

Andrews University

Digital Commons @ Andrews University

Master's Theses

Graduate Research

1965

The Relative Efficacy of Selected Drugs Upon the Physical Activities and the Attention Span of a Ten Year Old Brain-Damaged Child

Ruth Elaine Atkinson
Andrews University

Follow this and additional works at: <https://digitalcommons.andrews.edu/theses>



Part of the [Chemicals and Drugs Commons](#), and the [Psychiatry and Psychology Commons](#)

Recommended Citation

Atkinson, Ruth Elaine, "The Relative Efficacy of Selected Drugs Upon the Physical Activities and the Attention Span of a Ten Year Old Brain-Damaged Child" (1965). *Master's Theses*. 154.
<https://digitalcommons.andrews.edu/theses/154>

This Thesis is brought to you for free and open access by the Graduate Research at Digital Commons @ Andrews University. It has been accepted for inclusion in Master's Theses by an authorized administrator of Digital Commons @ Andrews University. For more information, please contact repository@andrews.edu.

Andrews University
School of Graduate Studies

THE RELATIVE EFFICACY OF SELECTED DRUGS UPON THE
PHYSICAL ACTIVITIES AND THE ATTENTION SPAN OF
A TEN-YEAR OLD BRAIN-DAMAGED CHILD

A Thesis

Presented in Partial Fulfillment
of the Requirements for the Degree
Master of Arts

by

Ruth Elaine Atkinson

May 1965

This thesis, written under the direction of the Chairman of the candidate's Guidance Committee and approved by all members of the Committee, has been presented to and accepted by the faculty of the School of Graduate Studies in partial fulfillment of the requirements for the Master of Arts degree.

Date May 1965

E. J. Lohler

Dean

Guidance Committee

Ruth Murdoch

Chairman

E. Stanley Chen

J. P. Harder

PREFACE

Miss Atkinson, working under the skilled direction of Dr. Murdoch, has furnished us with a series of extremely revealing word-photographs.

These are the several-hours-long, moment-by-moment accounts of a congenitally brain-injured child under the influence of one experimental medication after another (at intervals of some weeks). The conditions have been maintained as nearly constant as is practical in experiments involving human beings.

The result is a valuable contribution, not only toward the evaluation of the specific medication under investigation, but also as clinical descriptions. As such, they greatly enhance our appreciation of the turmoil in which the child is living, and which she engenders in all those who live in contact with her, not only in her home but also in the school and in the community.

May 17, 1965

Katherine K. Rice, Psychiatrist

Note: The subject of this study was a patient under the care of Dr. Katherine K. Rice at the time the study was made.

TABLE OF CONTENTS

	Page
Preface	1
List of Figures	iii
Chapter	
I. INTRODUCTION	1
The purpose of the study	1
The importance of the study	1
Definitions of terms used	2
Related studies	3
Hypothesis	6
Procedures	7
Limitations	8
Organization of the study	9
II. RELATED LITERATURE	10
Characteristics	10
Diagnosis	11
Educational techniques	11
III. PROCEDURES FOLLOWED	14
IV. SOURCES, TABULATION, AND INTERPRETATION OF DATA	17
V. CONCLUSIONS	38
APPENDIXES	40
BIBLIOGRAPHY	57

LIST OF FIGURES

Figure	Page
1. The total number of distractions recorded during five observations of a ten-year old brain-damaged child	32
2. The total number of contacts with people recorded during five observations of a ten-year old brain-damaged child	34
3. The total number of conversations recorded during five observations of a ten-year old brain-damaged child	35
4. The total number of normal activities recorded during five observations of a ten-year old brain-damaged child	37

CHAPTER I

INTRODUCTION

The Purpose of the Study

The purpose of this study was to determine the relative efficacy of selected drugs in reducing the hyperactivity and increasing the attention span of a ten-year old child who had been medically diagnosed as having brain damage.

The evaluation of the effects of three drugs, Chlordiazepoxide (Librium), Fluphenazine Hydrochloride (Prolixin), Thioridazine (Mellaril), and a combination of Mellaril and Methylphenidate Hydrochloride (Ritalin), was made by a psychiatrist after consideration of (1) written observations of the child's school activities during a two-hour period, (2) a tabulation of data based on the observations, (3) reports made by the parents and teacher of the child, and (4) interviews with the subject.

The Importance of the Study

Ilg and Ames, in their publication Child Behavior, describe brain-damaged children as "a large group of handicapped children . . . who desperately need our help."¹ More and more doctors and child guidance workers are deciding that brain injuries are, in part, responsible for many learning

¹Frances L. Ilg and Louise Bates Ames, Child Behavior, Reprinted from the Gesell Institute of Child Development, New Haven, Connecticut. (Glen Ellyn, Illinois: West Suburban Association for the Other Child, n.d.), 2.

difficulties and much misbehavior in some children.

Two common characteristics of some brain-damaged children, hyperactivity and a short attention span,¹ often cause misunderstanding about the problems these children have. Any drug reducing hyperkinesis and increasing attention span probably would benefit the children. Parents might be relieved of the anxiety and the feeling of social stigma caused by the suggestion that poor child-rearing practices and/or insecure interpersonal relationships were the causes of their child's behavior problems. Teachers possibly could be more successful in instructing these children, and schoolmates probably would have less reason to think of these boys and girls as "different." The children themselves might be less prone to develop additional emotional problems.

This study is important, too, because the child involved needs help toward living as normal a life as possible. The individual's behavior drew the attention of her family, her teachers, and her associates. Because it was so abnormal, medical and psychological help were sought for her. The psychiatrist administering the drugs felt that a study would be beneficial.

Inasmuch as little controlled experimentation has been done in this area, the study is potentially significant. It might be indicative of future help for the individuals suffering from brain damage and those most directly concerned with helping them.

Definitions of Terms Used

Unless otherwise mentioned in this paper, the following terms and definitions are used.

¹Raymond L. Clemmens, "Minimal Brain Damage in Children," Children, VIII (September-October, 1961), 190.

Brain Damage or Brain Injury

Any harm to the brain which affects the child's ability to function as a normal individual is brain damage. The individual's intellectual, motor, behavioral, and/or sense functions have been impaired or altered because of the improper functioning of the central nervous system.

Hyperkinesia or Hyperactivity

Hyperkinesia is exhibited by a child who seems to be in constant motion. The individual appears restless and fidgety and seems driven to motion.

M. C.

For the purposes of this study, the initials M. C. are used to refer to the child involved.

Placebo

A placebo is an inactive medicine given either to satisfy a patient's desire for medication, or as a control, for purposes of comparison in studying the effect of other medications.

Psychotropic Drugs

Substances capable of influencing psychological and mental processes and of modifying human emotions and behavior are called psychotropic drugs.¹

Related Studies

The amount of research available on this specific topic is extremely limited. Drs. Sam D. Clements and John E. Peters of the University of Arkansas Medical Center state that their extensive work with brain-damaged

¹P. J. Doyle, "The Organic Hyperkinetic Syndrome," Journal of School Health, XXXII (October, 1962), 301.

children is founded upon "clinical research and experience and is not yet based on carefully controlled experimentation."¹ The doctors continue:

We have found that a surprising and significant number of our minimal brain dysfunction (MBD) cases can be handled by a combination of drugs and infrequent counselling. The drugs we have found most helpful in reducing hyperactivity and irritability, and in increasing attention span are captodiamine (Suvren), and thioridazine hydrochloride (Mellaril), and the amphetamines. We have not made extensive use of phenothiazines other than thioridazine. Other clinics have reported favorably on several of them in the treatment of hyperkinesis in children.²

Azima and his co-workers "found that thioridazine Mellaril is effective mainly in combating psychomotor hyperactivity and excitation."³

Dr. Kinross-Wright treated one-hundred ninety-eight patients, including forty-one with acute functional psychoses and twenty-five with brain syndromes. Mellaril was the drug most liked by patients because of the few side effects.⁴

Sandoz Pharmaceuticals, Inc., states that "Mellaril thioridazine is eminently effective in reducing excitement, hypermotility, abnormal initiative, affective tension and agitation through its inhibitory effect on psychomotor functions."⁵ The drug is recommended by the company for use with children exhibiting hyperactivity.

In 1961 Clemmens reported that:

¹Sam D. Clements and John E. Peters, "Minimal Brain Dysfunctions in the School-Age Child," Reprinted from the Archives of General Psychiatry, VI (March, 1963), 18.

²Ibid., 25.

³"Thioridazine in Mental Syndromes," The Journal of the American Medical Association, CLXXII (February 6, 1960), 591.

⁴John Kinross-Wright, "Newer Phenothiazine Drugs in Treatment of Nervous Disorders," The Journal of the American Medical Association, CLXX (July 11, 1959), 1283-1288.

⁵Sandoz Pharmaceuticals, Division of Sandoz, Inc., Information Sheet on Mellaril, Hanover, New Jersey, July 12, 1963.

