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Alternatives to drugs for the hyperactive child

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ALTERNATIVES TO DRUGS
FOR THE
HYPERACTIVE CHILD

by

Clarice G. McGee

A RESEARCH PAPER
SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF ARTS IN EDUCATION
(EDUCATION OF LEARNING DISABLED CHILDREN)
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CHAPTER I

STATEMENT OF PROBLEM

The existence of hyperactivity among school children has been estimated at two to fifteen percent of the population. Subsequently, drugs have evolved as the "best" means to cope with such a child. However, "stimulant medications are beneficial in only about one-half to two-thirds of the cases in which trials of the drugs are warranted".¹

What options does the child for whom the drugs are ineffective or undesirable have? Are there any alternative approaches to controlling hyperactivity, or is the ill-fated child forced to outgrow the symptoms through the maturational years between two and thirteen without relief?

The researcher has investigated areas just beginning to be tapped as alternatives to the prescriptive medications now so popularly used. Such areas as food additives, sugar, allergies, diet, megavitamins, electromyographic biofeedback, sleep therapy, the use of caffeine, and lighting are currently being researched to determine possibly crucial effects on the behavior of a hyperactive child. The field is as yet new, but the evidence appears to indicate that there are alternative approaches to dealing with hyperactivity.

¹Office of Child Development and the Office of the Assistant Secretary for Health and Scientific Affairs, Department of HEW, "Report of the Conference on the Use of Stimulant Drugs in the Treatment of Behaviorally Disturbed Young School Children," (Washington D.C.: January 11-12, 1971): 3.

LIMITATIONS

The researcher has been limited to current studies due to the recent developments of the issue of alternatives to prescribed medications at this point. The paper concerns itself with the school-aged child.

The researcher realized that much study has also been done as to the use of techniques commonly classified as Behavior Modification. It was the purpose of this paper, however, to deal with areas involving physical metabolism rather than psychological studies due to the recent developments of the topic of alternatives to medication.

OVERVIEW OF HYPERACTIVITY

Various avenues have been taken in diagnosing hyperactive children, thus far showing an inconsistent pattern in treatment. The researcher notes at this time that once the abundance of definitions are investigated, it is not quite as surprising to surmise why one approach to controlling hyperactivity has been unfeasible (referring to drug therapy). It is the intent of the researcher at this time to compare and contrast a few of the definitions and descriptions of hyperactivity.

G. Philip, in an article in the Canadian Psychiatric Association Journal has classified hyperactivity into four types according to suspected etiological or environmental causes:

- 1) "Genetic or constitutional" -- those children who were hyperactive from a very early age, but where the pregnancy for the mother and events were normal.
- 2) "Behavioral or conditioned" -- children having parents who attended to distracting behavior.
- 3) "Minimal brain dysfunction or chemical" -- children having early and continuous hyperactivity as well as a history of abnormal pregnancy or perinatal events.
- 4) "Reactive or chaotic" -- children coming from a home environment with little agreement or discipline or considerable marital turmoil.¹

Another means of classifying hyperactivity has been done which has its focus on behavioral characteristics as well as etiological factors:

- 1) "Constitutional high activity level" -- children having sustained attention and performance in some cases, but not when restricted.

¹G. Philip, Canadian Psychiatric Association Journal 19, (December, 1974): 543-550.

- 2) "Children with a maturational lag" -- children having no gross neurological impairment, but which exhibit inappropriate behavior for their age. In time they may perform adequately.
- 3) "Children with emotional disturbance" -- children who are difficult to delineate. They demonstrate no neurological deficits, intellectual impairment, nor perceptual problems, but rather have a history of behavioral abnormalities and are unstable in a threatening environment.
- 4) "Children with diffuse brain damage" -- demonstrating chronic, severe hyperactivity and possibly neurological soft signs.¹

Another analysis of hyperactivity incorporates two previous classifications while adding further categories to differentiate a pervading hyperactivity from temporary symptoms:

- 1) "Primary hyperactivity" -- children exhibiting one or more of the following traits:
 - a) very high energy level with much energy going into muscular movement.
 - b) relatively inefficient regulation of motor impulses so that movement is excessive because of being clumsy or wide of mark.
 - c) perceptual distractibility evidencing itself in the child as not being able to focus for long periods of time and being easily distracted by irrelevant details. Some dysfunction of the attention focusing mechanism, the reticular formation is hypothesized.
- 2) "Secondary hyperactivity" --
 - a) excessive movement because of upset or worry.
 - b) aggressiveness seen as hyperactivity. In the course of the day the child does not expend more energy than usual.
 - c) developmental lag seen as hyperactivity. 2
 - d) normal child seen by parents as hyperactive.

Thus, in contrasting primary from secondary hyperactivity one would see the primary as having its roots in excessive movement

¹R. M. Reece, "The Hyperactive Syndrome," American Family Physician 8, (September, 1973): 100.

²Mary C. Howell, "Hyperactivity in Children," Clinical Pediatrics 11, (January, 1972): 36.

itself as the base of the difficulty, whereas secondary hyperactivity is only a symptom or reaction to more basic problems.

