, and arithmetic skills in sequence. The authors discuss their findings in terms of differentiating early childhood autism both from schizophrenia and from "true" mental retardation. (English summary)

20. Park, C. C. The Siege. New York: Harcourt, Brace, and World, 1967.

A mother describes her experiences in raising an autistic child. Problems of obtaining adequate educational help and the mother's efforts to teach her child are discussed.

21. Rieger, N. I. The capacity for enjoyment--a favorable prognostic sign in childhood schizophrenia. A preliminary report. In: Lopez Ibor, J. J., ed., Proceedings of the Fourth World Congress of Psychiatry, 1966, Part 3. New York: Excerpta Medica Foundation, 1968.

The recovery of an extremely regressed 4-yr. old schizophrenic girl is discussed in terms of her capacity to laugh, have fun, be cheerful, and appear happy. The author feels that schizophrenic children who manifest these characteristics have a better prognosis than other psychotic children.

22. Rutter, M. Psychotic disorders in early childhood. In: Conpen, A.; and Walk, A., eds., Recent Developments in Schizophrenia: A Symposium. London: Royal Medico-Psychological Association, 133-158, 1967.

The author reviews articles on early childhood psychoses and presents the latest research on behavioral, physical, and parental characteristics, classification, brain pathology, genetics, and treatment.

23. Sagarra, J. S. Esquizofrenias infantiles precoces. In: Lopez Ibor, J.J., ed., Proceedings of the Fourth World Congress of Psychiatry, 1966, Part 3. New York: Excerpta Medica Foundation, 1968.

24. Schachter, M. Evolution and prognosis of early infantile autism. Acta Paedopsychiatrica, 35:188-199, 1968.

A case history of one autistic boy from the age of 4 to 17 yrs. is presented. (English summary)

25. Spivack, G.; and Levine, M. The Devereux Child Behavior Rating Scale: A study of symptom behaviors in latency age atypical children. American Journal of Mental Deficiency, 68:700-717, 1964.

Scores on the Devereux Child Behavior Rating Scale were factor analyzed for 17 schizophrenics (median CA 8-8, median IO 45); 22 personality disorder cases (median CA 11-9, median IO 105); 12 chronic brain syndrome with behavioral reaction cases (median CA 11-0, median IO 73); and 36 chronic brain syndrome with no behavioral reaction cases (median CA 12-2, median IO 60). Fifteen factors were extracted, 8 of which were related to diagnostic categories. Schizophrenics showed significantly more receptor hypersensitivity and avoidance than the other 3 groups, significantly lower disinhibition scores than the chronic brain syndrome with behavioral reaction group, significantly lower cleanliness scores than either of the chronic brain syndrome groups, and significantly lower need for competence scores than the other 3 groups. Many other items generally considered to be characteristic of childhood schizophrenia did not differentiate between clinical groups and/or were related to IO.

26. Tilton, J. R.; DeMyer, M. K.; and Loew, L. H. Annotated Bibliography on Childhood Schizophrenia 1955-1964. New York: Grune and Stratton, 1966.

Abstracts are given for 346 publications on childhood schizophrenia from 1955 to 1964. The bibliography is divided into 7 sections: historical and general review, description and diagnosis, etiology, biochemical-neurological-physiological studies, family characteristics, treatment and care, and follow-up studies.

27. Treffert, C. A. The epidemiology of infantile autism. Presented at the American Psychiatric Association, 1969.

Prevalence rates of childhood schizophrenia were determined for the entire Wisconsin state population of CA 12 yrs. and under. The sample was divided into 3 groups: (1) classic infantile autism, (2) other variants of childhood schizophrenia, and (3) probable psychosis with evidence of brain damage. Of the 3.4 cases per 10,000 population, 25% were in group 1, 50% in group 2, and 25% in group 3. The male:female ratio was approximately 4:1.

28. van Krevelen, D.; Spiel, W.; von Stockert, F. G.; Lebovici, S.; Kuromaru, S.; and Lorente, S. A. Prognosis of infantile neuroses and psychoses. In: Lopez Ibor, J. J., ed., Proceedings of the Fourth World Congress of Psychiatry, 1966, Part 1. New York: Excerpta Medica Foundation, 1967.

An international symposium includes papers presented in English, German, French, and Spanish. Discussions of the papers by L. Bender, K. Dabrowski, P. G. Medlian, and M. Rutter are also included.

29. Ward, A. J. Early infantile autism: Diagnosis, etiology and treatment. Psychological Bulletin, 73:350-362, 1970.

Concepts of early infantile autism are reviewed and four diagnostic criteria are suggested: lack of object relations, lack of use of speech for communication, maintenance of sameness via stereotypic behavior, and lack of neurologic dysfunction. Two subgroups, organic and psychogenic, were described, but neither group was reported to respond very successfully to treatment except when a very active, intrusive and pleasant therapeutic approach was used. The author presents his own view of psychogenic autism which is seen as resulting from a lack of varying, novel and patterned stimulation in the early developmental history, leading to a deviant style of ego development and the formation of a behavioral ego rather than a true body image.

30. Ward, T. F.; and Hoddinott, B. A. A study of childhood schizophrenia and early infantile autism. Part I Description of the sample. Canadian Psychiatric Association Journal, 10:377-382, 1965.

Thirty-nine autistic children of CA 2 to 11 yrs. were hospitalized for a 3-month observation period. The male:female ratio was 2:1. Families were larger than average and were of higher educational and occupational levels than the general population. Abnormalities of pregnancy occurred in 56% of the cases; delayed speech occurred in 64% of the cases; and normal EEGs were obtained in 44% of the cases.

31. Ward, T. F.; and Hoddinott, B. A. A study of childhood schizophrenia and early infantile autism. Part II Selection of a group for in-patient treatment. Canadian Psychiatric Association Journal, 10:382-386, 1965.

The authors report the following criteria for selection of 12 autistic children, CA 2 to 7 yrs., for in-patient treatment: (1) low CA; (2) normal intellectual potential; (3) intact family; and (4) clearly autistic symptomatology.

32. Wilson, L. This Stranger, My Son. New York: G. P. Putnam's Sons, 1968.

A mother describes her experiences in raising a schizophrenic child with particular emphasis upon the difficulties encountered in obtaining useful advice on how to handle behavioral problems.

33. Wing, J. K., ed., Early Childhood Autism: Clinical, Educational, and Social Aspects. London: Pergamon Press, 1966.

A collection of 14 papers by a variety of investigators on the subject of early childhood autism is presented. (Individual articles are cited under the respective subject areas in this bibliography.)

34. Wing, J. K.; O'Connor, N.; and Lotter, V. Autistic conditions in early childhood: A survey in Middlesex. British Medical Journal, 3:389-392, 1967.

The entire 8 to 10-yr. old population of Middlesex was screened by use of a behavioral questionnaire to obtain information on the prevalence and characteristics of autistic children. Thirty-two autistic and 22 non-autistic cases were identified, indicating a prevalence of autistic children of 4.5/10,000. Data is provided on IQ, speech development, symptom onset, birth order, maternal age, pre- and pari-natal complications, neurological signs, occupational and educational levels of parents, and prevalence of familial psychopathology.

35. Wolff, S.; and Chess, S. A behavioural study of schizophrenic children. Acta Psychiatrica Scandinavica, 40:438-466, 1964.

Behavioral data for 14 autistics of CA 3 to 7 yrs. was obtained through maternal interviews, case records, and direct observations. Ss were ranked for severity of illness. Occupational, educational, and income levels of families, birth order, and occurrence of psychiatric disorders in relatives were unrelated to severity rankings. Children ranked as more severe had histories of periods of normal development followed by regression, had abnormal or excessive motor activity in first year, demonstrated less complex spontaneous behaviors, less eye-to-eye contact, greater avoidance of auditory stimuli, and greater frequency of abnormal motor and sensory behaviors. Speech of all children was largely echolalic even when used for communicative purposes. Insistence on sameness occurred more frequently in children ranked as moderately severe than in the most or least severe children. Six of the 14 Ss demonstrated unusual reading skills.

36. Yates, A. J. The Psychoses: Children, Chapter 13, Behavior Therapy. New York: John Wiley & Sons, Inc., 1970.

The author reviews the historical development of concepts of childhood schizophrenia and infantile autism, problems of differential diagnosis, theories of etiology, psychiatric treatment methods, and behavior modification studies.

For additional references to Descriptive Studies see: #83, von Brauchitsch & Kirk; #103, Wing; #386, Cain; and #410, Rimland.

Differential Diagnosis

37. Alderton, H. R. A review of schizophrenia in childhood. Canadian Psychiatric Association Journal, 11:276-285, 1966.

A brief review of the process of normal development and hypotheses regarding the etiology of childhood schizophrenia is presented. The author discusses the differential diagnosis of four types of childhood schizophrenia: (1) early infantile autism; (2) symbiotic infantile psychosis; (3) pseudoneurotic schizophrenia; and (4) pseudopsychopathic schizophrenia.

38. Asperger, H. On the differential diagnosis of early infantile autism. Acta Paedopsychiatrica, 35:136-145, 1968.

The differential diagnosis of several autistic conditions is discussed. (English summary)

39. Creak, M. et al. Schizophrenic syndrome in childhood: Further progress report of a working party. Developmental Medicine and Child Neurology, 6:530-535, 1964.

Based on a study of 129 schizophrenics without organic features, 26 schizophrenics with organic features, 34 organics without schizophrenia, and 24 children with neither organic features nor schizophrenia, Nine Points are proposed as diagnostic criteria for childhood schizophrenia. Frequencies of occurrence of each of the nine points in the 4 diagnostic groups are given. In general, the Nine Points occurred more frequently in the schizophrenic than the nonschizophrenic groups.

40. Douglas, V. I.; and Sanders, F. A. A pilot study of Rimland's Diagnostic Check List with autistic and mentally retarded children. Journal of Child Psychology and Psychiatry, 9:105-109, 1968.

Rimland's Diagnostic Check List for Behavior-Disturbed Children (Form E-2) was completed by the mothers of 13 autistic and 13 retarded children of CA 3 to 8 yrs. Seventeen check-list items yielded significant differences between groups. However, none of the autistic children received a score above Rimland's cut-off point for a diagnosis of infantile autism.

41. Eaton, L.; and Menolascino, F. J. Psychotic reactions of childhood: Experiences of a mental retardation pilot project. Journal of Nervous and Mental Disease, 143:55-67, 1966.

Clinical team evaluations are presented for a group of 32 psychotic children who were initially thought to be mentally retarded. The results offer guidelines for differential diagnosis between psychoses resulting from primary emotional disorders and psychoses superimposed on a chronic brain syndrome in children. The authors discuss the problems involved in regarding early infantile autism as a unitary syndrome.

42. Eisenberg, L. Classification of psychotic disorders in childhood. In: Eron, L. D., ed., Classification of Behavior Disorders. Chicago: Aldine Publishing Co., 1966.

A classification of the psychotic disorders of childhood is proposed with the primary axis of separation being either the presence or absence of central nervous system pathology, and with further subgroups based either on the nature of the CNS pathology or on historical and clinical findings. Early infantile autism and symbiotic psychosis are categorized under the autistic psychoses as psychoses without known CNS pathology.

43. Eisenberg, L. Psychotic disorders in childhood. In: Cooke, R. E., ed., The Biologic Basis of Pediatric Practice. New York: McGraw-Hill Book Co., 1968.

A classification system for childhood psychotic disorders is presented which distinguishes between psychoses associated with brain damage and those without evidence of brain damage. Early infantile autism and symbiotic psychosis are distinguished from the childhood schizophrenias, but all three are categorized under psychoses without known brain damage.

44. Fish, B; and Shapiro, T. Descriptive typology of children's psychiatric disorders II. A behavioral classification. Psychiatric Research Reports of the American Psychiatric Association, 18:75-86, 1964.

A heterogeneous group of psychiatrically disturbed children from CA 6 to 12 yrs. was divided into 3 matched groups which were given either chlorpromazine, dyshenhydramine, or a placebo. The following 4 groups were found to differ in response to treatment: autistic-disjunctive, immature-labile, anxious-neurotic, and sociopathic-paranoid.

45. Gold, S.; and Vaughn, G. F. Classification of childhood psychoses. Lancet, 2:1058-1059, 1964.

Previous classifications of childhood psychoses are examined, and a classification based on differential diagnosis is presented.

46. Kanner, L. Autistic disturbances of affective contact. Nervous Child, 2:217-250, 1943. Reprinted in Acta Paedopsychiatrica, 35:98-136, 1968.

Case histories of 11 autistic children of CA 2 to 11 yrs. are presented as representative of the syndrome of infantile autism. The author suggests that the basis of infantile autism is an innate inability to form relationships with people, and that autistic children "differ in many respects from all other known instances of childhood schizophrenia."

47. Kawabata, T.; Yamaguchi, H.; Koyabu, S.; Ishida, T.; Makita, H.; Mukohata, T.; Fujimoto, B.; Sumikawa, S.; Idei, Y.; Fukuoka, O.; and Takahashi, N. A psychiatric study of city children with physical and mental handicaps. Japanese Journal of Child Psychiatry, 8:353-364, 1967.

A psychiatric study was made of 7,000 urban handicapped children of early school age from which 3 handicapped groups were differentiated: (1) mental retardates with IQ below 40 (0.13%); (2) mental retardates with physical handicaps (0.14%); and (3) mental retardates who showed autistic behavior (0.1%). Although it was difficult to distinguish between autistic behavior disorders and those resulting from severe mental deficiency, the authors consider that in clinical practice it is proper to differentiate between these disorders. (English summary)

48. Menolascino, F. Psychoses of childhood: Experience of a mental retardation pilot project. American Journal of Mental Deficiency, 70:83-92, 1965.

A group of 616 children, ranging in age from early infancy to 8 yrs., were studied as suspected mental retardates. Thirty-two (5.2%) displayed psychotic reactions. Differential diagnostic aspects of the 3 types of childhood psychoses observed in the sample are reviewed. Suggestions are advanced as an aid to further clinical clarity in the psychiatric approach to seriously disturbed children.

49. Menolascino, F. J. Autistic reactions in early childhood: Differential diagnostic considerations. Journal of Child Psychology and Psychiatry, 6:203-218, 1965.

In a study of 616 children of CA 1 to 8 yrs. referred to the Nebraska Psychiatric Institute over a 5-yr. period on the basis of suspected mental retardation, 32 presented initial clinical pictures of autism.

Following further evaluation or treatment, the cases were subdivided into 8 distinct etiological categories. In view of the fact that autistic behaviors were associated with a wide variety of diagnostic classifications, the author suggests caution in the use of the term autistic as a meaningful diagnostic or treatment consideration. Six case histories are presented to illustrate the various etiologies associated with autistic behaviors.

50. Menolascino, F. J. Infantile autism: Description and classification. In: Churchill, D. W.; Alpern, G. D.; and DeMyer, M. K., eds., Infantile Autism: Proceedings of the Indiana University Colloquium. Springfield: Thomas, 1970.

The description and classification of infantile autism is discussed in terms of related disorders, issues in clinical diagnosis, and classification problems. A tentative classification for the varieties of clinical disorders commonly subsumed under this rubric is presented. Finally a research program for investigating the heterogeneous/homogeneous population of young children who display infantile autism is suggested.

51. O'Gorman, G. The psychoses of childhood. In: Howells, J. G., ed., Modern Perspectives in Child Psychiatry. Edinburgh: Oliver and Boyd, 1965.

52. Perron, L. The psychoses of childhood. Canadian Nurse, 60:42-43, 1964.

Five types of childhood psychosis (Spitz hospitalitis, anaclitic depression, Kanner's infantile autism, Mahler's symbiotic psychosis, and infantile schizophrenia) and 3 types of psychotherapy (supportive, insight--rehabilitative, and insight--reconstructive) are briefly described.

53. Rendle-Short, J., and Clancy, H. G. Infantile autism. Medical Journal of Australia, 1:921-922, 1968.

The authors present a check list of 14 autistic symptoms, and suggest that a child should demonstrate at least 7 of the symptoms before a diagnosis of autism is considered.

54. Rimland, B. On the objective diagnosis of infantile autism. Acta Paedopsychiatrica, 35:146-161, 1968.

Rimland discusses a revision of his Diagnostic Check List (E-2) to be used for the diagnosis of early infantile autism. Preliminary data on 68 cases is presented and specific Check List cut-off scores are suggested.

55. Rutterberg, B. A developmental classification of the childhood psychoses. Presented at the American Association of Psychiatric Clinics for Children, 1968.

56. Rutter, M. The influence of organic and emotional factors on the origins, nature and outcome of childhood psychosis. Developmental Medicine and Child Neurology, 7:518-528, 1965.

A 5 to 15-yr. follow-up of 63 psychotic children (mean evaluation CA 5 yrs. and mean follow-up CA 15 yrs.) was conducted. Data are presented to illustrate and support distinctions between childhood psychosis and (1) adult schizophrenia, (2) mental retardation, (3) brain damage syndromes, and (4) developmental aphasia. On the basis of a high frequency of neurological dysfunction and aphasic-like speech disorders, in addition to a low frequency of familial psychopathology, the author concludes that childhood psychosis is not primarily emotional in origin.

57. Rutter, M. Classification and categorization in child psychiatry. Journal of Child Psychology and Psychiatry, 6:71-83, 1965.

An 11-category classification system for childhood psychiatric disorders is presented which is based on differences in symptom clusters, response to treatment, long-term prognosis, etiology, epidemiology, age, sex trends, severity, and duration of disorder.

58. Rutter, M. The description and classification of infantile autism. In: Churchill, D. W.; Alpern, G. D.; and DeMyer, M., eds., Infantile Autism: Proceedings of the Indiana University Colloquium. Springfield: Thomas, 1970.

The author presents a general discussion of the relationship between autistic, developmental, and psychotic disorders, and concludes that autism should be placed in a distinct category. Diagnostic criteria are presented. It is suggested that neurological and intellectual status should not be considered in the diagnostic classification, but should be considered as separate axes for treatment and prognostic purposes.

59. Rutter, M.; Lebovici, S.; Eisenberg, L.; Sneznevskij, A. V.; Sadoun, R.; Brooke, E.; and Lin, T. Y. A tri-axial classification of mental disorders in childhood: An international study. Journal of Child Psychology and Psychiatry, 10:41-61, 1969.

A report on the third W.H.O. Seminar on Psychiatric Diagnosis is presented focussing primarily on disorders in children within CA 0 to 12 yrs. A triple axis classification system is suggested which would include the clinical psychiatric syndrome, the child's intellectual level, and etiological factors as independent axes. The system provides for

the differentiation of 4 types of childhood psychoses: infantile, dis-integrative, schizophrenic, and other. Descriptions of diagnostic categories are included.

60. Shechtman, A. Psychiatric symptoms observed in normal and disturbed children. Journal of Clinical Psychology, 26:38-41, 1970.

Achenbach's 91-item checklist, which differentiates behavioral characteristics in mentally healthy and mentally unhealthy children, was given to 62 out-patients, CA 6 to 13 yrs. Controls were 62 children matched for age, sex, education, and occupation of parents. Overlap was marked and few demographic variables were found to differentiate the groups. The author concludes that the presence of symptoms is not necessarily indicative of pathology. Rather, characteristics of the parents, the child's history of past problems, and the severity of the symptoms might be used as indicators of behavior disorders.

61. Sines, L. K.; and Owen, D. R. Identification of clinically relevant dimensions of children's behavior. Journal of Consulting and Clinical Psychology, 33:728-734, 1969.

The Missouri Children's Behavior Checklist for assessing several dimensions of children's behavior was given to 404 males, CA 5 to 16 yrs., referred for psychological evaluation. The checklist consists of 70 statements covering 6 dimensions of behavior: aggression, inhibition, activity level, sleep disturbance, somatization, and sociability. Scores discriminated between 2 groups of boys, one normal and one clinic-referred. The checklist is suggested as one approach to the qualitative evaluation of children's behavior.

62. Wing, J. K. Diagnosis, epidemiology, aetiology. In: Wing, J. K., ed., Early Childhood Autism: Clinical, Educational, and Social Aspects. London: Pergamon Press, 1966.

Problems of differential diagnosis, epidemiological data, and hypotheses of etiology are discussed. Childhood autism is described as a broader diagnostic category than the infantile autism of Rimland and Kanner and as a narrower diagnostic category than the childhood psychosis of the Creak criteria. It is suggested that the available evidence supports organic rather than psychogenic hypotheses of etiology, although there has been no clear delineation of specific CNS damage.

63. Wysocki, B. A.; and Wysocki, A. C. Behavior symptoms as a basis for a new diagnostic classification of problem children. Journal of Clinical Psychology, 26:41-45, 1970.

A non-structured interview was administered to the parents of 78 disturbed children (CA 5 to 16 yrs.) admitted as out-patients to a community child guidance center. Behavioral symptoms and environmental facts were grouped into 31 categories or variables which were subjected to factor analysis. Six significant group factors were extracted. The results supported the hypothesis that problem behavior symptoms tend to cluster in patterns suggesting possible diagnostic categories, and revealed the importance of physical handicaps and low IQ in emotional problems of children.

For additional references to Differential Diagnosis see: #3, Despert; #8, Goldfarb; #9, Hingtgen & Bryson; #19, Mnukhim, et al.; #22, Rutter; #29, Ward; #36, Yates; #104, Alanen, et al.; and #410, Rimland.

Family Characteristics

64. Bindman, S. S. Personality characteristics of the parents of children diagnosed as schizophrenic. U.C.L.A., Dissertation Abstracts, 1966.
65. Block, J. Parents of schizophrenic, neurotic, asthmatic, and congenitally ill children: A comparative study. Archives of General Psychiatry, 20:659-674, 1969.

The Rorschach, TAT, and MMPI were individually administered to 20 mothers and 20 fathers of schizophrenic children, 10 mothers and 10 fathers of neurotic impulsive children, 10 mothers and 10 fathers of neurotic withdrawn children, 21 mothers and 11 fathers of children with high somatic predisposition to asthma, 26 mothers and 9 fathers of children with low predisposition to asthma, and 23 mothers and 20 fathers of congenitally ill children. Two Q-sorts were done by clinicians based on the test protocols and on theoretical conceptions of schizophrenogenic and asthmatic mothers. Although several group differences were found which indicated a general relationship between parental and child psychopathology, there was little evidence of differences in psychopathology between parents of neurotics and schizophrenics.

66. Cooper, B. Parents of schizophrenic children compared with parents of nonpsychotic emotionally disturbed and well children: A discriminant function analysis. Temple University, Dissertation Abstracts, 1964.

Parents of schizophrenic, disturbed or neurotic, and psychiatrically normal children were tested for general adjustment, personality traits, parental attitudes, and marital adjustment. Results suggest that parents of schizophrenics display lack of warmth and lack of dominance while parents of emotionally disturbed children tend to display more instability.

67. Foster, H. H. Expression of emotion by parents of autistic children. Purdue University, Dissertation Abstracts, 1964.
68. Havelkova, M. Abnormalities in the siblings of psychotic children. Presented at the Canadian Psychiatric Association, 1965.

69. Korn, S. Family dynamics and childhood schizophrenia: A comparison of the family backgrounds of two low socioeconomic minority groups, one with schizophrenic children, the other with rheumatic fever children. Yeshiva University, Dissertation Abstracts, 1964.

Negro and Puerto Rican families of schizophrenic and rheumatic fever children were compared for intrafamilial disorganization, relationships, and maternal attitudes. Desertion by the father discriminated between diagnostic groups in the Negro sample, while separation of parents, extreme physical violence, and promiscuity of father discriminated between diagnostic groups in the Puerto Rican sample. Significant differences were also found between diagnostic groups for 4 variables of mother-child relationships.

70. Levine, M.; and Olson, R. P. Intelligence of parents of autistic children. Journal of Abnormal Psychology, 73:215-217, 1968.

A 20-item vocabulary test was mailed to the mothers and fathers of 3 autistic children. The parents scored between the 23rd and 78th percentiles on norms for their educational levels, and between the 50th and 84th percentiles on norms for their age groups.

71. Lordi, W. M.; and Silverberg, J. Infantile autism: A family approach. International Journal of Group Psychotherapy, 14:360-365, 1964.

In reporting parental reactions to therapy, the authors suggest that autistic children represent an extension of parental psychopathology.

72. Lotter, V. Epidemiology of autistic conditions in young children. II. Some characteristics of the parents and children. Social Psychiatry, 1: 163-173, 1967.

The families of 32 autistic (CA 8 to 10 yrs.) and 22 nonautistic handicapped children of the same CA range were studied. Parents of autistics were superior in socioeconomic status, intelligence, and education. Although there was no higher incidence of psychosis in families of autistic children, there was a higher incidence of other serious mental illness. There were no differences between groups in birth order, maternal age, prematurity, or complications in pregnancy and birth. Incidence of neurological and other abnormalities was lower in the autistic than in the handicapped group.

73. Lowe, L. H. Families of children with early childhood schizophrenia. Archives of General Psychiatry, 14:26-30, 1966.

The families of 65 autistic and/or symbiotic (AS), 34 chronic undifferentiated schizophrenic (CUS), and 146 emotionally disturbed (ED) children

of CA 1 to 11 yrs. were studied. Fathers of AS and CUS Ss were of higher educational and occupational levels than fathers of ED Ss, and mothers of AS Ss were of higher educational levels than mothers of either CUS or ED Ss. There were fewer broken homes in the AS and CUS than in the ED group. There were no differences between groups in paternal ages, boy/girl ratios, or ordinal positions.

74. McDermott, J. F., Jr.; Harrison, S. I.; Schragger, J.; Lindy, J.; and Killins, E. Social class and mental illness in children: The question of childhood psychosis. In: Chess, S.; and Thomas, A., eds., Annual Progress in Child Psychiatry and Child Development. New York: Brunner/Mazel, 1968.

Case records of 23 psychotics and 53 borderline psychotics (CA 3 to 14 yrs.) were divided into 5 groups on the basis of the fathers' occupational classifications. No relationship was found between psychosis and father's occupation or between 9 symptoms and social class. However, severe thought disturbances were more frequent in the skilled working class and professional executive groups and severe withdrawal was more frequent in the professional executive group.

75. Pitfield, M.; and Oppenheim, A. N. Child rearing attitudes of mothers of psychotic children. Journal of Child Psychology and Psychiatry, 5: 51-57, 1964.

A 50-item attitude inventory of child rearing practices was completed by the mothers of 100 psychotics, CA 3 to 15 yrs., and the mothers of 100 mongols and 100 normals matched for sex, age, ordinal position, and maternal age. There were no differences between groups in dominant overprojection, democracy, acceptance, or rejection. The mothers of psychotics were less objective and less strict than mothers of normals or mongols regarding infant training, habits and manners, sex play, and discipline, and were equal to mothers of normals in being more overprotective than mothers of mongols. In general, the mothers of psychotics tended to be less certain of their attitudes than mothers of the other two groups.

76. Rafferty, F. T.; Ingraham, B.; and McClure, S. The family system for two autistic children. Presented at the American Psychiatric Association, 1966.

Two families with autistic children, ages 3 and 5, were studied intensively in the homes for approximately 125 hours each by two specially trained psychiatric nurses. The isolation of the "autistic defect" from other ego defects such as intellect or speech is discussed.

77. Rice, G.; Kepecs, J. G.; and Yahalom, I. Differences in communicative impact between mothers of psychotic and nonpsychotic children. American Journal of Orthopsychiatry, 36:529-543, 1966.

The mothers of 3 autistic, 3 symbiotic, 4 undifferentiated schizophrenic, and 10 behavioral disorder children, CA 4 to 8 yrs., were rated on communicative impact by therapists. Mothers of psychotic children were rated as less likable, less treatable, more pathogenic, and more contradictory than mothers of nonpsychotic children.

78. Schopler, E.; and Loftin, J. Thought disorders in parents of psychotic children: A function of test anxiety. Archives of General Psychiatry, 20:174-181, 1969.

The Object Sorting Test was individually administered to 10 pairs of parents of psychotic children who were not receiving conjoint therapy with their children, 17 pairs of parents of psychotic children who were receiving conjoint therapy with their children, 11 pairs of parents of retarded children, and 21 pairs of parents of normal children. The parents not receiving therapy were interviewed about their normal children immediately before testing, while parents receiving therapy were told that the testing was part of the research project on childhood psychosis. Results demonstrated no thought disorder specific to parents of psychotic children. Where significant differences between groups were obtained, they were interpreted as being a function of test anxiety rather than as reflecting generalized thought disorders.

79. Schopler, E.; and Loftin, J. Thinking disorders in parents of young psychotic children. Journal of Abnormal Psychology, 74:281-287, 1969.

The Object Sorting Test was individually administered to the parents of 17 psychotic children who were in conjoint group therapy with their children and the parents of 11 retardates and 21 normals matched on the basis of children's CAs. Parents of psychotic children (particularly mothers) and fathers of retardates showed more thought impairment than parents of normals, while there were generally no differences between parents of psychotics and parents of retardates. Findings were interpreted as reflecting circumscribed test anxiety in relation to having an abnormal child rather than as reflecting generalized thought disorders.

80. Sloat, S. C. Child rearing practices in childhood schizophrenia: A comparison of ten schizophrenic children and their nonpsychotic siblings. University of Washington, Dissertation Abstracts, 1966.

81. Stadel, H. Ein Beitrag zur Problematik der Beziehungsschwierigkeiten von Müttern zu ihren autistischen Kindern. (Contribution to the problem of difficulties of contact of mothers with their autistic children). Acta Paedopsychiatrica, 35:227-241, 1968.

Since the developmental disturbances of the autistic child are associated with the character of the mother, the author suggests that therapeutic possibilities lie in the mother's approach. (English summary)

82. Trotta, F. The congruence of perceptions and reported behavior between the parents of schizophrenic, disturbed, retarded, and normal sons. Temple University, Dissertation Abstracts, 1964.

When 15 pairs of parents of male adolescent schizophrenics were compared to matched groups of parents of disturbed, mentally retarded, and normal sons, the former were more discrepant in self-reported behavior toward their son and in perceptions of their son's self-description.

83. von Brauchitsch, H. K.; and Kirk, W. E. Childhood schizophrenia and social class. Presented at the American Orthopsychiatric Association, 1967.

Data on 141 hospitalized mentally ill children were analyzed with regard to diagnosis, social class, age, sex, race, residence, family background, and duration of hospitalization. Diagnoses of schizophrenia were significantly more frequent and prognoses less favorable in children from upper socioeconomic classes.