Drug therapy has been of significant value in decreasing the hyperactivity, distractibility, and extreme anxiety associated with brain injury. Many pharmacologic agents have been used. Encouraging and at times dramatic results have been obtained with dextro-amphetamine, benadryl, and notably, dilantin.¹

John T. Ferguson and associates write that "the psychoanaleptic activity, or stimulating activity on the central nervous system, of orally administered methylphenidate (Ritalin) hydrochloride is well documented clinically."²

Eisenberg describes a study he and Connors made using methylphenidate and a placebo. They evaluated systematic responses and psychological test performances (including IQ and impulsivity tests) in disturbed children from a residential treatment center. The experimenters found that "among youngsters of normal or superior test intelligence, no drug effects were obtained. . . . There were suggestions of improvement in learning in the children on methylphenidate, but the results were equivocal."³ The authors conclude:

The basic intellectual limitation in mental deficiency as well as the underlying pathologic lesions in chronic brain syndromes are not modifiable by any known medications. But hyperkinesia and distractibility, the most disturbing symptoms in these patients, frequently can be relieved by stimulants such as dextroamphetamine or methylphenidate.⁴

Eisenberg's study at Johns Hopkins University School of Medicine involving the use of meprobamate, prochlorperazine, and a placebo in treating hyperkinetic children revealed that none of the drugs were satisfactory in

¹Clemmens, 181.

²John T. Ferguson, *et. al.* "Methylphenidate (Ritalin) Hydrochloride Parenteral Solution," The Journal of the American Medical Association, CLXII (December 1, 1956), 1303.

³Leon Eisenberg, "Role of Drugs in Treating Disturbed Children," Children, XI (September-October, 1964), 171.

⁴Ibid.

causing patient improvement, i.e., reduced hyperactivity.¹

In discussing Librium the Council on Drugs of the American Medical Association reports that it "has some degree of effectiveness in musculo-skeletal disorders associated with emotional disturbances but little or no effect upon those of a purely organic nature."²

Doyle writes that the evaluation of the use of psychotropic drugs "in hyperactive school children has not been very successful because of the confusion concerning their use and because of incomplete, uncoordinated reporting."³

Although a number of studies have been made using drugs to treat disturbed patients, few have dealt with the specific problem of hyperkinesis and a short attention span in brain-damaged children. Studies employing the drugs being used in the present investigation revealed that the medications generally were ineffective in significantly reducing hyperactivity and/or increasing attention span, though admittedly improvement was noted in some patients. In the studies cited, Mellaril was the drug producing the greatest desirable change.

Hypothesis

The hypothesis to be tested by this study is: That there is no significant difference in the efficacy of the selected drugs in reducing physical activity and increasing attention span in a ten-year old brain-damaged child.

¹Ibid.

²"Drugs Evaluated by the Council on Drugs," The Journal of the American Medical Association, CLXXXV (July 27, 1963), 298.

³Doyle, 301.

Procedures

The following procedures were used in the development of the study:

1. Identifying the problem.
2. Reviewing related studies and literature.
3. Flanning the study:
 - a) A psychologist on the University faculty observed the child and gave an individual intelligence test (the Wechsler Intelligence Scale for Children). Arrangements were made for Sylvia Marsh (a college student taking a course in child growth and development, 1963-1964) to prepare a continuous record of the child's school activities during the morning of December 12, 1963, and to make a case study.
 - b) Upon the basis of the information gathered, the psychologist referred the family to a psychiatrist. The case study, along with M. C.'s school records, and the record of the WISC was made available to the psychiatrist. A medical examination, including an electroencephalogram, was given. After consideration of all the data, the child was diagnosed as being brain-damaged.
4. Gathering pertinent data from the case study, school records, and the child's parents and teachers.
5. Consulting with the psychiatrist. It was decided to administer different medications to determine their effect, since experience has shown, repeatedly, that there are great variations in response to the newer ataractics, normalizers, and sedatives among patients showing surprisingly similar pathology. The drugs Librium, Prolixin, Mellaril, and a combination of Ritalin

and Mellaril were selected for use in this study. After the patient had been on each medication, a detailed record was made of every activity the child performed during the two-hour period from ten o'clock until noon on a school day. A rest period with no drug was planned between each of the medications used.

6. Planning the tabulation of data gathered during the observations.
7. Structuring the form on which to tabulate material.¹
8. Making the guide for the data tabulation.²
9. Tabulating the data collected during each two-hour observation.³
10. Preparation of bar graphs to illustrate tabulations.
11. Interpreting the data.⁴
12. Drawing conclusions.

Limitations

Though efforts were made to minimize limitations, the following ones are recognized:

1. The observers' lack of training probably made the observations less reliable and more inconsistent than those of trained personnel would have been.
2. Possibly more observations, longer observations, and/or a difference in the timing of the observations would give different results, though this does not seem likely insofar as the conclu-

¹See Appendix A, p. 41.

²See Appendix B, pp. 42-44.

³See Appendixes C and D, pp. 45-53.

⁴See Appendixes E, F, and G, pp. 54-56.

sions drawn from this study are in agreement with the impressions of teachers and parents.

3. A different spacing in the administration of the drugs and different dosages might lead to different results.
4. The variations in the lengths of time between the initial use of each drug and the date of the corresponding observation may affect the validity of the comparative results.
5. Conclusions drawn from these tests are limited to the subject of the study.

In spite of the limitations which have been enumerated, the study does contribute toward helping M. C. by showing the helpfulness of a specific drug or combination of drugs in controlling hyperkinesis, as compared to other medications used in the investigation. While this study concerns one individual the findings may be of value as an indication of what further investigations might reveal. It points out the lack of studies in this area and clarifies the need for further research.

Organization of the Study

Chapter I identifies the problem and its importance, and states the hypothesis to be tested.

Chapter II reviews literature pertinent to the study.

Chapter III shows the procedures followed.

Chapter IV describes the sources, tabulation, and interpretation of data.

Chapter V presents the conclusions drawn from the data.

CHAPTER II

RELATED LITERATURE

In recent years many reports have been made concerning the brain-damaged child. These usually include three main topics: characteristics, diagnosis, and educational techniques.

Characteristics

According to Clements and Peters,¹ Clemmens,² Ilg and Ames,³ and Strauss and Lehtinen⁴ some or all of the following characteristics may be found in children suffering from brain injury. Symptoms are listed without reference to importance:

1. Hyperkinesis.
2. Impulsiveness (perhaps destructiveness).
3. Irritability and aggressiveness.
4. Perseverance (child continues applying old material to new, irrelevant situations).
5. Perceptual-motor and general coordination defects.
6. Poor speech.

¹Clements and Peters, 19-21.

²Clemmens, 180-182.

³Ilg and Ames, 1-4, 7-8.

⁴Alfred A. Strauss and Laura E. Lehtinen, Psychopathology and Education of the Brain-Injured Child (New York: Grune and Stratton, 1947), pp. 86-97.

7. Short attention span and/or distractibility.
8. Specific learning difficulties, i.e., problems with reading, writing, spelling, and arithmetic.
9. Social immaturity.
10. Talkativeness or an almost complete lack of communication.
11. Unselective display of affection to total strangers or a pronounced and continued disregard of people.

Diagnosis

Clements has been concerned especially about the correct diagnosis of children with minimal brain dysfunctions. He feels that it is imperative that these children be carefully diagnosed in order that they may receive the best help possible. In his own clinical work, Clements bases his diagnosis on the following:¹

1. A complete physical examination and history.
2. Psychological evaluation.
 - a) Wechsler Intelligence Scale for Children (the scatter of the scores on the various subtests is very important).
 - b) Bender Visual Motor Gestalt (perhaps some others).
 - c) Standardized reading test.
 - d) Personal interviews and contacts.
 - e) Perhaps projective and other techniques.
3. Complete neurological examination (may include an electroencephalogram).

Education

The education of brain-damaged children is receiving more and more

¹Clements and Peters, 21-25.

attention. Clements and Peters write that "the proper school management of children with minimal brain dysfunction is of extreme importance."¹ Most authors report that these children can be taught, but that they have to be taught in a special way; therefore "the teacher and the principal should know the child's diagnosis and that a program of treatment has been begun."² The central concern in the educational program for the brain-damaged child must be an understanding of his functional disabilities.³ The teaching program has to be geared to the child's specific deficits and must allow for a slower pace in acquiring knowledge in these areas. The brain-injured child may have more than average capacity in other areas. These children frequently have far greater than average perception and memory for spatial relationships.

The task of learning is extraordinarily difficult because of the child's restlessness and his inability to exclude irrelevant sensory impressions.⁴

Some of these children should be in special classrooms in order to have a less stimulating environment. Partitions in the room may be helpful. Every item not essential to the classroom operation should be omitted. Teaching aids should be simple. Devices used in an ordinary classroom should not be used because of the distractions they provide. Even the teacher's dress should be very simple and unadorned.⁵

¹Clements and Peters, 26.

²Ibid.

³Karl C. Garrison and Dewey G. Force, The Psychology of Exceptional Children (3d ed.; New York: Ronald Press Co., 1959), p. 363.

⁴Clements, 180.

⁵Strauss and Lehtinen, pp. 127-146.

Ilg and Ames report that these children "usually learn quickly material that is clearly structured and brought into focus for them."¹ Instruction must be in utmost reality and should be given step by step. Ordinarily, freedom to make choices should not be given. A more difficult task should be attempted only when the preceding one has been completely mastered. Arithmetic should be taught structurally and reading "needs to be taught phonetically when the child is ready to absorb this method."²

Some of these children whose grade placement is well beyond their reading level, should have a large part of their lessons read to them so that they will not fall behind in the informational part of their courses.³

Oral examinations probably will be more accurate in getting an appraisal of the child's knowledge.

A hopeful note concerning the education of these children is that given in Child Behavior, "If diagnosed correctly at an early age, the brain injured child, after spending several years in a special class may be transferred to a regular class and function adequately there."⁴

¹Ilg and Ames, p. 4.

²Ibid.

³Clements and Peters, 26.

⁴Ilg and Ames, p. 5.

