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ABSTRACT

Presented are the proceedings of the Mississippi Perceptual-Motor Symposium, April 20-21, 1973. Included are papers on motor development, models for perceptual motor programming, children with minimal brain damage, effects of learning games or academic abilities, research on perceptual motor measures, and programs for motor development. (JB)

MISSISSIPPI PERCEPTUAL-MOTOR SYMPOSIUM

PROCEEDINGS

Hotel Heidelberg
Jackson, Mississippi
April 20-21, 1973

Presenters:

Robert Carlson, Ph.D.
Walter Cooper, Ed.D.
Bryant Cratty, Ed.D.
Vern Seefeldt, Ph.D.
Julian Stein, Ed.D.
Jerry Thomas, Ed.D.
Thomas Vodola, Ed.D.

For information regarding additional copies of the Proceedings write:

Mississippi Special Olympics
Box 5174 Southern Station
Hattiesburg, MS 39401

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TABLE OF CONTENTS

	Page
Foreward	1
Program; Officers and Organizational System of the Mississippi Special Olympics	2
"Mississippi Special Olympics, A Continual Approach to Motor Developmental Programming" by Walter E. Cooper, Ed.D.	8
"Developing Models for Perceptual-Motor Programming," by B. Robert Carlson, Ph.D.	17
"Children with Minimal Brain Damage: Prognosis for the Remediation of Motor Problems" by Bryant Cratty, Ed.D.	20
"The Effects of Learning Games Upon Academic Abilities of Children with Moderate to Severe Learning Problems" by Bryant J. Cratty, Ed.D.	27
Research Findings Regarding Perceptual-Motor Development and Academic Performance" by Stephen E. Klesius, Ph.D.	32
"A Summary of Reported Research in Perceptual-Motor Programs" by Vern Seefeldt, Ph.D.	45
"What Research and Experience Tell Us About Physical Activity, Perceptual-Motor, and Recreation Programs for Children with Learning Disabilities" by Julian Stein, Ed.D.	74
"Summary of Research Using Selected Perceptual-Motor Measures for Young Children" by Jerry R. Thomas, Ed.D.	94
"Implications of Perceptual-Motor Theory/Research for the Classroom Teacher" by Thomas M. Vodola, Ed.D.	104
"A Total Motor Development Program" by Thomas M. Vodola, Ed.D.	115

FOREWARD

The Mississippi Perceptual-Motor Symposium grew out of the Mississippi Special Olympics Program. This program is officially sponsored by the College of Education and Psychology at the University of Southern Mississippi. The program is endorsed by the Mississippi Governor's Office, the Mississippi State Department of Education Special Education and Health and Physical Education Offices, the Mississippi Jaycees, Ellisville State School, the Mississippi Association for Retarded Children, and Mississippi Association for Health, Physical Education and Recreation.

The Symposium is one step along the way toward long-range planning and development of motor developmental programming for mentally retarded individuals.

For further information relative to this planning and development write:

Mississippi Special Olympics
Box 5174 Southern Station
University of Southern Mississippi
Hattiesburg, MS 39401

or call:

Area Code 601-266 7279

Walter E. Cooper, Ed.D.
Assistant Dean College of Education
and Psychology
University of Southern Mississippi
State Director, Mississippi Special
Olympics

MISSISSIPPI PERCEPTUAL-MOTOR SYMPOSIUM
Hotel Heidelberg, Jackson, Mississippi
April 20-21, 1973
PROGRAM

FRIDAY

8:30-10:00	Vern Seefeldt, Ph.D., Michigan State University "The Status of Current Perceptual-Motor Research"*
10:00-10:30	BREAK--Coffee
10:30-12:00	Thomas Vodola, Ed.D., Oakhurst, New Jersey "A Functional Year-Round Program"*
12:00- 1:30	LUNCH
1:30- 3:00	Robert Carlson, Ph.D., University of Texas, Permian Basin "Developing Models for Perceptual-Motor Programming"*
3:00- 3:30	BREAK
3:30- 5:00	Jerry Thomas, Ed.D., Georgia Southern College "Current Research"*
	Walter Cooper, Ed.D., University of Southern Mississippi "Current Research"*
5:00- 7:00	DINNER
7:00- 7:30	Choir and Tumbling Team Exhibition, Ellisville State School Lane Wigington and Earlene Tisdale
7:30- 9:00	Bryant Cratty, Ed.D., University of California at Los Angel "The U.C.L.A. Perceptual-Motor Laboratory"*

All meetings on Friday in the Victory Room, Hotel Heidelberg

*Presentations will last approximately 45-60 minutes followed by a question and answer period!

SATURDAY

8:30-11:30	Julian Stein, Ed.D., AAHPER Consultant "Activities Jamboree"* (Registered Participants)
9:00-11:30	Debate on Mississippi Perceptual-Motor Programming (by invitation only) Basil Gaar, Ph.D., University of Southe: Mississippi - Moderator

ATURDAY (Cont.)

:30-12:00 Summary of the Mississippi Perceptual-Motor Symposium
Dr. Jerry Thomas

Activity Jamboree and Symposium Summary in the Victory Room and the Invitational Debate is in the Silver Room.

SPECIAL OLYMPICS

Originated by Mrs. Eunice Kennedy Shriver
Directed nationally by Glen Randall

Purpose

The ultimate goal of the Special Olympics Program is to create opportunities for sports training and athletic competition for all retarded children.

Recent scientific research has shown that physical activities, sports and competitive athletics are a major means of reaching the retarded. Here is an area where he can succeed and start building a positive self-image, gaining confidence and self-mastery as well as physical development. As a child improves his performance in the gymnasium and on the playing field, he also improves his performance in the classroom, at home and eventually on the job.

It is our hope that the Special Olympics Program will serve as a motivational "framework" within which physical education, recreation and sports activities can take place. Specifically we are striving to:

a) provide motivation for the initiation of physical education and athletic programs where none exist.

b) provide supplementary materials which will aid those currently conducting such programs.

c) provide opportunities for athletic competition through local, state, regional and international Special Olympics.

d) give each retarded child a "feeling of belonging" by offering him membership in a national athletic club with membership certificates, periodic newsletters, etc.

e) instill in the retarded child a "sense of pride" by giving him a chance to win an award, be honored at a school assembly, or have his picture in a newspaper . . . by giving him a chance to know success.

MISSISSIPPI SPECIAL OLYMPICS

State Director: Walter E. Cooper, Ed.D.

Official Sponsor: College of Education and Psychology
University of Southern Mississippi

Supporting Agencies: Mississippi Governor's Office
Mississippi State Department of Education, Speci
Education and Health and Physical Education
Mississippi Jaycees
Mississippi Association for Retarded Children
Mississippi Association for Health, Physical
Education and Recreation

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MISSISSIPPI SPECIAL OLYMPICS

1973

we are: A confederation of teachers, supervisors, students, business people, and parents pledged to the ideal that all mentally retarded students should have the opportunity to develop physical and social skills in a program expressly designed for them.

t we do: We provide an opportunity for mentally retarded students in the state to participate in local, regional, and state Olympic events. The events are the 50 yard dash, 300 yard run, standing long jump, softball throw, high jump (13 and older), mile run (16-18 years), pentathlon (13 and older), and the 440 yard relay. Mississippi is presently divided into nine areas and each area has an Area Director. The winners in the Area Games then go to the State Games which are held in Hattiesburg, Mississippi, on the campus of the University of Southern Mississippi.

we do: The Mississippi Special Olympics is sponsored by the University of Southern Mississippi and endorsed by the Mississippi Jaycees, Ellisville State School, Mississippi Association for Retarded Children, Mississippi Association of Health, Physical Education and Recreation, and the Mississippi State Department of Education, Special Education and Health and Physical Education offices.

For the past three years thousands of mentally retarded Mississippi school students have participated in the Mississippi Special Olympics sponsored nationally by the John F. Kennedy, Jr. Foundation in Washington, D. C. Under the guidelines established by the Kennedy Foundations, the Mississippi Special Olympics organizes, not only the local, regional and state events, but also year-around motor development programs for the students. In 1973, eight Motor Development Workshops have been developed for teachers, supervisors, and college students. These workshops are endorsed and supported by the Ellisville State School and the Interagency Commission on Mental Illness and Mental Retardation.

On April 20 and 21, 1973, a Mississippi Perceptual-Motor Symposium will be held in Jackson, Mississippi. This Symposium will bring in nationally recognized experts in the perceptual-motor area who will discuss and demonstrate the theory and application of perceptual-motor development as it pertains to mentally-retarded youth.

When we do: The local and regional events are held in April, and in 1973, the State Games at the University of Southern Mississippi will be held on May 12. The students receive certificates, ribbons medals and other rewards for competing in the Mississippi Special Olympics and the opportunity to experience many new and challenging tasks. Aside from the track and field games, the students also can participate in clinics which feature gymnastics, ball sports, dance, and tumbling.

What to do: If you are interested in the Mississippi Special Olympics program, detailed information can be secured from:

Dr. Walter E. Cooper, State Director
Mississippi Special Olympics
Southern Station Box 5174
Hattiesburg, MS 39401

MISSISSIPPI SPECIAL OLYMPICS

A CONTINUAL APPROACH TO MOTOR DEVELOPMENTAL PROGRAMMING

Walter E. Cooper, Ed.D.
University of Southern Mississippi
Hattiesburg, Mississippi

MISSISSIPPI SPECIAL OLYMPICS

A Continual Approach to Motor Developmental Programming

by Walter E. Cooper, Ed.D.
University of Southern Mississippi

INTRODUCTION

The proposal presented for a Perceptual-Motor Symposium is one step in the quest for a continual program of inservice training and follow-up relative to motor developmental programming.

Several steps will be presented in an attempt to show evidence of an organizational framework which has been developed which could support such a continual program in the future. The following steps will be discussed briefly:

1. The Mississippi Special Olympics Program
2. MOD (Motor Development Workshops) (funded by Mississippi Learning Resources - Mrs. Millie Rowland, Coordinator)
3. Mississippi Perceptual-Motor Symposium (the proposal herein requested.)
4. Continual program of inservice, follow-up, etc.

Mississippi Special Olympics

The Mississippi Special Olympics is a program (hopefully year-round) with a major purpose of fostering the motor development of all mentally retarded children. The State Office for the Mississippi Special Olympics is at the University of Southern Mississippi and the official sponsor is the College of Education and Psychology. Dr. Walter Cooper, Assistant Dean of the College of Education and Psychology, is

the State Director. There are nine areas, each with a director. An executive committee and honorary advisory board work together to develop policy. The Joseph P. Kennedy Jr. Foundation developed the program nationally (under the leadership of Mrs. Eunice Kennedy Shriver) and furnished materials, awards, and a small stipend each year ($800 in 1972). Endorsing agencies include the MAHPER, MARC, the Mississippi State Department of Education, the Mississippi Governor's Office, Ellisville State School and the Mississippi Jaycees.

Last year some 3,000 mentally retarded individuals participated in local and area meets, 946 participated in the State Games at the University of Southern Mississippi and 51 participants made the National Games trip to Los Angeles in August of 1972.

However, the real goal or dream is to develop the Mississippi Special Olympics program into the motivator for a year around motor developmental program.

The connecting link for year around programming and inservice work was motivated by the already mentioned Perceptual-Motor Conferences initiated by the AAHPER Perceptual Motor Task Force. The idea was to develop a national liason group (members from each state) to eventually develop inservice training programs on a state and local level.

The Mississippi Special Olympics program has developed the mechanics to coordinate such an inservice program and hopefully initiate various types of follow-up activities. There are nine areas within the state-wide organizational system for the Mississippi Special Olympics. Each has an area director who coordinates the local area program and maintains

liason with the State Office. Representatives from these nine areas just recently completed a planning clinic for 1972-73 at Ellisville State School.

Therefore, this step has already been successfully implemented and is running smoothly.

Motor Development (MOD) Workshops

The Mississippi Learning Resources System (Mrs. Millie Rowland, Coordinator), which operates out of the Mississippi State Department of Education - Special Education office, is coordinating the funding and development of eight motor development workshops for 1972-73. These workshops will cover the nine Special Olympics areas and local area directors will serve as liason personnel.

Mrs. Rowland, Dr. Walter Cooper, University of Southern Mississippi, and Mr. Kermit Davis, Consultant in Physical Education with the Mississip State Department of Education, have cooperatively organized these workshops and will be the major presenters.

The primary goal of these workshops will be to orient local personne (teachers in special education, physical education, elementary education, supervisors, day care personnel, and administrators) to the normal sequence and rate of motor development (research and theory), to screenin and testing techniques to identify status and weak areas of functioning, and then to activities which would improve functioning in identified weak areas.

It is recognized that the one-day workshops are but a start; but a most necessary orientation. It is hoped that at least one follow-up inservice meeting can be held each year.

PROJECT MOTOR DEVELOPMENT WORKSHOP (MOD)

Schedule

8:30 - Registration - Participants receive their group number.

9:00 - Perceptual-Motor Development - "A Dissemination Report for the Practitioner" - Dr. Walter Cooper, Asst. Dean of Education, University of Southern Mississippi, and State Special Olympics Director.

9:50 - Question Period

.0:00 - Fine Motor Coordination - Suggested Curriculum - Mrs. Mildred Rowland, Consultant for Mississippi Learning Resources System (MLRS), Special Education Office, State Department of Education.

.0:50 - Coffee Break

.1:00 - Motor Development and Pupil Evaluation - Dr. Walter Cooper

.2:00-1:00 Lunch

1:00 - Gross Motor Activities - A Suggested Curriculum - Mr. Kermit "Rosey" Davis, Asst. Supervisor of Physical Education Office, State Department of Education

2:30 - Special Olympics

3:00 - Give and Take Question in Open Forum

Mississippi Perceptual-Motor Symposium

The Mississippi Perceptual-Motor Symposium will be a one and one-half day inservice program of national significance. It will be held April 20, 21, 1973 in Jackson, Mississippi.

Several nationally recognized individuals in the motor developmental area have been contacted relative to their participation and are available

This symposium would bring together many of the individuals who will have participated during the year in the MOD Workshops. Thus, this will be one more step in the educative process in the area of motor developmental programming.

The perceptual-motor task force direction has been multidisciplinary in nature. The Mississippi Perceptual-Motor Symposium would include as participants elementary education teachers, physical education teachers, special education teachers, administrators, college and university faculty and others.

This Symposium will enable many practitioners (possibly as many as 200-300) to come together and develop some sound bases for developing a year-round approach to motor developmental programming.

Proposed Program of Follow-Up and Continuation For The Future

Steps one, two and three (the Mississippi Special Olympics, MOD Workshops, the Mississippi Perceptual-Motor Symposium) are merely means toward, hopefully, a systematic approach of screening and programming in the motor development area. The Special Olympics provides the organizational framework for coordination in the local areas, the MOD Workshops provide a basic orientation type activity, and the Perceptual-

Motor Symposium provides a pulling-it-all-together experience with the help of national level presenters. These three steps are viewed as a start not an end in themselves. The next and more important (and often overlooked question) is, "What happens to the child and the program he is involved in as a result of the inservice training activities?"

The plans to cope with this above stated question include possibly the following activities:

1. Follow-up inservice meetings yearly in each local area.
2. Gathering of State-wide descriptive data on the motor functioning of young children (birth to possibly age 10).
3. Action research projects in the motor development and programming area at Ellisville State School for the mentally retarded.
4. A coordinating staff (working out of the Mississippi Special Olympics State Office) to assist on the local level whenever needed.

This fourth step will be another proposal which will pull the other three steps together into a continual effort to coordinate motor developmental programming at the local level.

Thus, what started out as a program for mentally retarded youngsters (Mississippi Special Olympics) may reverse itself somewhat and become the impetus for drawing attention to the importance of motor development in the lives of all young children.

This program will certainly be multidisciplinary in nature involving the InterAgency Commission (Dr. Dorothy Moore, et.al.), the Mississippi Learning Resources System (Mrs. Millie Rowland), the Mississippi State Department of Education (Mr. Kermit Davis, physical consultant), Ellisville State School (Dr. Paul Cotten, Director), and the University

of Southern Mississippi - Mississippi Special Olympics (Dr. Walter Cooper, Director).

As Vern Seefeldt ("Substantive Issues in Perceptual Motor Development 1972)* has stated:

> At this time it appears that the existence of perceptual-motor programs is based upon either of two diverse assumptions. Namely, that (1) motor activity is useful in the prevention, diagnosis, and remediation of learning disabilities, or (2) that the experiences included in perceptual-motor programs are part of the rightful heritage of every school-aged child and as such are essential for the advancement of his motor development . . . Physical educators must determine what changes can be accomplished in the motor sphere of children and how these changes influence social and cognitive development.

