

THE RELATIONSHIP AMONG MOTOR PERFORMANCE,  
SELF-CONCEPT, AND LOCUS OF CONTROL IN  
LEARNING DISABLED CHILDREN

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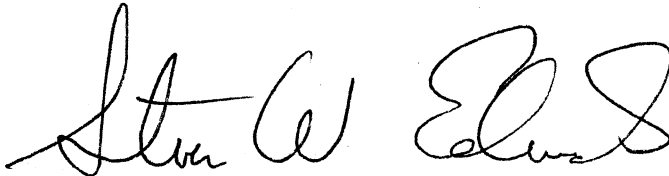
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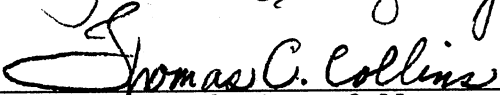
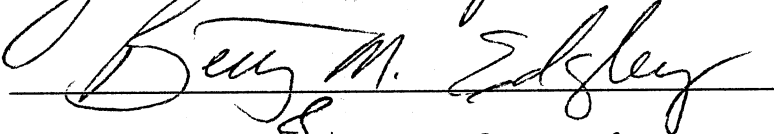
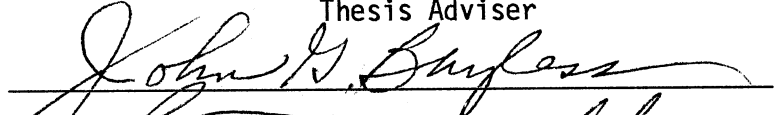
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Thesis Approved:



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Dean of the Graduate College

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## CHAPTER I

### INTRODUCTION

Through all centuries since the Middle Ages man has learned by experiment and mathematics how to analyze, how to cleave and whittle, how to sort things into their elementary parts and classify each in its proper box. Having done a good job at analysis, he found, as a rule, that he could make some headway at synthesis--he often put the clock together again. But he was troubled by the fact that sometimes he seemed to have lost the clue to the structural whole, for he found parts which somehow did not fit into the pattern, and sometimes he found, to his dismay, that a part he placed in the wrong position worked in a different way from the way it had worked before. Accordingly, it became necessary for him to look more closely at wholes as wholes--to study structure (Murphy, 1947, p. 619).

Educators recognize that physical, intellectual, and emotional development play a significant role in the growth and maturation of an individual. Educators accept that learning follows a developmental sequence and that the sequence is unique to each individual. Arnheim and Sinclair (1979, p. 22) stated: "The period from 9 to 12 years of age growth is relatively slow and uniform." Children vary considerably from each other in their rate of growth and development. However, every child follows a consistent pattern from birth to physical maturity (Arnheim and Sinclair, 1979). Progressive education strives to acknowledge the individual patterns of growth in each child and allows each to learn and develop at his/her own rate (Murphy, 1947).

Most investigators maintain that academic achievement is the rule by which to judge development instead of what underlies the many problems children have in learning academic material. This seems to be an issue in educating children with learning disabilities because they are

underachievers. Underachievement is the major definitional criteria of learning disabilities (Dudley-Marling, Snider, and Tarver, 1982). Individuals with learning disabilities may have average or better intelligence but fail to demonstrate the same academic competencies as do most individuals whose IQs fall within the normal range (Sherrill and Pyfer, 1985).

In addition, researchers have explored reasons for the underachievement of individuals with learning disabilities. Efficient cognitive processing is required for successfully performing a motor skill (Kerr and Hughes, 1987). Kerr and Hughes targeted inferior processing skills and abilities of the learning disabled as possible reasons for movement difficulties. Learning disabled children seem ". . . unable to apply their abilities because they have not developed efficient strategies for doing so" (Torgesen and Licht, 1983, p. 4). Other possible reasons for learning disabled children's underachievement include a significantly lower self-concept than normal peers (Martinek and Karper, 1982; Sheare, 1987; Rosenburg and Gaier, 1977). Finally, learning disabled children may allow external events to affect their performance more than their personal skills do (Mindingall, Libb, and Welch, 1980). Professional investigations in the areas of motor performance, self-concept, and locus of control contain relevant information for educating children with learning disabilities.

#### Statement of the Problem

The purpose of this study was to investigate the relationship among motor performance, self-concept, and locus of control in 43 learning disabled children ages 9 to 12 in the Enid Public Schools, Enid, Oklahoma.

## Hypotheses

The following hypotheses were tested at the .05 level of significance:

Hypothesis 1. There will be no significant relationship between motor performance and self-concept in the learning disabled children.

Hypothesis 2. There will be no significant relationship between motor performance and locus of control in the learning disabled children.

Hypothesis 3. There will be no significant relationship between self-concept and locus of control in the learning disabled children.

## Delimitations

The study was subject to the following delimitations:

1. The sample included 43 upper-elementary learning disabled students, ages 9 to 12.

2. The motor performance level of the group was measured by the McCarron Assessment of Neuromuscular Development (MAND).

3. The self-concept of the group was measured by the Piers-Harris Children's Self-Concept Scale (CSCS).

4. The locus of control of the group was measured by the Children's Nowicki-Strickland Internal/External Scale (CNS-IE).

5. All subjects were classified as learning disabled in accordance with the laws governing special education in the state of Oklahoma.

6. All subjects were of normal intelligence as measured by an intelligence quotient score of at least 85.

## Limitations

The results of this study may be affected by the following

### Limitations:

1. The sample was not randomly selected.
2. Race, gender, and socioeconomic status were not controlled in the study.

### Assumptions

The following assumptions were made:

1. The children accurately met the criteria to be classified learning disabled.
2. A maximum effort was given by each child on the motor performance test.
3. The principal investigator was unbiased in the administration of the tests.

### Definitions

For the purpose of this study, the following definitions are provided:

1. Locus of Control. "The perception of a connection between one's action and the consequences" (Rotter, 1966, p. 2).
2. Internal Locus of Control. "The perception that the event is contingent upon his/her own behavior or his/her own relatively permanent characteristics" (Rotter, 1966, p. 1).
3. External Locus of Control. "The perception that a reinforcement follows some action of his/her own but not being entirely contingent upon his/her action" (Rotter, 1966, p. 1).
4. Self-Concept. "A relatively stable set of self-attributes reflecting both a description and an evaluation of one's own behavior and attributes" (Piers, 1984, p. 1).

5. Motor Performance.

The outcome of measures of motor skills that include fine motor tasks which involve small muscle systems of the fingers, hand, and arms, as well as gross motor tasks which involve large muscle systems of the legs and trunk (McCarron, 1982, p. 4).

6. Specific Learning Disability. This term is defined as

. . . a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, which may manifest itself in an imperfect ability to listen, think, speak, read, write, spell or to do mathematical calculations. The term includes such conditions as perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia. The term does not include children who have learning problems which are primarily the result of visual, hearing, or motor handicaps, of mental retardation, emotional disturbance, or of environmental, cultural or economic disadvantage (Oklahoma State Department of Education, 1991, p. 10).