CHAPTER III

PROCEDURES FOLLOWED

Chapter I identified the problem of hyperkinesis and a shortened attention span being displayed by a ten-year old child suffering from brain-damage. Related literature was reviewed in Chapter II. Chapter III describes the procedures followed in determining the relative effectiveness of selected drugs in controlling hyperactivity and increasing attention span in a ten-year old brain-damaged child.

Three different drugs and a combination of two of them were administered in order to determine which was most effective in the case. To avoid carry-over effects, a rest period with no medication was planned between each of the drugs used.

On December 12, 1963 (before medications were begun), the girl was observed and a detailed account of her activities was written. A case study was prepared from information supplied by the school records, the child's parents and teachers, and acquaintances of the family.

Librium, a sedative-type drug was begun October 30, 1964. Five milligrams were given four times daily. The two-hour observation of the child was made the 9th of November, 1964. A detailed record of her activities from ten o'clock until noon was compiled.

On the 15th of November, 1964, the second drug, Prolixin, designed to calm down the hyperactive or stimulate the hypoactive patient, was begun. One milligram two times daily was prescribed. The two-hour observation was

made November 23, 1964.

Mellaril, related to the phenothiazine tranquilizers, and sometimes used for behavior disorders, was initially administered December 1, 1964. Twenty-five milligrams were given four times daily. The two-hour observation was made December 9, 1964.

A combination of Ritalin, a mild cerebral stimulant which has sometimes been paradoxically useful with hypokinetic and hyperkinetic children, and Mellaril was started January 13, 1965. After breakfast and after lunch, ten milligrams of Ritalin were administered. Twenty-five milligrams of Mellaril were given two times daily. On February 23, 1965, the observation was made.

The data classification was based upon the type of activity and the number of changes of activity recorded during the five observation periods. A longer attention span would be indicated by a decrease in the number of changes in activity, and lowered hyperkinesis would be indicated by a lessening of the frequency of non-directed movements.

A form was constructed which subdivided the four major categories (distractions; contact with people, deliberate proximity; conversations; and normal activities) into twelve sections. Also, the child's activities during each of the five observation periods were divided into three thirty minute periods (10:30-11:00; 11:00-11:30; 11:30-12:00) plus the recess period. Each observation was tallied on a separate form. See Appendix A, page 41.

A guide with which to do the tabulating was constructed. The guide lists typical activities in which the child engaged and the classification designated to each activity. This guide was made in order that consistency could be maintained in interpreting the child's activities. See Appendix B, pages 42-44.

The actual tabulation of data consisted of comparing each item noted during an observation's three thirty-minute periods and recess with the tabulation guide and making a tally mark(s) in the proper category on the form. Then the tallies were totaled. See Appendix C, pages 45-49. Bar graphs were constructed to illustrate this information.

Data from the observations which could not be pictured adequately in the tabulations was compiled in Appendix D, pages 50-53.

The deviation of the totals obtained while the child was on each medication from those obtained before the girl began drug therapy were listed in Appendix E, page 54.

Appendix F, page 55, was constructed to compare the totals of each of the four major categories of activity occurring during the five observation periods.

Appendix G, page 56, shows the deviation of the totals obtained for each drug from that obtained while the child was receiving no medications.

Interpretations of the data are discussed in Chapter IV. Chapter V presents the conclusions.

CHAPTER IV

SOURCES, TABULATION, AND INTERPRETATION OF DATA

The problem of hyperkinesis in a ten-year old brain-damaged child was identified in Chapter I. Chapter II reviewed the related literature and discussed the characteristics, diagnosis, and education of brain-damaged children. The procedures followed in this investigation to determine the relative efficacy of selected drugs upon the physical activities and the attention span of a brain-damaged child were given in Chapter III. This chapter presents the sources of data and describes the tabulation and interpretation of the information gathered during observations of the child's school activities.

A case study¹ and the child's school records were among the sources of data used in this investigation. They provided the following information:

The subject of the study was born February 11, 1954, in Avon Park, Florida. It was a forceps birth, and the attending physicians requested x-rays because of severe bruising of the scalp. Two of the physicians who saw the x-rays felt that there was no brain-injury despite the extent of bruising. One doctor, however, cautioned the prospective parents about the possibility of permanent damage. After a few days the baby was much improved and the foster parents decided to adopt her.

¹Sylvia Marsh, "Case Study: _____" (unpublished case study, Dept. of Education, Andrews University, 1964).

Very little is known about M. C.'s natural parents. The mother was a nineteen-year old Caucasian girl, and it was a full-term pregnancy. The mother is reported to have been mentally gifted and was graduated as valedictorian of her high school class. Because the child was illegitimate, the mother "was full of anxiety and under tension during the pregnancy."¹ Also, the baby's mother wanted to put the child up for adoption, while the maternal grandparents wished that she would keep the child so that they could adopt her.

The child's foster father is a minister and holds a Master's Degree. The foster mother has not yet completed college but is taking coursework. She has been a proofreader. English has always been spoken in the home although the parents are Italian. The subject has one brother, also adopted, who is fourteen months younger than she. He seems to be developing normally and has wondered, at times, why his sister is different from other children. In the remainder of this study, the foster parents are referred to as the child's father and mother.

The mother reports that the baby was extremely restless and active. At the age of two, she fell from a hospital crib onto a concrete floor. Though she landed on her head, she did not cry and seemed not to be seriously hurt. However, the doctor ordered x-rays, which revealed no damage.

M. C. attended kindergarten during the afternoons of the school year 1959-1960. The transfer slip from the school lists her as having "medial strabismus" in the right eye, as wearing glasses, and reports "vision inspection unsatisfactory."² The transfer also notes that she had been under

¹Ibid., p. 1.

²Elementary Schools, Oak Park, Illinois, "Transfer Slip," June 2, 1960, (in the files of the school).

the services of the Illinois Institute for Juvenile Research during 1959.

The school health appraisal records a teacher-nurse conference in October, 1960, about the "child's non-response to directions and emotional disturbance."¹ An entry on December 14, 1961, states that the child was undergoing testing at the Illinois Institute for Juvenile Research and that muscular co-ordination was below par.

A June 19, 1962, letter from the Institute to the school principal reports that the child had made improvement between her visits in 1959 and 1961. This letter also states that an EEG record suggested that the child's difficulty was related to "some central nervous system impairment."² The letter continues: "It was our feeling that the girl requires a great deal of stability and consistency from her environment to compensate for her current instability. She needs support in maintaining control."³ The report points out that the child's "immature visual motor coordination" is revealed by her "quick, impulsive actions."⁴ According to the letter, her thinking is "quite concrete."⁵

The school was urged to observe the activities the child was able to perform and to hold her to them, but to make allowances for her lack of stability. The necessity of not allowing her to fake helplessness in order to gain attention was pointed out.

The letter states that the Institute's impression of the child is

¹"Health Appraisal," (in the files of the school).

²Letter from the Illinois Institute for Juvenile Research, Chicago, Illinois, June 19, 1962, (in the files of the school).

³Ibid.

⁴Ibid.

⁵Ibid.

that she is "an unstable girl having an inadequately organized self-concept and appeared to be confused, but reaching out for stability. She was interested in improving her relationships and in receiving support."¹ Apparently, the child's problem had not yet been identified as brain damage in spite of the EEG.

In October, 1962, M. C.'s mother made this comment on the school's "Health Inventory," "She is very active."²

Intelligence tests' results give an IQ ranging from 72 to 107, but examiners have noted that a focusing of attention probably would result in better performance. A September 29, 1963, profile of the California Test of Mental Maturity gives a language data IQ of 134; non-language data, 80. School achievement tests reveal the same thing: that the child performs best in the language arts areas and poorest in arithmetic reasoning. The child is a rapid oral reader, rushing through a sentence with the same impulsiveness that she exhibits in her physical activities. She is able to pronounce surprisingly difficult words, her fifth-grade teacher reports. Sylvia Marsh records that "as a very young child she could spell complicated words, and that her father would 'show her off' to visitors by setting her on his knee and having her quickly spell long words."³

Observations of the child reveal her very short attention span and seeming compulsion for constant activity. Often she moves about the classroom, fingering items as she passes. Though it appears that she is paying absolutely no attention to the class activities, she can answer some questions when asked. The other children in the classroom usually ignore her

¹Ibid.

²"Health Inventory," October, 1962, (in the files of the school).

³Marsh, p. 3.

when she does something incorrectly or out of line and accept her when she participates with them.

The child seems to like music especially. She follows the rhythm of the music with her hands and/or feet. When she first joined the choir she followed her usual pattern of constant activity. During practice she would stand, turn around with her arms in the air, then sit down again. Other children in the choir complained to the director. As a result, the girl was moved from place to place. During one rehearsal, while the choir was standing, M. C. sat down, leaned back in her chair, and closed her eyes. She remained in that position during the rest of the practice session. Afterward, the teacher asked why she had done it. Her reply: "I was tired of singing."¹

Having to go to the restroom was used repeatedly as a reason for leaving practice. Before one session, the music teacher had a student teacher take the girl to the restroom. When she wanted to leave during rehearsal, the teacher said no, then reminded her that she had just been. The child has not repeated this technique.

Due to her unpredictability, M. C. was not allowed to sing with the choir for a vesper service. The teacher explained the reason to the child. Since that time, the girl has improved greatly and is allowed to sing with the choir for services. After every rehearsal, she asks the teacher, "Can I sing with the choir this Sabbath?"² She is told that as long as she continues to improve and to sit still she may sing whenever the choir sings.