84. Williams, C. E. Behavior disorders in handicapped children. Developmental Medicine and Child Neurology, 10:736-740, 1968.

The author suggests faulty child-parent interactions as the basis for a high incidence of behavior disorders in blind and autistic children.

For additional references to Family Characteristics see: #7, Gibson; #9, Hingtgen & Bryson; #22, Rutter; #30, Ward & Hoddinott; #34, Wing, et al.; #35, Wolff & Chess; #104, Alanen, et al.; #163, Goldfarb, et al.; #166, Klein & Pollack; #177, Gittelman & Birch; #178, Pollack, et al.; #180, Taft & Goldfarb; #182, Whittam, et al.; #221, Pollack & Gittelman; #410, Rimland; and #421, Ward.

Behavioral Characteristics

85. Boer, A.P. Application of a simple recording system to the analysis of free-play behavior in autistic children. Journal of Applied Behavior Analysis, 1:335-340, 1968.

Four autistic or autistic/symbiotic children of CA 4 to 5 yrs. were observed during regular free-play periods for fifteen 5-minute periods. Observers used a simple stenograph to record 8 types of behavior at 1-sec. intervals. Results demonstrated the relative stability of behavior, the lack of social behavior, and the high proportion of repetitive behavior. The method is suggested as a means of obtaining reliable and objective behavioral observations.

86. DeMyer, M. K.; Mann, N. A.; Tilton, J. R.; and Loew, L. H. Toy-play behavior and use of body by autistic and normal children as reported by mothers. Psychological Reports, 21:973-981, 1967.

Data on 11 categories of toy-play were obtained through maternal interviews for 30 autistic and schizophrenic children of CA 2 to 7 yrs. and 30 normal children matched for CA, birth order, socioeconomic status, sex, race, and religion. Autistics engaged in significantly less recognizable drawing, appropriate functional uses of toys, appropriate or dramatic doll play, dramatic role play, appropriate riding or play with wheeled toys, appropriate throwing or pounding, walking or swinging than normals. Autistics engaged in significantly more inappropriate throwing or pounding, perseverative manipulation of toys, and perseverative uses of body. There were no differences between autistics and normals in climbing or oral contacts. High agreement was obtained between maternal interviews and direct observations for the 14 Ss on whom such data were available.

87. Green, A. H. Self-mutilation in schizophrenic children. Archives of General Psychiatry, 17:234-244, 1967.

Case records of 70 schizophrenic children of CA 5 to 12 yrs. were examined. The children were divided into 2 groups on the basis of presence or absence of self-mutilative behavior and then compared on the following variables: prior history of headbanging, sex, cerebral dysfunction, and IO. Of the 70 Ss, 40% demonstrated self-mutilative behavior. Self-mutilation was significantly more prevalent in girls (61%) than boys (33%). Histories of infantile headbanging were reported for 30% of the entire sample, and were significantly more frequent in self-mutilative Ss (53% boys and 64% girls) than in non-self-mutilative Ss (11% boys and 14% girls). There were no differences between groups in IO or cerebral dysfunction.

88. Green, A. H. Self-destructive behavior in physically abused schizophrenic children. Archives of General Psychiatry, 19:171-179, 1968.

Case records of 70 schizophrenic children were examined for the occurrence of self-mutilative behavior and history of physical abuse. There was a significant relationship between self-mutilation and history of physical abuse and infantile headbanging, but there was no relationship between physical abuse and infantile headbanging, indicating that they were independent factors.

89. Haworth, M. R.; and Menolascino, F. J. Video-tape observations of disturbed young children. Journal of Clinical Psychology, 23:135-140, 1967.

Subjects were 4 schizophrenics, 5 psychotic-autistics, 4 adjustment reactions of childhood, 4 familial retardates, 2 children with special sensory handicaps, 3 chronic brain syndrome children, and 4 chronic brain syndrome-hyperkinetic children, all of CA 2 to 9 yrs. and estimated MA 1 to 7 yrs. Controls were 4 normals of CA 2 to 3 yrs. and 4 normals of CA 3 to 6 yrs. All children were individually observed in a standard 10 to 15-min. play situation. Sessions were videotaped and then reviewed by means of event recorders and a behavioral checklist. Three basic patterns of behaviors were observed: (1) children who consistently interacted with the environment appropriately, represented by the older normals, adjustment reaction cases, and familial retardates; (2) children who demonstrated variable reaction patterns, represented by the younger normals, sensory handicapped children and both CBS groups; and (3) children who demonstrated withdrawal, inappropriate behaviors, minimal speech, and excessive mannerisms, represented by the schizophrenic and autistic children. The play situation is suggested for use as a diagnostic aid with young nonverbal children of CA 2 to 6 yrs.

90. Hutt, C.; and Hutt, S. J. Effects of environmental complexity on stereotyped behaviors of children. Animal Behavior, 13:1-4, 1965.

Six autistic children of CA 3 to 5 yrs. who engaged in frequent stereotypies were individually observed for 3-min. periods in 4 situations: (1) an empty room, (2) a set of blocks present, (3) a passive female adult and the blocks present, and (4) the adult attempting to have the child make a block design. In general, stereotypies increased with increasing environmental complexity, except when the adult was actively attempting to engage the child in making a block design. Results are interpreted as indicating that stereotypies serve an arousal reducing function by blocking further sensory input.

91. Hutt, C.; and Ounsted, C. The biological significance of gaze aversion with particular reference to the syndrome of infantile autism. Behavioral Science, 11:346-356, 1966.

Eight male autistic children of CA 3 to 6 yrs. and 6 nonautistic children of same CA range were individually observed for 10-min. periods in a room displaying drawings of animal and human faces. Autistics spent significantly more time with the environmental stimuli and significantly less time with the human faces than the controls.

92. Hutt, S. J.; and Hutt, C. Stereotypy, arousal, and autism. Human Development, 11:277-286, 1968.

The results of a series of 5 studies with autistic children are summarized. It was found that: (1) in general, stereotypies increased with increasing environmental complexity; (2) autistics with predominant stereotypies were significantly different from autistics without predominant stereotypies as well as from controls; (3) the presentation of novel stimuli increased the occurrence of stereotypies in autistics; and (4) autistics and retardates demonstrated different patterns in the occurrence of stereotypies. It is suggested that stereotyped behaviors serve an arousal reducing function by producing repetitive endogeneous stimulation which blocks novel sensory input.

93. Hutt, S. J.; and Hutt, C. Stereotypies and their relation to arousal: A study of autistic children. In: Hutt, C.; and Hutt, S. J., eds., Behaviour Studies in Psychiatry, Oxford: Pergamon Press (in press).

A summary of the authors' investigations of the occurrence of stereotypies in autistic and retarded children is presented. Significant differences were found between normals, retardates, and subgroups of autistic children in the stimuli and situations which elicited stereotypies. The authors interpret the data as supporting the hypothesis that stereotyped movements serve an arousal reducing function.

94. Ishizima, T. A study of interpersonal relations in the autistic child: I. The experimental observation of behavior. Japanese Journal of Child Psychiatry, 8:437-447, 1967.

The behavior of autistic children was observed in a playroom under 4 conditions: alone, with a doll, with the mother, and with an unknown person. The orientation of an autistic child toward objects vs. people is considered as being related to the duration of the disease. (English summary)

95. O'Connor, N. Visual input and social response in autistic children. Proceedings of the Royal Society of Medicine, 60:560-563, 1967.

In a review of several experimental studies with autistic children, the results are summarized as indicating that: (1) autistic children do not avoid contact with adults and are similar in their approach, avoidance, and social behavior to normals and subnormals of similar developmental levels; (2) autistics display the same preference as normals and subnormals for pictures of people and do not avoid direct eye contacts with adults; and (3) autistics spend less time looking at any display than normal children of comparable mental levels.

96. Ritvo, E. R.; Ornitz, E. M.; and LaFranchi, S. Frequency of repetitive behaviors in early infantile autism and its variants. Archives of General Psychiatry, 19:341-347, 1968.

Five categories of behavior were observed and filmed in a ward setting for 15 autistic children of CA 1 to 10 yrs. In the 1 child observed for an extended period, frequency and rate of oscillating remained constant throughout the entire period indicating no fatigue effect. The authors suggest that repetitive behaviors are due to neuropathologic mechanisms in the central nervous system.

97. Shodell, M. J.; and Reiter, H. H. Self-mutilative behavior in verbal and nonverbal schizophrenic children. Archives of General Psychiatry, 19: 453-455, 1968.

Occurrences of self-mutilative behaviors were recorded by parents and teachers over a 10-day period for 21 verbal and 38 nonverbal schizophrenic children of CA 4 to 17 yrs. Self-mutilative behavior occurred in 38% of the cases and occurred significantly more frequently in nonverbal than in verbal children. No sex differences were found.

98. Sorosky, A. D.; Ornitz, E. M.; Brown, M. B.; and Ritvo, E. R. Systematic observations of autistic behavior. Archives of General Psychiatry, 16: 439-449, 1968.

Six autistic children (CA 2 to 7 yrs.) and 1 Down's syndrome child (CA 7 yrs.) were observed for 6 consecutive hours in a small room containing only a mattress and a few toys. One S was observed for 10 sessions, others were observed for 1 session. Twenty behaviors of 6 types were continuously recorded on an event recorder. The children demonstrated individual patterns of proportions of time engaged in the different behaviors. For the 1 S observed in repeated sessions, there were variations in quantities but not patterning of behaviors between days.

99. Spurgeon, R. K. Some problems in measuring nonverbal behavior of autistic children. Nursing Research, 16, 212-218, 1967.

The difficulties encountered in attempting to define measures of behavioral change for 3 autistic children of CA 9 to 10 yrs. in an "experimental nursing" situation are discussed.

100. Sussman, S.; and Sklar, J. L. The social awareness of autistic children. American Journal of Orthopsychiatry, 39:798-806, 1969.

Ten autistic and schizoid children of CA 4 to 7 yrs. were observed during interactions with adults in 3 types of "command situations:" (1) pre-command--the child's behavior was rated as accessible or not accessible; (2) command--the form of the command and the value of the situation for the child were rated; and (3) post-command--compliance or noncompliance by the child was recorded. The children were evaluated on (a) orientation to others and (b) orientation to context. In terms of orientation to others, the children usually complied with persuasive commands and generally did not respond to harsh commands. In terms of orientation to context, the children demonstrated more compliance in a less valued situation than in a highly valued situation. Although social orientation and patterning were not expected of the children, it was demonstrated that the children and adults were mutually aware of and influenced by each other.

101. Tilton, J. R.; and Ottinger, D. R. Comparison of the toy-play behavior of autistic, retarded, and normal children. Psychological Reports, 15: 967-975, 1964.

Thirteen autistic or autistic-symbiotic children (CA 3 to 7 yrs.), 12 retardates (CA 3 to 7 yrs., IQs below 55), and 18 normals (CA 3 to 6 yrs.) were individually observed for 20-min. periods in a room containing a variety of common toys. Nine categories of toy usage were recorded. Autistics combined toys less frequently than normals, engaged in repetitive manipulations and oral contacts of toys more frequently than normals or retardates, and had more restricted toy-play repertoires than normals or retardates.

102. Weiner, B. J.; Ottinger, D. R.; and Tilton, J. R. Comparison of the toy-play behavior of autistic, retarded, and normal children: A reanalysis. Psychological Reports, 25:223-227, 1969.

Toy-play data from a previous study (Tilton and Ottinger, 1964) were reanalyzed by means of a multiple-discriminant function analysis. The combinational category of toy-play emerged as the most important variable in discriminating between all 3 groups and between all possible pairs of groups. High agreement between clinical and statistical classification of Ss was obtained. The toy-play observation method is suggested for use in the diagnosis and evaluation of young children.

103. Wing, L. The handicaps of autistic children: A comparative study. Journal of Child Psychology and Psychiatry, 10:1-40, 1969.

Frequencies of abnormal behaviors were obtained from parental questionnaires for 20 speaking and 7 mute autistic, 25 normal, 15 Down's syndrome, 11 receptive aphasic, 10 executive aphasic, and 15 partially blind/partially deaf children, all of CA 4 to 16 yrs. Comparisons between speaking autistics and other groups showed that autistics were: (1) very different from normals and Down's syndrome cases; (2) similar to receptive aphasics in responses to sound, speech comprehension, use of speech, pronunciation, and nonverbal skills; (3) similar to executive aphasics in pronunciation, right-left orientation, and nonverbal skills; and (4) similar to partially blind/deaf children in responses to sound, speech comprehension, visual perception, gestures, uses of proximal senses, odd movement, emotional responses to situations, lack of play, and socially embarrassing behavior. The author concludes that similarities between autistic and partially blind/deaf children indicate similar types of perceptual deficits and that similarities between autistic and aphasic groups suggest dysfunctions of the dominant hemisphere which are more profound than those found in aphasics.

For additional references to Behavioral Characteristics see: #3, Despert; #9, Hingtgen & Bryson; #22, Rutter; #25, Spivack & Levine; #35, Wolff & Chess; #198, Hutt, et al.; #410, Rimland; and Behavior Therapy section.

Follow-up Studies

104. Alanen, Y.; Arajärvi, T.; and Viitamäki, R. O. Psychoses in childhood. Acta Psychiatrica Scandinavica, 40:Supplement 174, 1964.

Three autistic, 9 schizophrenic, 5 chronic psychotic, and 6 reactive psychotic children of CA 6 to 11 yrs. at follow-up were studied. The authors stress the similarities between autistic and schizophrenic children in symptomatology, outcome, and familial characteristics, and review etiological theories, diagnostic criteria, and characteristic psychological test responses of childhood psychotics. A detailed discussion of the results of a variety of psychological tests is presented, with the conclusion that prognosis appears to be more favorable for chronic and reactive psychotics than for autistics and childhood schizophrenics. WAIS, Rorschach, and Object Relation Test results for the mothers as well as brief case histories for the 23 Ss are included.

105. Bennett, S.; and Klein, H. R. Childhood schizophrenia: 30 years later. American Journal of Psychiatry, 122:1121-1124, 1966.

In a 30-yr. follow-up study of 14 cases of childhood schizophrenia, 2 could not be located, 2 had died, 9 were institutionalized, and 1 had made a marginal social adjustment. All had been diagnosed as schizophrenic or mentally defective.

106. Eaton, L.; and Menolascino, F. J. Psychotic reactions of childhood: A follow-up study. American Journal of Orthopsychiatry, 37:521-529, 1967.

The authors made a 5-yr. follow-up study of 2 autistic, 6 schizophrenic, and 24 psychotic (with chronic brain syndrome) children of average CA 5 yrs. at initial evaluation. There was no correlation between type and duration of therapy and clinical improvement. On the basis of similarities between groups in symptomatology and progress, the authors suggest that the processes underlying the psychoses of all 3 groups are basically the same.

107. Fish, B.; Shapiro, T.; Halpern, F.; and Wile, R. The prediction of schizophrenia in infancy: III. A ten-year follow-up report of neurological and psychological development. American Journal of Psychiatry, 121:768-775, 1965.

Three of 16 children examined at 1 mo. of age and periodically thereafter, were judged to be "vulnerable" to schizophrenia on the basis of uneven neurological development. Independent psychiatric and psychological examinations were given at CA 9 to 10 yrs. Psychiatric evaluations

of severity were not significantly related to original ratings of vulnerability. However, psychological evaluations differentiated all 3 "vulnerable" children as grossly pathological when compared to the other children.

108. Fish, B.; Wile, R.; Shapiro, T.; and Halpern, F. The prediction of schizophrenia in infancy: II. A ten-year follow-up report of predictions made at one month of age. In: Hoch, P. H.; and Zubin, J., eds., Psychopathology of Schizophrenia. New York: Grune & Stratton, 1966.

Sixteen infants were randomly selected from Bellevue Hospital. At one month of age 3 Ss were judged to be "vulnerable" to schizophrenia on the basis of abnormally uneven neurological development. The 3 "vulnerable" Ss continued to show erratic development throughout a 10-yr. period. The authors conclude that the 10-yr. follow-up supported the predictions made at 1 month of age and suggest that it is a fluctuating and erratic pattern of neurological development which differentiates the schizophrenic syndrome from that of chronic minimal brain damage.

109. Lempp, R.; and Vogel, B. Research into childhood schizophrenia. Acta Paedopsychiatrica, 33:322-331, 1966.

A 7-yr. follow-up study was made of 23 infantile psychotics. Eleven of the children developed satisfactorily, while 12 children required further institutional treatment or showed considerable disturbance in social adaptation. The authors mention that prognosis is better if symptoms develop after child is 10 yrs. old. (English summary)

110. Menolascino, F. J.; and Eaton, L. Psychoses of childhood: A five-year follow-up study of experiences in a mental retardation clinic. American Journal of Mental Deficiency, 72:370-380, 1967.

A 5-yr. follow-up was conducted for 2 autistic, 5 schizophrenic, and 22 psychotic (with chronic brain syndrome) children of mean CA 4 yrs. at evaluation. Of the 22 Ss with final diagnoses of chronic brain syndrome with psychosis, 12 had received initial diagnoses of childhood schizophrenia which were modified primarily as a result of increased neurological findings. All groups demonstrated similar developmental patterns. There was no correlation between treatment and prognosis, minimal language development, and little change in intellectual functioning. Although at evaluation 7 Ss were untestable and 12 Ss had marked motor-performance discrepancies suggestive of higher potential, none demonstrated improved test performance at follow-up in spite of some overall improvement in cooperation.

111. Micalizzi, F.; Scarcella, M.; and Chimenz, B. Course and prognosis of psychoses occurring in childhood in institutionalized patients. In: Lopez Ibor, J. J., ed., Proceedings of the Fourth World Congress of Psychiatry, 1966, Part 3, New York: Excerpta Medica Foundation, 1968.

In a follow-up study of 40 hospitalized adult mental patients who manifested symptoms of psychosis during their first 10 yrs. of life, the authors found that males predominated 2:1 and that onset was most frequent between ages 6 and 8. For schizophrenic disorders, favorable outcome was less dependent on medical therapy and family assistance than on lack of morbid heredity and early onset.

112. Mittler, P.; Gillies, S.; and Jukes, E. Prognosis in psychotic children: Report of follow-up study. Journal of Mental Deficiency Research, 10:73-83, 1966.

A follow-up report on 27 psychotic (P), 21 borderline psychotic (B), and 25 subnormal (S) children of admission CA 1 to 12 yrs. and follow-up CA 7 to 27 yrs. is presented. IQs at admission ranged from 24 to 111, with a mean IQ 50 for the psychotics, mean IQ 61 for the borderline psychotics, and mean IQ 47 for the subnormal group. At follow-up, 57% of the B group, but only 30% of the P and 20% of the S group had attended school for 1 yr. or more, while 52% of the B group, 74% of the P group, and 72% of the S group were institutionalized. Relative frequencies of psychotic behaviors and changes in IQ scores are also reported.

113. Reiser, D. E.; and Brown, J. L. Patterns of later development in children with infantile psychosis. Journal of the American Academy of Child Psychiatry, 3:650-667, 1964.

A follow-up study was made of 125 children diagnosed during their pre-school years as having atypical development. Age range at follow-up was 9 to 22 years. On the basis of social adjustment at follow-up, the children were classified into the following 7 groups: 13% normal-neurotic; 10% brittle-schizoid; 17% eruptive-schizoid; 7% schizophrenic; 3% overgrown children; 27% passive retarded; and 22% regressed-arrested.

114. Rutter, M. Prognosis: Psychotic children in adolescence and early adult life. In: Wing, J. K., ed., Early Childhood Autism: Clinical, Educational, and Social Aspects. London: Pergamon Press, 1966.

The results of a variety of follow-up studies are compared. It is concluded that: (1) although there are wide individual differences, very few psychotic children ever become self-supporting or are rated as having "good" social adjustment; (2) while many of the ritualistic behaviors diminish with age, the children still show lack of initiative and lack of social perceptiveness; (3) although some children show improvement in

language development, speech remains mechanical and concrete; and (4) if marked improvement is to occur, it is usually evident by the age of 6 or 7 yrs.

115. Rutter, M.; Greenfeld, D.; and Lockyer, L. A five to fifteen year follow-up study of infantile psychosis. II. Social and behavioural outcome. British Journal of Psychiatry, 113:1183-1199, 1967.

Sixty-three infantile psychotics of mean evaluation CA 5 yrs. and mean follow-up CA 15 yrs. were compared with 63 clinically heterogeneous non-psychotics matched for sex, age, IQ, and referral date. Over 33% of the Ss in both groups were in long-term hospitals, while 23% of the controls and only 3% of the psychotics were employed. In social adjustment, 14% psychotics and 33% controls had normal or good social adjustment, 48% psychotics and 25% controls had very poor social adjustment. Less than 50% psychotics had 2 or more years of schooling. Although intellectual levels did not increase with improvement in social relationships, there was some improvement in language development. Four main variables were related to outcome: (1) IQ; (2) speech; (3) severity of disorder; and (4) amount of schooling. Variables not related to outcome were: (1) sex; (2) gradual or abrupt onset; (3) evidence of brain injury; (4) family situation; and (5) type of treatment.

116. Rutter, M.; and Lockyer, L. A five to fifteen year follow-up study of infantile psychosis. I. Description of the sample. British Journal of Psychiatry, 113:1169-1182, 1967.

Sixty-three infantile psychotics of mean evaluation CA 5 yrs. and mean follow-up CA 15 yrs. were compared with 63 clinically heterogeneous non-psychotics matched for sex, age, IQ, and referral date. Intelligence test scores for the psychotic Ss yield the following distribution: 10% between IQ 91-120, 19% between IQ 71-90, 29% between IQ 51-70, and 43% below IQ 50 or untestable. Significant differences between groups were obtained on a wide variety of behavioral characteristics.

For additional references to Follow-up Studies see: #9, Hingtgen & Bryson; #22, Rutter; #177, Gittelman & Birch; #376, Davids, et al.; #379, Kempf; #380, Levy; and #410, Rimland.

II. INTELLECTUAL DEVELOPMENT

117. Allen, C. E.; and Toomey, L. C. Use of the Vineland Social Maturity Scale for evaluating progress of psychotic children in a therapeutic nursery school. American Journal of Orthopsychiatry, 35:152-159, 1965.

The Vineland scores of 6 psychotics who were promoted and 6 psychotics who were not promoted from clinic to regular nursery school were compared. All children were within a range of CA 4 to 5 yrs. and SA (Social Age) 1 to 4 yrs. It was found that a Vineland cut-off score of SA 3-0, if obtained before CA 5-0, was predictive of adjustment to a regular nursery school setting. In comparing the score patterns of the 2 groups, it was found that the patterns were similar for both groups, with highest scores on routine locomotion and self-help skills and lowest scores on communication and social skills, but that the nonpromoted children had much lower ceilings on all of the preschool tasks.

118. Alpern, G. D. Measurement of "untestable" autistic children. Journal of Abnormal Psychology, 72:478-486, 1967.

An adaptation of the Cattell Infant Scale was individually administered to 11 autistic and 3 schizophrenic children of CA 3 to 8 yrs. and Vineland SA 1 to 5 yrs., with a retest following a 3-day period. Concomitant Vineland Social Maturity Scale scores were obtained through interviews with the mothers, and clinical ratings of motor age, adaptive age, and personal/social age were provided by a child psychiatrist. A test-retest correlation of .93 and high positive correlations between the Infant Scale scores, Vineland scores, and clinical ratings were considered to indicate the usefulness of administering infant items to evaluate low-functioning autistic children.

119. Alpern, G. D.; and Kimberlin, C. C. The measurement of autistic children's intelligence: Instrument development and population findings. Presented at the American Association of Psychiatric Clinics for Children, 1969.

A short-form intelligence test was developed with a group of 28 Down's syndrome children (CA 10 mos. to 11 yrs., MA 5 mos. to 5 yrs.) by selecting 2 items per age level from the Cattell Infant Scale and Stanford-Binet Intelligence Test. A correlation of .99 was obtained between the short-form and standard full-form IQ scores. Both the short-form and full-form tests were then given over a 1-week interval to 32 autistic children (CA 3 to 21 yrs., IQ 4 to 78). The test-retest correlation between the short-form and full-form tests was .97, and no child had a difference in MA of more than 7 mos. between the 2 forms. Both the short- and full-form test scores were highly correlated with Vineland SA scores and a psychiatrist's clinical ratings of adaptive and personal/social ages.

120. DeMyer, M. K.; Norton, J. A.; and Barton, S. Social and adaptive behaviors of autistic children as measured in a structured psychiatric interview. In: Churchill, D. W.; Alpern, G. D.; and DeMyer, M., eds., Infantile Autism: Proceedings of the Indiana University Colloquium. Springfield: Thomas, 1970.

A structured psychiatric interview was performed with 71 emotionally disturbed children of CA 2 to 8 yrs., 10 brain-damaged retardates of CA 4 to 7 yrs., and 21 normals of CA 1 to 7 yrs. All interviews were filmed, taped, and then independently rated by 2 persons. Factor analysis of ratings resulted in 9 groups of children, ranging from group 1 having the highest normalcy and lowest pathology scores through group 9 with the opposite pattern. Proportions of diagnoses within factor groups are reported. The interview is suggested as a means for standardized evaluation of the social, adaptive, and verbal levels of low-functioning preschool children.

121. Gillies, S. M. Some abilities of psychotic children and subnormal controls. Journal of Mental Deficiency Research, 9:89-101, 1965.

Twenty-eight psychotic children (CA 5 to 12 yrs., nonverbal IQ 20 to 89, vocabulary IQ 20 to 69, and SQ 20 to 79) and 28 subnormals (matched for age and Peabody MA or Vineland SA with subgroups of psychotics) were administered the following tests: (1) Peabody; (2) Seguin Formboard or Wallen Pegboard; (3) performance WISC (given only to a subgroup of 11 Ss who had MAs of 5-0 on the Seguin); (4) Vineland; and (5) Goodenough. Retesting of 7 Ss after a 3-month period produced no significant test-retest difference. When mute psychotics were included, the psychotics were significantly lower than the retardates on vocabulary age and social age. The discrepancy between verbal and nonverbal scores was greater for psychotics than retardates, and social ages were significantly lower than nonverbal ages for psychotics but not retardates. When mute psychotics were excluded there were no significant differences between groups. In both groups, vocabulary ages were significantly lower than both nonverbal and social ages. The psychotic group did not approach normality on any test.

122. Goldfarb, W.; Goldfarb, N.; and Pollack, R. C. Changes in IQ of schizophrenic children during residential treatment. Archives of General Psychiatry, 21:673-690, 1969.

The full-scale WISC was administered at admission and after each year during 3 years of residential treatment to 30 childhood schizophrenics of mean CA 6-8, subdivided into 18 organic Ss of mean WISC IQ 75, 8 nonorganic Ss of mean WISC IQ 91, and 4 untestable Ss. Data was reported for the 26 scorable Ss. For the organic Ss, mean admission IQ was 75 and mean IQ following 3 yrs. of treatment was 83. For the nonorganic Ss, mean admission IQ was 91 and mean IQ following 3 years of treatment

was 101. Of the 18 organic Ss, 7 had IQ increases of 10 or more points, 1 had an IQ decrease of more than 10 points, and 10 had no changes in IQ. Of the 8 nonorganic Ss, 4 had IQ increases of more than 10 points and 4 had no changes in IQ.

123. Krall, V. Measures of developmental change in autistic children. Presented at the American Psychological Association, 1967.

Changes in MA and IQ were observed in 4 autistic children of CA 2 to 6 yrs. during 1 and 2-yr. periods. of therapy with retesting of the children at 3-month intervals using the Vineland Social Maturity Scale, Cattell Infant Intelligence Scale, Merrill-Palmer Scale of Mental Tests, Leiter International Performance Scale, and Stanford-Binet Intelligence Test, Form L-M. The children are described as increasing in testability throughout treatment with concomitant increases in IQ scores.

124. Mittler, P. The psychological assessment of autistic children. In: Wing, J. K., ed., Early Childhood Autism: Clinical, Educational, and Social Aspects. London: Pergamon Press, 1966.

Problems encountered in attempts to administer standardized psychological tests to autistic children are discussed. The use of specific tests to evaluate receptive and expressive language as well as general intellectual functioning is suggested.

125. Ruttenberg, B. A.; Dratman, M. L.; Fraknoi, J.; and Wenar, C. An instrument for evaluating autistic children. Journal of the American Academy of Child Psychiatry, 5:453-478, 1966.

A description is presented of the 4 core scales of the Behavior Rating Instrument for Evaluating Autistic Children (BRIAC) designed to rate the development of autistic children in the areas of (I) relationship; (II) communication; (III) mastery; and (IV) psychosexual development. When 31 autistic children of CA 4 to 11 yrs. were observed, coefficients between raters were .88 for Scale I, .85 for Scale II, .86 for Scale III, and .85 for Scale IV. Three supplementary scales, designed to evaluate (V) vocalization and speech development; (VI) social skills, and (VII) intellectual development and based primarily on combinations of standardized psychological tests, are also described. The authors propose that the BRIAC can be used for evaluating severity of symptoms and changes in development throughout therapy.

126. Rutter, M. Behavioral and cognitive characteristics of a series of psychotic children. In: Wing, J. K., ed., Early Childhood Autism: Clinical, Educational and Social Aspects. London: Pergamon Press, 1966.

The symptomatology, and WISC or WAIS subtest scores of 63 psychotic and 63 nonpsychotic children matched for CA and IQ were compared. It is suggested that much of the symptomatology characteristic of autism arises from a basic deficit or abnormality in the perception of stimuli.

127. Wassing, H. E. Cognitive functioning in early infantile autism: An examination of four cases by means of the Wechsler Intelligence Scale for Children. Acta Paedopsychiatrica, 32:122-136, 1965.

The WISC was administered to 4 autistic children (CA 7 to 13 yrs., IQ 60 to 85) and 100 children referred for psychiatric evaluation (CA 5 to 15 yrs., mean IQ 95). Within the autistic group there were large differences between Performance IQs (80 to 104) and Verbal IQs (47 to 72). Block Design and Object Assembly scores were significantly higher, while Comprehension and Vocabulary scores were significantly lower than their mean test scores when compared with the control group.

128. Wassing, H. E.; and van Krevelen, D. A. The question of intelligence in autistic children characterized by an unusual ability for drawing. Acta Paedopsychiatrica, 35:215-227, 1968.