## CHAPTER II

### LITERATURE REVIEW

A review of the literature to follow illustrated that: (1) some of the characteristics of learning disabled (LD) students have an effect on physical and motor performance, (2) positive self-concepts would be expected to be negatively correlated with learning difficulties, and (3) overall locus of control (LOC) orientation in LD children differs from nondisabled children.

#### Learning Disabilities and Motor Performance

While some LD children do not exhibit motor impairments or dysfunction, there are those LD children who display inadequate or inappropriate motor behavior (Haubenstricker, 1982). For instance, Bruininks and Bruininks (1977) compared the motor performance of 55 LD and 55 nondisabled students. Using a battery of motor skills tests, the authors concluded that the LD group performed significantly lower on measures of fine motor skills and on measures of gross motor skills when compared to the nondisabled group. Similar findings were described by Horvat (1990), who stated that LD children show motor deficits between gross motor tasks and chronological age. In addition to immature and substandard performance in motor skills, Haubenstricker (1982) and Wharry, Kirkpatrick, and Stokes (1987) have identified specific motor dysfunctions associated with learning disabilities. Those problems include: (1) dysrhythmia; and (2) deficits in coordination, balance, body image, haptic awareness, and

motor planning. Kendrick and Hanten (1980) compared 25 nondisabled eight-year-olds with 25 LD children of the same age on four tasks from the Devereaux Test of Extremity Coordination. Significant differences ( $p < .01$ ) in their abilities to repeat a finger opposition task and to control repeated tapping of the ball of the foot were found. Cratty (1972) also found that the LD have balance and agility problems.

LD children have difficulty acquiring and performing motor skills (Kendrick and Hanten, 1980; Bruininks, 1977). Kerr and Hughes (1987) used the Fitts Reciprocal Tapping Task to compare 16 LD children with a control group of 16 children. The data confirmed the tendency for the performance of LD subjects to reflect that of a lower developmental age. Motor development is a continuous, orderly process which essentially has the same sequence for all individuals; the rate of such development varies among individuals (Haubenstricker, 1982). Henry and Nelson (1972) have indicated that, while psychomotor skills increase as a function of age, the increments are not necessarily linear. Sherrill and Pyfer (1985) reviewed the data collected (Pyfer and Alley, 1978) on 253 LD children ages 3.5 to 15 years and the data (Pyfer, 1983) on an additional 116 children between the ages of 3.5 and 14 years. It was concluded that perceptual-motor skills, balance, and fine motor development plays a role in the motor performance ability of the LD.

Studies concerned with children classified as LD indicated that these children generally exhibit one or more syndromes of developmental disorders rather than an isolated, discrete disability (Haubenstricker, 1982). These children are often referred to as uncoordinated, awkward, or clumsy. Theorists maintain that lags in perceptual-motor functioning underlie many problems children have in learning academic material (Lerner, 1985; Ross, 1976).

## Learning Disabilities and Self-Concept

LD children have been shown to have a more negative or lower self-concept than their nondisabled counterparts (Martinek and Karper, 1982; Bryan and Pearl, 1979; Sheare, 1978; Rosenburg and Gaier, 1977). The low self-concept person has been conceptualized as disliking or devaluing him/herself, as well as seeing him/herself as not competent in dealing effectively with his/her environment (Cohen, 1959; Combs and Snygg, 1959). Inherent in low self-concept are expectations of failure (Sherrill, 1986).

Lecky (1945) identified the self-concept as the nucleus of the personality. There are several reasons to be concerned with the self-concepts of children with learning problems. Cooley and Ayres (1988) compared 46 LD students with 47 normally achieving students on self-concept and attributions made about academic successes and failures. Results from the Piers-Harris CSCS showed that overall LD students had lower self-concepts regarding intellectual and school status. Self-concept was correlated with ability effort attributions. Schunk (1984) stated that self-concept affects expectations and self-efficacy of the child faced with academic tasks. The self-concept of LD children is not improved by their academic underachievements (Wanat, 1983). The LD child's efforts to build a self-concept may be affected by their belief that they are powerless to influence their learning environment (Dudley-Marling, Snider, and Tarver, 1982).

Clinical reports (Griffiths, 1970) and parental reports (Bader, 1975) indicated that one characteristic shared by LD children is their low self-confidence and low self-concept. Silverman and Zigmond (1983) disputed this claim. Two separate studies were conducted using the



Piers-Harris CSCS. In the first study, 159 LD students from a large urban public school did not show a lowered self-concept when compared with a normal sample of subjects. In the second study, 10 urban, 10 suburban, and 10 rural LD students and 10 normally achieving students were used as subjects. The replication produced results similar to the original study. Self-concept scores for all the groups were unrelated to IQ or to academic status.

### Learning Disabilities and Locus of Control

LD children differ from nondisabled children in their locus of control (Bryan and Pearl, 1979). Research indicated that it is reasonable to hypothesize that LD children exhibit a more external LOC than average achieving children (Hallahan et al., 1978). The most consistent finding is the positive relationship between perceived failure and external LOC (Noland, Riggs, and Hall, 1987). In addition, LD children have been found to be more likely than normal achieving students to attribute their successes, but not their failures, to external factors, as can be seen in studies by Chapman and Boersma (1979), Dudley-Marling, Snider, and Tarver (1982), and Noland, Riggs, and Hall, 1987).

There are three dimensions of LOC: overall LOC orientation, LOC in academic versus general life situations, and LOC for success versus failure (Dudley-Marling, Snider, and Tarver, 1982). Fincham and Barling (1978), using the Nowicki-Strickland LOC scale, found that LD children scored more external than either average or gifted students.

Lawrence (1970) stated that locus of control generally follows a developmental pattern: "Young children tend to be externally oriented, with internal control developing as the child is more able to perceive the influence of his/her actions on events" (p. 2). Normally, feelings

of external control manifested by young children become progressively more internal as they mature (Nowicki and Strickland, 1973). The development of internality appears to be fundamental to education in a free society (Lawrence and Winschel, 1975). As children grow older and increase their experiential base, they develop beliefs about their competence and worth which may, in turn, change or further stabilize their beliefs about LOC (Gordon, 1977).

Information on LOC may be valuable in special education. There is evidence from the LOC literature that perceived control over one's environment can motivate action (Lefcourt, 1966; Rotter, Chance, and Phares, 1972). The creation of an environment conducive to the development of internality must begin with a setting in which the opportunity for success and failure are realistically available (Lawrence and Winschel, 1975).

#### Summary

Delayed motor performance, low self-concept, and external locus of control are all characteristics of LD children that may be different from those characteristics of normal achieving children, according to the stated literature.

## CHAPTER III

### METHODS AND PROCEDURES

The purpose of this study was to determine if significant relationships existed among motor performance, self-concept, and locus of control in elementary-age learning disabled children. Chapter III explains the selection of the subjects, instrumentation, collection of data, and the statistical analysis of data.