* Presented at the Symposium on Research Methodology in Perceptual-Motor Development, Springfield College, Springfield, Mass., May 12-13, 1972.

DEVELOPING MODELS FOR PERCEPTUAL-MOTOR PROGRAMMING

B. Robert Carlson
The University of Texas of the Permian Basin
Odessa, Texas

B. Robert Carlson, Ph.D.

Robert Carlson is currently Chairman of the Faculty and Associate Professor in Physical Education and Health at the University of Texas, Permian Basin. He received a B.A. from Trinity University in 1964, a M.Ed. in 1967, and a Ph.D. in 1968 from the University of Texas, Austin. He has served as Associate Professor in Physical Education and Recreation and Director of the Perceptual-Motor Clinic at the University of Kansas.

Some of the professional journals in which Dr. Carlson has published are Research Quarterly, Journal for Health, Physical Education and Recreation, Perceptual and Motor Skills, and Physical Therapy. Dr. Carlson's teaching interests lie in the areas of Physical Activity for the Handicapped and Experimental Design and Analysis. His area of interest for research are muscular strength, muscular endurance, and perceptual-motor diagnosis and remediation.

DEVELOPING MODELS FOR PERCEPTUAL-MOTOR PROGRAMMING

As the awareness of the potential value of perceptual-motor ability in children has increased, attention has been focussed on the remediation of perceptual-motor dysfunction. These efforts have assumed that such dysfunction can be objectively evaluated and quantified. To date, however, the more popular "tests" of perceptual-motor abilities are subjectively evaluated and/or based on a small population for the norms.

It seems important that effective testing be conducted prior to the initiation of a remedial or activity program. Pre-testing permits the formulation of objectives in behavioral terms to be accomplished in the perceptual-motor program. Areas to be evaluated should include static and dynamic balance, all forms of coordination, body image, tactile discrimination, directionality, laterality, reflexes, space awareness, figure-ground and visual performance. These same areas can then be post-tested to determine the extent of progress made by the child.

For the past 1½ years, I have been developing a comprehensive perceptual-motor test. Progress is being made in establishing the norms for performance of children K-6. This presentation is primarily a combination of slides and discussion on the test items and the performance of children.

Bryant J. Cratty, Ed.D.

Bryant Cratty was born in 1929, at Baltimore, Maryland. From the University of California at Los Angeles, he received a B.S. in 1952, a M.S. in 1955, and an Ed.D. in 1961. Dr. Cratty began teaching at Pomona High School in 1955, joined the faculty of U.C.L.A. in 1958 as an instructor, and is currently Professor of Kinesiology and Director of the Perceptual-Motor Learning Laboratory at U.C.L.A.

Dr. Cratty has published between 30 and 40 books and monographs which have been translated into ten languages. He has authored the Sensory-Motor Learning section of the Encyclopedia Britanica, and is an editor of the Research Quarterly, and The Journal of Motor Behavior. He has conducted workshops in 32 states of the Union and in eight foreign countries.

CHILDREN WITH MINIMAL BRAIN DAMAGE: PROGNOSIS FOR THE REMEDIATION OF MOTOR PROBLEMS

Bryant J. Cratty, Ed.D.
University of California
Los Angeles, California

CHILDREN WITH MINIMAL BRAIN DAMAGE: PROGNOSIS FOR THE REMEDIATION OF MOTOR PROBLEMS

Presented to the American Psychological Association Convention on the panel titled "Evaluation of Learning in the Brain Injured", at Honolulu, Hawaii, September, 1972.

There has been, within the past 25 years, as this group is aware, a considerable amount of interest surrounding the use of movement experiences with the brain injured youngster. While at times this interest has led to some rather bizaare theorizing and even more hysterically applied movement remedies, a positive outcome has been the attention which has been drawn to children with minimal motor problems. Research indicates that from 15-18% of all children consigned to an elementary school for normal youngsters evidence signs of motor discoordination which has some kind of neurological dysfunction at its root; while this percentage is even higher in groups of children with learning disabilities and in schools for the retarded.

In 1961 I began a program in Santa Monica, California, whose intent was to explore the remediation of motor problems among children labeled as evidencing the "Clumsy Child Syndrome". This program has continued to this present time, and has at several points been accompanied by research in efforts to gain deeper understanding of the effects of various program content upon the abilities of the children with whom we dealt and with whom we are dealing now. (7)

The children are referred to us from a variety of sources, including the Department of Pediatrics, and Psychiatry, in the UCLA Medical Center, private pediatricians, and pediatric neurologists, as well as school

psychologists, teachers, and parents. As would be expected the majority are boys, with the girls consisting of only about 20-30% of those evaluated.

During an initial hour-long testing session the children are exposed to a six-category test of gross motor functioning, the first part of the Frostig, as well as a self-concept test and a games choice test, together with other tasks designed for the subjective evaluation of motor function. Examples of these latter exercises include alternate hopping, lateral movement of the total body, finger opposition, as well as running behavior. This evaluation, which is observed by the parents and myself, is followed by a conference illuminating salient points observed during the testing period.

The children then usually participate in classes which meet twice a week, lasting about an hour at each session. In groups of four the children are exposed to tasks which represent areas of deficiencies previously evaluated during an hour-long testing session at U.C.L.A. The age-range with which we normally work includes 4 year olds to 12 year olds.

Basic principles followed include attempting to expose children to what is termed a "stress-success" cluster of tasks, i.e. tasks which both are taxing but able to be performed, as well as some which are stressful to a slight degree. Moreover, we try to gradually modify the amount of social stress imposed on the children by modifying the constitution and/or size of the group in which they are working. Graduated sequences of fine motor control tasks have been found helpful

in changing handwriting and printing performance; while overall, as the children grow older, more and more sports skills are phased into a program which, for the younger ones, consist primarily of basic developmental activities, involving balance, agility and the like. (8)

As the result of our research and observations, the following picture is emerging.

(a) Most amenable to change are children who are younger, and whose problems are slight. There does not seem to be any significant sex differences in prognosis for change of motor problems. (7)

(b) Over the years approximately 80% of the children referred to us are boys.

(c) As a group, boys afflicted with motor problems give answers reflecting lack of social acceptance on a standardized test of "self-concept". (7)

(d) Easiest to change are qualities reflecting physical fitness. Next in order of difficulty are motor qualities involving accuracy and control, i.e. balance, agility, ball handling ability and the like. Most difficult to change, after a 5-6 month period, are answers on the children's self-concept test.

(e) Little transfer will occur between training in fine motor qualities and those involving large muscle control. This finding prompted us several years ago to concentrate either on fine or gross motor problems, while working out a home training program for the quality not dealt with in the formal program.

(f) Hand-eye control is improvable not only with the application of remedial measures involving practice, but are also improved in hyperactive children with the application of medication.

(g) Improvement in groups of children exposed to a two-hour a week program of motor remediation will improve about 3 times more during a six month period, in tests reflecting balance, agility and the like, than would be expected as the result of normal maturational changes. (7)

(h) A program of gross motor activities, if directional concepts are emphasized, i.e. jump up, more toward your right, etc., results, after a 5 month period, in significant improvement in a drawing test in which arrangement of figures in proper locations around the corners of a large square is required. (7)

(i) A group of boys with motor problems will evidence game-choice profiles similar to those of girls; while they will also tend to report playing games involving "phantasy bravery" (cops and robbers, space-men, etc.) at older ages than do comparable boys, free of motor problems (7).

(j) There are marked individual differences, as is usually found in programs of motor remediation, relative to susceptability to remedial efforts. Cohen, among others, discovering differences in cortical responses following similar kinds of peripheral sensory stimulation, has concluded that unique patterns of interaction between cerebral motor activity and peripheral sensory activity, within each individual, explain the differential success of various methods of remediation. (3)

(k) It is unclear whether changes recorded on tests are reflective of basic neurological modifications to the demands placed upon the children, or whether they are simply due to the adoption of new and more effective strategies when attempting to accomplish motor tasks.

Our future research revolves around discovering the nature of the diffusion of ability patterns in children as a function of age. Thus, a hypothesis is being pursued similar to that espoused in 1946 by Garrett (11), and since corroborated in recent studies relative to intellectual abilities. (10) (12) Further investigations are exploring the nature of impulse control measures and their relationship to academic learning and I.Q. scores. (13) (14) Moreover, following a four year study of the effect of learning games on academic abilities in the central-city of Los Angeles (Catholic Archdiocese), we are pursuing a program through which we hope to elicit change in selected intellectual attributes through selected, structured, and "cognitively loaded" programs of movement education, to which retarded children will be exposed. (9) The further illumination of racial differences in motor ability traits (1) and in self-control measures (2), uncovered by several of our students, present, I believe, other important directions for future studies.

BIBLIOGRAPHY

Bonds, Robert S., "A Comparison of Movement Abilities Exhibited by Chicano, White and Black Children", Unpublished, Perceptual-Motor Learning Laboratory, U.C.L.A., 1971.

Burke, K., "A Survey of Selected Self-Control Measures in Elementary School Children", Unpublished study, Perceptual-Motor Learning Laboratory, U.C.L.A., 1970.

Cohen, L. A., "Manipulation of cortical motor responses by peripheral sensory stimulation", Arch. of Physical Med. and Rehab., v. 50, no.9, 496-505, September, 1969.

Cratty, Bryant J., Active Learning, Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1971.

Cratty, Bryant J., Perceptual and Motor Development of Infants and Children. New York: MacMillan Co., 1970.

Cratty, Bryant J. Physical Expressions of Intelligence, Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1972.

Cratty, Bryant J., Martin, Jannett, Ikeda and Morris, Movement Activities, Motor Ability and the Education of Children, Springfield, Illinois: Charles C. Thomas, 1970.

Cratty, Bryant J., Sister Margaret Mary Martin, Perceptual-Motor Efficiency in Children: The Measurement and Improvement of Movement Attributes. Philadelphia: Lea & Febiger, 1969.

Cratty, Bryant J., and Sister Mark Szczepanik, The Effects of a Program of Learning Games Upon Selected Academic Abilities of Children with Learning Difficulties, Bureau of Education for the Handicapped, Washington, D. C.: U.S. Office of Education, 1971.

Dya, N. W. and Verz, P.S., "Growth Changes in Factorial Structure by Age and Sex", Gent. Psycholo., Monog., v. 78, 55-88, 1968.

Garrett, H. E, "A Developmental Theory of Intelligence", Am. Psychol., v.1, 372-378, 1946.

Kalm, S. B., "Development of Mental Abilities: An Investigation of the Differentiation Hypothesis", Canad. J. of Psychol.

Maccoby, Eleanor E., Dowley, Edith M., and Hagen, John W., "Activity Level and Intellectual Functioning in Normal Pre-School Children", Child Dev., v. 36, 761-769, 1965.

Massari, D., Hayweiser, L. and Meyer, W. J., "Activity Level and Intellectual Functioning in Deprived Pre-School Children", Develop. Psychol., v. 1, no. 3, 286-290, 1969.

THE EFFECTS OF LEARNING GAMES UPON ACADEMIC ABILITIES OF CHILDREN WITH MODERATE TO SEVERE LEARNING PROBLEMS

Bryant J. Cratty, Ed.D.
University of California
Los Angeles, California

THE EFFECTS OF LEARNING GAMES UPON ACADEMIC ABILITIES OF CHILDREN WITH MODERATE TO SEVERE LEARNING PROBLEMS[1]

Presentation at the Special Olympics for Retarded Children, sponsored by the Department of Recreation and Parks, City of Chicago and by the Joseph P. Kennedy Jr. Foundation, August, 1970.

During the past three years we have conducted research concerning the way in which vigorous physical activity can be paired with various academic skills. In general, we work with children three times a week, for lessons lasting one-half hour. The children are brought through a six phase program which is matched as closely as possible with the lessons they are attempting to master in the classrooms.

The 250 children worked with during the years have been of all races, and have scored from 40 to 100 in I.Q. tests administered to them. The results of these studies have been quite promising, as the findings below indicate.

1. In measures of attention and task persistence the children exposed to learning games evidenced significantly more improvement than did the children in the group afforded special small-group classroom tutoring.
2. The final scores in letter recognition (i.e. the ability to recite the alphabet in correct order): the learning games group performed significantly better (at the 1% level) than did the classroom tutoring group (22 letters correct to over 25 letters correct as mean scores).

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[1]A research study sponsored by the U.S.Department of Education, Bureau of Handicapped Children, carried out in Los Angeles, within six schools in the Catholic Archdiocese, from 1968-1970. (Detailed findings will be available in monograph form, Department of Physical Education, UCLA, in August, 1970.)

3. In all the measures involving remembering letters, numbers, and pictures in order, when given orally or presented visually, the learning games group evidenced significantly more improvement and reached significantly higher scores than did the groups exposed to special classroom tutoring.
4. By mid-way through the first semester, 75% of the first graders in the learning games group evidenced the ability to identify all letters of the alphabet perfectly while only 30% of the children receiving special classroom tutoring in small groups were able to do so.
5. The children in the learning games group evidenced significantly higher spelling scores (at the 1% level) than did the children exposed to special classroom tutoring.
6. In a total score derived from combining scores of balance and two scores of agility, both the learning games group and the special classroom tutoring group initially posted scores of 18; in the final testing the learning games group registered improvement in this combined score which was significantly better (at the 1% level) than the final average score of the children exposed to classroom tutoring.

Future research will be focused upon the improvement of mathematics and counting abilities, as well as upon children lower on the intellectual scale.

Equipment and Instructional Material:

1. Lining tape employed on the floor of the gymnasiums used as classrooms has been Scotch Tape #471.

2. Action Learning, Inc. has developed foam plastic squares (10" x 10") containing numbers, lower and upper case letters, and geometric figures. Sets of game cards come with these sets. (Box 49672, Los Angeles, California 90049)

3. Port-A-Pit (1340 N. Jefferson, E. Anaheim, Calif.) has designed mats and other equipment which may be used for various of the learning games developed in this program.

4. Portable number and letter squares may be made from masonite (with the figures stenciled on); the masonite squares must be contained in metal frames to prevent sliding. Portable squares were also made from rubber under-matting.

5. Movement, Perception, and Thought by Bryant J. Cratty, (Palo Alto, California: Peek Publications) is a paperback containing the basic rationale plus a selection of learning games.

6. Active Learning by Bryant J. Cratty (Englewood Cliffs, New Jersey: Prentice-Hall, Inc. 1971) contains over 100 learning games and 70 illustrations. Also in paperback.

7. Fifty Vigorous Activities for the Atypical Child by Bryant J. Cratty (Freeport, New York: Educational Activities, Inc. 1968.) is a packet of 50 game cards.

8. A 200 page research monograph describes in detail the findings from the investigations carried out. The Effects of a Program of Games Upon Selected Academic Abilities in Children with Learning Difficulties may be ordered through the Perceptual-Motor Learning Laboratory, University of California, Los Angeles, 90024.

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RESEARCH FINDINGS REGARDING PERCEPTUAL-MOTOR DEVELOPMENT AND ACADEMIC PERFORMANCE*

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RESEARCH FINDINGS REGARDING PERCEPTUAL-MOTOR DEVELOPMENT AND ACADEMIC PERFORMANCE

In planning this presentation an approach was sought which would review and summarize research literature in a manner meaningful to teachers rather than just the researcher. Too many meetings, at too many conferences or scholarly meetings devoted to research, end with the majority of conferee's going away saying "What in the world were they talking about" or "So what." Hopefully this presentation will be of a practical nature, one which reviews research and indicates implications for programs of physical education. In order to do this, the presentation will include: critiques of independent reviews of research literature, statements by critics of perceptual-motor development, synthesis of research findings, and comments and observations.

Independent Reviews

The first of the reviews to be presented, in alphabetical order, was completed by Balow (1) who included 12 studies and failed to find any research evidence supporting the value of perceptual-motor programs. It was stated that such activities are neither a cure-all for general learning disabilities nor specific to any basic school skills. Never-the-less, Balow supported the use of perceptual-motor experiences in the curriculum on the basis that the activities "will probably help teach children important general behavioral skills necessary for success in school, but clearly not replacements for the careful diagnosis

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and direct teaching of basic school skills." The following six reasons were given for including perceptual-motor development activities within the curriculum:

1. The enjoyment and developmental appropriateness of motor activity, particularly for primary school boys for whom sitting still is so inappropriate developmentally.