Starting from a pluralistic concept of intelligence the authors explained the fact that retarded children sometimes show an unusual ability for drawing. They question Fischer's argument that good drawing performances of autistic children indicate the presence of good cognitive capacity. (English summary)

For additional references to Intellectual Development see: #9, Hingtgen & Bryson; #15, Lotter; #22 Rutter; #34, Wing, et al.; #104, Alanen, et al.; #110, Menolascino & Eaton; #112, Mittler, et al.; #116, Rutter & Lockyer; #177, Gittelman & Birch; #178, Pollack, et al.; and #410, Rimland.

III. PERCEPTUAL PROCESSES

129. Birch, H. G.; and Walker, H. A. Perceptual and perceptual-motor dissociation. Studies in schizophrenic and brain-damaged psychotic children. Archives of General Psychiatry, 14:113-118, 1966.

The WISC Block Design subtest was administered to 10 brain-damaged psychotics (CA 6 to 12 yrs., mean IQ 80), 10 childhood schizophrenics (CA 5 to 12 yrs., mean IQ 82) matched on age and IQ, and 10 childhood schizophrenics (CA 7 to 12 yrs., mean IQ 80) matched on Block Design scores. Following failure to reproduce the design, the Ss were given a 3-choice recognition test. Both of the schizophrenic groups were later retested with the recognition task given both before and after attempted reproduction. In recognition of correct designs following failures, the brain-damaged psychotic group had significantly higher total scores than either of the schizophrenic groups, and both schizophrenic groups performed at chance levels. In retesting the schizophrenics for recognition both before and after attempted reproduction, the schizophrenics had significantly higher scores before than following reproductions. Failure in reproduction disrupted recognition performance in the schizophrenic groups but not in the brain-damaged psychotic group.

130. Bryson, C. O. Systematic identification of perceptual disabilities in autistic children. Perceptual and Motor Skills, 31:239-246, 1970.

Six autistic children of CA 4 to 9 yrs. and MA 1 to 5 yrs. were individually tested with a series of 2-choice matching-to-sample tasks requiring visual, vocal, and fine motor responses to visual and auditory stimuli. Large individual differences between children were found and individual patterns of performance are briefly described. The testing method is suggested for use with low-functioning children.

131. Bryson, C. O. Short-term memory deficits in autistic children. Research Report No. 4, Clinical Research Center for Early Childhood Schizophrenia, Indianapolis, Indiana, 1969.

Seven autistic children (CA 3 to 6 yrs., MA 1 to 4 yrs.) were given a series of 4-choice matching-to-sample and sequencing tasks to measure visual-to-visual and auditory-to-visual short-term memory capacities. Large individual differences between Ss were found. In general, visual-to-visual performances were better than auditory-to-visual performances on both types of tasks under simultaneous presentation conditions. However, visual-to-visual performances deteriorated more rapidly than auditory-to-visual performances under delayed response conditions.

132. Cowan, P. A.; Hoddinott, B. A.; and Wright, B. A. Compliance and resistance in the conditioning of autistic children: An exploratory study. Child Development, 36:913-923, 1965.

Twelve autistic children of CA 4 to 19 yrs. were individually tested and required to select color (red) and shape (square) from among 12 stimuli on the basis of verbal command. In pretesting during which all responses were rewarded, 2 children obtained perfect scores, while the other 10 obtained scores which were significantly below chance. The 10 Ss were then given a maximum of 120 trials with the same task with only correct responses rewarded. Four of the 10 Ss mastered the task within 60 trials and demonstrated generalization, while 6 Ss continued to perform at less-than-chance levels throughout the 120 trials. The authors interpret less-than-chance performance as due to negativism which might be overcome by increased motivation.

133. Farnham-Diggory, S. Self, future, and time: A developmental study of the concepts of psychotic, brain-damaged, and normal children. Social Research in Child Development Monograph, 31: No. 103, 1966.

Twenty-four psychotic and 24 brain-damaged children were individually matched to 48 normal children on age, IQ, socioeconomic background, race, and sex, and compared to normals on measures of their cognitive representational schemata. Despite some clinically similar behavior patterns, the psychotic and brain-damaged children displayed important differences in cognitive structures. With reference to naturalistic concepts, normal and non-normal children displayed differences in images, models or schemata.

134. Frith, U.; and Hermelin, B. The role of visual and motor cues for normal, subnormal and autistic children. Journal of Child Psychology and Psychiatry, 10:153-163, 1969.

The Frostig Test of Visual Perception was used to match and subdivide into high and low perceptual age groups 20 autistics of CA 6 to 15 yrs., 20 subnormals of CA 14 to 17 yrs., and 20 normals of CA 3 to 6 yrs. Sequencing and tracking tasks were used to evaluate the children's ability to use visual, kinesthetic, or a combination of visual and kinesthetic cues. Children with higher perceptual ages had better performances on all tasks. In general, normals made the most efficient use of visual cues, and low functioning autistics made more efficient use of kinesthetic than visual cues. The authors suggest that in autistic children there appeared to be a dissociation between excellent motor performance and relative failure to make use of added visual information in the same motor task.

135. Fuller, G. B. The objective measurement of perception in determining personality disorganization among children. Presented at the American Psychological Association, 1964.

The Minnesota Percepto-Diagnostic Test, which measures perceptual stability, was given to 450 normal, 260 emotionally disturbed, and 150 schizophrenic children. A significant difference was found between the 3 groups for distortion in perception, indicating a direct relationship between personality organization and stability of perception.

136. Hagen, J. W.; Winsberg, B. G.; and Wolff, P. Cognitive and linguistic deficits in psychotic children. Child Development, 39:1103-1117, 1968.

Psychotic and normal children were compared on several tasks hypothesized to involve language mediation: discrimination learning, transposition, reversal discrimination, and short-term memory (STM). Verbal labeling was employed as a variable in the STM task. Psychotic Ss performed at lower levels than normals on all measures. The finding that psychotics who had at least semifunctional language abilities were able to profit from verbal labeling in STM tasks suggests that one locus of deficiency in psychotic children is in the production and utilization of internal verbal cues.

137. Hermelin, B. Recent psychological research. In: Wing, J. K., ed., Early Childhood Autism: Clinical, Educational, and Social Aspects. London: Pergamon Press, 1966.

In a series of studies comparing psychotics (CA 8 to 15 yrs.), normals (CA 3 to 6 yrs.), and retardates (CA 8 to 15 yrs.) matched on the basis of MA, it was found that psychotics: (1) were more physically active than retardates; (2) were equal to retardates in physical contact with an adult; (3) were less responsive than retardates to verbal stimuli; (4) made more position responses than retardates; and (5) were equal to retardates in demonstrating light dominance. It was also found that nonspeaking psychotics performed more poorly than speaking psychotics, and that the discrimination performance of psychotics improved with the addition of multi-dimensional cues.

138. Hermelin, B. Coding and immediate recall in autistic children. Proceedings of the Royal Society of Medicine, 60:563-564, 1967.

A review of a series of experimental studies comparing the short-term memory abilities of autistic, subnormal, and normal children indicates that: (1) autistics are less affected by the meaning of auditory stimuli; (2) autistics are less likely to recode auditory stimuli into meaningful groupings; (3) autistics are more affected by the recency than by the sequencing of auditory stimuli; and (4) the inability of autistics to use coding and categorizing processes is more marked with auditory than visual stimuli.

139. Hermelin, B.; and O'Connor, N. Crossmodal transfer in normal, subnormal and autistic children. Neuropsychologia, 2:229-235, 1964.

The ability to fit forms into 3-hole formboards was tested in 32 autistic children (CA 6 to 19 yrs. and Seguin MA 3 to 14 yrs.), 32 retardates (matched for CA and MA), and 32 normals (matched for MA on the basis of CA). Transfer from vision to touch and transfer from touch to vision were tested by use of identical and different formboards. There were no significant differences between groups. All groups performed significantly better under the visual than tactile condition, and all groups demonstrated crossmodal transfer from visual to tactile but not from tactile to visual.

140. Hermelin, B.; and O'Connor, N. Effects of sensory input and sensory dominance on severely disturbed, autistic children and on subnormal controls. British Journal of Psychology, 55:201-206, 1964.

A series of 3 experiments explored the responsivity of autistic and retarded children to light, sound, and tactile stimuli which were presented in pairs to 10 or 12 autistics (CA 8 to 16 yrs., IQ 28 to 55) and 10 or 12 retardates matched on CA and IQ. When every response was rewarded, both groups responded more frequently to light although they differed in responsivity to sound and touch. When only responses to sound and touch were rewarded when paired with light, there were no differences between groups. When inhibition to light and orientation to sound and touch tasks were presented, there were no differences between groups on the orientation tasks, but autistics had lower performances than retardates on the inhibition task.

141. Hermelin, B.; and O'Connor, N. Visual imperception in psychotic children. British Journal of Psychology, 56:455-460, 1965.

Two experiments investigated the visual discrimination abilities of 10 or 12 speaking autistics (CA 9 to 15 yrs., Seguin MA 4 to 9 yrs., Peabody MA 2 to 7 yrs.), 10 or 12 nonspeaking autistics (CA 7 to 15 yrs., Seguin MA 3 to 12 yrs., Peabody MA 1 to 3 yrs.), and 10 retardates (CA 8 to 14 yrs., Seguin MA 4 to 14 yrs., Peabody MA 2 to 7 yrs.). In both experiments nonspeaking autistics performed more poorly than speaking autistics, and in the first experiment both autistic groups performed more poorly than retardates.

142. Hermelin, B.; and O'Connor, N. Remembering of words by psychotic and subnormal children. British Journal of Psychology, 58:213-218, 1967.

Two experiments tested the ability of 12 speaking psychotics (CA 8 to 15 yrs., Peabody MA 2 to 11 yrs., digit span 2 to 7 digits) and 12 retardates matched on MA and digit span to remember sequences of from

3 to 8 words varying in frequency of occurrence, arranged randomly or in sentences, and which could be recoded in conceptual groups. Although psychotics were able to remember words as well or better than the retardates, the retardates responded more to the meaning of the words by remembering sentences better than random sequences and by recoding the sequences into conceptual groups more frequently than the psychotics.

143. Hermelin, B.; and O'Connor, N. Perceptual and motor discrimination in psychotic and normal children. Journal of Genetic Psychology, 110:117-125, 1967.

Two experiments employing length and position discrimination tasks are reported for 32 psychotics (CA 6 to 15 yrs.) and 32 normals (CA 3 to 6 yrs.) matched on formboard scores. The normals performed significantly better than autistics, and both groups performed significantly better on the position discrimination than on the length discrimination task.

144. Hingtgen, J. N.; and Coulter, S. K. Auditory control of operant behavior in mute autistic children. Perceptual and Motor Skills, 25: 561-565, 1967.

To determine whether auditory stimuli could control operant responding (lever pressing) in mute autistic children, 4 Ss of CA 5 to 8 yrs. were presented with 5 pairs of auditory stimuli. Three of the 4 children learned to discriminate 4 pairs of auditory stimuli within an average of 36 daily 40-min. sessions. The data indicated that some mute autistic children were capable of learning simple auditory-to-motor associations.

145. Metz, J. R. Stimulation level preferences of autistic children. Journal of Abnormal Psychology, 72:529-535, 1967.

Ten autistic children of CA 6 to 11 yrs., 10 schizophrenic children of CA 5 to 11 yrs., 10 "successful" normals of CA 5 to 11 yrs., 10 normals of CA 4 yrs., 10 normals of CA 5 yrs., and 10 normals of CA 8 yrs. were individually tested during 15-min. sessions and allowed to move a lever to adjust the volume levels of 5 types of auditory stimuli. A light always indicated the position of highest volume. Autistics selected higher volumes than schizophrenics or "successful" normals, while schizophrenics were more variable than successful normals in their volume selections.

146. Morrison, D.; Miller, D.; and Mejia, B. Comprehension and negation of verbal communication in autistic children. Presented at the American Association of Psychiatric Clinics for Children, 1969.

Operant methods were used to investigate the relationship between the receptive use of language and negativistic motivation in 2 autistic

boys, 8 and 10 yrs. old. The results suggested that both boys had relatively well developed receptive language, but failed to perform appropriately because of a habit of avoidance of compliant behavior. The authors concluded that although it was unlikely that all autistic behavior can be traced to negative motivation alone, it is possible that such motivation is responsible for much of the deviant behavior seen in autistic children.

147. O'Connor, N.; and Hermelin, B. Sensory dominance in autistic imbecile children and controls. Archives of General Psychiatry, 12:99-103, 1965.

Visual (light) and auditory (tone or verbal command) stimuli varying in relative intensities were simultaneously presented on opposite sides of a room to 14 autistics (mean CA 13-1, mean Peabody MA 2-7), 14 mongols (mean CA 12-11, mean Peabody MA 2-10), and 14 nonmongol imbeciles (mean CA 12-9, mean Peabody MA 4-8). Autistics demonstrated predominant position responses and did not respond differentially to stimulus intensity, modality of presentation, or type of auditory stimulus. Mongols responded more frequently to light and to the higher intensity stimulus regardless of modality, but did not differentiate between the auditory stimuli. Nonmongols demonstrated light dominance, intensity dominance, and word over tone dominance. However, responsivity to the verbal-auditory stimulus was correlated (.57) with Peabody MA across all 3 groups and the nonmongols as a group had higher Peabody scores.

148. O'Connor, N.; and Hermelin, B. Visual analogies of verbal operations. Language and Speech, 8:197-207, 1965.

Four types of tasks were given to 12 nonspeaking psychotics of mean CA 10-10, mean Seguin MA 5-6, and mean Peabody MA 1-9; 12 speaking psychotics of mean CA 11-9, mean Seguin MA 6-0, and mean Peabody MA 4-1; 12 retardates of mean CA 10-5, mean Seguin MA 5-10, and mean Peabody MA 4-2; 12 deaf children of mean CA 11-0, mean Seguin MA 10-3, and mean Peabody MA 3-5; 12 aphasics of mean CA 10-10, mean Seguin MA 9-9, and mean Peabody MA 2-7; 12 young normals of mean CA 5-2; and 12 old normals of mean CA 10-5. In comparing the nonspeaking psychotics, speaking psychotics, imbeciles and young normals on the size discrimination tasks, it was found that: (1) both psychotic groups had lower performances than the normals and imbeciles on the sequencing task; (2) there were no differences between groups on the cross-modal task, with all groups having low performances; (3) nonspeaking psychotics had lower performances than the other three groups on the short-term memory task; and (4) nonspeaking psychotics had significantly lower performances than normals on the matching-to-sample task. In comparing the deaf, aphasic, and older normal groups on the direction or shape discrimination tasks, there were no differences between groups on any of the tasks. Results are discussed in terms of relationships between visual information processing tasks and language skills.

149. O'Connor, N.; and Hermelin, B. The selective visual attention of psychotic children. Journal of Child Psychology and Psychiatry, 8: 167-179, 1967.

Total visual inspection times and visual preferences were obtained for 7 pairs of visual stimuli presented to 28 psychotic children (CA 7 to 19 yrs.), 28 normals (CA 4 to 7 yrs.), and 28 retardates (CA 10 to 18 yrs.), matched on formboard performance (mean Seguin MA 5-3). Psychotics had significantly lower fixation scores and significantly more undirected gazing than either retardates or normals, although the patterns of visual preference were similar for all groups, with faces being the preferred stimuli. Both groups preferred actual faces to photographs, but normals looked at faces significantly more than did the psychotics. Normals switched fixations between stimuli significantly more frequently than the other 2 groups. Psychotics spent more time in nondirected gazing, while retardates fixated the stimuli more than psychotics but switched fixations less frequently than normals. In comparing preference for novel to familiar stimuli, all groups preferred the novel stimuli.

150. O'Connor, N.; and Hermelin, B. Auditory and visual memory in autistic and normal children. Journal of Mental Deficiency Research, 11:126-131, 1967.

Two experiments investigated the auditory-to-vocal and visual-to-visual memory abilities of 12 autistics (CA 7 to 16 yrs.), 12 normals (CA 4 to 5 yrs.), and 12 normals (CA 3 to 5 yrs.) matched on Peabody MA (MA 1 to 8 yrs.) using random or sequential presentations of stimuli. Under visual-to-visual conditions, there were no differences between groups, and all groups performed better under the sequential rather than random presentation. Under the auditory-to-vocal condition, there were no differences between groups in total scores, and all groups demonstrated significant recency and sequence effects, but these effects were more marked in the autistics than normals.

151. Onheiber, P. The development and consistency of auditory-visual integration in schizophrenic children. Columbia University. Dissertation Abstracts, 1968.

152. Ottinger, D. R.; Sweeney, N.; and Loew, L. H. Visual discrimination learning in schizophrenic and normal children. Journal of Clinical Psychology, 21:251-253, 1965.

Eleven schizophrenics of CA 3 to 12 yrs. and 11 normals matched on race, sex, and CA were tested with three 2-choice discrimination tasks. The normals performed significantly better than the schizophrenics on all 3 tasks, with normals generally solving the problems within the first 25 trials and 5 of the 11 schizophrenics functioning at chance level on all 3 problems.

153. Safrin, R. K. Differences in visual perception and in visual-motor functioning between psychotic and nonpsychotic children. Journal of Consulting Psychology, 28:41-45, 1964.

Thirty-nine psychotic male children (mean CA 9-9, mean MA 8-8, mean IQ 89) and 57 male nonpsychotic children (mean CA 10-0, mean MA 10-11, mean IQ 110) were administered (1) the Bender Visual-Motor Gestalt Test, (2) Cornell-Coxe Memory for Designs, modified to exclude the memory variable, and (3) Block Design from the WISC, both in standardized presentation and as multiple-choice visual perception tests. Neurological examinations were also given. When MA was controlled there were no differences between groups in visual-perception, visual-motor functioning, or neurological deviations. Within the psychotic group however, neurological deviations were related to both CA and MA.

154. Schopler, E. Visual versus tactual receptor preference in normal and schizophrenic children. Journal of Abnormal Psychology, 71:108-114, 1966.

Receptor preferences were measured in 30 schizophrenic children (CA 5 to 10 yrs., IQ 50 to 129), 15 retardates (mean CA 10-2 matched for MA), and 90 normals selected from nursery school through 4th grade and of above average intelligence. The children were individually tested by allowing them to play with 4 pairs of stimuli providing choices between visual and tactile stimulation. Schizophrenics spent less time with visual stimuli than either normals or retardates, while there were no differences between groups in amount of time spent with tactile stimulation. Thus, the schizophrenics did not compensate for lowered visual exploration by increased tactile manipulation.

155. Tubbs, V. K. Types of linguistic disability in psychotic children. Journal of Mental Deficiency Research, 10:230-240, 1966.

The Illinois Test of Psycholinguistic Abilities was administered to 10 psychotics of CA 6 to 15 yrs., 10 subnormals of CA 9 to 17 yrs., and 10 normals of CA 3 to 5 yrs., matched on Peabody MA scores (MA 2 to 11 yrs.). Since ITPA norms were inapplicable, raw scores were converted to standard scores across all 3 groups and then compared. Psychotics performed at lower levels than either the normals or subnormals on all subtests except the digit span memory subtest. There were significant differences between psychotics and subnormals on 3 of 9 subtests and between psychotics and normals on 5 subtests, while there were no differences between normals or subnormals on any of the subtests.

156. Wolf, E. G.; and Rутtenberg, B. A. Sound acceptance in autistic children. Journal of Special Education, 2:353-359, 1968.

Since autistic children were observed to manifest unusual characteristics in relation to auditory stimuli, the authors constructed a sound reception scale which describes a general developmental hierarchy of observable responses to sounds. They conclude that autistic children in a nonstimulating setting continue to relinquish auditory contact with their environment.

For additional references to Perceptual Processes see: #8, Goldfarb; #9, Hingtgen & Bryson; #22, Rutter; #196, Hermelin & O'Connor; #206, Small; #222, Ritvo, et al.; #306, Hingtgen & Churchill; #307, Hingtgen & Churchill; #400, Kirk; #405, Ornitz; #406, Ornitz; #407, Ornitz & Ritvo; #408, Ornitz & Ritvo; #410, Rimland; #412, Rutter; #414, Schopler; and #420, Stroh & Buick.

IV. LANGUAGE

157. Cunningham, M. A. A five year study of the language of an autistic child. Journal of Child Psychology and Psychiatry, 7:143-154, 1966.

The speech of one autistic boy was recorded during fifty-six 15-min. play sessions over a 5-yr. period between ages 6 and 11. Following initial progress in speech during the first year of observation, little or no further improvement was apparent and speech remained between the 24-30 month normal age level.

158. Cunningham, M. A. A comparison of the language of psychotic and non-psychotic children who are mentally retarded. Journal of Child Psychology and Psychiatry, 9:229-244, 1968.

Speech samples were obtained from four 15-min. sessions for 13 psychotics of CA 5 to 13 yrs., MA 2 to 7 yrs., sentence length-3, and 13 nonpsychotic retardates matched for CA, MA, and sentence length. Psychotics made significantly more incomprehensible, inappropriate, echolalic, and noncommunicative remarks, more demands and requests, and fewer informative remarks. Within the psychotic group, echoisms were significantly correlated with sentence length (-.61). There were no differences between groups in frequencies of action accompaniments, thinking aloud, answers, questions, complete sentences, incorrect omissions, incomplete sentences, or use of personal pronouns. There appeared to be 2 psychotic subgroups: (1) lower development and more echolalia; and (2) higher development but few informative remarks. The author suggests that the peculiarities of psychotic speech result from lack of maturity, lack of empathy, and poor discrimination of social reinforcers.

159. Davis, B. J. A clinical method of appraisal of the language and learning behavior of young autistic children. Journal of Communication Disorders, 1:277-296, 1967.

Six autistic or autistic-symbiotic children, CA 3 to 5 yrs., were observed during two 20-min. periods in a free ward situation and were tested during 3 sessions using a language inventory designed to evaluate inner, receptive, and expressive language. The author reports increased performance in all areas of language functioning with the use of "structure" and an increase in voluntary responding by the third language evaluation. However, all responses remained at a very low developmental level and the children demonstrated little ability to utilize abstract information.

160. deHirsch, K. Differential diagnosis between aphasic and schizophrenic language in children. Journal of Speech and Hearing Disorders, 32:3-10, 1967.

The similarities and differences between aphasic and schizophrenic speech are discussed. Both groups are characterized by high auditory thresholds for speech, inferior auditory discrimination, feedback distortions, echolalia, limitations in verbal output, and conceptual deficits. However, aphasic children have short auditory memory spans and do not present the deviations in pitch, stress, inflection, manneristic style, and the idiosyncratic use of words which are characteristic of schizophrenic children. The author attributes aphasic deviations to CNS impairment and schizophrenic deviations to psychopathology.

161. Fay, W. H. On the basis of autistic echolalia. Journal of Communication Disorders, 2:38-47, 1969.

Bi-monthly tests of verbal comprehension were tape-recorded for a retarded autistic boy of CA 4-10, IQ 50, and SQ 54; a normal developmental echolalic boy of CA 2-6, later IQ 102; and a delayed language development echolalic boy of CA 3-0 and IQ 72. Comprehension errors decreased for both control children, but remained higher and unchanged for the autistic. Frequency of echoisms was strongly related to comprehension errors in all 3 children. Although words-per-echoism were similar, echoisms rapidly decreased for the normal child, were variable and then ceased for the delayed child, and remained high for the autistic child. Autistic echolalia was qualitatively different and characterized by monotone delivery, automatic echoing, whispering and subvocal echoing. A further brief study indicated that autistic echolalia was due to lack of comprehension rather than emotional factors.

162. Fish, B.; Shapiro, T.; Campbell, M.; and Wile, R. A classification of schizophrenic children under five years. American Journal of Psychiatry, 124:1415-1423, 1968.

Twenty-eight schizophrenics of mean CA 3 yrs. and 4 nonpsychotics admitted during same period were divided into 7 groups on the basis of presence of speech, language comprehension, and adaptive skills. All 13 Ss with speech, but none of the 19 mute Ss, had spoken before CA 2 yrs. In all groups there was a high incidence of prenatal difficulties and familial mental illness. Presence of speech was related to improvement on placebo and response to drug treatment. Initial speech and comprehension ratings were related to developmental levels at follow-up.

163. Goldfarb, W.; Goldfarb, N.; and Scholl, H. H. The speech of mothers of schizophrenic children. American Journal of Psychiatry, 122:1220-1227, 1966.

Ratings of speech patterns of mothers and children were made by a speech pathologist for 23 schizophrenics of CA 6 to 11 yrs. and 23 normals matched for age and sex. Both schizophrenic children and their mothers were significantly lower than normal children and their mothers, with no differences between mothers and children in either group. The authors conclude that mothers of schizophrenic children provide poorer speech models for their children than mothers of normals.

164. Gorden, N.; and Taylor, I. G. Assesment of children with difficulties of communication. Brain, 87:121-140, 1964.

The difficulties of diagnosing deaf, retarded, emotionally disturbed, and autistic children with language disorders are discussed, and the use of the EEG/audiogram for identifying the anatomical basis of lack of response to sound is described. The authors advocate the use of sleep EEGs for children in assessing their difficulties of communication and provide 12 illustrative case records.

165. Hackett, J. D. Schizophrenia: A different but comparable model. Diseases of the Nervous System, 5, Supplement:133-143, 1968.

The author describes similarities between schizophrenic children and those with stuttering problems, and suggests use of stutterers as control groups for those engaged in the study of schizophrenic children.

166. Klein, D. L.; and Pollack, M. Schizophrenic children and maternal speech facility. American Journal of Psychiatry, 123:232, 1966.

The study of Goldfarb, Goldfarb, and Scholl (1966), which indicated that mothers of schizophrenic children provide poorer speech models than mothers of normals, is criticized on 3 points: (1) mothers were not matched for age, education, IQ, or social class; (2) selection methods for normal control group were not described; (3) no mother-child correlations were given to demonstrate a direct relation between mother and child speech patterns and only comparisons between groups were presented.

167. Pronovost, W.; Wakstein, M. P.; and Wakstein, D. J. A longitudinal study of the speech behavior and language comprehension of fourteen children diagnosed atypical or autistic. Exceptional Children, 33:19-26, 1966.

Historical data were obtained from case records and recordings were made of vocal behavior during regular ward routines and therapy sessions for

14 autistics of CA 5 to 15 years. The children were divided into 2 groups: (1) vocalization group of 8 Ss, and (2) talking group of 6 Ss. Although none of the children had structural difficulties which would impede sound production, there were marked deficiencies in precise volitional control of oral and respiratory musculature in the vocalization group. Both groups demonstrated little or no language comprehension, and wide variations in pitch, intensity, and duration of utterance. Within the talking group, accuracy and articulation of speech sounds were related to immediacy of echolalia, while the vocalization group made no recognizable speech sounds. There were also significant differences between groups in responsivity to environmental auditory stimuli. The authors suggest that perceptual problems are the most significant factors underlying impaired language development.

168. Rutenberg, B. A.; and Wolf, E. G. Evaluating the communication of the autistic child. Journal of Speech and Hearing Disorders, 32:314-324, 1967.

Three scales of the Behavior-Rating Instrument for Evaluating Autistic Children (BRIAC) are described: I. Relationship; II. Communication; and V. Vocalization and Speech Development. Communication and speech development were found to be closely related to relationship ratings.

169. Rutter, M. Speech disorders in a series of autistic children. In: Franklin, A. W., ed., Conference on Children with Communication Problems. London: Pitman Medical, 1965.

Following a description of the speech characteristics of 63 autistic children, mean CA 5 yrs., similarities between aphasic and autistic language are discussed. It is suggested that the speech abnormalities of autistic children are primary and the autistic symptomatology secondary.

170. Savage, V. S. Childhood autism: A review of the literature with particular reference to the speech and language structure of the autistic child. British Journal of Disorders of Communication, 3:75-87, 1968.

The author briefly discusses the problems of differential diagnosis of autism, with particular reference to developmental aphasia, theories of etiology, and methods of treatment. Operant conditioning is suggested as the preferred method of speech training to provide a basis for further language development.

171. Shapiro, T.; and Fish, B. A method to study language deviation as an aspect of ego organization in young schizophrenic children. Journal of the American Academy of Child Psychiatry, 8:36-56, 1969.

One schizophrenic child, CA 5 yrs., and 1 child with a passive personality disorder, CA 3 yrs., were given three 20-min. language examinations over a 6-mo. period during which speech was rated for developmental and functional levels. In the nonpsychotic child both developmental and functional levels increased, while in the schizophrenic child developmental level increased slightly without concomitant change in functional level. The authors consider deviations in language development to be indicative of deviations in ego development.

172. Ward, T. F.; and Hoddinott, B. A. The development of speech in an autistic child. Acta Paedopsychiatrica, 35:199-215, 1968.

A classification of the verbal behavior of 1 autistic boy, CA 4 yrs., was based on 540 three-minute samples spaced at 5-week intervals over an 18-month treatment period. Changes in the pattern of verbal behavior were considered indicative of increased communicative intent. The authors suggest this method as a means for evaluating changes in verbal behavior in psychotic children.

173. Weber, J. L. The speech and language abilities of emotionally disturbed children. Canadian Psychiatric Association Journal, 10:417-420, 1965.

The Templin-Darby Screening Test of Articulation was administered to 28 autistic or schizophrenic children and 78 children diagnosed as neurotics, primary behavior disorders, or minimally brain damaged. Although the nonpsychotic Ss had a higher than normal frequency of deviations in articulation, language development, rate of speech, and fluency, only the psychotic Ss were mute, had noncommunicative speech, or used bizarre language.

174. Weiland, I. H.; and Legg, D. R. Formal speech characteristics as a diagnostic aid in childhood psychosis. American Journal of Orthopsychiatry, 34:91-94, 1964.

Frequency of various parts of speech was determined on the basis of the first 750 words obtained during individual sessions for 34 psychotics, CA 7 to 16 yrs., and 60 nonpsychotic and 11 brain-damaged Ss, CA 8 to 15 yrs. The psychotic group demonstrated more variability between children than the control groups, and tended to use fewer personal pronouns and more imperative verbs. Speech characteristics of psychotics are considered to be indicative of their retardation in ego development and decreased involvement in social relationships.

175. Weiss, H. H.; and Born, B. Speech training or language acquisition? A distinction when speech training is taught by operant conditioning procedures. American Journal of Orthopsychiatry, 37:49-55, 1967.

