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# The Relationship between the Cognitive Style of Field Independence/Field Dependence and the Visual Selective Attention Abilities in Kindergarten Children

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THE RELATIONSHIP BETWEEN THE COGNITIVE STYLE OF FIELD INDEPENDENCE/  
FIELD DEPENDENCE AND THE VISUAL SELECTIVE ATTENTION  
ABILITIES IN KINDERGARTEN CHILDREN

THESIS

Submitted to the Graduate Committee of the  
Department of Curriculum and Instruction  
Faculty of Education  
State University College at Brockport  
in Partial Fulfillment of the  
Requirements for the Degree of  
Master of Science in Education

by

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## Abstract

This study investigated the relationship between visual selective attention and the cognitive style of field independence/dependence in 20 kindergarten children.

The students were given a visual selective attention task to determine which students were in the visual selective attention stage. Two groups of ten students each were formed; those students who were in the visual selective attention stage and those who were not. Next, students from both groups were given the Children's Embedded Figures Test (CEFT) to determine field independence/dependence.

Results were correlated using the Pearson Product Moment Correlation. Visual selective attention and field independence/dependence were found to be significantly correlated ( $r = .633$ ;  $p = .01$ ). The  $r^2$  was .400 showing that 40% of the variation on the visual attention task is shared by the CEFT. Implications for future research and classroom practice were discussed.

## Table of Contents

	Page
List of Tables . . . . .	iii
Chapter	
I. Statement of the Problem . . . . .	1
Purpose . . . . .	1
Need for the Study . . . . .	1
Definition of Terms . . . . .	2
Limitations of the Study . . . . .	3
Summary . . . . .	3
II. Review of the Literature . . . . .	5
Purpose . . . . .	5
Cognitive Style . . . . .	5
Field Independence/Dependence and Reading . . . . .	7
Visual Selective Attention . . . . .	10
Visual Selective Attention and Reading . . . . .	11
Summary . . . . .	15
III. The Research Design . . . . .	16
Purpose . . . . .	16
Methodology . . . . .	16
IV. Analysis of the Data . . . . .	19
Findings and Interpretations . . . . .	19
Summary . . . . .	22
V. Conclusions and Interpretations . . . . .	23
Conclusions . . . . .	23
Implications for Further Research . . . . .	24
Implications for the Classroom . . . . .	25
References . . . . .	27

List of Tables

Table	Page
1. Subject Performance Scores on the Visual Selective Attention Task and the <u>Children's Embedded Figures Test</u> (CEFT) . . . . .	21

## Chapter I

### Statement of the Problem

#### Purpose

The purpose of this study was to determine if there is a significant relationship between visual selective attention and the cognitive style of field independence/dependence in a select group of kindergarten children. The following questions were examined:

1. Is there a statistically significant relationship between field dependence/independence and visual selective attention in a group of kindergarten children?

2. Is there a statistically significant relationship between field dependence/independence and visual selective attention in boys in a group of kindergarten children?

3. Is there a statistically significant relationship between field dependence/independence and visual selective attention in girls in a group of kindergarten children?

#### Need for the Study

Much research has investigated the relationship between field dependence/independence and reading achievement (Conoley, 1977; Daku, 1978). Few studies have looked closely at the visual processes actually measured by tests for field dependence/independence. One skill which might be tapped on these tests is the developmental skill of visual selective attention. The ability to attend selectively is

considered to be a prerequisite for perceptual learning, a process thought to be especially important in beginning reading (Gibson & Levin, 1976).

Many visual selective attention researchers have investigated the component of distinctive feature analyses in beginning reading (Samuels, 1971; Samuels & Jeffrey, 1966). Children must be able to selectively attend to relevant features such as wholeness and directionality of letters like d, p, b; rather than compelling irrelevant stimuli such as the size or color of the letters. Goldstein and Blackman (1978) have stated that persons high in field independence are selective in attention, but the distinction between the two (that is, field independence and selective attention) is unclear.

It would seem then, that closer examination of the relationship between field dependence/independence and visual selective attention is essential. Research has shown field independence to be closely related to reading achievement (Conoley, 1977; McDaniel, 1973; Watson, 1969), but field dependent children also learn to read. The question would then be, are field dependent readers effectively using selective attention? Further research is needed to determine if there is a relationship between field dependence/independence and visual selective attention.