#### Subject Selection

The 43 subjects for this study were 9 to 12 year old learning disabled students from seven elementary schools in the Enid Public Schools, Enid, Oklahoma. The seven elementary schools included: Adams, Coolidge, Garfield, Glenwood, Harrison, Monroe, and Taft.

The Director of Personnel with the Enid Public Schools was contacted by the principal investigator for school approval to conduct the study (see Appendix A). Before this study was carried out, the Oklahoma State University Institutional Review board granted approval of the principal investigator's use of human subjects for this study (see Appendix B).

All of the children operationally defined as LD, ages 9 to 12, attending the Enid Public Schools were asked to participate in the study. Each potential subject was given a parental consent form prior to participation in this study which had to be signed by the parent or legal guardian (see Appendix C).

A total of 43 subjects participated in this study. Of the 43 subjects, 10 were 9 years old, 15 were 10 years old, 10 were 11 years old, and 8 were 12 years old. Testing dates, sites, and times were arranged by the principal investigator, each subject's LD teacher, and their regular education teacher to minimize potential embarrassment of the individual being removed from the classroom and to accommodate each child's schedule. The nature of the study was revealed to each participant prior to testing, and the child's assent was verbally given to the investigator.

#### Instrumentation

Three instruments were used in the study. The McCarron Assessment of Neuromuscular Development (MAND) was used to determine motor performance (McCarron, 1982). The MAND consists of five fine motor tasks and five gross motor tasks (see Appendix D). Each task has a scaled score. The sum of the scaled scores yielded each subject's Neuromuscular Development Index (NDI) score, which was used for comparison to the age appropriate normed score. The assessment was given one-on-one by the investigator, who adhered to the instructions for administration outlined in the MAND Manual. The information obtained described the overall neuromuscular development of the subject compared to the normed scores for specific ages.

Prior to the use of the Piers-Harris Children's Self-Concept Scale (CSCS), the author obtained the permission of the Western Psychological Services Publishing Company to use the instrument (see Appendix E). The CSCS was utilized for the assessment of each subject's overall self-concept. The author read aloud the 80 individual test items, repeating each item twice to the subjects. No time limits were imposed on the

subjects for completion of the self-report questionnaire. The author scored the tests using the appropriate score sheet provided by Western Psychological Services to obtain the total raw score for each subject. The Piers-Harris CSCS also includes six cluster scores. The cluster scores were calculated as described in the Piers revised manual (Piers, 1984). The six cluster scores included: (1) behavior, (2) intellectual and school status, (3) physical appearance and attributes, (4) anxiety, (5) popularity, and (6) happiness and satisfaction.

In addition to the MAND and the Piers-Harris, the Children's Nowicki-Strickland-Internal/External Scale (CNS-IE) was utilized to measure each subjects' general locus of control (see Appendix F). The CNS-IE consisted of a 40-item forced choice self-report questionnaire. The subjects responded by circling yes or no, identifying the answer with which they most often agreed. Each test item was read aloud to the subjects by the author and repeated twice. No time limits were imposed for the completion of the test. The principal investigator scored each scale by hand according to the Nowicki manual.

#### Methods and Procedures of Statistical Analysis

The Pearson Product Moment Correlation Coefficient was used to determine if significant relationships existed between motor performance and self-concept, motor performance and locus of control, and self-concept and locus of control. The .05 level of significance was established as the level of acceptance or rejection of the hypotheses. The statistical computations were carried out using the IBM SYSTAT computing program at Oklahoma State University.

## CHAPTER IV

### RESULTS AND DISCUSSION

This chapter has been organized to better facilitate the discussion of the statistical data relative to the stated hypotheses. Chapter IV is divided into the following sections: (1) statement of the results, (2) analysis of the hypothesis data, and (3) discussion of the results.

#### Statement of the Results

##### Motor Performance

A neuromuscular development index (NDI) was calculated for each subject according to the MAND Individual Profile. The NDI scores ranged from 58 to 119. Tables I through V show the NDI and MAND factor scores. The factor scores include: (1) persistent control, (2) muscle power, (3) kinesthetic integration, and (4) bimanual dexterity.

Overall, 7 of the 10 MAND tasks were found to be below normal. Figure 1 records the group average scaled scores of 10 MAND tasks. The tasks included: (1) beads in a box, (2) beads on a rod, (3) finger-tapping, (4) nut and bolt, (5) rod slide, (6) hand strength, (7) finger-nose-finger, (8) jumping, (9) heel-toe-heel, and (10) stand on one foot.

##### Self-Concept

The self-concept of each subject was determined by the Piers-Harris

TABLE I  
NEUROMUSCULAR DEVELOPMENT INDEX SCORES

Scores	Frequency
119	1
111	1
110	1
109	1
106	1
102	1
098	1
094	3
093	1
091	1
090	1
089	1
088	1
086	2
083	2
081	2
080	1
079	2
078	1
077	3
076	1
075	1
074	1
073	1
071	5
069	2
068	1
062	2
058	1

Note:  $\bar{X}$ =86.163, S. D.=14.288, N=43

CSCS. As can be seen in Table VI, the raw scores ranged from 15 to 76 and the percentiles ranged from the 1st to the 99th percentile.

TABLE II

## PERSISTENT CONTROL SCORES

Scores	Frequency
125	1
110	2
105	1
100	1
095	2
090	1
085	2
080	1
075	1
070	4
065	9
060	6
055	5
050	4
040	3

Note:  $\bar{X}=69.186$ , S.D.=  
19.998, N=43

TABLE III

## MUSCLE POWER SCORES

Scores	Frequency
145	1
135	1
125	2
120	1
115	1
110	7
105	2
100	5
095	4
090	5
085	5
080	5
070	3
065	1

Note:  $\bar{X}=97.093$ , S.D.=  
17.701, N=43

Using the conversion chart from the Piers (1984) manual, a T-score was given to convert the raw score and percentile ranking. The group test scores were as follows: raw score = 58, percentile = 63, and T-score = 53. Table VII shows the T-score ranges and descriptions from Piers (1984).