Behavior modification procedures were employed to increase the comprehension and speech production of an autistic boy of CA 7 yrs. Following a 6-week period of no training, retention was demonstrated, but there was little generalization or creative speech. The authors conclude that a distinction should be made between speech training and language acquisition, since in this case speech training was successful while language acquisition was not attained.

176. Wolff, S.; and Chess, S. An analysis of the language of fourteen schizophrenic children. Journal of Child Psychology and Psychiatry, 6:29-41, 1965.

Behavioral data on 14 autistics, CA 3 to 7 yrs. who were ranked for severity of illness, were obtained through maternal interviews and direct classroom observations. Five Ss had no speech, 1 S had recently lost speech, and 8 Ss had marked speech abnormalities. High correlations between observations and maternal reports of speech were obtained. The total number of words, number of different words, and average length of utterances were highly correlated with clinical ratings. In all cases, developmental language age was far below CA. Clinical status was more highly correlated with ratio of original to repetitive speech ($Tau = .78$) than with ratio of communicative to noncommunicative speech ($Tau = .54$).

For additional references to Language see: #9, Hingtgen & Bryson; #22, Rutter; #30, Ward & Hoddinott; #34, Wing, et al.; #35, Wolff & Chess; #110, Menolascino & Eaton; #136, Hagen, et al.; #142, Hermelin & O'Connor; #146, Morrison, et al.; #148, O'Connor & Hermelin, #155, Tubbs; #192, Fish, et al.; #265, Rubin, et al.; #266, Rutenber & Dratman; #277, Rutenber; #385, Bosch; #394, Griffith & Ritvo; #410, Rimland; #412, Rutter; and Behavior Therapy section.

V. NEUROBIOLOGICAL CORRELATES

Pre- and Peri-natal Factors

177. Gittelman, M.; and Birch, H. G. Childhood schizophrenia: Intellect, neurologic status, perinatal risk, prognosis, and family pathology. Archives of General Psychiatry, 17:16-25, 1967.

Detailed case histories were studied for 97 schizophrenic children of CA 4 to 20 yrs. Based on IQs obtained from standardized tests, 18% of the children had IQs in normal or above normal range, 26% in the borderline range, and 56% at the subnormal (below IQ 69) level. Ratings of either moderate or severe neurologic dysfunction were obtained in 75% of the cases. Neurologic dysfunction was significantly more frequent in the mentally subnormal group and those cases having positive neurological signs tended to have decreases in IQ on subsequent testing. Thirty-five Ss had not developed communicative speech by CA 5 and speech development was significantly related to IQ. Of the 53 parents rated, 10 had no manifest signs of disturbance, 26 were rated as coping effectively, 15 were considered moderately disturbed, and 2 were considered severely disturbed. Only 16 families of the 53 had any history of mental illness. Of 83 cases on whom records were available, 35 of the mothers had complications in pregnancy and delivery. In a follow-up of 43 cases over a mean period of 6 yrs., 25 were still diagnosed as childhood schizophrenics, 1 as upper frequency hearing loss, 1 as infantile neurotic, and 14 as organic or nonorganic mentally defective (diagnoses were not available in 2 cases). Fifteen of the children were in psychiatric hospitals, and 22 were at home with 18 attending some type of school. Institutionalization was related to lower IQ, and improvement to higher IQ. The authors conclude that children diagnosed as childhood schizophrenics are primarily brain-damaged rather than functionally disturbed.

178. Pollack, M.; Gittelman, M.; Miller, R.; Berman, P.; and Bakwin, R. A developmental, pediatric, neurological, psychological, and psychiatric comparison of psychotic children and their sibs. Presented at the American Orthopsychiatry Association, 1970.

Comparisons were made between 76 schizophrenic and/or autistic children and 113 of their biological siblings on the following variables: perinatal, developmental, and psychiatric histories; and standardized pediatric, neurological, and psychological examinations. Psychotic children were significantly more impaired on all measures than their sibs demonstrating: (1) more "hard" and "soft" neurological signs; (2) lower IQs; (3) lower SQs; (4) a higher correlation between IQ and SQ; and (5) more

abnormal psychiatric histories. The authors conclude that the childhood psychoses are a heterogeneous group of chronic brain syndromes.

179. Pollack, M.; and Woerner, M. G. Pre- and peri-natal complications and "childhood schizophrenia:" A comparison of five controlled studies. Journal of Child Psychology and Psychiatry, 7:235-242, 1966.

A review and summary of 5 studies investigating complications of pregnancy and delivery in schizophrenic or psychotic children is presented. All 4 of the studies including prenatal information reported a significantly higher incidence of prenatal complications in schizophrenic than control groups with the most frequently reported complications being toxemia, vaginal bleeding, and severe maternal illness. There were mixed findings with regard to abnormalities of birth and neonatal period, although the trend was for more abnormalities among the schizophrenic cases. The 4 studies considering prematurity found no differences between schizophrenics and controls. Although only 2 studies compared reproductive loss during other pregnancies of the mother, both found increased histories of stillbirths or abortions among mothers of schizophrenics. When severe illness and/or prolonged feeding difficulties during the postnatal period were studied, these were found to be significantly more frequent in schizophrenics than controls. The overall pattern of findings, except for the factor of prematurity, is similar to data reported for cerebral palsy, epilepsy, and mental deficiency.

180. Taft, L. T.; and Goldfarb, W. Prenatal and perinatal factors in childhood schizophrenia. Developmental Medicine and Child Neurology, 6:32-43, 1964.

Twenty-nine childhood schizophrenics (CA 6 to 11 yrs.), 39 siblings of the schizophrenics, and 34 normals of comparable age, race, sex, and cultural status were rated on 83 items covering prenatal and perinatal factors. "Blind" ratings were made by a child neurologist from data obtained from maternal interviews, physicians' records, and hospital charts. Schizophrenic children had significantly more prenatal and perinatal complications than either their siblings or normals, with differences more marked for boys than girls. However when only hospital chart information was included, there were no differences between groups of girls while there were significant differences between the schizophrenic and the other 2 groups of boys. The authors conclude that the evidence supports the hypothesis that at least a subgroup of schizophrenic children are organically damaged.

181. Terris, M.; Lapouse, R.; and Monk, M. A. The relation of prematurity and previous fetal loss to childhood schizophrenia. American Journal of Psychiatry, 121:476-481, 1964.

The reproductive histories of the mothers of 463 childhood schizophrenics and the next 463 single births in the same hospital of the same sex, race, and maternal age were searched for any factors that might have been involved with reproductive casualty. No significant differences were found in prematurity rate, length of gestation, or the use of manual, instrumental, and operative procedures. Comparison of 182 pairs of multiparous mothers showed a significantly higher incidence of previous stillbirths and abortions in the mothers of schizophrenics.

182. Whittam, H.; Simon, G. B.; and Mittler, P. J. The early development of psychotic children and their sibs. Developmental Medicine and Child Neurology, 8:552-560, 1966.

The early development of 43 child psychotics of mean CA 8-6 was compared to their siblings. Psychotic children had significantly more pre-, peri-, and post-natal complications than their siblings--67% vs. 33%. Psychotics were also significantly more retarded than their sibs in sitting, walking, and speaking.

183. Zitrin, A.; Ferber, P.; and Cohen, D. Pre- and para-natal factors in mental disorders of children. Journal of Nervous and Mental Disorders, 139:357-361, 1964.

Birth records for 193 schizophrenic, 99 organic brain diseased, and 78 miscellaneous children under CA 12 yrs. were compared to matched controls. Incidence of prematurity tended to be higher among schizophrenics (27 cases) than among controls (16 cases).

For additional references to Pre- and Peri-natal Factors see: #9, Hingtgen & Bryson; #30, Ward & Hoddinott; #34, Wing, et al.; #72, Lotter; and #410, Rimland.

Drug Studies

184. Abramson, H. A. The use of LSD (d-Lysergic Acid Diethylamide) in the therapy of children. Journal of Asthma Research, 5:139-143, 1967.

Studies in which LSD was administered to children with severe disturbances, including psychoses, are reviewed. The author concludes that comparatively large doses of LSD-25 may be safely administered for extended periods of time to psychotic children without incidence of brain damage. Behavioral improvements noted include decreases in hostile and stereotyped behaviors and increases in positive contacts with adults.

185. Bender, L. A twenty-five year view of therapeutic results. In: Hoch, P. H.; and Zubin, J., eds., The Evaluation of Psychiatric Treatment. New York: Grune & Stratton, 1964.

Metrazol convulsion therapy was given to a group of 15 boys, CA 6 to 14 yrs., diagnosed as autistic or childhood schizophrenic. The chronic course of the autistic group was not appreciably changed by the physiological therapy, whereas metrazol therapy appeared to facilitate remission in the schizophrenic group if given during puberty.

186. Bender, L. d-Lysergic acid in the treatment of the biological features of childhood schizophrenia. Diseases of the Nervous System, 7:43-46, 1966.

The author discusses her use of LSD with approximately 50 autistics and schizophrenics of CA 4 to 15 yrs. Schizophrenic children receiving LSD or derivatives in daily doses were without side effects or gross emotional reactions, and showed positive alterations in mood, appearance, responsiveness, and perception.

187. Bender, L.; Faretra, G.; Cobrinik, L.; and Sankar, D. V. The treatment of childhood schizophrenia with LSD and UML. In: Rinkel, M., ed., The Biological Treatment of Mental Illness. New York: L. C. Page and Co., 1966.

LSD or UML was given daily over an average of 9 months to 10 schizophrenics of CA 6 to 15 yrs. Positive results are reported for all children, especially with the younger autistics. The children showed improvements in responsiveness, verbalization, and reality testing, and decreases in anxiety, plasticity, and bizarre ideation. No major undesirable side effects were noted.

188. Bonisch, E. Erfahrungen mit pyriethoxin bei hirngeschädigten Kindern mit autistischem Syndrom. (Experiences with pyriethoxin treatment of brain-damaged children with autistic syndrome). Praxis der Kinderpsychologie und Kinderpsychiatrie, 17:308-310, 1968.

Sixteen brain-damaged autistic children were treated with pyriethoxin. Twelve Ss became more interested and affectionate, and 5 progressed in speech development. In 7 of 12 restless Ss, higher dosages increased the disturbance so that dosage reduction was necessary. No other signs of incompatibility were observed. (English summary)

189. Faretra, G.; and Bender, L. Autonomic nervous system responses in hospitalized children treated with LSD and UML. In: Wortis, J., ed., Recent Advances in Biological Psychiatry, Vol. VII. New York: Plenum Press, 1964.

Thirty psychotic children, CA 9 to 12 yrs. were given injections of saline, adrenaline, and pilocarpine before medication with LSD-25, UML-491, and psilocybin. Suitable clinical and psychological studies with records of blood pressure, pulse and respiration were made with each injection. Results showed an increasing potentiation of the normal blood pressure responses to epinephrine injection and a less marked action on the response to pilocarpine with all 3 medications. There were no marked differences among findings when the cases were divided diagnostically, and no differences among the 3 drugs. The authors suggest that LSD, UML, and psilocybin potentiate the reactions of the sympathetic system in psychotic children.

190. Fish, B. Drug use in psychiatric disorders of children. American Journal of Psychiatry, 124:31-36, Supplement, 1968.

The importance of drug treatment with disturbed children is discussed. Specific indications and limitations are presented as well as the differences between adults and children in their responses to major or minor tranquilizers and stimulants. The author generally recommends psychotherapy in combination with drug treatment.

191. Fish, B.; and Shapiro, T. A typology of children's psychiatric disorders. I. Its application to a controlled evaluation of treatment. Journal of American Academy of Child Psychiatry, 4:32-52, 1965.

Forty-five children of CA 6 to 12 yrs. with behavior disturbances ranging from mild neuroses to psychoses were given baseline evaluations and EEGs, and then treated with chlorpromazine, diphenhydramine, or placebo for 5 to 6 weeks. Ss were grouped into 4 clinic types based on severity ratings from severe to mild psychopathological disorders, using impairment of ego

as the frame of reference (I--Autistic-disjunctive; II--Immature-labile; III--Anxious-neurotic; IV--Sociopathic-paranoid). Conclusions were drawn regarding the relationships between clinical types, and treatment responses, IQ, other developmental disorders, history, and social factors.

192. Fish, B.; Shapiro, T.; and Campbell, M. Long-term prognosis and the response of schizophrenic children to drug therapy: A controlled study of trifluoperazine. American Journal of Psychiatry, 123:32-39, 1966.

Eleven pairs of retarded, autistic schizophrenics, CA 2 to 6 yrs., were matched for age and psychopathology, using language impairment as the primary measure. The experimental group was given trifluoperazine and the control group was given placebos for up to 10 weeks. The children with the least language impairment showed the greatest improvement under placebo, while the children with the greatest language impairment showed the greatest improvement under and the greatest tolerance to trifluoperazine treatment. The results suggest a difference in pharmacologic reactivity between children exhibiting mild and severe language impairment.

193. Mogar, R. E.; and Aldrich, R. W. The use of psychedelic agents with autistic schizophrenic children. Behavioral Neuropsychiatry, 1:44-52, 1969.

Seven studies were reviewed in which psychotic children were given psychedelic drugs for therapeutic or experimental purposes. The authors conclude that the most effective results were obtained with at least 100 microgram doses of LSD-25 given daily or weekly over relatively extended periods of time. Greater therapeutic benefit appeared related to degree of active therapist involvement with the patient, opportunity to experience meaningful objects and interpersonal activities, and congenial settings. The most consistent effects of drug therapy included improved speech behavior in otherwise mute children, increased emotional responsiveness to other children and adults, elevation in positive mood, and decreases in compulsive ritualistic behavior. The authors feel that the collective findings argue strongly for more extensive application of these drugs with autistic children.

194. Rolo, A.; Krinsky, L. W.; Abramson, H. A.; and Goldfarb, L. Preliminary method for study of LSD with children. International Journal of Neuropsychiatry, 1:552-555, 1965.

One 11-yr. old childhood schizophrenic was filmed during the performance of a series of motor tasks on 8 different occasions, some of which followed LSD treatment. The films were presented in random order to 22 judges--11 psychologists and psychiatrists, and 11 with neither professional training nor experience. There was a total lack of agreement among judges as to when S was under LSD and as to whether there was any

improvement in behavior. The authors make no claims as to the value of LSD in the treatment of children and report this study for its value as a methodology for the objective measurement of drug effects.

195. Simmons, J. Q., III; Leiken, S. J.; Lovaas, O. I.; Schaeffer, B.; and Perloff, B. Modification of autistic behavior with LSD-25. American Journal of Psychiatry, 122:1201-1211, 1966.

Identical male autistic twins, CA 5 yrs., were given either placebo or LSD-25 before a series of behavioral measurements were made of self-stimulation, social interaction, and affect. Consistent behavioral changes followed LSD, including increases in eye-to-face contact, laughter and smiling, and a decrease in self-stimulative behavior. The authors conclude that LSD-25 appears to be useful in the psychotherapy of autistic children because of its positive effect in areas which are closely related to psychotherapy.

For additional references to Drug Studies see: #9, Hingtgen & Bryson; #44, Fish & Shapiro; #162, Fish et al.; #199, Itil, et al.; and #410, Rimland.

EEG Studies

196. Hermelin, B.; and O'Connor, N. Measures of the occipital alpha rhythm in normal, subnormal, and autistic children. British Journal of Psychiatry, 114:603-610, 1968.

The occipital rhythm patterns of 10 autistics (CA 5 to 15 yrs., verbal MA 1 to 11 yrs., visual-motor MA 4 to 11 yrs.), 10 normals, and 10 mongols (matched on MA) were investigated. All children were put through 6 separate 2-min. conditions in succession: darkness, light signals, continuous light, darkness, sound signals, continuous sound and darkness. Two electrodes were placed over the occipital lobe and telemetered EEGs were recorded. The occurrence of alpha waves during the first 2 periods of darkness was more frequent in mongols than in normals or autistics, although all groups demonstrated similar patterns of adaptation to darkness. There were no differences between groups in responses to light signals and continuous light, although autistics adapted more readily than normals or mongols. No group adapted to sound, and autistics were relatively more aroused by the continuous auditory stimulus than normals or mongols.

197. Hutt, C.; Hutt, S. J.; Lee, D.; and Ounsted, C. Arousal and childhood autism. Nature, 204:908-909, 1964.

Waking and sleeping EEG records of 6 autistics, CA 3 to 6 yrs., were studied and compared with other child and adult EEGs. Stereotyped behaviors were associated with rhythmic and desynchronized EEG records. The authors conclude that autistic children tend to avoid behaviors which would arouse the already aroused and hyperactive reticular system and that such avoidance results in stereotypic behavior and a maintenance of "sameness."

198. Hutt, S. J.; Hutt, C.; Lee, D.; and Ounsted, C. A behavioural and electroencephalographic study of autistic children. Journal of Psychiatric Research, 3:181-197, 1965.

EEG and free-field behavioral measures were made for 10 autistics (CA 3 to 6 yrs.), 60 children with behavior disorders other than autism (used as controls for EEG study), and 10 nonautistic in-patients with minor behavior disorders (used as controls for free-field study). The autistics as a group showed virtually no constructive play in contrast with the normals although the former spent more time with play materials and were actively responsive to changes in their environment. Eight autistic children had waking EEG records characterized by low voltage irregular activity without any established rhythms. The hypothesis is advanced that autistic children are in a chronically high state of physiological arousal.

199. Itil, T. M.; Rizzo, A. E.; and Shapiro, D. M. Study of behavior and EEG correlation during treatment of disturbed children. Diseases of the Nervous System, 28:731-736, 1967.

Twenty behaviorally disturbed children and adolescents (diagnosed as schizophrenic, personality disorder, or chronic brain syndrome with CA range 11 to 20 yrs.) exhibiting abnormal EEGs were treated with combination of diphenylhydantoin and thioridazine. EEG and behavioral measures were made before and 3 months after treatment. Following treatment 15 Ss showed improvement and 14 were discharged. Analysis demonstrated that significant correlations exist between behavior alterations and qualitative EEG changes.

200. Onheiber, P.; White, P. T.; DeMyer, M. K.; and Ottinger, D. R. Sleep and dream patterns of child schizophrenics. Archives of General Psychiatry, 12:568-571, 1965.

EEGs were recorded for 7 autistic or schizophrenic children (CA 2 to 8 yrs.) and 3 normal children (CA 6 to 9 yrs.) to determine the percentage of time spent in various stages of sleep, time of onset of first REM period, and the duration of successive REM periods. The psychotic children were similar to controls on all 3 measures of sleep and dream patterns.

201. Ornitz, E. M.; Ritvo, E. R.; Brown, M. B.; LaFranchi, S.; Parmelee, T.; and Walter, R. D. The EEG and rapid eye movements during REM sleep in normal and autistic children. Electroencephalographic and Clinical Neurophysiology, 26:167-175, 1969.

Sleep EEGs and rapid eye movements (REMs) were studied in 6 normal and 8 autistic children (CA 1 to 4 yrs.). Autistics demonstrated a significantly greater amount of 10.5-15 c/sec activity than normals and less frequent single eye movements and eye movement burst activity. The authors discuss these neurophysiological abnormalities in terms of maturational factors.

202. Ornitz, E. M.; Ritvo, E. R.; Panman, L. M.; Lee, V. H.; Carr, E. M.; and Walter, R. D. The auditory evoked response in normal and autistic children during sleep. Electroencephalography and Clinical Neurophysiology, 25:221-230, 1968.

Auditory evoked responses were studied in 23 autistics, CA 2 to 8 yrs., and 26 normal controls during stage 2 and REM sleep, during episodes of tonic inhibition occurring throughout REM sleep, and during phasic inhibition associated with bursts of REM sleep. Stimulation was in the form of clicks occurring every 2.2 to 2.4 seconds about 5 feet above the head. Autistics under 5 yrs. 1 mo. showed significantly larger responses than controls when (1) amplitudes during eye movement burst were compared

to ocular quiescent phase of REM sleep; and (2) when amplitudes during either REM sleep or its ocular quiescent phase were compared to stage 2 sleep. The authors postulate that a disturbance of phasic inhibition may reflect a basic disturbance of vestibular function.

203. Ornitz, E. M.; Ritvo, E. R.; and Walter, R. D. Dreaming sleep in autistic and schizophrenic children. American Journal of Psychiatry, 122:419-424, 1965.

Spontaneous nights of sleep were studied for 7 early infantile autistic or childhood schizophrenics (CA 5 to 12 yrs.) and 6 nonpsychotics (CA 4 to 10 yrs.). No differences between psychotic children and controls were found in EEG, eye movements, heart rate, or submandibular muscle potential, and there was no evidence of EEG abnormalities of cerebral dysrhythmia.

204. Ornitz, E. M.; Ritvo, E. R.; and Walter, R. D. Dreaming sleep in autistic twins. Archives of General Psychiatry, 12:77-79, 1965.

A pair of nonverbal 5-yr. old autistic male twins was observed during one night of spontaneous sleep, and recordings were made of EEG, eye movement, heart rate and submandibular muscle potential. Their dreaming sleep was similar in patterning and amount to that of normal children.

205. Ritvo, E. R.; Ornitz, E. M.; Tanguay, P.; and Lee, J. C. M. Neurophysiologic and biochemical abnormalities in infantile autism and childhood schizophrenia. Presented at the American Orthopsychiatry Association, 1970.

The authors present a brief review of their research and suggest that the symptoms of autism, symbiosis, atypical ego development, and some cases of childhood schizophrenia reflect a basic neuropathologic dysfunction which interferes with the normal homeostatic regulation of perceptual stimuli within the central nervous system. Supporting evidence from sleep EEG records, postrotatory nystagmus tests, direct behavioral observations, and blood analyses is summarized.

206. Small, J. G. Sensory evoked responses of autistic children. In: Churchill, D. W.; Alpern, G. D.; and DeMyer, M., eds., Infantile Autism: Proceedings of the Indiana University Colloquium. Springfield: Thomas, 1970.

Average sensory evoked responses and slow potential shifts were measured in 5 autistics of CA 4 to 7 yrs., and 5 matched controls. Using a sound controlled room and low intensity light, sound, and somatosensory stimulation, differences were identified between the evoked responses of

autistic and normal children. Visual responses were of lower and more stable amplitude in autistic children than in normal controls. Autistics also had less complex auditory evoked responses (fewer negative and positive peaks) than normals.

207. Walter, S. G.; Aldridge, V. J.; Cooper, R.; O'Gorman, G.; McCallum, C.; and Winter, A. L. Report on: Neurophysiological correlates of apparent defects of sensori-motor integration in autistic children. In: Churchill, D. W.; Alpern, G. D.; and DeMyer, M., eds., Infantile Autism: Proceedings of the Indiana University Colloquium. Springfield: Thomas, 1970.

Neurophysiologic responses of 13 autistic children, 17 children with autistic features, 1 normal family group, and a group of foundlings were investigated. A 16-channel machine simultaneously recorded EEG in response to sensory stimuli and autonomic responses (heart rate, GSR, respiration, electro-myelogram). Nonspecific responses to visual stimuli were absent in 4 disturbed Ss and nonspecific responses to auditory stimuli were absent in 9 disturbed Ss. The proportion of mature interaction patterns was much lower in disturbed children than in the normal groups. The authors conclude that disturbances of sensory-motor experience in young children may set up a state of exaggerated autonomic excitement associated with anxiety which can interfere continuously with the establishment of stable interactive adaptations.

208. White, P. T.; DeMyer, W.; and DeMyer, M. EEG abnormalities in early childhood schizophrenia: A double-blind study of psychiatrically disturbed and normal children during promazine sedation. American Journal of Psychiatry, 120:950-958, 1964.

One EEG during promazine sedation was obtained for 58 autistics and/or symbiotics (mean CA 5 yrs.), 44 chronic undifferentiated schizophrenics (mean CA 7 yrs.), 37 chronic acting-out behavior disorders (mean CA 7 yrs.), 10 psychoneurotics (mean CA 8 yrs.), and 10 normals (mean CA 5 yrs.). Final clinical diagnoses were made without reference to the EEGs, and the EEG records were read in random order without knowledge of the clinical diagnosis. Of 149 Ss, 51% had abnormal EEGs. None of the normals had abnormal EEGs and only 1 neurotic had EEG abnormalities. The most frequent abnormalities were irregular paroxysmal spike and wave complexes, often best seen during transition from waking to sleeping states. About 13 to 19% of the 3 most severely disturbed groups displayed seizure activity.

For additional references to EEG Studies see: #9, Hingtgen & Bryson; #22, Rutter; #30, Ward; #398, Kamp; and #410, Rimland.

Skeletal, Cell, Biochemical, and Other Studies

209. Bernal, M. E.; Simmons, J. Q., III; and Miller, W. H. Psychophysiological studies of autistic children (Progress report). California Mental Health Research Digest, 7:151-152, 1969.

Preliminary results of an ongoing investigation indicated that schizophrenic children had lower GSR responsivity than normals, regardless of the stimulus modality tested. Since these responses are similar to those of retardates, the authors suggest that functional mechanisms such as response magnitude or habituation rate are very similar in both groups in spite of behavioral differences.

210. Brambilla, F.; Viani, F.; and Rossotti, V. Endocrine aspects of child psychoses. Diseases of the Nervous System, 30:627-632, 1969.

Pituitary, adrenal, and thyroid functions were studied in 16 psychotic children, CA 5 to 14 yrs. Metabolic imbalance was present in 87% of the Ss. The pituitary gland presented the most significant deficiencies, characterized by reduced gonadotropins, ACTH and TSH secretion. The target glands (adrenal and thyroid) presented moderate deficiencies as a consequence of pituitary impairment. The origin of the hormonal imbalance is unknown, but there appeared to be a general positive correlation between the severity of the endocrine disorder and the severity of the behavioral disorder.

211. DeMyer, M. K.; Ward, S. D.; and Lintzenich, J. Comparison of macronutrients in the diets of psychotic and normal children. Archives of General Psychiatry, 18:584-590, 1968.

In a diet study carried out on a hospital ward, 11 schizophrenic and/or autistic children of CA 2 to 9 yrs. ingested the same percentages of carbohydrates, proteins, and fats as 4 controls of CA 5 to 7 yrs., but their caloric intake was 35% less than that of the controls.

212. Dutton, G. The growth patterns of psychotic boys. British Journal of Psychology, 110:101-103, 1964.

Measures of weight, skeletal maturity, sexual maturity, and discriminant androgyny were made for 25 male psychotics of CA 6 to 20 yrs. More Ss than expected had definite growth failures: 26% had depressed linear growth, and 17% had delayed skeletal development. The author suggests that some forms of childhood psychoses may be related to metabolic disturbance.

213. Fowle, A. M.: Atypical leukocyte pattern of schizophrenic children. Archives of General Psychiatry, 18:666-680, 1968.

Blood smears were collected from 26 autistics or schizophrenics (CA 5 to 14 yrs.), 33 siblings of the schizophrenics, and 30 normals. Several atypical types of lymphocytes and cells of the plasmacyte series occurred at a higher frequency in smears of schizophrenics than in normal children: 22.9% schizophrenics; 9.3% sibs; 7.8% controls. Some of the atypical cells were similar to those associated with antibody production or responses to virus infections, whereas others resembled immature lymphocytes. Total cell counts of proplasmacytes were found to be the best criterion to use in comparing smears of normals and schizophrenic children and in relating blood cell patterns to severity of illness.

214. Gittelman, M.; and Cleeman, J. Serum magnesium level in psychotic and normal children. Behavioral Neuropsychiatry, 1:51-52, 1969.

Five cc. of blood were drawn from 35 psychotic children, CA range 3 to 15 yrs., and 26 children with no overt psychiatric disturbance. When serum magnesium levels were determined, no significant differences were found between the psychotic and normal groups.

215. Gold, S. Further investigation of a possible epileptogenic factor in the serum of psychotic children. Australian and New Zealand Journal of Psychiatry, 1:153-156, 1967.

Serum was obtained from 31 psychotic, 32 mongol, 64 mentally deficient, and 31 normal children, and was subcutaneously injected into 6-week old male mice. Ten minutes later an intraperitoneal injection of Leptazol was given and the time of seizure onset was recorded. Although no significant difference was found in seizure times, significantly greater numbers of mice died after being given psychotic serum. The author concludes that the study verified the presence of a toxic epileptogenic factor in the serum of psychotic children and illustrated that it is not significantly present in serum obtained from normal or mentally-retarded children.

216. Gold, S.; and Seller, M. J. An epileptic factor in the serum of psychotic children. The Medical Journal of Australia, 2:876-877, 1965.

The serum of psychotic or normal children was injected subcutaneously into mice, followed by a dose of a seizure-inducing drug, Leptazol. The elapsed time of onset of seizure was shorter and the severity, measured by death of animal, was significantly greater when serum of psychotic children was used.

217. Heeley, A. F.; and Roberts, G. E. Tryptophan metabolism in psychotic children. Developmental Medicine and Child Neurology, 7:46-49, 1965.

Tryptophan metabolism was studied in 16 psychotics of CA 2 to 8 yrs. and 10 normal controls. A defect in tryptophan metabolism which may represent impaired functioning of pyridoxine-dependent systems was demonstrated in 9 psychotic cases. There was an apparent correlation between this abnormality and the clinical subgroup of children who showed deviant behavior from a very early age. Children who regressed into psychotic behavior at a later age, following an apparently normal start, showed no abnormality of metabolism.

218. Judd, L. L.; and Mandell, A. J. Chromosome studies in early infantile autism. Archives of General Psychiatry, 18:450-457, 1968.

Chromosome counts were made for 11 autistic children of CA 6 to 12 yrs. The Y (male) chromosome appeared larger in 3 Ss, of whom 2 were autistic brothers. A chromosome study done on the nonautistic father of these 2 Ss also showed a large Y chromosome. The large Y factor was considered coincidental and not linked to autism. No significant or consistent chromosomal abnormalities were found.

219. Oliver, B. E.; and O'Gorman, G. Blood lead and pica in psychotic children. Developmental Medicine and Child Neurology, 8:704-707, 1966.

The blood-lead levels of 40 psychotic children (CA 3 to 14 yrs.) in long-stay care were compared to the incidence and severity of pica in the children. Some degree of pica was exhibited in 65% of the children with 58% having blood-lead levels above normal. Although there were exceptions, generally it was found that the more severe the pica, the higher was the blood-lead level.

220. Pieper, W. J.; Abrams, N. G.; and Pergament, E. Primary infantile autism combined with sex chromosome abnormality (XYY). Presented at the American Psychiatric Association, 1968.