#### Definition of Terms

Related terms of importance are defined as follows:

Cognitive style - refers to the manner in which an individual cognitively organizes his/her environment (Goldstein & Blackman, 1978).



It is a psychological construct which represents consistencies in an individual's manner of acquiring and processing information.

Field independence - the degree of ability to separate an item from the context in which it occurs (Witkin, Lewis, Hartzman, Manchover, Meissner & Wapner, 1972). A person who is field independent is more analytical, and tends to be more internally oriented (Pultz, 1979).

Field dependence - the degree of dependence on the structure of the prevailing field (Witkin et al., 1972). A person who is field dependent is more sociable in nature and tends to passively conform to the prevailing field or context.

Selective attention - the ability to select among the stimuli and to attend to one, or a limited number of stimuli at one time (Cuccu, 1978).

#### Limitations of the Study

This study was limited to selective attention in the visual area and the cognitive style dimension of field dependence/independence in twenty kindergarten students in a suburban school.

#### Summary

Research is inconclusive in stating the relationship or differentiation between visual selective attention and field dependence/independence. It was questioned whether field dependent children were in the visual selective attention state, and was there a need to develop their visual selective attention abilities before beginning formal reading instruction. This study examined the relationship between the cognitive

style of field dependence/independence and the visual selective attention abilities in kindergarten children. The results were analyzed and the importance of visual selective attention in beginning reading was studied.

## Chapter II

### Review of the Literature

#### Purpose

The relationship between the cognitive style of field dependence/independence and visual selective attention was examined in this study. This chapter is divided into four sections: the first, a general discussion of cognitive style (in particular, the field dependent/independent dimension); second, a review of research examining the relationship between field dependence/independence and reading ability; third, a discussion of research related to visual selective attention; and finally, a review of research related to visual selective attention and reading ability.

#### Cognitive Style

Cognitive style refers to the way an individual filters and processes stimuli from the environment, so that it takes on psychological meaning. Goldstein and Blackman (1978) postulate that an individual responds to his cognitive construct of the environment rather than objective reality. One dimension of cognitive style that has been extensively investigated and is of interest to educators is the construct of field dependence/independence (FD/FI).

The original studies concerning FD/FI were developed to determine how individuals orient themselves in space or how they perceive the

upright (Witkin, Lewis, Hartzman, Manchover, Meissner, & Wapner, 1954/1972). The subject was required to judge the position of an item, such as a rod or his body, in a field and adjust it to the true vertical. The subject used the visual field cues surrounding him or kinesthetic cues from the pull of gravity on his body to determine uprightness. The Rod and Frame Test (RFT) (Witkin et al., 1954/1972) and the Body Adjustment Test (BAT) were used to assess the degree of FD/FI. The RFT consists of a luminous rod within a luminous frame in a completely darkened room. The subject's task is to adjust the rod to the true vertical when the rod and frame are tilted in the same and opposite directions. The BAT consists of the seated subject being required to adjust a tilted chair in a tilted room to the true vertical. Ragan (1979) states that:

these techniques accomplished essentially the same thing: that is, they change the usual relationship between an individual's visual and kinesthetic cues. It was this study of the conflict between the cues that uncovered wide individual differences in the way individuals perceive. Some individuals relied primarily on the visual field to judge uprightness while others used primarily impressions from their body to make their judgements. Of further importance was the fact that an individual is self consistent with regards to this test; that is, one's degree of reliance on either body or visual field remained constant across all the tests (Witkin et al., 1954/1972). It was this dependence on the visual field that resulted in formulation of the perceptual constructs of field independence and field dependence. (p. 4)

Later studies investigated whether these self-consistencies carried over into other perceptual situations not involving determination of the true vertical. A new task, the Embedded Figures Test (EFT) (Witkin et al., 1954/1972), was developed which required the subject

to find a simple geometric figure embedded in a complex pattern in as little time as possible. This FI/FD dimension was described as involving a perceptual analytical ability which is apparent throughout a person's perceptual functioning and therefore constitutes his "perceptual style." These styles are considered relative because the FI/FD dimension is a continuum with individuals placed somewhere between the extremes.