TABLE IV  
KINESTHETIC INTEGRATION SCORES

Scores	Frequency
140	1
115	1
105	1
100	3
095	1
090	3
085	7
080	5
075	3
070	5
065	3
060	1
055	3
050	3
045	2
040	1

Note:  $\bar{X}$ =76.628, S.D.=20.199,  
N=43

TABLE V  
BIMANUAL DEXTERITY SCORES

Scores	Frequency
140	1
135	2
130	1
125	1
120	2
115	3
110	4
105	5
100	6
095	4
090	5
085	3
080	2
075	2
070	1
060	1

Note:  $\bar{X}$ =100.930, S.D.=  
17.837, N=43

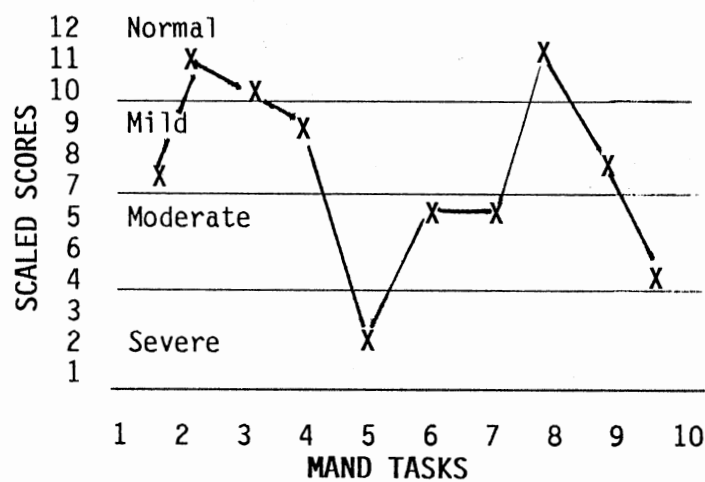


Figure 1. Group Profile on 10 MAND Tasks

TABLE VI  
RAW SCORES AND PERCENTILES OF SELF-CONCEPT

Raw Score	Frequency	Percentile	Frequency
76	1	99	1
75	2	98	2
74	2	97	2
73	3	96	3
71	2	94	2
69	2	91	2
68	1	89	1
67	1	87	1
65	3	82	3
64	2	79	2
63	1	77	1
61	1	71	1
60	1	69	1
59	1	66	1
57	1	60	1
57	1	57	2
56	2	55	2
55	2	55	2
54	2	52	2
53	1	49	1
52	2	46	2
51	1	44	1
42	1	23	1
40	3	20	3
38	1	17	1
37	1	15	1
35	1	13	1
21	1	02	1
15	1	01	1

Note:  $\bar{X}=57.605$ , S.D.=  
14.738, N=43

Note:  $\bar{X}=63.116$ , S.D.=  
30.544, N=43

TABLE VII  
T-SCORE RANGES AND DESCRIPTORS USED IN  
THE INDIVIDUAL REPORT

Total T-Score	Descriptor
Greater than 70	Very much above average
66-70	Much above average
61-65	Above average
56-60	Slightly above average
45-55	Average
40-44	Slightly below average
35-39	Below average
30-34	Much below average
Less than 30	Very much below average

Source: E. V. Piers, Piers-Harris Children's Self-Concept Scale (1984).

Cluster scores were calculated for each subject according to the Piers manual. Figure 2 shows the cluster score average of the group tested. The clusters are identified scales that reflect different aspects of self-concept: (1) behavior, (2) intellectual and school status, (3) physical appearance and attributes, (4) anxiety, (5) popularity, and (6) happiness and satisfaction.

#### Locus of Control

Locus of control for each subject was determined by scoring the CNS-IE scale. Table VIII shows the raw scores, the group mean score, and the group standard deviation (17 being an external score).

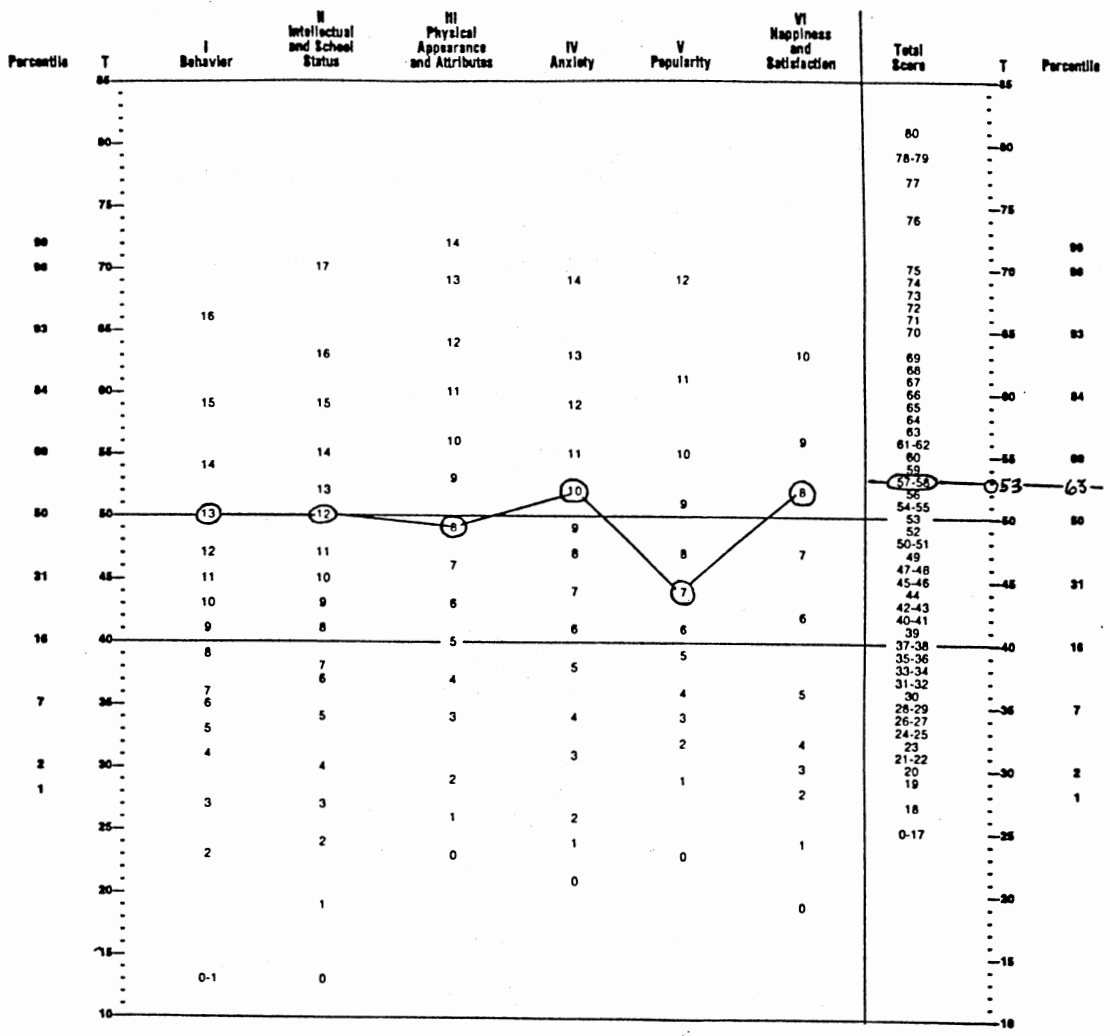


Figure 2. Cluster Scores Group Profile

TABLE VIII  
LOCUS OF CONTROL RAW SCORES

Scores	Frequency
29	1
27	1
25	1
22	1
21	3
20	1
19	2
18	1
17	7
16	3
15	3
14	3
13	1
12	3
11	4
10	3
08	3
07	1
06	1

Note:  $\bar{X}=15.256$ , S.D.=5.247,  
N=43

#### Analysis of Hypotheses Data

The Pearson r was used to determine if significant relationships existed among motor performance, self-concept, and locus of control in learning disabled children. Table IX shows that only self-concept and locus of control had a significant relationship. No significant relationships were obtained with regard to motor performance and self-concept or motor performance and locus of control.