Marsh reports that the child "has developed a great attraction for Miss _____ the music teacher, even to the extent that she told her

¹Ibid., p. 4.

²Ibid., p. 5.

mother, "I wish Miss _____ were my mother and you were the music teacher."¹

The child repeatedly asks questions to which she already knows the answers or to which it is obviously impossible to give an answer; for example, "How does Caroline Kennedy spell her name, 'lyn' or 'line?'" "Can your dog talk?"; "Who's Fido?"; or "Will Bobby be good today?" Often she answers her own question. Sometimes she seems to be pondering a subject audibly.

Teachers report that if someone claps his hands behind her back, the child will jump and say, "What have I done? What have I done?" and that she is cruel with animals and has been known to hold a dog so that it dangled from its leash and choked.

The child is domineering with her playmates and usually is not interested in the activities of her age-mates. Often she is unable to comprehend (her fifth-grade teacher reports) the directions to the games being played. She enjoys children several years younger than she. The child shows awareness of the fact that she is not accepted by the world around her for the reasons that other people are. She wonders why she is not liked, why other children frequently do not want to play with her.

The child's parents seem to be firm with her, especially her father. At one time, advisors told the parents that they were being too easy on her and to "clamp down." After trying this the father reported that he could not spank her so much because she was incapable of performing the tasks. The parents are trying to adjust to the child's abilities and lack of them and to base expectations on her capacities.

In addition to the case study and the school records, the parents furnished information about the child's reactions to the different medica-

¹Ibid.

tions. On March 11, 1965, the subject's mother supplied the data below:¹

While the child was on Librium, the parents were unable to notice much difference in her activities. The drug seemed to have little effect on her and did not calm her down significantly. Interestingly, the child herself has several times stated that she thought the "green and yellow" capsules "helped me most."

Prolidin, one milligram two times daily, was discontinued after four days when parents and teacher agreed that the medication was acting as an unwanted stimulant.

During the first three or four days while the girl was taking Mellaril, twenty-five milligrams three times daily, she looked droopy-eyed and sleepy, but after about a week, she overcame the droopy look. When the patient was receiving the medication, she slowed down "very, very much" and "seemed improved." However, the psychiatrist told the parents that the drug was too great a depressant.

The Ritalin and Mellaril combination reduced hyperkinesis, but the parents "still had feelings whether this was the answer to her problem."

The parents are perplexed by the difficulty of knowing how much to expect of the child. They feel that the girl should be able to accept disappointments without whining and acting much younger and that this inability to accept little disappointments is her "biggest problem." One example the mother reported was about a globe. The globe was a small, inexpensive one which frequently slipped from its plastic frame. One time, however, the frame broke, making it impossible for the parents to repair it. Though they tried to explain why they could not mend the globe, the child reacted in "her usual whiny way."

¹Interview with the Mother, March 11, 1965.

The mother also reported about a time when the girl fretted, fussed, and fumed, even in front of company. The child had been told that mother would take her to a friend's home in the afternoon, if it were possible. However, just before leaving, unexpected company came to call on the pastor's family. This made it necessary for the mother to stay home, and because there was no one else to take the child, she had to stay home too. The parents felt that the child should have been able to comprehend the reasons for this exception to their intentions without having to be talked to and spanked before ceasing her whining.

An incident which the girl seemed to understand involved a balloon. While on a trip the child pushed her blown-up balloon into the front section of the car several times, and received a reprimand because of the danger involved. The parents explained that it made it difficult for daddy to drive safely since the balloon blocked his vision. The censures seemed to have little effect, so the father told M. C. that the next time her balloon came into the front of the car, he would have to pop it. She became more careful in her activity, but eventually let the balloon get in daddy's way. Though he popped it, the child did not fret or cry. She was quiet, and the mother thought that she "realized that it was right to pop it."

The father seems to have more success in controlling the child, but she is "not too fazed by spankings," they report.

While on the Ritalin and Mellaril combination, the parents noticed that the child made more loud noises and burped frequently and loudly. They were not sure if the cause was deliberate or if the drug "released" her, and she did not realize how noisy she was being. Sometimes they felt that she burped just to "get a kick out of it."

The following indicates the child's progress:

During the week of March 1, 1965, the subject studied her Sabbath School lesson alone, though she "played" between her sessions of study.

The child is learning to knit in the Pathfinder Club. She knows how to say what to do, and the steps to take, but she gets about halfway through a procedure and cannot finish, for she drops the needles. The girl told her grandmother the "next thing to do," but could not manipulate her own hands to do it.

The child's parents report that her conversation got better during the entire period she was on medications. She still repeated questions to which she knew the answers, but gradually conversation is taking the place of the questions. Also, the questions are becoming more and more "normal."

The parents concluded that they are "puzzled and unsure as to whether medication is best for her; they're not convinced, in some ways yes, in some, no."

Another source of data was the child's fifth-grade teacher (September, 1964-June, 1965) who gave the following information:¹

From about the 1st of January, 1965, the child seemed to make the greatest improvement in her school activities. The teacher was impressed particularly with the girl's arithmetic growth. Her attention span was still short, but "with a great deal of encouragement and praise" the pupil would do a whole page of second-grade work by herself. The child sought constant assurance that she was doing the work correctly. After finishing one, two, or three problems, she would consult the teacher in order to have her work checked. The teacher reports that the pupil will do any work that she is capable of doing by herself if she is praised often.

The instructor says that the girl still asks many questions, but

¹Interview with the fifth-grade teacher, March 10, 1965.

that they are more nearly like those of a fifth-grade child. She feels the questioning is an attempt by M. C. to act like other people and to get the attention of others. If one does not answer her questions, even if it means telling her that he does not know, M. C. looks forlorn and forsaken. The teacher reported that she tried ignoring the questions only once, and that the look upon the girl's face caused her to decide never to ignore her. Also, the teacher wants to be sure that the child feels secure in talking with her and does not withdraw.

"It is amazing how good she is in certain areas, especially English. She even corrects others. She learns to spell easily if she takes the trouble to do so. She reads well, unusually well, and can pronounce difficult words, but she does not communicate her comprehension." The teacher also says that her handwriting (which had been printing and was practically illegible) is definitely improved, but that M. C. has not carried over her writing from penmanship to other work. "She is using cursive writing now, and it is much better than her printing."

The teacher does not excuse the child from doing her work, but up until the last grading period (March), she had not done enough work to get a real grade. The parents and the teacher had conferred and decided that to get all F's would be discouraging, so she was usually given C's with an occasional B or D. The teacher declared, "I don't know what she has learned or what she can learn." She further explained that while it is difficult to evaluate M. C.'s progress, it is obvious that she has done better while on the drugs than she would have done without them.

The teacher reports that the girl is sensitive to punishment, even if it is mild. She dislikes having her name written on the board when she knows it means she is misbehaving. At the beginning of the school year, she

would take things which did not belong to her. She was told that the teacher would punish her (by having her stand within one square on the sidewalk during recess) and also that her parents would be told. This was very effective and her "taking" has practically ceased.

Early in this school year the teacher often had difficulty getting the girl to respond to questions. One day the instructor told M. C. that if she would not answer when called on the teacher could not help her, and that she should say, "I don't know," if she did not know an answer. She was also told that she would have to stand in the hall, thus being isolated (which she does not like), if she would not answer. The fact that she was not being punished for not knowing but for not answering was emphasized. This helped immensely, and after the initial incident, the child has been responding much more.

The teacher feels that the other children "are very good to her; only those in other grades, who do not know her, do not make allowances." The instructor also believes that the pupil is getting along better socially. She is said to be more outgoing and behaving more maturely, though she is admittedly still immature emotionally. Her comments are becoming more and more "grown-up," according to the teacher. M. C. has asked whether or not she will have a boy friend. She has become very "fussy" with her hair and combs it more herself. The child's mother reports that she wants it to "look just right." At recess, the girl frequently plays with younger children. Sometimes she plays alone.

"She's a sweet little girl--would be hard to deal with otherwise. Her parents are marvelous," the teacher concluded.

In addition to the formal observations, the observer has noted informally the following bits of behavior which appear immature and purpose-

less for a child almost eleven years old:

About the 25th of November, 1964, the child was in the University bookstore. The observer had made a purchase and was paying the cashier when the cashier remarked, "Something's wrong with that little girl. I can tell it by looking at her eyes." As the cashier rang up the purchase, the child rushed over and asked, "Where's the bell? Where's the bell?" She then rushed about the store, seemingly looking at everything, yet moving so rapidly she could not have seen anything clearly. She came back to the cash register and said, "I hear a bell. Where's the bell? Where's the bell?" The clerk made no reply, and the child immediately moved around the store again. After making two more circuits about the bookstore, she ran up the steps into the grocery store where she began walking up and down the aisles. The manager approached her and said, "That's enough for today, M_____. It's time to go home now." She went out the door he held open for her.

On December 9, 1964, the patient was observed as she went home from school for lunch. As she passed the grocery store, she stopped at the window and put her face up to it. Her right hand was used to shade her eyes. After spending about forty-five seconds peering inside, she skipped down to the post office where she walked inside, turned around, and came back to the store window. She stopped and again peered inside, shading her eyes with her hands. Then she skipped down the walk toward home.

Shortly before Christmas, 1964, the child was a member of the Junior Choir which participated in a Christmas program. While on stage she changed locations twice, and gazed toward the ceiling and wings during the performance (singing several songs). Only on the chorus of one song did she look at the director and really sing.