As Witkin explored the intellectual domain he found consistencies in the way FI/FD persons approached problem solving tasks and in 1962 he renamed his perceptual styles, cognitive styles. FI individuals were found to be more analytical, and interacted more actively with their environment. FD individuals tended to be more global in their interaction with the environment, accepting it "as is" with little structuring abilities in both perceptual and intellectual activities (Witkin, Oltman, Raskin, & Karp, 1971).

#### Field Independence/Dependence and Reading

Cohn (1968) examined the relationship between FI/FD and reading comprehension. The study used 123 sixth graders and found FI to be significantly correlated to reading comprehension. It was concluded that FI was related to those aspects of reading comprehension that relied upon new cognitive activity rather than experience or outside authority.

Pultz (1979) also found significant positive relationships between FI/FD and several targeted reading skills in 18 college students. FI/FD, as measured by Group Embedded Figures Test was correlated significantly with retention ( $r = .660$ ), skimming and scanning ( $r = .564$ ),

comprehension ( $r = .525$ ), words in isolation ( $r = .700$ ), completion of cloze passages with exact fill-ins ( $r = .781$ ), and number of spaces left blank on cloze passages ( $r = .719$ ).

Conoley (1977) examined differences in cognitive style and visual motor ability in 89 fourth grade students divided into groups of poor, average, and good readers. Research found that good and average readers were more field independent than poor readers. Good readers had more visual motor ability and were more visually analytic than poor readers.

Smith (1973) found a significant relationship between FI/FD and reading in 34 first grade students. It was found that FI girls were better able to selectively attend to and recall details from a short paragraph than FD girls.

Gill, Herdtner, and Lough (1968) examined perceptual differences in 194 nursery, kindergarten, and first grade children. The Modified Rod and Frame Test was found to be a moderate predictor of reading success for males, while the Frostig Test and the Metropolitan Achievement Test were better predictors for females.

Watson (cited in Daku, 1978) examined FI/FD as measured by the Children's Embedded Figures Test with first, second and third grade boys as it related to the reading portion of the Stanford Achievement Test and The Draw-A-Person Test. The study showed that FI boys were better readers than FD boys in grades one through three.

Dermott (1978) investigated FI/FD and nine other variables and how they interrelate and predict specific reading skills at the end of first grade. Research using 241 first grade pupils concluded that

FI/FD is a poor predictor of reading skills. It was stated that the importance of FI/FD lies only with the difficulty a poor reader may have in discriminating parts from a whole, as in learning decoding skills rather than skills utilizing meaning clues.

Cox (1976) investigated the relationship between field independence/dependence and early reading success in 100 kindergarten children. Research showed no significant differences between early and non-early readers in their cognitive style. It was concluded that field independent children were not more likely to be early readers than field dependent children.

McDaniel (1973) examined 10 motion picture tests of perceptual ability with 48 children, grades one through six. The study found the Embedded Figures Test ( $r = .58$  at the first grade) and Spatial Orientation of Objects ( $r = .65$  at fourth grade) to have the highest correlation with reading. Research found that Temporal Memory Span II, which requires the subject to remember the order of presentation of a series of designs, discriminates most sharply between dyslexic and normal children. The next best discriminating tests in the series are Embedded Figures and Form Identification. This suggests that:

the ability to recognize visual patterns accurately, to hold such patterns in memory, and to find the patterns among distracting elements may be among the more important perceptual processes related to severe reading disabilities. (p. 578)

As can be seen by the above studies, field independence has been found to be significantly correlated with reading, but not conclusively so. The more recent research has examined not only cognitive style and reading but has also looked more closely at the perceptual processes necessary for children to become good readers.

### Visual Selective Attention

There has been much debate in research as to the definition of selective attention. Visual selective attention has been described as the ability to select among the stimuli and to attend to one or a limited number of stimuli at one time (Cuccu, 1978). This definition is very similar to the definition for the cognitive style dimension of distractibility (or constrict-flexible construct as named by Gardner, Holzman, Klein, Linton and Spence in 1959). Distractibility is the degree to which an individual directs attention selectively to relevant stimuli (Ragan, 1979). Research has questioned the similarity of the distractibility or constricted-flexible construct to Witkin's FD/FI (Gardner et al., 1959; Houston, 1969; Karp, 1963; Sack & Rice, 1974; Santostefano, 1969). After reviewing the literature dealing with this question, Ragan (1979) has concluded that "distractibility is a cognitive style distinct from field independence/dependence, and not one that embraces Witkin's construct" (p. 34).

