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The Identification of Characteristics of the Hyperactive Child Through Objective Evaluation

Joan Elaine Owen
Utah State University

THE IDENTIFICATION OF CHARACTERISTICS OF THE HYPERACTIVE CHILD THROUGH OBJECTIVE EVALUATION

by

Joan Elaine Owen

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Dedication

To Ben for his many hours of continued support and to some very special friends who were an inspiration.

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Through Objective Evaluation

by

Joan Elaine Owen, Doctor of Philosophy

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Major Professor: Dr. E. Wayne Wright
Department: Psychology

For many years adults have been concerned about the hyperactive child, who acts out in a boisterous manner, who is perhaps too physically stimulated and who is often perceived as not meeting adult expectations. It seems important to identify the characteristics of the hyperactive child in an objective and understandable manner so that parents, teachers, medical doctors, and mental health practitioners can determine more adequate prescriptive treatment programs.

The purpose of this study was to adjudge whether children referred for psychoeducational evaluation by pediatricians as hyperactive exhibit behavioral characteristics which, when evaluated by standardized tests, are significantly different from those characteristics exhibited by "normal" children. Any such behavioral differences could then allow for the development of a characteristic profile for the hyperactive child.

An attempt was made to discover whether children referred for hyperactivity would be significantly different from normal children when using the WISC-R subtests to measure the following traits: level of general information (Information subtest); logical and abstract verbal reasoning (Similarities subtest); concentration and number skills (Arithmetic subtest); the amount of verbal information that the child possesses (Vocabulary subtest); practical knowledge and social judgment (Comprehension subtest); immediate auditory recall and attention span (Digit Span subtest); ability to isolate essential from non-essential details (Picture Completion subtest); adequate judgment in interpreting social situations (Picture Arrangement subtest); visual-motor coordination (Block Design subtest); visual-motor organization (Object Assembly subtest); and any unique or consistent pattern of characteristics based on all of the WISC-R subtests, with the exception of Object Assembly as compared to the WISC-R Object Assembly subtest measuring attentional behavior.

Attempt was also made to discover whether children referred for hyperactivity would be significantly different from normal children when using the PIAT subtests of math and reading recognition to measure skill acquisition in math and reading.

A functional analysis of 40 children was conducted, with 20 children between the ages of 6 to 12 years in a control group, referred by pediatricians as "normal," and 20 children between the ages of 6 to 12 years in an experimental group, referred by pediatricians as "hyperactive."

The results were statistically analyzed using the Kruskal-Wallis one-way analysis of variance by ranks. The results showed no significant differences between the control and experimental groups. Thus the attempt of the present study to identify characteristics of the hyperactive child through use of the Wechsler Intelligence Scale for Children-Revised and the Peabody Individual Achievement Test indicated that control and experimental groups appeared to be from the same population.

The following conclusions were drawn from the results of this study: (1) Children referred for hyperactivity could not be identified through the use of the WISC-R and PIAT math and reading subtests as differing from the control or "normal" population, (2) It was, therefore, not possible to establish a characteristic profile for identifying the hyperactive child by using the WISC-R and PIAT tests alone, (3) At the present time a behavioral checklist employed by a trained practitioneer may still be the best process for identifying specific behaviors of the hyperactive child, and (4) A prescriptive diagnostic and treatment program based upon observed behaviors may provide one method for identifying and remediating deviant behavior of the overly active child.

(102 pages)

Introduction

For many years adults have been concerned about the hyperactive child who acts out in a boisterous manner, who is perhaps too physically stimulated and who is often perceived as talking out of turn. This child is generally brought to professional attention early in life. Careful questioning of parents usually reveals that the child has evidenced symptoms from a very young age. For example, parents often report that the child has always seemed to have an unusual amount of energy, with less need for sleep than his or her siblings, and that clothes, shoes, and bicycles were worn out faster by this child than by other children. Parents and teachers note fidgetiness, inability to sit still for any length of time, talking a great deal, and inability to keep his or her hands off other persons and objects. Over the years many descriptive words or phrases have been used to describe such "problem" children, and much concern has been expressed about them. The clinician cannot help becoming involved with the acting out child due to the fact that great numbers of children are reported to be hyperactive.

The experiences of this investigator as a classroom teacher, school psychologist and clinicians have brought about an awareness of children who appear disorderly at home and in the classroom and who, in great numbers, are placed on medication as a method of treatment. Some families have had their entire life disrupted through diet changes in an attempt to control

hyperactivity; and in some instances family relationships have dissolved due to internal conflicts centered around a hyperactive child.

Symptoms reported by teachers, parents, and medical doctors have many similarities. It is not uncommon for them to ask school counselors, psychologists or other clinicians, whether the child could be categorized as truly hyperactive. These same individuals are appearing to ask for a quantitative measure of activity which could help them decide whether medication is indicated. While it is not the role of the non-medical clinician to determine whether or not a child should be placed on medication, the clinician can offer professional direction through method of observation, the use of behavioral checklists and possibly through the use of standardized tests.

It has been felt by my researchers and clinicians that labelling children as hyperactive can have negative results and that careful consideration should be given in each case before doing so. Many individuals believe that labelling a child leads to a self-fulfilling prophecy, causing a child to attempt to live up to the assigned role. Diagnostic labelling can also lead to negative self-stimulation and, thus, giving the child the opportunity not to be responsible for his or her own actions because of the labelling stigma. Some method of preventing false labelling has, therefore, seemed important; and with this purpose in mind the present investigator was compelled to explore the possibility of using objective measurements to establish a profile to the hyperactive child.

Renshaw (1974) stated, "It is logical to believe that the hyperactive child has always been with us historically and that literature, children's verses, and anecdotes give us confirmation for this" (Introduction). In making his point, Renshaw further presents the concept that anecdotes in early literature from various parts of the world strongly indicate that the hyperactive child has been around for a very long time in every part of the globe, in every race, with a similar prevalence. For example, fairy tales in children's stories throughout the ages document characters who today may be identified as children with hyperactive reactions. They are depicted in these stories as always in trouble, always active, never learning from the disaster precipitated, and never little heroes.

Renshaw (1974) stated further that in earlier days children who might, in the present day, find adjustment impossible were able to function in agricultural surroundings. He pointed out that the hyperactive child to the 20th century is caught in the societal drive toward universal literacy for all who live in complex urban societies where reading is essential to daily functioning. He indicated that while the rural culture offered numerous viable alternatives to the illiterate child, parents today are expected to produce educated children, since even the most menial jobs require the capacity to read instructions and to write reports of some kind. Thus, the hyperactive child, with his inability to adjust to the school environment, must now be urged to stay and receive an education rather than to be pushed into other alternatives as in the past.

For many reasons the recognition of the hyperactive child as such has not been adequately documented until the recent past. The number of hyperactive children in the United States differ in various reports. Feingold (1975) reports the number of hyperactive children as varying from a high of 5,000,000 to a low of about 1,000,000, with a questionable low low of 500,000. He says that, in truth, no one seems to know the exact number and that on this issue the "experts clash again" (p. 53).

Wender (1974) estimated that there are probably 5,000,000 hyperactive children in the United States and that hyperactivity is the single most common child behavior disorder seen by psychologists. He felt that as many as 5% of the school-age children have hyperactive problems. An earlier estimate by Miller (1973) put the number of hyperactive children in the United States today at 1.5 million children. Thus, it seems apparent that the numbers are not agreed upon by experts, and this descrepancy of opinion may possibly result from the fact that hyperactivity is very difficult to define objectively at the present time.

Questions concerning children who evidence behavior problems frequently labeled as "conduct disorders," "acting-out," and "aggressive" are of long standing, and those questions involve large numbers of such students (Renshaw, 1974, p. 3). It, therefore, seems important that every effort be made to attempt to identify hyperactive children in a manner which is understandable and objective enough that parents, teachers, and medical doctors can more adequately define the problem and its treatment needs.

Also, greater understanding and agreement among "helping professionals" regarding the parameters of the hyperactive syndrome would be of considerable value in determining appropriate directions of remediation or treatment.

Furthermore, since the "hyperactive" label can sometimes impair the child's self-image and create negative expectations (Arnold, 1973), this label should probably be used only when one is confident of its accuracy and when its use effects greater understanding of the syndrome and subsequent diagnosis and treatment of the problem.

Purpose of the Study

The purpose of the present study was two-fold:

1. To develop a method of identifying behavior characteristics of the hyperactive child which would be suitable for replication by professionally trained individuals.

2. To assess hyperactive children by means of standardized tests in order to adjudge whether children who have been referred for psychoeducational evaluation by medical doctors exhibit behavior characteristics which, when evaluated, are significantly different from those characteristics exhibited by "normal" children.

Assumptions

The assumptions underlying the present study and which were aimed at establishing characteristics of the hyperactive child and comparing these characteristics with those of the normal child were as follows:

1. That hyperactive children included in the experimental group would be identified by parents, teachers, and medical doctors and referred to an educational therapist with the major complaint being hyperactivity.

2. That the hyperactive children so identified could be evaluated by objective instruments so that characteristic behavior patterns of these children could be compared to those of normal children. (These behavior patterns are outlined in the hypotheses.)

3. That professional observations made by properly trained individuals (i.e., medical doctors and educational therapists) can provide information which may be used either to support materials gained from the testing or to provide additional understanding regarding the characteristics of the hyperactive child.

4. That the information gathered concerning the characteristics of the hyperactive children may be used in attempting to establish a mathematical validity measure of the occurrences of certain characteristics of hyperactive children as compared to normal children.

5. That if the statistical analysis of the study data supported the establishment of recognizable patterns of characteristics in hyperactive children as compared to normal children, these patterns could be arranged in such a manner that they would provide a guide or design which could be used to avoid false labelling of children who are not "true" hyperactives.

Hypotheses

The following null hypotheses were tested:

1. Children referred for hyperactivity will not differ significantly from normal children in verbal comprehension as measured by the Information test of the WISC-R.

2. Children referred for hyperactivity will not differ significantly from normal children in logical and abstract reasoning as measured by the Similarities test of the WISC-R.

3. Children referred for hyperactivity will not differ significantly from normal children in concentration and number skills as measured by the Arithmetic test of the WISC-R.

4. Children referred for hyperactivity will not differ significantly from normal children in the amount of verbal information that the child possesses as measured by the Vocabulary test of the WISC-R.

5. Children referred for hyperactivity will not differ significantly from normal children in practical knowledge and social judgment as measured by the Comprehension test of the WISC-R.

6. Children referred for hyperactivity will not differ significantly from normal children in immediate auditory recall and attention span as measured by the Digit Span test of the WISC-R.

7. Children referred for hyperactivity will not differ significantly from normal children in ability to isolate essential details as measured by the Picture Completion test of the WISC-R.

8. Children referred for hyperactivity will not differ significantly from normal children in adequate judgement in interpreting social situations as measured by the Picture Arrangement test of the WISC-R.

9. Children referred for hyperactivity will not differ significantly from normal children in visual-motor coordination as measured by the Block Design test of the WISC-R.

10. Children referred for hyperactivity will not differ significantly from normal children in visual-motor organization as measured by the Object Assembly test of the WISC-R.

11. Children referred for hyperactivity will not differ significantly from normal children on the Peabody Individual Achievement Test for mathematics.

12. Children referred for hyperactivity will not differ significantly from normal children on the Peabody Individual Achievement Test for reading.

13. Children referred for hyperactivity will not differ significantly from normal children in showing a unique or consistent pattern of characteristics based on the WISC-R and PIAT test scores as related to attentional behavior.

Definition of Terms

1. Brain damage. Structural abnormality of the brain.

2. Brain dysfunction. Synonymous with brain damage.

3. Cerebral dysfunction. Only occasionally associated with actual damage to the brain; manifested by more subtle defects in coordination, perception or language.

4. Hyperkinetic. Synonymous with hyperactive.

Review of Literature

What is Hyperactivity

In the 1960's the term hyperactive began to appear in the literature. The selection and recognition of these terms, hyperactive and hyperkinetic, have been valuable in helping to identify these troubled children as subjects for research. Thus researchers have been aided in studying the child who is presenting disruptive behavior.

Keogh, Wetter, and McGinty (1972) reported that the definitions and descriptions of hyperactivity emphasized two major aspects of symptom patterns: (1) the symptom patterns which have to do with the extent and kind of motor activity, and (2) those which have to do with associated behavior, social, and psychological characteristics. The incidence of heightened and sustained activity levels that persist over a period of time with hyperactive children, as well as an increased speed of their movements and activities, have been noted by several investigators, chiefly Werry and Sprague (1969). Further investigation of the heightened level of motor activity indicated, however, that the significant factor was not the amount of heightened activity but the character of the activity itself.

Schulman, Kaspar, and Thorne (1965) indicated that while there were consistencies in individual activity levels over a period of time, there were also marked "within group" and "within child" variations. An additional

factor was that activity levels in hyperactive children showed more variation in relation to different physical and social aspects in the experimental environment than is the case with normal children (Hutt & Hutt, 1964). A concomitant finding by McConnell, Cromwell, Biger, and Son (1964) was that hyperactive children showed motor activity which is not appropriate to the social situation, and this was seen as a critical characteristic of the hyperactive child. Thus, the activity level of the child was considered to be at the upper end of the distribution of overactivity.

Two of the more esoteric attempts at measurement of the activity level of hyperactive children have involved the use of the Actometer, a modified self-winding calendar watch which records acceleration and deceleration of movements (Johnson, 1971) and the study of using Alpha (brain) wave frequency (Nall, 1973).

Treatment of Hyperactivity through Chemotherapy--Used as Diagnosis

A considerable body of research in the literature describes the use of Methylphenidate (Ritalin) and other chemotherapies to ameliorate the hyperactive syndrome. This amelioration, in an inverse way, has been a form of identification of hyperactive children, since in some instances children made positive gains through the use of medication, which suggested that these children were originally hyperactive.

Campbell, Douglas, and Morgenstern (1971) compared 19 children diagnosed as hyperactive with 19 control children and found that positive

effects of the use of Ritalin with hyperactives could be shown. The use of Ritalin with these children was measured in four fields: reflection-impulsivity, field dependence-independence, constricted-flexible control, and automatization. Children in the hyperactive group showed more impulsive behavior, were more field dependent, were more constricted in ability to control attention, and slower on measures of automatization than the control group. Medicating the hyperactive children with Ritalin seemed to affect the cognitive styles of hyperactive behavior in that the hyperactive children who were treated with Ritalin became less impulsive in responding and also showed ability to inhibit incorrect responses, thus evidencing behaviors more nearly equivalent to that of the control group.