DESCRIPTIVE TERMS FOR THE HYPERACTIVE CHILD¹

Motor Activity

overactive
fidgety
can't sit still
constantly moving
clumsy
whirling dervish
climbing and jumping

Psychological Testing

short attention span
distractible
perceptual-motor handicap
low frustration level
difficulties in abstractions,
numerical concepts and design
perception
variable IQ

Neurological Abnormalities

speech abnormalities
strabismus and convergence
difficulties
tremor, mild choreoathetosis
clumsy, broad based gait
truncal swaying
poor tandem walking
inability to hop or stand on
one leg
poor 'Finger to Nose'
dysdiadochokinesia
synkinesis
increased deep tendon reflexes
clonus
variations of Babinski reflex

Behavior

disruptive
antisocial
impulsive
destructive
bothers others
pest
tantrums
aggressive
cruel
hostile

As evidenced by the subtle nuances in definitions to causes and behaviors, the existence of hyperactivity is not something easily characterized. Add to it the individual differences each person exhibits, and an easy definition and/or categorization becomes extremely difficult, thus resulting in uncertain methods of individual treatment.

¹Robert M. Reece, "The Hyperactive Child Syndrome," American Family Physician, (September, 1973): 99.

It was not the researcher's aim to strive for one encompassing definition of hyperactivity. Rather it has been to acquaint the reader with the divergence of ideas on the topic, so as to realize the complexity of the issue of hyperactivity and its treatment.

7
DEFINITIONS

Hyperactivity for the purposes of this paper will be adequately explained with the definition taken from the "Report of the Conference on the Use of Stimulant Drugs in the Treatment of Behaviorally Disturbed Young School Children":

There is no known single cause or single answer for such problems. The major symptoms are in an increase of significantly impaired span of focused attention. The inability to control physical motion and attention may generate other consequences, such as disturbed mood and behavior within the home, at play with peers, and in the schoolrooms... The physical activity appears driven -- 'as if there were an inner tornado' -- so that the activity is beyond the child's control, as compared to other children. The child is distracted, racing from one idea and interest to another, but unable to focus attention.¹

Prescriptive medications refer to the prescription drugs most commonly used for treatment of hyperactivity. The most common drugs utilized are:

Methylphenidate (Ritalin)
Amphetamine (Dexedrine)
Chlordiazepoxide (Librium)
Deanol (Deaner)
Reserpine (Serpasil)
Chlorpromazine (Therazine)²

Although some of the areas investigated might be considered medications: caffeine or megavitamins, these are not to be included with the list of commonly prescribed medications for the use with the hyperactive child.

¹Office of Child Development and the Office of the Assistant Secretary for Scientific Affairs, Dept. HEW, "Report of the Conference on the Use of Stimulant Drugs in the Treatment of Behaviorally Disturbed Young School Children," (Washington D.C.: January 11-12, 1971): 2.

²Gordon J. Millichap, "Treatment of Minimal Brain Dysfunction Syndromes -- Selection of Drugs for Children with Hyperactivity and LD," Pediatric Clinic of North America 14(November, 1967): 775.

Hyperactivity, in its variably defined forms has been estimated in two to fifteen percent of school-age children. Numerous methods for coping with the symptoms have been utilized in the past with the use of prescriptive stimulant medications being the most extensive. However, not all cases of hyperactivity are controllable through drug use, thus necessitating further remediative approaches. It has been the researcher's purpose to investigate these alternative approaches of coping with hyperactivity. In Chapter two these alternatives will be discussed.

CHAPTER II

ALTERNATIVES TO PRESCRIPTIVE MEDICATION -- A MEDICAL FOCUS

In order to investigate the topic of alternatives to the use of prescriptive medications the researcher has found that there are indeed avenues worthwhile delving into prior to the consideration of stimulant medications for control of hyperactivity. Factors such as diet, allergies, vitamins, caffeine, and lighting are worth considering in the investigation of hyperactivity via an etiological perspective. Procedures dealing with control of hyperactivity such as sleep therapy, as well as electromyographic biofeedback are significant also in their direct focus on behavior control.

The aforementioned areas deal mainly with the medical facets of the problem of hyperactivity. The researcher notes at this time that other areas such as family education and counseling, remedial education, and psychotherapy are also significant, but will not be discussed due to the limits of this paper.

Before considering how to curb a hyperactive child's actions, the researcher felt it necessary to stress the importance of first insuring, by means of a thorough physical exam, that the child's hyperactive actions have not been caused by inadequate diet or consequences of it: allergies, or improper metabolism of foods. Once this prerequisite exam has been completed, other avenues investigated for hyperactivity would hold more credence as to being the cause, knowing that the child is in good physical health.

Research into the metabolism of foods as they are supplied to the CNS might be a pathway to look down, for it is obvious that properly fed children are more likely to feel well and to perform better. Even the toxicity or contamination of foods with sprays or additives seems to be possibly a cause of irritants and agitants of the CNS.

It is obvious to any of us interested and working with normal children who fail to meet academic expectations that something is wrong. Of all the gamut of things tried and being tried, perhaps attention to these areas would be rewarding. In other words, fuel supplied to body machinery is as important to the brain learning, remembering, and forgetting as mechanical contrivances.¹

Essential to the understanding of diet to proper growth has been the knowledge of what roles various types of foods take in maintaining proper health, and its correlate, good behavior. A graph by S. N. Jani described the Nutrients and their Functions:²

<u>NUTRIENTS</u>	<u>FUNCTIONS</u>
Fats — — — — —	Energy
Carbohydrates	Growth and Repair
Proteins — — — — —	Normal Body Processes
Minerals	
Vitamins — — — — —	

1H. W. S. Powers, "Dietary Measures to Improve Behavior and Achievement," Academic Therapy 9(Winter, 1973-1974): 213.