Santostefano (1969) explored the developmental aspect of the constricted-flexible style and its relationship to other cognitive styles. He has suggested that focal attention precedes and is a requisite for, field articulation development.

Ross (1976) has also looked at selective attention as a developmental ability. He has identified three stages of attention: overexclusive, overinclusive, and selective attention. In the overexclusive stage the child may focus on the roundness of a letter instead of the entire shape of the letter. The letters b, p, q, d may all look the same to the child. In the overinclusive stage the child may focus on many irrelevant stimuli



such as the shape and color of the paper, or the size of the letters instead of just the appropriate stimuli. This exemplifies incidental learning at its highest point because the child learns as much about the incidental features of color and shape of the paper, as he does about the central features of what the letter or word is. Finally, in the visual selective attention stage only the relevant and appropriate stimuli are focused on--all aspects of the shapes of the letters and their relationship to each other. Samuels (1971) has suggested that where the learner focuses his attention and what cues he selects has important implications for reading.

#### Visual Selective Attention and Reading

Samuels and Jeffrey (1966) used three groups of 12 kindergartens each. Each group was taught one of three lists of words that differed in number of different letters (four, six or eight) used to construct four two-letter words. It was concluded from the study that training which causes the student to focus his attention on each individual letter is less likely to lead to future reading errors than training which causes the student to rely on single features. In the words house and horse, for example, the beginning letter and length of the word is the same, but the student will know which word is horse if he looks at each individual letter. The researchers found that a rapid initial learning of a small sight vocabulary was followed by a degree of confusion on the part of the learner. The student found that his uses of relevant cues (initial letter, length of word) could no longer produce the correct response.

Hurst (1978) also examined distinctive feature training. Research involving 128 kindergarten children showed no significant differences in letter naming ability of kindergarten children trained to distinguish distinctive visual and auditory features in the letters b, d, p. It was stated that differences between treatments may have been masked by extensive within group variability. Researchers concluded that "some children may need to begin training with dissimilar distractors and then move to highly similar distractors when the simpler task is mastered. A dissimilar distractor phase may be unnecessary for other children" (p. 7139-A)

Samuels (1967) used 52 first grade students, 26 in the group utilizing picture aids and 26 in the group not utilizing picture aids. This study questioned whether pictures diverted attention away from printed words. Results indicated that poor readers with no pictures learned more words than did those who had pictures present. There was no significant difference noted among good readers.

Peters (1978) investigated the hypothesis that hyperactive children have difficulty selectively attending to task-relevant stimuli because they are distracted by task-irrelevant stimuli. The researcher used a color naming task, a picture order task, and a selective listening task to compare performance of hyperactive and control children under two conditions. Under the first condition, task-irrelevant stimuli were present. In the second condition, those stimuli were absent. Results failed to demonstrate that hyperactive children have selective attention difficulties. However, other results indicated that they do have

difficulty sustaining task performance and inhibiting impulsive responding.

Zeaman and House (1967) found that for some learning tasks the retardate does not know where to focus attention during early learning trials. Once the retardate discovers the relevant dimension of the task, his learning curve is similar to that of the normal group.

Cuccu (1978) investigated the visual selective attention abilities of a group of 50 children completing a kindergarten program. Each subject was given 25 cards which differed from each other in the shape of the card, color of the card, Greek letter written on the card, and color of the Greek letter written on the card. The subjects were asked to attend to the Greek letter to sort the cards (the central task). In doing the task the subjects had to ignore the incidental features of card shape and color, and letter color. The results showed that central and incidental learning had a strong inverse relationship to each other. The results also indicated that the majority of kindergarteners could successfully complete the visual selective attention task.

Turnure and Samuels (1972) investigated attention and reading achievement in 88 first grade boys and girls. An observer was assigned to record attentional behaviors of the pupils during the reading class. Task relevant behaviors such as eyes on the teacher or text, observing the chalkboard, were marked as positive attentiveness. Negative attentiveness consisted of the subject working on non-assigned materials or eyes closed. The study found that task relevant, visual orienting behavior was related to school achievement. Girls were found to be

significantly more attentive than boys and achieved higher word recognition scores. Results also found word recognition to be significantly related to attentiveness.