Eisenberg, Conners, and Sharpe (1965) found that the use of Ritalin enabled hyperactive children to improve their school grades. Douglas, Weiss, and Minde (1969) reported an improvement in motor skills in the hyperactive in the act of maintaining attention. Sykes, Douglas, Weiss, and Minde (1971) were impressed with the significance of their findings which indicated that the maintenance of attention to an experimenter-passed task requiring the detention of significant stimuli seemed to be impaired in the hyperactive children.

According to Feingold (1975) at least 15 other drugs, in addition to Ritalin, are used in management of hyperactives. Dexedrine (Dextroamphetamine) is said to be the second largest behavioral modifier. Ritalin,

Dexedrine and Deaner (Deanol) are all classified as "central-nervous-system stimulants."

The "antianxiety and antipsychotic" compounds in use for children are Librium (Chlordiazepoxide), Thorazine (Chlorpromazine), Mellaril (Thioridazine) Atarax and Vistaril (Hydroxyzine), Prolizin and Permitil (Fluphenazine), Milltown and Equanil (Meprobamate). Tofranil (Imipramine) is used as an "antidepressant," and Dilantin (Diphenylhydantoin) as an "anti-convulsant."

Although the research generally supports the use of Ritalin with hyperactive children, there are some indications of possible negative side effects from its use. Therefore, research should and will no doubt be continued to establish more firmly the relative benefits gained from its use vs. the potential negative effects. Hager (1973), in an attempt to minimize negative effects from chemotherapy established treatment guidelines to safeguard against medication for purely repressive reasons.

Adler (1970) expressed some reservation about the use of Ritalin. He felt that if one could learn how to help the hyperactive child in a more meaningful way without the use of Ritalin, one could hopefully throw out the drugs. He indicated, however, that until an effective substitute for Ritalin is identified this medication will be required in order to keep the hyperactive child from inadequate adjustment.

The known benign "side effects" of the stimulants were found by Feingold (1975) to include nervouseness, insomnia, stomach ache and skin

rash. Various investigators, he added, have also reported loss of appetite leading to weight loss and increased heartbeat, but that no serious side effects have been attributed to Ritalin, Dexedrine or Deaner.

The cause of hyperactivity, Feingold states, is in the majority of cases attributed to food additives. By deleting all synthetic food colorings and flavorings from a patient's diet, Feingold has discovered remarkable personality and behavioral changes. Feingold reported that when the additives in cookies, ice cream, fruit punches, hot dogs and dry cereals are taken away, the hyperactive child becomes calmer, more responsive, less distractable and more able to cope. These changes are followed by a marked improvement in scholastic achievement.

Feingold realizes that additives are here to stay, but he feels that they should be labeled more completely and accurately, that they be tested thoroughly and that everyone should know exactly what effects the additives can have. He states further:

> Until we receive more facts, we really don't know what is going on in the human brain, or in the nervous system, and how chemicals, both natural and synthetic, might affect these mechanisms. However, I'm inclined to think that if 50 percent, even 25 percent of the H-LDs [hyperkinetics] will respond to inexpensive dietary management, it is well worth the family's effort. If the children of this particular group--those apparently reacting to food additives--can be taken off drug therapy and permitted to lead normal lives at home and in school . . . the admitted bother becomes both predictive and rewarding. (pp. 137-138)

Behavioral Characteristics (Syndrome) of Hyperactive Children

The literature contains a number of studies describing attempts to identify certain characteristics as being more prominent among hyperactive children than among normal children through the use of direct observation, behavioral checklists and standardized tests.

Several patterns of behavioral characteristics of the hyperactive child have been developed (Feingold, 1975; Stewart, Ferris, Craig, & Dieruf, 1966; Wender, 1974; McConnel et al., 1964; Hager, 1973; Dielman, Cattell, & Lepper, 1971; Davids, 1971). However, the literature does not provide a study of a behavioral syndrome of hyperactive children based on an objective evaluation through the use of standardized diagnostic instruments. These are, however, studies comparing the behavioral characteristics of hyperactive children to those of normal child based on observation. The present study, as indicated in Objective 2, will provide further information regarding the measured behaviors of hyperactive children in an attempt to establish a pattern that can be used by parents, teachers, therapists, and medical doctors, for identification and remediation purposes.

The task of describing the behavioral characteristics of hyperactive children is a difficult one--not because the attributes are unusual, but because many of the symptoms are present in all children to some degree at some particular time (Wender, 1974). The characteristics of the hyperactive are not abnormal in themselves; they are only abnormal when they are excessive

in degree. What characterizes hyperactive children is the intensity, the persistence, and the patterning of these symptoms.

Wender (1974) describes the hyperactive child as being:

> incessantly in motion, driven like a motor, constantly fidgeting, drumming his fingers, shuffling his feet. He does not stay at any activity long. He pulls all his toys off the shelf, plays with each for a moment and discards it. He cannot be read to without quickly losing interest. Of course he is unable to keep from squirming at the dinner table; he may not even be able to sit still in front of the TV set. In the car he drives the other passengers wild. He opens and closes ashtrays, plays with the windows, tugs others' seat belts, and kicks the passengers in the front seat. At school his teacher relates that the child is fidgety, disruptive, unable to sit still in his seat; that he gets up and walks around the classroom, talks out, clowns; and that he jostles, bothers, and annoys his fellow pupils. Sometimes the HA child is as overtalkative as he is overactive, talking as ceaselessly as he moves.
>
> However, it should also be emphasized that the HA child need not always be moving. Sometimes he can sit relatively still. For whatever reason, this is most apt to occur when he is getting individual attention from an adult. This is worth remembering because sometimes people who examine the child are misled when he sits more or less still for 10 to 15 minutes. (p. 10)

According to the American Psychiatric Association (1968) hyperkinesis is characterized by restlessness, distractibility, and short attention span, especially in young children.

Keogh (1971) commented that learning problems of hyperactive children are a result of increased motor activity. This activity disrupts attention to task and prevents accurate intake of information. She further states that learning problems of hyperactive children are a function of hasty, impulsive decisions in learning situations.

Flynn and Others (1972) suggested that hyperactivity appears to be multi-etiological and that it chronically shows the imbalance of the excitatory and inhibitory processes.

Renshaw (1974) has stated that if a child displays 50% of the following characteristics, persistently and recurrently, the child may be defined as hyperactive:

1. Ceasless, purposeless activity
2. Short attention span
3. Highly distractible
4. Highly excitable; labile emotions (from tears to laughter in minutes)
5. Uncontrolled impulses (talks, hits, leaps, etc.)
6. Poor concentration (over includes all stimuli, unable to screen out or discriminate)
7. Heedless of danger/pain
8. Poor response to reward/punishment
9. Destructive; aggressive; lies; steals; has temper tantrums
10. Constant clash with environment (including pets)
11. Accident-prone; clumsy; poor motor-coordination
12. Speech problems
13. Perception difficulties; audiovisual problems
14. Mixed L-R dominance (ex.: R-handed/L-eyed/R-legged)
15. Irregular developmental milestones (example: no crawling then sudden walking; no babbling then sudden sentences)
16. "Untidy" drawing, coloring, handwriting, (over-shooting of lines; unable to draw parallel lines; unable to stay within boundaries)
17. Nothing completed spontaneously, needs excess reminders (eat/dress/task)
18. Inability to cope with phase-related activity (example: collaborative games, riding bicycle, gym, etc.)
19. Poor socialization; quarrelsome; no respect for needs
20. Sleep disturbance
21. Needs constant supervision. (pp. 82-83)

Use of Standardized Tests to Measure Hyperactive Characteristics

As stated earlier, a comprehensive pattern of behavioral characteristics of hyperactive children based on standardized testing has not been established, although some research has been completed in which standardized instruments were used to measure a limited number of characteristics (no more than four characteristics in any one study).

Arnold (1973) indicated that psychological testing may serve as a guideline for assessment; and Bjorklund and Butter (1973) used the Primary Mental Abilities Test and the Impulsivity Scale in an attempt to measure cognitive impulsivity. Burleigh and Others (1971) used the Porteus Maze Test which, on a limited sample, differentiated between normal and hyperactive children in their tendency to perseverate.

Related Research with the Wechsler Intelligence Scale for Children--WISC

The work of Witkin, Dyk, Goodenough, and Karp (1962) and that of Cohen (1959), indicated that the Wechsler Intelligence Scale for Children taps at least three relatively independent functions which might be used to identify characteristics of the hyperactive. Keogh et al. (1972) also employed tests of the Wechsler Intelligence Scale for Children in an attempt to identify characteristics of children who exhibited learning difficulty. Among three groups of children tested, one group was categorized as Learning Difficulty-Hyperactive. Keogh's approach included the combining of various WISC tests into three

factors: verbal-comprehension, analytical-field approach, and attentional-comprehension factors.

Keogh et al. (1972) reported:

> A Verbal-Comprehension factor is composed of Information, Vocabulary, and Comprehension subtests; an Analytic-Field-Approach factor is made up of Object Assembly, Block Design, and Picture Completion subtests, and an Attentional-Concentration factor is composed of Arithmetic, Digit Span, and Coding subtests. Individual differences in styles of intellectual performance, especially as they relate to characteristics of field independence-dependence, are presumed to be reflected in differences in patterning of factor scores. (p. 178)

The present study, in contrast to Keogh's study, tested children who were re-identified specifically as hyperactive rather than as "learning difficulty-hyperactive," one of Keogh's classifications. In addition, the use of individual subtests to identify particular characteristics was used, hopefully to make possible a clearer delineation of these characteristics. Keogh indicated that it is likely that the higher the level of motor activity, the greater the likelihood of inappropriate behavior. She, however, was unable to find significance in her study. Kaufman (1975) offers support for the practice of interpreting the specificity of a single test of the WISC-R when evaluating a child's profile of scaled scores. He states that the WISC-R is at the same time both consistent with, and a decided improvement over, the structure of the WISC, its successful predecessor. Thus a hoped for advantage of the testing in the present study, as compared to earlier testing efforts, is the present availability of the WISC-R (1974 Revision).

The characteristics to be evaluated by using the WISC-R included the following: level of general information (Information subtest); logical and abstract verbal reasoning (Similarities subtest); concentration and number skills (Arithmetic subtest); amount of verbal information (Vocabulary subtest); practical knowledge and social judgment (Comprehension subtest); immediate auditory recall and attention span (Digit Span subtest); ability to isolate essential from non-essential details (Picture Completion subtest); adequate judgment in interpreting social situations (Picture Arrangement subtest); visual motor coordination (Block Design subtest); and visual motor organization (Object Assembly subtest).

The use of subtests of the Wechsler Scales to identify the above characteristics is supported by research reported in the literature. The Wechsler Scales were originally developed as an Intelligence test to be used for the evaluation of cognitive abilities; however, use of the subtests to measure other characteristics has been well established.

For example, Zimmerman and Woo-Sam (1972) reported that the Information subtest is basically used to determine how much general information the subject has abstracted from his surrounding environment. The child is not asked to find relationships between facts, but simply if he has obtained and stored them as general knowledge. Ogdon (1975) stated that this subtest measures an ability which embraces remote memory and alertness to the environment and which is believed to be influenced favorably by conscious effort only to a small extent.

The Similarities subtest appears to determine the qualitiative aspects which the subject has abstracted from his environment (Glasser & Zimmerman, 1967). A number of researchers have indicated that verbal concept formation and logical thinking in conjunction with remote memory and a general verbal fluency are the factors being measured (Gilbert, 1969; Glasser & Zimmerman, 1967; Harrower, 1956; Mayman, Schafer, & Rapaport, 1951; Patterson, 1953; Rapaport, Gill, & Schafer, 1945; Rosenzweig & Kogan, 1949; Waugh & Bush, 1971; Wechsler, 1958).

Ogdon (1975) made the following statement:

> Concept formation has been considered the intellectual function relating to "belonging together" or likeness of objects and events. It is a kind of associative ability. The effect of maladjustment on thought processes often can be discovered earlier in concept formation than in other aspects of intellection. Verbal concept formation may be maintained by subjects from good cultural backgrounds whose superior verbal conventions or habits may mask the debilitating encroachment of maladjustment proclivities. (p. 14)

Glasser and Zimmerman's (1967) evaluation of the Arithmetic subtest indicates that meaningful manipulation of complex thought patterns is required by this subtest and that this test is a measure of the child's ability to utilize abstract concepts of number and numerical operations, which are measures of cognitive development. Concentration and attention are noncognitive functions in essence, and manipulation of number operations is cognitive. Therefore, this test is of value in that it furnishes a demonstration of how the child relates cognitive and noncognitive factors in terms of thinking and performance.

Glasser and Zimmerman (1967), Mayman et al. (1951), and Waugh and Bush (1971) indicate that the Vocabulary subtest measures one's fund of verbal information and comprehension.

According to Glasser and Zimmerman (1967) the Comprehension subtest may be employed to measure the level of a child's ability to use practical judgment in everyday social situations, the extent to which social acculturation has taken place, and the extent to which a maturing conscience or moral sense has developed. It requires the use of so-called common sense judgment in a variety of situations. Success on this test probably depends a great deal on possession of practical information as well as the ability to evaluate and utilize past experience in socially acceptable ways. This test determines if the child can use, in a socially accepted way, facts which are gleaned from the surrounding environment.

Practical social judgment is considered to be a function on the borderline between intellect and affect. It suggests the emotionally relevant use of one's assets with regard to the situation, and has the special flavor of social, perhaps even moral, competence (Gilbert, 1969; Glasser & Zimmerman, 1967; Holt, 1968; Kripner, 1964; Waugh & Bush, 1971).

The Digit Span subtest may be used to determine the level of a child's ability to attend in a rather simple situation, to measure immediate auditory recall or immediate auditory memory (attention) span. If the child understands and masters methods of grouping operations, his success on this test probably is assured. In this sense, then, attention becomes an active as

well as a passive process. If a child can suspend irrelevant thought processes while attending to this task, the capacity for success on digits will be high. It might be noted, however, that a score on this test considerably above the subtest average can and often does indicate flattened affect or bland emotional life and a classical repression of feeling (Glasser & Zimmerman, 1967).

The findings of Cohen (1952a, 1952b, 1959), and Dennerll, Broeder, and Sokolov (1964) indicate that attention, as measured on the Digit Span subtest, is a passive process, as opposed to the concentration necessary for successful achievement on arithmetic. Distractible persons may be expected to do poorly here.

The Picture Completion subtest purports to measure the child's ability to identify visually familiar objects, forms, and living things and the further capacity to identify and isolate essential from non-essential characteristics. Attention and concentration are important elements in this test (Glasser & Zimmerman, 1967).

Ogdon (1975) states that the Picture Arrangement subtest measures planning ability related to social intelligence. The perception of cause and effect relationships based on visual comprehension is important, as well as the ability to comprehend and size up a total (complex) situation and behave appropriately.