2. The personal recognition of success that can attend motor-perceptual activities, particularly for pupils long used to failure in school.

3. The accompanying positive attention from significant adults.

4. The fact of teaching, in direct drill form, a set of visual and motor skills that may be weak, or absent, and which relate to school demands but ordinarily are left to develop incidentally.

5. Teaching, via such visual and motor activities, habits and skills of attention . . .

6. Teaching, via such visual and motor activities, habits and skills of following directions . . .

Cratty (2) has been deeply involved in the analysis and description of perceptual-motor abilities and learning. One of this writer's many publications included a review of perceptual-motor research in Perceptual-Motor Efficiency in Children. Selected statements from this publication are as follows:

1) "Programs of perceptual-motor education are likely to elicit change in those attributes trained for. Attributes such as: balance, left-right discrimination of body parts. hand-eye coordination, agility, and sport skills will change in varying degrees in children with moderate to mild deficits. More change is more likely to occur in children with mild deficits than those with more pronounced problems and in younger than in older children."

2) Not all children need be placed in a perceptual-motor program. Children who have been identified as having perceptual-motor deficits should be placed in remedial programs as soon as possible.

3) Improved motor skill proficiency and increased physical fitness may increase academic performance of some students experiencing learning problems. This would probably be due to enhanced self-concept rather than other factors.

4) Visual training may aid students who have been identified as having visual problems when the activity program is designed to remediate these specific deficits.

5) Structured patterns of movement which involve creeping and crawling are questionable except in cases of severe motoric inability.

6) Active game experiences which involve problem solving and body movement have been shown to be a motivating and effective way to teach and reinforce some classroom concepts and operations. Serial memory activities in letter and number problems, verbal and arithmetic games and form recognition experiences have been used to enhance the educational development of typical and atypical school students.

Glass and Robbins (3) reviewed fifteen studies of the effect of therapy to improve neurological organization as defined and prescribed by Delacato. Half of the studies were deemed inadequate in experimental or statistical design. The other half contained biased designs and contamination via special treatment effects to characterize the results as being highly questionable. These authors concluded their review of research by stating that each of the empirical studies which Delacato cited as 'scientific appraisal' are of dubious value in lending support to the theory of neurological organization.

Klesius (4, 5) completed two reviews of literature; the first in March, 1970, and the second April, 1971. The 1970 paper reviewed twenty-eight studies wherein a variety of perceptual-motor programs were employed. All research found in the search of literature were reported despite possible criticisms of many investigations. The reviews' focus was upon the effect of perceptual-motor activity programs on the reading achievement of students with average or above average intellectual ability. Twelve studies found statistically significant differences in reading readiness or achievement for subjects receiving perceptual-motor experiences but sixteen studies found no differences between experimental and control groups. The general conclusions of the review were:

1. The effectiveness of perceptual-motor development programs in improving reading ability can neither be confirmed nor denied.

2. In general, perceptual-motor development programs employing a wide variety of experiences appear to show promise with underachieving intermediate grade students and pre-school children. The effectiveness of the Delacato and Frostig (prior to 1970) type programs when used independently of other perceptual-motor activities, is doubtful.

In response to the question "would the results of this review have been different if only research of high quality was included" Klesius prepared a second review. In order to differentiate the quality of experimental investigations criteria defining acceptability limits were extablished. A total of forty studies were rated according to the criteria and twelve met or exceeded the standard for inclusion.

Six of the studies supported the hypothesis that perceptual-motor development programs significantly influence reading readiness of children in kindergarten or the reading ability of students from a low socio-economic environment. Likewise, six studies found no difference in reading readiness or achievement following a program of perceptual-motor activities. Two of these studies found significant improvement in perceptual-motor ability but no concomitant increase in reading achievement was reported. This is contrary to claims made by the proponents of perceptual-motor programs. The conclusion drawn was: "the hypothesis that perceptual-motor development programs positively influence reading achievement can neither be confirmed nor denied on the basis of the research reviewed."

The 1970 International Reading Association Convention included a session devoted to the subject "Perceptual Training - Does It Result in Reading Improvement?" Robinson (6) made the following statements regarding a review of literature concerning perceptual training following the Frostig, Kephart, and Winter Haven approaches: "The Frostig program of visual perceptual training has not been effective in improving reading . . ." and in general, the studies of the effects of visual-perceptual training lead to no clear-cut conclusions. Such training may result in improvement on tests of visual perception but seldom is a substantial improvement in reading found. Duncan (7) in drawing implications from Robinson's review, made the recommendation that despite the inconclusive and ill-defined nature of perceptual motor development research, teachers should support good motor development programs even though direct correlation to reading is not evident.

Seefeldt (8) is in the process of completing what will be the most extensive examination of the influence of perceptual-motor experiences upon children. This effort on behalf of the American Association for Health, Physical Education, and Recreation and the Perceptual-Motor Task Force will be a forthcoming National Education Association publication in the What Research Tells the Teacher series.

Seefeldt's preliminary conclusions, based on the literature reviewed, as of October, 1972, were the testimony and practice surpasses the research evidence to support or refute them. Criticism was directed to the ill conceived research design of students in this area. Program bias in favor of the experimental group or insufficient number of subjects, length of time, or evaluation instruments were major faults detected. Transfer seems to occur only when gross motor activities are very similar to academic tasks. On a positive note, Seefeldt stated that gross motor activities for the young child appear to be an excellent medium to introduce social and cognitive learnings.

Perceptual-Motor Critics

What are some comments of the critics of perceptual-motor training? The thoughts of a reading educator, opthalmologist, and special educator are presented.

Cohen (9) has completed several studies investigating the influence of the Frostig program on reading achievement. He stated, " . . . I would play the visual perceptual game if I were in the

visual perception or the IQ business. But in the reading field, the surest way to get urban ghetto kids to read is to teach them letters and words and to do it thoroughly."

Benton (10) as spokesman for a group of opthalmologists assembled at an international institute on dyslexia published an article outlining the group's position. Two of these statements were as follows:

1. "Not enough objective scientific evidence yet exists to prove that perceptual-motor training of the visual system can significantly influence reading disability."

2. "The belief that eye dominance can be at the root of so profound and broad a human problem as reading and learning disability is both naive and simplistic and unsupported by scientific data."

Mann (11) has stated that perceptual-motor training is an educational fad. This view is based on the belief that the perceptual-motor difficulties of handicapped children are misread and "unwarranted extrapolations from theory." Mann stated that what is of value in perceptual-motor programs can be achieved through traditional adapted programs whether it is a "good" physical education, special education, or classroom program.

Synthesis of Research Findings

The following statements are based on the eight reviews of the research literature dealing with the influence of perceptual-motor activities upon reading or academic achievement in general. The conclusions of each of these reviews were given and this composite may point to future directions in perceptual-motor development research and programs.

1. The quality of research is sorely lacking. The studies with faults, far outnumber those of any quality. Closer control of special effects, longitudinal designs, selection and number of subjects, and appropriate analysis require more attention.
2. The nature of assessment-evaluation instruments are not refined to the extent of unquestionable measurement. This is especially true in the realm of perceptual-motor evaluation items.
3. The contradictory and inconclusive results of the research reviewed does not allow a clear conclusion to be drawn to either confirm or deny the effectiveness of perceptual-motor programs in contributing to academic achievement, especially reading. At this point one could choose to state that because perceptual-motor development programs do not have strong evidence supporting them they should not be used or until research clearly refutes perceptual-motor development activities they should continue to be used.
4. Wide range activity approaches to perceptual-motor development programs show promise in producing positive results in this area. In physical education perceptual-motor activities involving body awareness, balance, locomotor, and manipulative skills and within the classroom visual discrimination, auditory discrimination, and language

symbol skills should be presented within a sequence which follows a developmental progression.

5. Perceptual-motor development activities that more closely resemble classroom tasks are more likely to transfer and influence classrooom performance. Introduction and/or reinforcement of classroom concepts and operations seem to be enhanced through an active learning game approach.
6. Perceptual-motor development activities may be a positive influence in developing selective attention, impulse control, and/or self-concept. These factors may be influenced as much by the development of positive inter-personal relationships as by the movement experiences per se.
7. Perceptual-motor development activities are probably more effective when used with younger rather than older children and with early childhood and primary grade students than with intermediate grade students.

Comments

At this point it is easy to be a skeptic, it is rather a safe way out. On the otherhand, to go too far in the other direction without evidence is risking the credibility of your profession. Scholarly effort both empirical and rational needs to continue to shape the direction of percpetual-motor activities in enhancing the total development of the child.

Perceptual-motor activities are developmentally appropriate for programs of early childhood education and children in primary

grade programs who are experiencing specific learning problems. Perceptual-motor activities should be considered not as a substitute but a supplement to programs of instruction, especially reading. While no one best method exists to teach all individuals in a class a best way exists to teach each individual. Perceptual-motor activities in a developmentally sequenced approach should exert a stronger influence on child development than the prevailing free play or game oriented approach followed in most kindergarten and primary grade programs of physical education.

Lastly, whether or not the term perceptual-motor persists, such programs will have left their mark in calling attention to the importance of planned programs of movement experiences emphasizing prerequisite skills and generalized movement patterns.

References

1. Balow, Bruce "Perceptual-Motor Activities in the Treatment of Severe Reading Disabilities." The Reading Teacher, Vol. 24 (March, 1971) pp. 513-525 and 542.
2. Cratty, Bryant J. Perceptual-Motor Efficiency in Children. Lea and Febiger, Philadelphia, Pa., 1969.
3. Glass, Gene and Robbins, Melvyn P. "A Critique of Experiments on the Role of Neurological Organization in Reading Performance" Reading Research Quarterly, Vol. 3, (Fall, 1967) pp. 5-51.
4. Klesius, Stephen E. "Perceptual-Motor Development and Reading" Proceedings of the College Reading Association Vol. 11 (1970) pp. 37-44.

5. Klesius, Stephen E. "Perceptual-Motor Development and Reading" A paper presented at the 17th Annual Convention of the International Reading Association, Atlantic City, N.J., April, 1971.

6. Robinson, Helen M. "Perceptual Training - Does It Result In Reading Improvement - Background of Information and Research." Paper presented at the 17th Annual Convention of the International Reading Association, Atlantic City, N.J., April, 1971.

7. Duncan, Patricia H. "Perceptual Training - Does it Result in Reading Improvement? Evaluation, Conclusions, and Implications. Paper presented at the 17th Annual Convention of the International Reading Association, Atlantic City, N.J., April, 1971.

8. Seefeldt, Vern University of Michigan Personal Correspondence, October, 1971.

9. Cohen, S. Alan "Studies in Visual Perception and Reading in Disadvantaged Children." Journal of Learning Disabilities, Vol. 2 (October 1969) pp. 8-16.

10. Benton, Curtis D. "Opthalmologists Recommend Less Emphasis on the Eyes in Learning Disorders." Journal of Learning Disabilities, Vol. 3, (October, 1970) pp. 54-56.

11. Mann, Lester. "Perceptual Training: Misdirections and Redirections." American Journal of Orthopsychiatric, Vol. 40, (January, 1970) pp. 30-38.

A SUMMARY OF REPORTED RESEARCH IN PERCEPTUAL-MOTOR PROGRAMS

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A SUMMARY OF REPORTED RESEARCH IN PERCEPTUAL-MOTOR PROGRAMS

The wave of popularity which ushered in programs of perceptual-motor development during the 1960's has subsided, but the interest within the educational community for content and methods to aid children with learning disabilities appears stronger than ever. In March, 1973, I attended the International Convention of the Association for Children with Learning Disabilities, held in Detroit, Michigan. The pervading atmosphere was one of frustration and disappointment in the present state of our art and science in assisting children who do not learn as efficiently or routinely as their peers. The delegates, in meeting after meeting, expressed a desire for information which would enable them to provide better programs for disabled learners, while the research workers appeared to be much more adept at pointing out shortcomings in our present practices than in offering practical solutions to the problems of teachers. William Cruickshank (1972) provided a fitting synopsis to our present dilemma when he stated:

> "The field of learning disabilities is today a complex, con-conglomerate of ideas and professional personnel. It is at a point in its growth where careful assessment of all of its aspects must be undertaken. It is easy to say that something is at a crisis stage. It is my considered opinion, however, that of all aspects of the psychology of disability and special education, the field is at a point where it cannot continue as it has in the past decade without the expectancy of failure and without bringing down on the heads of children professional frustrations, political hostility and parental antagonism. There are many reasons for the situation as it is today, but one factor of significance is the precocious maturation of the idea of learning disabilities." (Cruickshank, 1972, p. 380)

Although many would regard the preceding statement as overly pessimistic, I have the impression that there is common agreement that

it is time to assess the situation in learning disabilities, and specifically for this Conference - Perceptual-Motor Programs - and then determine what must be accomplished in the future. Programs which are designed to assist those who have learning disabilities must become accountable and predictable if they are to survive as a part of public education.

My responsibility in this Symposium is to review the research evidence pertaining to the effectiveness of perceptual-motor programs. I will emphasize the ideas, hypotheses, experiments and results of those reports which have been published in the 1960's and 70's because I believe that a critical analysis of the recent past, rather than an historical review, is more appropriate for our purposes. On this premise I will attempt to develop the following four-part outline:

1. The scope of the reported research included in this review
2. The rationale for perceptual-motor programs in an educational setting
3. The current status of perceptual-motor programs
4. Suggested goals for the future of perceptual-motor programs

SCOPE OF THE REPORTED RESEARCH

The term "perceptual-motor" is commonly used in connection with processes which are designed to alleviate or remediate learning disabilities. At this point the commonality of meaning ends, for the programs which have emerged under these two general objectives are markedly different in content, methodology, and outcomes. The diversity ranges from the practice of gross motor skills which are identical to those offered in many physical education programs throughout the country,

to exercises which are designed for the specific purpose of training the eye to discriminate between a figure and its background. On previous occasions I have suggested that the conventional meaning of the term "perceptual-motor" incorporates the four processes of a) discrimination and input, b) integration with past experiences, c) purposeful movement and d) monitoring of the response (Seefeldt, 1970) Critics maintain that a portion of this definition incorporates a meaning which is uniquely reserved for the word "motor". Despite the objections and confusion which surround the term "perceptual-motor", it is obvious that it has received acceptance among educators and psychologists. Those who find the term "perceptual-motor" to be ambiguous can achieve precision of meaning by resorting to an operational definition. Perhaps the greatest contribution of the hyphenated term has been to direct our attention to the perceptual processes which precede and accompany the motor responses.

The review of research in this presentation is limited to those reports wherein gross motor responses constitute an essential part of the training procedure in an attempt to enhance the development of visual, auditory, verbal, tactile and kinesthetic perceptions. Most of the perceptual-motor programs include activities which require total body movement and some form of locomotion. Members of our audience whose interest is in programs wherein the trainee remains stationary and the process involves primarily eye-object or eye-hand coordination will find many similarities in the issues, theories, research findings, and future directions of the two approaches.

THE RATIONALE FOR PERCEPTUAL-MOTOR PROGRAMS IN AN EDUCATIONAL SETTING

Proponents of perceptual-motor programs allege that they provide a positive contribution to the education of the enrollees. However, two diverse assumptions have evolved as a result of the programs' implementation in the public schools. Initially, the justification for the perceptual-motor programs was based on the premise that motor activity is useful in the prevention, diagnosis and remediation of learning disabilities. Under this rationale the use of motor activity is either precursory or adjunctive to the learning of other skills. The precursory role of movement suggests that the motor skills of infancy and childhood provide the basis for future development in social, cognitive and motor areas. In this situation motor activity is used as a vehicle to achieve a specific end, which may be only remotely related to motor development. The "precursory hypotheses" has a broad base of support within professions and disciplines, as exemplified by the following statements:

> "Learning disabilities may be viewed in terms of difficulties in this developmental sequence. When such difficulties occur, then there are gaps in the sequence which will affect all future learning either by limiting or distorting it." (Dunsing and Kephart, 1965, p. 81)

> "The ultimate in mental ability is the result of the ultimate in motor ability." (Getman, 1965, p. 50)

> "These lacks of opportunity for the proper sequential progression through the neurological developmental stages usually result later in some qualitative disfunction in the development of total neurological organization." (Delacato, 1965, p. 60)

> "Thus, everything seems to happen as though the more complex, in their organization and autoregulation systems, cognitive systems are, the more their formation is dependent on a sequential process comparable to a biological epigenesis." (Piaget, 1971,p.18)

The alleged "adjunctive" role which movement plays in achieving other objectives is based on the premise that the learning of motor skills provided a favorable environment in which the child can acquire the elements which are prerequisites to academic achievement. The use of motor skills to attain other goals probably occurs in the natural developmental process, but in the curricula of perceptual-motor programs the function of movement is remedial in nature. The concrete nature of movement provides an immediate indication of success or failure. The flexibility of motor tasks enables the instructor to set the goals so that success is possible and failure is improbable. The successful accomplishment of a task provides an intrinsic reward, but it also gives the teacher an opportunity to respond with approval to the actions of the child. This series of events, which includes the establishment of a "success syndrome", the positive relationship between instructor and student, the increased ability of the student to attend to a task, and the direct association between listening to instructions and successful completion of a task are all part of the usual academic routine. It seems logical to assume that these traits will transfer to other learning environments.