Zukier and Hagen (1978) investigated the development of selective attention under distracting conditions. Using 60 eight and eleven year olds, researchers tested the children for incidental and central recall with distractors requiring either auditory or visual attention. Results indicated that older students made greater use of strategies that enabled them to focus on the relevant features of the learning task. Older students could also deploy their selective attention with greater efficiency and flexibility.

Bergen (1979) using 25 eight, nine and ten year olds sought to improve selective attention efficiency through verbal rehearsal. Results indicated that selective attention efficiency improved as seen by a lowering of incidental recall, but there was no concomitant rise in central recall. The findings suggested "a maturational lag of a few years in the growth of perceptual and higher-order cognitive processes. The children seemed characterized by global, undifferentiated perceptions due to their failure to use rehearsal to improve memory" (p. 6093-B).

Denny (1974) compared good and poor readers from second through fifth grades on three cognitive style dimensions: conceptual style preferences, cognitive tempos and attentional styles. This research found attentional style to be a better measure to distinguish between good and poor readers. Results indicated that:

poor readers' difficulties lie not in the total amount of time they attend to particular problems, but in the proportion of that time spent productively examining the relevant stimuli in their visual fields. (p. 707-708)

Research in the area of visual selective attention is limited, much more research is needed before results can be conclusive. Nonetheless, the above studies have shown that once a student is shown the relevant features of a task, his learning improves.

#### Summary

More research is needed on the relationship between selective attention and field dependence/independence. Research has shown that selective attention is a developmental ability important to reading achievement. It has also been found that the cognitive style of field dependence/independence is related to reading achievement. Field dependence/independence and selective attention may be closely related in view of other findings which associate field independent individuals with greater selective attention abilities. This study investigated the relationship between selective attention and the cognitive style of field dependence/independence in a small group of kindergarten children.

## Chapter III

### The Research Design

#### Purpose

The purpose of this study was to determine if there is a significant relationship between visual selective attention and the cognitive style of field dependence/independence in a select group of kindergarten children. The null hypotheses are as follows:

1. There is no significant relationship between field dependence/independence and visual selective attention in kindergarten children.
2. There is no significant relationship between field dependence/independence and visual selective attention in kindergarten boys.
3. There is no significant relationship between field dependence/independence and visual selective attention in kindergarten girls.

#### Methodology

##### Subjects

This study included twenty kindergarten students, ten boys and ten girls, from a suburban school district in western New York State.

##### Instruments

A visual selective attention task developed by Carol Cuccu in 1978 was used to assess visual selective attention ability or inability in all subjects. The visual selective attention task is a quickly completed task (10-15) minutes using 25 cards which differed from each

other in: shape of the card, background color of the card, Greek letter written on the card, and color of the Greek letter written on the card. The shapes of the cards were a circle, square, triangle, octagon, and a star. The colors of the cards were red, orange, blue, green, and white. Greek letters used were  $\pi$ ,  $\theta$ ,  $\phi$ ,  $\delta$ ,  $\mu$ . These letters were written in blue, red, black, green, and brown felt tip markers.

The subjects were told to sort the cards by using only the Greek letters. A central score is obtained from the number of Greek letters correctly grouped. An incidental score is also obtained from correctly identified card shapes or colors recalled by the subjects.

The Children's Embedded Figures Test (CEFT), Consulting Psychologists Press, Inc., 1971, was used to determine the degree of field dependence/independence in all subjects. The CEFT was determined to be a better alternative than the Embedded Figures Test (EFT), Consulting Psychologists Press, Inc., 1971, when using subjects between the ages of five and ten (Witkin, Oltman, Raskin, Karp, 1971).

In the CEFT each subject must find a previously seen simple shape embedded in a more complex figure. A score is obtained from the total correctly identified shapes out of a possible 25. Higher scores reflect a greater degree of field independence than lower CEFT scores.

#### Procedure and Statistical Analysis

The visual selective attention task was given individually by the researcher to all the subjects to determine which subjects were in the visual selective attention stage. Each subject was told by the researcher, "In my hands I have some cards. On each of the cards I have

written a Greek letter." One card was used as an example and each subject was asked, "Do you see the Greek letter on this card?" After the subject confirmed having seen the Greek letter, the subject was told, "I want you to put all the cards that have the same Greek letter written on them together. Only look at the Greek letter to put the cards together."