On February 20, 1965, the observer approached two families on a

sidewalk near Andrews University. The fathers were talking together, followed by the mothers and children. About ten feet behind the family group was the patient. The child seemed unaware of anyone approaching her. She was looking into the sky, even turning around, and seldom looked toward the ground. She moved her outstretched arms in a figure-eight motion. Gently upturned lips made a slight smile. Her eyes seemed to be focused on a far-away object.

The final source of data was the tabulations based upon the child's activities recorded during the five two-hour observation periods.

Every item noted during each of the observation's three thirty-minute periods and recess period was compared with the tabulation guide and a tally mark(s) was placed in the proper column on the form. Then tallies in each column were totaled. See Appendix C, pages 45-49.

When considering the data given on the forms, the reader should be aware of the information below:

1. Occasionally, an item was tallied in several different categories, depending upon the child's location at the time of her activity. For example, if the girl was sitting in her seat, flipping through the pages of her book was counted as a "distraction, in seat." However, the same activity (flipping through the pages of her book) was recorded as a "distraction, out of seat," when the child was standing at the time she performed the activity.
2. Infrequently, a single movement by the child was classified under two categories. For example, following the teacher (for no discernible purpose) was tallied in both the "distraction, out of seat," and "contact with people, M. C. initiated, with teacher," columns.
3. Opening and closing of the desk was considered one distraction.

4. Conversation was not counted as a contact although a contact was made.

5. Each time the child was distracted and returned to an activity, the activity to which she returned was counted again; for example, working on an arithmetic problem, getting up and playing with the curtain, and returning to the problem was tallied as two "normal activities, positive," and one "distraction, out of seat."

6. Each time the child went to the restroom, it was counted as a "normal activity, positive," because the observer was unable to ascertain her activities while there. However, the number of trips she made was abnormal, for she sometimes went several times within the two-hour observation period. Most of the time she stayed less than a minute.

Thus, when considering the number of "normal activities, positive," one should remember that it includes the return to activities and the "extra" trips to the restroom.

Data from the observations which could not be pictured adequately in the tabulations was compiled in Appendix D, pages 50-53.

Each of the twelve columns of the four drug forms was compared to the twelve columns of the form recording the child's activities before any medications were given. The results appear in Appendix E, page 54. A positive number signifies that more of the activity in question occurred while the child was on the drug than when she was on no medication. A negative number indicates that fewer incidents of the activity occurred while the patient was on a drug than when receiving no medication. A zero indicates that there was no difference between the total of incidents while the girl was receiving a drug and when she was not. "None" means that there was none of the activity recorded while the child was on the particular medication.

However, because there were not any "conversations, other initiated" while the child was receiving no medication, the numbers on the drug forms are always positive.

Appendix F, page 55, lists the four major categories and the total number of incidents in each category. The underlined numbers indicate the greatest change from "no drug."

Appendix G, page 56, shows the deviation in the number of activities while on each drug as compared to the figures obtained while the child was on "no drug." Positive numbers indicate that more of the activity in question occurred while the child was on the drug than when on no medication. Negative numbers show that fewer incidents of the activity occurred while the patient was on a drug than when receiving no medication. A zero indicates that there was no difference between the total number of incidents occurring while the child received a drug and when she was not taking a medication.

To help in interpreting the data, bar graphs were constructed, using the information in Appendix F.

As can be noted in Figure 1, the child was distracted two-hundred forty-six times during the two-hour observation recorded before she received any medications. A slight reduction in the total number of distractions was recorded while Mellaril was being administered, but it is important to note that the majority of the distractions observed were quick eye movements from one object or person to another and took place while the patient was in her seat, rather than being large movements which involved leaving her seat and moving about the room. During the time M. C. received Prolixin, the distractions diminished by about one-half. While she was taking Librium, the number of distractions was cut by almost two-thirds. During the time the

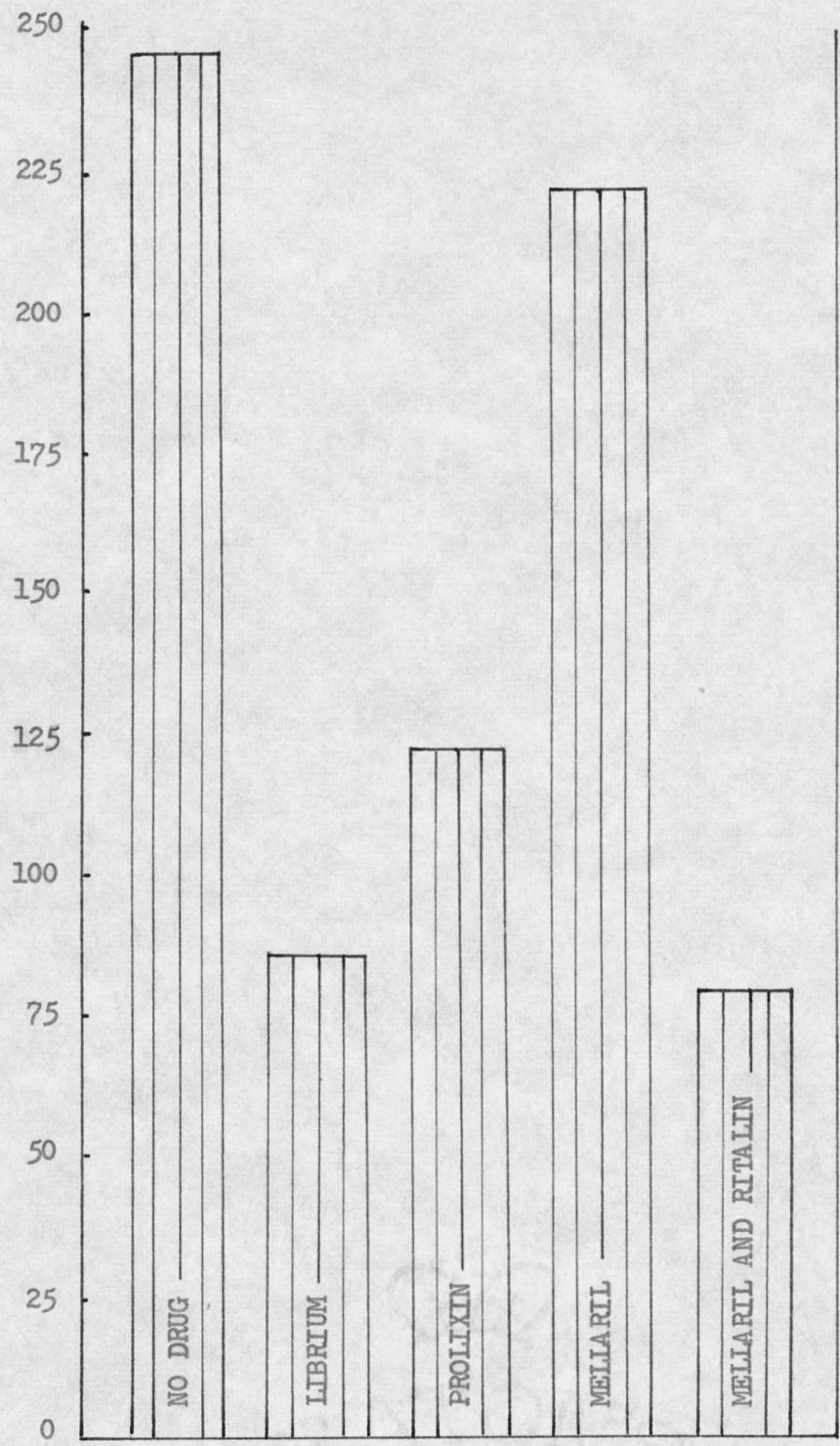


Fig. 1.--The total number of distractions recorded during five observations of a ten-year old brain-damaged child.

child received the combination of Mellaril and Ritalin, the total number of distractions was reduced to less than one-third of the number recorded during the period before medications were started. The data suggests that the combination of Mellaril and Ritalin was most effective in diminishing distractions.

Figure 2 shows the total number of contacts with people during the five observation periods (excluding those made during conversations). Eighteen were recorded while the child was receiving no medications. The number of contacts almost doubled while M. C. was taking Librium. During the period of time that she was on Prolixin, no change in the number of contacts was made. The girl's contacts with people decreased by one-third while she was taking Mellaril. During the time she was on the Mellaril and Ritalin combination, the number of contacts was reduced to slightly less than one-third that recorded while M. C. was taking no drugs. Although the greatest change in the number of contacts occurred when M. C. was taking Librium, most of these contacts consisted of her following the teacher about the room, which could not be regarded as a normal or desirable activity. Therefore, it would seem that the Mellaril and Ritalin combination was most successful in controlling this activity.

As Figure 3 illustrates, twenty-two conversations were recorded before M. C. began medications. While she was receiving the Mellaril and Ritalin combination, the number of conversations almost doubled. The number of conversations increased more than fifty per cent while the girl was taking Prolixin. Conversations were reduced one point during the time the girl received Librium. While on the Mellaril alone, the number of conversations was reduced by about one-third. Since the "no drug" observation indicated that the child frequently failed to respond to questions or to participate



Fig. 2.--The total number of contacts with people recorded during five observations of a ten-year old brain-damaged child.