An analysis of the motor activities within some perceptual-motor programs reveals a similarity in content to that which has been a part of good physical education programs for decades. In fact, the stated purpose of these programs is to enhance gross and fine motor control. In this situation, the activities are offered to improve the motor proficiency of the child, per se, and any contribution to

academic achievement is of peripheral importance. Since these activities generally are offered to all of the children in a grade, school, or system, it becomes obvious that the purpose is primary rather than compensatory. It is also apparent that the difference in focus between the two approaches will lead to different outcomes. My observations also have led to the conclusion that when the primary purpose of instruction is to improve the efficiency of movement, there is a greater emphasis on quality than in situations where movement is merely a means to an end. The unwillingness or inability of teachers who use movement as an adjunct to academic achievement to emphasize the quality of performance is a serious criticism which I have of such programs.

My primary purpose today is to review the role of motor activity in the alleviation or remediation of learning disabilities; therefore, the discussion which follows will concentrate on the literature which pertains to programs which directly or subtly purport to enhance learning ability through the use of movement.

THE CURRENT STATUS OF PERCEPTUAL-MOTOR PROGRAMS

On the basis of published research reports it is obvious that perceptual-motor programs are immersed in controversy. It has been suggested that confusion and turmoil are a natural part of the maturational process for newly emerging programs, but a retrospective look at our efforts reveals some fundamental errors in procedure which have led to the present dilemma. I will identify four of these problems as a background for the review of specific programs which follows:

Theories and hypotheses - A paradox which surrounds perceptual-motor systems is that there is abundant testimony and opinion in support of these programs, but scientific, experimental corroboration of their effectiveness is difficult to find. There are several possible reasons for this state of affairs, but one of the most important is that the proponents of the various systems have not been explicity in the identification of theories, hypotheses and operational procedures which should provide the structure for any sound educational system. The lack of theory dissuades the generation of hypotheses, which in turn prevents the systematic evaluation of programs. It is evident that the possibliity of transfer from situation to situation is reduced when no attempt is made to identify and control the variables which influence the learning process.

Characteristics of the learners - The symptoms which are associated with learning disabilities have been enumerated by various authors (Abercrombie, 1964; Ayres, 1965; Kappleman, 1972; Wertheim, 1967). The number of characteristics is astounding, but this problem is further compounded by the evidence that there is very little interrelationship between these variables and that their occurrence within individuals does not follow a predictable pattern (Ayres, 1965). It has been suggested that there is a common cause for most of the problems, (Delacato, 1959; Kephart, 1960) but attempts to associate the characteristics with a basic, underlying malfunction have met with limited success. At this point it appears that we do not have sufficient information about the specificity of learning problems to be

able to prescribe programs which will combat them. Although the combination of traits from an array of variables may be highly related to academic achievement, it is unlikely that all of the symptoms will be alleviated by the same program. It is questionable whether any program, no matter how carefully conceived, will achieve its objectives if all that the recipients have in common is an inability to learn in the conventional manner.

Program design, content and evaluation - The success of any educational program is dependent upon the compatibility of its objectives with the needs of the students it purports to educate. It follows that the evaluator of programs should be consistent with their objectives. In perceptual-motor programs we face difficulties in all three categories.

The overriding goal of perceptual-motor programs is to raise the child's level of performance so that it corresponds to that of "normal" children. There is little to criticize in such an expectation, provided we do not attach the element of time to it. However, most experimental programs do involve time as one of the variables, and this is where the problems arise.

The recipients of "perceptual-motor training" are generally selected because of their inability to meet the expected accomplishments of their peer group. Often the attempts at remedial education occur years after the signs of learning disability were first detected. Yet, many of the experimental tests of compensatory programs include a design which attempts to alleviate in six weeks or six months, a

causative condition or conditions which may have been neglected for years. It is my impression that the time which is required for the restoration of debilitating conditions has been grossly underestimated by investigators who have provided us with data from experimental situations.

The degree to which the objectives and content of programs are compatible with the readiness and needs of the learners is directly related to outcomes. In some "perceptual-motor" projects the negative or neutral effects of training are insured before the experimental treatment is initiated. Research workers recognize the important role which sample size, alpha level, experimental unit, unit of analysis, duration of experiment and power of the test have in the decision of program effectiveness. Theoretically, all of the aforementioned decisions should be made prior to the initiation of the investigation, presumably based on the investigator's knowledge of his subjects. The state of our information concerning the characteristics of children with learning disabilities and the conditions under which they learn most effectively suggests that the basis for experimental procedure has been speculation rather than knowledge. Not only does the usual approach to experimental investigation (samples categorized into experimental, control and placebo groups, with pre-and post tests) fail to produce positive results, it actually prevents the investigator from interacting with the subjects in an attempt to discover more effective methods of producing change (Suchman, 1967; Similes, 1968).

A recent development in educational assessment, known as formative evaluation, is a promising procedure in situations where little is know about the subjects or the content to be appraised. Formative evaluation is a continuous testing procedure which is in operation concurrently with the experimental program. Small samples are exposed to various procedures and content, and tested for their ability to meet specific objectives. Whenever indicated the objectives and procedures are changed to meet the abilities of the sample. The end result is a program of objectives and content which reflects the changes that can be produced in a specific situation (Stake, 1967; Stufflebeam, 1971). On this basis other experimental situations are evaluated in the conventional or summative manner. The formative process of evaluation combines theory and practice within an experimental setting - a condition which is prohibited under the summative method of assessment. The emphasis on accountability suggests that this is a timely occurence. Volumes of irrelevant reports of educational research attest to the fact that theory without practical utility is as wasteful of human resources as practice which is not guided by theory.

The interdisciplinary approach - The multidisciplinary approach to the solution of perceptual-motor problems is a popular notion, and ideally, there is much to recommend it. How could one improve upon a learning procedure which has been jointly approved by a pediatrician, psychologist, school nurse, reading consultant, specialist in learning disabilities, and the classroom and physical education teachers? Yet,

.n practice, the task of educating children with learning disabilities .s most often the province of teachers with specialties in behavioral lisabilities or physical education. The "precocious maturation of the :oncept of learning disabilities" to which Cruickshank (1972) referred ıas cast many professions into a role which they are currently not :quipped to fulfill. However, the pressure from parents and school ıdministrators, combined with the influence of federal funds, to :nitiate programs for the disabled learner have induced many teachers to nake diagnoses, write prescriptions and administer treatments in an ırea where they have little or no competence. Authors of text books ıave compounded the problem by writing in a "do-it-yourself" style vhich may provide a false sense of proficiency to the reader. A concern for the welfare of the child suggests that precautions about dealing vith the diagnostic tools, training procedures and evaluation instruments of other disciplines and professions would be more appropriate.

Several programs have been highly influential as models in the proliferation of perceptual-motor training. They are reviewed briefly to provide an indication of the similarity and diversity which exists. It should be noted that this synopsis cannot do justice to any of the approaches to compensatory education. A more comprehensive account of these and other programs can be found in Myers and Hammill, entitled, Methods for Learning Disorders (1969).

Perhaps the most controversial of all perceptual-motor training programs is one emanating from the Institute for Achieving Human Potential, based in Philadelphia, Pennsylvania (Delacato, 1959, 1963 and LeWinn,

1969). Training procedures are designed according to a theory of "neurological organization". The rationale underlying the system of training is based on the belief that the full functional capacity of the brain is achieved by stimulation. The training procedure emphasizes the importance of perfecting the motor patterns of infancy, with the assertion that imperfections or omissions in the sequence will influence all subsequent behavior. Learning difficulties are attributed to inadequacies in early motor function which have resulted from (a) genetic causes (b) trauma and (c) lack of opportunity to complete the neurological organization.

Treatment procedures in "neurological organization" involve a replication of the motor patterns which allegedly are the cause of the learning disability. Active or passive manipulation (patterning) of the body segments in prescribed movements is an essential part of the training program. It is assumed that such movements will stimulate undeveloped parts of the brain or induce associated tissues to acquire the function of brain cells which have been destroyed. The establishment of cerebral dominance is viewed as the culmination of man's ontogenetic development, which has progresses anatomically through the medulla and cord, pons, midbrain and cortex. Incomplete or bilateral cerebral dominance is viewed as the cause of speech and reading disorders; thus, the neurological training is designed to establish asymmetry in cerebral function.

The theory and rationale of neuromuscular organization is a controversial topic among educators and members of the health-related professions (Fishbein, 1968 - official statement 1968). Independent

reports which deal with the theory (Cohen, 1970; Freeman 1967) and results of investigations (O'Donnell, 1969; Robbins, 1966, 1967) have failed to justify the "patterning" procedure as a useful therapeutic approach to developmental disturbances of intellectual or motor function. O'Donnell (1969) and Robbins (1966, 1967) failed to confirm that children who participated in the prescribed program of neuromuscular organization showed greater gains in reading ability, development of laterality and visual motor integration than control groups who participated in the regular curriculum. The unwillingness of the proponents of "neuromuscular organization" to cooperate in independently sponsored studies designed to test the effectiveness of the method, has dissuaded further scientific evaluation (Kohn, 1968).

The ineffectiveness of the patterning procedures in meeting the stated objectives of Doman and Delacato raises the question, "What are the possible consequences of neuromuscular organization?" I concluded in an earlier report that, "the rigid control required to supervise and administer the techniques of patterning would seem prohibitive in terms of available personnel. In addition, the imposition of motor patterns and techniques such as rebreathing of expired air, restrictions of fluid, sugar, salt, music and use of the non-dominant eye and hand could have adverse psychologyical and physiological consequences. When one considers that the time spent in these questionable practices is at the expense of the usual motor, cognitive and social development of the child, the practice of neuromuscular organization becomes untenable as an exercise of the public schools," (Seefeldt, 1970, p. 83).

Perhaps the most influential perceptual-motor program, in terms of emulation, is the training procedure of Kephart (Kephart, 1960). As in the program of Neurological Organization, Kephart's approach stresses the importance of motor experiences in the total education of the child. However, no attempt is made to impose patterns upon the central nervous system through structured movements. Kephart views the cause of learning problems as a breakdown in the integration of present and past stimuli, and of faulty feedback from the source of sensation to the brain, so that the correction of perceptual errors is incomplete. In training, a child is frequently returned to the basic motor skills in order to recapitulate the patterns upon which it is believed more complex behavior is built.

According to Kephart, a child becomes oriented to his environment by first achieving postural control. Posture is regarded as the basic movement pattern out of which all other movements develop. The motor sphere of the child is divided into five categories as follows: eye-hand coordination, laterality, directionality, temporal-spatial translation and form perception. Activities are prescribed to enhance the development of these qualities, but no single motor skill is believed to be essential to normal development.

Despite the acknowledged acquaintance of investigators with Kephart's perceptual-motor theory, there is little experimental evidence to support or refute it. The lack of scientific evaluation may be due to a quasi-theoretical base, in conjunction with a flexible program of content. Keogh (1968) found a portion of the Perceptual-Motor Survey

to be invalid as a measure of motor deficiency. Haring and Ridgway (1967) reported that the Perceptual-Motor Survey did not provide a suitable battery of tests for the prediction of learning disabilities in kindergarten children. Falik (1969) concluded that kindergarten children who were exposed to a one-year period of perceptual-motor activities based on Kephart's procedures were not superior in reading readiness to a control group. A follow-up study indicated that at the end of the second grade the experimental and control groups did not differ in reading achievement. O'Connor (1969) noted that a program of activities suggested by Kephart did improve the motor performance of an experimental group of first grade children who participated in it for six months, but the change in motor performance did not transfer to a Perceptual Forms Test or to academic achievement.

Perceptual-motor training, based on Kephart's system, produced positive results in two reports. Painter (1966) reported marked improvement in scores on tests of the Goodenough Draw-a-man, Beery Geometric Form Reproduction, Illinois Test of Psycholinguistics, body image and visual-motor integrity after an experimental group of kindergarten children had been exposed to the program for twenty one half-hour sessions. It should be noted that this experience was in addition to the usual opportunities available to the control group, and therefore, confounds the interpretation. Edgar (1969) noted that a group of young, mentally retarded children showed significant improvement on the Gesell Developmental Schedule after individualized sensory motor training for 15 tc 20 minutes a day, three days a week for a period of eight months. In

this situation, however, the improvement was noted in areas which surround the learning of motor skills, i.e. adaptive behavior, language development, personal-social interaction, and did not purport to enhance cognitive function.

Another perceptual-motor training program which has been widely adopted was proposed by Frostig and co-workers. The Marianne Frostig Developmental Test of Visual Perception and its companion, The Frostig Visual-Perceptual Training Program are designed to predict, diagnose and provide remedial assistance in reading problems (Frostig, 1964). Frostig's recent book, Movement Education: Theory and Practice (1970) advocates gross motor activity as an essential part of the training procedure. The Frostig Test and Training Program were developed on the assumption that reading ability depends upon adequate visual-perceptual skills. These visual-perceptual skills are viewed as discrete components, developmental in nature, which mature independent of each other. The five areas of the Frostig Test are designed to account for specific problems which are common to children with reading disabilities. The Frostig Training Program is designed for classroom use, and areas of it may be prescribed according to the specific difficulty.

A number of reports have recently established that the Frostig Developmental Test of Visual Perception (D + VP) does not meet either of its two assumptions; namely, that there are multiple factors involved in the test and that these factors are related to reading ability. Ayres (1965) detected only one factor when the data of normal children were analyzed and two factors within a group of children

with learning disabilities. Silverstein (1965) arrived at the same conclusion after analyzing the data of three distinct groups. He reported one "general factor" within the test battery which he called perceptual development or possibly intelligence. Allen (1968) reported that all five subtests loaded heavily on one factor when analyzing the data of educable mentally retarded children between the ages of 10 and 16 years. Smith (1972) reported that the DTVP data from boys and girls of five through ten years produced only one factor with the possibility of a weak second factor emerging. The correlations between the subtests and the Wide Range Achievement Test (WRAT) were low, indicating that within this age range the test does not provide a good prediction of reading ability. The low relationship of the DTVP and reading skill confirms the findings of Olson (1968, 1970), Alley (1968), Jacobs (1968) and Rosen (1966).

Results from the Frostig system of perceptual training indicate that children who participate in such procedures score better on the items which test these abilities. However, the relation of the Frostig items to reading achievement is questionable.

A program which departs from conventional practice is that of the Reading Research Foundation of Chicago (McCormick, 1968). The training procedure is based on Luria's hypothesis that verbal behavior is an important regulator of other motor skills. Training emphasizes the "internalization of self-control" by which the trainee moves through a series of physical exercises in a progression which begins by responding to the command of an instructor, advances to verbal, self-directed behavior and culminates in silent self-direction of movement. Explicity

in the rationale is the necessity of orienting one's attention to the task at hand. Improvement in reading skills is alleged to occur concomitantly with the ability to invoke self-discipline in the presence of surrounding stimuli. To date the only systematic evaluation of the relationship between improvement in "internalized self-control" and reading achievement has been reported by proponents of the program (McCormick, 1968, 1969). Their evidence indicates that the participation in the program improves reading ability in those children who have learning disabilities and for those who are achieving below their potential. The paucity of research on the program proposed by McCormick suggests that a decision regarding its effectiveness cannot be made at this time.

Irrespective of their approach, perceptual-motor programs have failed to confirm that motor function is general rather than specific, or that increased motor proficiency is directly related to academic achievement. Conversely, there is evidence which demonstrates that children with learning disabilities do improve in gross and fine motor function when these objectives are a specific part of the training procedure.