TABLE IX  
CORRELATION MATRIX

	NDI	SC PCTILE	LOC
NDI	1.000		
SC PCTILE	.256	1.000	
LOC	-.210	-0.534 <sup>a</sup>	1.000

<sup>a</sup> = .29,  $p < .05$ ,  $df = 41$

Note: NDI=Neuromuscular Development Index, SC PCTILE=Self-Concept Percentile, LOC=Locus of Control

Age and Scores of Motor Performance,  
Self-Concept, and LOC

The LD children who participated in this study were from 9 to 12 years of age. Of the 43 subjects, 10 were age 9, 15 were age 10, 10 were age 11, and 8 were age 12. Table X reveals age group means of motor performance (MP), self-concept (SC), and locus of control (LOC).

Discussion

The data from the study revealed a significant negative relationship between self-concept and locus of control, with a higher self-concept associated with an internal locus of control. This finding concurred with findings of previous research by Fitch (1970), Fitts (1972), Heaton and Duerfeldt (1973), Strassburg and Robinson (1974), Gordon (1977), Kanoy, Johnson, and Kanoy (1980), and Gadzella, Williamson, and Ginther

(1985). These authors all reported that a higher self-concept is related to a more internal locus of control and a lower self-concept is related to a more external locus of control. The analysis of data with regard to motor performance and self-concept and motor performance and locus of control did not prove to have a significant relationship.

TABLE X  
AGE GROUP MEANS

Age	N	MP	SC	LOC
9	10	573	59	17
10	15	634	58	16
11	10	655	58	13
12	8	649	55	15

Previous research which indicated differences in motor performance with regard to self-concept included Humphrey (1976) and Finkral (1973), who provided evidence that psychomotor performance and its relationship to self-concept contributed to the total development of an individual. Karper (1986) and Martens (1971) noted that motor performance and locus of control have an effect on each other through training and reinforcers. It was interesting to note that although there may not be a relationship between motor performance and self-concept and motor performance and locus of control, Horvat (1990) explained that most characteristics of LD students have some effect on physical and motor performance.

The present study failed to confirm previous research findings which established a relationship between motor performance and self-concept and motor performance and locus of control. Self-report measures have been criticized because they may reflect a desire to present oneself in a desirable light. Another possible explanation for these differences may pertain to the methods used for determining LD status. The present study used children currently placed in the LD resource program by the Enid Public School System.

In summary, it appeared that LD children have personality characteristics that are correlated with each other. In general, positive self-concepts are negatively correlated with an external locus of control.



## CHAPTER V

### SUMMARY, FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

This chapter contains a summary of the study, the findings derived from the analysis of the data collected, conclusions, and recommendations for further study.

#### Summary

The primary purpose of this study was to determine if significant relationships existed between motor performance and self-concept, motor performance and locus of control, and self-concept and locus of control in elementary-aged learning disabled children. Motor performance was determined by scores obtained from the MAND. Self-concept was determined from values obtained from the Piers-Harris. Locus of Control was determined by scores obtained from the CNSIE. A total of 43 subjects (11 female and 32 male) who were enrolled in the Enid Public Schools were administered the MAND, the Piers-Harris, and the CNS-IE.

#### Findings

The data collected in this study were analyzed and yielded the following findings:

Hypothesis 1. There will be no significant relationships between motor performance and self-concept in the learning disabled children

tested. Hypothesis one was accepted, as there was no significant relationship in scores of motor performance with regard to self-concept.

Hypothesis 2. There will be no significant relationships between motor performance and locus of control in the learning disabled children tested. Hypothesis two was accepted, as there was no significant relationship in scores of motor performance with regard to locus of control.

Hypothesis 3. There will be no significant relationships between self-concept and locus of control in the learning disabled children tested. Hypothesis three was rejected, as a significant negative relationship existed in self-concept with regard to locus of control.

### Conclusions

Results of the analysis indicated that LD children had relatively mild motor performance disabilities, average self-concepts, and average locus of control for their age group. Locus of control and self-concept were found to be negatively related; the lower the self-concept, the more external the locus of control was, and vice versa. Motor performance was found to be unrelated to either.

### Recommendations

The literature contained many studies of self-concept and locus of control, yet few of these dealt with learning disabled children and motor performance. In review of the methods, procedures, and results of this study, the author believes the following recommendations to be in order:

1. The sample group tested should be expanded to include 8 to 13 year olds. This would allow for a greater number in the sample for analysis.

2. The sample group should be selected so as to include approximate equal numbers of male and female subjects.

3. The sample group should be expanded to include subjects with other learning problems such as the educable mentally handicapped.

4. The study should be replicated using older subjects (ages 14-18) for comparison.

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APPENDIXES



**APPENDIX A**

**LETTER FOR SCHOOL PARTICIPATION AND  
APPROVAL**

March 22, 1991

Mr. S. N. Jenkins  
Director of Personnel  
Enid Public Schools  
Enid, OK 73701

Dear Mr. Jenkins:

This letter is a solicitation for your elementary school learning disabled students ages 9 to 12 to participate in a research project I am planning to conduct this Spring, 1991. Due to your position as the Personnel Director, and as a recognized leader in education, I am earnestly interested in your involvement in this project. This particular study investigates motor performance, self-concept, and locus of control as they relate to each other. The results of this research will have implications for adapted physical education and/or regular physical education programming for the learning disabled child.

Participation in this study will require parental consent (see enclosed letter). Enclosed you will also find a copy of all three tests to be administered: the McCarron Assessment of Neuromuscular Development (MAND), the Piers-Harris Children's Self-Concept Scale (CSCS), and the Children's Nowicki-Strickland Internal/External Locus of Control Scale (CNS-IE). The CNS-IE and the CSCS are paper and pencil tests and can be given to a group, while the MAND is a motor skills test that will be given individually to each subject. The entire battery of tests will take approximately one hour per child to complete. I plan to make on-site visitations to do the assessments, unless other arrangements can be made. The children's names will not be used during the discussion or subsequent publication of the results.

I appreciate your consideration in this research endeavor. A response by March 29, or as soon as possible, would facilitate my Spring plans. I am confident that research is an integral part of the ongoing body of knowledge from which educators can assist the learning disabled child in the educational process.

Sincerely,

Susan K. McEachern

March 29, 1991

Dr. Steve Edwards  
Colvin P.E. Center  
School of Health/PE  
Stillwater, OK 74078-0616

To Whom It May Concern:

One of your graduate students, Susan K. McEachern, has requested permission to conduct a research project with learning disabled children in the Enid Public Schools.

She has submitted that proposal to the Director of Special Education, Colleen Nixon, and to our Personnel Office for approval. In addition, she discussed the project with Myles Yoes, the school psychologist.