The level of one achievement on the Picture Arrangement subtest was studied by Wechsler (1958), Rapaport (1945), Gurvitz (1951), Glasser and

Zimmerman (1967), and Waugh and Bush (1971). Findings indicate that the level of achievement reflects one's ability for planning, anticipation, and interpretation of social situations which often, but not always, involve interpersonal relations. Achievement also indicates an ability to anticipate the consequences of initial acts or situations.

Glasser and Zimmerman (1967) reported that the Block Design subtest measured perception, analysis, synthesis, and reproduction of abstract designs. Logic and reasoning must be applied to space relationships. Ogdon (1975) agreed with their findings and further stated that it is perceptual organization and spatial visualization that appear to be the most important factors related to achievement on this subtest. Preliminary studies by Glasser and Zimmerman (1967) seem to indicate that unusually high scores on the Block Design subtest suggest superior visual-motor coordination and perceptual organization.

The Object Assembly subtest measures perception, visual-motor coordination, and simple assembly skills. For success there must be some visual anticipation of part-whole relationships, and flexibility in working toward a goal which may be unknown at first. A synthesis of concrete visual forms is required (Glasser & Zimmerman, 1967).

The Object Assembly subtest is considered principally as a test of perceptual (non-verbal) organization ability (Cohen, 1952a, 1952b, 1975a, 1975b, 1959). Coordination as well as visual organization seem to play a productive role, in that the subject must produce something on his own, out of

not altogether immediately recognizable parts (Rapaport et al., 1945). Visual organization as a dynamic mental process is manifested when seen as part of something, usually seen as a whole and recognized. This seems to imply that visual or cognitive organization requires the identification of, or giving meaning to, stimuli, and is more important on this subtest than sheer psychomotor speed (Lanfled & Saunders, 1961; Mayman et al., 1951; Patterson, 1953).

Ogdon (1975) concluded that "When a task is less familiar or less clearly structured, the test is not one of visual organization with subsequent motor execution, but of actual visual-motor coordination" (p. 16).

Methods and Procedure

This section discusses the following: The subjects chosen for the experiment, the test instruments used, and the procedure. The overall methodology, including its subsections, was discussed with a number of colleagues and workers in the field of mental health, as well as being evaluated as the Review of Literature was being developed.

According to Cromwell, Baumeister, and Hawkins (1963) it has proved difficult to establish a reliable and valid measurement of the activity demonstrated by the hyperactive child. Since their findings were published, the problem of delineation of the characteristics of the hyperactive child has seemed to grow no less complicated. Sykes et al. (1971) indicated that the definition of the hyperactive child in terms of the measured quantity of movement or activity had not been completed but that the identification of hyperactive children was an operational one. They further stated that their method of selection was that the child's parent or teacher reported specified overactivity on the part of the child as the major complaint and that such hyperactivity had to have been present as a chronic problem since early childhood.

It seems desirable to have a profile of hyperactive children which would then be used to identify the hyperactive child on a more objective basis. Therefore, the method for identifying the hyperactive child is of prime importance. Not only should the method for identifying the hyperactive child

be such that this method can be replicated, but in addition the method itself could provide a structure which might be used in an objective manner for identification of hyperactive children by practitioners in the field. The method, it was felt, should be based on the use of highly respected, readily available, and widely used psychological instruments which would be part of the repertoire of school psychologists and trained technicians. The Wechsler Intelligence Scale for Children-Revised (WISC-R) and the Peabody Individual Achievement Test (PIAT) were the two instruments selected for use in the present study.

Subjects

Identification of hyperactive children has attracted the attention of a number of researchers. Schrager et al. (1970) found that hyperkinetic children were absent from school more frequently and did remarkably less well on standardized tests of school readiness than their peers who were rated non-hyperkinetic.

According to Hutt and Hutt (1964) hyperactive children are less able than normal children to modify their behavior and activity levels in relation to differing physical and social aspects of the experimental environment. McConnell et al. (1964), McFarland, Peacock, and Watson (1966), Werry (1968a, 1968b), and Werry and Sprague (1969) indicated that the distinguishing characteristics of the hyperactive child are situationally or socially inappropriate behaviors, thus bringing the hyperactive into conflict with his or her

socio-familial environment. McConnell et al. (1964) used an instrument which they categorized as a subjective measure of activity level; they identified hyperactive children by the use of a 10-item observable behavior rating scale.

Perhaps the most comprehensive summary of various opinions concerning characteristics of the hyperactive child was that of Keogh (1971) who stated that despite agreement that there is imprecision of definition of hyperactivity, professionals and parents also agree that "they know it when they see it."

In a survey by Schrager, Lindy, Harrison, McDermott, and Wilson (1966), pediatricians, teachers, psychologists, psychiatrists, and social workers concurred that the six behaviors most characteristic of hyperactive children were: fidgety and restless; inattentive; hard to manage; cannot sit still; easily distracted; cannot take frustration. Stewart et al. (1966) interviewed mothers of 37 hyperactive elementary school children and found that over two-thirds of these children were described in the following traits: cannot sit still; talks too much; wears out toys and furniture; fidgets; does not complete projects; does not stay with games. Professionals and parents apparently react to similar behaviors. Furthermore, descriptive terms on which professionals and parents agreed were, for the most part, negative. Such terms reflect irritation on the part of adults and support Werry and Sprague's (1969) point as to the importance of qualitative aspects of hyperactivity in bringing about disruption of the social and personal adjustment of the child.

Selection of Subjects

It is not surprising that a considerable amount of time was spent in contemplating a best method for choosing the subjects for the present study. Two different pediatricians were brought into the discussion both singly and together and unanimous agreement was reached that the procedures for selection of the subjects must be carefully considered and carefully followed. Each step in the selection process was established only after much consideration. The selection of the subjects for the study of the experimental group was basic to the establishment of a profile of the hyperactive child, since these subjects were to be identified as being typical of the hyperactive children.

Subjects for the study were selected on the basis of several specified criteria as follows:

1. The experimental group was comprised of children referred to the psychoeducational therapist by a pediatrician, with the basic reason for referral being that the child exhibited hyperactive symptoms. It was required that each child chosen as a subject for the experimental group must have exhibited the symptoms of hyperactivity for at least 1 year prior to referral by the pediatrician. It was required that each of the children chosen must have exhibited symptoms of hyperactivity throughout the day as reported by the parent and the classroom teacher.

2. No child was accepted for the study if he or she has been diagnosed by a psychologist or psychiatrist as brain-damaged, epileptic, psychotic, or severely emotionally disturbed. Each of the children had to

have an IQ of 80 or above on the WISC-R Full Scale Score. It was required that none of the children involved in the experiment was, or had been, receiving medication for hyperactivity or participating in any kind of psychiatric program at the time of the testing and interviews.

3. The children chosen for the experimental group were all from middle-class backgrounds and were all living at home with at least one natural parent at the time of the testing.

4. The experimental group, selected on the basis of the established criteria, consisted of 10 boys and 10 girls within the range of 6 to 12 years. The 20 subjects included 17 Caucasians and three Blacks. No subjects were culturally impoverished; all were from middle-class population. All the children were in good physical health and without limiting physical impairment.

5. It was decided that a control group would be established for comparison with the experimental group of children who were identified as hyperactive. The control group consisted of 20 children who were identified by parents, teachers, and pediatricians as normal children.

6. The children selected for the control group were chosen by random sampling from among a number of children referred for routine physical examinations. Every 10th child on the roster of children reported to be normal by two pediatricians was selected.

Parents were contacted for permission to include the child in the control group and were questioned as to the degree of acting-out behavior of

their child. Teachers were querried regarding the same behaviors. Teacher and parent judgment of normalcy was accepted.

Once the experimental and control groups were established it was possible to compare both groups on the basis of their performance on the WISC-R and PIAT. In addition to this, the national norms for each of the objective type tests were used as measurements both for the control group (identified as normal children) and the experimental group (identified as hyperactive children).

Instruments

In selecting the instruments to be used for testing, consideration was given to various tests mentioned in the literature which were used to measure behaviors of hyperactive children. Kagan, Rosman, Day, Albert, and Phillips (1963) used the Matching Familiar Figures Test to measure reflection-impulsivity; Karp and Konstadt (1963) selected the Children's Embedded Figures Test to measure field dependence-independence; Cohen, Weiss, and Minde (1972) used both of these instruments. The Wechsler or Stanford-Binet have been used by Stewart et al. (1966) to establish the intelligence of hyperactive children. Wender (1974) suggested that through the use of the Wechsler Intelligence Scale for Children-Revised, the Rorschach, the Bender-Gestalt, Figure Drawings, or Block Design tests, evidence of fine organicity may be established as related to hyperactivity. After consideration of the above mentioned tests it was decided that the Wechsler Intelligence Scale

for Children-Revised (WISC-R) and the Peabody Individual Achievement Test would be used for the present study.

The Peabody Individual Achievement Test (PIAT) was selected for the study in order to assess mathematics skill and reading recognition skill of the subjects. The PIAT was published in 1970 by the American Guidance Service, Inc., Circle Pines, Minnesota. It is used in establishing grade and age equivalencies in mathematics, reading and spelling, and has been recognized as a reliable and valid instrument, according to the PIAT Manual. In the present study, the PIAT was used to measure skills in mathematics and reading recognition of the control and experimental groups.

The administration and scoring of the tests were done by two test administrators, both of whom were college trained in the use of each of the tests involved in the research. The administrators also had extensive experience in the use of these tests in actual field situations. A report was individually prepared for the family of each of the subjects involved in the study. The report included recommendations for therapeutic procedures when the needs for such procedures were indicated.

The Peabody Individual Achievement Test (PIAT) was chosen as a supplemental instrument to the WISC-R since the PIAT seemed to be consistent with the general requirement of attempting to identify a profile of the hyperactive child. This test was used to measure mathematics and reading recognition in a manner which eliminates problems generated by different methods of teaching mathematics and reading recognition. A description of

the PIAT subtests as presented in the PIAT Manual as follows:

> Mathematics Subtest
> Description. The Mathematics subtest consists of 84 multiple-choice items, each with four options, which range from testing such early skills as matching, discriminating, and recognizing numerals; to measuring advanced concepts in geometry and trigonometry.
>
> Rationale. Mathematics was included in the PIAT as a subtest because this is a universally-taught and frequently-used academic skill. (p. 10)
>
> Reading Recognition Subtest
> Description. This subtest also contains 84 items which range in difficulty from pre-school through high school.
>
> Rationale. In a technical sense, after the first 18 readiness-type items, the general objective of the Reading Recognition subtest is to measure skills in translating sequences of printed alphabetic symbols which form words, into speech sounds that can be understood by others as words. This subtest might also be viewed as an oral reading test. While it is recognized that reading aloud is only one aspect of general reading ability, it is a skill useful throughout life in a wide range of everyday situations in or out of school. (p. 12)

Procedures

The following chronological sequence of the study will clarify the research procedures used.

1. The experimental group included 20 children between 6 and 12 years of age who had been referred because of hyperactivity to the Psycho-educational Diagnostician by each child's parents, teacher, and pediatrician.

2. The control group included 20 children between 6 and 12 years of age who had been designated by each child's parents, teacher, and medical doctor as normal.

3. The control group was equated with the experimental group on mean IQ, sex, race, and place of residence (urban-rural).

4. A telephone interview was conducted with the classroom teacher of each child included in the study.

5. An interview was held with at least one natural parent of each subject in both the control and experimental groups.

6. To eliminate the possibility of test administrator bias, two examiners administered and scored the tests. One examiner gave the WISC-R and the other administrator gave the PIAT to each client.

7. Using the Kruskal-Wallis one-way analysis of variance by ranks, an evaluation was made relating the significance of the relationship of the scores of the experimental and the control groups on the WISC-R and the PIAT.

Selection of the Experimental Group

The Psychoeducational Diagnostician, who was also the experimenter, used the following procedures in establishing information pertaining to the experimental group (N = 20, ages 6-12):

1. Upon identification of the hyperactive child, the pediatrician referred the parent and child to the Psychoeducational Diagnostician to establish an appointment time for further diagnosis. The form letter from the pediatrician to the Psychoeducational Diagnostician was sent for each child

indicating that the referral was to further ascertain the degree of hyperactivity or "acting-out" behavior on the part of the child.

2. The receptionist for the Psychoeducational Diagnostician made an appointment with the parent and child who had been referred for hyperactivity.

3. Prior to the formal testing session, at least one parent was interviewed; the following questions were used for each child in the experimental group:

a. Has the classroom teacher ever approached you regarding your child's "acting-out" or hyperactivity behavior?

b. Does your child have the ability to watch a 30-minute television program that he or she enjoys without exhibiting "out-of-seat" behavior?

c. Would you describe your child as "constantly on the move?"

d. Do you describe your child's sleeping habits as normal?

e. Does your child move from one activity to another exhibiting poor concentration or attending ability?

f. Is your child presently on medication for hyperactivity?

g. Is your child presently undergoing any type of treatment by professionals such as: psychologists, psychiatristis, or family therapists, for hyperactivity or emotional problems?

h. Has your child ever been diagnosed as seizure-disordered or possibly brain-damaged?

4. At the initial interview with the parent the "Release of Information Form" was signed, giving the Psychoeducational Diagnostician permission to contact the classroom teacher for an interview.

5. The Psychoeducational Diagnostician sent the "Release of Information Form" to the classroom teacher. This form was accompanied by a letter which stated that the Psychoeducational Diagnostician would be contacting the teacher for information regarding the youngster named on the "Release of Information Form."

6. A follow-up telephone call was made to the teacher by the Psychoeducational Diagnostician. An interview over the telephone was held, using the following set of questions asked of the teacher:

a. Would you describe this child as one who is hyperactive or exhibits "acting-out" behavior?

b. Does this child have the ability to watch a 30-minute television program that he/she enjoys without exhibiting "out-of-seat" behavior?

c. Would you describe this child as "constantly on the move?"

d. Does this child move from one activity to another exhibiting poor concentration or attending ability?

e. Is this child presently on medication for hyperactivity?

f. If this child presently undergoing any type of treatment by professionals such as: psychologists, psychiatrists, or family therapists for hyperactivity or emotional problems?

g. Do school records indicate that this child has been diagnosed as seizure-disordered or brain-damaged?

7. Following the parent interview, each child in the experimental group was given the Wechsler Intelligence Scale for Children-Revised by the Psychoeducational Diagnostician. The Peabody Individual Achievement Test was administered to each child by another examiner.

8. A follow-up consultation was held with at least one parent and the child to discuss test results and specific recommendations or treatment.

9. A copy of the written psychological report was given to the parent and one copy of the psychological report was mailed to the pediatrician. Upon parental request, a third copy was sent to the classroom teacher who participated in the program.

Selection of the Control Group

The Psychoeducational Diagnostician used the following procedure to gather information pertaining to the control group (N = 20, ages 6-12).