It is well to remember that the inability of programs to meet the objectives of investigators does not in itself render them worthless. As stated prior to the review of literature, the circumstances which surrounded the evaluations of perceptual-motor programs may have been responsible for their failure. For example, the selection of inappropriate objectives, the eclectic use of content, the short duration of

the experimental program and the inability to measure all of the possible values are serious enough to produce neutral or negative results. The following section provides suggestions for our future research and teaching in an attempt to clarify the relation between programs and outcomes.

FUTURE GOALS FOR PERCEPTUAL-MOTOR PROGRAMS

Knowledge of Developmental Sequences - There is common agreement within professions that human behavior is subject to orderly, sequential development. However, the specific elements and experiences that are essential to the process have not been defined for most of the perceptual modes. For example, the developmental sequences in some of the fundamental motor skills were defined by Shirley (1933), and Bayley (1935). Wild (1938) and Hellebrandt (1961) identified the stages of throwing and jumping, respectively, while Hooker (1952) provided an extensive description of developmental reflexology. These descriptions account for a minute portion of the potential knowledge about motor development, but when we seek knowledge about the interrelated development of perceptual processes, there is little information to guide our practice. In essence, we do not know what experiences (kind, degree, duration) are necessary to produce the "readiness" which permits the child to acquire such skills as prehension, locomotion, speech, reading and writing. Yet, most individuals develop these abilities to the degree that permits them to function independent of spacial aid within our society. The adage that "many children learn in spite of their teachers" could be applied to parents, as well, but if we are to serve

the fifteen to thirty percent who now fail in academic situations, we must become more knowledgeable about the variables which determine individual success or failure. Questions which arise are: Can the developmental skills of childhood be obtained through a variety of experiences? Are certain experiences more beneficial than others. Are there critical periods, during which certain developmental processes must occur in order for the full genetic potential to be realized? If we are to provide programs for the prevention and remediation of learning disabilities, we must be able to define the essential components of childhood experiences.

Synthesis of Present Knowledge - The advancement of a discipline or profession is determined in part on the ability of its members to disseminate, evaluate and add to existing knowledge. In the area of perceptual-motor development we have a problem which is unique to education. Instead of the usual delay in the incorporation of research findings into practice, we find that practice has had undisputed control over the content of programs. This situation has resulted in the proliferation of curricula which provide little or no scientific support for their effectiveness. While it is evident that research efforts, in general, have not been supportive of perceptual-motor programs, there is a rapidly growing body of knowledge from which to generate new hypotheses. At this point there is much to be learned from a study of the conditions which produced the neutral or negative results of the past as well as the identification of those experiences which produced positive results.

Theory and Practice - The systematic advancement of knowledge occurs when theory guides practice and the results of practice are used to generate additional theories. Too often, however, the theorist is not willing to assume any responsibility for the practical application of his product, and the practitioner is suspicious of evidence which has been gathered in a laboratory situation. If perceptual-motor programs are to become a part of public education, their effectiveness must be demonstrated in the nation's schools. The research worker must leave the university setting and join the public school teacher, the child, and the parent in an environment which must accommodate the remedial program. The clinical setting is not a feasible model for dealing with the number of children who require special assistance in learning the skills of our culture. Communication between teachers and research workers is an essential process in the development of effective programs.

Preparation of Professional Personnel - The rapidity with which one can achieve the status of "expert" in the area of perceptual-motor development or in the area of learning disabilities is alarming. Cruickshank (1972) observed that students can achieve this status by taking courses from professors who have had no practical experience in teaching children with learning disorders, or by brief periods of on-the-job training. The criterion of expediency has permitted the present state of affairs to exist, but if perceptual-motor programs are to receive the support of school officials and parents in the future, the following conditions seem to be prerequisites.

Teachers should be knowledgeable about the various characteristics of children with learning disabilities and be able to administer the

screening tests which are appropriate for identifying these problems. The specific learning styles, teaching methods and techniques should be a part of the teacher's repertoire. Teachers must be sufficiently conversant with the research literature to be able to use it as a source of current awareness and to be able to communicate in its terms with other disciplines and professions. Teachers must be sufficiently inculcated with the scientific approach to education in order to state objectives, determine content and evaluate programs in objective rather than subjective terms.

Research: Application and interpretation - Many of the problems which have reduced the creditability of perceptual-motor programs could have been avoided by adhering to the principles of educational measurement. Problems involving sample size, significance level, power, and statistical procedures are inexcusable when one considers the present sophistication of educational psychologists and statisticians in these matters. The propensity of teachers to use art instead of science in their teaching procedures is a serious problem but it can be overcome it the research worker will assume the leadership in the interpretation and application of evidence to practical situations. In my opinion the applied scientist must provide for the practical application of his research because our present methods of teacher preparation do not equip the teacher with this capability.

SUMMARY

I have attempted to define the scope of programs which are commonly known as "perceptual-motor." The inherent difficulties which caused

many of the programs to fail were discussed as a background for the review of research pertaining to four selected systems of perceptual-motor development. Several changes in the delivery process are suggested on the assumption that a direction will provide greater compatibility between the theory and results of perceptual-motor development.

BIBLIOGRAPHY

Abercrombie, M. "Visual, Perceptual and Visuomotor Impairment in Physically Handicapped Children." Perc. and Motor Skills. 18: 561-625, 1964.

Allen, R. "Factor Analysis of the Developmental Test of Visual Perception Performance of Educable Mental Retardates." Perc. and Motor Skills. 26:257-258, 1968.

Alley, G. "Perceptual-Motor Performances of Mentally Retarded Children After Systematic Visual-Perceptual Training." Amer. J. Ment. Defic. 73:247-250, 1968.

Ayres, o. "Patterns of Perceptual-Motor Dysfunction in Children: A Factor Analytic Study." Perc. and Motor Skills. 20:335-368, 1965.

Ayres, A. "Deficits in Sensory Integration in Educationally Handicapped Children." J. Learning Disabilities. 2:44-52, 1969.

Ayres, A. "Interrelations Among Perceptual-Motor Abilities in a Group of Normal Children." American J. Occup. Ther. 20:68-71, 1966.

Barsch, R. "A Movigenic Curriculum." Bulletin No. 25. State Department of Public Instruction. Madison, Wisconsin. 1965.

Bayley, N. "The Development of Motor Abilities During the First Three Years." Mono. Soc. Res. Child. Devel. No. 1, p. 1-25, 1935.

Carlson, B. "Status of Research on Children with Perceptual-Motor Dysfunction." JOHPER. 43:57-59, 1972.

Cohen, H., Birch, H. and Taft, L. "Some Considerations for Evaluating the Doman-Delacato 'Patterning' Method." Pediatrics. 45:302-314, 1970.

Cruickshank, W. "Some Issues Facing the Field of Learning Disability." J. of Learn. Dis. 5:380-388, 1972.

Delacato, C. The Diagnoses and Treatment of Speech and Reading Problems. Springfield, Ill. Chas. Thomas. 1963.

Dunsing, J. and Kephart, N. "Motor Generalizations in Space and Time." Chapter 4, p. 77-121 in Learning Disorders. Vol. 1. J. Hellmuth (ed.) Seattle, Washington, Special Child Publications.

Edgar, C., Ball, T., McIntyre, R. and Shotwell, A. "Effects of Sensory-Motor Training on Adaptive Behavior." Amer. J. Ment. Defic. 5:713-720, 1969.

Fishbein, M. "Patterning' Under Attack." Medical World News. May 31, 1968.

Freeman, R. "Controversy Over 'Patterning' As a Treatment For Brain Damage in Children." JAMA. 202:385-388, 1967.

Frankenburg, W. and Dodds, J. "The Denver Development Screening Test." J. of Ped. 71:181-191, 1967.

Frostig, M., and Horne, D. Teachers Guide,The Frostig Program for the Development of Visual Perception. Chicago. Follett Ed. Corp. 1964.

Frostig, M., and Maslow, P. Movement Education: Theory and Practice. Chicago. Follett Ed. Corp. p. 237, 1970.

Gesell, A. "The Development of Handedness." J.Genet.Psy. 70:155-175, 1947.

Getman, G. "The Visuomotor Complex in the Acquisition of Learning Skills' Chap. 3, p. 49-76 in Learning Disorders. J. Hellmuth (ed.) Seattle, Washington, Special Child Publications, 1965.

Glass, G. and Robbins, M. "Neurological Organization and Reading." Reading Res. Quart. Fall: 7-15, 1967

Goodenough, F., and Smart, R. "Interrelationship of Motor Abilities in Young Children." Child Devel. 6:141-153, 1935.

Haring, N. and Ridgway, R. "Early Identification of Children with Learning Disabilities." Excep. Child. 33:387-395, 1967.

Haring , N. and Stables, J. "The Effect of Gross Motor Development on Visual Perception and Eye-Hand Coordination." J. Amer. Phy. Ther. Assn. 46:129-135, 1966.

Hellebradnt, F., Rarick, G., Glassow, R., and Carnes, M. "Physiological Analyses of Basic Motor Skills." Amer.J.Phy.Med. 40:14-25,1961.

Hooker, D. The Prenatal Origin of Behavior. Porter Lecture, Series 18, Lawrence, Kansas, University of Kansas Press, 1952.

Jacobs, J., Wirtlin, L. and Miller, C. "A Follow-Up Evaluation of the Frostig Visual Perception Training Program." Ed. Leadership. 26:169-175, 1968.

Kappleman, M., Luck, E., Ganter, R. "Profile of the Disadvantaged Child with Learning Disorders." Amer. J. Dis. Child.121:371-379, 1972.

Kephart, N. The Slow Learner in the Classroom. Columbus, Ohio. Chas. Merrill Books, p. 292, 1960.

Kohn, A. "Controversy: The Institutes and Patterning." Children Limited. 17:1-4, 1968.

LeWinn, E., Doman, G., Doman, R., Delacato, C., Spitz, E., and Thomas,E. "Neurological Organization: The Basis for Learning." Chapt. 2, p. 51-93, Vol. 2 of Learning Disorders, J. Jellmuth (ed.), Seattle, Washington. Special Child Publications, 1969.

Lewis, J. "The Improvement of Reading Ability Through a Developmental Program of Visual Perception." J. Learn. Dis. 1:23-25, 1968.

Lipton, E. "A Perceptual-Motor Development Program's Effect on Visual Perception and Reading Readiness of First Grade Children." Res. Quart. 41:402-405, 1970.

McCormick, C., Schnobrick, J., and Footlik, S. "The Effect of Perceptual-Motor Training on Reading Achievement." Acad. Ther. Quart. 4:171-176, 1969.

McCormick, C., Footlik, S., and Poetker, B. "Improvement in Reading Achievement Through Perceptual-Motor Training." Res.Quart. 39:627-633, 1968.

Milani-Comparetti, A., and Gidoni, E. "Routine Developmental Examination in Normal and Retarded Children." Devel. Med. Child. Neurol. 9:631-638, 1967.

Myers, P. and Hammell, D. Methods for Learning Disorders. New York. John Wiley & Sons, p. 313, 1969.

O'Connor, C. "Effects of Selected Physical Activities Upon Motor Performance, Perceptual Performance and Academic Achievement of First Graders." Perc. and Motor Skills. 29:703-709, 1969.

O'Donnell, P. and Eisenson, J. "Delacato Training for Reading Achievement and Visual-Motor Integration." J. Learning Dis. 2:441-447, 1969.

Official Statement: "The Doman-Delacato Treatment of Neurologically Handicapped Children." Arch. Phy. Med. Rehab. 49:183-186, 1968.

Olson, A., and Johnson, C. "Structure and Predictive Validity of the Frostig Developmental Test of Visual Perception in Grades One and Three." J.Spec.Ed. 4:49-52, 1970.

Olson, A. "Factor Analytic Studies of the Frostig Developmental Test of Visual Perception." J. Spec. Ed. 2:429-433, 1969.

Painter, G. "The Effect of A Rhythmic and Sensory Motor Activity Program on Perceptual Motor Spatial Abilities of Kindergarten Children." Excep. Child. 32:113-116, 1966.

Piaget, Jean. Biology and Knowledge. Chicago, Ill. The University of Chicago Press, 1971.

Robbins, M. "A Study of the Validity of Delacato's Theory of Neurological Organization." Excep. Child. 33:517-523, 1966.

Robbins, M. "Test of the Doman-Delacato Rationale for Retarded Readers." JAMA. 202:87-92, 1967.

Rosen, C. "An Experimental Study of Visual Perceptual Training and Reading Achievement in First Grade." Perc.Motor Skills. 22:979-986, 1966.

Seefeldt, V. "Perceptual-Motor Skills." Chap. 3, p.72-79 in H.Montoye (ed.) Vol.2 Growth, Development and Body Composition, An Introduction to Measurement in Physical Education. Indianapolis, Indiana, Phi Epsilon Kappa, 1970.

Shirley, M. The First Two Years. Vol.2, Minneapolis, The University of Minnesota Press, 1933.

Silverstein, A. "Variance Components in the Developmental Test of Visual Perception." Perc.and Motor Skills. 20:973-976, 1965.

Smith, P. and Marx, R. "Some Cautions on the Use of the Frostig Test: A Factor Analytic Study." J. Learning Dis. 5:42-47, 1972.

Stake, R. "The Countenance of Educational Evaluation." Teachers College Record. Vol. 68:523-540., 1967.

Stufflebeam, D. "The Use of Experimental Design in Education Evaluation. J.Ed.Measurement. 8:267-274, 1971.

Suchman, E. "The Evaluative Research Design." Chap.6, p.91-114 in Suchman, E. Evaluative Research. New York. Russell Sage Foundation, 1967.

Wertheim, E. "The School Aged Child with Multiple Minimal Handicaps." Aust. Ped. J. 3:1-14, 1967.

Wickstrom, R. Fundamental Motor Patterns. Philadelphia. Lea and Febiger, 1970.

Wild, M. "The Behavior Pattern of Throwing and Some Observations Concerning its Course of Development in Children." Res. Quart. 9:20-24, 1938.

Zimiles, H. "An Analysis of Current Issues in the Evaluation of Education Programs." Disadvantaged Child. 2:545-554, 1968.

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WHAT RESEARCH AND EXPERIENCE TELL US ABOUT PHYSICAL ACTIVITY, PERCEPTUAL-MOTOR, AND RECREATION PROGRAMS FOR CHILDREN WITH LEARNING DISABILITIES

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WHAT RESEARCH AND EXPERIENCE TELL US ABOUT PHYSICAL ACTIVITY, PERCEPTUAL-MOTOR, AND RECREATION PROGRAMS FOR CHILDREN WITH LEARNING DISABILITIES

The problem with research is that we use it like a drunk uses a lamp post - for support rather than illumination!

Recent legislation enacted in California mandates school programs for all four year old children. Similar legislation is being considered in New York State for three year old youngsters. Other states, many professional organizations, various volunteer agencies, and countless individuals champion the cause of starting all children in formal education programs at earlier and earlier ages. This represents just one of confusing, apparently contradictory, and difficult, if not impossible to understand, situations and circumstances confronting educators, parents, legislators, the lay public, and others interested in the good and welfare of all children.

Comprehensive analyses by groups outside of California and apparently impartial individuals of the same studies that provided rationale and support for the California mandate indicate that children as a group should start into formal education programs later, not earlier as in the current movement! Other reports indicate that the three R's should be saved for junior high school! The importance of early informal learning experiences, parental involvement, home intervention, family participation, along with a later starting age for formal schooling are factors that need to receive greater consideration and more emphasis for optimal child growth and development; early successes and positive emotional development are being given increasing emphasis. In spite of increasing evidence to the contrary, programs continue to emphasize

formal learning experience, organized activities, and cognitive or academic skills at earlier and earlier ages! Certainly there is little if any disagreement that children with definite and obvious sensory or motor deficits do need an earlier start so they can develop skills, competencies, attitudes, and other requisite characteristics to function in the most effective manner when they do enter elementary school. Specialists in growth and development, psychologists, educators, and parents have long discussed the fact that girls mature more rapidly than boys, and that at the age of conventional school entry, girls are about a year ahead of the boys -- yet we still insist on starting everyone to school, teaching them to read, and emphasizing cognitive skills at the same time. This leads to other hard to understand paradoxes of our times --

- Growth and development are looked upon as very individual for each child, although youngsters who do not reach certain motor, milestones, perform certain cognitive or academic skills, or attain specific concepts and proficiences by a given time are considered different, slow, or even retarded!