After completion of the task, the number correctly grouped by the Greek letters yielded the central score. The children were also asked to recall the shapes of the cards and the color of the cards to see if any incidental learning had taken place.

Two groups of 10 subjects each were formed: those who were in the visual selective attention stage and those who were not. Next, subjects from both groups were given the Children's Embedded Figures Test to determine field dependence/independence. The CEFT was given on an individual basis. Each subject was directed to identify previously seen simple figures in a more complex setting. For example, the subject was shown the shape of a triangle and was asked to find the triangle hidden within the picture of a truck. No time limit is set for the subject to find it. A total score was obtained which determined the degree of field dependence/independence. The results from the two testing instruments were analyzed to determine correlational coefficients among the variables.



## Chapter IV

### Analysis of the Data

The relationship between visual selective attention and the cognitive style of field independence/dependence was examined in this study. This chapter contains the analysis of the data, the findings, and interpretation of the data.

#### Findings and Interpretations

The correlation coefficient was computed to determine if there was a statistically significant relationship between visual selective attention and field independence/dependence. The results of this computation yielded a correlation coefficient of .633. When the number of the sample is 20, the correlation coefficient must be .561 ( $\alpha = .01$ ;  $df = 18$ ) for a significant relationship to exist. When comparing this critical value to the results of this study, it is observed that a significant relationship does exist between visual selective attention and field independence/dependence.

The relationship between sex and visual selective attention and field independence/dependence was also examined. A significant relationship between visual selective attention and field dependence/independence was found to exist in the males ( $r = .730$ ,  $\alpha = .05$ ,  $df = 8$ ) but not in the females in this study ( $r = .537$ ). By referring to Table 1, one can see that of the females, 50% were visually

selectively attentive, with 40% being field independent and 10% field dependent. In the other 50% of the females which were not visually selective, 30% were field dependent and 20% field independent. These findings support other research that has observed the trend of males being more field independent than females.

It was also observed that central and incidental scores were inversely related, supporting Ross's (1976) and Cuccu's (1978) findings (see Table 1). Table 1 shows that of the 12 subjects who received 100% as a central score, there were two subjects who received 0% as an incidental score with the average being 43.8%. Conversely, of the seven subjects who received 0% as a central score, one also received 90% as an incidental score with the average being 65.7%.

Table 1

Subject Performance Scores on the Visual Selective Attention  
Task and the Children's Embedded Figures Test (CEFT)

Student	Sex	VSA Central Score	VSA Incidental Score	CEFT* Score
1	M	100%	50%	13
2	M	100%	70%	15
3	M	100%	60%	14
4	M	100%	90%	14
5	F	100%	0%	11
6	F	100%	0%	16
7	M	100%	50%	19
8	M	100%	30%	13
9	F	100%	80%	15
10	F	100%	40%	12
11	F	100%	40%	3
12	M	100%	30%	13
13	M	90%	30%	12
14	F	0%	50%	12
15	F	0%	60%	9
16	M	0%	80%	9
17	M	0%	90%	10
18	F	0%	60%	3
19	F	0%	80%	2
20	F	0%	40%	4

\*score > 7- tends towards field independence

score < 7- tends towards field dependence

### Summary

Visual selective attention was found to correlate significantly with field independence/dependence. A trend was found in the expected direction between sex and field independence/dependence, with the males being significantly correlated with visual selective attention and field independence. The results also indicated that central and incidental scores on the visual selective attention task have an inverse relationship to each other.

## Chapter V

### Conclusions and Implications

This chapter presents conclusions drawn from this study, implications for future research, and implications for the classroom.

#### Conclusions

The findings obtained from this study indicated that visual selective attention and field independence/dependence are strongly related to each other in kindergarten children. The conclusion drawn here is that most children, by the time they reach the end of kindergarten, are able to separate parts from the whole when told what to look for.

Since field independence has been demonstrated to be highly correlated to reading success, the ability being measured in tests for cognitive style may be the child's ability to selectively attend to the appropriate or indicated stimuli.