1. A roster, including names of children and parents to be included in the control group, was obtained from two pediatricians. The pediatricians each selected 15 children categorized as normal for possible inclusion in the study. Parents were notified by the pediatrician that the Psychoeducational Diagnostician would be calling them for possible inclusion of their child in the study.

2. A telephone contact by the Psychoeducational Diagnostician was made with the parent of each normal child, requesting an interview as well as an opportunity to do a diagnostic workup on the child which could possibly benefit the child.

3. At least one parent of the normal child was interviewed prior to the testing session to establish whether the child could be categorized as "normal." The same set of questions asked of the experiemtnal group parents was also used for the control group.

4. The parents signed a "Release of Information Form" at the time of the interview enabling the Psychoeducational Diagnostician to contact the classroom teacher for further information pertaining to the normal youngster.

5. The Psychoeducational Diagnostician sent the "Release of Information Form" to the classroom teacher with an accompanying letter stating that contact would be made as part of a research project.

6. A follow-up telephone call was made to the classroom teacher, with an interview being held over the telephone. The same set of questions asked of the teacher of the hyperactive group was used.

7. The control group child, or "normal" child, was then administered the WISC-R by the Psychoeducational Diagnostician, with the PIAT being administered by the second test examiner.

8. A follow-up consultation was held with at least one parent and the child to discuss test results and to recommend specific treatment when needed.

9. A copy of the written psychological report was given to the parent and one copy was mailed to the pediatrician. Upon parental consent, a third copy was sent to the classroom teacher who participated in the program.

During the initial contact with parents of both the experimental and control group subjects, a standard questionnaire form was completed. This form included information as to the child's place of residence, sex, race, age, and grade in school. The form also included questions as to the parents' occupation and whether one or both parents were the child's natural parents.

The Kruskal-Wallis one-way analysis of variance by ranks was selected as the appropriate statistical technique for testing the study's hypotheses. According to Siegel (1956) statistical technique was uniquely suited to the data of the behavioral sciences. Siegel supports the use of the Kruskal-Wallis one-way analysis of variance as follows:

> The Kruskal-Wallis one-way analysis of variance by ranks is an extremely useful test for deciding whether $\underline{k}$ independent samples are from different populations. Sample values almost invariably differ somewhat, and the question is whether the differences among the samples signify genuine population differences or whether they represent merely chance variations such as are to be expected among several random samples from the same population. The Kruskal-Wallis technique tests the null hypothesis that the $\underline{k}$ samples come from the same population or from identical populations with respect to averages. The test assumes that the variable under study has an underlying continuous distribution. It requires at least ordinal measurement of that variable.
>
> The Kruskal-Wallis test is more efficient than the extension of the median test because it utilizes more of the information in the observations, converting the scores into ranks rather than simply dichotomizing them as above and below the median. The extension of the median test and the Kruskal-Wallis test may

> both be applied to the same data, i.e., they have similar requirements for the data under test. When the data are such that either test might be used, the Kruskal-Wallis test will be found to be more efficient because it uses more of the information in the observations. It converts the scores to ranks, whereas the extension of the median test converts them simply to either pluses or minuses. Thus the Kruskal-Wallis test preserves the magnitude of the scores more fully than does the extension of the median test. For this reason it is usually more sensitive to differences among the k samples of scores. The Kruskal-Wallis test seems to be the most efficient of the nonparametric tests for k independent samples. (p. 184)

It was felt that procedures used in this research study should be very clearly delineated and readily understandable to persons with training in the fields of mental health and child development. Consideration was given to identifying each step against each other in order to establish a clear format and one which could be easily replicated. Several precautionary factors were built into the procedural process, including the matching of groups and an interview with at least one natural parent, in both the control and experimental groups. Since it also seemed necessary to establish without question the validity of the testing process it was decided to use two test examiners in order to avoid possible administrator bias. Two pediatricians, each of whom has had extensive experience in evaluating hyperactive children, were involved in the selection of the experimental group. In case of any question involving a selection of a child for the experimental group, more than one pediatrician was brought into an evaluation of the child's hyperactivity.

Results

The study was intended to determine whether a profile could be established by using the WISC-R and the PIAT math and reading recognition subtests which could then be used to identify the differences between hyperactive and normal children. A control group of 20 children who were identified as normal and an experimental group of 20 children who were identified as hyperactive were tested. The scores were obtained for the two groups on 14 WISC-R scales and subtests and two PIAT subtests. These scores are presented in Table 1.

The presentation in Table 1 is based on the derivation of the means for each of the subtests and scales for the control group and the derivation of the means for each of the subtests and scales for the experimental group. The means are listed opposite each other with the differences listed in the next column. The fourth column lists the X^2 values, derived from the Kruskal-Wallis one-way analysis of variance, as a test for significance between the means.

Item 14 of Table 1 presents the full scale IQ for both the control and the experimental groups. It will be noted that the mean IQ scores of these groups are within two points of each other. Table 1 further presents the differences between the Verbal (Item 12) and Performance (Item 13) portions of the test for the control and experimental groups on the WISC-R.

Table 1

Mean Scores for Each of the Diagnostic Categories on 14 WISC-R Scales and Subtests and Two PIAT Subtests for Control and Experimental Groups

Item	Group		Differences (C-E)	X^2
	Control	Experimental		
1. Information	9.45	9.00	.45	.316
2. Similarities	12.05	11.95	.10	.225
3. Mathematics	9.75	8.95	.80	.286
4. Vocabulary	11.10	9.15	1.95	2.597
5. Comprehension	11.90	11.45	.45	.108
6. Digit Span	8.4	8.25	.15	.299
7. Pic. Compl.	10.45	10.00	.45	.419
8. Pic. Arrangement	9.85	10.85	-1.00	1.309
9. Block Design	9.75	10.20	- .45	.436
10. Object Assem.	10.55	12.40	-1.85	3.189
11. Coding	9.20	7.75	1.45	1.770
12. Verbal IQ	105.35	100.40	4.95	.273
13. Performance IQ	99.10	95.10	4.00	.058
14. WISC Full IQ	102.50	100.85	1.65	.122
15. PIAT Math	59.15	46.85	12.30	1.828
16. PIAT Reading	64.50	44.80	19.70	4.333*

*$p < .05$.

The diagnostic categories for the seven WISC-R Verbal scales and subtests are presented in Table 2. This table indicates the mean Verbal scale IQ for the control group and the mean Verbal scale IQ for the experimental group.

Table 2

Mean Scores for Each of the Diagnostic Categories on the WISC-R Verbal Scale and Six Subtests for the Control and Experimental Groups

	Control	Experimental	Differences (C-E)
Information	9.45	9.00	.45
Similarities	12.05	11.95	.10
Mathematics	9.75	8.95	.80
Vocabulary	11.10	9.15	1.95
Comprehension	11.90	11.45	.45
Digit Span	8.40	8.25	.15
Verbal Scale IQ	105.35	100.40	.273

To make it possible to compare the mean scores of the WISC-R Verbal scales (Table 2) with the mean scores for the Performance scales, Table 3 has been prepared. It will be noted that the mean scores for the Performance

scale IQ (Table 3) for the two groups is somewhat lower than the mean Verbal scale IQ shown in Table 2. It will also be noted that the difference between the mean Performance scale IQ of the control and experimental groups as shown in Table 3 is slightly less than the difference between the mean Verbal scale IQ's of the two groups as shown in Table 2.

Table 3

Mean Scores for Each of the Diagnostic Categories on the WISC-R Performance Scale and Five Subtests for the Control and Experimental Groups

	Control	Experimental	Differences	X^2
Picture Completion	10.45	10.00	.45	.419
Picture Arrangement	9.85	10.85	-1.00	1.309
Block Design	9.75	10.20	- .45	.436
Object Assembly	10.55	12.40	-1.85	3.189
Coding	9.20	7.75	1.45	1.770
Performance Scale IQ	99.10	95.10	4.00	.058

Since it was felt that the WISC-R IQ scores were of particular importance, it was decided to present these in graphic form (see Figure 1). This allows a visual examination of the relationships of the IQ scores on Verbal, Performance, and Full Scale in comparing control and experimental groups.

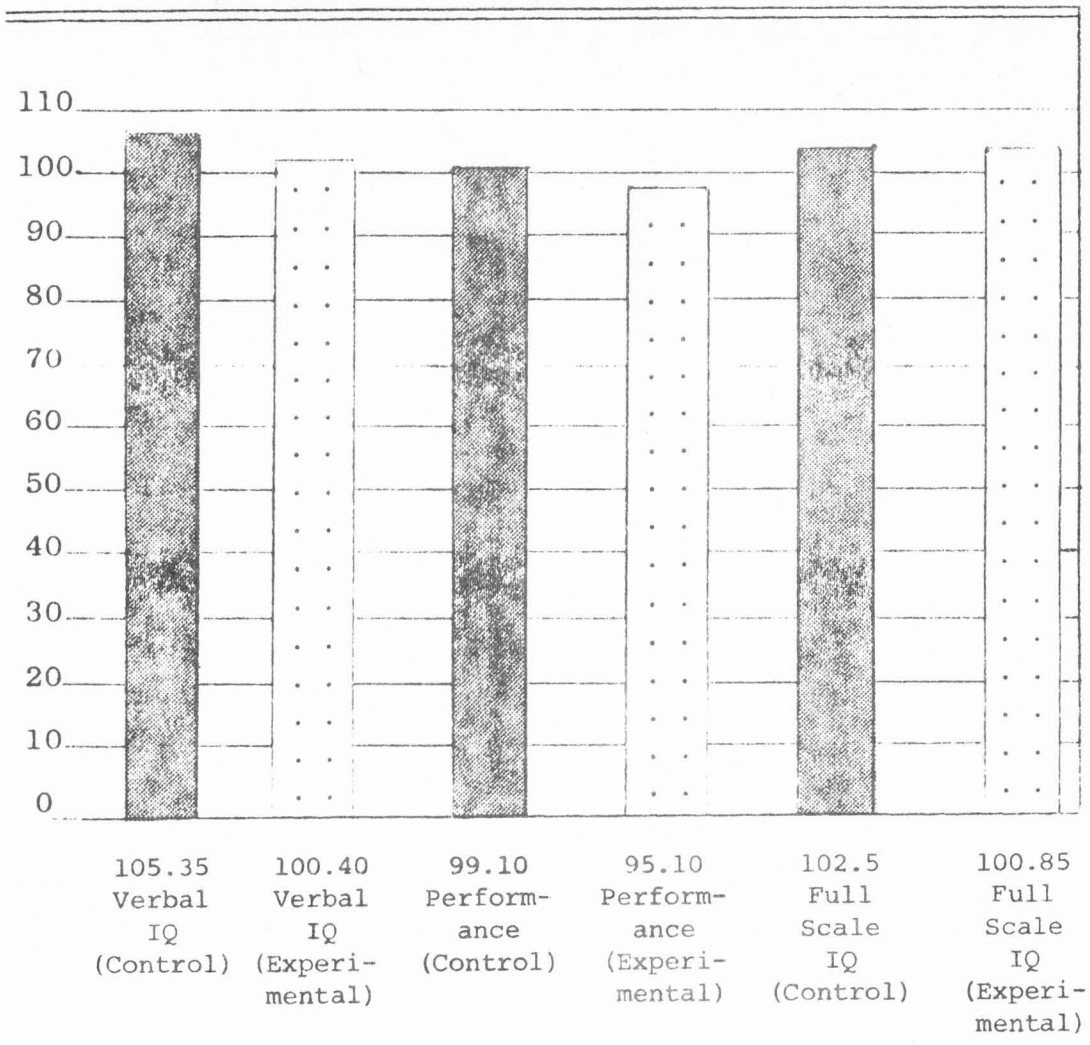

Figure 1. Mean scores for the verbal IQ, performance IQ, and full scale IQ on the WISC-R for the control and experimental groups.

It was decided that in order to facilitate comparison, the WISC-R and PIAT findings should be presented separately, therefore, Table 4 was established to indicate the mean scores in mathematics and reading recognition for both the control and experimental groups on the PIAT.

Table 4

Mean Scores for Two of the Diagnostic Categories on the PIAT Math and Reading Recognition Subtests for the Control and Experimental Groups

	Control	Experimental	(C-E)	X^2
PIAT-Math	59.15	46.85	12.30	1.828
PIAT-Reading	64.56	44.80	19.70	4.333*

*$p < .05$.

To further clarify and develop the relationships of the control and experimental groups on the mathematics and reading subtests of the PIAT, this information is presented in Figure 2 using the bar graph.

The mean scores for the diagnostic categories of the 11 WISC-R scales and subtests for the control and experimental groups are presented in Figure 3. A line graph was used in an attempt to establish a profile for the hyperactive child and the normal child. This line graph shows the high scores

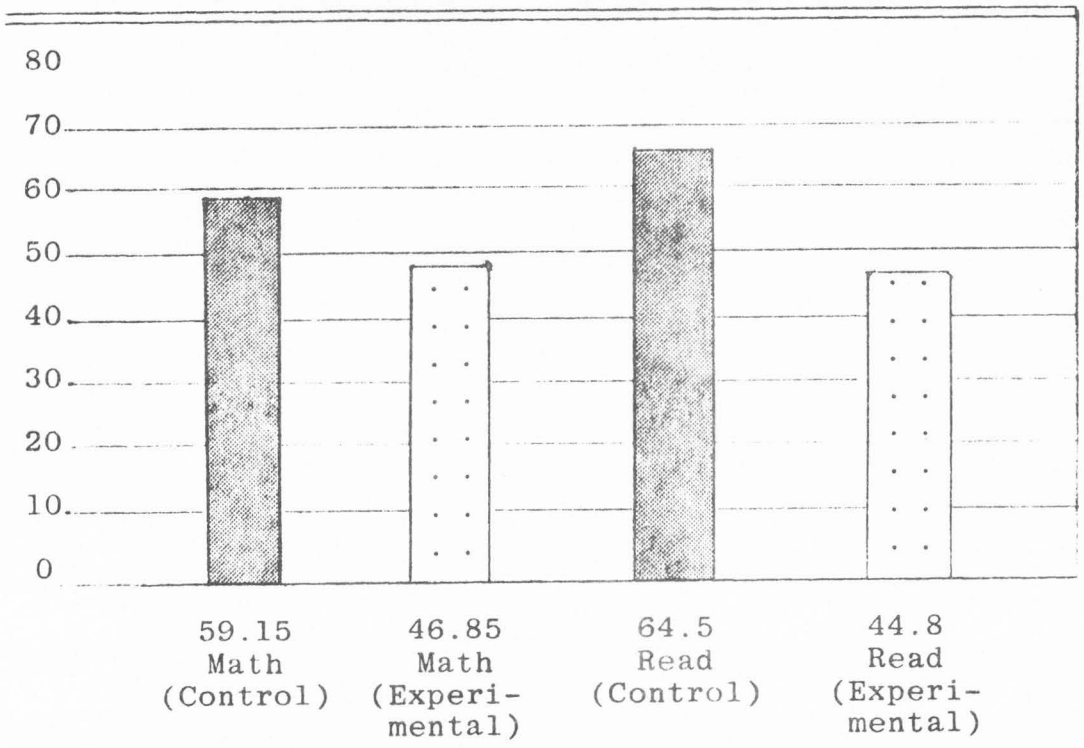

Figure 2. Mean scores for the math and reading recognition subtests on the PIAT for the control and experimental groups.