WILLIAM BOND BEHAVIORAL

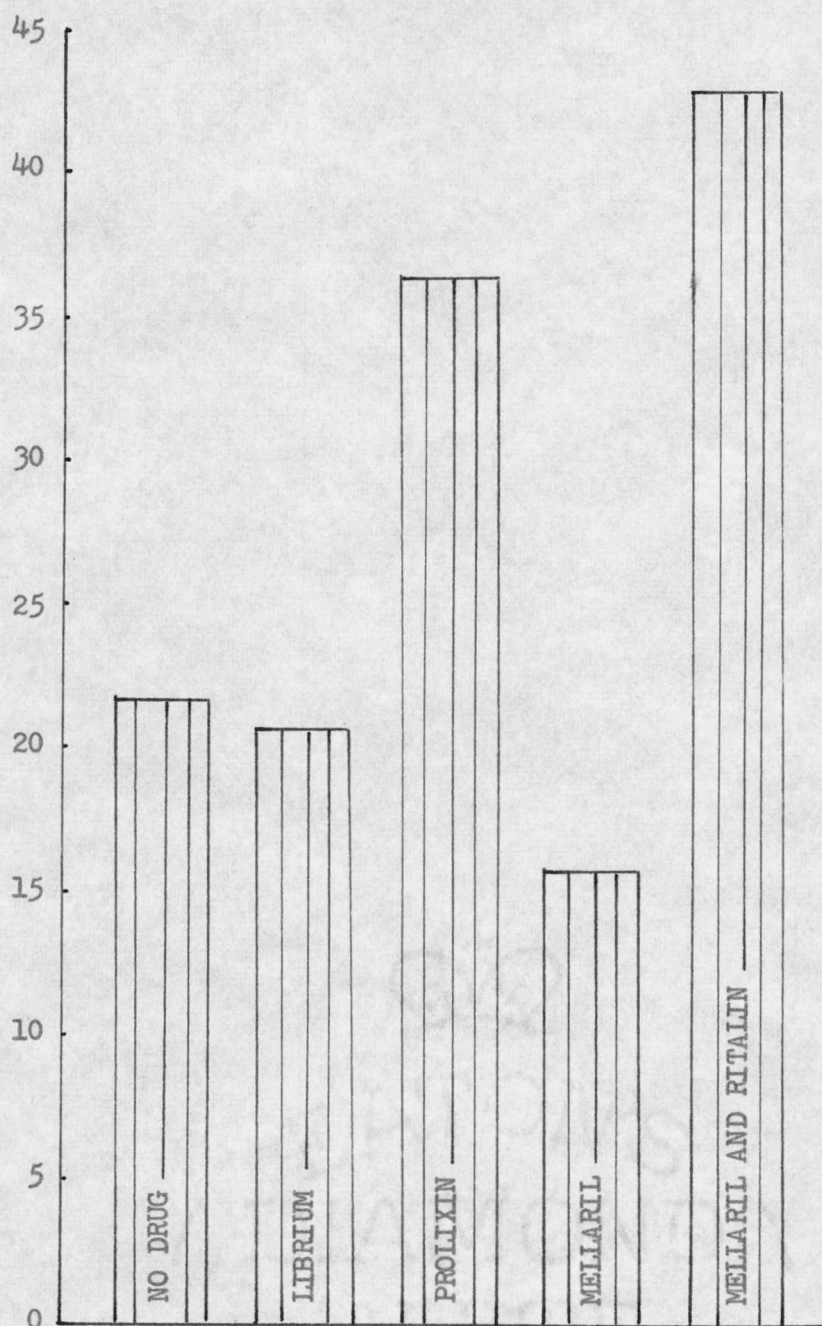


Fig. 3.--The total number of conversations recorded during five observations of a ten-year old brain-damaged child.

in normal conversations with others, it seems correct to conclude that while on the Mellaril and Ritalin combination the child's conversation and contacts were more normal.

Before M. C. was being given drug therapy, thirty-five normal activities were recorded (see Figure 4). It can be seen that the number of desirable activities increased while the child was receiving each medication. During the time the child received Librium, the number of normal activities jumped to almost double the number recorded before she began medications. Mellaril and the Mellaril and Ritalin combination differed by only two points; while receiving both, desirable activities increased by about three-fourths. Though the number of activities rose by almost one-third during the time M. C. took Prolixin, this was the smallest increase observed while on any drug.

CONTINUED ON NEXT PAGE

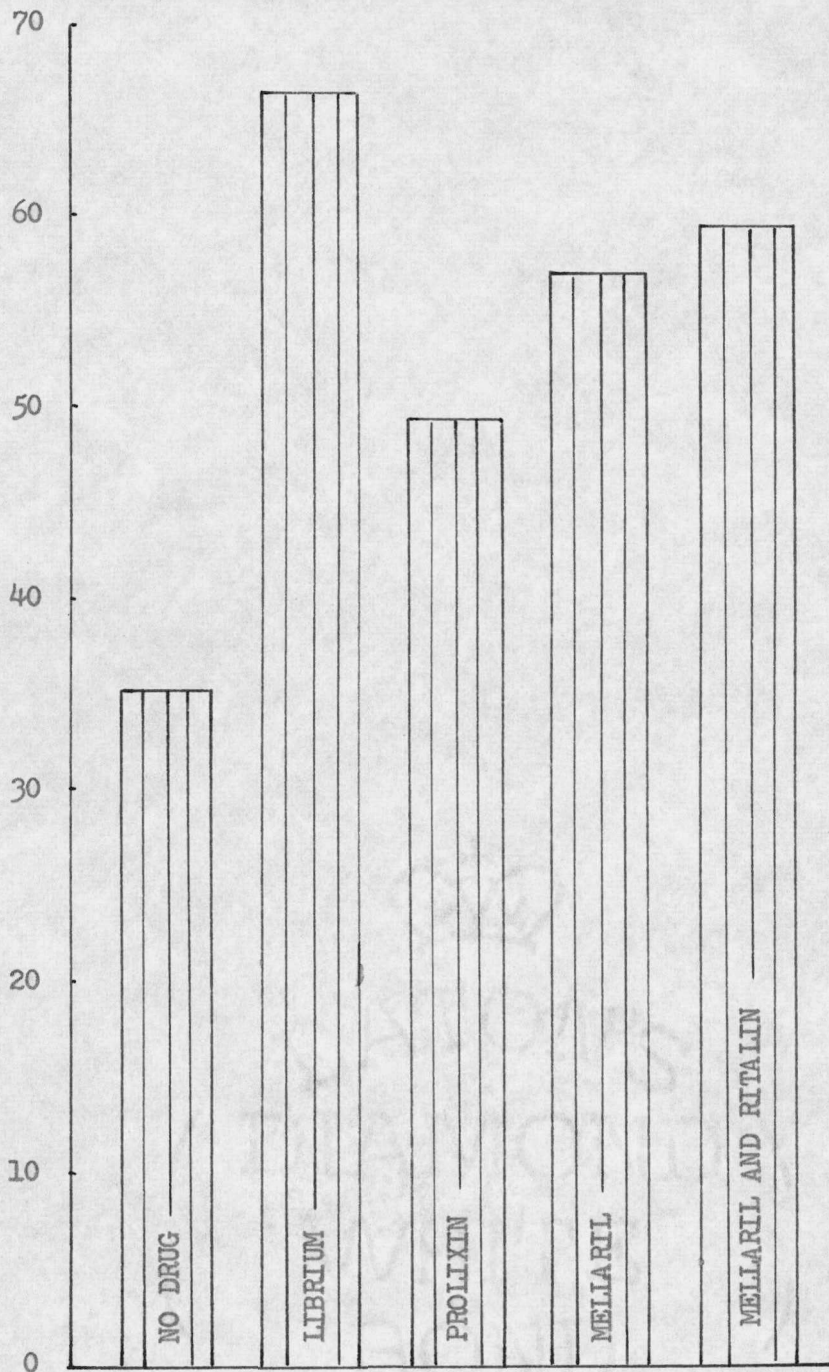


Fig. 4.--The total number of normal activities recorded during five observations of a ten-year old brain-damaged child.

NOTHING IS CONTENT

CHAPTER V

CONCLUSIONS

The purpose of this study was to determine the relative efficacy of selected drugs in controlling the physical activities and increasing the attention span of a ten-year old brain-damaged child. Related studies revealed that drug therapy generally had been ineffective in significantly reducing hyperkinesia and increasing attention span, though improvement had been noted in some patients.

Because of the child's abnormal behavior (constant and seemingly non-directed activities and a very short attention span), the subject of the study was observed by a psychologist, a written record of a morning's school activities was made, and a case study was prepared. Upon the basis of the data gathered, the child was referred to a psychiatrist. Drug therapy was begun and the present study was made to determine the relative effectiveness of the selected drugs in improving the child's behavior.

According to the data gathered, the greatest desirable changes in three of the four major areas considered appeared while the child was taking a combination of Mellaril and Ritalin. Distractions were reduced to less than one-third of the number recorded before drug therapy was begun. Contacts with people diminished to slightly less than one-third the number observed before medications were given. This was interpreted as being desirable since the child's previous contacts consisted mainly of her following the teacher as she moved about the classroom. While the subject was receiv-

ing the Mellaril and Ritalin combination, the number of conversations almost doubled. This was considered desirable since the child previously had not participated in normal conversations with others.

The greatest number of normal activities was recorded during the period of time in which the child received iábrum. The increase reached to almost twice the number recorded before the child began taking medications. The Mellaril and Ritalin combination ranked second highest with an increase of about seventy-five per cent over the number of activities noted during the observation before drug therapy was begun.

Thus, according to the data gathered in this study, in the case of one ten-year old brain-damaged child (1) the use of each drug resulted in improvement in one or more areas of the child's behavior, (2) some of the drugs, while being effective in particular areas, appeared to have undesirable effects, and (3) the combination of Mellaril and Ritalin was most satisfactory in controlling hyperactivity and increasing attention span.