2I. A. Alekseeva and Kaplanskaya, S. I. Raiskaya, "Effect of Methionine on Nervous Activity in Protein Deficient Rats," Translated by Translated Annals of the N.Y. Academy of Science, (1962): 93.

"One of the most important nutrients to consider is protein. With this there is an interplay of vitamins and protein which aid generally in development, specifically in cortical functioning."¹ The issue of the essentiality of protein must be considered in conjunction with the other constituents for good health, however, for it was found that a great deal of malabsorption of protein occurred, wherein protein was metabolized as a carbohydrate, too rapidly to utilize everything contained in the proteins during a period of poor protein balance.²

Further research on the interplay of nutrients to achieve successful medical programs has been done by R. Scobey, in which children did not respond significantly to vitamin therapy until protein deficiency was first corrected.³ In this research protein proved to be a necessary prerequisite to general health before vitamin therapy could take effect on hyperactivity.

Various men dealing with hyperactive children, interestingly enough, have been found to have similar diets for their patients. von Hilsheimer, a superintendent of a psychiatric hospital in Orange Valley, Florida, has attributed his reduction of treatment time from an average of twenty-four months to eight months with a concurring change in patient diet. The diet consisted of a reduction of sugars

¹S. N. Jani and L. A. Jani, "Nutritional Deprivation and LD: An Appraisal," Academic Therapy 10 (Winter, 1974-1975): 154.

²George von Hilsheimer, Allergy and Toxins and the Learning Disabled Child, (San Rafael, Cal.: Academic Therapy Pub., 1974): 40.

³R. R. Scobey, "Nutrition and Child Health," New York State Journal of Medicine 47, (1947): 1,788.

and carbohydrates with an increase in vitamins, especially the B vitamins, and proteins.¹ This diet similarly could be compared to that proposed by Aleskseeva, a diet based mainly on proteins and vitamins.

A practicing physician, Doctor Hugh Powers, has found also that a strict diet could aid a child in more readily conforming to daily life. Basing each child's diet on his own age and build, Doctor Powers specifically prescribed a diet consisting of:

- 1) a limitation of carbohydrates and an exclusion of sugars, coffee, tea, and cola drinks.
- 2) digestive enzymes to enhance the use of protein as a source of glucose.
- 3) a concentrated vitamin B and C supplement.
- 4) a complete vitamin-mineral preparation.
- 5) whole adrenal-cortical extract and other hormonal supplements when indicated.²

So that parents and teachers could become aware of a child with inadequate nutrition, R. Scobey listed signs to be aware of as warning signs of improper diet:

- 1) frequent and prolonged infections involving the mouth, skin or respiratory tract.
- 2) clumsiness or falling easily.
- 3) delayed healing of minor injuries.
- 4) irritability and restlessness.
- 5) nail biting.
- 6) inability to sit still.
- 7) inability to fall asleep easily at night.
- 8) restless sleep or awakening with fright.
- 9) tiring easily or lacking ambition.
- 10) frequent headaches.

¹George von Hilsheimer, "Reaching Achievement as a Function of Maturity, Diet, and Manipulation of Chronic States of High Arousal," The Child with ID -- His Right to Learn: Eighth Annual International Conference of the ACID, (March 18-20, 1971): 274-275.

²H. W. S. Powers, Jr., "Dietary Measures to Improve Behavior and Achievement," Academic Therapy 9(Winter, 1973-1974): 206.

- 11) abdominal pain and constipation.
- 12) digestive disturbances.
- 13) vague pain in the extremities.
- 14) frequent urination, possible enuresis.
- 15) a child's 'going to pieces' if mother or teacher corrects him.
- 16) leukonychia -- white spots on the pink of the fingernails (for throid deficiency).¹

Proper nutrition should rightfully be the first area checked when dealing with a hyperactive child, since many imbalances in diet can evidence themselves in hyperactive symptoms. After a general physical exam has been given, the researcher has found that an in-depth allergy test series should also be done, since more and more evidence has been found connecting allergies to hyperactivity. The next section of this paper has considered allergies and their relation to hyperactivity.

¹R. R. Scobey, "Nutrition and Child Health," New York State Journal of Medicine 47(1947): 1,787.