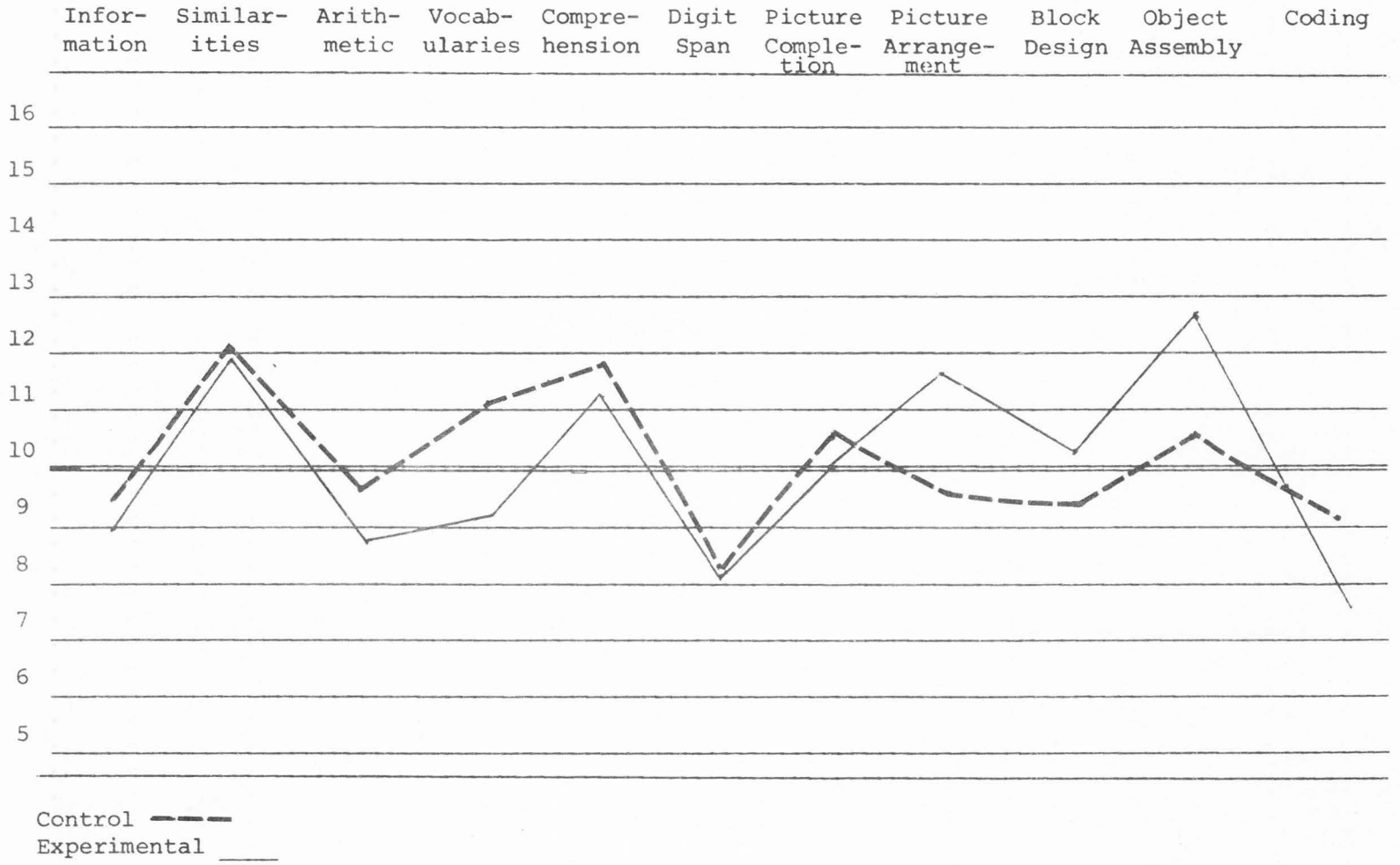

Figure 3. Mean scores for each of the diagnostic categories on 11 WISC-R subtests for the control and experimental groups.

and the low scores for each group in juxtaposition and allows a visual comparison of these groups.

In an attempt to ascertain whether individual scores for the two groups were similarly clustered the mean standard deviations were abstracted. These deviations are presented in Table 5 for each of the diagnostic categories on 11 WISC-R scales and subtests. These were also depicted in Figure 4 using a line graph so that the high scores and low scores of the control and experimental groups could be visually identified.

In an attempt to identify whether the Picture Completion subtest of the WISC-R had specific and valid meaning as compared with the other 10 subtests, it was decided to present related materials in Figure 5. In this graphic presentation, the 10 subtests, excluding Picture Completion, were compared with Picture Completion by first finding the mean of the individual means for the 10 subtests. This mean was then compared with the mean of the Picture Completion subtest for both control and experimental groups and presented in graphic form in Figure 5.

Table 5

Standard Deviations for Each of the Diagnostic Categories on 14 WISC-R Scales and Subtests and Two PIAT Subtests for Control and Experimental Groups

Item	Group		Differences (C-E)
	Control	Experimental	
1. Information	3.19	2.47	.72
2. Similarities	3.63	2.99	.64
3. Mathematics	3.23	2.33	.90
4. Vocabulary	3.40	2.18	1.22
5. Comprehension	3.78	3.02	.76
6. Digit Span	1.90	3.04	-1.14
7. Picture Completion	3.07	3.77	- .70
8. Picture Arrangement	3.41	3.20	.21
9. Block Design	2.34	2.59	- .25
10. Object Assembly	2.72	3.36	- .61
11. Coding	2.63	2.61	.02
12. Verbal IQ	17.38	11.51	5.87
13. Performance IQ	14.48	15.93	-1.45
14. WISC Full IQ	15.42	12.52	2.90
15. PIAT Math	18.29	21.36	-3.06
16. PIAT Reading	30.23	28.06	2.17

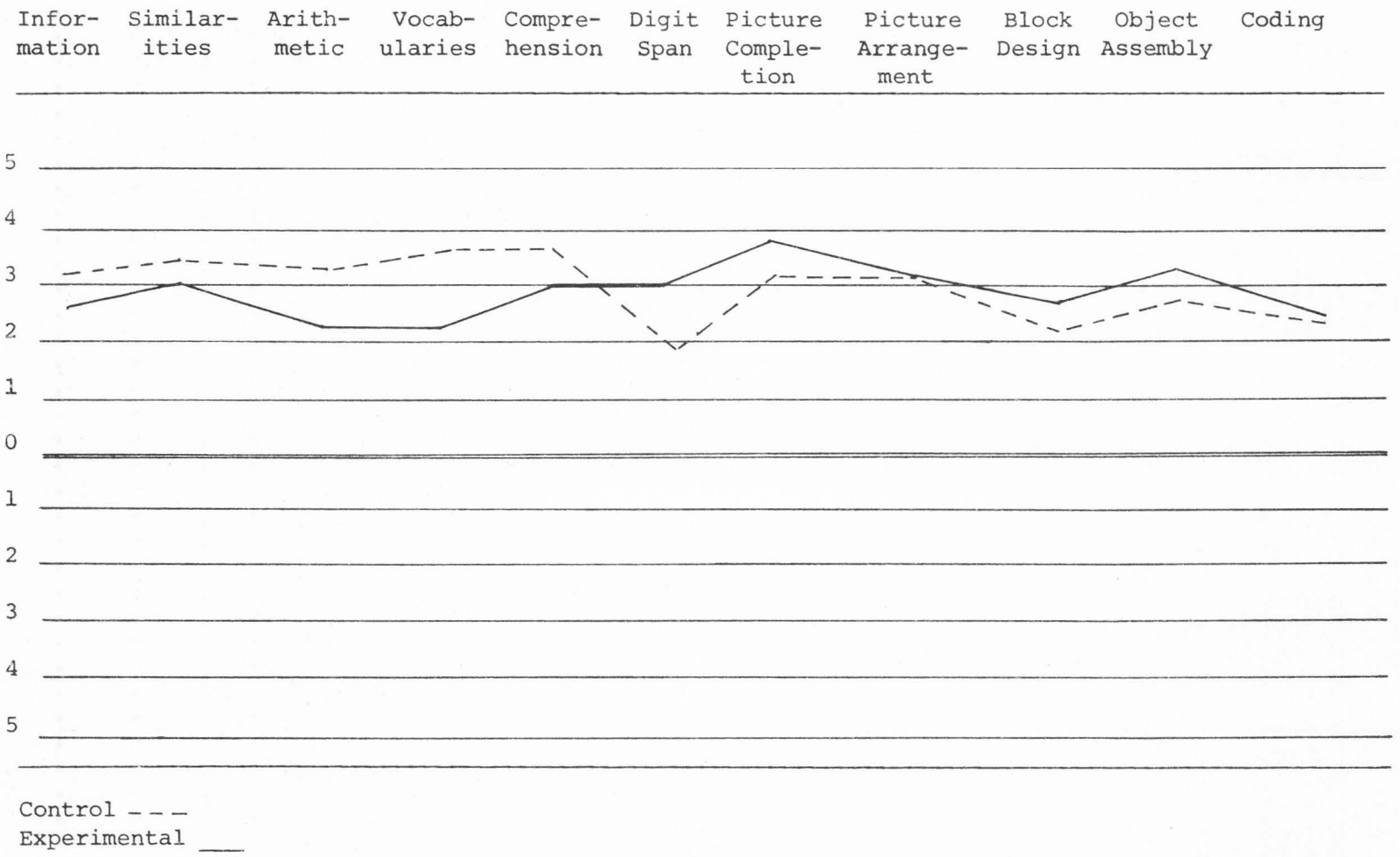

Figure 4. Standard deviation for each of the diagnostic categories on 11 WISC-R subtests for the control and experimental groups.

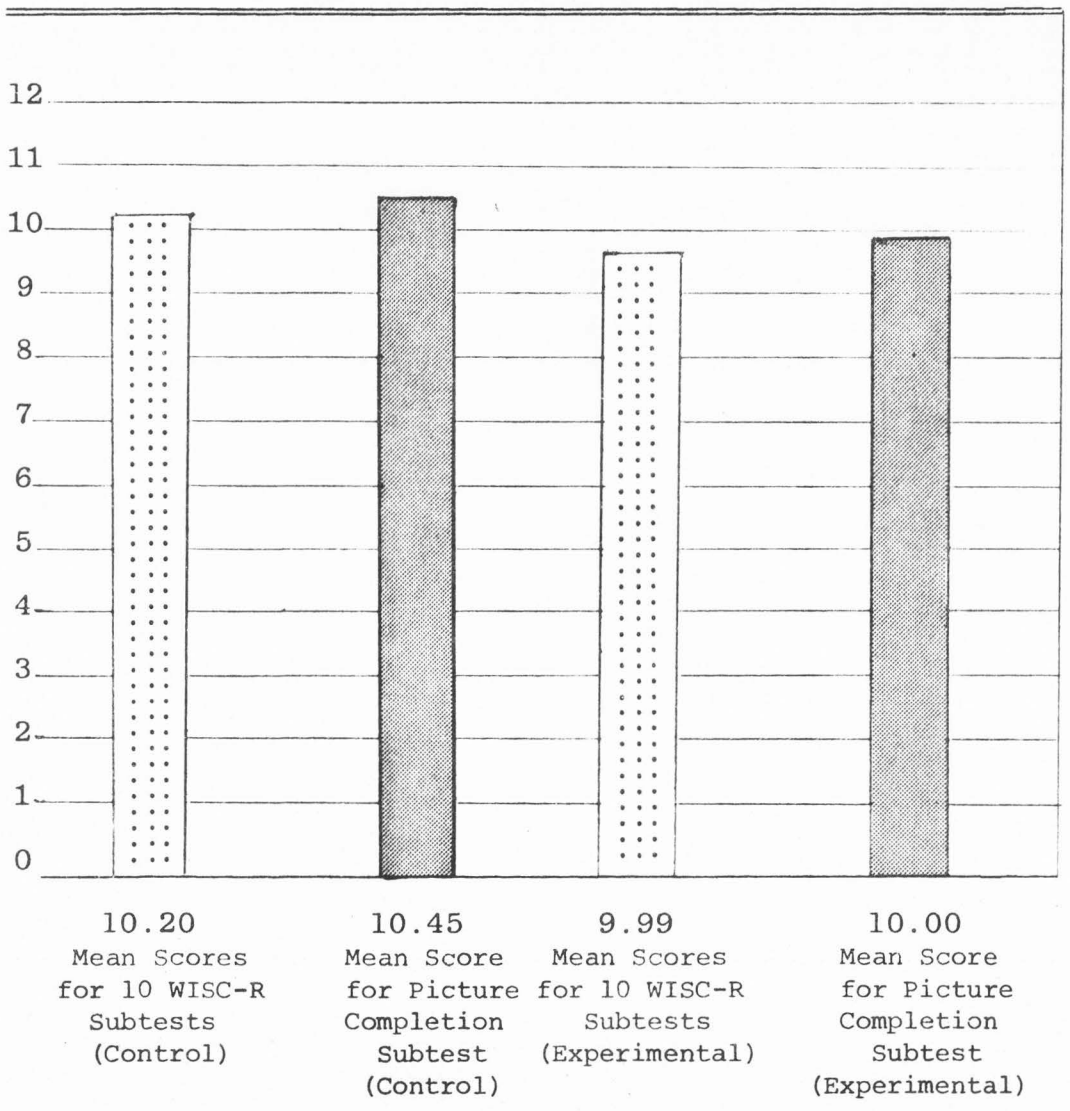

Figure 5. Mean scores for each of the diagnostic categories on the 10 WISC-R subtests as compared to the mean score on the picture completion WISC-R subtest for the control and experimental groups.

Discussion

The original hypotheses were established with the expectation that hyperactive children would differ from normal children in a manner which could be evaluated by objective test instruments which are readily available to mental health workers. In attempting to identify the characteristics which could be used to establish a profile for normal children and a profile for hyperactive children the following hypotheses were established. (The hypotheses were presented in the null form so that they would be amenable to testing by the Kruskal-Wallis one-way analysis of variance at the .05 level of significance.)