Further research is needed to determine whether the discoveries made are applicable only to this child or if the medications investigated will be helpful in controlling hyperkinesis and increasing attention span in other brain-damaged children.

APPENDIXES

DIAMONDA
WHITE
BOND

COTTON FIBER PAPER

APPENDIX A

Distractions		Contacts with People				Conversations				Normal Activities	
In Seat	Out of Seat	M.C. Initiated		Others Initiated		M.C. Initiated		Others Initiated		Positive	Negative
		Teacher	Others	Teacher	Others	Teacher	Others	Teacher	Others		

APPENDIX B

TABULATION GUIDE

Biting hands--distraction, in seat or out of seat, depending upon where the child was at the time the behavior occurred.

Chewing on book--distraction, in seat.

Dropping items on the floor--distraction, in seat.

Flipping pages--distraction, in or out of seat.

Getting a quick drink--distraction, out of seat.

Getting up and sitting down immediately--distraction, out of seat.

Grabbing paper from a child--distraction, in seat.

Helping push child in swing--normal activity, positive.

Hitting child--normal activity, negative.

Hopping up and down--distraction, out of seat.

Jerking at coat to get it off hanger--normal activity, negative.

Jumping jacks (copying academy boys)--normal activity, positive.

Keeping time to music with feet--normal activity, positive.

Knocking knees together--distraction, in seat.

Laying item on desk and watching it slide off--distraction, in seat.

Leaning on desk with arms and hopping--distraction, out of seat.

Leaving room (without a purpose)--distraction, out of seat.

Listening to children practicing song (when patient was supposed to be having recess)--normal activity, negative.

Looking intently at arm (had hurt it)--normal activity, positive.

- Looking, watching (non-directed)--distraction, in seat or out of seat.
- Looking through others' things--distraction, in seat.
- Lying in swing--normal activity, positive.
- Mouth movements--distraction, in seat or out of seat.
- Moving with teacher, following her--distraction, out of seat and contact with people, M. C. initiated, with teacher.
- Not getting in line and moving with other children--distraction, out of seat.
- Opening and closing desk--distraction, in seat.
- Participating in regular classroom activity--normal activity, positive.
- Playing in snow with feet--normal activity, positive.
- Playing on bars, on sled--normal activity, positive.
- Playing with hair--distraction, in seat.
- Playing with hands, bicycle motion--distraction, out of seat.
- Playing with moving curtain (air vent caused it to move)--distraction, out of seat.
- Pulling up knee socks--normal activity, positive.
- Pulling up skirt (from bottom, not pulling it up to keep it up)--distraction, out of seat.
- Putting objects in mouth--distraction, in seat.
- Quickly raising and lowering hand (without purpose)--distraction, in seat.
- Rapidly moving feet up and down while sitting in seat--distraction, in seat.
- Rearranging material on desk--distraction, in seat.
- Rubbing hand up and down on desk--distraction, in seat.
- Running--normal activity, positive.
- Shoving on door--distraction, out of seat.
- Sitting in swings--normal activity, positive.

Standing, alone--distraction, out of seat.

Standing by teacher--distraction, out of seat; contact with people, M. C. initiated, with teacher.

Straightening bicycle she had nearly knocked over--normal activity, positive.

Swinging alone--normal activity, positive.

Swinging on pole--normal activity, positive.

Talking to self--distraction, in seat or out of seat.

Taking item from another's desk--distraction, in seat or out of seat.

Tapping on teacher--distraction, out of seat; contact with people, M. C. initiated, with teacher.

Trying to take swing from another--normal activity, negative; contact with people, M. C. initiated, with others.

Trying to turn on TV--distraction, out of seat.

Twisting in swings--normal activity, positive.

Walking from and returning to seat (without purpose)--distraction, out of seat.

Walking, meanderingly--distraction, out of seat.

Watching observer--distraction, in seat.

Wiggling whole body while in seat, bounce-like--distraction, in seat.

Writing on paper (not assignment)--distraction, in seat.

APPENDIX C

NO MEDICATION

	Distractions		Contacts with People				Conversations				Normal Activities	
	In Seat	Out of Seat	M.C. Initiated		Others Initiated		M.C. Initiated		Others Initiated		Positive	Negative
			Teacher	Others	Teacher	Others	Teacher	Others	Teacher	Others		
Classroom 10:30-11:00	61	45		7				3	3		6	
Classroom 11:00-11:30	43	30		2	2		4		2		7	3
Classroom 11:30-12:00	18	49	2	2		2	1	3	2		2	1
Recess				1			1	3			16	
Totals	122	124	2	12	2	2	6	9	7		31	4

LIBRIUM

	Distractions		Contacts with People				Conversations				Normal Activities	
	In Seat	Out of Seat	M.C. Initiated		Others Initiated		M.C. Initiated		Others Initiated		Positive	Negative
			Teacher	Others	Teacher	Others	Teacher	Others	Teacher	Others		
Classroom 10:30-11:00	28	7	2	12			3				8	1
Classroom 11:00-11:30	16	11	4	1			3		4	1	9	1
Classroom 11:30-12:00	17	8	3				7				16	1
Recess				12			1	1		1	26	5
Totals	61	26	9	25			14	1	4	2	59	8

PROLIXIN

	Distractions		Contacts with People				Conversations				Normal Activities	
	In Seat	Out of Seat	M.C. Initiated		Others Initiated		M.C. Initiated		Others Initiated		Positive	Negative
			Teacher	Others	Teacher	Others	Teacher	Others	Teacher	Others		
Classroom 10:30-11:00	28	7	2	12			3				8	1
Classroom 11:00-11:30	16	11	4	1			3		4	1	9	1
Classroom 11:30-12:00	17	8	3				7				16	1
Recess				12			1	1		1	26	5
Totals	61	26	9	25			14	1	4	2	59	8

MELIARIL

	Distractions		Contacts with People				Conversations				Normal Activities	
	In Seat	Out of Seat	M.C. Initiated		Others Initiated		M.C. Initiated		Other Initiated		Positive	Negative
			Teacher	Others	Teacher	Others	Teacher	Others	Teacher	Others		
Classroom 10:30-11:00	92	16	1	1							4	
Classroom 11:00-11:30	71	10		1			4	2	3		8	3
Classroom 11:30-12:00	24	11	1				1	3		1	24	2
Recess				3	1	4		2			14	2
Totals	187	37	2	5	1	4	5	7	3	1	50	7

MELLARIL AND RITALIN

	Distractions		Contacts with People				Conversations				Normal Activities	
	In Seat	Out of Seat	M.C. Initiated		Others Initiated		M.C. Initiated		Others Initiated		Positive	Negative
			Teacher	Others	Teacher	Others	Teacher	Others	Teacher	Others		
Classroom 10:30-11:00	33	5					2	6		2	16	
Classroom 11:00-11:30	3	2						2		2	13	
Classroom 11:30-12:00	9	26	1	3			6	14	3	2	13	
Recess				1				3	1		4	13
Totals	45	33	1	4			8	25	4	6	46	13

APPENDIX D

NON-TABULATED DATA

No Medications

Before the child was on any medication, very few activities in which she engaged were oriented toward schoolwork. She seemed oblivious to the rest of the room, yet her attention to little things, such as pieces of lint, showed that she was observing more of her surroundings than one would suspect from seeing her darting movements and superfluous activities. Also, she was able to answer some questions, such as those about a story to which an observer thought that she had paid absolutely no attention. The child roamed about the room, taking round-about routes to a destination. Often she opened and closed her desk without a reason. No one thing received her attention for very long. The girl frequently ignored questions which were asked of her. If she made any comment, it usually was irrelevant.

The pupil would also volunteer to do a particular thing, such as demonstrate an arithmetic problem, but when called upon, would ignore, refuse, or be unable to do the work (often, the activity was one in which she had already successfully engaged, the teacher reported).

Librium

While receiving the drug, Librium, the patient continued to behave in much the same way as she had done previously, the most noticeable exception being that she did not ignore or refuse to answer questions as much as

she had done before. The child still purposelessly opened and closed her desk many times, used round-about routes to reach her destinations, and fingered many objects.

One time the girl very vigorously brushed off her clothing, though she had not soiled it. Except for participating in the pre-pennmanship exercise (shaking of arms and hands to limber them up before writing) and the music class, the subject's activities were essentially non-school oriented.

Prolixin

Throughout all the observations, the child showed a desire to be accepted by the other children as being normal and engaging in normal activities. This desire became very noticeable when she feigned taking a test. She carefully numbered her paper, slid down the cover sheet, and pretended to be thinking of different parts to an answer, counting them on her fingers by putting the thumb to the fingers in succession. At recess the desire for companionship and the desire for a swing to herself seemed to conflict. Six times the child got in and out of the swing she had to herself. She ran back and forth between the two sets of swings, from the set where she could swing all the time, but alone, to the set where the other girls were, but where she had to share the swings.

The girl responded to other people by smiling or softly laughing at them. She looked and listened for others' reactions to her activities, as when she leafed through papers on the teacher's desk.

At one time during the observation, she spent twenty-one minutes in her seat, the maximum for all the observations made.

Mellaril

While on Mellaril the child played more actively with the other

children than had been noted before, but this may have been due to the fact that she had her sled at school and others wanted to use it. During this same recess period she ran down and up the hill, for no discernible reason.

After returning to the classroom, the subject sat down, putting her skirt over the back of her chair so that her red tights showed. The class chorused, "M_____!" A big grin and twinkling eyes were her replies. It seemed that more laughter and grinning took place between the children during this observation than at any other time.