The occurrence of a XYY syndrome in an autistic boy, CA 4 yrs., is reported. The authors discuss the general phenomenon of the psychotic process as representative of a class of final common pathway reactions. Such reactions are viewed as being behavioral manifestations which contribute to the ultimate style of the organism's functional integrity, and have a multifactorial etiological origin from biosocial factors. Possible implications of the effects of excessive desoxyribosenucleic acid in the Y chromosome upon ego maturation and development is examined using infantile autism as the primary behavioral model.

221. Pollack, M.; and Gittelman, R. K. The siblings of childhood schizophrenics: A review. American Journal of Orthopsychiatry, 34:868-873, 1964.

Studies dealing with siblings of schizophrenic children with specific reference to the prevalence of childhood schizophrenia and neurological abnormalities among siblings were reviewed. The authors conclude that these reports support the hypothesis that neurological as well as psychiatric dysfunction in these children originates from organic disorders in the CNS.

222. Ritvo, E. R.; Ornitz, E. M.; Eviatar, A.; Markham, C.; Brown, M.; and Mason, A. Decreased postrotatory nystagmus in early infantile autism. Neurology, 19:653-658, 1969.

Postrotatory nystagmus was investigated in 28 children (26 autistics) of mean CA 5-3 who had symptoms indicative of perceptual inconstancy and 22 normals of mean CA 6-10. Duration of horizontal, vertical, and diagonal nystagmus were recorded following rotatory stimulation induced by a Barany chair under 2 conditions: (1) eyes open in a lighted room; and (2) eyes blindfolded in a darkened room. Perceptual inconstancy Ss had significantly shorter postrotatory nystagmus than normals when tested with eyes open in a lighted room, while there were no significant differences between groups when tested with eyes blindfolded in a darkened room. Factors of age, sex, direction, and habituation had no effect. The authors conclude that the results support the hypothesis that psychotic children have a unitary organic disease process since decreased postrotatory nystagmus occurred only when there were multiple competing stimuli (visual and vestibular input).

223. Seller, M. J.; and Gold, S. Seizures in psychotic children. Lancet, 1:1325, 1964.

Cerebrospinal fluid (CSF) of psychotic and nonpsychotic children was injected into mice, followed 10 min. later by a dose of Leptazol. Onset of seizure time for mice injected with psychotic CSF was significantly shorter than for mice injected with control CSF. In the psychotic group, behavior was characterized by twitching, tail-flicking, and hyperkinesis.

224. Shapiro, T. Hand morphology in some severely impaired schizophrenic children. American Journal of Psychiatry, 122:432-435, 1965.

Hand development was investigated in 11 schizophrenics (CA 3 to 6 yrs.) with varying degrees of autism, social withdrawal, and speech impairment. The most severely schizophrenic children showed poor muscle build and a distinctive indentation at the radial aspect of the metacarpal-phalangeal joint of the index finger when viewed from the dorsum. The defect was

bilateral and easily visible. This group also showed a generalized marked doughiness of muscle tone and would utilize their fine motor skills only when urged. The sign was reported to resemble normal hand development up to about 3 yrs. of age.

225. Silver, A.; and Gabriel, H. P. The association of schizophrenia in childhood with primitive postural responses and decreased muscle tone. Developmental Medicine and Child Neurology, 6:495-497, 1964.

Muscle tone and postural response were tested in 116 children of CA 8 to 12 yrs.: 39 schizophrenics, 13 borderline, 9 with reading difficulties, 16 organic, and 39 normals. The S's head was gently rotated from side to side and if his body followed the rotation, the response was considered abnormal. Thirty of 39 psychotic Ss showed decreased muscle tone and primitive rotation of the body, while these responses were rarely found in the other groups.

226. Simon, G. B.; and Gillies, S. M. Some physical characteristics of a group of psychotic children. British Journal of Psychiatry, 110:104-107, 1964.

A series of physical measurements were made on 34 psychotic children of CA 2 to 14 yrs. and mean Vineland SQ 38.3: height, weight, subcutaneous fat, bone, muscle, and skeletal age. Psychotic children were found to be significantly below their normal peers in weight and bone age, and to include an excess of children below the 10th percentile for height.

227. Weber, D. Zur atologie autistischer syndrome des kindesalters (Etiology of autistic syndrome in childhood). Praxis der Kinderpsychologie und Kinderpsychiatrie, 15:12-18, 1966.

A 10-yr. study of 92 children and adolescents with early autistic symptoms revealed that disturbances of primarily polyetiological and organic origin were basic causes. (English summary)

For additional references to Skeletal, Cell, Biochemical, and Other Studies see: #9, Hingtgen & Bryson; #22, Rutter; #388, DesLauriers & Carlson; #397, Kahn & Arbib; #391, Friedes & Pierce; #392, Geiger-Marty; #393, Glavin; #403, Mednick; #405, Ornitz; #406, Ornitz; #407, Ornitz & Ritvo; #408, Ornitz & Ritvo; and #410, Rimland.

VI. TREATMENT

Psychotherapy

228. Alpert, A.; and Pfeiffer, E. Treatment of an autistic child: Introduction and theoretical discussion. Journal of the American Academy of Child Psychiatry, 3:591-616, 1964.

A 2-yr. diary of the psychoanalytic treatment of 1 autistic child, CA 2 yrs., is presented. The primary aim of therapy was to undo the effects of the hypothesized maternal deficiency in affective and sensory modalities by establishing a symbiotic, dependent relationship with a constant need-gratifying object. Muscle stimulation was also used to improve muscle tone, satisfy the need for libidinal body contact, and to provide to-and-fro rhythmic stimulation as restitution for one of the deficiencies in S's early relations with his mother.

229. Belz, J. F.; Drehmel, V. W.; and Sivertsen, A. D. Volunteer: The community's participant in treatment of schizophrenic children in a day care program. Presented at the American Orthopsychiatric Association, 1967.

The use of volunteers in a day-care treatment center for schizophrenic children is described.

230. Brody, V. A. An approach to the treatment of disadvantaged, preschool, preverbal psychotic children and their parents in an outpatient clinic. Presented at the American Orthopsychiatric Association, 1969.

A group therapy program aimed at increasing the communication between parents of 3 psychotic boys is described.

231. Carlson, C. F. An evaluation of consistent high impact sensory and affective stimulation therapy on early infantile autistic behavior. Northwestern University. Dissertation Abstracts, 1968.

232. Christ, A. E. Sexual countertransference problems with a psychotic child. Journal of the American Academy of Child Psychiatry, 3:298-316, 1964.

The author describes 18 mos. of psychotherapy with a mute 14-yr. old girl who had been considered a childhood schizophrenic since CA 3 yrs. He suggests that the patient's progress will be delayed until the therapist recognizes and resolves the problems involving countertransference.

233. Coffey, H. S.; and Wiener, L. L. Group Treatment of Autistic Children. Englewood Cliffs, N. J.: Prentice-Hall, 1967.

The authors describe the development of day-care programs which are basically within the framework of psychoanalytic group treatment. Therapy groups usually consisted of 1 or more "catalysts"--children with more ego strength than the autistics. Traditional psychotherapy was employed with emphasis on establishing relationships to build ego strength. Of 13 children who left the center, 6 are attending public school, 3 in special and 3 in regular classes. Of the remaining 7, 1 is dead (auto accident), 3 are in residential treatment, and 3 are at home.

234. Connell, P. H. Medical treatment. In: Wing, J. K., ed., Early Childhood Autism: Clinical, Educational, and Social Aspects. London: Pergamon Press, 1966.

Various forms of treatment that might be used with childhood psychotics are discussed. The author suggests that both the mother and the child be admitted to the hospital for diagnosis in order to guard against disturbing the mother-child relationship, and to observe the mother's handling of the child. Out-patient or day hospital arrangements are considered to be the most advantageous, although occasionally inpatient treatment might be necessary. If inpatient hospitalization is necessary, the unit should have educational facilities which are specially adapted for dealing with very severely disturbed behavior. The author further suggests that symptomatic treatment with drugs for symptoms such as excessive restlessness, distractibility, and sleeplessness might help the child to adjust to the environment. Treatment of parents is also suggested when necessary.

235. DesLauriers, A. The schizophrenic child. Archives of General Psychiatry. 16:194-201, 1967.

The schizophrenic process in children is viewed as an aberration in normal ego development experienced as the child learns to differentiate self from non-self, primarily through the use of a mother. A therapeutic attitude is discussed, having as its goal to create for the child the basic conditions of ego development and ego functioning. The author suggests that the task of therapy with the schizophrenic child is to communicate the experience of being alive, separated, and differentiated, as the true foundation of reality relationships and interpersonal communications.

236. Dratman, M.; and Kalish, B. Reorganization of psychic structures in autism: A study using body movement therapy. Presented at the American Dance Therapy Association, 1967.

237. Dundas, M. H. Autistic children. Nursing Times, 60:138-139, 1964.

The author describes autism as a form of childhood schizophrenia which occurs at a crucial time during the process of maturation, either because of a traumatic experience, or more frequently, a sudden separation of mother and child leading him to reject the world. Therapy is designed to help the child regress to a point in development where the break occurred, through the employment of individual "aunties" who supply love, warmth, and cuddling. Parents are seen weekly by a psychiatric social worker.

238. Dundas, M. H. The one-to-one relationship in the treatment of autistic children. Acta Paedopsychiatrica, 35:242-245, 1968.

The author describes the etiology of autism as a trauma in the symbiotic state. A one-to-one relationship is considered to be essential to therapy. When a relationship is firmly established with an auntie, she helps the child regress to the traumatic experience and then to proceed from that state of development. A psychotherapist is present to guide aunties and give psychotherapy to Ss when needed. Five case studies are reported. The author states that to insure continuous development and improvement the autistics needed the intensive one-to-one play relationship for "a long period."

239. Ekstein, R. On the acquisition of speech in the autistic child. Reiss-Davis Clinical Bulletin, 1:63-80, 1964.

240. Ekstein, R. Children of Time and Space, of Action and Impulse. New York: Appleton-Century-Crofts, 1966.

Clinical studies on the psychoanalytic treatment of severely disturbed children are presented, including borderline disorders, character disorders and various forms of childhood psychosis. In addition to an elaboration of the author's concept of the use of distancing devices by these patients, the book contains material regarding the diagnostic treatment and training techniques he and his coworkers have developed over the past two decades.

241. Ekstein, R.; and Caruth, E. The working alliance with monster. Bulletin of the Menninger Clinic, 29:189-197, 1965.

The author suggests that the psychotic child's willingness, tentative as it generally is, to accept a therapist into his delusional world must be matched by the therapist's capacity to enter that world. Illustrative case material from schizophrenic children is presented.

242. Ekstein, R.; and Caruth, E. Distancing and distance devices in childhood schizophrenic and borderline states: Revised concepts and new directions in research. Psychological Reports, 20:109-110, 1967.

The authors present their views regarding the differences between the psychotic's and neurotic's use of distance as related to the differing nature of the patients' psychic structures.

243. Eisenberg, L.; Conners, K.; and Sharpe, L. A controlled study of differential application of outpatient psychiatric treatment for children. Japanese Journal of Child Psychiatry, 6:125-132, 1965.

244. Fraknoi, J. Theoretical implications of therapeutic results achieved with a group of autistic children. 1967 (submitted for publication).

245. Fraknoi, J.; and Rutterberg, B. Formulating of the dynamic economic factors underlying infantile autism as reconstructed from the study of a group of autistic children and evaluation of their mothers. 1968 (submitted for publication).

246. Furer, M. The development of a preschool symbiotic psychotic boy. Psychoanalytic Study of the Child, 19:448-469, 1964.

The psychoanalytic evaluation and results of psychotherapy with 1 symbiotic boy of CA 3 yrs. are discussed. Theoretical concepts of normal development are also briefly reviewed.

247. Garcia, B.; and Sarvis, M. A. Evaluation and treatment planning for autistic children. Archives of General Psychiatry, 10:530-541, 1964.

A flexible psychoanalytically oriented approach to evaluation and treatment of autistics and their families is presented which emphasizes the impossibility of separating evaluation and treatment. Combining concepts of organic predisposition with maternal deficiency, a theory of etiology is given based on child's paranoid reaction to mother and her counter-rejection. The earliest possible assessment by the therapist of etiological variables is urged, reminding him of the individuality of etiology and, therefore, the necessity of individualized treatment.

248. Kawabata, T. Treatment of autistic children: Inpatient treatment in an adult psychiatric ward. Japanese Journal of Child Psychiatry, 8:448-459, 1967.

Inpatient treatment including drug, milieu, and individual psychotherapy was employed with autistic children in an adult psychiatric ward. Two

cases are described in which the children showed significant improvement in ego development. (English summary)

249. Kempf, J. P. Communicating with the psychotic child. International Psychiatry Clinics, 1:53-72, 1964.

Therapeutic approaches to autistic and symbiotic children are discussed. It is suggested that with the autistic child it may be necessary to rely initially on food for oral gratification and then progress to tactile gratification. With the symbiotic child, the author suggests that the therapist must first become a part of the symbiotic relationship and then gradually introduce frustrations so that the child may become more independent.

250. Kempf, J. P. Brief hospitalization in treatment of the psychotic child. Psychiatry Digest, 27:35-43, 1966.

The author discusses the lack of facilities for long-term treatment of severely emotionally disturbed children, and describes several categories of problems which have been managed successfully on a short-term basis in the general hospital. These included the borderline psychotic adolescent, the latency-aged child, the mentally retarded child with a psychotic reaction, and the preschool child with a sudden onset of emotional disturbance. A brief period of hospitalization is suggested to aid in determining the diagnosis when necessary.

251. Kempf, J. P.; Harrison, S. I.; and Finch, S. M. Promoting the development of ego functions in the middle phase of treatment of psychotic children. Journal of the American Academy of Child Psychiatry, 4:401-412, 1965.

Three phases of therapy with autistic children are described: (1) breaking through autistic barrier to establish contact; (2) developing ego functions; and (3) dealing with intrapsychic and interpersonal conflicts. The authors report that ego functions improve with training (based initially on imitation) and appropriate behavior gradually increases.

252. King, P. D. Theoretical considerations of psychotherapy with a schizophrenic child. Journal of the American Academy of Child Psychiatry, 3:638-649, 1964.

Psychotherapy sessions with a 9-yr. old schizophrenic boy are described and 2 main points are discussed: (1) the pitfalls of the therapist's offering interpretations before trust in the relationship is established; and (2) S's use of others as anxiety reducers.

253. King, P. D.; and Ekstein, R. The search for ego controls: Progression of play activity in psychotherapy with a schizophrenic child. The Psychoanalytic Review, 54:639-648, 1967.

An anecdotal history of a 9-yr. old schizophrenic boy in psychotherapy describes the progression of S's rudimentary play from chaotic impulse to a compulsive quasi-order. Therapy was based on the theory that genuine play requires a certain maturation of ego organization and is possible only where achievement of maturation is fairly stable and not excessively invaded by more regressive precursors of thinking.

254. Langdell, J. I. Family treatment of childhood schizophrenia. Mental Hygiene, 51:387-392, 1967.

Individual and conjoint therapy sessions with a schizophrenic boy and his parents from CA 3 to 18 yrs. are described. The primary problem was considered to be the mother's inability to allow the boy to become independent. Improvement in the child followed the therapeutic loosening of parental intra- and inter-personal conflicts.

255. Lifton, N.; and Smolen, E. Group psychotherapy with schizophrenic children. Presented at the American Group Psychotherapy Association, 1965.

Seven to 12 hours per week of group therapy was provided for schizophrenic and autistic children of CA 4 to 12 yrs. The program was based on the concept that schizophrenics suffer severe ego disturbances and therefore must be treated through relationships built on group activities and discussions. Materials were chosen to increase ego strength by increasing contact, interaction, and reality testing. Therapists were active in conveying expectations, interpreting the Ss' hidden feelings, ignoring fantasies, and clarifying reality testing. Higher levels of ego integration, greater self-control, and decreases in withdrawal, psychotic fantasies, and psychotic behaviors are reported. Seventy percent of the children have been maintained in public schools. The least success is reported with the young, severely autistic children.

256. Lush, D. Progress of a child with atypical development. Journal of Child Psychotherapy, 2, 1968.

Psychotherapy with a 3-yr. old autistic girl and the resulting behavioral improvements are described. A detailed description of 2 therapy sessions is presented as well as a discussion of theoretical concepts.

257. Maslow, A. R. A concentrated therapeutic relationship with a psychotic child. Journal of the American Academy of Child Psychiatry, 3:140-150, 1964.

Psychotherapy with 1 psychotic child of CA 6 yrs. is described. A 17-yr. old student spent 3 hrs. daily with S for 3 mos. receiving weekly evaluative and guidance conferences with the author. The concept of allowing an untrained youth to work with S was based on the principal goal of giving the child the opportunity to form a symbiotic attachment without the grossly destructive elements, which he presumably had experienced previously. Following therapy the child was more affectionate and socially oriented, and less impulsive and mechanical. The use of untrained therapeutic assistants in similar cases is advocated.

258. Miller, B. M. Communication, verbal and non-verbal, with emotionally disturbed children: The search for meaning. Presented at the American Orthopsychiatric Association, 1969.

The author warns of dangers in attempting to verbally communicate with the verbal or non-verbal emotionally disturbed child to whom words are frequently unfamiliar, emotionally loaded, symbolic, or contain multiple meanings. The use of "body language" with the non-verbal autistic child is discussed and therapists are advised to be aware of every movement of such a child, as this is his only means of communicating.

259. Reiser, M.; and Sperber, Z. Utilizing nonprofessional case aides in the treatment of psychotic children at an outpatient clinic. Presented at the American Orthopsychiatric Association, 1969.

Six psychotic children of CA 5 to 8 yrs. were seen as outpatients for 1-hr. sessions twice weekly in a therapy program using both lay and professional therapists. Successful results are reported in terms of the children's development and therapists' training.

260. Rice, G.; and Klein, A. Getting the message from a schizophrenic child. Psychiatry, 27:163-169, 1964.

A case study of a 5-yr. old schizophrenic boy is presented in which the authors emphasize that failure of communication is one of the most persistent problems in psychotherapy with schizophrenic children. Much of the schizophrenic's bizarre behavior is considered to be communicative but, since his communication is through actions, he is difficult to understand. Only the therapist's empathy allows him to enter the patient's chaotic world of confused perceptions and primitive impulses.

261. Robertson, M. F. Shadow therapy. Journal of Mental Retardation, 1964.

Shadow therapy with 12 disturbed psychotics, CA 4 to 12 yrs., is described. The author states that shadow therapy decreases the number of visually perceived stimuli allowing the children to reveal their conflicts. An increase in positive social behavior after shadow therapy is reported.

262. Robertson, M. F. Shadow image perception: A communicative device in therapy. American Journal of Psychotherapy, 20:655-663, 1966.

Shadow therapy was used with 4 withdrawn, disturbed children in institutions for mentally retarded. As the Ss reacted to candle flames, shadows, and darkness, stereotyped modes of behavior decreased and a more socialized level of responding was observed. Using shadow therapy, the author finds that Ss explore their fantasies and differentiate them from reality.

263. Robertson, M. F. Shadow therapy with children. American Journal of Psychotherapy, 23:505-509, 1969.

Shadow therapy is based on hypothesis that darkness is more conducive to emotional reactions to stimuli which may be too frightening in daylight, and darkness gives the child an opportunity to control the shadow stimuli presented to him. The therapist helps the child progress in shadow and object identification, including differentiation of therapist's and child's shadows. The author reports that the child eventually responds to shadow therapy as his need to focus on his fantasies is met.

264. Rosenberger, L.; and Woolf, M. Schizophrenic development of two children in the 4-6 age group. Psychoanalytic Review, 51:469-530, 1964.

Two schizophrenic, autistic girls, CA 4 to 6 yrs., under psychoanalytic treatment for several years are described. Emphasis is placed on heredity in that both Ss' fathers were considered schizophrenic. The author denies parental lack of affection, but rather states that the parents used the girls to satisfy their own emotional needs and overwhelmed them with affection.

265. Rubin, H.; Bar, A.; and Dwyer, J. H. An experimental speech and language program for psychotic children. Journal of Speech and Hearing Disorders, 32:242-248, 1967.

Six psychotics, CA 4 to 13 yrs., received speech therapy for 2 hrs. per week over periods ranging from 4 mos. to 2 yrs. Therapy was based on the assumption that there is a hierarchy of speech development which must be followed and that reinforcement for speech and language must be social in nature and hence relationship formation must precede language development. Good results were seen in 5 of the 6 children.

266. Rutenberg, B.; and Dratman, M. Orienting the speech and language therapy of autistic children to an understanding of the autistic process. Presented at the New England Speech and Hearing Association Meeting, 1967.
267. Schechter, M. D.; Shurley, J. T.; Sexauer, J. D.; and Toussieng, P. W. Perceptual isolation therapy: A new experimental approach in the treatment of children using infantile autistic defenses: A preliminary report. Journal of the American Academy of Child Psychiatry, 8:97-139, 1969.

Following the theory that autistic behaviors are employed as defenses against incoming stimuli which are experienced as noxious or overwhelming, the authors developed a partial perception-isolation situation for 3 autistic retarded children of CA 4 to 5 yrs. During a 6 to 12 week period, Ss were isolated in a small soundproof and lightproof bedroom, void of all fixtures and furnishings except a mattress. Food was provided and a therapist visited irregularly. During isolation demands and novel stimuli were gradually introduced. Clinical judgements indicated improved social interaction and eye contact.

268. Schechter, M. D.; Shurley, J. T.; Toussieng, P. W.; and Maier, W. J. Sensory isolation therapy of autistic children: A preliminary report. Journal of Pediatrics, 74:564, 1969.

Three children with autistic defenses were treated in a milieu of sensory isolation for 40, 68, or 74 days. The authors report significant improvement in each child's ability to relate to other people and to adapt to the environment following treatment.

269. Schopler, E. The relationship between early tactile experience and the treatment of an autistic and a schizophrenic child. American Journal of Orthopsychiatry, 34:339-340, 1964.

Two case studies are presented to illustrate techniques based on the theory that autistic children have an unusually high threshold against stimuli, while schizophrenic children have an unusually low threshold. Therapy for the autistic child focused on intervention through physical contact and body games. Therapy for the schizophrenic child focused on reducing the "tactile conflict in his unique communication patterns." Success is reported with both treatment techniques.

270. Schopler, E.; and Reichler, R. J. Psychobiological referents for the treatment of autism. In: Churchill, D. W.; Alpern, G. D.; and DeMyer, M., eds., Infantile Autism: Proceedings of the Indiana University Colloquium, Springfield: Thomas, 1970.

The authors suggest that the central impairment in autistic children is the lack of cortical control and integration of perceptual information which results in both emotional and cognitive impairment. Maladaptive parental attitudes and behaviors are considered to be reactions to, rather than causes of, the child's impairment. In the treatment program described, the parents work with their child as co-therapists with the primary goal of helping the child attain organization of sensory experiences.

271. Smolen, E.; and Lifton, N. A special treatment program for schizophrenic children in a child guidance clinic. American Journal of Orthopsychiatry, 36:736-742, 1966.

A treatment program for families of childhood psychotics is described, which involved individual and group therapy sessions for both the parents and children. The psychiatrists were active in encouraging change as an immediate and necessary goal for all family members. Many parents are described as unconsciously unwilling to accept improvement in their children. Supplemental programs for the children included speech therapy, home visits, day camps, and cooperative arrangements with public schools where the children were enrolled.

272. Speers, R. W.; and Lansing, C. Group psychotherapy with preschool psychotic children and collateral group therapy of their parents: A preliminary report of the first two years. American Journal of Orthopsychiatry, 34:659-666, 1964.

Five childhood psychotics with autistic features, CA 3 to 4 yrs., were enrolled in a group therapy treatment consisting of 2 meetings weekly. Mothers and fathers also participated in group therapy sessions and were advised (as part of therapy) to have a full time "nanny" for their child. The children at first manifested increased withdrawal, then panic reactions, and finally awareness and interaction with subsequent group formation. The authors stress that parents should be helped to recognize their narcissism and emotional withdrawal. Improvements in communicative speech and ego development are reported and the authors suggest an optimistic prognosis.

273. Speers, R. W.; and Lansing, C. Group Therapy in Childhood Psychosis. University of North Carolina Press: Chapel Hill, 1965.

The authors describe a four year group psychotherapy program with 1 autistic and 4 symbiotic children, CA 3 to 5 yrs., and collateral group therapy of their parents. All families had a high incidence of mental illness, and the parents' rejection of "nannies" hired to care for the children in their homes as an integral part of the therapy program is discussed. Case histories of the 5 children and their families, as well as descriptions of each of the therapy groups (children, mothers, fathers) are presented. The authors suggest that childhood psychosis may be due to an interaction of innate defects in the child and personality defects in the mother, and that the mothers must be helped to resolve their conflicts before therapy with the child can be entirely successful.

274. Stuckey, B. J.; Garrett, M. W.; Oppliger, S.; Thorne-Thomsen, B.; Sugar, M.; and Stretch, J. J. Community management of the psychotic child. Presented at the American Orthopsychiatric Association, 1968.

Thirteen psychotic children up to CA 13 yrs. were treated as outpatients using one paid student companion per child for 8-10 hrs. weekly. All children involved in the program showed clinical improvement.

275. Tessman, L. H.; and Kaufman, I. Treatment techniques, the primary process, and ego development in schizophrenic children. Journal of the American Academy of Child Psychiatry, 6:98-115, 1967.

The importance of primary process thinking in childhood schizophrenia and considerations of treatment techniques utilized to deal with this phenomena are discussed. The authors feel that the therapist must provide this type of child with a different, less frightening affective context for learning to deal with primary process conflicts.

276. Thomas, R. Comments on some aspects of self and object representation in a group of psychotic children. Psychoanalytic Study of the Child, 21:527-580, 1966.

Anna Freud's diagnostic profile was applied to 4 schizophrenics of CA 7 to 10 yrs. The author believes that analysis helped the children communicate but therapeutic effects were limited by possible innate neurological defects.

277. Wolf, E. G.; and Rutenberg, B. A. Communication therapy for the autistic child. Journal of Speech and Hearing Disorders, 32:331-335, 1967.

A program of speech therapy based on the premise of ego dysfunction is proposed for autistic children. No formal work is begun until a child forms some relationship with one child-care worker. Training then begins with simple imitation-learning and S is praised for every effort towards mastery. The authors report that most autistics respond to this therapy, but if they remain fixated even after they have developed a relationship, an organic disorder is suspected.

For additional references to Psychotherapy see: #3, Despert; #9, Hingtgen & Bryson; #29, Ward; #36, Yates; #52, Perron; #71, Lordi & Silverberg; #384, Bettelheim; #388, DesLauriers & Carlson; #391, Friedes & Pierce; #411, Rutenberg; #415, Schopler; and #424, Zaslow.

Behavior Therapy

278. Baroff, G. S.; and Tate, B. G. The use of aversive stimulation in the treatment of chronic self-injurious behavior. Journal of the American Academy of Child Psychiatry, 7:454-460, 1968.

Although individual, group, and drug therapy had failed to eliminate the self-hitting behavior of a 9-yr. old autistic boy with a 5-yr. history of self-injury, self-hitting rapidly decreased when it was followed by withdrawal of physical contact or electric shock. Following the additional elimination of posturing and saliva-saving, further treatment, e.g. language training, was possible.

279. Blake, P.; and Moss, T. The development of socialization skills in an elective mute child. Behavior Research and Therapy, 5:349-356, 1967.

A 4-yr. old girl with some psychotic symptoms and no communicative speech or imitative skills was tested for verbal output in a specially designed booth. A "color organ" was used as positive reinforcer during a baseline period. During training sessions, food and the manipulation of light served as effective reinforcers. Crying and other inappropriate behaviors were extinguished, and eye contact, attention, and verbal responses were increased.

280. Brawley, E. R.; Harris, F. R.; Allen, K. E.; Fleming, R. S.; and Peterson, R. F. Behavior modification of an autistic child. Behavioral Science, 14:87-97, 1969.

During a 3-month period, social and food reinforcers were used to increase appropriate vocal and social behaviors and to decrease disruptive, non-appropriate behaviors in a 7-yr. old autistic child. Simple imitative behaviors and more complex tasks were later taught. A short reinforcement-reversal period showed an increase in inappropriate behaviors. When original conditions were restored, the behavior returned to previous levels of improvement.

281. Breger, L. Comments on "Building social behavior in autistic children by use of electric shock." Journal of Experimental Research in Personality, 1:110-113, 1965.

Lovaas, Schaeffer, and Simmons (1965) are criticized for using such "specific, highly aberrant children" in a study which only benefited programs involving autistics and did not lead to any generalized theory. Breger also questions the demonstration of any real generalization, in terms of the Ss associating adults with relief of pain.

282. Brooks, B. D.; Morrow, J. E.; and Gray, W. F. Reduction of autistic gaze aversion by reinforcement of visual-attention responses. Journal of Special Education, 2:307-309, 1968.

Attempts were made to increase visual attention responses using operant conditioning techniques with a female autistic deaf-mute, CA 19 yrs. Following establishment of a baseline of visual contact, visual attending responses were increased on a crf schedule of reinforcement and maintained on a VR 20 schedule, using M&Ms as reinforcers. The authors concluded that this behavior was clearly under control of its consequences, and that other more subtle social skills might be developed through operant techniques.

283. Carlin, A. S.; and Armstrong, H. E. Rewarding social responsibility in disturbed children: A group play technique. Psychotherapy: Theory, Research and Practice, 5:169-174, 1968.

Four brain-damaged and/or schizophrenic children of CA 7 to 12 yrs. were enrolled in a 5-week treatment program to encourage social interaction and social responsibility. Tokens, which could be used to purchase candy and toys following a session, were given for appropriate behaviors and fines were levied for disruptive behavior. Tokens were gained and lost in a common pool so that each Ss behavior was the responsibility of the entire group. Disruptive behaviors immediately diminished during sessions and the decrease later generalized to the ward. In addition, social interaction and genuine playing together appeared and became reinforcing in themselves.

284. Churchill, D. W. Psychotic children and behavior modification. American Journal of Psychiatry, 125:1585-1590, 1969.

A broad program of behavior modification was initiated for 15 autistic and/or schizophrenic children from 3 to 7 yrs. old. Following operant conditioning techniques and regardless of degree of progress towards normal behavior, the children were always more attentive, cooperative, and highly motivated. The learning of simple basic skills, as well as a change in the child's and parents' attitudes resulted in a lessening of child-tyranny in the home as well as a decrease in family morbidity.