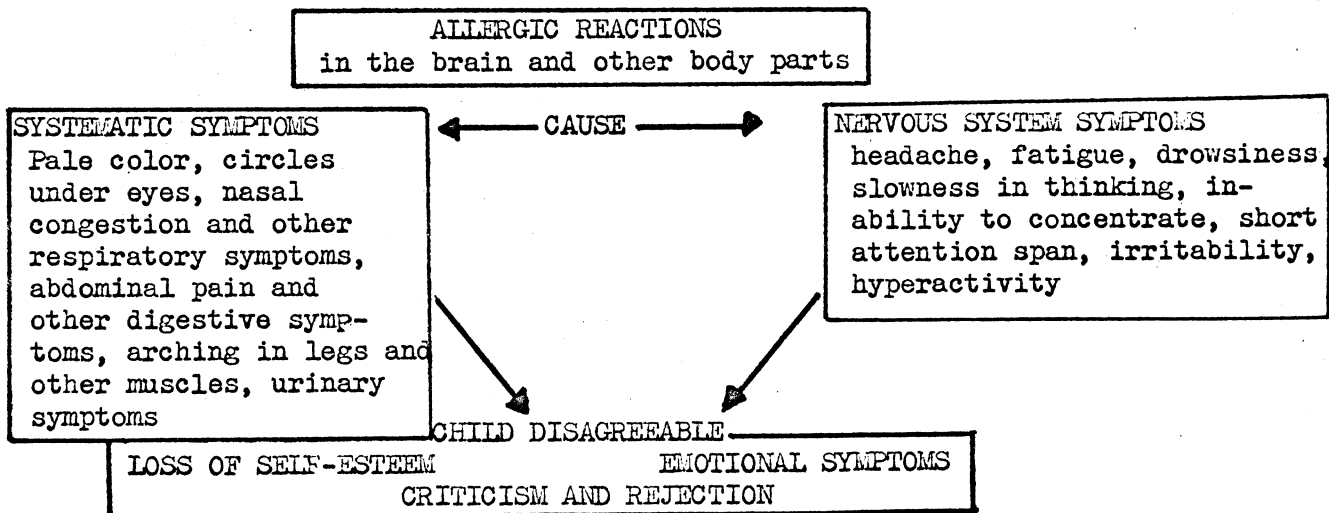
ALLERGIES

Allergy is known in medical journals as the 'great masquerader', and educators need to take heed and to begin recognizing that allergies may be the cause of (or occur concurrently with) many conditions heretofore labeled hyperactivity, MBD, emotional disturbance, language and/or learning disability and behavior problems.¹

Research into allergic reactions by Speers has led him to separate the allergic tension-fatigue syndrome into a fatigue group and a tension group. This syndrome may occur alone or with other allergic reactions such as asthma, hayfever, or eczema. Either way this syndrome evidences itself, it has been found to be different from allergens in respiratory or skin allergies.²

The Tension symptoms, with which this paper has been concerned, have two main groups: those involving motor tension and those involving sensory tension. Motor tension evidenced itself in restlessness, a constant state of activity, and clumsiness in voluntary muscle control, unlike sensory tension having irritability and an inability to be pleased.³

All these symptoms have been described concisely in a graph to explain the consequential effects of allergic reactions:⁴



¹J. Havard, "School Problems and Allergies," Journal of ID 6 (October, 1973): 1.

²William Crook, M.D., "Food Allergy -- The Great Masquerader,"

Once the symptoms for an allergy had been noted an elimination diet would be in order to specify what the child had allergic reactions toward. During an elimination diet no food, medication, or beverages for a period of four to five days would be allowed. Then food would again be introduced separately to watch for any allergic reactions.

Foods commonly implicated in regards to their relationship to hyperactivity have similarly been noted as being high in allergic potential. Such foods are: cow's milk, citrus products, wheat, corn, chocolate, eggs, nuts, fish, and berries.¹ If any of these had been found to have caused an allergy, that food and any product in that food group would also be eliminated to see if the allergic reactions would cease.

Other substances found in foods or having been in contact at one time with the foods have been found to be casually related to behavior problems in a significant number of hyperkinetic children; these were contaminants such as pesticides, fertilizers, herbicides, aniline coal tar, and food dyes.²

Besides the substances already noted salicylates were also to be tested with these foods being avoided if allergic tendencies were to arise: almonds, apples, apricots, blackberries, cherries, currants, gooseberries, grapes or raisins, nectarines, oranges, peaches, plums

Pediatric Clinic 22(February, 1975): 230.

³Ibid., p. 231.

⁴Ibid., p. 232.

¹R. C Wunderlich, "Treatment of the Hyperactive Child," Academic Therapy 8(Summer, 1973): 383.

²C. Hawley and R. E. Buckley, "Food Dyes and Hyperkinetic Children," Academic Therapy 10(Fall, 1974): 28.

or prunes, raspberries, strawberries, cucumbers, pickles and tomatoes. Flavorings also should be tested in: ice cream, oleo, gin, all distilled beverages, bakery goods (except plain bread), jello, candies, gum, cloves, oil of wintergreen, toothpastes, mint flavors, lozenges, mouthwash, jams, jellies, luncheon meats, and frankfurters. Beverages to be tested include: cider and cider vinegars, wine and wine vinegars, Kool-Aid and similar beverages, soda, tea, beer, diet drinks, and supplements. Finally certain drugs containing aspirin and perfumes need to be tested as allergens.¹ These lists of possible allergy-causing substances have been compiled by Doctor B. F. Feingold, M.D. in his endeavors to deal with allergies.

Parents could aid in pinpointing allergies by being able to list foods a child craves, or has ill-reactions to, or times of the year that seem to cause problems. Also any allergies in the family background should be reported.

As seen by the wide variety of substances tested in allergy patients, many substances not usually considered as containing allergic reactions are present in many substances the child utilized or consumed daily. Such allergy tests, though time consuming, could pinpoint the cause or causes of a child's hyperactive reactions, thus possibly alleviating the need for drugs.

The researcher has found during the investigation on hyperactivity that a surprisingly large number of researchers have based their work on the theory of allergies and their effect on behavior. The substances most often discussed have been milk,² food dyes, and caffeine (which is

¹C. Hawley and R. E. Buckley, "Food Dyes and Hyperkinetic Children," Academic Therapy 10(Fall, 1974): 29-30.

²William H. Philpott, "Biobehavioral Psychiatry and LD," The Child with Learning Disabilities: His Right to Learn, (1971): 299.

discussed later in this paper), surprisingly enough the very substances found so often in a child's diet. Once again the issue of proper diet has come to the foreground as something that must be seriously considered in the topic of hyperactive reactions.

