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ABSTRACT

The study involving 105 learning disabled students (6 to 12 years old) investigated the effects of the sex and race of students to determine if these factors were salient to initial placement in elementary learning disabilities classrooms, to the amount or type of instruction received in reading, to the learning behaviors students exhibit in reading, or to students' academic progress. Highlights of previous research on the relationship of sex and race to performance and treatment differences in elementary school classrooms were reviewed. The evaluation unit of the Learning Research and Development Center studied reading instruction in an urban school district's elementary classrooms for the learning disabled for 2 years. To assess the relative efficacy of specific practices, Ss were pretested in the fall using the Level I Reading Subtest of the Wide Range Achievement Test (WRAT) and Spache Diagnostic Reading Scales and were posttested in the spring of the following year using the WRAT, the Spache, and the Comprehensive Tests of Basic Skills. Results of the analysis regarding differential placement suggested that there is a race and sex relationship to placement. It appeared that Black girls, while they are less likely to be placed overall, are more likely to be placed correctly. The level of achievement, teacher instructional behaviors, and student behaviors were remarkably similar for all student groups although there was a significant sex by race interaction for oral reading (White girls read aloud more), a significant race effect for off task (Whites were off task more), and a significant sex effect for rewards and waiting/managing materials (girls got more rewards and waited/managed more). (SB)

Sex and Race Differences in Learning Disabilities Classrooms

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Abstract

Poor reading performance is the primary reason for assignment of learning disabled students to special education classrooms. Such classrooms are characterized as containing a majority of whites and males. Previous research indicates that in regular classroom settings teachers teach girls more reading and boys more mathematics. Research on racial differences in instructional treatment has been scant. This paper presents an investigation of whether or not differences by sex or race occurred in placement, teacher contacts, assignment practices, and student learning behaviors in learning disabilities classrooms. Results revealed differences in placement, similarity of teacher treatment and student behavior, and similarity of the effects of such behaviors on test performance.

Sex and Race Differences in Learning Disabilities Classrooms

Special education in general and education for the learning-disabled (LD) in particular have put considerable emphasis on recognizing the individual problems of students and on finding appropriate, individual solutions. Therefore, one would expect to find substantial variation in those classrooms with respect to characteristics such as entering ability, discrepancy between chronological age and achievement level, time spent receiving instruction, time spent engaged in instructional activities, and growth in performance. However, one would not expect that variation to be explainable by group membership, for example the sex and/or race of the child. The purpose of this paper is to investigate the effects of the sex and race of LD students to determine if these factors were salient to initial placement in elementary learning disabilities classrooms, to the amount or type of instruction received in reading, to the learning behaviors students exhibit in reading, or to students' academic progress.

Theoretical Framework

The general population of interest is children classified as learning disabled. One of the requirements for classifying a child as learning disabled is that his/her intellectual ability (as measured by an IQ test) should fall within or above the average range. Evidence suggests that most LD students fall in the lower end of that range (i.e., between 90 and 95) (Gajar, 1977; Hansche & Gottfried, 1980;

Kirk & Elkins, 1975; Larson, 1978; Norman & Zigmond, 1980; Reynolds, Cober, & Moyer, 1978). The second requirement of interest is that a discrepancy exist between the child's ability and his/her performance. In general, an LD child is performing below what his/her IQ would indicate and below grade level. The most common area of underachievement is reading (Hallahan & Kauffman, 1978; Zigmond, Vallecorsa, & Leinhardt, 1980).

The special education literature suggests a preponderance of males in learning disabilities classrooms (Norman & Zigmond, 1980). The predominance of males has been supported on biological grounds, but this has not gone unchallenged. Blom (1971) notes that while most studies find a higher incidence of reading disability among boys than girls and that this is even more true among minority and disadvantaged students, data from other countries suggest this fact does not hold, thus discrediting innate physiological explanations. Further, there have been suggestions that identified girls are more disabled than boys (Owen, 1978). Current concerns for the disproportionate (over)representation of blacks in EMR settings is not reflected in the LD situation as minorities are not over- and are sometimes under-represented (Bickel, in press).