285. Colligan, R. C.; and Bellamy, C. M. Effects of a two-year treatment program for a young autistic child. Psychotherapy: Theory, Research and Practice, 5:214-219, 1968.

A treatment program utilizing operant techniques in conjunction with playroom and milieu therapy was designed for a 3-yr. old autistic child. Food and social reinforcers were effective in increasing vocabulary and spontaneous language, but little change was noted in eye contact and

social interaction. During the second year the use of relationship therapy increased although operant techniques were continued. After 2 yrs. the child was enrolled in public school kindergarten for exceptional children. The authors advocate individually designed techniques of behavior modification within a therapeutic nursery school milieu and the encouragement of parental participation.

286. Cook, C.; and Adams, H. E. Modification of verbal behavior in speech deficient children. Behavior Research and Therapy, 4:265-271, 1966.

Operant conditioning techniques were employed to modify the verbal behavior of 3 speech deficient children: 1 mute boy, CA 6 yrs.; 1 mute boy, CA 13 yrs.; and 1 girl CA 13 years with some speech. Candy, a puppet, and social reinforcers were used to condition vocalization rate, shape a small vocabulary of syllables, and extinguish animal-like sounds. Some naming and mimicking responses were also established.

287. Davison, G. C. A social learning therapy programme with an autistic child. Behaviour Research and Therapy, 2:149-159, 1964.

One autistic 9-yr. old participated in a limited treatment program (8 hrs. weekly) employing operant conditioning techniques. Two Es, who were students with minimal training, interacted with S in normal play situations utilizing M&Ms and a mirror as primary reinforcement, and smiles and laudatory phrases as secondary reinforcement. In a pretest S obeyed only 1 of 17 commands given by E. After 7 weeks of therapy S obeyed a minimum of 15 commands and showed more social awareness and increased communicative speech. When tested for generalization of training S responded to 14 of 17 commands given by an unfamiliar adult.

288. Davison, G. C. An intensive long-term social learning treatment program with an accurately diagnosed autistic child. Proceedings of the 73rd Annual Convention of the American Psychological Association, 203-204, 1965.

During a treatment program with an autistic-symbiotic child, CA 2 yrs., attention was directed towards eliminating tantrum behavior and increasing attention to directions, play activities, reading, and writing. The author reported good success with all aspects of the program and plans a more extended program for speech in which the mother would assist in the home.

289. Davison, G. C. The training of undergraduates as social reinforcers for autistic children. In: Ullmann, L. P.; and Krasner, L., eds., Case Studies in Behavior Modification. New York: Holt, Rinehart, & Winston, 1965.

Undergraduates (2 teams of 2 each) were taught to employ reinforcement principles and rewarded 2 autistic 10-yr. olds with candy, verbal comments and smiles for appropriate behaviors. Gradually candy reinforcement was decreased. Some appropriate social behavior was achieved and maintained by the use of the undergraduates as social reinforcers.

290. Ferster, C. B. Psychotherapy by machine communication. Disorders of Communication, 42:317-333, 1964.

Automated operant conditioning techniques were used to shape lever-pressing responses in a 4-yr. old autistic boy. The methods involved successive approximation and the gradual elimination of an adult from the experimental room. After about 160 daily sessions S was able to successfully manipulate the lever to obtain candy from a vending machine. Thereafter it was possible to maintain large amounts of behavior under good experimental control.

291. Ferster, C. B. Arbitrary and natural reinforcement. Psychological Record, 17:341-347, 1967.

The author cautions that arbitrary positive reinforcement as used in a therapeutic situation may have undesirable by-products similar to aversive control. Natural reinforcement, on the other hand, has the advantage of persisting with the intervention of parent and therapist, and this class of reinforcers does not require collateral aversive stimuli and incarceration to be effective.

292. Ferster, C. B. The transition from the animal laboratory to the clinic. Psychological Record, 17:145-150, 1967.

The author describes a 30-min. session during which E used operant techniques to control the spontaneous behavior of an autistic child of CA 4 yrs. In contrast to laboratory situations where behaviors were pre-determined by E, the differential reinforcement of other behavior allowed E to extinguish primitive behaviors by manipulating simple features of S's environment. No extrinsic reinforcement was used; rather E allowed each desired behavior to become intrinsically rewarding.

293. Ferster, C. B. Operant reinforcement of infantile autism. In: Lesse, S., ed., An Evaluation of the Results of the Psychotherapies. New York: Charles C. Thomas, 1968.

294. Ferster, C. B.; and Simons, J. Behavior therapy with children. Psychological Record, 16:65-71, 1966.

Natural reinforcers were used to shape and create new responses in 3 autistic children and these methods were contrasted with the usual operant techniques in which food reinforcement is used with animals. The procedures carried out by a therapist in the natural context of the ongoing therapeutic environment of the treatment center are described in a functional analysis of behavior.

295. Fineman, K. R. Visual-color reinforcement in establishment of speech by an autistic child. Perceptual and Motor Skills, 26:761-762, 1968.

Following the measurement of a baseline of verbalizations for an autistic 4-yr. old, S was introduced to a "color organ" which was sensitive to pitch and volume of sound by showing an array of fusing colors on a screen. A visual-color display was presented after each non-specific verbalization. Baseline sessions averaged 20.8 responses while experimental sessions averaged 50.8. No attempt was made to selectively reinforce specific verbal behavior.

296. Fineman, K. Shaping and increasing verbalization in an autistic child in response to visual-color stimulation. Perceptual and Motor Skills, 27:1071-1074, 1968.

Although visual-color displays contingent upon verbalizations were effective in augmenting the rate of sounds made by a 6-yr. old autistic child, food was significantly more powerful in shaping specific sounds under a prompt-response contingency.

297. Gardner, J. E.; Pearson, D. T.; Bercovici, A. N.; and Bricker, D. E. Measurement, evaluation, and modification of selected social interactions between a schizophrenic child, his parents, and his therapist. Journal of Consulting and Clinical Psychology, 32:537-542, 1968.

A two-part program was designed for 1 male schizophrenic child of 6 yrs. During the initial part of the study observations and recordings were made of the S's behaviors as well as of the reinforcement used when S was in typical setting with his parents and therapist. Next a training or treatment phase employed operant principles to control deviant behavior and increase appropriate behavior, attending behavior, and speech. S improved rapidly in 3 months of training with most deviant behavior being replaced by normal verbal and nonverbal behaviors.

298. Gelfand, D. M.; and Hartmann, D. P. Behavior therapy with children: A review and evaluation of research methodology. Psychological Bulletin, 69:204-215, 1968.

The authors review the literature on behavior therapy with children in terms of 3 types of therapist goals: (1) deceleration of maladaptive behavior, (2) acceleration of prosocial behavior, and (3) combined promotion of adaptive behavior and control of problematic behavior. Although a number of studies reviewed demonstrated the efficacy of behavioral treatment, the majority of studies were inadequately controlled and incompletely recorded case studies. The authors suggest that when individual Ss are used for therapy-evaluation studies, E should provide adequate baseline measures of the terminal behaviors, systematic variation of reinforcement contingencies, evidence that behavior observations are unbiased, and finally, rigorous follow-up evaluations.

299. Goodwin, M. S.; and Goodwin, T. C. In a dark mirror. Mental Hygiene, 53:550-563, 1969.

For 28 months the ERE (Edison Responsive Environment) was available for half-hour periods from 1 to 5 times weekly for 150 children of CA 3 to 16 yrs.: 75 had learning disabilities, 10 had physical handicaps, and 65 were autistic. The ERE is a cubicle enclosing a multiphase electric typewriter, projector, and programming device designed to respond to or direct the user in a variety of ways. Ss were given free reign in the booth, but were under the guidance of a teacher or worker. When improvement did occur, success was attributed to maturation, schooling, and home experiences, as well as to the ERE. The ERE measured abilities which were usually hidden in conventional psychological tests. In addition, as visits to the ERE increased, disruptive behavior and hyperactivity usually decreased.

300. Gray, B. B.; and Fygetakis, L. Mediated language acquisition for dysphasic children. Behaviour Research and Therapy, 6:263-280, 1968.

Six aphasics or dysphasics, 4 to 7 yrs. old, were given language acquisition sessions by professional teachers and part-time volunteers. Reinforcers were styrofoam stars which were saved to buy small toys and games and which were contingent upon both good behavior and appropriate language responses. The token-toy method of reinforcement was effective for both behavior control and language acquisition and volunteers were easily trained in the programmed conditioning methods.

301. Graziano, A. M.; and Kean, J. E. Programmed relaxation and reciprocal inhibition with psychotic children. Presented at the American Psychological Association, 1967.

Psychotic children were taught muscular relaxation through carefully structured training in physical relaxation. The authors suggest that the learned relaxation behavior produced a significant decrement in the generalized response of high anxiety which had previously led to aggressive outbursts.

302. Hewett, F. M. Teaching reading to an autistic boy through operant conditioning. The Reading Teacher, 17:613-618, 1964.

An operant conditioning program was established to teach reading, writing, and other basic language skills to 1 autistic child of 13 yrs. Acquisition of rudimentary reading, writing, and conversational skills appeared to make S more interested in his environment and more accessible to social controls.

303. Hewett, F. Teaching speech to an autistic child through operant conditioning. American Journal of Orthopsychiatry, 35:927-936, 1965.

A 4-yr. old autistic child was enrolled in an operant conditioning program designed to develop speech. During the first week all meals were fed to S by E in a conditioning booth to acquaint S with E, surroundings, and procedure, and to establish eye contact. Then tactile and imitative motor responses were rewarded for the purpose of developing an imitative relationship. Next, S's spontaneous vocalizations were shaped and reinforced using discriminative reinforcers to establish a 32-word vocabulary. Finally, generalization and meaningful language were obtained and his parents were introduced into the program.

304. Hewett, F. M. The autistic child learns to read. Slow Learning Child, 13:107-121, 1966.

Three autistic children of CA 10 to 11 yrs. were enrolled in a reading program in which 1 teacher worked with each child utilizing operant conditioning techniques. The author feels that reading skills, developed through the operant conditioning program, offer a tool for increased reality contact, social interaction, and approval for the autistic child, and that the operant conditioning approach holds unique promise for intervening in the psychosocial deterioration associated with autism.

305. Hewett, F. M.; Mayhew, D.; and Rabb, E. An experimental reading program for neurologically impaired, mentally retarded, and severely emotionally disturbed children. American Journal of Orthopsychiatry, 37:35-48, 1967.

Reading skills were taught to 25 children of CA 6 to 12 yrs., of whom 8 were neurologically impaired, 4 were mentally retarded, 10 were emotionally disturbed, and 3 were autistic. A control S was 1 normal nonreading girl aged 4 yrs. 11 mos. The experimental reading program employed principles of programmed instruction and empirical learning theory with the goal of a 155-word vocabulary. Ss were under the supervision of individual teachers and received extrinsic reinforcements (either candy or money) as well as social reinforcement. The authors consider the program a success since all Ss achieved some level of reading proficiency.

306. Hingtgen, J. N.; and Churchill, D. W. Identification of perceptual limitations in mute autistic children: Identification by the use of behavior modification. Archives of General Psychiatry, 21:68-71, 1969.

Four autistic boys of CA 4 to 6 yrs. received 3 to 5 weeks of intensive imitative training using food and social contact as reinforcing stimuli. Further imitative and nonimitative training followed, especially in the area of language development. Two Ss achieved high levels of auditory-visual, visual-vocal, and auditory-motor associations, whereas 2 Ss failed to advance beyond imitative speech. The authors suggest that the behavioral repertoire of autistic children may be significantly increased by intensive operant conditioning techniques but the failure of many mute psychotic children to develop more advanced language skills suggests a basic disturbance of perceptual processes.

307. Hingtgen, J. N.; and Churchill, D. W. Differential effects of behavior modification in four mute autistic boys. In: Churchill, D. W.; Alpern, G. D.; and DeMyer, M., eds., Infantile Autism: Proceedings of the Indiana University Colloquium. Springfield: Thomas, 1970.

Following intensive imitative training, the behavioral repertoire of 4 mute autistic boys, 4 to 6 yrs. old, was significantly increased. Subsequent training in making the basic auditory-visual, and visual-vocal associations necessary for the development of receptive and expressive language was given to all Ss. Although 2 Ss made these associations within the first 10 hrs. of training, the other 2 Ss failed to learn the associations after 600 session-hours. The results indicate possible perceptual limitations in some autistic children and the authors suggest that a profile of differential changes in behavior following conditions of increased motivation and training could contribute to a clearer understanding of the disorder.

308. Hingtgen, J. N.; Coulter, S. K.; and Churchill, D. W. Intensive reinforcement of imitative behavior in mute autistic children. Archives of General Psychiatry, 17:36-43, 1967.

Two mute autistic children, CA 5 to 6 yrs., who had not shown any significant improvement following various types of traditionally oriented therapy, were given daily 6-hr. training sessions over a 21-day period to develop 3 types of imitative behavior: (1) use of body, (2) use of objects, and (3) vocalization. Food, water, and release from physical restraint were used as reinforcers. Significant increases in all types of imitative behavior were obtained during the 21-day period, and the Ss later progressed beyond simple imitative responding to more complex behaviors. The authors suggest that short-term intensive imitative training might be effective in establishing a large number of behaviors which could be used by parents, teachers, and others as the foundation for working toward a broader and more spontaneous behavioral repertoire in the autistic child.

309. Hingtgen, J. N.; Sanders, B. J.; and DeMyer, M. K. Shaping cooperative responses in early childhood schizophrenics. In: Ullman, L.; and Krasner, L., eds., Case Studies in Behavior Modification. New York: Holt, Rinehart & Winston, 1965.

Operant techniques were used to shape cooperative behaviors in 6 autistic, autistic-symbiotic, or chronic undifferentiated schizophrenics who had previously demonstrated little or no social interaction with their peers. As cooperative behaviors increased over the 23-day period, physical contacts and other social interactions within each pair also increased in the experimental situation.

310. Hingtgen, J. N.; and Trost, F. C., Jr. Shaping cooperative responses in early childhood schizophrenics: II. Reinforcement of mutual physical contact and vocal responses. In: Ulrich, R.; Stacknik, T.; and Mabry, J., eds., Control of Human Behavior. Glenview, Illinois: Scott, Foresman & Co., 1966.

Successive approximation was used to shape mutual physical contact and vocalizations in 2 pairs of nonverbal autistic or autistic-symbiotic children (CA 5 to 7 yrs.) in an average of 46 daily sessions. The number of social interactions recorded during reinforcement sessions was significantly greater than the number of physical contacts and vocal responses measured in a series of toy play observations with the same children. In addition, the increase in social behavior generalized beyond the experimental situation and was observed to occur in the home and ward environments.

311. Hudson, E.; and DeMyer, M. K. Food as a reinforcer in educational therapy of autistic children. Behaviour Research and Therapy, 6:37-43, 1968.

Nine autistic or schizophrenic children, CA 3 to 7 yrs. were given craft lessons particularly suited to their limited capabilities, in which food was substituted for beads, paint, and other usual art materials. All but 1 child responded positively to the introduction of food as an art medium, and most Ss later generalized to working with regular art media. However all children failed to use either material creatively.

312. Jensen, G. D.; and Womack, M. Operant conditioning techniques applied in the treatment of an autistic child. American Journal of Orthopsychiatry, 37:30-34, 1967.

A 6-week operant conditioning program was employed with a 6-yr. old autistic child in which social and food reinforcers were used to reward desired behavior, and withdrawal of attention and slapping were used as negative reinforcers. Emphasis was placed on increasing interaction with peers and verbal behavior, and decreasing disruptive, aggressive, and stereotyped behavior. Significant improvements in behavior were observed including elimination of temper tantrums and an increase of intelligible language. The authors also report an improvement in therapeutic team morale.

313. Johnson, S. M.; and Brown, R. A. Producing behavior change in parents of disturbed children. Journal of Child Psychology and Psychiatry and Allied Disciplines, 10:107-121, 1969.

The parents of 2 "overactive, unresponsive, unpredictable" children (CA 2 yrs., IQ 60-70, and CA 6 yrs., IQ 97) were shown how their systems of reward and punishment maintained unwanted behaviors and were then trained to use operant principles to obtain desired behavior by observing a therapist interacting with the child. In addition to modelling procedures, the authors encouraged group discussions with other parents of disturbed children, as well as the direct instruction and formal behavior training of parents.

314. Kerr, N.; Meyerson, L.; and Michael, J. A procedure for shaping vocalizations in a mute child. In: Ullman, L.; and Krasner, L., eds., Case Studies in Behavior Modification. New York: Holt, Rinehart, & Winston, 1965.

Using singing and jogging on E's knee as reinforcement, attempts were made to elicit vocalization in a severely mentally retarded, emotionally disturbed, mute child, aged 3. After only several hours, S responded to E's vocalization 60% of the time.

315. Leff, R. Behavior modification and the psychoses of childhood: A review. Psychological Bulletin, 69:396-409, 1968.

The author reviews the literature on the use of operant-training procedures with psychotic children and states that Ferster's concept of "behavioral deficit" serves as a useful theoretical framework for analyzing behavior and designing modification programs. Since operant methods are easily taught, beneficial results have been achieved even by nonprofessional workers. In spite of a lack of adequate control studies, the evidence is interpreted as strongly supportive of a social-learning model of severely pathological behavior and an operant-training model of therapy.

316. Lovaas, O. I. A program for the establishment of speech in psychotic children. In: Wing, J.K., ed., Early Childhood Autism: Clinical, Educational, and Social Aspects. London: Pergamon Press, 1966.

A discussion of the speech training program based on behavior modification principles used by Lovaas and his co-workers with 11 psychotic children is presented. All Ss were taught a labeling vocabulary by this method, but with large individual differences in rate of acquisition. Echolalic children progressed to the use of complex and spontaneous speech more quickly than previously mute children.

317. Lovaas, O. I. Learning theory approach to the treatment of childhood schizophrenia. Paper presented at the American Orthopsychiatric Association, 1966.

Operant conditioning procedures with schizophrenic children are discussed. The author outlines his facilities and programs and presents the principles of operant conditioning as applied to the behavior patterns of schizophrenic children. Further discussion involves establishing social reinforcers and use of pain in conditioning techniques. Examples of imitative speech training with 1 S are cited. It is concluded that the value of operant conditioning with schizophrenic children is in its simplicity of principles and methodology.

318. Lovaas, O. I. A behavior therapy approach to the treatment of childhood schizophrenia. In: Hill, J. P., ed., Minnesota Symposia on Child Psychology, Volume 1. Minneapolis: University of Minnesota Press, 1967.

The author reviews his research in the application of reinforcement principles to childhood schizophrenia. General methodological considerations, the distinction between the acquisition of social reinforcers and the training of specific behaviors, problems of stimulus and response generalization, and the application of reinforcement theory to complex forms of behavior are discussed. The methods which were found to be most

successful in controlling psychotic behaviors (e.g. self-destruction, self-stimulation, atavisms, echolalia), in promoting the acquisition of social reinforcers, and in training specific social, intellectual, and verbal behaviors are fully described.

319. Lovaas, O. I. Considerations in the development of a behavioral treatment program for psychotic children. In: Churchill, D. W.; Alpern, G. D.; and DeMyer, M., eds., Infantile Autism: Proceedings of the Indiana University Colloquium. Springfield: Thomas, 1970.

The author reviews his research in the application of reinforcement principles to childhood schizophrenia.

320. Lovaas, O. I.; Barberich, J. P.; Perloff, B. F.; and Schaeffer, B. Acquisition of imitative speech by schizophrenic children, Science, 151: 705-707, 1966.

Two schizophrenic 6-yr. olds were given intensive training sessions in which positive reinforcers (food) were given for correct responses and negative reinforcers (spankings) were contingent upon disruptive behavior. Through successive approximations, Ss' vocalizations gradually increased and became imitative. Time-contingent rather than response-contingent reinforcement produced a decrease in imitation. Evidence of generalization in vocal imitation is also presented, indicating that imitation gradually became intrinsically rewarding.

321. Lovaas, O. I.; Freitag, G.; Gold, V. J.; and Kassarla, I. C. Experimental studies in childhood schizophrenia: Analysis of self-destructive behavior. Journal of Experimental Child Psychology, 2: 67-84, 1965.

Three experiments were conducted with a 9-yr. old schizophrenic to examine the functional relationship between his self-destructive behavior and social reinforcement. The results indicated that: (1) the occurrence and magnitude of the behavior was related to the reinforcement and subsequent extinction of another behavior in that same situation; (2) the effect of verbal comments contingent on the behavior served to increase the frequency; (3) ignoring per se was not enough to produce a change; and (4) the removal of a stimulus previously associated with reinforcement withdrawal decreased the frequency of self-destructive behavior. The authors feel that these data suggest a functional relationship between specific environmental operations and self-destructive behavior.

322. Lovaas, O. I.; Freitag, G.; Gold, V. J.; and Kassorla, I. C. Recording apparatus and procedure for observation of behaviors of children in free play settings. Journal of Experimental Child Psychology, 2:108-120, 1965.

An apparatus and procedure are described in which both the frequency and duration of a variety of specific behaviors can be immediately and simultaneously recorded. The method is suggested for use in: (1) analyzing interrelated behaviors in a single child; (2) investigating adult-child interactions; and (3) comparing the behaviors of normal and autistic children.

323. Lovaas, O. I.; Freitag, G.; Kinder, M. I.; Rubenstein, B. D.; Schaeffer, B.; and Simmons, J. O. Establishment of social reinforcers in two schizophrenic children on the basis of food. Journal of Experimental Child Psychology, 4:109-125, 1966.

The authors investigated the establishment and maintenance of social stimuli as reinforcers in one set of identical twin schizophrenic children, 4 yrs. old. It was found that: (1) the social stimulus acquired reinforcing properties when it was made discriminative for food and (2) the social stimulus showed no signs of losing its acquired reinforcing properties as long as it continued to be discriminative for food.

324. Lovaas, O. I.; Freitas, L.; Nelson, K.; and Whalen, C. The establishment of imitation and its use for the development of complex behavior in schizophrenic children. Behaviour Research and Therapy, 5:171-181, 1967.

Eleven autistics or schizophrenics of CA 4 to 13 yrs. were rewarded (food) for imitating E on a group of 60 nonverbal tasks. Following the establishment of imitative behaviors, further socially and intellectually useful behaviors were introduced, and were shifted from imitative to stimulus control. All Ss achieved generalized nonverbal imitation and learned a number of self-help skills although there were large individual differences in acquisition time.

325. Lovaas, O. I.; Schaeffer, B.; and Simmons, J. O. Building social behavior in autistic children by use of electric shock. Journal of Experimental Research in Personality, 1:99-109, 1965.

Three therapeutic uses of pain (electric shock from grid floor) were investigated with 1 set of schizophrenic identical twins: (1) use of pain as punishment contingent on undesirable behaviors so as to suppress them; (2) use of pain to establish avoidance or escape learning; and (3) use of pain reduction as a positive reinforcer. The authors report positive results in eliminating undesirable behaviors and increasing social responses to adults.

326. Maes, J. Modifying behavior: The case of Alice. Journal of Psychiatric Nursing and Mental Health Service, 7:89-90, 1969.

After an autistic 14-yr. old girl was transferred to an adolescent ward, attendants attempted to modify her extremely antisocial behavior and improve her personal care by using praise and trips to the canteen as reinforcement. After 6 months on the ward, S's antisocial behavior decreased, personal care behaviors increased, and relations with the staff and other patients improved.

327. Marr, J. N.; Miller, E. R.; and Straub, R. R. Operant conditioning of attention with a psychotic girl. Behaviour Research and Therapy, 4:85-87, 1966.

A 12-yr. old schizophrenic girl was presented with 1 of 4 different tape recordings when she entered and remained in a "reinforcement square:" (1) disorganized speech--her voice; (2) disorganized speech--another's voice; (3) dialogue with therapist; and (4) story of her hospitalization. S's highest preference was for another's disorganized speech, while her lowest preference was for her own speech. The authors suggest that improved attention resulted from using tape recordings as reinforcers during conditioning.

328. Marshall, G. R. Toilet-training of an autistic eight-year-old through conditioning therapy: A case report. Behaviour Research and Therapy, 4:242-245, 1966.

Attempts were made to toilet-train an 8-yr. old autistic child through operant conditioning techniques. During the first week S was rewarded (candy, etc.) for an approximation of desired behavior. After 2 weeks a negative reinforcer (slapping) was added for soiling. Following the initial phase, conditioning was carried over to the home where S was reinforced on a variable ratio schedule and was reported to be completely toilet-trained.

329. Martin, G. L.; England, G.; Kaprowy, E. Kilgour, K.; and Pilek, V. Operant conditioning of kindergarten-class behavior in autistic children. Behaviour Research and Therapy, 6:281-294, 1968.

Ten autistic children of CA 8 to 13 yrs. were placed in a kindergarten setting with a S:E ratio of 1:1. Food and token reinforcers were used to condition several types of behavior. All Ss manifested increases in proper classroom behaviors, e.g. sitting quietly and responding to simple commands, while their disruptive behavior decreased. Seven of the 10 also showed significant improvement in language development.

330. Martin, G. L.; and Pear, J. J. Short-term participation by 130 undergraduates as operant conditioners in an ongoing project with autistic children. Presented at the 76th Annual Convention of the American Psychological Association, 1968.

Comparisons were made of 2 programs in which undergraduates trained autistic children (1) when only instruction on operant conditioning was given, and (2) when instruction and actual conditioning of the students themselves was carried out (they were socially reinforced for following instructions). It was found that the students performed the operant conditioning techniques better after they had experienced conditioning themselves. Both the autistic and undergraduate programs were considered to be successful.

331. Matheny, A. P., Jr. Pathological echoic responses in a child: Effect of environmental mand and tact control. Journal of Experimental Child Psychology, 6:624-631, 1968.

Language observations were made during 19 one-hour sessions with a 5-yr. old echolalic child during which E varied his "mand" and "tact" verbal responses. Results showed that when E's "mand" responses increased, S's nonechoic responses also increased; when E's "mand" responses decreased, S's nonechoic responses also decreased and echoic responses increased. The author suggests that "tacts" are more abstract and therefore less comprehensible, while "mands" and simple questions have greater potential for eliciting specific verbal and nonverbal behaviors which can be immediately reinforced.

332. McConnell, O. L. Control of eye contact in an autistic child. Journal of Child Psychology and Psychiatry, 8:249-255, 1967.

An attempt was made to overcome the visual avoidance of a Negro autistic boy, CA 5 yrs., through operant conditioning using social reinforcers during 33 sessions of 45 min. each. Following conditioning visual avoidance was decreased and eye contact increased. Generalization outside the observation room was achieved and related changes in approach, exploratory, and emotional behaviors were also observed.

333. Means, J. R.; and Merrens, M. R. Interpersonal training for an autistic child. Perceptual and Motor Skills, 28:972-974, 1969.

An attempt was made to eliminate the maladaptive disruptive behaviors and increase the social behaviors of a 3-yr. old autistic child through the use of social reinforcers (attention). S's disruptive behavior ceased within 2 sessions and approach and interaction increased during 14 sessions over a 3 month period. Training was continued in the home, and the mother reported improved behavior, including some toilet training.

334. Metz, J. R. Conditioning generalized imitation in autistic children. Journal of Experimental Child Psychology, 2:389-399, 1965.

Following the establishment of a baseline of imitative behavior for two 7-yr. old schizophrenics, food was used as reinforcement for appropriate imitative responses. Ss not only learned to imitate, but also generalized without specific training, and the new behaviors persisted without specific reinforcement.

335. Metz, J. R. Conditioning social and intellectual skills in autistic children. In: Fisher, J.; and Harris, R. E., eds., Reinforcement theory in psychological treatment: A symposium. California Mental Health Research Monograph, 8:40-49, 1966.

Behavior modification methods were used to train 3 types of response disposition in 9 autistic/schizophrenic children of CA 5 to 8 yrs.: (1) social contact, (2) generalized imitative behavior, and (3) cognitive skills.

336. Metz, J. R. Conditioning self-help and social skills of emotionally disturbed children. The Quarterly of Camarillo, 2:3-11, 1966.

Eleven emotionally disturbed children (with some autistic symptoms) of CA 4 to 9 yrs. were trained to pay for meals with tokens. Self-help and social skills were then rewarded with tokens which could be used to pay for meals or to rent toys. Since both self-help and social skills were increased, the author suggests that the possibilities of training these skills in emotionally disturbed children are unlimited if careful programs are outlined and ward personnel are trained to properly reinforce desired behavior.

337. Nelson, R. O.; and Evans, I. M. The combination of learning principles and speech therapy techniques in the treatment of noncommunicating children. Journal of Child Psychology and Psychiatry, 9:111-124, 1968.

Two autistics, 1 educationally subnormal, and 1 executive aphasic (CA 5 to 7 yrs.) were reinforced for imitation and echolalia through successive approximations. Standard speech therapy techniques were also used, as well as individualized cues employing visual and tactile stimuli. Three Ss showed measurable improvement. The successes and failures of the program suggest there should be a greater interaction between traditional speech therapy techniques and the principles of operant conditioning.

338. Nev, P. Operant conditioning of schizophrenic children. Canadian Psychiatric Association Journal, 12:9-15, 1967.

Twenty male schizophrenics were divided into 2 groups of 10 each matched for age, duration of stay, and Vineland score, and were given either interpretive play therapy (see King, 1964) or reinforcement therapy. Emotional relatedness, self-identity, and speech were conditioned with positive reinforcement (candy). Ss were tested before, during, and after fifty 45-min. sessions. The reinforcement therapy group showed more improvement in speech and on the Vineland Scale (no numerical data given). The author suggests that the relative efficacy of reinforcement therapy may be due to the ease of learning operant techniques by the staff and the children's need for predictable routines.

339. Patterson, G. R.; and Brodsky, G. A behavior modification programme for a child with multiple problem behaviours. Journal of Child Psychology and Psychiatry, 7:277-295, 1966.

Four conditioning programs were used with a 5-yr. old child with multiple behavior problems: (1) extinction of tantrums by withholding of social reinforcement; (2) extinction of separation anxiety; (3) food and social reinforcement for peer interaction; and (4) training of parents in reinforcement theory. Sessions were held daily for 1 week in the clinic, kindergarten, and home. The authors report that problem behavior was controlled within 1 week and that normal behavior was sustained over a 3-mo. period.