It must be noted here that correlation does not mean causation. A more appropriate way to understand correlation is to square it then multiply by 100. As explained by Stauffer, Abrams, and Pikulski (1978):

The number obtained from squaring the correlation is interpreted as the percent of the variance of one measure that is shared by the other measure. The  $r^2$  is sometimes called the coefficient of determination, because it is the proportion of the variance of one variable that can be determined by another variable. (p. 134)

In this study the  $r^2$  is .400 meaning that 40% of the variation on the visual selective attention task is shared by the Children's Embedded Figures Test. This leaves 60% of the variance unaccounted for. Prior to the data analysis, it was thought that visual selective attention and field independence/dependence were related more highly. By looking at the coefficient of determination, it can be seen that only 40% of one measure is shared by the other, leaving the other 60% open for further investigation.

#### Implications for Future Research

Since this is a relatively new area of research, this study raised many questions, some of which are listed below.

Would a replication of this study using a much larger sample have similar results?

Would a replication of this study using a different visual selective attention task obtain similar results?

Given a group of students not in the visual selective attention stage, would teaching them distinctive feature strategies increase their degree of field independence?

Are visual selective attention and reading readiness significantly correlated?

Given a group of students not in the visual selective attention stage, would teaching them selective attention strategies increase their reading ability?

Does the correlation between visual selective attention and field independence/dependence in one group of children change over time?  
Is there a developmental trend?

What would the performance be on a visual selective attention task of students starting their kindergarten program?

Does the reading program a child is placed in affect his visual selective attention or cognitive style?

### Implications for the Classroom

Since selective attention is so essential in beginning reading, kindergarten teachers may want to give the visual selective attention task earlier in the year to determine just what children need more help and/or time. If a child did poorly on the visual selective attention task the teacher might assume that the child needs help in determining the relevant features of a task. In the task of reading for example, the child needs to know letter distinctions, letter combinations and spacing.

Another use for visual selective attention scores might be to aid in the early identification of problem learners. It was noticed in this study that many of the children not in the visual selective attention stage were identified as slow learners. Using the visual selective attention task might help confirm results of other ability tests.

An important implication for classroom teachers would be in the area of selecting reading programs for children. Children who are identified as weak in visual selective attention may do better using a V.A.K.T. approach to learning to read. These children should be placed in a reading program that uses a minimal amount of visual distractors such as color or pictures. The children should be taught

to develop their visual selective attention abilities before they even start a regular reading program.

Research has shown field independence to be highly correlated to reading achievement and visual selective attention seems to be an ability being measured by tests for field independence/dependence ( $r^2 = .400$ ). It would follow then, that children should be taught to selectively attend to relevant features when first learning to read.

Consequently, more research must be conducted to determine the relationship between visual selective attention and cognitive style. Children need to develop their visual selective attention abilities in order to become good readers. Ways must be found to teach better uses of visual selective attention strategies. A closer examination of cognitive style and visual selective attention may yield new hope for disabled readers.



## References

## References

- Bergen, J. The effects of a cognitive strategy on the selective attention ability of reading disabled children (Doctoral dissertation, Rutgers University, 1979). Dissertation Abstracts International, 1979, 39, 6093-6094.
- Cohn, M. L. Field dependence-independence and reading comprehension (Doctoral dissertation, New York University, 1968). Dissertation Abstracts International, 1968, 29, 476-477.
- Conoley, J. L. Differences in cognitive style and visual motor ability in groups of poor, average, and good readers (Doctoral dissertation, University of Texas at Austin, 1976). Dissertation Abstracts International, 1977, 37, 7680A.
- Cox, D. K. Field independence/dependence and precocious kindergarten readers. Master's in Education Thesis, Rutgers, The State University of New Jersey, 1976. (ERIC Document Reproduction Service No. ED 124 916)
- Cuccu, C. An investigation of the visual selective attention abilities of children completing a kindergarten program. Master's of Education Thesis, The State University of New York at Brockport, 1978.
- Daku, J. J. The relationship between field dependence/independence and reading achievement at the sixth grade. New Brunswick, New Jersey: Rutgers, The State University of New Jersey, 1978. (ERIC Document Reproduction Service No. ED 149 288)

