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The Influence of Intensive Training in Decoding Skills on Field Dependence–Independence in First Grade Children

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This paper describes the results of a study assessing the impact on field independence–dependence of decoding as a component of reading instruction for 225 first graders. Such drill appears to affect the ability to disembed, a component of field independence-dependence, but not to affect the ability to identify verticality.

This study was designed to examine the impact of a reading instruction program which includes practice in decoding on the ability to identify an embedded figure, a common measure of field dependence-independence.

The stability of field dependence-independence has been documented in two longitudinal studies, one with children from eight to thirteen years old and the other with subjects from 10 to 24 years old. Both the Rod-and-Frame Test (RFT) and Embedded-Figures Test (EFT) were included in the analysis. It was concluded that "at each age, individual consistency in performance across tests of field dependence is found" [3, p. 291].

In a related study, 300 kindergarten children were tested with both the Portable Rod-and-Frame Test (PRFT) and the Children's Embedded-Figures Test. Dreyer, Dreyer, and Nebelkopf [1, p. 175] summarized their results: "High [validity] correlations between these two measures were found for both boys (.61) and girls (.66), corroborating work done on global-analytic cognitive style with older age groups."

The two years phonics training is emphasized the most; the first and second grades are, for the most part, not represented among these samples.

Method

The subjects of this study were 225 children–115 boys and 110 girls–randomly selected from 21 of the 22 first grade classrooms in the seven elementary schools in the Bangor (Maine) Public Schools. Twelve classrooms relied primarily on the Alpha One series for instruction in reading, which in this paper is referred as an intensive-phonics program. This group included 60 boys and 56 girls. Eight classes utilized the 1967 edition and one the 1972 edition of the Harper Row basal readers, to be called the basal-reader program in this report. This group included 55 boys and 44 girls. Both reading programs were evenly distributed about the city and across socio-economic groups.

The Portable Rod-and-Frame Test (PRFT) [2] was administered from December through February, and the Children's Embedded-Figures Test (CEFT) [4], from February through April. The measurements of the eight specific reading skills were obtained in May. The criterion-reference tests for specific reading skills were taken from the 1975 restricted edition of the Metropolitan Achievement Tests, Primary I and II. Those tests used from the Primary I were as follows: (1) Phoneme/Grapheme Relationships–Beginning Sounds (PGRBS), (2) Phoneme/Grapheme Relationships–Ending Sounds (PGRES), (3) Phoneme/Grapheme Relationships–Total (PGRTL), (4) Semantic/Syntactic Clues (SSC), (5) Word Part Clues–Word Endings (WPCWE), (6) Word Part Clues–Compound Words (WPCCW), and (7) Word Part Clues–Total (WPCTL). The one test used from the Primary II was Phoneme/Grapheme Relationships–Vowels (PGRV).

Pearson product-moment correlations were computed between both dimensions of field dependence-independence and between field dependence-independence and each specific reading (decoding) skill for both sexes in both reading programs.

Results

The results of the correlational analysis for the children in the basal-reader program are presented in Table 1. For the boys, CEFT significantly correlated with PRFT ($r = -.547$). However, neither test of field dependence-independence was significantly related to any of the specific reading skills. For the girls, CEFT was also significantly related to PRFT ($r = -.340$). CEFT was significantly related to Word Part Clues–Word Endings (WPCWE), and PRFT to Phoneme/Grapheme Relationships–Ending Sounds (PGRES), Phoneme/Grapheme Relationships–Total (PGRTL), and WPCWE.

Discussion

The greater the correlation between the embedded dimension of field dependence-independence and specific reading skills, especially phonics skills, for first grade children, the smaller the correlation between the embedded dimension of field dependence-independence and the

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Table 1

Pearson Product-Moment Correlations of CEFT and PRFT with One Another and with PGRBS, PGRES, PGRV, SSC, WPCCW, and WPCTL for First Grade Boys and Girls in Basal-Reader and Intensive-Phonics Programs

	Basal-Reader Program				Intensive-Phonics Program			
	Boys (N = 51-55)		Girls (N = 36-44)		Boys (N = 58-60)		Girls (N = 65-66)	
	CEFT	PRFT	CEFT	PRFT	CEFT	PRFT	CEFT	PRFT
PRFT	-.547[c]		-.340[a]		-.234		-.062	
PGRBS	.121	-.104	.181	-.291	.311[a]	-.153	.219	-.074
PGRES	.126	-.088	.134	-.316[a]	.340[b]	-.163	.401[c]	-.192
PGRTL	.131	-.102	.172	-.323[a]	.306[a]	-.199	.378[b]	-.166
PGRV	-.034	.027	.023	-.057	.155	-.290[a]	.221	-.050
SSC	.022	.123	.091	-.160	.016	-.103	.274[a]	-.029
WPCWE	.214	-.093	.379[a]	-.367[a]	.139	-.191	.193	-.060
WPCCW	-.011	-.052	.027	-.118	.153	-.307[a]	.249[a]	-.084
WPCTL	.111	-.084	.215	-.270	.188	-.319[a]	.261[a]	-.085

Note: CEFT = Children's Embedded-Figures Test, PRFT = Portable Rod-and-Frame Test, PGRBS = Phoneme/Grapheme Relationships—Beginning Sounds, PGRES = Phoneme/Grapheme Relationships—Ending Sounds, PGRTL = Phoneme/Grapheme Relationships—Total, PGRV = Phoneme/Grapheme Relationships—Vowels, SSC = Semantic/Syntactic Clues, WPCWE = Word Part Clues—Word Endings, WPCCW = Word Part Clues—Compound Words, WPCTL = Word Part Clues—Total.

[a]$p<.05$, [b]$p<.01$, [c]$p<.001$

vertical dimension. Apparently, in only a few months, practice in decoding in an intensive-phonics program affects the ability to disembed to the degree that the relationship between the embedded and vertical dimensions of field dependence-independence is diminished. The differential pattern by sex needs further study.

The question of the permanence of this variation in the embedded dimension of field dependence-independence also needs further study. If the practice in decoding skills in an intensive-phonics program is the major contribution to the variation in the relationship between the embedded and vertical dimensions of field dependence-independence, will this variation disappear as the reading program moves away from phonics drill in a later school year? Shouldn't investigations of the embedded dimension in the primary grades be considering the possible effect of reading approach on findings?

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