1. Children referred for hyperactivity will not be significantly different from normal children in Verbal Comprehension as measured by the Information test of the WISC-R. This null hypothesis was accepted.
2. Children referred for hyperactivity will not be significantly different from normal children in logical and abstract Verbal Reasoning as measured by the Similarities test of the WISC-R. This null hypothesis was accepted.
3. Children referred for hyperactivity will not be significantly different from normal children in concentration and number skills

as measured by the Arithmetic test of the WISC-R. This null hypothesis was accepted.

4. Children referred for hyperactivity will not be significantly different from normal children in the amount of Verbal Information that the child possesses as measured by the Vocabulary test of the WISC-R. This null hypothesis was accepted.
5. Children referred for hyperactivity will not be significantly different from normal children in practical knowledge and social judgment as measured by the Comprehension test of the WISC-R. The null hypothesis was accepted.
6. Children referred for hyperactivity will not be significantly different from normal children in immediate auditory recall and attention span as measured by the Digit Span test of the WISC-R. The null hypothesis was accepted.
7. Children referred for hyperactivity will not be significantly different from normal children in ability to isolate essential from non-essential details as measured by the Picture Completion test of the WISC-R. This null hypothesis was accepted.
8. Children referred for hyperactivity will not be significantly different from normal children in adequate judgment in interpreting social situations as measured by the Picture Arrangement test of the WISC-R. This null hypothesis was accepted.

9. Children referred for hyperactivity will not be significantly different from normal children in visual-motor coordination as measured by the Block Design test of the WISC-R. This null hypothesis was accepted.

10. Children referred for hyperactivity will not be significantly different from normal children in visual-motor coordination as measured by the Object Assembly test of the WISC-R. This null hypothesis was accepted.

11. Children referred for hyperactivity will not be significantly different from normal children as measured by the Peabody Individual Achievement Test for math. This null hypothesis was accepted.

12. Children referred for hyperactivity will not be significantly different from normal children as measured by the Peabody Individual Achievement Test for reading recognition. This null hypothesis was rejected.

13. Children referred for hyperactivity will not be significantly different from normal children in showing a unique or consistent pattern of characteristics based on the WISC-R as related to attentional behavior. This null hypothesis was accepted.

Since there were 13 null hypotheses and of the 13 only one was rejected, it is immediately apparent that the general concept of establishing a profile for the hyperactive child, based on the WISC-R and PIAT, did not

materialize as was hypothesized. The tests administered to the control and the experimental groups seem to validate the idea that children who had been labeled as normal did not represent different populations from so-called hyperactive children, but, in fact, seemed to represent similar populations.

These findings seem to support the concept that hyperactivity is a disease by default, a medical ailment which can be ascribed to those children who have no other problems but who do not measure up to the expectations of their elders (Schrag & Divoky, 1975). It would seem that hyperactivity as a syndrome of characteristics has not been established, and clarification of the problem did not result from the present study. Keogh et al. (1972) found that hyperactivity is associated with a wide range of social, behavioral and maladaptive characteristics, because educational implications of hyperactivity have not been clearly specified. Keogh's concepts seem to have been supported by the findings of the present study.

The relationships on which the acceptance of the null hypotheses were based are presented in Table 1. In observing Table 1, it is apparent that the mean scores for the control and experimental groups are very similar to each other. The column of chi squares includes only one item, No. 16, PIAT reading recognition, which is significant at the .05 level. It may be noted that the mean scores presented in Table 2, and Table 3, in a manner which separates the test results on the basis of Verbal scales and Performance scales, indicate little difference between the scores of the two groups. Table 2 shows a mean IQ of 105.35 for the control group and 100.40 for the

experimental group. This difference was not statistically significant at the .05 level. Though the Performance scale IQ for both groups was lower than the Verbal scale IQ for both groups, in each case the difference was minimal. The mean score for the control group was approximately 6 points lower on Performance than on Verbal scales and the mean score for the experimental group was approximately 5 points lower on Performance than Verbal scales. Again, the lack of statistical significance of these differences indicates that the experimental and control groups are essentially similar in IQ.

An examination of Figure 1, in which the scores for Verbal IQ, Performance IQ, and Full Scale IQ on the WISC-R are presented both for control and experimental groups, indicates that the control group and experimental group are similar. The bar graphs for the two groups provide the same indication.

In Table 4 the presentation of the mean reading recognition score on the PIAT for control and experimental groups includes the one significant difference established on a statistical basis. It will be noted that the mean score on reading recognition for the control group is 64.56 and for the experimental group 44.80, presenting a difference of 19.76 points on the PIAT scale. This is the greatest difference between mean scores on any of the tests administered. Figure 2, which is a visual presentation of this fact supports the rather large difference. The bar graphs for reading recognition scores for control and experimental groups are considerably different. Also in Figure 2 the graphs representing the math scores for experimental and control

groups are somewhat at variance. The math and reading recognition differences together represent the greatest differences throughout all of the subtests.

The standard deviations on the WISC-R for the control group and the experimental group as presented in Figure 4 are similar in profile. If standard deviations had varied widely it would have indicated that scores were scattered in a completely divergent manner; however, with consistent standard deviations it is more likely that the range of scores are similar and indicate that both groups are drawn from the same population.

The mean WISC-R scores presented in Figure 3, resemble each other very closely for both the control and experimental groups. The line graph depicts patterns for the control and experimental groups which follow each other rather closely, with the exception that the means for the control group, although they are higher throughout most of the graph, do drop lower than those of the experimental group in Picture Arrangement, Block Design, and Object Assembly subtests. An overall observation of the profiles indicates similarity and seems to support the concept that both groups are from the same population.

In an attempt to identify whether a particular subtest of the WISC-R had meaning which was greater than that of a combination of the other subtests, the 10 scores, excluding Picture Completion, were compared to the Picture Completion subtest score itself and the results are presented in a visual manner in Figure 5. In this case the mean scores for the 10 subtests,

excluding Picture Completion and the mean scores for Picture Completion, are seen to be very nearly identical for both the control and experimental groups. The conclusion is that there are no differences in either control or experimental groups between the mean scores for the 10 WISC-R subtests (excluding Picture Completion) and the mean scores for Picture Completion itself.

A scatter gram was employed to assess whether the combination of scores on the Picture Arrangement, Block Design, and Object Assembly subtest would show a significant pattern which could be indicative of organicity in the hyperactive child. The control group had 11 scores above the mean and 9 scores below the mean. The experimental group had 10 scores above the mean and 10 scores below the mean. These results did not indicate significance.

One factor which may have affected the testing situation was the one-to-one relationship of the children in the control group and the experimental group with the test administrators. If hyperactive children are more positive when in a one-to-one situation, this, of course, would influence their performance on the test items. It would seem to follow that the possibility might occur that such children in their day-to-day environment might perform differently on objective instruments. It is possible that a testing situation in the day-to-day environment of the child might offer a different result.

Summary

The present study was an attempt to use the WISC-R and the PIAT math and reading subtests to identify characteristics by objective evaluation which could establish a profile for the hyperactive child. It was found that characteristics of hyperactive children did not stand out as being different from those of normal children.

Schrag and Divoky (1975) found that identifying hyperactive children by means of medical diagnosis seemed as ineffective as attempting to identify hyperactive children by using objective psychological measurements. They indicated that a child is too often placed in supposedly specialized programs without adequate evaluation of the child's needs and/or without proper evaluation of the treatment program itself. They also stated that people apply diagnostic labels to children and then proceed to prescribe medications and/or recommend other treatments which may not be appropriate for the hyperactive child.

Schrag and Divoky (1975) seem to be indicating that some of the terms used, such as minimal brain dysfunction (MBD) and hyperkinesis, are lumped together although these terms are not clearly identifiable. This same concept is presented by Gross and Wilson (1974) who say that minimal brain dysfunction, hyperactive disorder, hyperkinetic reaction, or hyperkinetic behavioral disturbance represent the most common psychiatric diagnoses among children.

In some clinics these phrases, along with variations of them, are simply different ways of designating the same disorder; in still other clinics the phrases have discreet meanings. Not long ago children with these same childhood disorders might have been diagnosed as having behavior disorders or impulse disorders, and this type of diagnosis is still prevalent in many clinics today. It would appear that the most nearly objective method for identifying hyperactive children would be that of observation by a trained observer using a behavioral checklist. This method still remains the most widely used method of assessing the characteristics of the hyperactive child.

The basic conclusion which must be reached as a result of the present study is that it is not possible by using the WISC-R subtests and the Arithmetic and Reading Recognition subtests of the PIAT to establish a profile which would objectively identify the characteristics of the hyperactive child. This, of course, does not preclude the possibility that some other objective instruments might establish such a profile. However, the implication is rather strong that the likelihood of establishing an objective profile using recognized and readily available evaluation instruments is not great.

Schrag and Divoky (1975) indicated that there has been an epidemic of an ailment which has spread from virtual obscurity less than a decade ago to its present proportion. They say there is no single name and there are no universally accepted symptoms, nor are there any discernible anatomical or biochemical characteristics which can be diagnosed in a clinic or a laboratory. This condition, according to Schrag and Divoky, may afflict as many as 40% of

all American children and is probably the cause of most, if not all, pediatric problems associated with learning and behavior. They use the term "learning disabilities" along with the terms "impulse disorder" and "minimal brain dysfunction" in describing the hyperactive child. Schrag and Divoky further indicate that the concept of minimal brain dysfunction has now been widely accepted, but that the reasoning behind it is circular; that is, the people who promote the term "brain dysfunction" assume that behavior such as hyperactivity is a sign of brain damage independent of neurological indexes and, therefore, many behavior problem children are considered to have brain damage.

Gross and Wilson (1974) continue by saying that there has been value in the increased attention given to neurological dysfunction in behavioral-disturbed children but it is not clear that any new diagnostic label serves better than the old, or reflects better the focus of current research. The subject of brain damage and the subsequent hyperkinetic behavior or of hyperkinetic behavior itself, according to Gross and Wilson, represents a treacherous subject for research which is filled with problems of definition and methodology.

Schrag and Divoky (1975) are concerned about the application of diagnostic labels to children with the attendant prescription of medications and other treatments which fit the label but not necessarily the child. Friedman (1969) goes as far as saying that "labeling a child has no educational value." On the basis of the findings from the present study as well as

information abstracted from the research it might be postulated that labelling could definitely be a disadvantage to the child. It might be possible that labelling among professionals could have the advantage of being used as a verbal shorthand to describe a syndrome of behaviors, but it should be recognized that this labelling should be used with care. Further, it must be emphasized that labelling at the present time is based primarily on observation, since it has not yet seemed fruitful or possible to identify behaviors which indicate dysfunction except through observation. In an attempt to objectify the process of identification of the hyperactive child, check-off lists will continue to be used; however, the subjectivity of the observer may possibly effect any evaluation by observation.

The present study suggests that testing, at least with the WISC-R or PIAT, is not productive in identifying the hyperactive child. Medical identification also seems to be inadequate; and observation has the obvious subjective element. Therefore, labelling the hyperactive child probably should be avoided and individual behavior should be identified with the aim of providing remediation.

Keogh et al. (1972) found that hyperactivity is associated with a wide range of social behavioral and maladaptive characteristics in that the educational implications of hyperactivity have not been clearly specified. She said further that there are various hypotheses which propose to explain the relationships and interactions of hyperactivity with learning problems but that these hypotheses are not exhaustive or mutually exclusive, but in fact do

overlap. These hypotheses do, however, imply different remedial approaches. It would seem, therefore, that the identification of specific behaviors and providing remedial programs for these various non-productive or counter-productive behaviors offer the most promising attempts to alleviate the problem.

According to Brutten, Richardson, and Mangel (1973) the psychologist could very well be an important person in working with the hyperactive children since the psychologist is trained to provide objective and detailed studies of vital aspects of the child's functioning, as well as an observational system. To do so, the psychologist must be a sensitive person in order to determine whether the hyperactive child is performing approximately at the level of his native ability or whether there are peculiar inhibiting factors that keep the child from performing as well as possible. The psychologist must also be alert to interferences which come from a handicapping condition which may not be readily apparent to either the teacher or the parent. The fact that there are problems and behavior symptoms which can be recognized as causing difficulty is emphasized by Renshaw (1974), who indicates that screening programs are necessary at a very early age in order to identify children who have need for evaluation, in order to identify problems and to plan treatment. Renshaw's findings tend to lend support to the concept that children who have social and academic difficulties at an early age should not be considered as potentially normal children just by virtue of maturation.

Cantwell (1975) states that children should receive remediation assistance in order to cope with day-to-day reality and to live in a world with social requirements. Therefore, it would appear that the best procedure for dealing with problems of children is to identify behaviors which are interfering with the child's progress socially, emotionally, educationally, and intellectually, and attempt to develop programs which will alleviate the problems created by these particular behaviors. The use of various terms such as learning-disabled, minimal brain-damaged, hyperkinetic, hyperactive, impulse-disordered, seems to have little, if any, value in dealing with the family and the child for purposes of communication.

It would appear that there is a possibility of counter productive activity in the use of medications. Walker (1974) stated that stimulants merely mask the symptoms and do not cure the disease. He did not agree with the idea of some physicians that at the present stage of medical knowledge all that can be done is to hope to mask the symptoms. Walker felt that these problems can be identified and treated if the physician is willing to take the time and trouble to evaluate the problems.

A beginning has been made on the study of the effects of caffein and food additives on children (Powers, 1975). Since definitive information on caffein and food additives in this area is not available at present, it would appear that changing diet habits for families would not be recommended at the present time. Powers states that detailed studies of physical and environmental factors which are related to learning disability need immediate

attention. He indicates that the fields of ECO-Chemistry and ECO-allergy should be expanded rapidly. It is important that more information be obtained concerning the influence on the child of everything from deodorant sprays to plastics and smog, including potential problems with food additives.

The extreme concern of professional persons in the mental health and educational fields, because of the disruptive effects of certain children is evidenced in a statement by Goodman and Hammond (1975). They describe a program in which seat belts were used to confine the child in case of a problem with "out-of-seat" behavior, to confine the child to his own desk. The aim of the program was, of course, to secure the child so that he would remain seated and could maintain attention in order to do more effective learning. Goodman and Hammond report that though the children could have broken the strings which secured the seat belts, none of them ever did this; that the children gave positive reports concerning the program; and that the key to the success of the seat belts was that they were never presented as a form of punishment, but as an additional piece of classroom equipment. However, it would seem that this rather esoteric method of approaching the problem of the overactive child may have some negative implications in the minds of many mental health workers and educators.