- The importance of individualizing instruction to meet each child's needs in terms of his special interests, abilities, and ways of learning are stressed, but those who need such individualized instruction and are unable to respond and function effectively to regimented, group, class oriented activities and methods are labeled as different, difficult, deficient, or deviant!

- Attempts to identify behavioral characteristics, personal traits, and personality differences that make it more likely individual youngsters will respond effectively to specific activities, methods, procedures, or techniques are advocated, but activities, methods, procedures or techniques that can be used effectively with all youngsters are still sought!
- Play movement, motor activity, and physical proficiency are felt to be important prerequisites for sound growth and complete development, yet many early childhood education programs and projects continue to place increasing emphasis upon academic activities and cognitive development!
- Written philosophies of all schools recognize the highly individualized nature of the educational process, but remedial programs, specific projects, and special efforts have to be established before individual needs of students are met through appropriate adaptations and modifications of activities, methods, procedures, and techniques are made.
- Interdisciplinary cooperation and multiagency teamwork are by-words of the day, yet many groups and individuals give little more than lip service to this concept as shown by the amount of duplication of effort, professional jealousies, disciplinary empires, and confusion in terminology!
- Relevance and accountability are concerns of educators at every level, but too few students or consumers are given opportunities to provide input into and evaluate programs that directly affect

them; too few teachers are involved in activities and procedures for which they are held accountable; and often inconsistencies abound between programs and ways in which progress is assessed!

- Understanding children, knowledge of growth and development patterns and sequences, and opportunities to observe, teach, lead, and know children without handicapping conditions are felt to be important prerequisites and form a basic foundation for those who work with youngsters who have various impairments, disabilities, or handicaps, yet earlier and earlier specialization is advocated by some persons involved in programs for special populations!

- More individualized attention through smaller teacher-pupil ratios is considered an important ingredient for programs involving special groups, but attempts to reduce these ratios through differential staffing patterns involving use of para-professionals, activity specialists, aides, attendants, and assistants are resisted by many individuals, groups, associations, and unions!

- Individuals with various physical, mental, emotional, social, or educational impairments, disabilities, or handicaps are said to be more like their peers and contemporaries than they are different so that discriminate integration is to be encouraged and activities provided to promote getting and keeping these populations in the mainstream of society, but separate and segregated programs continue to emphasize differences, deficiencies, disabilities, deviations!

In addition to these and many other confusing paradoxes, several additional problems contribute to the confusion, misconceptions, lack of understanding, and unsureness of ways to proceed.

- Semantics and terminology. Individuals use different terms and interpretations when referring to the same characteristics, traits, concepts, and movement patterns. Others use the same terms and interpretations when referring to entirely different characteristics, traits, concepts, movements and patterns. Also complicating this particular situation is failure to distinguish and differentiate among characteristics, and concepts, and teaching methods, techniques, approaches, and procedures. Need for consistency in terminology and in its usage, especially when personnel from different disciplines are involved, is evident and obvious. Clouding the picture and muddying the water further is a tendency to be over sophisticated, complicated, and complex in the use of words. So often a tried and true word, phrase, or term -- one that is clear, concise, and simple -- is perfectly acceptable and descriptive -- it conveys what is meant and intended but avoided like the plague so new words and terms can be introduced. For example, what do cognitive, affective, and psychomotor have that mental, emotional, and physical don't? For some reason new terms give mystery, status, and uniqueness to old wine placed in new bottles, and gives academic sanction and intellectual respectability to educational jaron -- the confusion caused matters not.

Contradictory research. Results of studies, experimental, action, basic, applied, formal, informal, descriptive, inferential, ad infinitum can easily be found that present diametrically opposite findings, conclusions, and recommendations! There are as many reasons for these contradictions as for differences in empirical reports, subjective observations, and just plain differences of opinion -- people, programs, methods, activities, axes to grind, preconceived ideas to prove, subjects, methodological weaknesses, over generalizations, inappropriate applications, wrong inferences, making results fit hypotheses. Attempts to apply methods, approaches, and techniques from the physical sciences to the behavioral sciences is another important but universally overlooked factor. When one chemical is mixed with another under identical conditions, resulting interactions are the same; a given power source (voltage) always provides the same current (amperage) through the same amount of electrical resistance (ohms). Most all principles, laws, and their application are consistent and constant when dealing with elements in the physical sciences. However, this concept and its application are not only inconsistent with the very basis of individual differences and all its implications for education, inter-personal relationships, and personal behavioral characteristics, but complicated further by many different factors that contribute to any situation involving people -- physical situations, other people -- peers, leaders, adult models involved in these situations, the individual's emotional climate at the time, physical problems such as illnesses

or nagging inconviences. So often research has been aimed at finding ways to incorporate all individuals with certain characteristics and traits into a given mold or program instead of identifying personal, social, emotional, physical, and related traits of individuals that will make it more likely for each to succeed under certain circumstances and with specific methods, activities, and techniques. Emphasis must be upon individualizing instruction in terms of each person's needs -- one-to-one, small group, large group, massed, distributed, whole, part, whole-part-whole, formal, informal, structured, open, as needed.

What's happened to childhood? Physiologists, specialists in child growth and development, teachers, and parents all tell us that children are maturing physically more rapidly today than even a generation ago. But they do not tell us that these same youngsters are maturing psychologically, emotionally and socially more rapidly; they are more worldly and sophisticated but these do not in themselves equal greater maturity. There are many indications that despite earlier physical maturation, certain elements and aspects of growth and development cannot be hurried; each child does in fact pace himself according to his own internal timetable and schedule; hurrying or delaying this can be devastating and detrimental to the individual. In fact, many people feel there is heavily represented among children who are having problems in school, a mass of idosyncrasies and individual differences which we have chosen to regard as abnormalties, which are only individual

differences. If we were prepared to accept them, they would not be the cause for alarm. There is nothing wrong with the non-retarded reading-disabled child -- he simply has the individual differences that he is not by aptitude a good reader. Studies and observation both indicate that more children today suffer from emotional maladjustment as evidenced by incidence of peptic ulcers as early as third and fourth grade, number of high school suicides, drug problems, children needing psychiatric counseling, and various and sundry similar psycho-social problems. Often associated with these problems are different kinds and types of learning disabilities. It is crucial to ascertain exact cause and effect relationships in these cases -- are emotional problems because of learning disabilities—or learning disabilities caused by emotional problems? Methods, procedures, and attack on these problems will be quite different depending upon exact cause. Where remedial programs are effective, especially during the elementary school years, activities that are effective and well received by children are often those so typical to, of, by and for children. These same activities and this same approach are also the bases for preventative programs at earlier ages and stages. As we evaluate and assess what has happened to childhood we need to explore its relationships to and effects upon questions such as:

- If the percentage of learning disabilities is higher today than a generation ago, why?

- What effects to early specializations in specific activities such as Pop Warner Football, Bitty Basketball, Little League Baseball, prodigy piano lessons, ballet, and other impositions of an adult society -- formals for nine and ten year olds, preteens pre-bras -- have in creating and promoting learning problems?

- To what extent does the philosophy <u>if it's not academic it's not important</u> have upon creating learning problems and disabilities among children who are not academically oriented or receptive to teaching modalities of a given teacher or specific school system?

- Does television, reduced play space, structural play areas with less emphasis upon creative play, and other characteristics of our modern twentieth century urban society affect overall child growth and development and contribute to learning problems and difficulties?
- Does dictation of adult concepts and values to the child create and contribute to these very same problems? What's important in the adult world often means little if anything in a child's world!

With so many paradoxes, inconsistencies, and confusing issues, everyone interested and involved in programs and activities for children must arm themselves well to avoid falling into traps inherent in these situations. One way to avoid falling into these traps is to return to

and draw upon basic concepts from anatomy, physiology, kinesiology, psychology, sociology, physics, education, growth, and development -- this provides a solid foundation for sound programs, procedures, methods, and techniques. This provides teachers, leaders, parents, supervisors, and administrators with information, concepts, understandings, and appreciation so they can recognize "old wine in new bottles." When tried and true activities or techniques are simply given new and sophisticated names, a sound foundation of basic fundamentals in these and related areas permit the individual to see both forest and trees. For example --

- Does perceptual-motor activity relate to or extend basic stimulus-response principles?
- Do perceptual-motor activity and systems relate to or differ from neuromuscular principles and factors?
- To what extent does relatively independent function of right and left cerebral hemispheres and cerebellum control of coordination explain individuals who can perform certain activities, skills, and movement patterns well, but have difficulty performing other activities, skills, or movement patterns that are similar or identical ones on the other side of the body?
- What are relationships, similarities, and differences among patterning, perceptual-motor activity, movement education, and exploration of movement?

- From a nerocuscular functional standpoint, what are differences/similarities between gross and fine motor acts? Is differentiation between gross and fine motor acts one of convenience and observation because evaluative instruments lack sufficient sensitivity to assess each accurately? To what extent is the principle that gross movements precede fine ones an overstated generalization?

- What are similarities and/or differences among movement activities conducted by physical educators, dance therapists, music therapists, occupational therapists, physical therapists, recreational therapists, corrective therapists, and optometrists?

To get at some basics to shed light on these questions we need to turn to research, empirical evidence, observations of people in the field, experience, and gut-level feelings of parents, volunteers, and paraprofessionals, as well as many involved professionals from different disciplines. Many important but overlooked, circumvented, or ignored facts from various fields are particularly relevant and need to be discussed in terms of their application and appropriateness for all children, especially those with learning problems. Since emphasis of this paper is upon physical activity, perceptual-motor, and recreation programs and activities, major considerations come from physical education and appropriate psychological literature.

Basic to developing, conducting, evaluating, and supervising many school clinic and related programs and activities for learning disabled or other children with problems or problem areas has been the process and procedure to generalize from one situation or circumstance to

another. Generally this is accomplished by using a specific test, battery of tests, or other evaluative/assessment/diagnostic instruments. From results of specific tasks or test items generalizations are made about an individual's potentials, abilities, skills, capabilities, processes, faculties, and functions.

In spite of increasing test refinements, greater sophistication in administration, larger samples for determining norms, and specialists who administer tests and interpret results, many individuals do things tests say they can't while countless others can't do things they should according to test results. It appears high time that several fundamental admissions be made --

- Test results can basically be interpreted that an individual has (or has not) performed certain tasks, evidenced certain behaviors on specific tasks under a given set of circumstances and conditions, and at a particular point in time.

- Transfer and/or application of learning occurs only under specific conditions, in certain ways, and with special considerations.

- Most all learning -- physical, academic, social -- is rather specific so the most fruitful approach is to concentrate on specific learning needs of individual youngsters.

- No single activity, program, method, approach, or technique can be everything to everybody. There are many ways to reach the same objective and attain identical goals that are influenced and affected by the individualities of both learner and teacher.

Greater recognition of teacher differences -- abilities, backgrounds, hangups -- have to be considered. Giving a mediocre or worse teacher fewer children in his class simply brings mediocrity and incompetence closer to the students; an alive, dynamic teacher can reach and teach large groups.

- So much in current day school operation is approached backwards -- deficiencies and deviations rather than abilities and competencies are stressed -- student achievement at the beginning rather than at the end of formal education is emphasized.

- Emphasis needs to be upon the learner and learning not the teacher and teaching. If completely honest, each will admit he never taught anyone anything! Environment, situations, circumstances, and relationships are established whereby every student is able to learn. This makes a teacher's role/position more not less important as feared by so many who rebel and react negatively to this concept.

Throughout the country many youngsters participate actively in physical education, movement, motor activities, and perceptual-motor programs because of alleged contributions to academic development, reading achievement, mathematical prowess, writing ability, and/or general intellectual growth. For many of these youngsters the most important contributions of these programs are -- they are being successful, someone is taking a special interest in them, and they are having fun. As success breeds further success, greater confidence, more pride in doing a good job and in seeing a task through from

beginning to end, these youngsters feel important and are willing to accept new challenges, try new activities, and explore fresh waters. Confidence in and important interpersonal relationships with teachers, leaders, counselors, buddies, parents, or others who have helped these children in these new, exciting, and fruitful experiences are vital ingredients in this process. With time many of these youngsters do gain other skills, obtain new proficiencies, and show previously unshown competencies, but not necessarily because of direct contributions of physical activities. While improved physical fitness, greater motor ability, and higher levels of physical proficiency are important and do contribute to this total process, we must be clear and accurate in assessing cause and effect relationships. Results of past research and experience do contribute to this process.

- Not too many years ago students experiencing difficulty in English were encouraged to enroll in Latin; geometry was encouraged to help develop ability to think logically, solve problems. make inferences, and exercises greater reason. Soon it was found that students needing help in English should take additional English not Latin, and that geometry only helped develop reason, logic, and problem solving ability related to solving geometry problems!
- Correlations and other statistical relationships between so-called gross and fine motor tasks and activities have consistently been small and low!

Relationships among various fine motor tasks and acts have resulted in lower correlations and statistical relationships than between gross and fine motor acts!

Relationships among various gross motor activities, acts, and tasks, while somewhat higher than relationships between gross and fine motor activities, have also been relatively small and low!

Recent investigations have shown perceptual-motor test items or tasks purported to measure the same characteristics or traits did not load on the same factor in an extensive factor analytic study.

Basic components and characteristics of physical fitness such as muscular strength and endurance have been shown to be rather specific in terms of range and angle of motion through which they are developed.

Reports and studies indicate that apparent relationships between components such as visual perception and perceptual-motor function have resulted because many visual perception test items require perceptual-motor functions.

Results from other studies, research projects, empirical reports, observations, and subjective statements reenforce the point that is consistent through each of the above -- learning, whether motor/physical or cognitive/mental, is specific with transfer

occurring only under specific conditions and circumstances. Generally, the most effective transfer occurs when application of principles and concepts are taught so that common elements can be used from one situation to another.

If learning is specific and transfer occurs only under special conditions, how and why are so many programs and activities for learning disabled children that emphasize motor development, movement, and physical activities so successful? As implied and stressed throughout this paper, reasons cannot be generalized to all situations and circumstances, for all children and for most teachers; just as there is no one way to guarantee success for everyone with every child, these successes reflect many splendored reasons:

- Activities are developmental in nature providing youngsters with opportunities and experiences that are in tune with their real interests, abilities, levels of development, background, experiences, as well as in terms of their culture, folkways, and mores.

- Activities provide youngsters with opportunities to succeed. Regardless of factors delineated above, every youngster can find activities in which he can succeed; emphasis is positive -- not negative, and on ability -- not disability; students are encouraged -- not discouraged, as potential -- not deficiencies is stressed.

- Activities offer children who need a variety of experiences in terms of number, type, kind, length, and frequency to master various concepts, opportunities to apply them in other situations and circumstances. The greater the number of situations in which an individual practices and uses a concept or skill, not only does it become more deeply entrenched in his nervous system, but the more likely he will have performed it in situations where direct transfer can occur. This also emphasizes learning as a process and not as simply a means of receiving factual information.

- Activities capitalize upon the very important element -- fun. Somewhere along the line we have lost sight of the fact that learning is best accomplished with laughter, adventure, and a sense of triumph!

Put these factors all together and the child is being put back into childhood! School and related programs become relevant to interests and needs of children, not institutions that further interests, desires, and ambitions of adults. They challenge, motivate, stimulate and become fun places where youngsters are accepted as youngsters, each for himself in terms of his own strengths, recognizing his hangups, but still as a person of worth and dignity. In a climate of this type the child looks forward to the excitement and thrill of what he is doing--he is turned on and tuned in--and who he is doing it with, teachers as well as classmates. Without minimizing contributions and importance of the many ways in which physical activities,

perceptual-motor, and recreation programs contribute to the growth, development, good and welfare of all children, especially those with various learning problems. It appears that greatest benefits result from ways these activities and those who conduct them make each youngster feel about himself. The interpersonal relationship between student and teacher, participant and leader, camper and counselor, child and parent, resident and attendant is crucial in this process that helps each individual find himself.

Theodore Roosevelt summed it all up in a rather succinct manner when he said,

> " . . . The credit belongs to the man who actually is in the arena; whose fall is marred by dust, and sweat; who strives valiantly; who errs and may fall again, because there is no effort without error or shortcoming, but who does actually strive to do the deed; who does know the great enthusiasm, the great devotion; who spends himself in a worthy cause; who at best, knows in the end the triumph of high achievement, and who at the worst if he fails, at least fails while daring greatly, so that his place shall never be with those cold, timid souls who know neither victory nor defeat."