The next two topics dealt with in this paper, Megavitamins and Caffeine, have previously been mentioned under the areas of diet and allergies. They have both been discussed in more detail because current research has become more pronounced on their individual effects on hyperactivity.

MEGAVITAMINS

Megavitamins had been used prior to this time for therapeutic reasons, but not until Doctor Linus Pauling, the noted Nobel laureate in biochemistry suggested that megavitamin treatment might better be described as "orthomolecular therapy"¹, did it open the way for large doses of vitamins in combinations to be utilized in therapy.

Another doctor, Doctor Cott had also been working for some years with megavitamins for hyperactivity after first having used the therapy with childhood schizophrenia and autism cases. Doctor Cott found megavitamins to decrease hyperactivity as well as to improve concentration and attention span.²

Of the megavitamins, the B complex vitamins appeared to be the most effective in therapy.

The B complex vitamins include the only enzyme that metabolizes nutrients for the nervous system. Whole grains, undebilitated brown rice, eggs, milk, and meat from properly fed animals are rapidly disappearing from the market. Consequently the constitutionally less strong individuals are less able to maintain adequate nutrition for the nervous system. A high intake of sweetened foods will cause a deficiency in the supply of the B complex available to the body and brain. The sugar habits of the child must also be assessed in light of the B vitamin intake.³

Vitamin C also has been found to be useful in the treatment of hyperactivity, though evidence has not been as strong as with the

¹Allan Cott, "Orthomolecular Approach to the Treatment of LD," Schizophrenia 3:2(Second quarter, 1971): 101.

²Ibid., p. 101.

³George von Hilsheimer, How to Live with Your Special Child A Handbook for Behavior Change. (Washington, D.C.: Acropolis Books, 1970): 26.

B vitamins. Doctor Wunderlich has used vitamin C alone in high doses and has found it effective in reducing or eliminating all of the hyperactive behavior in some children. In his article, "Treatment of the Hyperactive Child" he indicated that vitamin C might "alter an allergic state manifested solely or predominantly as 'itchy brain behavior' (hyperactivity, distractibility, etc.),¹ thus being more effective in regard to an allergy cure, which many children of hyperactive symptoms have been found to need.

Megavitamin therapy has been found most effective with children between two and eight years of age. The usual amount of therapy time has been from three to six months before the effects can be seen.²

The most common types of megavitamins prescribed daily are:

1) "Niacin or niacinamide (vitamin B₃) in one to two gram doses. It has been found that this dosage often normalized a hyperactive child's behavior with startling differences from Ritalin effects: normal behavior in one to six months with no decreased activities, no night wakefulness or interference with appetite or weight gain. Only rarely was nausea or diarrhea caused".³

2) "Calcium pantothenate (another B vitamin) in 400 to 600 mg. doses.

Research has found that this vitamin coupled with vitamin C

¹R. C. Wunderlich, "Treatment of the Hyperactive Child," Academic Therapy 8(Summer, 1973): 377-378.

²Allan Cott, "Orthomolecular Approach to the Treatment of LD," Schizophrenia 3:2(Second quarter, 1971): 101.

³R. C. Wunderlich, "Treatment of the Hyperactive Child," Academic Therapy 8(Summer, 1973): 378.

(also prescribed in the megavitamin therapy) frequently had the effects of having a more outgoing and interested child in group participation."¹

3) "Ascorbic acid (vitamin C) in one to two gram doses daily. 'Ascorbic acid as well as niacin are important in the respiration of all body tissues in the maintenance of health'."²

4) "Pyridoxine (vitamin B₆) in 200 to 400 mg. doses has been found to be one of the most important agents in megavitamin therapy. In some cases expressive speech has improved with high doses with side effects being rare."³

The child who is being treated with megavitamins may reach a plateau in his improvement. This may be because the child's chemical make-up has been improved as much as possible with the megavitamin regimen. At that point he may be further helped by the use of antihistamines and/or corticosteroids.⁴

More work has yet to be done in the area of megavitamins, since so many vitamins have yet to be utilized in therapy. One example of a family who accidentally found that zinc in oysters controlled their daughter's hyperactivity after other megavitamins had failed⁵ sub-

¹R. C. Wunderlich, "Treatment of the Hyperactive Child," Academic Therapy 8(Summer, 1973): 379.

²Allan Cott, "Orthomolecular Approach to the Treatment of LD," Schizophrenia 3:2(Second quarter, 1971): 101.

³R. C. Wunderlich, "Treatment of the Hyperactive Child," Academic Therapy 8(Summer, 1973): 379.

⁴Ibid., p. 379.

⁵"A Case History: Sugar Fried Oysters and Zinc," Academic Therapy 11(Fall, 1975): 120.

stantiated the researcher's point. The future will find more and better uses for megavitamins. Special education teachers and doctors be aware!

Caffeine use has become a part of modern society's diet in coffee, tea, and cola drinks. Because of the great amounts consumed, the use of caffeine has been analyzed in terms of its effect on hyperactivity.

Previously in this paper Doctor Hugh Powers' diet for hyperactive children was cited excluding all types of caffeinated beverages: coffee, tea and cola drinks¹, thus considering caffeine to be of no benefit in controlling hyperactivity. Other reports have disagreed with Powers' view to different degrees.