340. Picaizen, G.; Berger, A. A.; Baronofsky, D.; Nichols, A. C.; and Karen, R. Applications of operant techniques to speech therapy with nonverbal children. Journal of Communication Disorders 2:203-211, 1969.

Successive approximation and differential reinforcement were used to develop vocalizations and then speech in 2 nonverbal girls, CA 3 to 4 yrs. Food reinforcers were used on varying schedules. In order to bridge the gap between the Ss' utterances and the reinforcements, E used a noise-maker ("cricket") as a conditioned reinforcer. Both Ss not only developed a small vocabulary, but also began using the words in a spontaneous and appropriate manner.

341. Rabb, E. W.; and Busch, J. A. Developing speech with nonverbal autistic children through reading. Presented at the American Orthopsychiatric Association, 1968.

A 3-part reading program based on programmed instruction principles was used with 4 autistic children, CA 4 to 9 yrs. Although there were large individual differences between children, the reading program appeared to facilitate speech development.

342. Risley, T. R. The effects and side effects of punishing the autistic behaviors of a deviant child. Journal of Applied Behavior Analysis, 1:21-34, 1968.

Electric shock and other forms of punishment were used to eliminate various types of deviant behavior (rocking, climbing, self-slapping, and aggression against S's little brother) in a 6-yr. old brain-damaged autistic child. There appeared to be no suppression of other behaviors nor any increase in general aggression. A positive side effect of the program was the facilitation of acquisition of new appropriate behaviors such as eye contact and imitative behaviors.

343. Risley, T.; and Wolf, M. Experimental manipulation of autistic behaviors and generalization into the home. In: Ulrich, R.; Stachnik, T.; and Mabry, J., eds., Control of Human Behavior. Glenview, Illinois: Scott, Foresman & Co., 1966.

Ice cream was used as a reinforcer to elicit mimicking in a 6-yr. old autistic child. Following this procedure, fading techniques were used to shape mimicking responses into appropriate verbal behavior. The child's parents observed the operant sessions at home, and both E and the parents were able to teach S to make appropriate verbal responses in many different situations.

344. Risley, T.; and Wolf, M. Establishing functional speech in echolalic children. Behaviour Research and Therapy, 5:73-88, 1967.

Four echolalic, autistic (and/or brain-damaged) children, CA 7 to 12 yrs., were taught functional speech using the following procedure: (1) disruptive behavior was controlled by means of time-out from positive reinforcement (non-attending by E or isolation of S); (2) imitation was then brought under control of E by reinforcing only verbal responses with food; (3) after imitation, Ss were taught to name objects by shifting stimulus control from verbal prompts (imitation) to pictures and objects (naming); (4) vocabulary was further expanded by presentation of novel stimuli; and (5) phrases and sentences were gradually introduced. Generalization usually occurred spontaneously once other speech had developed, but it was also dependent upon the opportunity for some type of reinforcement.

345. Salzinger, K.; Feldman, R. S.; Cowan, J. E.; and Salzinger, S. Operant conditioning of verbal behavior of two young speech-deficient boys. In: Krasner, L.; and Ullmann, L. P., eds., Research in Behavior Modification. New York: Holt, Rinehart and Winston, 1965.

Operant conditioning methods were used to shape vocal and verbal behaviors in two boys, CA 3 to 4 yrs., exhibiting some autistic symptoms and little

or no speech. The authors developed a small vocabulary in one S by reinforcing successive approximations to words, but they were not able to obtain discriminative control over word emission. In the second S, social reinforcers were used to develop speech and gain discriminative control over a variety of responses.

346. Schell, R. E.; Stark, J.; and Giddan, J. G. Development of language behavior in an autistic child. Journal of Speech and Hearing Disorders, 32:51-64, 1967.

Behavior modification techniques were used to prompt, develop, and maintain verbal behavior in a 4-yr. old nonverbal autistic boy. S showed marked improvement in terms of the frequency and variety of his verbal and nonverbal behavior, the degree of appropriate stimulus control over his behavior, and the increase in the reinforcing and discriminative value of people in his environment.

347. Shaw, W. H. Treatment of a schizophrenic speech disorder by operant conditioning in play therapy. Canadian Psychiatric Association Journal, 14:631-634, 1969.

Verbal conditioning was used in the context of weekly outpatient play therapy with a schizophrenic boy of CA 8, who had normal language comprehension but unintelligible speech. The therapist's participation in bizarre games, as requested (gesture) by boy, served as a reinforcer for appropriate verbal behavior. After 6 months of therapy (2 months with therapist, and 4 months with parents trained in differential reinforcement), speech improved and was maintained for the following 3 years.

348. Simmons, J. Q., III; and Lovaas, O. I. Use of pain and punishment as treatment techniques with childhood schizophrenics. American Journal of Psychotherapy, 23:23-35, 1969.

Punishment was used to control the behavior of 9 schizophrenics with moderately severe retardation, CA 4 to 10 yrs. Pain was administered (slap or electric shock with verbal admonition) to Ss for the following behaviors: failure to attend, stereotyped behavior interfering with learning, and self-destructive behavior. Evidence showed that punishment suppressed responsiveness, but if punishment was administered contingent upon behavior, suppression was more specific. Also, when given alternative behavior (a 2-choice situation) punishment facilitated learning the correct response. Three applications to clinical situations were suggested: (1) pairing people with pain-reduction as positive reinforcers; (2) using pain to suppress self-destructive behavior; and (3) establishment of acceptable behavior through escape and avoidance.

349. Tate, B. G.; and Baroff, G. S. Aversive control of self-injurious behavior in a psychotic boy. Behaviour Research and Therapy, 4:281-287, 1966.

Two attempts were made to reduce self-injurious behavior in an 8-yr. old autistic child: (1) self-injurious behavior (SIB) was followed by withdrawal of human physical contact and (2) SIB was followed by an electric shock administered by E with a prod. Both procedures effectively reduced SIB. Withdrawal of physical contact was immediately effective, but electric shock was not only immediately effective but remained effective over a 6-month period. In addition it was found that eating behavior could be reinstated, posturing could be stopped, and saliva-saving and clinging could be terminated by firm commands followed by the sound of the shock apparatus.

350. Walder, L. O. Teaching parents to modify the behaviors of their autistic children. Presented at the American Psychological Association, 1966.

Parents of 5 autistic children were taught techniques of behavior modification to enable them to be more effective in eliciting and maintaining more mature and socially useful behaviors in their children.

351. Weiland, I. H. Summary of treatment approaches. In: Churchill, D. W.; Alpern, G. D.; and TeMyer, M. K., eds., Infantile Autism: Proceedings of the Indiana University Colloquium. Springfield: Thomas, 1970.

Behavioral and psychoanalytic approaches to treating infantile autism are analyzed and compared. The author feels that treatment efforts should not be based on theory but rather on a better diagnostic approach to more clearly discriminate the various types of autism and to deal more directly with the actual pathology of the disorder rather than the superficial symptoms.

352. Werry, J. S.; and Mollersheim, J. P. Behavior therapy with children: A broad overview. Journal of the American Academy of Child Psychiatry, 6:346-370, 1967.

The authors present a review of the literature on behavior therapy as applied to the treatment of the psychopathology of childhood. In their opinion, behavior therapy is most likely to be the treatment of choice where there are discrete, easily recognizable symptoms; where patient or parent is symptom oriented; where clinical conditions make the patient unamenable to conflict-insight-verbalization approaches; and finally where child therapists are scarce. Behavior therapy appears to offer significant relief to some disorders unreachable by traditional methods and offers promise of opening roads to research in certain areas of psychotherapy.

353. Wetzel, R. J.; Baker, J.; Roney, M.; and Martin, M. Outpatient treatment of autistic behavior. Behaviour Research and Therapy, 4:169-177, 1966.

An outpatient behavior modification program was initiated for a 6-yr. old autistic child who was seen twice weekly (45 min.) for 3 months. Attention from E served as the reinforcer, contingent upon approach and interaction behavior. Attention was withheld for tantruming and disruptive behavior. S's mother observed the operant procedures and used them at home. The parents reported decreases in tantrums and increases in social and functional behavior.

354. Wolf, M.; and Risley, T. Application of operant conditioning procedures to the behavior problems of an autistic child: A follow-up and extension. Behaviour Research and Therapy, 5:103-111, 1967.

The behavioral problems of a 5-yr. old schizophrenic boy in a school situation (e.g. toileting, pinching and hitting other children, and other unacceptable social behaviors) were handled in same manner as the child's original glasses-wearing, tantruming, and sleeping problems, i.e., by operant conditioning methods. The authors report complete success with all behavioral problems that were tackled by use of behavior modification techniques. After 3 yrs. of intensive application, the child has progressed from "hopeless" to the point where he is able to manage in the public school educational system.

355. Wolf, M.; Risley, T.; and Mees, H. Application of operant conditioning procedures to the behavior problems of an autistic child. Behaviour Research and Therapy, 1:305-312, 1964.

The behavioral problems (tantrums, sleeping problems, wearing of glasses, and appropriate verbal and social behavior) of a schizophrenic boy of CA 3, were modified by using operant conditioning techniques and employing both ward staff and parents in the conditioning process. The most effective method appeared to be the use of time-out and isolation as negative reinforcers for undesirable behaviors. The authors reported unqualified success with the child now wearing glasses, becoming increasingly verbal, and no longer having tantrums and sleeping problems.

For additional references to Behavior Therapy see: #9, Hingtgen & Bryson; #36, Yates; #170, Savage; #175, Weiss & Born; and #390, Ferster.

Educational Programs

356. Cohen, R. S. Some childhood identity disturbances: Educational implementation of a psychiatric treatment plan. Journal of American Academy of Child Psychiatry, 3:488-497, 1964.

Group psychotherapy and individual classroom techniques were employed to alleviate the dysidentity problems of 5 schizophrenic boys of CA 6 yrs. described as having ego disturbances with a need for defining exact limits between the child's ego and the external world. Some methods used were tape recordings of their own and other's voices, mirrors, snapshots, and self-drawings. S's own feelings and likes-dislikes as compared with the feelings of the group were also discussed. After the 3-yr. program was completed, treatment continued in an after-care program for 3 additional years while Ss attended other schools in the community.

357. Dubnoff, B. The habilitation and education of the autistic child in a therapeutic day school. American Journal of Orthopsychiatry, 35:385-386, 1965.

The program of a therapeutic day school is described in which educative processes are employed which lead to ego development through mastery of tasks. The child is made to verbalize his demands and only appropriate behavior is gratified. It is suggested that symbiosis with the teachers leads to trust and finally to individualization and autonomy. A brief case history of 1 child is presented.

358. Dubnoff, B.; and Chambers, I. Perceptual training as a bridge to conceptual ability: A multifaceted approach. Presented at the Council for Exceptional Children Conference, 1966.

The authors describe the curriculum developed with 80 children of CA 3 to 18 yrs. with diagnoses ranging from organic damage to psychosis. No distinction is made between brain-injured and emotionally disturbed children since both groups are considered to manifest ego dysfunction. The first step in the learning and rehabilitation program is the development of body image followed by a perceptual-motor program. To promote socialization, a relationship is first built on a one-to-one level with an adult and then the child is brought into a small group of peers. Demands and expectations are slowly placed upon the children in a structured atmosphere.

359. Elgar, S. The autistic child. (mimeographed paper)

A school program employed with 15 autistic children of CA 4 to 14 yrs. is described. The children are divided into 3 groups according to age and development, with a teacher-child ratio of about 1:2. Emphasis is on sensorial education, personal health care, and motor education, with the more advanced children receiving training in number work, reading, and social skills. Three case studies are included.

360. Elgar, S. Teaching autistic children. In: Wing, J. K., ed., Early Childhood Autism: Clinical, Educational, and Social Aspects. London: Pergamon Press, 1966.

The author considers speech and visual learning difficulties to be the most significant aspects of autism, whereas behavioral abnormalities are thought to be the result of an inability to process incoming stimuli. The teaching methods employed in her school are described and illustrated by 7 case histories.

361. Goldfarb, W. Corrective socialization: A rationale for the treatment of schizophrenic children. Canadian Psychiatric Association Journal, 10:481-494, 1965.

Childhood schizophrenia is viewed as evolving from primary deficits in adaptive behavioral functions. A method of treatment is proposed which involves educational correction of the functional deficiencies, relying heavily on the processes of human interaction and socialization. Case studies to illustrate the "corrective socialization" treatment method are included.

362. Goldfarb, W.; and Goldfarb, N. Evaluation of behavioral changes of schizophrenic children in residential treatment. American Journal of Psychotherapy, 19:185-204, 1965.

Methods for the evaluation of behavioral change in schizophrenic children are discussed and categorized. Based on diagnostic and etiological considerations the authors suggest the existence of organic and nonorganic subgroups. The use of longitudinal studies using each child as his own control is suggested, since it is not considered feasible to obtain control groups of untreated schizophrenics. A longitudinal study of gains in reading ability is presented to illustrate the methodologic approach.

363. Goldfarb, W.; and Pollack, R. C. The childhood schizophrenic's response to schooling in a residential center. In: Hoch, P. H.; and Zubin, J., eds., The Evaluation of Psychiatric Treatment. New York: Grune and Stratton, 1964.

Educational curves were derived from a longitudinal study of educational growth of 37 schizophrenic Ss (25 organic and 12 nonorganic, CA 6-11 yrs. treated psychiatrically while in residence at the Littleton Center. Metropolitan Achievement Tests were administered at 6-mo. intervals. As a group, Ss showed encouraging responses to schooling in a therapeutic atmosphere, although the majority had been considered uneducable in the community. Individual variants in learning are described in relationship to factors such as presence or absence of cerebral dysfunction, level of intellectual functioning, and sex.

364. Harper, J. Further aspects in the treatment of autistic children. Australian Occupational Therapy Journal, 14:16-30, 1967.

The author discusses etiology, psychomotor, perceptual, and conceptual disturbances, impairments of interpretation and integration of sensory stimuli, speech deficiencies, the role of the therapist, and the results of follow-up studies. It is suggested that the autistic child requires an integrated environment in which his potential for normalcy can be developed through relationships with therapists, parents, and the rest of the family unit.

365. Lotter, V. Services for a group of autistic children in Middlesex. In: Wing, J. K., ed., Early Childhood Autism: Clinical, Educational, and Social Aspects. London: Pergamon Press, 1966.

The services available for autistic children in Middlesex are discussed. The main criticisms were that: (1) there was little provision for educational assessment while the child remained at home, and (2) there were few special education facilities to provide training.

366. Nichtern, S. Education and habilitation of childhood schizophrenics within a regular school setting. Presented at the American Psychiatric Association, 1964.

A program is proposed to deal with the problems of seriously disturbed children at a cost little more than the annual per pupil cost for normal children and without resorting to residential treatment facilities. The author advocates volunteer workers (teacher-moms) to provide 1:1 relationships. Children in such programs are reported to have demonstrated emotional and social changes accompanying their educational achievements.

367. Rutter, M. Schooling and the autistic child. Special Education, 56: 19-24, 1967.

368. Schell, R. E.; and Adams, W. P. Training parents of a young child with profound behavior deficits to be teacher-therapist, Journal of Special Education, 2:439-454, 1968.

Parents were given instructions in behavior modification principles. A detailed discussion of the effectiveness of training and evidence of generalization and persistence of changes is presented.

369. Stamp, I. Teachers look at autism. Australian Pre-School Quarterly, 7:12-14, 1966.

The author lists 9 behavior characteristics usually observed in autistic children, and suggests ways in which the teacher may begin communication with the child by nonverbal means. It is suggested that an autistic child should be in a group only as long as the teacher can watch for opportunities for contact and that ignoring the child may only increase his tendency to isolation.

370. Weston, P. T. B., ed., Some Approaches to Teaching Autistic Children. London: Pergamon Press, 1965.

Information regarding the handling and education of autistics is provided. The general orientation is that autistics have a common handicap--the inability to comprehend language--and that the extent to which autistics can overcome this basic handicap is the measure of their progress towards normality. Articles include descriptions of practical teaching approaches.

371. Wilson, M. D. Problems in providing education. In: Wing, J. K., ed., Early Childhood Autism: Clinical, Educational, and Social Aspects. London: Pergamon Press, 1966.

The problems of providing education for autistic children are discussed. The author suggests that the first step should be to develop sufficient contact with the children so that they can be made aware of environmental stimuli; one should not simply leave them alone and wait for them to respond. He does not recommend the usual type of nursery school with a variety of equipment constantly available, but rather the presentation of only a few items at a time. The need to provide well structured educational opportunities is emphasized.

372. Wing, J. K.; and Wing, L. A clinical interpretation of remedial teaching. In: Wing, J. K., ed., Early Childhood Autism: Clinical, Educational, and Social Aspects. London: Pergamon Press, 1966.

The problems of providing education for autistic children are discussed. The authors state that it is not sufficient to provide the same educational experience for autistics that would be provided for normals or subnormals of the same MA, but rather, the general pattern of their abilities (higher performance and lower verbal skills) should be considered. Recommendations are that: (1) the environment should be highly structured rather than permissive; (2) an emphasis on forming relationships is not necessary for they are formed naturally in the course of effective training; and (3) problems in educating autistics should be considered in terms of learning disabilities rather than emotional illness.

373. Wing, L. Autistic Children. London: National Association of Mental Health, 1964.

Advice is given to parents of autistic children on how to deal with them on a day-to-day basis in the home.

374. Wing, L. Counselling and the principles of management. In: Wing, J. K., ed., Early Childhood Autism: Clinical, Educational, and Social Aspects. London: Pergamon Press, 1966.

The author presents a general description of raising autistic children in the home. The importance of handling behavior problems before they become too severe to allow training, the need for structured speech training at young ages, and the use of special training with visual stimuli are emphasized.

375. Wing, L.; and Wing, J. K. The prescription of services, In: Wing, J. K., ed., Early Childhood Autism: Clinical, Educational, and Social Aspects. London: Pergamon Press, 1966.

The services available or needed for autistic children are discussed. Recommendations are that: (1) there be special centers where both mother and child can be admitted for evaluation before services are prescribed; (2) parents should receive guidance on how to teach and manage their child if he remains in the home; (3) psychotherapy should be available for both family and child if necessary; and (4) small residential units with supportive environments should be established.

For additional references to Educational Programs see: #9, Hingtgen & Bryson; #22, Rutter; and Behavior Therapy section.

Evaluations of Therapy

376. Davids, A.; Ryan, P.; and Salvatore, P. D. Effectiveness of residential treatment of psychotic and other disturbed children. American Journal of Orthopsychiatry, 38:469-475, 1968.

Ten male childhood schizophrenics and 17 boys with a diagnosis of passive-aggressive personality (CA 10 to 21 yrs.) were studied. Data was derived from 3 sources: (1) list of complaints at intake; (2) information from case records; and (3) follow-up questionnaires. The 27 Ss were further divided for comparisons into: (1) those living at home and those institutionalized, and (2) those whose follow-up evaluation was described as "good" or "very good" and those evaluated as "fair" or "poor." The main factor determining the outcome of psychiatric treatment appeared to be the original symptoms and behaviors rather than the type of therapy employed.

377. Fish, B. Evaluation of psychiatric therapies in children. In: Hoch, P. H.; and Zubin, J., eds., The Evaluation of Psychiatric Treatment. New York: Grune and Stratton, 1964.

The author discusses the difficulties encountered in evaluating therapies with young children because of their rapid rate of development, vulnerability, and plasticity. She suggests that a spectrum of psychopathology be employed, ranging from major to minor disturbances of development, with severity roughly correlated to prognosis. Children with organic brain disorders would have the most severe ratings, while children with primary behavior disorders would have the least severe ratings. Clinical judgements based on a scale provided for school children would be used to evaluate changes in behavior. Factors to be considered in evaluating both short-term and long-term treatment effects are discussed.

378. Goldfarb, W.; Goldfarb, N.; and Pollack, R. C. Treatment of childhood schizophrenia. Archives of General Psychiatry, 14:119-128, 1966.

Twenty-six schizophrenics, (CA 6 to 11 yrs.), matched for age, sex, IQ, and neurological findings, were given psychiatric evaluations of ego status and functional behavior, the Metropolitan Achievement Test Series, and the WISC over a 3-yr. period. Three groups were delineated: organic, nonorganic, and unscorable (on the WISC). Half of each group received day-care treatment, and half residential. Those Ss who were unscorable showed no significant improvement in either day or residential care. The organic children showed comparable improvement in day and residential care. The nonorganic Ss in residence showed more improvement than nonorganics in day care.

379. Kempf, J. P. Psychotic children treated in a child guidance clinic. Diseases of the Nervous System, 27:317-320, 1966.

A 3-yr. follow-up was conducted on 51 psychotic children treated under 3 types of programs: (1) intensive psychotherapy (11 Ss); (2) guidance (19 Ss); and (3) prevention of hospitalization (21 Ss). Under intensive psychotherapy, 6 Ss showed major improvement and 5 Ss attained only marginal adjustment. Under guidance, 4 were institutionalized and 15 were in regular or special schools. Under prevention of hospitalization, 12 were institutionalized. The authors conclude that Ss receiving intensive therapy made the greatest gains in ego functioning.

380. Levy, E. Z. Long-term follow-up of former inpatients at the children's hospital of the Menninger Clinic. American Journal of Psychiatry, 125: 1633-1639, 1969.

A follow-up study of inpatients hospitalized between 1945-60 was conducted using data from families, patients, and professional sources. The subjects were 100 children of CA 5 to 15 yrs. with diagnoses of chronic brain syndrome, schizophrenia, personality disorder, and emotional maladjustment. Approximately 66 achieved marginal adjustment and those who improved average 300 hours of psychotherapy. The patients originally diagnosed as schizophrenic, especially those with low IQs, showed the poorest adjustment.

381. Wenar, C.; Ruttenberg, B. A.; Dratman, M. L.; and Wolf, E. G. Changing autistic behavior. Archives of General Psychiatry, 17:26-35, 1967.

Thirty-two autistics of CA 4 to 10 yrs. were rated on the Ruttenberg et al. (1966) BRIAC scale before and after 1 yr. of treatment in 3 institutions: (1) a large state hospital offering custodial care; (2) a modern state institution offering many different planned activities with a large staff; and (3) a small psychoanalytically oriented day-care unit. Each child's progress was evaluated by 2 separate raters in the areas of relationship, mastery, psychosexual development, communication, and vocalization. The third setting was most effective in bringing about improvement in the areas of relationship, mastery, and psychosexual development. None of the milieus produced changes in communication and vocalization.

For additional references to Evaluations of Therapy see: #106, Eaton & Menolascino; #110, Menolascino & Eaton; #115, Rutter, et al.; #122, Goldfarb et al.; #338, Ney; #351, Weiland; #362, Goldfarb & Goldfarb; and #363, Goldfarb & Goldfarb.

VII. THEORY

382. Bender, L. The concept of plasticity in childhood schizophrenia. In: Hoch, P. H.; and Zubin, J., eds., Psychopathology of Schizophrenia. New York: Grune & Stratton, 1966.

Childhood schizophrenia is regarded as an inherited vulnerability, characterized by embryonic plasticity in all areas of functioning, particularly those governed by the CNS. Maturational lags, uneven development, and neurological "soft signs" are cited as evidence of the pervading plasticity.

383. Bender, L. Childhood schizophrenia: A review. Journal of the Hillside Hospital, 16:10-22, 1967.

The author describes the evolution of her embryonic plasticity theory of schizophrenia in which childhood schizophrenia is conceptualized as an inherited, mainly CNS, plasticity, which results in an inability to perceive reality and experience clear-cut patterns. Behaviors characteristic of the various forms of schizophrenia are considered to be defense mechanisms employed to cope with the anxiety produced by the lack of perceptual clarity.

384. Bettelheim, B. The Empty Fortress: Infantile Autism and the Birth of the Self. New York: The Free Press, 1967.

Autistic behavior is interpreted as a defensive denial of self against the threat of total destruction in a world perceived as hostile and rejecting. The syndrome results from pathological characteristics within the parents, particularly the mother, which lead to pathogenic under- or over-stimulation and prevent the child from effectively acting on his environment. Three case histories and therapeutic considerations are discussed.

385. Bosch, G. Infantile Autism. New York: Springer-Verlag, 1970.

Autistic behavior is viewed neither as a symptom nor a syndrome, but as a unique type of disorder of interpersonal relations. Rather than characterizing the autistic child as rejecting relationships and withdrawing into himself, the author stresses that the child has a very close bond with his surroundings, which corresponds to the symbiotic mother-baby relationship. An analysis of the peculiar language of autistic children is also presented.

386. Cain, A. Special isolated abilities in severely psychotic young children. Psychiatry, 32:137-149, 1969.

Ten autistic or symbiotic children of CA 3 to 10 yrs. were studied. Three case histories are presented to illustrate the special abilities of psychotic children which are beyond their CA and general developmental levels. The author suggests that the special abilities result from a combination of: (1) unique sensory capacities; (2) precocious development in that particular sphere of activity; and (3) unusual motivation in terms of the child and parents being able to relate to each other in the special ability area but not in other areas; so that the child receives environmental reinforcement for the ability and at the same time can use the sphere of ability as a means of escape and protection from the world.

387. Chambers, C. H. Leo Kanner's concept of early infantile autism. British Journal of Medical Psychology, 42:51-54, 1969.

The author reviews and summarizes Kanner's writings on infantile autism and concludes that Kanner's present position is that autism: (1) is a distinct clinical syndrome; (2) is characterized by extreme aloneness and preoccupation with preservation of sameness and is manifest in the first 2 yrs. of life; and (3) is probably generically related to older childhood schizophrenias but is distinguished on the basis of history, early onset and clinical course.

388. DesLauriers, A. M.; and Carlson, C. F. Your Child Is Asleep: Early Infantile Autism. Homewood, Illinois: The Dorsey Press, 1969.

An imbalance between the ascending reticular activating system (Arousal I) and the limbic reward system (Arousal II) such that Arousal I dominates or inhibits Arousal II is postulated as the etiological factor in infantile autism. The result is that the child is in a chronically high state of arousal and is unable to establish associations between responses and rewards. Since little learning is able to occur, incoming stimuli are repeatedly treated as new or novel stimuli. Case histories of five autistic children and their therapy programs are described.

389. Edelson, S. R. A dynamic formulation of childhood schizophrenia. Diseases of the Nervous System, 27:610-615, 1966.

Edelson hypothesizes that childhood schizophrenia is a pathological mourning reaction produced by a sensed loss of mother love and maintained by parental pathology. Although autism and symbiosis are both considered to be caused by maternal deprivation, the author suggests that symbiotic children suffer less severe maternal deprivation than autistic children.

390. Ferster, C. B. The repertoire of the autistic child in relation to principles of reinforcement. In: Gottschalk, L.; and Auerbach, A. H., eds., Methods of Research in Psychotherapy. New York: Appleton-Century-Crofts, 1966.

A behavioral interpretation of autistic development is presented in which the author postulates that parents fail to adequately reward a wide variety of behaviors. Therefore, parental responses fail to become conditioned or generalized reinforcers and the child develops little or no social behavior. It is further suggested that atavisms, because of their aversive effects, are frequently reinforced by the parents and that repetitive, self-stimulative behaviors are maintained by continuous weak reinforcement through their immediate and direct effects on the environment and the child's own body.

391. Friedes, D.; and Pierce, P. S. On the neuropsychology of the Kanner-Rimland syndrome: Hypothesis and case report. Proceedings of the 76th Annual Convention of the American Psychological Association, 3:477-478, 1968.

The authors suggest that autism results from a chronic imbalance between specific and nonspecific arousal systems such that somaesthetic stimulation is channeled largely through the nonspecific rather than the specific route. Chronic high anxiety and aversion to body stimulation are considered to be the primary symptoms of autism with other symptoms as derivatives. The therapeutic technique proposed consists of presenting increasing amounts of body stimulation in the form of brushing and stroking in a manner which makes use of the specific pathway. Treatment procedures are illustrated by the case history of an autistic boy of CA 11 yrs.

392. Geiger-Marty, O. Beitrag zum fruhkindlichen autismus (An example of early infantile autism). Acta Paedopsychiatrica, 35:178-188, 1968.

An organic etiology for early infantile autism is proposed which involves delayed maturation of the cortico-thalamic area and results in disturbances of eye contact, perception, cognition, and emotionality. The author suggests that repeated brain examinations be performed to provide information on the maturation of different brain areas. (English summary)

393. Glavin, J. P. Rapid oxygen change as possible etiology of RLF and autism. Archives of General Psychiatry, 11:301-309, 1966.

A review of the behavioral similarities between autistic children and children with retrolental fibroplasia suggests that both may be due to rapid reduction in oxygen tension in the blood soon after birth.

394. Griffith, R. J.; and Ritvo, F. R. Echolalia: Concerning the dynamics of the syndrome. Journal of the American Academy of Child Psychiatry, 6:184-193, 1967.

Examples of echolalia from a psychotic child are presented to demonstrate the theory that echolalia is the result of disturbed early object relationships, and that different types of echolalia relate to various aspects of the relationship disturbance. A prolonged period of echolalia is considered indicative of prolonged fixation at the stage of ego development when there are no clear boundaries between self and nonself; negative echolalia is considered indicative of a child's perception of the world as hostile; and delayed echolalia is considered to represent autoerotic and autoaggressive motoric discharge of basic drives.

395. Haworth, M. R.; and Menolascino, F. J. Some aspects of psychotic behavior in young children. Archives of General Psychiatry, 18:355-359, 1968.

The stereotyped repetitive behaviors characteristic of young psychotic children are described and interpreted as representing deviant development (rather than fixation or regression) and as reflecting avoidance and withdrawal in the use of mouth, hands, and eyes.

396. Hutt, C.; and Hutt, S. J. Infantile autism: A biological approach. Journal of British Medical Women's Federation, 163, 1966.

397. Kahn, R. M.; and Arbib, M. A. A cybernetic approach to mental development, with some comments on infantile autism and the childhood schizophrenias. Presented at the American Orthopsychiatric Association, 1968.

The authors distinguish between autism and childhood schizophrenia, suggesting that autism is due to a "hardware" or internal defect while childhood schizophrenia is due to a "software" or environmental defect. Based on analogies with computer operations, they speculate that in autism there is a chronic malfunction within the brain system which blocks the interaction and feedback between digital information (logical) and analogic information (emotional) systems. Homeostatic mechanisms dealing with input then become highly restrictive because of the lack of a systematic relationship between the digital and analogic systems. They further suggest that in childhood schizophrenia there is inadequate or inconsistent input from the environment rather than an internal malfunction within the system.