We grant approval as outlined in Susan's proposal.

Sincerely,

S. N. Jenkins  
Director of Personnel

**APPENDIX B**

**INSTITUTIONAL REVIEW BOARD APPROVAL**

OKLAHOMA STATE UNIVERSITY  
 INSTITUTIONAL REVIEW BOARD  
 FOR HUMAN SUBJECTS RESEARCH

Proposal Title: The Relationship of Motor Performance, Self-Concept,  
and Locus of Control in Learning Disabled Children

Principal Investigator: Lynne Heilbuth/Susan K. McEachern

Date: April 3, 1991 IRB # ED-91-029

-----  
 This application has been reviewed by the IRB and

Processed as: Exempt  Expedite  Full Board Review   
 Renewal or Continuation

Approval Status Recommended by Reviewer(s):


Approved  Deferred for Revision   
 Approved with Provision  Disapproved

Approval status subject to review by full Institutional Review Board at  
 next meeting, 2nd and 4th Thursday of each month.

-----  
 Comments, Modifications/Conditions for Approval or Reason for Deferral or  
 Disapproval:

The reviewers have posed the following questions:

1. You will need to get the child's assent to participate. If the child does not wish to participate, even though the parents have signed the the consent form, the child does not have to participate.
2. It may be of additional reassurance to parents if the researcher would indicate just who will have access to data concerning their children. This could be easily dealt with by way of an additional comment on the informed consent form.
3. It is not indicated how the data will be collected from the participants. Will they be taken out of classes to complete forms, tests, etc.? If so, does this protocol create a potential for embarrassment or other negative type attention for an already "different" group of individuals?

Signature: 

Chair of Institutional Review Board

Date: April 18, 1991

APPENDIX C

INFORMED CONSENT LETTER

Dear Parent/Guardian:

A research project, with the approval of the Enid Public School System and the Oklahoma State University Institutional Review Board, will be conducted by Susan McEachern, a Master of Science degree candidate in Health, Physical Education, and Leisure Sciences at Oklahoma State University. The project will investigate the relationships among motor performance, self-concept, and perceived locus of control of learning disabled children. The research may help educators improve physical education programming to meet the individual strengths and needs of the learning disabled child. The project will be directed by Dr. Steve Edwards, Dr. Lynne Heilbuth, and Dr. Betty Edgley, faculty members at Oklahoma State University.

All of the children ages 9 to 12 identified as learning disabled will be asked to participate in the study. For the purposes of the study, we are asking permission to administer three tests. Two of the tests are self-report questionnaires; the third test is a motor skills assessment. Participation in this study will be completely voluntary. A copy of each test is on file with your child's teacher if you wish to preview them. The tests are the following:

- a. The Piers-Harris Self Concept Scale
- b. The Children's Nowicki-Strickland Locus of Control
- c. The McCarron Assessment of Neuromuscular Development

The testing will take approximately one hour to complete. Two 30-minute sessions will be arranged with the child's teacher to ensure that your child will not miss any necessary classwork. Every effort will be made to make the testing procedure a positive experience.

In the discussion of this project or its results, the children's names will remain anonymous and will be kept confidential. The findings will be used for educational purposes only.

Please sign the attached consent form and return it to your child's teacher.

Sincerely,

Susan McEachern  
Graduate Assistant  
Oklahoma State University

Stanley Jenkins  
Director of Personnel  
Enid Public Schools

## INFORMED CONSENT STATEMENT

Study Title: The Relationship Among Motor Performance, Self-Concept, and Locus of Control in Learning Disabled Children

Researchers: Lynne Heilbuth, Ph.D. (Principal Adviser) and Susan McEachern, B.S.

I, (print name) \_\_\_\_\_, hereby authorize or direct Susan McEachern (or associates or assistants of her choosing) to perform the following procedures listed here:

- A. Purpose. This study is designed to investigate the relationship among motor performance, self-concept, and locus of control in elementary aged learning disabled children.
- B. Procedures. In participating in this study, your child will be asked to do the following things:
  1. Complete a questionnaire relating to self-concept.
  2. Complete a questionnaire relating to locus of control (locus of control is the extent to which people believe they are responsible for their behavioral outcomes).
  3. Complete a motor performance assessment of gross and fine motor skills.
- C. Duration of Participation. Your child's participation will require one hour.
- D. Confidentiality. All information your child provides will be kept confidential. Data from this research, including questionnaires, will be kept in a secure place. Results from this study may be presented at professional meetings or in publications. Your child's anonymity, however, will be preserved.
- E. Risks. The risks in this study are minimal and do not exceed those ordinarily encountered in daily life.
- F. Benefits. As a research participant, your child will be aiding special populations/physical education research and may reap the benefits of improved physical education programming for special needs students. Through research like this, assessments and programming can be utilized to help learning disabled children with social, emotional, and psychomotor difficulties.



I have been fully informed about the procedures listed here. I am also aware of what my child will be asked to do and of the risks and benefits of this study. I also understand the following statements:

I am the parent or legal guardian of the child who will participate in this study.

My child's participation is part of an investigation entitled, "The Relationship of Motor Performance, Self-Concept, and Locus of Control in Learning Disabled Children."

I understand that participation is voluntary, that there is no penalty for refusal to participate, and that I am free to withdraw my consent and my child's participation in this project at any time without penalty.

I understand that I may contact any of the researchers at the following address and telephone number, should I desire to discuss my child's participation in this study and/or request information pertaining to the study's outcome: Research Services, 001 Life Sciences East, Oklahoma State University, Stillwater, Oklahoma, 74078, (405) 744-5700.

I have read and fully understand the consent form. I sign it freely and voluntarily. A copy of this form has been given to me. I hereby give permission for my child's participation.

---

Signature of Parent/Guardian

---

Date

---

Child's Name

APPENDIX D

MCCARRON ASSESSMENT OF NEUROMUSCULAR  
DEVELOPMENT

**MCCARRON ASSESSMENT OF NEUROMUSCULAR DEVELOPMENT  
SCORE SHEET**

Name \_\_\_\_\_ Male \_\_\_\_\_ Female \_\_\_\_\_  
 Age: \_\_\_\_\_ Years \_\_\_\_\_ Months Preferred Hand: Right \_\_\_\_\_ Left \_\_\_\_\_

1. **Beads in Box** (number placed in 30 seconds) Right \_\_\_\_\_ + Left \_\_\_\_\_ = Score  **Raw Score**

2. **Beads on Rod** (use cylinders only) (number placed in 30 seconds)  
 Eyes Open \_\_\_\_\_  
 Eyes Closed \_\_\_\_\_  
 Total = \_\_\_\_\_ (O + C) Score

3. **Finger Tapping** (use score sheet) Right \_\_\_\_\_ + Left \_\_\_\_\_ = Score

4. **Nut and Bolt** (number of seconds to complete task)  
 100 - \_\_\_\_\_ (Large) = \_\_\_\_\_  
 100 - \_\_\_\_\_ (Small) = \_\_\_\_\_  
 Total = \_\_\_\_\_ (L + S) Score