Doctor R. C. Schnackenberg has tried substituting caffeine for methylphenidate or dextroamphetamine with eleven children and has gotten positive results. His procedure included giving the child a cup of coffee for breakfast and one for lunch rather than using drugs for a total of three weeks. Doctor Schnackenberg found that the 200 to 300 mg. of caffeine taken daily had the same controlling effects of drugs with fewer side effects, as well as being less expensive.²

Doctor Hugh Powers, Jr. has recently published an article that might explain how both results have been arrived at correctly:

Caffeine excites all portions of the CNS. In moderate doses (two cups of coffee, three cups of tea, or three to twelve ounces of cola) caffeine enhances functions, but in unpredictable ways. Children are more susceptible than adults. In desirable doses

¹H. W. S. Powers, Jr., "Dietary Measures to Improve Behavior and Achievement," Academic Therapy 9(Winter, 1973-1974): 206.

²R. C. Schnackenberg, "Caffeine as a Substitute for Schedule II Stimulants in Hyperkinetic Children," American Journal of Psychiatry 130:7(July, 1973): 797.

there is a limited period of improvement (one to two hours) wherein there is a more rapid and clear flow of thought with subsequent drowsiness. However, recently acquired motor skill in a task involving delicate muscular coordination and accurate timing may be adversely affected. For some people, even one cup of coffee, tea, or cola can cause insomnia, excitement, tense muscles, and tremulousness.¹

According to this report Schnackenberg's results would have coincided with Powers' reported period of improvement within one to two hours after having taken the coffee. However Schnackenberg's report did not go into detail on fine muscular coordination or accurate timing, thus Doctor Powers' final queries have not as yet been substantiated or refuted.

The issue as to the use of caffeine is as yet unresolved and will remain so until further research is done. Because of the popularity of caffeine and its low cost, the area of caffeine and hyperactivity control would appear to be a feasible area of future research.

¹Hugh W. S. Powers, Jr., "Caffeine, Behavior, and the LD Child," Academic Therapy 11(Fall, 1975): 5-6.

LIGHTING

Recent research has been done on the effects of various types of light on human responses. Doctor Ott found that "light entering the eyes, in addition to vision, stimulated activity in both the pituitary and pineal glands and possibly other areas of the mid-brain region that control the endocrine system and the production of hormones. Thus light energy exerts an influence on body chemistry as we know it does through the process of photosynthesis in plants."¹

Ott theorized that a layer of cells located in the retina with no visibility function in fact is a photoreceptor mechanism. He continued in his theory by saying that levels of radiation well below those necessary to produce noticeable physical injury to cell tissue could influence the endocrine system through a retinal hypothalamic pathway and produce both abnormal physical and mental responses over an extended period of time.² Radiation from television sets has been tested by the Environmental Health and Light Research Institute that has suggested the same results Otts has found concerning retinal reaction.³

After having studied the effects of natural sunlight on responses, Ott continued in his article about sunlight that had been altered: "Recent experimental studies have indicated that abnormal growth

¹John Ott, ScD., "Responses of Psychological and Physiological Functions to Environmental Light," Journal of Learning Disabilities 1(May, 1968): 298.

²John Ott, "Response of Psychological and Physiological Functions to Environmental Radiation Stress," Journal of Learning Disabilities 1(June, 1968): 353-354.

³Ibid., p. 353.

responses develop when any part of this natural sunlight spectral energy is blocked from entering the eyes, and it is suggested that some learning disabilities may be directly associated with these abnormal growth responses."¹

Doctor Ott and three colleagues tested the theory of abnormal forms of sunlight as a cause to behavior problems in four classrooms in Sarasota, Florida. The different lighting sources compared were not with sunlight, but rather with two types of artificial lighting fixtures for the interior of the classrooms.

The control classrooms used Cool white fluorescent bulbs in unmodified fixtures as opposed to the experimental rooms which utilized Vita-lite fluorescent bulbs with the cathode elements at the ends of the bulbs being wrapped in aluminum foil to prevent the filtration of rays. Egg crates also were used over the lights to diffuse the rays.

The results were as expected: Full-spectrum fluorescent lighting radiation shielding decreased the hyperactive behavior of students in the two experimental rooms to a significant degree ($p < .0005$), thus illustrating Ott's idea of remaining as close to sunlight as possible in order to decrease hyperactive behavior in children.²

The results warrant consideration for their application to use

¹John Ott, ScD., "Responses of Psychological and Physiological Functions to Environmental Light," Journal of Learning Disabilities 1(June, 1968): 298.

²Lewis W. Mayron, John Ott, Rick Nations, and Ellen L. Mayron, "Light, Radiation and Academic Behavior," Academic Therapy 10:1 (Fall, 1974): 33-47.

in the classroom. However, more research by independent groups at this time must also be done to confirm or disprove results reported by John Ott.

Two important manufacturers, those making eyeglasses and contact lenses as well as light bulb manufacturers have been attempting to produce products that do not block the normal amount of near long wave ultraviolet rays that penetrate the atmosphere. The actions of these groups lend credence to the belief that natural sunlight is best and that anything artificial should be kept as close to sunlight as possible.

The popular black light has had some research done finding that, when harmful radiation has been blocked, black light can be good to use. Unlike blacklight, however, pink light might be very annoying.¹

As with areas such as allergy, megavitamins, and caffeine, the effects of lighting on hyperactivity still look to the future for clarification and substantiation of ideas. Results in this area also must be left open until further research has been done.

¹John Ott, ScD., "Response of Psychological and Physiological Functions to Environmental Radiation Stress," Journal of Learning Disabilities 1(May, 1968): 300.