It would seem inappropriate to place the blame for all childhood difficulties on the misguided handling by parents (Brutten et al., 1973). Even though parents are not to blame for all childhood difficulties, it seems appropriate that in the programs for ameliorating the problems of the child

who behaves improperly that parents should be included in parent-training courses pertaining to child management.

According to Kurtz and Neisworth (1976), perhaps one of the positive programs for bringing about change on the part of the child would be that of emphasizing certain internal variables, such as "will power," "determination," and "restraint." They state that the child who devises and implements a procedure to change his behavior with minimal involvement from adults might be said to exhibit self-control, and they see this as a dynamic continuum wherein the child alters the external environment as well as his own internal environment to promote meaningful change. It seems that this program of encouraging the child to change behavior and to change internal variables might be a more positive and worthy consideration on the part of psychologists and mental health workers.

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Appendix: Forms Used in Research

Checklist for Researcher

1. MD Referral _____
2. Family History _____
3. Questionnaire - Parent _____
4. Questionnaire - Teacher _____
5. Release of Information _____
6. PIAT _____
7. WISC - R _____
8. Psychological Report _____
9. Profile _____
10. Scores tabulated for research _____

Dr. Joan Owen
Sunrise Medical Bldg., Suite 206
3196 Maryland Parkway
Las Vegas, Nevada 89109

REFERRAL FORM

TO: Physician or Facility	FROM:	DATE OF REFERRAL:
Patient's Name	Type of services requested	Location for treatment

Signature of referring physician _____

CONFIDENTIAL

FAMILY INFORMATION

...structions: Please answer the following questions to the best of your ability. Your answers, which will be kept in confidence, should be of considerable help in the guidance of this child. If additional space is needed, attach separate sheets of paper. Please feel free to ask any questions you may have about this form.

Full name of child _____
(Last) (First) (Middle) (Nickname)

About how many times have you moved during child's life? _____

What are your child's problems as you see them? _____

_____

PARENTS OR GUARDIANS

Name	Age	Occupation and Place of Employment	Grade Completed	Date of Marriage	Religious (if any) Preference
Mother:					
Father:					
Stepmother or foster mother:					
Stepfather or foster father:					

CHILD'S BROTHERS AND SISTERS

Name	Full, Half, Step, or Foster	Sex	Age	Grade Completed	Occupation	Living In Home

Others in Home _____ Relationship _____ Explain _____

Is the child living with his own parents? Yes _____ No _____ If no, explain _____

Describe the type of relationship which the child has or has had with his or her father: _____

_____

_____

Describe the type of relationship which the child has or has had with his or her mother: _____

_____

_____

Describe the type of relationship which the child has had with his or her brothers and sisters: _____

QUESTIONS ABOUT THE CHILD'S HOME

Does child share room? _____ With whom? _____ What tasks does child perform? _____

Attitude about home tasks _____

Describe the behaviors of this child which require control and corrections and the methods used: _____

Describe the child's reaction to measures used: _____

DEVELOPMENTAL HISTORY

Describe your reaction to pregnancy: _____

Length of pregnancy _____ Instrument birth: Yes _____ No _____ Birth weight _____
Describe any difficulties with pregnancy and the birth of the baby: _____

Was there a birth injury? Yes _____ No _____ If yes, what did your physician tell you? _____

Was the child breast fed? _____ At what age was child weaned? _____ Were there feeding problems? _____ If yes, describe: _____

At what age did child first walk alone ? _____ Say words? _____ Sentences? _____
At what age did you start toilet training? _____ Age completed? _____
Describe any difficulties in training: _____

Describe any speech difficulties this child may have experienced: _____

What hand does the child prefer to use at present? _____
As far as you can remember, did the child always prefer this hand? Yes _____ No _____
Underline each of the following disorders which this child has experiences:

1. Dizzy spells, fainting spells, convulsions.
2. Eczema, hay fever, asthma, other allergies.
3. Attacks in which fever was above 104°. Name disease _____
   How long was fever over 104°? _____
4. Tonsillitis, heart defects.
5. Accidents, disfigurements, deformities, operations, other _____
6. List childhood illnesses and age they occurred _____

Underline each of the following habits and mannerisms you have observed.
Bedwetting, poor bladder or bowel control, masturbation, thumb sucking, chewing fingers or objects, nail biting, day dreaming, restlessness, unusual behavior, fighting, temper tantrums, stealing, lying, destructiveness, poor coordination, nightmares, shyness.

Describe how you have handled these with the child: _____

QUESTIONS ABOUT SCHOOL

At what age did your child begin school? _____ Reaction to school? _____

Describe any difficulties the child has or has had in school with his teachers, other children, studies, etc.:

Describe those things in school (including extra-curricular activities) which the child likes and dislikes:

How do you feel about your child's educational experience? _____

QUESTIONS ABOUT NEIGHBORHOOD AND PLAY ACTIVITIES

Describe the age and type of playmates the child prefers: _____

Describe how your child gets along with other children _____

What play activities does your child prefer? _____

PREVIOUS PROFESSIONAL SERVICE

Has your child been seen by any of the following: Psychiatrist? _____ Psychologist? _____
Social Worker? _____ Other Specialists? _____
If yes, give his name and address _____

Please attach separate sheet of paper for additional comments.

Date _____ _____
Signature

_____
Relationship to child

PARENT QUESTIONNAIRE

Prior to the formal testing session, at least one parent was interviewed; the following questions were used for each child in the experimental group:

a. Has the classroom teacher ever approached you regarding your child's "acting-out" or hyperactivive behavior?

b. Does your child have the ability to watch a 30-minute television program that he or she enjoys without exhibiting "out-of-seat" behavior"

c. Would you describe your child as "constantly on the move?"

d. Do you describe your child's sleeping habits as normal?

e. Does your child move from one activity to another exhibiting poor concentration or attending ability?

f. Is your child presently on medication for hyperactivity?

g. Is your child presently undergoing any type of treatment by professionals such as: psychologists, psychiatrists, or family therapists, for hyperactivity or emotional problems?

h. Has your child ever been diagnosed as seizure-disordered or possible brain-damaged?

RELEASE OF RECORDS

TO: _____
(Physician, Hospital, Clinic, Etc.)

RE: _____ _____
(Client's Name) (Birth Date)

_____
(Address and Street Number)

_____
(City) (State) (Zip)

_____
(Parent or Legal Guardian)

I hereby authorize any physician, hospital, clinic or any other person who has attended the above-named client to furnish to: Dr. Joan Owen
Sunrise Medical Building, Ste. 206
3196 Maryland Parkway
Las Vegas, Nevada 89109

any information available with respect to any illness, injury, medical history, physical examination or evaluation, consultation reports, and any treatment or programs prescribed concerning the above-named client.

_____ _____
(Date) (Parent or Legal Guardian)

_____
(Witness)

TEACHER QUESTIONNAIRE

A follow-up telephone call was made to the teacher by the Psychoeducational Diagnostician. An interview over the telephone was held, using the following set of questions asked of the teacher:

a. Would you describe this child as one who is hyperactive or exhibits "acting-out" behavior?

b. Does this child have the ability to watch a 30-minute television program that he/she enjoys without exhibiting "out-of-seat" behavior?

c. Would you describe this child as "constantly on the move?"

d. Does this child move from one activity to another exhibiting poor concentration or attending ability?

e. Is this child presently on medication for hyperactivity?

f. Is this child presently undergoing any type of treatment by professionals such as: psychologists, psychiatrists, or family therapists for hyperactivity or emotional problems?

g. Do school records indicate that this child has been diagnosed as seizure-disordered or brain-damaged?

WISC-R RECORD FORM

Wechsler Intelligence Scale for Children—Revised

NAME _____ AGE _____ SEX _____

ADDRESS _____

PARENT'S NAME _____

SCHOOL _____ GRADE _____

PLACE OF TESTING _____ TESTED BY _____

REFERRED BY _____

WISC-R PROFILE

Clinicians who wish to draw a profile should first transfer the child's *scaled scores* to the row of boxes below. Then mark an X on the dot corresponding to the scaled score for each test, and draw a line connecting the X's.*

	VERBAL TESTS						PERFORMANCE TESTS						
	Information	Similarities	Arithmetic	Vocabulary	Comprehension	Digit Span	Picture Completion	Picture Arrangement	Block Design	Object Assembly	Coding	Mazes	
Scaled Score	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Scaled Score
19	•	•	•	•	•	•	•	•	•	•	•	•	19
18	•	•	•	•	•	•	•	•	•	•	•	•	18
17	•	•	•	•	•	•	•	•	•	•	•	•	17
16	•	•	•	•	•	•	•	•	•	•	•	•	16
15	•	•	•	•	•	•	•	•	•	•	•	•	15
14	•	•	•	•	•	•	•	•	•	•	•	•	14
13	•	•	•	•	•	•	•	•	•	•	•	•	13
12	•	•	•	•	•	•	•	•	•	•	•	•	12
11	•	•	•	•	•	•	•	•	•	•	•	•	11
10	•	•	•	•	•	•	•	•	•	•	•	•	10
9	•	•	•	•	•	•	•	•	•	•	•	•	9
8	•	•	•	•	•	•	•	•	•	•	•	•	8
7	•	•	•	•	•	•	•	•	•	•	•	•	7
6	•	•	•	•	•	•	•	•	•	•	•	•	6
5	•	•	•	•	•	•	•	•	•	•	•	•	5
4	•	•	•	•	•	•	•	•	•	•	•	•	4
3	•	•	•	•	•	•	•	•	•	•	•	•	3
2	•	•	•	•	•	•	•	•	•	•	•	•	2
1	•	•	•	•	•	•	•	•	•	•	•	•	1

*See Chapter 4 in the manual for a discussion of the significance of differences between scores on the tests.

NOTES

	Year	Month	Day
Date Tested			
Date of Birth			
Age			

	Raw Score	Scaled Score
VERBAL TESTS		
Information		
Similarities		
Arithmetic		
Vocabulary		
Comprehension		
(Digit Span)	( )	( )
Verbal Score		
PERFORMANCE TESTS		
Picture Completion		
Picture Arrangement		
Block Design		
Object Assembly		
Coding		
(Mazes)	( )	( )
Performance Score		

	Scaled Score	IQ
Verbal Score	*	
Performance Score	*	
Full Scale Score		

*Prorated from 4 tests, if necessary.

The Psychological Corporation, New York, N.Y. 10017

Printed in U.S.A.

74-103AS

PIAT Peabody Individual Achievement Test

INDIVIDUAL RECORD BOOKLET

by Lloyd M. Dunn, Ph.D. and Frederick C. Markwardt, Jr., Ph.D.

NAME _____ SEX: M F
(last) (first) (middle initial) (circle)

SCHOOL _____
(or agency or address)

TEACHER _____
(or counselor or supervisor)

EXAMINER _____

TESTING TIME _____ GRADE _____ CODE _____
(min.) (or phone) (or race or descent)

AGE DATA

Test: (years) (months) (days)

Birth: (years) (months)

TEST SCORES

NORMS RECORDED (Check one) .... ☐ Age ☐ Grade

SUBTESTS	Raw Scores	Equivalents	Percentile Ranks	Standard Scores
Mathematics				
Reading Recognition				
Reading Comprehension				
Spelling				
General Information				
Total Test				

TEACHER'S TEST DATA

DATE OF TEST

Adjusted M.A.	Chronological Age	Grade Placement
18-2		13.0
17-8		12.5
17-2		12.0
16-8		11.5
16-2		11.0
15-8		10.5
15-2		10.0
14-8		9.5
14-2		9.0
13-8		8.5
13-2		8.0
12-8		7.5
12-2		7.0
11-8		6.5
11-2		6.0
10-8		5.5
10-2		5.0
9-8		4.5
9-2		4.0
8-8		3.5
8-2		3.0
7-8		2.5
7-2		2.0
6-8		1.5
6-2		1.0
5-8		0.5K
5-2		0.0K
4-8		0.5N
4-2		0.0N
3-8		Pre-School
3-2		

Mathematics | Reading Recognition | Reading Comprehension | Spelling | General Information | Total Test

Percentile Rank	I.Q. Score
99	133
98	130
96	127
94	124
92	121
88	118
84	115
79	112
73	109
66	106
58	103
50	100
42	97
34	94
27	91
21	88
16	85
12	82
8	79
6	76
4	73
2	70
1	67

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A.C.4-150-375 REV.

Subtest 1

MATHEMATICS

Demonstration and Training Exercises

Trial	Exercise A	Exercise B	Exercise C	Exercise D	Exercise E
1	(4)_____	(3)_____	(2)_____	(1)_____	(2)_____
2	(4)_____	(3)_____	(2)_____	(1)_____	(2)_____
3	(4)_____	(3)_____	(2)_____	(1)_____	(2)_____

BASAL AND CEILING RULES:
Basal: 5 consecutive correct responses
Ceiling: 5 errors in 7 consecutive responses
○ Suggested grade level starting points for typical subjects are indicated below

(K) 1. (4)_____
2. (2)_____
3. (3)_____
4. (1)_____
5. (4)_____
6. (3)_____
7. (3)_____
8. (1)_____
9. (4)_____
10. (4)_____
11. (1)_____
12. (3)_____
13. (4)_____
14. (2)_____
(1) 15. (4)_____
16. (3)_____
17. (1)_____
18. (3)_____
19. (2)_____
20. (3)_____
21. (2)_____
22. (1)_____
23. (2)_____
24. (2)_____
(2) 25. (1)_____
26. (4)_____
27. (3)_____
28. (1)_____
29. (3)_____
(3) 30. (2)_____
31. (2)_____
32. (4)_____
33. (4)_____
34. (2)_____
(4) 35. (3)_____
36. (1)_____
37. (2)_____
38. (3)_____
39. (1)_____
(5) 40. (3)_____
41. (4)_____
42. (4)_____
43. (1)_____
44. (3)_____
(6) 45. (4)_____
46. (2)_____
47. (1)_____
48. (1)_____
49. (3)_____
(7) 50. (3)_____
51. (2)_____
52. (4)_____
53. (4)_____
(8) 54. (4)_____
55. (2)_____
56. (3)_____
57. (1)_____
(9) 58. (2)_____
59. (2)_____
(10) 60. (1)_____
61. (3)_____
(11) 62. (1)_____
63. (4)_____
(12) 64. (3)_____
65. (2)_____
66. (2)_____
67. (4)_____
68. (4)_____
69. (1)_____
70. (1)_____
71. (2)_____
72. (1)_____
73. (1)_____
74. (3)_____
75. (3)_____
76. (4)_____
77. (3)_____
78. (2)_____
79. (3)_____
80. (4)_____
81. (2)_____
82. (1)_____
83. (2)_____
84. (2)_____

Subtest 1 Mathematics
RAW SCORE CALCULATION
Ceiling item _____
Errors _____
Raw Score _____