5. **Rod Slide** (use score sheet) Right \_\_\_\_\_ + Left \_\_\_\_\_ = Score   
**Fine Motor Total**

6. **Hand Strength** (dynamometer grip) (Best of two trials with each hand) Right \_\_\_\_\_ + Left \_\_\_\_\_ = Score

7. **Finger-Nose-Finger** (use score sheet)  
 Eyes Open \_\_\_\_\_  
 Eyes Closed \_\_\_\_\_  
 Total = \_\_\_\_\_ (O + C) Score

8. **Jumping** (use score sheet) Score

9. **Heel-Toe-Walk** (use score sheet) Score

10. **Standing on One Foot** (number of seconds up to 30)  
 Eyes Open Right \_\_\_\_\_ Left \_\_\_\_\_ = \_\_\_\_\_  
 Eyes Closed Right \_\_\_\_\_ Left \_\_\_\_\_ = \_\_\_\_\_  
 Total = \_\_\_\_\_ Score

**Gross Motor Total**   
**Total**

HAND PREFERENCE, LATERALITY AND FATIGUE INDICES													
Subtest	RIGHT		Subtest	LEFT		Subtest	% DIFFERENCE*		Trial	RIGHT		LEFT	
	Raw	Scaled		Raw	Scaled		Raw	Scaled		Raw	Scaled	Raw	Scaled
RBB			LBB			BB			1				
RFT			LFT			FT			2				
RHS			LHS			HS			3				
Σ SCALED			Σ SCALED			Σ DIFF			4				
M SCALED			M SCALED			M DIFF			5				
RIGHT HPI			LEFT HPI			HPI DIFF				RFI		LFI	
*RIGHT PREFERRED: (R-L)/R													
*LEFT PREFERRED: (L-R)/L													

APPENDIX E

CHILDREN'S SELF-CONCEPT SCALE

## CHILDREN'S SELF-CONCEPT SCALE

- |  |  |
|--|--|
| 1. My classmates make fun of me .....yes no                      | 21. I am good in my school work .....yes no                    |
| 2. I am a happy person .....yes no                               | 22. I do many bad things .....yes no                           |
| 3. It is hard for me to make friends .....yes no                 | 23. I can draw well .....yes no                                |
| 4. I am often sad .....yes no                                    | 24. I am good in music .....yes no                             |
| 5. I am smart .....yes no  | 25. I behave badly at home .....yes no                         |
| 6. I am shy .....yes no  | 26. I am slow in finishing my school work .....yes no          |
| 7. I get nervous when the teacher calls on me .....yes no        | 27. I am an important member of my class .....yes no           |
| 8. My looks bother me .....yes no                                | 28. I am nervous .....yes no                                   |
| 9. When I grow up, I will be an important person .....yes no     | 29. I have pretty eyes .....yes no                             |
| 10. I get worried when we have tests in school .....yes no       | 30. I can give a good report in front of the class .....yes no |
| 11. I am unpopular .....yes no                                   | 31. In school I am a dreamer .....yes no                       |
| 12. I am well behaved in school .....yes no                      | 32. I pick on my brother(s) and sister(s) .....yes no          |
| 13. It is usually my fault when something goes wrong .....yes no | 33. My friends like my ideas .....yes no                       |
| 14. I cause trouble to my family .....yes no                     | 34. I often get into trouble .....yes no                       |
| 15. I am strong .....yes no                                      | 35. I am obedient at home .....yes no                          |
| 16. I have good ideas .....yes no                                | 36. I am lucky .....yes no                                     |
| 17. I am an important member of my family .....yes no            | 37. I worry a lot .....yes no                                  |
| 18. I usually want my own way .....yes no                        | 38. My parents expect too much of me .....yes no               |
| 19. I am good at making things with my hands .....yes no         | 39. I like being the way I am .....yes no                      |
| 20. I give up easily .....yes no                                 | 40. I feel left out of things .....yes no                      |

- |   |     |    |  |     |    |
|---|-----|----|--|-----|----|
| 41. I have nice hair .....                                | yes | no | 61. When I try to make something, everything seems to go wrong ..... | yes | no |
| 42. I often volunteer in school .....                     | yes | no | 62. I am picked on at home .....                                     | yes | no |
| 43. I wish I were different .....                         | yes | no | 63. I am a leader in games and sports .....                          | yes | no |
| 44. I sleep well at night .....                           | yes | no | 64. I am clumsy .....  | yes | no |
| 45. I hate school .....                                   | yes | no | 65. In games and sports, I watch instead of play .....               | yes | no |
| 46. I am among the last to be chosen for games .....      | yes | no | 66. I forget what I learn .....                                      | yes | no |
| 47. I am sick a lot .....                                 | yes | no | 67. I am easy to get along with .....                                | yes | no |
| 48. I am often mean to other people .....                 | yes | no | 68. I lose my temper easily .....                                    | yes | no |
| 49. My classmates in school think I have good ideas ..... | yes | no | 69. I am popular with girls .....                                    | yes | no |
| 50. I am unhappy .....                                    | yes | no | 70. I am a good reader .....   | yes | no |
| 51. I have many friends .....                             | yes | no | 71. I would rather work alone than with a group .....                | yes | no |
| 52. I am cheerful .....                                   | yes | no | 72. I like my brother (sister) .....                                 | yes | no |
| 53. I am dumb about most things .....                     | yes | no | 73. I have a good figure .....                                       | yes | no |
| 54. I am good-looking .....                               | yes | no | 74. I am often afraid .....  | yes | no |
| 55. I have lots of pep .....                              | yes | no | 75. I am always dropping or breaking things .....                    | yes | no |
| 56. I get into a lot of fights .....                      | yes | no | 76. I can be trusted .....   | yes | no |
| 57. I am popular with boys .....                          | yes | no | 77. I am different from other people .....                           | yes | no |
| 58. People pick on me .....                               | yes | no | 78. I think bad thoughts .....                                       | yes | no |
| 59. My family is disappointed in me .....                 | yes | no | 79. I cry easily .....   | yes | no |
| 60. I have a pleasant face .....                          | yes | no | 80. I am a good person .....   | yes | no |

January 3, 1991

Publishers and Distributors  
Piers-Harris Children's Self Concept Scale  
Western Psychological Services  
12031 Wilshire Blvd.  
Los Angeles, CA 90025

To Whom It May Concern:

In mid-December, Susan McEachern contacted your office concerning the use of the Piers-Harris Children's Self Concept Scale in her masters thesis. As a follow-up to that telephone contact, we submit this letter to document the appropriate use of the test instrument.

The following order and enclosed check cover the required needs for the study.