SLEEP THERAPY

Research in the area of sleep therapy has been done with results suggesting that further "research be directed towards regulation of the dynamic homeostasis of the entire biological system as a means of correcting specific learning disabilities."¹

Various forms of sleep therapy have been tried, all with some success. One type suggested a marathon wake session of forty-eight to seventy-two hours of wakefulness ending at night. This has been reported to usually end in a regulation of sleep.² Another type of therapy directed extremely disordered individuals to sleep for a ten to twelve hour night of uninterrupted sleep combined with a pattern of waking every three hours during the day and strenuous exercise. Sleep improvement was attempted through habituation or inhibition which had been induced by a mild, repetitive, painless electric stimulation. The treatment improved not only sleep and relaxation, but reading improvement.³ Still another experiment with electrosleep resulted in the experimental group as well as the control group (who received sham electrosleep) reporting relief. In the report the physiological relief achieved by the control group as well as the experimental group who improved significantly more (to

¹George von Hilsheimer, "Reaching Achievement as a Function of Maturity, Diet, and Manipulation of Chronic States of High Arousal," The Child with Learning Disabilities: His Right to Learn (Eighth Annual International Conference of the ACID, March 18-20, 1971): 280.

²George von Hilsheimer, How to Live with Your Special Child -- A Handbook for Behavior Change (Washington, D.C.: Acropolis Books, 1970): 38.

³George von Hilsheimer, "Reaching Achievement as a Function of Maturity, Diet, and Manipulation of Chronic States of High Arousal," The Child with ID: His Right to Learn, (Eighth Annual International Conference of the ACID, March 18-20, 1971): 279.

the .01 level) have shown that attempts at sleep regulation
achieved significant positive results.¹

¹George von Hilsheimer, "Creeping Reification -- Functional Versus Symptomatic Treatment in the Diagnosis 'Minimal Brain Dysfunction,'" Journal of Learning Disabilities 6(March, 1973): 66.

ELECTROMYOGRAPHIC BIOFEEDBACK

Electromyographic biofeedback, though complicated in name actually has been found to be very simplistic in nature. It would involve using electronic equipment to monitor an individual's physiological processes which are normally not noticed, then reporting the processes to the individual by means of a light or tone. This procedure has aided subjects to gain voluntary control over individual physiological systems, which otherwise would have gone unnoticed.¹

Once the subject has learned to control his various physiological systems, the complicated equipment no longer would be necessary, thus eliminating the argument that biofeedback would be much too costly. One important issue, however, is that this form of therapy, as others, must be generalized to the home and school environment with authorities understanding and cooperating in order to continue in the effectiveness of such therapy, which, without machines to serve as feedback, must be based on self-control.

Such therapy has been tried with good results, though not as extensively as some of the other alternatives, since scientific equipment and personnel use is expensive. With further studies into the area of electromyographic biofeedback, perhaps a less expensive version of this therapy can be developed for more extensive use with hyperactive children.

¹Lendell Williams Braud, PhD., Mimi N. Lupin, MA and William G. Braud, PhD., "The Use of Electromyographic Biofeedback in the Control of Hyperactivity," Journal of Learning Disabilities 8(August-September, 1975): 21-22.

With the area of hyperactivity control being more widely researched, alternative methods of control other than prescriptive medication have been rapidly coming to focus. Areas such as parental counseling and behavior modification have gained rapid popularity as has the medical focus to the problem. This paper has been limited to the medical focus.

The areas that have been discussed in the area of medicine have been: diet and its effect on the total make-up and functioning of the child, allergies and how they result in hyperactive behaviors, megavitamin therapy to control hyperactivity, caffeine and its positive and negative effects on hyperactivity, lighting and its effects, sleep therapy, and finally electromyographic biofeedback.

The third chapter of this research paper deals generally with other alternatives to drugs for hyperactive children as well as future implications of the work being done.

CHAPTER III

SURVEY OF OTHER ALTERNATIVES TO DRUGS

Various aspects of dealing with the hyperactive child have been discussed in light of a medical focus of therapy. As mentioned previously, there are modes of coping with hyperactivity other than drugs, such as parental counseling, behavior modification, and remedial training. This last chapter briefly discusses these areas as well as future trends in dealing with hyperactivity.

The area of parental counseling has been a major emphasis in dealing with hyperactivity since parents naturally become involved in the dilemma in every way. Knowledge of the situation and what can be done leads parents to answers about their child's actions as well as their own feelings toward their child, which must be dealt with also.

Knowledge about how to structure home and school situations for the child are also essential in dealing with hyperactivity. Guidelines as to what is and is not acceptable behavior on the child's part must be understood by all parties involved to continue in a consistent fashion from one situation to another. Consequences for behaviors must occur to continue a stable environment in which the child is to function.

Knowing that "all but the most severe cases seem to outgrow the behavior or develop better self-control between twelve and seventeen"¹

¹S. O. Cole, "Hyperkinetic Children: The Use of Stimulant Drugs Evaluated," American Journal of Orthopsychiatry 45(January, 1975): 29.

could serve as something to hold onto in times when hyperactivity seems to defy everything else.

The chances are that the child will outgrow it, if the parents can just take it one day at a time.

Another method of dealing with hyperactivity other than drugs is the very popular method of Behavior Modification, which can be utilized with positive results by any knowledgeable person. Once the basics of behavior modification have been understood, the principles of rewarding good behaviors to have them continue (positive reinforcement) and ignoring the behaviors not desired while substituting a more acceptable behavior to take its place (negative reinforcement) could be applied to any situation involving behaviors.