398. Kamp, L. N. J. Autistic syndrome in one of a pair of monozygotic twins. Psychiatria, Neurologia, Neurochirurgia, 67:143-147, 1964.

Symptoms and etiologic considerations are discussed for one 3-yr. old autistic child. S's EEG and other neurological data were normal, suggesting no organic pathology. The author feels that the autistic syndrome developed as a result of emotional deprivation and S's interaction with his aggressive monozygotic twin.

399. Kanner, L. Infantile autism and the schizophrenias. Behavioral Science, 10:412-420, 1965.

A summary of 4 approaches to the etiology of autism is presented: (1) there are innate deficits within the child, and the parents' behaviors represent a reaction rather than a cause; (2) the parents', particularly the mothers', emotional problems are the main determinants; (3) there is a reciprocal relationship between innate disability and environmental reaction; and (4) the child's and parent's aloofness stem from the same genetic source. The author suggests that the first step in resolving the contradictions between theories of etiology is to more clearly differentiate between the psychoses of childhood and discontinue the search for a common cause for all childhood psychoses.

400. Kirk, R. V. Perceptual defect and role handicap: Missing links in explaining aetiology of schizophrenia. British Journal of Psychiatry, 114: 1509-1521, 1968.

Following an assessment of the main types of investigation concerning schizop. ., the author cites evidence in support of defective perception as the central factor. He then presents his own theory of etiology which postulates that a child's unrecognized perceptual defect leads to a learning handicap for the child and to a role handicap for the parents. A complex interaction between the two handicaps creates a vicious circle which leads to the development of schizophrenic symptoms in the child and to alienation in the parents. The ways in which this process develops the specific symptoms and characteristics of the disease are outlined and described.

401. Leonberg, S. C., Jr.; and Bok, J. B. Childhood schizophrenia: Organic or psychogenic? Journal of Diseases of the Nervous System, 28:686-687, 1967.

A case history of a childhood schizophrenic, CA 20 yrs., is presented which demonstrates the interaction of organic and psychogenic factors and lends support to theories of organic etiology.

402. Mahler, M. S. On early infantile psychosis: The symbiotic and autistic syndromes. Journal of the American Academy of Child Psychiatry, 4:554-569, 1965.

The essential differences between child and adult schizophrenia are considered to be due to differences in the degree of structured differentiation between the ego, superego, and id. The author suggests that in infantile psychosis a constitutional vulnerability prevents the child from utilizing the external maternal ego for the structuralization of his own ego. Two case histories are presented to illustrate the position that autism is secondary to symbiosis and that both result from disturbances in the symbiotic relationship.

403. Mednick, S. A. Breakdown in individuals at high risk for schizophrenia: Possible predispositional perinatal factors. Mental Hygiene, 54:50-63, 1970.

A distinctive premorbid pattern of behavior was observed in a group of adolescents who suffered psychotic breakdowns. This pattern was closely associated with pregnancy and birth complications which could have produced anoxic states likely to damage certain areas of the brain such as the hippocampus. The adolescents exhibited a pattern of behavior analogous to the behavior of rats with surgically-inflicted hippocampal lesions. Neurophysiological and biochemical mechanisms are described which could mediate the hypothesized relationship between hippocampal damage and behavior patterns.

404. O'Gorman, C. The Nature of Childhood Autism. London: Butterworths, 1967.

Childhood autism is presented as a form of psychosomatic illness with emotional and somatic reactions affecting one another reciprocally, so that circular mechanisms are established. The symptoms of autism are interpreted as reflecting the primary mechanism of dissociation and to be analogous to symptoms found in both child and adult schizophrenia. Brief case histories are presented throughout to illustrate points made in the discussion.

405. Ornitz, E. M. Disorders of perception common to early infantile autism and schizophrenia. Comprehensive Psychiatry, 10:259-274, 1969.

Autism, childhood schizophrenia, and adult schizophrenia are hypothesized to be variants of the same underlying disease process: CNS dysfunction producing faulty modulation or inadequate homeostatic regulation of sensory input. Differences in symptomatology reflect differences in developmental and maturational levels at the time of disease onset. Supporting evidence drawn from clinical, psychological, psychophysiological, and neurophysiological material is presented.

406. Ornitz, E. M. Vestibular dysfunction in schizophrenia and childhood autism. Comprehensive Psychiatry, 11:159-173, 1970.

After reviewing clinical experimental studies of responses to vestibular stimulation in schizophrenia and childhood autism, the author suggests that central vestibular mechanisms play a fundamental role in the pathogenesis of these conditions. The vestibular system is viewed as normally regulating the mutual interaction of sensory input and motor output during both REM sleep and waking. The perceptual and motility disturbances which occur in schizophrenic adults and autistic children are attributed to vestibular dysfunction during these states of consciousness. The symptoms resulting from the inadequate vestibular modulation of perception and motility appear to be maturationally determined.

407. Ornitz, E. M.; and Ritvo, E. R. Neurophysiologic mechanisms underlying perceptual inconstancy in autistic and schizophrenic children. Archives of General Psychiatry, 19:22-27, 1968.

The process underlying early infantile autism, atypical development, symbiotic psychosis, and childhood schizophrenia is presented as a condition of perceptual inconstancy caused by dissociated states of excitation and inhibition. In comparing the components of REM sleep, the authors postulate that the equilibrium between tonic inhibition, phasic excitation, and phasic inhibition is disrupted by a pathophysiologic factor, possibly a defect in the vestibular system, which may also operate during the waking state.

408. Ornitz, E. M.; and Ritvo, E. R. Perceptual inconstancy in early infantile autism. Archives of General Psychiatry, 18:76-98, 1968.

The authors suggest that a breakdown in the homeostatic regulation of sensory input underlies infantile autism, atypical development, symbiotic psychosis, and childhood schizophrenia. Disturbances of perception, motility, relatedness, language, and developmental rate characteristic of these diagnostic categories are considered to be reflections of the underlying perceptual inconstancy produced by dissociated, uncoupled, and alternating states of excitation and inhibition.

409. Pells, B. W. The ego and the self in childhood schizophrenia: A selective attention hypothesis. Harvard University. Dissertation Abstracts, 1967.

410. Rimland, B. Infantile Autism. The Syndrome and Its Implications for a Neural Theory of Behavior. New York: Appleton-Century-Crofts, 1964.

Literature related to autism is reviewed and a Diagnostic Check List (Form 1) is proposed for the differentiation of infantile autism from childhood schizophrenia. The author postulates that in genetically vulnerable children a malfunction of the reticular formation results in a lack of integration of incoming stimuli and an inability to relate new stimuli to previous experience. Implications of the theory with respect to autism and other cognitive defects are discussed.

411. Rutter, B. A. A psychoanalytic understanding of infantile autism and its treatment. In: Churchill, D. W.; Alpern, G. D.; and DeMyer, M., eds., Infantile Autism: Proceedings of the Indiana University Colloquium. Springfield: Thomas, 1970.

Autism is considered to represent fixation at, or regression to the pre-oral level of psychosexual development with a failure to develop drive modulation and object relationships. A discussion of the normal development of object relationships is presented and contrasted to the development of autistic children. Psychogenic and organic theories of etiology are briefly reviewed, and it is concluded that organic and environmental factors form a continuum of causation, with primary autism attributed to innate constitutional defects and secondary autism attributed to environmental impact. Treatment methods and reactions to treatment are discussed.

412. Rutter, M. Concepts of autism: A review of research. Journal of Child Psychology and Psychiatry, 9:1-25, 1968.

The differential diagnosis of infantile autism is discussed and genetic, psychogenic, behavioral, and organic theories of etiology are evaluated. The author suggests that autistic behaviors are responses to language and perceptual disturbances and presents evidence supporting his hypothesis.

413. Salk, L. On the prevention of schizophrenia. Diseases of the Nervous System, 29:11-15, 1968.

Salk postulates that autism results from a constitutional predisposition paired with a lack of sensory stimulation during the first few days of life. These factors lead to irreversible structural damage in the endocrine and neural systems underlying the sensory and response apparatus.

414. Schopler, E. Early infantile autism and receptor processes. Archives of General Psychiatry, 13:327-335, 1965.

A brief description of the role of sensory stimulation in normal infant development is presented. The author suggests that infantile autism involves early sensory deprivation which results from the interaction between a constitutional dysfunction in the reticular arousal system and mothering which does not compensate for the deficiency with adequate near receptor stimulation during the first year of life.

415. Schopler, E. Psychobiological referents for the treatment of autism. In: Chruchill, D. W.; Alpern, G. D.; and DeMyer, M., eds., Infantile Autism: Proceedings of the Indiana University Colloquium. Springfield: Thomas, 1970.

Four related subclusters of symptoms are described as characteristic of preschool autistic children: (1) failure to establish social attachments; (2) impaired competence motivation; (3) disturbances of perceptual integration; and (4) impaired cognitive functions. The central impairment underlying the disorder is considered to be the lack of cortical control and integration of perceptual information, with relatively less distortion of near rather than distance receptor systems. The out-patient treatment program involves teaching the parents to help their child establish perceptual organization and cortical control over his sensory experience.

416. Schumann, W. Zur problematik des kindlichen autismus und der psychologischen nosologie (On the problems of children's autism and psychological nosology). Praxis der Kinderpsychologie und Kinderpsychiatrie. 15: 168-175, 1966.

Etiological hypotheses are proposed which differentiate between autism, neurosis, and schizophrenia. Autism is presented as resulting from a combination of innate "plasticity," early obstacles in an intensely caring environment, and more opportunities for identification with things than with persons. (English summary)

417. Smolen, E. M. Some thoughts on schizophrenia in childhood. Journal of the American Academy of Child Psychiatry, 4:443-472, 1965.

Childhood schizophrenia is described as encompassing a variety of conditions which are characterized by multiple defects in ego development. Diffuse organic damage and an inadequate mother-child interaction beginning at conception combine to prevent the establishment of real object relationships during the 6-9 month period. The 3-6 month period is considered important in that the patterns of mother-child responses are established which determine how the problems of forming real object relationships are resolved.

418. Soddy, K. The autistic child. The Practitioner, 192:525-533, 1964.

The primary factor in autism is considered to be a disruption of relationship formation resulting from a combination of constitutional predisposition and environmental inadequacy. The hypothesis offered is that if the child does not obtain adequate satisfaction from the feeding situation during the first 6 mos. of life, he has little or no motivation for responding to environmental stimuli.

419. Speers, R. W.; and Lansing, C. Some genetic-dynamic considerations in childhood symbiotic psychosis. Journal of the American Academy of Child Psychiatry, 7:328-349, 1968.

After 6 yrs. of clinical work with 15 young psychotic children and their parents, the authors propose a theory of childhood psychoses based on multiple causality. They accept as causal agents the factors of ego and neurological Anlagen, the psychobiological functioning of the mother during gestation, and postnatal environmental influences.

420. Stroh, G.; and Buick, D. Perceptual development and childhood psychosis. British Journal of Medical Psychology, 37:291-299, 1964.

Pathologic behaviors of psychotic children are described and considered to reflect an underlying perceptual disturbance resulting from failure to follow the normal sequence of perceptual development.

421. Ward, A. J. Early infantile autism: An etiological hypothesis. Presented at the American Association of Psychiatric Clinics for Children, 1969.

Infantile autism is viewed as a total psychobiological, developmental disorder rather than a type of childhood psychosis. Ward hypothesizes that a crippling anxiety in the mother during pregnancy produces a child slowed in the development of his awareness and understanding of the outer world. When born into an unstimulating and non-nutrient environment, this child undergoes massive sensory deprivation or restriction which further slows down his development and leads to the preponderance of object-related and stereotyped behaviors.

422. Weiland, I. H. Development of object relationships and childhood psychosis. Journal of the American Academy of Child Psychiatry, 3:317-329, 1964.

The basis of autism is presented as the failure to develop an object relationship with the mother which may result from an inability to discriminate, or failures in interaction with, the mother during critical periods in infancy. It is further postulated that a failure to imprint the maternal heartbeat in utero may underlie the later failure to discriminate the mother as a source of anxiety relief.

423. Weiland, I. H. Considerations on the development of symbiosis, symbiotic psychosis, and the nature of separation anxiety. International Journal of Psychoanalysis, 47:1-5, 1966.

Traditional psychoanalytic concepts of symbiotic behavior and separation anxiety are discussed. In psychotic children symbiotic behavior is produced by anxiety which results from an inability to generalize and thus develop an adequate repertoire of anxiety relief situations. A circular relationship develops between excessive infantile anxiety, symbiotic behaviors, and failure to develop normal object relationships. The author suggests that although reduction of anxiety would lessen the symbiotic clinging, it would not affect the child's general ability to recognize the social utility of humans and form adequate interpersonal relationships.

424. Zaslow, R. W. A psychogenic theory of the etiology of infantile autism and implications for treatment. Paper presented to the California Psychological Association, 1967.

A psychogenic theory of autism is proposed which attempts to integrate conditioning theory (motoric and sensory modality conditioning) and psychodynamic influences attributable to parental characteristics. It is suggested that autism results from the combined effects of: (1) a conditioned avoidance response to human contact in the earliest stages of infancy by means of the Moro and dorsal reflex responses and (2) inadequate tactile-kinesthetic handling of the child in the initial stages, followed by maternal inability to tolerate emotional stress reactions and a failure to reduce these reactions in later childhood development. A variety of symptoms characteristic of autism are discussed and explained by reference to the theory. A rage-reduction technique is proposed as a treatment method.

For additional references to Theory sec. #3, Despert; #9, Hingtgen & Bryson; #22, Rutter; #29, Ward; #36, Yates; #37, Alderton; #46, Kanner; #56, Rutter; #62, Wing; #92, Hutt & Hutt; #104, Alanen, et al.; #240, Ekstein; #247, Garcia & Sarvis; #269, Schopler; #270, Schopler & Reichler; #273, Speers & Lansing; #291, Ferster; #361, Goldfarb; and #364, Harper.

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Bricker, D. E. 297
 Brodsky, G. 339
 Brody, V. A. 230
 Brooke, E. 59
 Brooks, B. D. 282
 Brown, J. L. 113
 Brown, M. 222
 Brown, M. B. 98, 201
 Brown, R. A. 313
 Bryson, C. O. 9, 130, 131
 Buick, D. 420
 Busch, J. A. 341
 Cain, A. 386
 Campbell, M. 162, 192
 Carlin, A. S. 283
 Carlson, C. F. 231, 388
 Carr, E. M. 202
 Caruth, E. 241, 242
 Chambers, C. H. 387
 Chambers, I. 358
 Chess, S. 35, 176
 Chimenz, B. 111
 Christ, A. E. 232
 Churchill, D. W. 2, 284, 306,
 307, 308
 Clancey, H. G. 53
 Cleeman, J. 214
 Cobrinik, L. 187
 Coffey, H. S. 233
 Cohen, D. 183
 Cohen, R. S. 356
 Colligan, R. C. 285
 Connell, P. H. 234
 Conners, K. 243
 Cook, C. 286
 Cooper, B. 66
 Cooper, T. 207
 Coulter, S. K. 144, 308
 Cowan, J. E. 345
 Cowan, P. A. 132
 Creak, M. 39
 Cunningham, M. A. 157, 158
 Davids, A. 376
 Davis, B. J. 159
 Davison, G. C. 287, 288, 289
 deHirsch, K. 160
 DesLauriers, A. M. 235, 388
 DeMyer, M. K. 2, 26, 86, 120,
 200, 208, 211, 309, 311
 DeMyer, W. 208
 Despert, J. L. 3
 Douglas, V. I. 40

| | | | |
|---------------------|---------------------------------|------------------|-----------------------------------------------|
| Dratman, M. L. | 125, 236, 266, 381 | Fish, R. | 44, 107, 108, 162, 171, 190, 191, 192, 377 |
| Drehmel, V. W. | 229 | Fleming, R. S. | 280 |
| Dubnoff, B. | 357, 358 | Foster, H. H. | 67 |
| Duffy, J. H. | 4 | Fowle, A. M. | 213 |
| Dundas, M. H. | 237, 238 | Fraknoi, J. | 125, 244, 245 |
| Dutton, G. | 212 | Freitag, G. | 321, 322, 323 |
| Dwyer, J. H. | 265 | Freitas, L. | 324 |
| Eaton, L. | 41, 106, 110 | Friedes, D. | 391 |
| Eberhardy, F. | 5 | Frith, U. | 134 |
| Edelson, S. R. | 389 | Fujimoto, B. | 47 |
| Eisenberg, L. | 42, 43, 59, 243 | Fukuoka, O. | 47 |
| Ekstein, R. | 239, 240, 241, 242, 253 | Fuller, G. B. | 135 |
| Elgar, S. | 359, 360 | Furer, M. | 246 |
| England, G. | 329 | Furieux, B. | 6 |
| Evans, I. M. | 337 | Fygetakis, L. | 300 |
| Eviatar, A. | 222 | Gabriel, H. P. | 225 |
| Faretra, G. | 187, 189 | Garcia, B. | 247 |
| Farnham-Diggory, S. | 133 | Gardner, J. E. | 297 |
| Fay, W. H. | 161 | Garrett, M. W. | 274 |
| Feldman, R. S. | 345 | Geiger-Marty, O. | 392 |
| Ferber, P. | 183 | Gelfand, D. M. | 298 |
| Ferster, C. B. | 290, 291, 292, 293, 294, 390 | Gibson, D. | 7 |
| Finch, S. M. | 251 | Giddan, J. G. | 346 |
| Fineman, K. R. | 295, 296 | Gillies, S. M. | 112, 121, 226 |
| | | Gittelman, M. | 177, 178, 214 |

- Gittelman, R. F. 221
- Glavin, J. P. 393
- Gold, S. 45, 215, 216, 220
- Gold, V. J. 321, 322
- Goldfarb, L. 194
- Goldfarb, M. 122, 163, 362, 378
- Goldfarb, W. 8, 122, 163, 180, 361, 362, 363, 378
- Goodwin, M. S. 299
- Goodwin, T. C. 299
- Gorden, K. 164
- Gray, B. B. 300
- Grav, W. F. 282
- Graziano, A. M. 301
- Green, A. P. 87, 88
- Greenfeld, D. 115
- Griffith, P. J. 394
- Hackett, J. D. 155
- Hagen, J. W. 136
- Halpern, F. 107, 108
- Harner, J. 364
- Harris, F. R. 280
- Harrison, S. I. 74, 251
- Hartman, D. P. 298
- Havelkova, M. 68
- Haworth, M. R. 89, 395
- Heeley, A. F. 217
- Hermelin, B. 134, 137, 138, 139, 140, 141, 142, 143, 147, 148, 149, 150, 196
- Hewett, F. M. 302, 303, 304, 305
- Hingtgen, J. N. 9, 144, 306, 307, 308, 309, 310
- Hoddinott, B. A. 30, 31, 132, 172
- Hudson, F. 311
- Huesca, F. P. 10
- Hutt, C. 90, 91, 92, 93, 197, 198, 396
- Hutt, S. J. 90, 92, 93, 197, 198, 396
- Idei, V. 47
- Ingraham, B. 76
- Isaeu, D. 19
- Ishida, T. 47
- Ishii, T. 11, 12
- Ishizima, T. 94
- Itil, T. M. 199
- Jensen, G. D. 312
- Johnson, S. M. 313
- Judd, L. L. 218
- Jukes, F. 112
- Kahn, R. M. 397

| | | | |
|------------------|--------------------|----------------------|---------------|
| Kalish, B. | 236 | Krinsky, L. W. | 194 |
| Kamp, L. N. J. | 398 | Kuromaru, S. | 28 |
| Kanner, I. | 46, 399 | Kysar, J. E. | 13 |
| Kaprowy, F. | 329 | LaFranchi, S. | 96, 201 |
| Karen, R. | 340 | Langdell, J. I. | 254 |
| Kassorla, I. C. | 321, 322 | Lansing, C. | 272, 273, 419 |
| Kaufman, I. | 275 | Lapouse, R. | 181 |
| Kawabata, T. | 47, 248 | Lauder, M. | 14 |
| Kean, J. E. | 301 | Lehovici, S. | 28, 59 |
| Kemph, J. P. | 249, 250, 251, 379 | Lee, D. | 197, 198 |
| Kepecs, J. G. | 77 | Lee, J. C. M. | 205 |
| Kerr, N. | 314 | Lee, V. H. | 202 |
| Kilgour, K. | 329 | Leff, R. | 315 |
| Killins, E. | 74 | Legg, D. R. | 174 |
| Kimberlin, C. C. | 119 | Leiken, S. J. | 195 |
| Kinder, M. I. | 323 | Lempp, R. | 109 |
| King, P. D. | 252, 253 | Leonberg, S. C., Jr. | 401 |
| Kirk, R. V. | 400 | Levine, M. | 25, 70 |
| Kirk, W. E. | 83 | Levy, E. Z. | 380 |
| Klein, A. | 260 | Lifton, N. | 255, 271 |
| Klein, D. L. | 166 | Lin, T. Y. | 59 |
| Klein, H. R. | 105 | Lindy, J. | 74 |
| Korn, S. | 69 | Lintzenich, J. | 211 |
| Koyabu, S. | 47 | Lockyer, L. | 115, 116 |
| Krall, V. | 123 | Loftin, J. | 78, 79 |

Lordi, W. M. 71
 Lorente, S. A. 28
 Lotter, V. 15, 34, 72, 365
 Lovaas, O. I. 195, 316, 317,
 318, 319, 320, 321, 322, 323,
 324, 325, 348
 Lowe, L. H. 26, 73, 86, 152
 Lush, D. 256
 Lutz, J. 16
 Maes, J. 326
 Makita, H. 47
 Mahler, M. S. 402
 Maier, W. J. 268
 Mandell, A. J. 218
 Mann, N. A. 86
 Marco, F. 17
 Markham, C. 222
 Marr, J. N. 327
 Marshall, G. R. 328
 Martin, G. L. 329, 330
 Martin, M. 353
 Maslow, A. R. 257
 Mason, A. 222
 Matheny, A. P., Jr. 331
 Mayhew, D. 305
 McCallum, C. 207
 McClure, S. 76
 McConnell, O. L. 332
 McDermott, J. F., Jr. 74
 Means, J. R. 333
 Mednick, S. A. 403
 Mees, H. 355
 Mejia, B. 146
 Menolascino, F. J. 18, 41, 48,
 49, 50, 89, 106, 110, 395
 Merrens, M. R. 333
 Metz, J. R. 145, 334, 335,
 336
 Meyerson, L. 314
 Micalizzi, F. 111
 Michael, J. 314
 Miller, B. M. 258
 Miller, D. 146
 Miller, E. R. 327
 Miller, R. 178
 Miller, W. H. 209
 Mittler, P. J. 112, 124, 182
 Mnukhim, S. 19
 Mogar, R. E. 193
 Monk, M. A. 181
 Morrison, D. 146
 Morrow, J. E. 282

Moss, T. 279
 Mukohata, T. 47
 Nelson, K. 324
 Nelson, R. O. 337
 Ney, P. 338
 Nichols, A. C. 340
 Nichtern, S. 366
 Norton, J. A. 120
 O'Connor, N. 34, 95, 139, 140,
 141, 142, 143, 147, 148, 149,
 150, 196
 O'Gorman, G. 51, 207, 219, 404
 Oliver, B. E. 219
 Olson, R. P. 70
 Onheiber, P. 151, 200
 Oppenheim, A. N. 75
 Oppliger, S. 274
 Ornitz, E. M. 96, 98, 201, 202,
 203, 204, 205, 222, 405, 406,
 407, 408
 Ottinger, D. R. 101, 102, 152,
 200
 Ounsted, C. 91, 197, 198
 Owen, D. R. 61
 Panman, L. M. 202
 Park, C. C. 20
 Parmelee, T. 201
 Patterson, G. R. 339
 Pear, J. J. 330
 Pearson, D. T. 297
 Pells, B. W. 409
 Pergament, E. 220
 Perloff, B. F. 195, 320
 Perron, L. 52
 Pertejo, J. 17
 Peterson, R. F. 280
 Pfeiffer, E. 228
 Picaizen, G. 340
 Pieper, W. J. 220
 Pierce, P. S. 391
 Pilek, V. 329
 Pitfield, M. 75
 Pollack, M. 166, 178, 179, 221
 Pollack, R. C. 122, 363, 378
 Pronovost, W. 167
 Rabb, E. 305, 341
 Rafferty, F. T. 76
 Reichler, R. J. 270
 Reiser, D. E. 113
 Reiser, M. 259
 Reiter, H. H. 97
 Rendle-Short, J. 53
 Rice, G. 77, 260

Rieger, N. I. 21
 Rimland, B. 54, 410
 Risley, T. R. 342, 343, 344,
 354, 355
 Ritvo, E. R. 96, 98, 201, 202,
 203, 204, 205, 222, 394, 407,
 408
 Rizzo, A. E. 199
 Roberts, G. E. 217
 Robertson, M. F. 261, 262, 263
 Rolo, A. 194
 Roney, M. 353
 Rosenberger, L. 264
 Rossotti, V. 210
 Rubenstein, B. D. 323
 Rubin, H. 265
 Rутtenberg, B. A. 55, 125, 156,
 168, 245, 266, 277, 381, 411
 Rutter, M. 22, 56, 57, 58, 59,
 114, 115, 116, 126, 169, 367,
 412
 Ryan, R. 376
 Sadoun, R. 59
 Safrin, R. K. 153
 Sagarra, J. S. 23
 Salk, L. 413
 Salvatore, P. D. 376
 Salzinger, K. 345
 Salzinger, S. 345
 Sanders, B. J. 309
 Sanders, F. A. 40
 Sankar, D. V. 187
 Sarvis, M. A. 247
 Savage, V. S. 170
 Scarcella, M. 111
 Schachter, M. 24
 Schaeffer, B. 195, 320, 323,
 325
 Schechter, M. D. 267, 268
 Schechtman, A. 60
 Schell, R. D. 368
 Scheil, R. E. 346
 Scholl, H. H. 163
 Schopler, E. 78, 79, 154, 269,
 270, 414, 415
 Schragger, J. 74
 Schumann, W. 416
 Seller, M. J. 216, 223
 Sexauer, J. D. 267
 Shapiro, D. M. 199
 Shapiro, T. 44, 107, 108, 162,
 171, 191, 192, 224
 Sharpe, L. 243
 Shaw, W. H. 347
 Shodell, M. J. 97

Shurley, J. T. 267, 268
 Silver, A. 225
 Silverberg, J. 71
 Silvertsen, A. D. 229
 Simmons, J. O., III 195, 209,
 323, 325, 348
 Simon, G. B. 182, 226
 Simons, J. 294
 Sines, L. K. 61
 Sklar, J. L. 100
 Sloat, S. C. 80
 Small, J. G. 206
 Smolen, E. 255, 271, 417
 Snezevskij, A. V. 59
 Soddy, K. 418
 Sorosky, A. D. 98
 Speers, R. W. 272, 273, 419
 Sperber, Z. 259
 Spiel, W. 28
 Spivack, G. 25
 Spurgeon, R. K. 99
 Stadeli, H. 81
 Stamp, I. 369
 Stark, J. 346
 Straub, R. R. 327
 Stretch, J. J. 274
 Stroh, G. 420
 Stuckey, B. J. 274
 Sugar, M. 274
 Sumikawa, S. 47
 Sussman, S. 100
 Sweeney, N. 152
 Taft, L. T. 180
 Takahashi, N. 47
 Tanguay, P. 205
 Tate, B. G. 278, 349
 Taylor, I. G. 164
 Terris, M. 181
 Tessman, L. H. 275
 Thomas, R. 276
 Thorne-Thomsen, B. 274
 Tilton, J. R. 26, 86, 101, 102
 Toomey, L. C. 117
 Toussieng, P. W. 267, 268
 Treffert, D. A. 27
 Trost, F. C., Jr. 310
 Trotta, F. 82
 Tubbs, V. K. 155
 van Krevelen, D. A. 28, 128
 Vaughn, G. F. 45
 Viani, F. 210

Viitamaki, P. O. 104
 Vogel, B. 109
 von Brauchitsch, H. K. 83
 von Stockert, F. G. 28
 Wakabayashii, S. 12
 Wakstein, D. J. 167
 Wakstein, M. P. 167
 Walder, L. O. 350
 Walker, H. A. 129
 Walter, R. D. 201, 202, 203,
 204
 Walter, W. G. 207
 Ward, A. J. 29, 421
 Ward, S. D. 211
 Ward, T. F. 30, 31, 172
 Wassing, H. E. 127, 128
 Weber, D. 227
 Weber, J. L. 173
 Weiland, I. H. 174, 351, 422,
 423
 Weiner, B. J. 102
 Weiss, H. H. 175
 Wenar, C. 125, 381
 Werry, J. S. 352
 Weston, P. T. B. 370
 Wetzell, R. J. 353
 Whalen, C. 324
 White, P. T. 200, 208
 Whittam, H. 182
 Wiener, L. L. 233
 Wile, R. 107, 108, 162
 Williams, C. E. 84
 Wilson, L. 32
 Wilson, M. D. 371
 Wing, J. K. 33, 34, 62, 372,
 375
 Wing, J. 103, 372, 373, 374,
 375
 Winsberg, B. G. 136
 Winter, A. L. 207
 Woerner, M. G. 179
 Wolf, E. G. 156, 168, 277, 381
 Wolf, M. 343, 344, 354, 355
 Wolff, P. 136
 Wolff, S. 35, 176
 Wollersheim, J. P. 352
 Womack, M. 312
 Woolf, M. 264
 Wright, B. A. 132
 Wysocki, A. C. 63
 Wysocki, B. A. 63
 Yamaguichi, H. 47

Yahalom, I. 77

Yates, J. A. 36

Zaslow, R. W. 424

Zelenetskaya, A. 19

Zitrin, A. 183

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A review of the 1964-1969 literature on early childhood psychosis appears in the Spring 1972 issue of the Schizophrenia Bulletin. Joseph N. Hingtgen and Carolyn Q. Bryson, who prepared this bibliography, are authors of the evaluative review. In the same issue, alternative interpretations of the literature are offered in a critique by Donald S. Gair, coauthor of a previous review of early childhood psychiatric disorders for the Joint Commission on the Mental Health of Children.

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