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SUMMARY OF RESEARCH USING SELECTED PERCEPTUAL-MOTOR MEASURES FOR YOUNG CHILDREN

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SUMMARY OF RESEARCH USING SELECTED PERCEPTUAL-MOTOR MEASURES FOR YOUNG CHILDREN[1]

This paper is designed to present research completed and currently underway in the perceptual-motor area by myself and my colleague, Dr. Brad S. Chissom. I will not attempt to review the literature in this area for two reasons: (1) the time limitation; and (2) I expect two of the major speakers, Dr. Cratty and Dr. Seefeldt, will do this. I would, at this point, refer you to two reviews of the perceptual-motor literature: Bryant J. Cratty's (1972) Physical Expressions of Intelligence and James W. Fleming's (1972) "Perceptual-Motor Programs" in The Psychomotor Domain (edited by Robert Singer).

Our initial interest in this area stemmed from our motor development backgrounds and research training at the doctoral level. In reviewing much of the research relating the motor and perceptual-motor doamin to the intellectual domain, it appeared many researchers were viewing variables a pair at a time: one independent and one dependent variable or one predictor and one criterion variable. It should be apparent that these domains are not univariate in nature but are composed of a number of abilities which interact with each other within a domain and the other domain to varying degrees.

Three other things also became obvious as the literature relating the perceptual-motor and intellectual domains was reviewed. First, if the perceptual-motor area is developmental as postulated by many authors,

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[1]I would like to acknowledge Dr. Brad S. Chissom, Georgia Southern College, my co-author on all the research reported here, for his help comments in putting this paper together.

nd if our theories of task specificity are reasonable, then as hildren mature from pre-school to primary-grade ages, there should be ncreasing specificity between these two domains. Second, the research ndicates a wide variety of tasks that have been labeled perceptual-otor. In the area of hand-eye coordination alone, marked contrasts re evident. For example, gross tasks such as ball throwing and fine otor tasks such as winding thread on a spool are both included within he same area. It seems obvious that if one researcher calls a ball hrowing task hand-eye coordination while another calls winding thread and-eye coordination, their success in predicting or causing changes n intellectual criteria might vary considerably. Third, there is a erious lack of precision in the measurement of perceptual-motor variables. his is due, not only to the low reliability of many of the measures mployed for young children, but also to the use of nominal and ordinal cales of measurement.

Our first study (Thomas and Chissom, 1972b) was an attempt to valuate: (1) whether or not there is a decreasing relationship between he perceptual-motor and intellectual domains as age increases; (2) hat kinds of hand-eye coordination tasks are the best predictors of intellectual criteria; and (3) what kinds of tasks will yield reasonable reliability estimates for young children.

The sample was composed of 40 Ss at the kindergarten level, 24 first graders, 24 second graders and 25 third graders. Data were collected on three perceptual-motor measures and two academic measures. The perceptual-motor tests were: Shape-O Ball Test, wall bounce test and

basket toss test. The academic measures were: Otis-Lennon Mental Ability Test and a complex teacher rating.

Results indicated that there was a decreasing relationship between the perceptual-motor and academic domains as age increased until the relationship was no longer significant at grade 3. Of the three hand-eye coordination tasks, the Shape-O Ball was the best predictor of the academic criteria and was also the most reliable. It seemed apparent that the Shape-O Ball Test also included at least two other abilities, shape discrimination and perceptual-match. Also, the authors felt that the reliability of the Shape-O Ball Test was adequate but might be increased through refinement of the administration procedures.

This led to a second study (Thomas and Chissom, 1972a) in which an attempt was made to validate the Shape-O Ball Test for kindergarten children. Ths subjects were 38 kindergarten children for whom data were collected on the Shape-O Ball Test, Frostig Developmental Test of Visual Perception, and the complex teacher rating. Results indicated that the Shape-O Ball Test correlated significantly (r=.70) with the total score on the Frostig and all five subtests. The Shape-O Ball Test was a good predictor of the complex teacher rating (r=.67) and identified 78% of the children placed in the lowest quartile by the teacher rating. The Frostig correlated .55 with the teacher rating and identified 67% of the children placed in the lowest quartile. This study was an important step in establishing that the Shape-O Ball Test was both a reliable and valid predictor of academic aptitude for young children. The reliability for the test was .98.

The next step taken by the authors was to try and establish if the Shape-O Ball Test was also a good predictor of academic performance for disadvantaged pre-school children. This led to study three (Chissom and Thomas, 1973).

Subjects were 66 pre-school children enrolled in a Head Start Program in southeast Georgia. The subjects were 82% black, 18% white, 44% males and 56% females. They were administered the Shape-O Ball Test, Otis-Lennon Mental Ability Test and the complex teacher ratings. Results indicated that the relationship between the Shape-O Ball Test (perceptual-motor) and the two academic criteria was much lower than in previous research using children from the middle and upper socioeconomic classes. One of the major problems seemed to be with the Otis-Lennon MAT. Subjects' scores on this test were at chance performance leaving few opportunities for a significant correlation to occur. While this study failed to establish if the Shape-O Ball Test was suitable for disadvantaged children, it appears that the Otis-Lennon may not be.

Study four (Thomas and Chissom, 1973) was a continuation of the research with children who were not disadvantaged. However, the subjects for this study were first-grade level. The purposes of this research were to establish if the Shape-O Ball Test could be used in conjunction with another objective measure to predict reading performance. Scores on the Shape-O Ball Test, Otis-Lennon MAT, complex teacher rating and reading group assignment were obtained for all subjects. Results indicated that a significant canonical correlation ($Rc=.841$, $p < .01$)

existed between the two objective measures (Shape-O Ball and Otis-Lennon) and the two subjective measures (teacher rating and reading group). The Shape-O Ball correlated significantly with the Otis-Lennon (r=.71), teacher rating (r=.71) and the reading group (r=.64). Using discriminant analysis, the Shape-O Ball Test and Otis-Lennon were successful in assigning subjects to reading groups.

This study is useful because it indicated that teachers can use these two objective tests to assign students to reading groups when they lack prior information to use in making these decisions.

Current Research Underway

We currently have three perceptual-motor research projects underway. The first is an experimental study in which 40 kindergarten children have been randomly assigned to one of two groups: (1) an experimental group receiving a perceptual-motor program for 30 minutes daily that began the second week of January, 1973, and will end the third week of May, 1973; and (2) a control group which receives supervised play for the same time period. Both groups are being pre-, mid-, and post tested using the Shape-O Ball Test (fine eye-hand coordination, shape recognition and perceptual-motor match), stabilometer (balance), a self-concept scale, the Otis-Lennon Mental Ability Test, and the complex teacher rating. In addition, subjects will be randomly assigned to the first grade in the fall of 1973 and tested again in January, 1974 for any long term effects of the program.

The experimental perceptual-motor program is specifically designed to stress fine eye-hand coordination, shape discrimination, perceptual-

motor match and balance. Our previous research and other research has indicated that these variables are the ones which most frequently correlate to academic readiness. We hope to ascertain from this study any immediate and/or long-term effects of the development of certain perceptual-motor skills on academic readiness.

A second study underway involves data collected last year for study number 2 (reviewed previously). Data on the Shape-O Ball Test and the Frostig DTVP were collected in the winter of 1972 for 38 kindergarten subjects. The Metropolitan Reading Test was administered to this same group of subjects in January, 1973, when they were in the first grade. In addition, the complex teacher ratings were collected for all subjects. We plan to compare the ability of the Shape-O Ball Test with the Frostig DTVP (both administered in kindergarten) to predict reading level and overall academic achievement in the first grade.

A third study which will begin in March is concerned with collecting data on 60 disadvantaged kindergarten children. These children will be administered the Shape-O Ball Test, stabilometer test, Otis-Lennon MAT, Slosson IQ, Peabody Picture Vocabulary, and the complex teacher rating. We hope by administering a large battery of tests we can get better measurement of ability than in our previous study using disadvantaged children (see study number 3). We hope to evaluate the relationship between these two perceptual-motor measures and the battery of academic measures.

In summary, we have tried to do several things in our research which we deem essential for the interpretation of results:

1. Use perceptual-motor measures that are reliable for young children and which yield data on an interval or ratio scale of measurement.
2. Be consistent in the use of the good measures on various populations of subjects.
3. Establish a basis for our experimental research currently underway through previous correlational studies to both develop good tests and evaluate the perceptual-motor skills likely to effect academic readiness.
4. Use as subjects young children where both theory and previous research indicate a relationship is likely to exist.

REFERENCES

Chissom, B. S. & Thomas, J. R. Comparison of factor structures for the the Frostig Developmental Test of Visual Perception. Perceptual and Motor Skills, 1971, 33, 1015-019. (a)

Chissom, B. S. & Thomas, J. R. Multivariate validity of the Otis-Lennon Mental Ability Test Primary I Level. Educational and Psychological Measurement, 1971, 31, 991-93. (b)

Chissom, B. S. & Thomas J. R. Relationship between perceptual-motor and academic measures for disadvantaged pre-school children. Perceptual and Motor Skills, 1973, 36, 152-154.

Chissom, B. S., Thomas, J. R. & Biasiotto, J. Canonical validity of perceptual-motor skills for predicting an academic criterion. Educaticnal and Psychological Measurement, 1972, 32, 1095-1098.

Cratty, B. J. Physical Expressions of Intelligence. Prentice-Hall, Inc.: Englewood Cliffs, N.J., 1972.

Fleming, J. W. Perceptual-motor programs. In R.N. Singer (Ed.), The Psychomotor Domain. Lea & Febiger: Philadelphia, 1972.

Otis, A. S. & Lennon, R. T. Otis-Lennon Mental Ability Tests. Harcourt, Brace, and World: New York, 1967.

Thomas, J. R. & Chissom, B. S. A note on the factor structure of the Frostig Developmental Test of Visual Perception. Perceptual and Motor Skills, 1973, 36, 510.

Thomas, J. R. & Chissom, B. S. An investigation of the combination of a perceptual-motor test and a cognitive ability test for classifying first grade children into reading groups. Psychology in the Schools, 1973, (April issue in press).

Thomas, J. R. & Chissom, B. S. Relationships as assessed by canonical correlation between perceptual-motor and intellectual abilities for pre-school and early elementary age children. Journal of Motor Behavior, 1972, 4, 23-29.

Thomas, J. R., Chissom, B. S. & Biasiotto, J. Investigation of the Shape-O Ball Test as a perceptual-motor task for pre-schoolers. Perceptual and Motor Skills, 1972, 35, 447-50.

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IMPLICATIONS OF PERCEPTUAL-MOTOR THEORY/RESEARCH FOR THE CLASSROOM TEACHER

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IMPLICATIONS OF PERCEPTUAL-MOTOR THEORY/RESEARCH FOR THE CLASSROOM TEACHER

INTRODUCATION

Former Educational Misconceptions

Since the "dark ages", physical education and physical activity have been viewed as "the work of the devil", "a consumer of surplus energy", "relaxation from the stress created by the academic disciplines" "a developer of the physical" and "a developer of skills/abilities through the physical".

Regardless of the theory that prevailed, physical education was never viewed as a means of contributing to the development of a child's intellect. Rather, it was a generally accepted practice to divide education into two categories -- those activities that developed the mental faculties and those activities that developed the body. The role of the school was to develop the child's mental faculties.

The teacher's role in this dichotomy was to dispense knowledge. He was the most important part of the educational triad (i.e., the teacher, the learning process, and the student). The primary method of teaching was lecturing - lectures based on the "absolute truths" of the day.

The learning process focused on student memorization and regurgitation of the "truths". It was contended that the memorization of content would develop the individual's mental abilities and his ability to apply said knowledge to other problems.

The student's role, in this arrangement, was one of "passivitity." The good student was one who memorized his assignments, accepted all teacher-dispensed knowledge as"truths", and conformed to all standards.

Thus, education during the past centuries stressed the separation of the mind and the body. The teacher and content were of paramount importance; the learner was a "pawn" in the educational process. Physical education was relegated to the role of "special" status (i.e., "special" in the sense that it is not of major importance). Note: Many of the misconceptions of yesteryear still prevail today.

New Theories in Education

Dissatisfaction with the "product" of education has stimulated a new movement during the past decade. The role of the school has been seriously questioned. Many theorists now contend the school should prepare the student for life. Thus, education is viewed as a "means" rather than as an "end". The current focus on "Career Education" is a prime example of the prevailing philosophy. Within this structure, equal status is accorded all disciplines. (The state of New Jersey has recently enacted legislation whereby the Carnegie unit, a basis of awarding course credits, is being phased out. The new procedure will be to award credits on the basis of participation time rather than on the basis of academic subjects, vocational subjects, special areas, etc.

Resurgence of Deweyism. John Dewey firmly believed that one "learns by doing." He believed that the teacher's role was important, but that it was subordinate to the students. The teacher should guide and assist the student through a variety of meaningful learning experiences. Dewey's approach to education, or hybrids thereof, is manifested in many of today's schools.

Other educational theories that focus on the "child-centered approach" are being utilized. The Montessori Method provides a curriculum which stresses maximum student experiential involvement. Piaget's "developmental stages of learning" are being scrutinized for their educational implications. As a result, content is being viewed as a vehicle via which one endeavors to meet the needs of the child. Similarly the "open school" concept focuses on meeting the needs and interests of the child.

Perceptual-Motor Movement. Research has refuted the theory that the development of one's intellect, requires the development of processes via which one learns to apply knowledge, to critique, to interpret, to synthesize, etc. In other words, education must be devoted to teaching students "how to learn".

At the fore of the "frontal attack" on how children learn, has been the perceptual-motor theorists. Some theorists contend that learning takes place via a continuum -- motor -- perceptual -- perceptual-motor -- conceptualization. Other theorists maintain a broad experiential background in perceptual and perceptual-motor activities will enhance cognition and aid in the achievement of academic skills.

To date, perceptual-motor research has been limited and inconclusive Many test batteries have been questioned in terms of validity (i.e. measuring what they purport to measure). Other studies were: designed poorly; used a population that was too small, or biased; or drew erroneous conclusions.

Despite these limitations, the future of research in the perceptual-motor area is promising. Studies have revealed that perceptual and

motor experiences are beneficial to preschool child. Ishmail and Gruber[1] investigated the effects of a motor activity program (in which the child was required to "think") on intelligence and academic achievement. The results of the study revealed significantly superior gains were made by students participating in a physical activity program which required their total involvement. Humphrey & Sullivan[2] and Cratty[3] conducted studies which revealed that physical education cognitively-oriented activities have a positive influence on the slow learner/retarded child.

Summary. Educational theorists/researchers have rearranged educational priorities. Concern is being expressed in terms of the total child. "Child-centered" curricula age being developed whereby objectives, evaluative criteria, etc. are being expressed in terms of the learner. The teacher's role consists of stimulating, assisting, and guiding the learner. "Content" has been classified as a "tool" which is used to aid in the development of the child's intellect. Replacing "content" in the educational triad is the provision of student learning experiences which aid the child in "learning how to learn".

The perceptual-motor movement, while floundering somewhat due to a lack of programmatic research, has a birght future because its approach

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[1]A. H. Ishmail and J.J. Gruber, Motor Aptitude and Intellectual Performance (Columbus, Ohio: Charles E. Merrill Books, Inc., 1967).

[2]James H. Humphrey & Dorothy D. Sullivan, Teaching Slow Learners Through Active Games (Springfield, Illinois: Charles C. Thomas, Publishers, 1970).

[3]Bryant J. Cratty, Physical Expressions of Intelligence (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1972).

is consistent with the new goals of education. Further, there is sufficient research available to substantiate the implementation of perceptual motor programs in preschool/lower elementary grades and programs for children with learning disabilities. (The writer's experience reveals the single-most important value derived from a perceptual-motor program is the enhancement of the child's self-concept.)

MOTOR/PERCEPTUAL-MOTOR CONSIDERATIONS

Prior to presenting a recommended teaching model and implications for the teacher, a distinction between motor and perceptual-motor tasks shall be presented.

Differentiating Between A Motor and Perceptual-Motor Task

A perceptual-motor task is one that involves the simultaneous impingement of two or more information systems on the learner (one of which is movement) in which the learner is always involved in the decision-making process.[4] The "key" to distinguishing a perceptual-motor task from a motor task is based on an analysis of the foregoing definition, with particular emphasis on the terms "information systems" and "decision-making".

The term "information systems" refers to the sensory receptors (i.e., visual, auditory, tactile, kinesthetic, olfactory, and gustatory). Thus a perceptual-motor experience requires pupil movement which is based on integrating information provided by one or more of the sensory receptors. The term "decision-making" connotes that the learner must analyze the task and make a decision.