As the methods involved in Behavior Modification become more scientifically proven, procedures for dealing with behaviors have been becoming more dependable and popular. A basic understanding of human nature and ever increasing evidence of the validity of the method will bring even greater interest and use of the "Behavior Mod" techniques.

Still another area being tapped in the field of hyperactivity treatment has dealt with the remediation of academic areas that have been stunted due to poor concentration and attention. The emphasis at present has been on working with the younger children under eleven to alleviate the need for later remediation, by placing the younger child in a school setting that allows for the child's excess of activity and channels it to productive ends so that later failure will not occur in academic and social areas.

The area of remediation and special education has been an

important factor to consider, since learning is so contingent on behaviors which the hyperactive child cannot, of himself, control without help. Considering the repercussions of hyperactivity necessarily means dealing with social as well as individual learning behaviors of attention and concentration.

The following are suggestions for adults in dealing with hyperactivity:¹

- 1) Increase the child's self-esteem by avoiding recurrent failure. Start with tasks well within his maturational learning capacity so he can succeed.
- 2) Give immediate non-verbal recognition as well as verbal or written rewards or tokens.
- 3) Use association cues liberally to sustain interest and improve memory retention.
- 4) Innovate according to perceived problems and skills of the child.
- 5) Capture interest and improve motivation by controlled and creative use of novelty and surprise.
- 6) Set some immediate goals to teach the effort-achievement principle.
- 7) Avoid overloading with data. Short but repeated input is more successful.
- 8) Use AV aids whenever available. They improve cross sensory association and comprehension.
- 9) Ask and ask again from administrators for teaching materials and media that would help the child learn.
- 10) Observe and document in writing the pattern of a new child's behavior for about two weeks to obtain some in-depth understanding of his function.
- 11) Twelve to fifteen minute assignments achieve more than two to two and a half hour ones.

¹Domeena C. Renshaw, M.D., The Hyperactive Child (Chicago: Nelson-Hall, 1974): 126-129.

- 12) Call for psychological consultation through the principal or special education director when perplexed or at a stalemate.
- 13) Request evaluation of hyperkinetic child for transfer from regular to a special education classroom when he cannot be contained even with careful teacher effort, good parent contact, and medications. The right to learn of twenty-nine other children is usually at stake.
- 14) Stay in close touch with the child's physician by regular reports and occasional phone calls. Ideally also by regular psychiatric consultation to teachers in special education classrooms.
- 15) Try to set aside regularly some special time, although brief, to recreate.

Besides suggestions for all adults in general, Doctor Renshaw has also listed specific techniques for the family which can be very pertinent.¹

- 1) Be carefully consistent in rules and discipline.
- 2) Keep voice quiet and slow. Anger is normal. Anger can be controlled. Anger does not mean you do not love a child.
- 3) Try hard to keep your emotions cool by bracing for expectable turmoil. Recognize and respond to any positive behavior, however small. If you search for good things you will find a few.
- 4) Avoid a ceaselessly negative approach --STOP -- DON'T NO.
- 5) Separate behavior which you may not like from the child's person, which you like.
- 6) Have a very clear routing for this child. Construct a timetable for working, eating, play, TV, study, chores, and bedtime. Slowly your structure will reassure him until he develops his own.
- 7) Demonstrate new or difficult tasks, using action accompanied by short, clear, guilt explanations. Repeat the demonstrations until learned.
- 8) Try a separate room or a part of a room which is his

¹Domeena C. Renshaw, M.D., The Hyperactive Child (Chicago: Nelson-Hall, 1974): 8-12.

own special area. Avoid brilliant colors or complex patterns in decor: simplicity, solid colors, minimal clutter, with a worktable facing a blank wall away from distractions assist concentration. A hyperactive child cannot 'filter' out overstimulation himself yet.

- 9) Do one thing at a time: give him one toy from a closed box, clear the table of everything else when coloring, turn off the radio and TV when he is doing homework.
- 10) Give him responsibilities which is essential for growth. The task should be within his capacity, acceptance and recognition of his efforts should not be forgotten.
- 11) Read his pre-explosive warning signals. Quietly intervene to avoid explosions by distracting him or discussing it calmly.
- 12) Restrict playmates to one or at most two at a time because he is so excitable. Your home is more suitable, so you can provide structure and supervision.
- 13) Do not pity, tease, be frightened by or overindulge this child. He has a special condition of the Nervous System which is manageable.
- 14) Openly discuss fears you have about the use of medication with your physician.
- 15) Share your successful helps with his teacher.

FUTURE IMPLICATIONS

As has been researched in this paper, various methods of dealing with hyperactive children have been and are being developed as alternatives to drug therapy. The areas of allergy -- related hyperactivity, megavitamins, and caffeine have been discussed many times in journal articles. Others such as control of lighting on hyperactivity and sleep therapy still need further research to support their premises as methods for dealing with hyperactivity.

All methods of hyperactivity therapy, including the popular drugs, must be further tested as to short term as well as long term effects with larger test groups to get more reliable results. To do all this, people have to be willing to try the various alternatives for hyperactivity, then the research journals not only in the educational journals, but also in the medical journals, should publicize the data so that all can choose from a variety of alternatives in dealing with hyperactivity.

Time and research in the educational and medical fields combined will arrive at the results of the data the researcher has discussed in this paper, which as yet has been inconclusive. The objective of proposing new methods for hyperactivity has been achieved. Now it is time to carefully test out the data, for only from testing will results occur to benefit the children.

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