Subtest 2

READING RECOGNITION

Demonstration and Training Exercises

Trial	Exercise A	Exercise B	Exercise C	Exercise D	Exercise E
1	(3)_____	(1)_____	(4)_____	(2)_____	(1)_____
2	(3)_____	(1)_____	(4)_____	(2)_____	(1)_____
3	(3)_____	(1)_____	(4)_____	(2)_____	(1)_____

1. (1)_____
2. (2)_____
3. (1)_____
4. (4)_____
5. (3)_____
6. (2)_____
7. (1)_____
8. (2)_____
9. (4)_____
10. B b_____
11. A a_____
12. O_____
13. S_____
14. N_____
15. c_____
16. i_____
17. d_____
18. m_____
19. run_____
20. play_____
21. jump_____
22. kitten_____
23. wagon_____
24. fishing_____
25. brook_____
26. gloves_____
27. smile_____
28. colt_____
29. round_____
30. blaze_____
31. feather_____
32. flour_____
33. igloo_____
34. liquid_____
35. purse_____
36. dangerous_____
37. lodge_____
38. stylish_____
39. accident_____
40. ruin_____
41. exercise_____
42. pigeon_____
43. moisture_____
44. artificial_____
45. anchor_____
46. elegant_____
47. gaudy_____
48. treacherous_____
49. yacht_____
50. guerilla_____
51. boisterous_____
52. isthmus_____
53. anticipation_____
54. vertebrates_____
55. contemplate_____
56. heroine_____
57. unparalleled_____
58. inaccessible_____
59. colleague_____
60. medieval_____

PIAT

BASAL AND CEILING RULES
Basal: 5 consecutive correct responses
Ceiling: 5 errors in 7 consecutive responses
STARTING POINT:
Raw Score on the Mathematics Subtest

61. pinnacle
62. picturesque
63. adjacent
64. navigable
65. diminutive
66. ensign
67. dilapidated
68. bureaucrat
69. adulation
70. exorbitantly
71. epoch
72. aesthetic
73. deluge
74. didactic
75. titular
76. credulity
77. judiciable
78. nihilism
79. pharyngeal
80. pterodactyl
81. macrocosm
82. chimerical
83. disaccharide
84. apophthegm

Subtest 2 Reading Recognition
RAW SCORE CALCULATION
Ceiling item
Errors
Raw Score

PIAT

Subtest 3
READING COMPREHENSION

NOTE: This subtest is to be administered *only* to those subjects scoring above 18 on the Reading Recognition Subtest. For subjects *not* scoring above 18, record the Reading Recognition Raw Score again in the box below as the Reading Comprehension Raw Score and proceed to Subtest 4.

Demonstration and Training Exercises

Trial	Exercise A	Exercise B	Exercise C	Exercise D
1	(3)____	(2)____	(4)____	(4)____
2	(3)____	(2)____	(4)____	(4)____
3	(3)____	(2)____	(4)____	(4)____

BASAL AND CEILING RULES:
Basal: 5 consecutive correct responses
Ceiling: 5 errors in 7 consecutive responses
STARTING POINT:
Raw Score on the Reading Recognition Subtest

19. (3)____	41. (3)____	63. (4)____
20. (1)____	42. (3)____	64. (3)____
21. (2)____	43. (1)____	65. (4)____
22. (3)____	44. (4)____	66. (1)____
23. (2)____	45. (2)____	67. (2)____
24. (3)____	46. (3)____	68. (1)____
25. (1)____	47. (1)____	69. (4)____
26. (1)____	48. (1)____	70. (2)____
27. (2)____	49. (2)____	71. (1)____
28. (3)____	50. (3)____	72. (1)____
29. (2)____	51. (2)____	73. (4)____
30. (1)____	52. (4)____	74. (4)____
31. (3)____	53. (3)____	75. (1)____
32. (4)____	54. (4)____	76. (2)____
33. (2)____	55. (2)____	77. (3)____
34. (4)____	56. (4)____	78. (4)____
35. (3)____	57. (2)____	79. (2)____
36. (4)____	58. (4)____	80. (3)____
37. (1)____	59. (3)____	81. (3)____
38. (2)____	60. (2)____	82. (1)____
39. (3)____	61. (3)____	83. (2)____
40. (1)____	62. (2)____	84. (1)____

Subtest 3 Reading Comprehension
RAW SCORE CALCULATION*
Ceiling item
Errors
Raw Score

*See Manual, Part I, Calculating Raw Scores, for further instructions.

Subtest 4

SPELLING

Demonstration and Training Exercises

Trial	Exercise A	Exercise B	Exercise C	Exercise D	Exercise E
1	(1)	(3)	(4)	(2)	(1)
2	(1)	(3)	(4)	(2)	(1)
3	(1)	(3)	(4)	(2)	(1)

1. (3) (Point in a sweeping motion to the response area.*) Find the one that is different — *not* the same. Point to it.

2. (4) Find the one that is different — *not* the same. Point to it.

3. (1) Find the one that is different — *not* the same. Point to it.

4. (1) Find the one that is different — *not* the same. Point to it.

5. (3) Find the one that is different — *not* the same. It is a letter of the alphabet. Point to it.

6. (2) Find the one that is different — *not* the same. It is a letter of the alphabet. Point to it.

7. (3) Find the letter of the alphabet. Point to it.

8. (2) Find the letter of the alphabet. Point to it.

9. (4) Find the letter of the alphabet. Point to it.

10. (3) Find the letter of the alphabet. Point to it.

11. (2) Find the letter "**b**" (say the name of the letter). It makes the "buh" sound in "bun." Remember, it is a letter of the alphabet. Point to it.

12. (1) Here are four different letters of the alphabet. Find the letter "**m**" (say the name of the letter). It makes the "mm" sound as in "mother." Point to it.

*This pointing instruction will not be repeated in the wording of subsequent items. However, the examiner is to follow this procedure whenever he believes it will be helpful to the subject.

13. (4) Here are four different words. Find the word "**see**." It is the one word that starts with the "ss" sound. Point to "**see**."

14. (2) Here are four different words. Find the word "**on**." It is the one word that starts with the "ah" sound. Point to "**on**."

INTRODUCTION FOR ITEM 15 AND FOR SUBSEQUENT STARTING POINTS:

On this page, and on each of the pages to follow, you will have four choices. You are to find the correct spelling of the word I say. I will first say the word; then I will use it in a sentence and then I will say the word again.

15. (1) Come with **me** to the store.

16. (4) The men will **go** to work today.

17. (1) The lady is walking with a **man**.

18. (4) Vegetables are **good** for us.

19. (2) We get milk from a **cow**.

20. (4) A cat **has** four legs.

21. (3) We eat **when** we are hungry.

22. (1) The game will begin on **time**.

23. (2) The flowers grow in the **garden**.

24. (3) Both **girls** are in red dresses.

25. (2) My **brother** watches television.

26. (1) Light comes through the **windows**.

27. (3) The slowest runner came in **last**.

28. (3) He put two **stamps** on the letter.

29. (2) A teen-ager is called a **youth**.

30. (4) Drive slowly in the school **zone**.

31. (2) We use **sugar** to sweeten food.
32. (2) The man cut his **thumb**.
33. (4) We will stay at a **motel** tonight.
34. (4) The sky is **cloudy**.
35. (3) The book cost one **dollar**.
36. (1) We dry our hands with a **towel**.
37. (1) I have read a **sentence** to you.
38. (2) A **bicycle** has two wheels.
39. (4) They are having a **science** fair.
40. (3) Mountain climbing takes **nerve**.
41. (2) Crossing streets is **dangerous**.
42. (1) New Year's Day is a **holiday**.
43. (1) The man holds a **political** office.
44. (4) We hope he will **succeed**.
45. (1) Lettuce is a green **vegetable**.
46. (3) A girl was at the **marriage**.
47. (1) We learn by **experience**.
48. (1) The child has a rare **disease**.
49. (3) He has a **pamphlet** to read.
50. (4) They are starting a **business**.
51. (3) The car is known for **excellence**.
52. (4) Our club formed a **committee**.
53. (3) A lemon is a **citrus** fruit.
54. (2) The men formed a **syndicate**.
55. (1) The phone **installation** was complete.
56. (4) At the desk, sat the **secretary**.
57. (2) The noise was a **nuisance**.
58. (4) We ate lunch at the **restaurant**.
59. (3) The extra part was **supplementary**.
60. (2) The road is closed **temporarily**.
61. (4) He is acting in a **pretentious** manner.
62. (1) The airline will **inaugurate** a flight.
63. (2) The girl is in a **melancholy** mood.
64. (1) There was a **discernible** difference between the two colors.
65. (3) For a week the drizzling rain has been **incessant**.
66. (1) The shy girl is a very **conscientious** student.
67. (3) The look on his **countenance** was one of great joy.
68. (2) Please bring me back a **souvenir** from Asia.
69. (2) Use of the bomb would be an act of **infamy**.
70. (1) Gasoline is an extremely **combustible** fluid.
71. (2) The sailor told the young man an **apocryphal** story.
72. (4) Their **proficiency** in spelling was outstanding.
73. (4) His behavior caused her great **embarrassment**.
74. (2) There was a **fallacy** in the lawyer's argument.
75. (3) The dog crept into the house **surreptitiously**.
76. (3) A complete solar eclipse occurs only **occasionally**.
77. (1) When we have sunny weather, we go **picnicking**.
78. (4) The loss of the game was a **disappointment**.
79. (1) The play included a dramatic **soliloquy**.
80. (1) The medicine included **herbaceous** roots.
81. (2) The liquid has a **saponaceous** feel to it.
82. (3) The school nurse will **inoculate** the students.
83. (2) **Pyorrhea** is an inflammation of tissues in the mouth.
84. (3) To **exacerbate** means to make more violent.

Subtest 4 Spelling
RAW SCORE CALCULATION
Ceiling Item ____
Errors ____
Raw Score ____

PIAT-IV

Subtest 5
GENERAL INFORMATION

Demonstration and Training Exercises

Trial	Exercise A	Exercise B	Exercise C	Exercise D	Exercise E
1					
2					
3					

BASAL AND CEILING RULES:
Basal: 5 consecutive successes
Ceiling: 5 errors in 7 consecutive responses
STARTING POINT:
Raw Score on the Spelling Subtest

1.	32.	63.
2.	33.	64.
3.	34.	65.
4.	35.	66.
5.	36.	67.
6.	37.	68.
7.	38.	69.
8.	39.	70.
9.	40.	71.
10.	41.	72.
11.	42.	73.
12.	43.	74.
13.	44.	75.
14.	45.	76.
15.	46.	77.
16.	47.	78.
17.	48.	79.
18.	49.	80.
19.	50.	81.
20.	51.	82.
21.	52.	83.
22.	53.	84.
23.	54.	
24.	55.	
25.	56.	
26.	57.	
27.	58.	
28.	59.	
29.	60.	
30.	61.	
31.	62.	

Subtest 5 General Information

RAW SCORE CALCULATION

Ceiling item .....

Errors .....

Raw Score .....

WECHSLER INTELLIGENCE SCALE FOR CHILDREN-REVISED (WISC-R)

Name_____ **Test Date**_____ **Examiner**_____

SCALED SCORE (A scaled score of 10 indicates average ability.)	Information	Similarities	Arithmetic	Vocabulary	Comprehension	Digit Span	Picture Completion	Picture Arrangement	Block Design	Object Assembly	Coding	Mazes	
	Information from Experience and Education, Gen. Knowledge	Logical and Abstract Verbal Reasoning, and Relationships	Concentration: Numbered Skills and Reasoning Cognitive-non-cognitive	Word Knowledge from Experience and Education, Gen. Intellectual Level	Practical Knowledge and Social Judgment, Acculturation	Auditory Attention Span and Rote Memory or Recall	Concentration/Attention Visual Attention and Memory, Awareness of Essential Details	Interpretation of Social Situations	Organizing Form Relationships in Space Logic and Reasoning	To Abstract Meaning (whole) Integration and Matching Skill in Non-Verbal Tasks	Eye-hand Brain Coordination Speed of Learning and Writing Symbols, Visual-Motor Dexterity	Visual-Motor Coordination	
20	...	...	...	...	...	...	...	...	...	...	...	...	20
18	...	...	...	...	...	...	...	...	...	...	...	...	18
16	...	...	...	...	...	...	...	...	...	...	...	...	16
14	...	...	...	...	...	...	...	...	...	...	...	...	14
12	...	...	...	...	...	...	...	...	...	...	...	...	12
10	...	...	...	...	...	...	...	...	...	...	...	...	10
8	...	...	...	...	...	...	...	...	...	...	...	...	8
6	...	...	...	...	...	...	...	...	...	...	...	...	6
4	...	...	...	...	...	...	...	...	...	...	...	...	4
2	...	...	...	...	...	...	...	...	...	...	...	...	2
0	...	...	...	...	...	...	...	...	...	...	...	...	0
Scaled Scores													

VERBAL SUBTEST IQ_____ PERFORMANCE IQ_____

FULL SCALE IQ_____

Estimation of Accuracy of Test Results. Results felt to be Valid:_____ Invalid:_____

C.A._____ M.A._____

Test Behavior and Summary Statement:

Vita

Joan Elaine Owen

Candidate for the Degree of

Doctor of Philosophy

Dissertation: The Identification of Characteristics of the Hyperactive Child through Objective Evaluation

Major Field: Psychology

Biographical Information:

Personal Data:

Home Address:	3647 Ottawa Circle Las Vegas, Nevada 89109
Date of Birth	September 2, 1934
Place of Birth:	Grand Rapids, Michigan
Husband's Name:	Dr. Ben Owen
Children:	Eugene R. Bowen, Jill E. Bowen

Educational Background:

Western Michigan University	B.S. Elementary Education, 1965
Western Michigan University	M.A. Elementary School Administration and Supervision, 1966
Utah State University	Ed.D. Elementary Education Curriculum Development and Supervision, 1971
University of Nevada Las Vegas	M.Ed. Educational Foundations and Counseling, 1973
Utah State University	Ph.D. Psychology, 1976

Professional Experience:

Lecturer, University of Nevada, Las Vegas, 1967-68

Teacher, counselor, administrative assistant, educational analyst, school psychologist, Clark County School District, Las Vegas, Nevada, 1965-1975

Psychotherapist, private practice, 1973-present

Director and Chief Psychologist, Special Children's Clinic, Nevada State Department of Health, 1975-present

Professional Organizations:

American Psychological Association
Council for Exceptional Children
National Council on Family Relations
American Personnel and Guidance Association
National Association of School Psychologists
American Association of Marriage and Family Counselors
Nevada Psychological Association
Nevada Society for the Aurally Handicapped
The International Transactional Analysis Association
The American Association of Psychiatric Services for Children
Nevada Association of Marriage and Family Counselors