- Denny, D. Relationship of three cognitive style dimensions to elementary abilities. Journal of Educational Psychology, 1974, 66, 702-709.
- Dermott, R. A. Two dimensions of field dependence-independence: How they and nine other variables interrelate and predict specific reading skills at the end of first grade (Doctoral dissertation, University of Maine, 1977). Dissertation Abstracts International, 1978, 38, 5304A-5305A.
- Gardner, R., Holzman, P. S., Klein, G. S., Linton, H., & Spence, D. P. Cognitive control: A study of individual consistencies in cognitive behavior. Psychological Issues, 1959, 1, (whole No. 4).
- Gibson, E. J., & Levin, H. The psychology of reading. Cambridge, Mass.: MIT Press, 1976.
- Gill, N. T., Herdtner, J., & Lough, L. L. Perceptual and socioeconomic variables, instruction in body-orientation, and predicted academic success in young children. Perceptual and Motor Skills, 1968, 26, 1175-1184.
- Goldstein, K. M., & Blackman, S. Cognitive style. New York: John Wiley & Sons, 1978.
- Houston, B. K. Field dependence and performance in distraction. Journal of Psychology, 1969, 72, 65-69.
- Hurst, J. F. Role of distinctive feature training in teaching letter names to kindergarten children (Doctoral dissertation, University of Kansas, 1977). Dissertation Abstracts International, 1978, 38, 7139A.

- Karp, S. A. Field dependence and overcoming embeddedness. Journal of Consulting Psychology, 1963, 27, 294-302.
- McDaniel, E. Ten motion picture tests of perceptual abilities. Perceptual and Motor Skills, 1973, 36, 755-759.
- Peters, K. G. Selective attention and distractibility in hyperactive and normal children (Doctoral dissertation, McGill University, Montreal, Canada, 1978). Dissertation Abstracts International, 1978, 38, 5039B.
- Pultz, J. Relationships among cognitive style, learning style and targeted reading skills. Master's in Education Thesis, The State University of New York at Brockport, 1979.
- Ragan, T. J. Cognitive styles: A review of the literature. Interim report for period January 1977-January 1978, Air Force Human Resources Lab., Brook AFB, Texas, May 1979. (ERIC Document Reproduction Services No. ED 174 655)
- Ross, A. O. Psychological aspects of learning disabilities and reading disorders. New York: McGraw Hill, 1976.
- Sack, S. A., & Rice, C. E. Selectivity, resistance to distraction and shifting as three attentional factors. Psychological Reports, 1974, 34, 1003-1012.
- Samuels, S. J. Attentional process in reading: The effect of pictures on the acquisition of reading responses. Journal of Educational Psychology, 1967, 58, 337-342.
- Samuels, S. J. Attention and visual memory in reading acquisition. Report No. 26, Minnesota University, Minneapolis, 1971. (ERIC Document Reproduction Service No. ED 071 238)

- Samuels, S. J., & Jeffrey, W. E. Discriminability of words, and letter cues used in learning to read. Journal of Educational Psychology, 1966, 57, 337-340.
- Santostefano, S. G. Cognitive controls versus cognitive styles: Diagnosing and treating cognitive disabilities in children. Seminars in Psychiatry, 1969, 1, 291-317.
- Smith, K. M. Influence of cognitive style and intelligence variables in aided reading comprehension (Doctoral dissertation, University of Wisconsin, 1973). (ERIC Document Reproduction Service No. ED 094 354)
- Stauffer, R. G., Abrams, J. C., & Pikulski, J. J. Diagnosis, correlation and prevention of reading disabilities. New York: Harper & Row, 1978.
- Turnure, J. E., & Samuels, S. J. Attention and reading achievement in first grade boys and girls. Research Report No. 43, Minnesota University, Minneapolis, 1972. (ERIC Document Reproduction Service No. ED 074 447)
- Witkin, H. A. The perception of the upright. Scientific American, 1959, 200, 50-56.
- Witkin, H. A., Lewis, H. B., Hartzman, M., Manchover, K., Meissner, P. B., & Wapner, S. Personality through perception. Westport, Conn.: Greenwood Press, 1972. (Originally published, 1954).
- Witkin, H. A., Oltman, P. K., Raskin, E., & Karp, S. A. A manual for the Embedded Figures Test. Palo Alto, Calif.: Consulting Psychologists Press, 1971.

Zeaman, D., & House, B. J. The relationship of IQ and learning. In Gagne (Ed.), Learning and individual differences. Ohio: Charles E. Merrill, 1967.

Zukier, H., & Hagan, J. W. The development of selective attention under distracting conditions. Child Development, 1978, 49(3), 870-873.