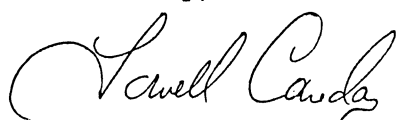
Item	Quantity	Price	Total
Test Booklet W-180 a	2	9.25	\$18.50
Scoring Key W-180 b	1	12.70	12.70
Manual W-180 c	1	37.00	37.00
Subtotal			68.20
Postage and Handling @ 10%			6.82
Total			\$75.02

Oklahoma State University requires all research projects using human subjects to be approved in process and design through the Institutional Review Board. This study will be submitted for review by the Board and will be administered under the direct supervision of a three member faculty committee. No scoring data will be personally identifiable. Each study participant will be informed of the purpose and process of the study prior to participation and parental consent will be required for inclusion of under-age children in the study.

In all written results of the study, including the thesis and any articles which may ensue from the study, proper citation and credit will be given for the test developers and publishers.

If you have any questions concerning this study, please feel free to contact either Susan McEachern or Lowell Caneday. We appreciate your prompt response to our order for the test material.

Sincerely,



Lowell Caneday, Ph.D.  
Associate Professor



Susan McEachern  
Principal Investigator

## MEMORANDUM

Date: January 4, 1991

To: Publisher of the Piers-Harris Self-Concept Scale

From: Steven W. Edwards, Ph.D.

Re: Supervision of Ms. Susan McEachern

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Ms. McEachern is conducting a study which uses the Piers-Harris Self-Concept Scale and I will be supervising her research. I have experience in psychometrics and I am a member of the American Psychological Association (Member #6017-0263). Ms. McEachern will be adhering to the standards of the A.P.A. regarding the use of this psychological assessment.

Please feel free to contact me if you have questions regarding this matter. (Phone: (405) 744-5500).



APPENDIX F

CHILDREN'S NOWICKI-STRICKLAND INTERNAL/  
EXTERNAL LOCUS OF CONTROL SCALE

Directions: Circle the appropriate answer as it applies to you.

- |     |    |     |  |
|-----|----|-----|--|
| Yes | No | 1.  | Do you believe that most problems will solve themselves if you just don't fool with them?                        |
| Yes | No | 2.  | Do you believe that you can stop yourself from catching a cold?  |
| Yes | No | 3.  | Are some kids just born lucky?   |
| Yes | No | 4.  | Most of the time do you feel that getting good grades means a great deal to you?                                 |
| Yes | No | 5.  | Are you often blamed for things that just aren't your fault?   |
| Yes | No | 6.  | Do you believe that if somebody studies hard enough he or she can pass any subject?                              |
| Yes | No | 7.  | Do you feel that most of the time it doesn't pay to try hard because things never turn out right anyway?         |
| Yes | No | 8.  | Do you feel that if things start out well in the morning that it's going to be a good day no matter what you do? |
| Yes | No | 9.  | Do you feel that most of the time parents listen to what their children have to say?                             |
| Yes | No | 10. | Do you believe that wishing can make things happen?  |
| Yes | No | 11. | When you get punished does it usually seem its for no good reason at all?  |
| Yes | No | 12. | Most of the time do you find it hard to change a friend's (mind) opinion?  |
| Yes | No | 13. | Do you think that cheering more than luck helps a team to win?   |
| Yes | No | 14. | Do you think that it's nearly impossible to change your parent's mind about anything?                            |
| Yes | No | 15. | Do you believe that your parents should allow you to make most of your decisions?                                |

- Yes No 16. Do you feel that when you do something wrong there's very little you can do to make it right?
- Yes No 17. Do you believe that most kids are just born good at sports?
- Yes No 18. Are most of the other kids your age stronger than you are?
- Yes No 19. Do you feel that one of the best ways to handle most problems is just not to think about them?
- Yes No 20. Do you feel that you have a lot of choice in deciding who your friends are?
- Yes No 21. If you find a four leaf clover do you believe that it might bring you good luck?
- Yes No 22. Do you often feel that whether you do your homework has much to do with what kind of grades you get?
- Yes No 23. Do you feel that when a kid your age decides to hit you, there's little you can do to stop him or her?
- Yes No 24. Have you ever had a good luck charm?
- Yes No 25. Do you believe that whether or not people like you depends on how you act?
- Yes No 26. Will your parents usually help you if you ask them to?
- Yes No 27. Have you felt that when people were mean to you it was usually for no reason at all?
- Yes No 28. Most of the time, do you feel that you can change what might happen tomorrow by what you do today?
- Yes No 29. Do you believe that when bad things are going to happen they are going to happen no matter what you try to do to stop them?
- Yes No 30. Do you think that kids can get their own way if they just keep trying?

- Yes No 31. Most of the time do you find it useless to try to get your own way at home?
- Yes No 32. Do you feel that when good things happen they happen because of hard work?
- Yes No 33. Do you feel that when somebody your age wants to be your enemy there's little you can do to change matters?
- Yes No 34. Do you feel that it's easy to get friends to do what you want them to?
- Yes No 35. Do you usually feel that you have little to say about what you get to eat at home?
- Yes No 36. Do you feel that when someone doesn't like you there's little you can do about it?
- Yes No 37. Do you usually feel that it's almost useless to try in school because most other children are just plain smarter than you are?
- Yes No 38. Are you the kind of person who believes that planning ahead makes things turn out better?
- Yes No 39. Most of the time, do you feel that you have little to say about what your family decides to do?
- Yes No 40. Do you think it's better to be smart than to be lucky?

VITA

Susan K. McEachern

Candidate for the Degree of

Master of Science

**Thesis:** THE RELATIONSHIP AMONG MOTOR PERFORMANCE, SELF-CONCEPT, AND LOCUS OF CONTROL IN LEARNING DISABLED CHILDREN

**Major Field:** Health, Physical Education and Leisure

**Area of Specialization:** Adapted Physical Education

**Biographical:**

**Personal Data:** Born in Oceanside, California, October 18, 1963, the daughter of Delwin "Dink" and Patricia J. McEachern.

**Education:** Graduated from Garber High School, Garber, Oklahoma, in May, 1981; received Bachelor of Science Degree in Secondary Education at Oklahoma State University in May, 1986; completed requirements for Master of Science degree at Oklahoma State University in December, 1991.

**Professional Experience:** Health and Physical Education, Graebner Elementary School, San Antonio, Texas, 1986-88; Physical Education and Adapted Physical Education, Harmony, Elementary School, San Antonio, Texas, 1988-89; Graduate Teaching Assistant, Oklahoma State University, 1989-1991; Consultant Teacher, Perry Elementary, Perry, Oklahoma, 1989-90; Entry-Year Teaching Committee Oklahoma State University, 1990-91.

**Presentations:** "Teaching Children With Individual Differences in Regular Physical Education," Oklahoma Association for Health, Physical Education, Recreation, and Dance State Convention, Oklahoma City, Oklahoma, October, 1989.

**Professional Organizations:** Oklahoma Association for Health, Physical Education, Recreation, and Dance; Oklahoma Adapted Physical Education Task Force; Phi Epsilon Kappa; American Alliance for Health, Physical Education, Recreation, and Dance.