When the girl correctly answered a question about music, the class gave a gasp of surprise and statements of approval.

During the observation, made while the child was receiving Mellaril, she carried on the longest conversation recorded, about two minutes in length. It was a natural two and three-way conversation between the child, other pupils, and the teacher.

Mellaril and Ritalin

While receiving the combination of Mellaril and Ritalin, the girl laughed more to herself than was observed previously. She responded to reactions of others by chuckling to herself. Her conversations with people had noticeably increased--to the greatest number recorded during all the observation periods. Another very apparent change was the way in which the child attempted to do her work. The total number of distractions were less than at any other time. Her movements were more goal-directed. She went directly (by the shortest route) to her place of activity rather than roaming about as during previous observations.

General

During all the observation periods the subject usually went to the

teacher for help rather than raising her hand. Although a student teacher was sometimes in charge, the regular teacher was almost always the one sought by M. C.

The observer was aware of at least surface tolerance by the other children. Most of them were very helpful and did not ridicule or embarrass the child. The observer could not help but notice, however, that the patient was considered odd and was not desired for a companion, though she wanted the approval of the children and seldom directly bothered a child.

APPENDIX E

	Distractions		Contacts with People				Conversations				Normal Activities	
	In Seat	Out of Seat	M.C. Initiated		Others Initiated		M.C. Initiated		Others Initiated		Positive	Negative
			Teacher	Others	Teacher	Others	Teacher	Others	Teacher	Others		
No Drug (Base—total number of each activity which occurred)	122	124	2	12	2	2	6	9	7	0	31	4
Librium	-61	<u>-98</u>	+ 7	+13			+ 8	- 8	-3	+2	<u>+28</u>	+4
Prolixin	-30	-92	+ 2	- 6	none	-1	+13	0	-3	+5	+12	+2
Mellaril	+65	-97	0	- 7	<u>-1</u>	<u>+2</u>	- 1	- 2	<u>-4</u>	+1	+19	+3
Mellaril and Ritalin	<u>-77</u>	-91	- 1	- 8	none	none	+ 2	<u>+16</u>	-3	+6	+15	+9

Note: The underlined numbers indicate the greatest change in each characteristic.

APPENDIX F

Drug Names	Distractions	Contacts with People	Conversations	Normal Activities
No Drug	246	18	22	35
Librium	87	<u>34</u>	21	<u>67</u>
Prolixin	124	18	37	49
Mellaril	224	12	16	57
Mellaril and Ritalin	<u>78</u>	5	<u>43</u>	59

Note: The underlined numbers indicate the greatest change from "No Drug" in each column.

APPENDIX G

Drug Names	Distractions	Contacts with People	Conversations	Normal Activities
No Drug (Base--total number of each activity which occurred)	246	18	22	35
Librium	-159	<u>+16</u>	- 1	<u>+32</u>
Prolixin	-122	0	+15	+14
Mellaril	- 22	- 6	- 6	+22
Mellaril and Ritalin	<u>-166</u>	-13	<u>+21</u>	+24

Note: Plus or minus indicates the direction of deviation from "No Drug."

Underlined number indicates greatest change from "No Drug."

BIBLIOGRAPHY

Books

- Baker, Harry J. Introduction to Exceptional Children. 3d ed. New York: Macmillan Company, 1959.
- Clements, Sam D., Lehtinen, Laura E., and Lukens, Jean E. Children with Minimal Brain Injury. Chicago: National Society for Crippled Children and Adults, 1964.
- Garrison, Karl C., and Force, Dewey G. The Psychology of Exceptional Children. 3d ed. New York: Ronald Press Company, 1959.
- Ilg, Frances L., and Ames, Louise Bates. Child Behavior. Reprinted from the Gesell Institute of Child Development, New Haven, Connecticut. Glen Ellyn, Illinois: West Suburban Association for the Other Child, n.d.
- Kirk, Samuel A., and Weiner, Bluma B. (eds.). Behavior Research on Exceptional Children. New York: The Council for Exceptional Children, National Education Association, 1963.
- Phillips, Bring Lakin, Wiener, Daniel N., and Haring, Norris G. Discipline, Achievement, and Mental Health. Englewood Cliffs: Prentice-Hall, 1960.
- Strauss, Alfred A., and Lehtinen, Laura E. Psychopathology and Education of the Brain-Injured Child. New York: Grune and Stratton, 1947.

Periodicals

- "Abstracts from the Literature," The Journal of the American Medical Association, CLXXIII (July 23, 1960), 1403.
- Bach, Jerome M., and Fleeson, William. "Granulocyte Suppression with Thioridazine Hydrochloridein," The Journal of the American Medical Association, CLXXIII (June 18, 1960), 793-794.
- Barbe, Walter B. "Meeting the Needs of Exceptional Children," Education, LXXXIV (April, 1964), 476-479.

- Batterman, Robert C., Mouratoff, George J., and Kaufman, Jerome E. "Comparative Treatment of the Psychoneurotic Reactive-type Anxiety State with Fluphenazine and Chlordiazepoxide," Biological Abstracts, XLV (September-October, 1964), 6261.
- Beck, Joan. "Mental Miracles for Brain-Injured Children," Chicago Tribune Magazine, September 13, 1964, pp. 26-44.
- Clements, Sam D., and Peters, John E. "Minimal Brain Dysfunctions in the School-Age Child," Reprinted from the Archives of General Psychiatry, VI (March, 1963), 185-197.
- Clemmens, Raymond L. "Minimal Brain Damage in Children," Children, VIII (September-October, 1961), 179-183.
- "Council on Drugs: New and Nonofficial Drugs," The Journal of the American Medical Association, CLXXI (October 17, 1959), 891-893.
- "'Creeping, Crawling' Therapy Restores Boy's Normal Life," Arkansas Democrat, December 21, 1964, p. 1.
- Darvill, Fred T. "Double-Blind Evaluation of Methylphenidate (Ritalin) Hydrochloride," The Journal of the American Medical Association, CLXXIX (April 11, 1959), 1739-1741.
- Doyle, P. J. "The Organic Hyperkinetic Syndrome," Journal of School Health, XXXII (October, 1962), 299-306.
- "Drugs Evaluated by the Council on Drugs," The Journal of the American Medical Association, CLXXXV (July 27, 1963), 298.
- "Drugs Evaluated by the Council on Drugs During 1960," The Journal of the American Medical Association, CLXXVII (July 8, 1961), 45-49.
- Eisenberg, Lecn. "Role of Drugs in Treating Disturbed Children," Children, XV (September-October, 1964), 167-173.
- Ferguson, John T., et al. "Methylphenidate (Ritalin) Hydrochloride Parenteral Solution," The Journal of the American Medical Association, CLXII (December 1, 1956), 1303-1304.
- "Foreign Letters," The Journal of the American Medical Association, CLXXII (February 6, 1960), 589-595.
- Kinross-Wright, John. "Newer Phenothiazine Drugs in Treatment of Nervous Disorders," The Journal of the American Medical Association, CLXX (July 11, 1959), 1283-1288.
- Krakowski, A. J. "Chlordiazepoxide in Treatment of Children with Emotional Disturbances," Biological Abstracts, XLV (November-December, 1964), 8245.

- Krupp, George R., and Schwartzberg, Bernard. "The Brain-injured Child: A Challenge to Social Workers," Social Casework, XLI (February, 1960), 63-69.
- Maisel, Albert Q. "Hope for Brain-Injured Children," Reader's Digest, LXXXV (October, 1964), 135-140.
- Matson, Virginia F. "Miracles Can Happen to Brain-Damaged Children," Parents' Magazine, XXXVI (August, 1961), 48-49, 114-116.
- Miller, Nandeen. "Teaching an Emotionally-Disturbed, Brain-Injured Child," Reading Teacher, XVII (March, 1964), 460-465.
- Morrow, Laura E. "Fluphenazine in the Long-Term Treatment of Non-hospitalized Psychiatric Patients," Biological Abstracts, XLV (September-October, 1964), 6596.
- "New Drugs and Developments in Therapeutics," The Journal of the American Medical Association, CLXXVII (July 29, 1961), 245-246.
- Roth, Lloyd J., and Barlow, Charles F. "Drugs in the Brain," Science, CXXXIV (July 7, 1961), 22-31.
- Watson, C. Wesley, Bowker, Reinette, and Calish, Claire. "Effect of Chloriazepoxide on Epileptic Seizures," Biological Abstracts, XLV (November-December, 1964), 7266.
- "Wonder Drugs and Mental Disorders," Consumer Reports, XX (August, 1955), 386-389.
- Ziporyn, Marvin, and Stoner, Harold E. "The Use of Fluphenazine Hydrochloride (Prolixin) in Acute Functional Psychoses," Biological Abstracts, XLV (September-October, 1964), 6914.

Other Sources

- Elementary Schools, Oak Park, Illinois, "Transfer Slip," June 2, 1960, (in the files of the school).
- "Health Appraisal," (in the files of the school).
- "Health Inventory," dated October, 1962, (in the files of the school).
- Illinois Institute for Juvenile Research, Letter to the school principal, dated June 19, 1962.
- Information Sheet on Mellaril, Sandoz Pharmaceuticals, Division of Sandoz, Incorporated, Hanover, New Jersey, July 12, 1963.
- Interview with the fifth-grade teacher, March 10, 1965.

Interview with the Mother, March 11, 1965.

Marsh, Sylvia. "Case Study: _____." Unpublished case study,
Department of Education, Andrews University, 1964. (Typed.)

①7-3045