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[4]Paraphrased from G. N. Getman's definition of "perceptual-movement. Lecture: "Perceptual-Motor Programming," E.D.A. - AAHPER Workshop, Philadelphia, April 1, 1971.

On the other hand, a "motor task" is defined as a pupil movement which focuses most attention on the "movement". (The writer is aware that all movement requires some perceptual involvement, but the definitions implies minimal perceptual involvement.)

Possibly an example or two will clarify the distinction between a motor task and a perceptual motor-task. In the first example, the teacher demonstrates placing his hands on his head and requests the student replicate the task; twenty-five times. Once the child locates the hand/head position, he can repeat the act with his eyes closed as he needs no further information, nor does he have a decision to make. In this example, the task required involved primarily a motor response. However, if the teacher requires the child to observe varied hand positions and to react accordingly, the task would involve a perceptual-motor response. For example, the teacher would place his hands on his head, shoulders, hips, and knees; the student would be required to replicate each act. Analysis reveals this act to involve a series of perceptual-motor responses as the student must make decisions (where to place his hands), based on the information provided (visual).

Similarly the game "Simon Says" would involve the integration of perceptual and motor responses, but of a higher order than the previous example. In the "Simon Says" game the child is required to integrate visual and auditory information, prior to making a decision.

A TEACHING MODEL FOR ENHANCING LEARNING VIA PHYSICAL ACTIVITY

The new role of the teacher requires that he possess diagnostic ability so that he can prescribe a program commensurate with the

developmental level/needs/interests of the individual. Thus, the teacher should ascertain what goal he desires to set for the learner before selecting the specific task. The following task guidelines provide the teacher with specifics necessary to meet some of the varied needs of learners within any given group.

Motor Development

Children who are inordinately clumsy, poorly coordinated, etc. should be prescribed tasks that focus on the motor act. All attention should be directed toward the accomplishment of the specific motor proficiency. The goal in this situation is to learn a specific motor skill; the means of achieving the goal is the provision of information necessary to perform the specific act. For example, if one wants to teach a subject to hop properly, explanations/demonstrations/experiences should be directed toward centering the body weight over one foot, hopping on one foot, transferring weight from one foot to the other, etc.

Perceptual-Motor Development

Children who have difficulty integrating perceptual information with motor responses should be prescribed tasks that require the matching of these responses. Examples of children that would require such programming would be the clumsy/poorly coordinated, the poor reader/writer, (manifested by letter/word reversals, skipping of words), and the slow learner. To achieve the goal of integration of perceptual and motor responses, the student should be provided a variety of experiences which require the utilization/integration of multi-sensory, information as a

basis for making a decision which, in turn, culminates in a motor response. Giving a child directiors to hop on his right foot twice, his left three times, and twice on his right foot involves the utilization/integration of the teacher's directions (auditory information) so that the child can make the proper decision in performing the motor act.

A major derivative of the performance of perceptual-motor tasks is that the child's ability to comprehend, analyze, etc. (learn to learn) is enhanced. Research indicates the slow learner, particularly benefits from such prescriptive activities.

Note: The prescription of perceptual-motor tasks presupposes competencies in the performance of discrete tasks related to perceptual responses and to motor responses. For example, a child who does not possess the ability to hop alternately on his left and right foot will surely be unable to perform the aforementioned perceptual-motor task.

Perceptual-Motor/Academic Achievement (PMAA)

Many misguided educators are making rash statements regarding the values derived from perceptual-motor activities. There is no supportive data to date to justify statements that balancing, eye/hand activities, etc. will improve reading. Walking on a balance beam will develop a child's ability to walk on a balance beam. In the same manner, eye/hand activities will end in fine motor coordination and possibly the development of reading readiness skills.

However, the teacher desirous of enhancing a child's academic achievement via physical activity can do so if he structures the

perceptual-motor experience properly. While it is true that hopping will only enhance one's ability to hop, a slight adjustment in the task will result in an improvement in a child's academic skills. The term the writer has attached to this type of task is referred to as "perceptual-motor/academic achievement. The modification requires that the perceptual-motor response incorporate specific information and decisions related to the academic skill. For example, the perceptual-motor task of throwing a ball at a target will enhance eye/hand coordination and eye/hand accuracy. However, if we place letters over target openings and request each child to attempt to spell a specific word by tossing a ball through the correct openings, his ability to spell the word will be improved.

In other words, academic achievement can be enhanced if the "identical elements approach" is applied. PMAA tasks should be perceptual-motor experiences which are modified to incorporate the following features:

1. Sensory information/decisions which are as similar as possible to the academic skill being stressed.
2. The focusing of the child's attention on the academic skill by having him verbalize his responses.
3. Opportunities for broad applicability of the principles involved.
4. Immediate correction/reinforcement to insure positive transfer.

The PMAA approach can be of particular value to the classroom teacher working with slow learners, as many of these children are receptive to movement - especially, if the competitive element is incorporated. For that matter, PMAA activities can also be provided for normal and advanced students on an adjunctive basis.

PROGRAM IMPLICATIONS FOR THE CLASSROOM TEACHER

Perceptual-motor tasks/activities should be included in the curriculum by the classroom teacher. Properly designed learning experiences are recommended because they can enhance the child's: motor development, ability to integrate perceptual and motor responses; academic achievement; and his self-concept.

Implications for the classroom teachers would be as follows:

1. To work closely with the school psychologist, learning disability specialist, medical inspector, school nurse, special educator, and physical educator in DIAGNOSING each child's problem(s) and PRESCRIBING accordingly.
2. To maximize each child's involvement in the learning process by providing learning experiences which require utilization/integration of INFORMATION SYSTEMS.
3. To design tasks/games which require the child to make a DECISION so that cognition is enhanced.
4. To devise tasks/games that will enrich ACADEMIC SKILLS VIA TRANSFER OF LEARNING.

SELECTED BIBLIOGRAPHY

Chaney, Clara M. & Newell C. Kephart, Motoric Aids to Perceptual Training. Columbus, Ohio: Charles E. Merrill Publishing Co., 1968.

Cratty, Bryant J. Active Learning Games To Enhance Academic Abilities. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1971.

Golick, Margaret, A Parent's Guide to Learning Problems. Montreal, Canada: Quebec Association for Children with Learning Disabilities, 1970.

National Clearinghouse for Mental Health Information, Cognitive and Mental Development in the First Five Years of Life: A Review of Recent Research. Chevy Chase, Maryland: National Institute of Mental Health, November, 1970.

Vodola, Thomas M. Individualized Physical Education Program For the Handicapped Child. Englewood Cliffs,N.J.: Prentice-Hall, Inc., 1973.

A TOTAL MOTOR DEVELOPMENT PROGRAM

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A TOTAL MOTOR DEVELOPMENT PROGRAM

During a child's early formative years, it is essential that broad-based movement education experiences be provided as a carefully planned program provides a firm foundation for subsequent learning.

It is worthy to note that the term "movement education" was used rather than "motor development" because the latter term is often misconstrued as a composite of motor skills. The concern is that students be provided a variety of motor pattern experiences rather than a series of discrete motor skills. For example, it is known that child suffering from Downe's Syndrome has difficulty balancing himself. As a consequence, some teachers will provide the child with a daily diet of walking on a balance beam. The result of such experiences will be the development of competency in that discrete motor skill --walking on a balance beam.

The time devoted to my presentation is too short for an explanation of all of the movement patterns that should be provided during the elementary grades, but an attempt shall be made to provide you with some of my major concerns, suggested guidelines for conducting a sound, year-round program, sample materials related to the recommendations, and values to be accrued from a sound movement education program.

Major Concerns

As a physical educator, I view the following practices as detrimental to the total motor development of <u>each child</u>:

The games approach. All-too-frequently the physical education curriculum consists of an aggregate of competitive activities and games. Via this approach, the primary focus is placed on the game, with the child but a pawn in the process. Let me cite a true experience:

At the dinner table one evening, Johnny was asked by his father, "What did you do in physical education today?" Johnny's reply was that the class played softball. Query: "What position did you play?" Answer: "Left field." Query: "How many balls did you catch?" Answer: "None." Query: "Did you get any hits?" Answer: "No, I did not get a chance to get up-at-bat." Thus, Johnny was not provided any education experience during that period.

There is nothing inherently wrong with the utilization of games as learning experiences - the problem is one of improper implementation.

Minimal physical education at the elementary level. Personal experience has revealed that physical education programs in grades K-2 are virtually non-existent, or a disproportionate amount of time is devoted to the program at the upper grade levels. While physical education is recommended for all grade levels, on a priority basis, a sound program is essential in grades K-6.

Minimal special physical education classes. A survey in New Jersey revealed that less than 2% of the respondents conducted physical education programs for the atypical child.[1] Correspondence with physical

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[1]Thomas M. Vodola and Alfred Daniel, "The Status of Developmental and Adapted Physical Education in the New Jersey Public and Private School Systems." (Trenton: New Jersey Youth Commission's Sub-Committee on Youth Fitness, 1967.)

educators throughout the country revealed a similar pattern - the virtual non-existence of individualized physical education programs for students with motor/physical fitness problems.

The perceptual-motor craze. Ten years ago, physical educators were deluged with articles espousing the cause of physical fitness. Today, the status symbol evolves around the introduction of perceptual-motor programs. Both physical fitness and perceptual-motor activities are important aspects of a sound physical education program. However, I am concerned with the possible deemphasis of motor learning due to the current stress on perceptual-motor activities and activities designed to enhance academic performance via motor activity. It must be remembered that an essential prerequisite to perceptual-motor training is a complete repetoire of movement patterns. For example, one of the test items the Township of Ocean uses in their prekindergarten screening test to assess a child's gross body coordination is alternately hopping on one foot and then the other.[2] If a child has not learned the basic locomotor skill of hopping, he will be unable to perform the more complex task of alternately hopping, nor will he be able to "count" the number of hops required on each foot.

Utilization of the classroom teacher as a physical educator. Many of my colleagues feel that it is too idealistic to presume that all physical education programs at the elementary level will ever be taught

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[2]Thomas M. Vodola, Individualized Physical Education Program for the Handicapped Child (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1973) pp. 75-76.

by physical educators. I contend that the implementation of a sound motor development program necessitates the teacher have expertise in kinesiology, physiology of exercise, motor learning, and other related areas.

This, by no means, is meant to deprecate the classroom teacher. It is just a matter of reality; most classroom teachers have been exposed to one physical education methods course (or in some instances none at all). Further, it is a known fact that no one can serve two masters equally well.

Program Guidelines

So much for concerns. What are some of the factors that enhance the success of a motor development program at the elementary level?

A total commitment to the child-centered approach. To insure the total development of each child, the curriculum has to be written so that a constant focus is placed on the implementation of those tasks and activities that meet the developmental needs of the students involved. Many existing programs "gear the child to the curriculum." What is recommended is that the "curriculum be geared to the child." Thus, program formulation necessitates a definite awareness of the physical, social and psychological needs of children at the various age levels. And then, the program guidelines have to be written explicitly so the objectives are stated behaviorally. Let us analyze an example of the procedure recommended, using one objective at the kindergarten level.

1. Conceptual Statement

   Physical activity contributes to efficiency of movement.

2. Physiological Characteristics

   Small muscles developing, large muscles growing and increasing in strength.

3. Implications/Suggestions

   Select purposeful activities; teach basic locomotor skills, ball and object skills-hoops, bean bags.

4. Behavioral Statement

   The student demonstrates proficiency in the locomotor skill of hopping on either foot.

5. Student Learning Experiences

   - Balancing on left/right foot, on a variety of levels, with eyes open/closed.
   - Varying the center of gravity of the body weight while balancing.
   - Hopping on the left/right foot.
   - Hopping forward, backward, sideward.

6. Evaluative Criteria

   The student can hop forward a distance of ten feet without breaking his rhythm, or touching his raised foot to the floor.

Note the sequential flow of the example cited. Starting with a conceptual statement and ending with crystallized criteria based on the physical developmental needs of five-year old children. The objective cited is not the important point; the important point is that the entire motor development program be predicated on the needs of the children involved.

The child-centered approach of curriculum design assures one of the implementation of a motor development program that is relevant to the needs of the children. One of the nicest comments the writer has ever received from one of his staff members was, "Whenever you observe me, I immediately reflect on the "why" of the activities I am teaching." That statement very succinctly explains the meaning of the child-centered approach.

Maximal student involvement. There is a direct, positive relationshi between the amount of learning that takes place and the amount of time each student is actively involved in the learning process. While it is true that teachers must work within the time allotted for the physical activity program, they can insure that students are provided learning experiences for the entire period.

Frequently, teachers will attempt to justify limited student involvement by stating that the facilities are inadequate. The answer in that situation would be to eliminate the specific activity as there is nothing sacred about any one activity. However, in most cases, class situations can be organized so that all children are involved for the entire period.

To involve all students in each learning experience necessitates additional supplies and equipment, but the benefits derived more than justify the added expenditure. I recall an incident where a board member stated, "Do you mean that if you have a class of forty children, you will need forty balls?" My reply was, "Yes." I stated analogously, "What would be the effects on reading achievement if there were only three textbooks available in a reading class which had thirty students?"

Individualize the learning experiences. A sound principle of learning states that student learning experiences should be designed to insure that each student experiences success. Thus, if one of your objectives related to balance/postural orientation and one of the experiences provided is walking on a balance beam which is two feet above the floor level, a progression of difficulty should be established.

In that manner, a child who is fearful of height may start by walking on a line marked on the floor. (It should be remembered that no task or activity is sacred; activities should be determined on the basis of individual student needs. In fact it is very conceivable that in some cases activities for certain students would be contraindicated.)

A special enrichment program. As an integral part of the total school program, physical education should be organized in a fashion similar to any other subject matter area. For example, students with reading difficulties are provided remedial reading programs. Consequently, provision should be made for a separate instructional program to provide individualized physical education for those students who cannot benefit from the regular program. Included in such a class might be students with severe motor/physical fitness problems, the learning disabled, the sensory impaired, and the orthopedically handicapped.

Also recommended, would be the development of prekindergarten and basic motor ability tests to assess each child's performance so that a referral basis can be established. (Refer to materials distributed.)

Values to be Derived from a Comprehensive Motor Development Program

There is unlimited data to support the values of a broad-based motor pattern program at the elementary level. Pre-and post-testing will indicate that children will improve in locomotor skills, basic motor ability attributes, awareness of body image, physical fitness, ad infinitum. However, without minimizing these values, I contend that the single greatest value derived from a carefully planned physical

activity program is what it does to the child's self-concept.

Once again I reiterate, the single greatest value attained is the enhancement of the child's self-concept. This manifestation has been extremely prevalent when working with special education students. Discussion with and letters from parents have, repeatedly indicated their children have more confidence in themselves, relate better with their peer groups, and seem to achieve better in their academic subjects. (A recent research study by the writer and his colleagues in the Township of Ocean School District revealed a significant gain in the self-concept and academic achievement of underachieving students.[3])

Summary

My charge was to elaborate on the importance of a comprehensive motor development program in the school curriculum. Rather than present a detailed description of one program, I have endeavored to provide an overview of my major concerns, followed by some general guidelines. Hopefully, the additional materials distributed will provide you with some specific activities you may want to consider.

I have not focused directly on the program needs of the special student because the content of the regular and special physical education programs are basically the same; the difference between the two programs is one of method.

During the "question and answer period" I shall attempt to clarify any positions taken and to provide answers related to the physical education - special education interrelationships that are necessary to implement a successful motor development program.

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[3]Thomas Vodola, F.West, and A. Widmann, "The Effects of Individualize Motor-Cognitive Activities on Motor Performance, Academic Achievement and f-Concept of Underachieving Students," 1973, Township of Ocean School trict, Oakhurst, New Jersey.

MISSISSIPPI SPECIAL OLUMPICS

-- A MODEL FOR YEAR-ROUND MOTOR DEVELOPMENTAL PROGRAMMING --

MISSISSIPPI SPECIAL OLUMPICS -- Training, area, state, and national games - a worthwhile supplement to educational programming for mentally retarded individuals.

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PERCEPTUAL-MOTOR SYMPOSIUM -- To further disseminate factual information in the perceptual-motor area utilizing nationally recognized consultants.

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FOLLOW-UP AND EVALUATION -- Tentative plans call for the establishment in 1973-74 of field coordination in model centers throughout the State.