There have been no studies found on the relationship of group membership (sex or race) to the characteristics or treatment of LD students. Therefore, the salient literature for this work deals with known and speculated population differences in non-LD students with respect to basic abilities, academic performance, and instructional treatments. There is considerable variance in the amount of

information available in each of these areas. The following discussion highlights what is known about the relationship of sex and race to performance and treatment differences in elementary school classrooms.

Performance Differences

In general, no consistent sex differences have been found in intellectual ability (Maccoby & Jacklin, 1974) or related basic abilities such as divergent thinking or problem-solving (Daehler, 1972; Greenberger, O'Connor, & Sorensen, 1971; McKinney, 1973). There have been some studies of race-related differences in basic abilities, but no methodologically convincing evidence exists to date to support such ability differences.

Studies of general intellectual ability that include both the sex and the race of the child also find no consistent differences based on group membership. For example, using young black children, neither Klaus and Gray (1968) nor Quay (1972) found sex differences in general intelligence. Achievement differences, however, appear repeatedly for both groups under consideration (e.g., Jantz, 1974). It is common to find studies where girls score higher in reading while boys outperform girls in mathematics (e.g., Aiken, 1973; Blom, Frey, Prawat, & Jarvis, 1980; Flanagan, Davis, Dailey, Shaycoft, Orr, Goldberg, & Neyman, 1964; Gates, 1961; Parsley, Powell, & O'Connor, 1964). Race-related differences in achievement have also been well documented, and one generally finds that whites outperform blacks when SES has not been controlled (Hunt, 1972; Mosteller & Moynihan, 1972). When SES, race, and sex are included in studies of school achievement,

results vary. Tulkin (1968) found differences between males by race but no differences between females. Backman (1972) reanalyzed Project Talent data and found sex to account for significantly more of the variation in test performance than either SES or ethnicity. Johnson (1973-74) found a sex by culture interaction in performance. Confusion seems to be the rule rather than the exception.

Treatment Differences

If one can assume no differences among groups in basic abilities with consistent differences in achievement, then the next step is to look for educationally relevant differences in classroom experiences as a potential source of the variation between groups. Here one finds that a variety of explanations have been generated, none conclusively proven. A large number of studies look at the differential expectations of teachers for different groups of students (e.g., Cooper & Baron, 1977; Cornbleth & Korth, 1977; Datta, Schaefer, & Davis, 1968; Finn, 1972; Good & Brophy, 1971; Wait & McCarthy, 1980). These studies, however, usually do not determine how those expectations are translated into the differential treatment of students. Even when a specific teacher behavior is predicted by expectation, no link is made as to how that behavior may affect student performance.

The sex differences literature, while extensive, contains relatively few studies that examine specific cognitive instruction to students. Even when general measures of instruction are used, evidence as to differences in this domain is either weak or contradictory (Bank, Biddle, & Good, 1980). The most common finding

is that boys receive more management and more negative contacts (Brophy & Good, 1970; Davis & Slobodian, 1967; Jackson & Lahaderne, 1967; Koester & Farley, 1980; Meyer & Thompson, 1963). Blom, Frey, Prawat, and Jarvis (1980) investigated whether the discrepancy between boys' and girls' reading difficulties is due to a difference in how language is used by the two groups. They found that while girls consistently outperform boys in reading achievement, boys outperform girls in receptive language ability. This finding would suggest that different instructional methods may be necessary in teaching reading to boys and girls, but once again, no evidence is presented to show that this is the case.

Two studies have been found that look at specific instructional process variables that appear to have an affect on student achievement and that also vary depending upon the sex of the child. Samuels and Turnure (1974) found that attentiveness was significantly related to word recognition scores in first graders when reading readiness was controlled. (There was also no significant difference between boys and girls on reading readiness.) After observing student behavior during reading, they found that first grade girls were significantly more attentive than boys and achieve higher word recognition scores. Leinhardt, Seewald and Engel (1979) found confirming evidence that boys receive more management contacts and also found that teachers make more cognitive contacts to girls in reading and more cognitive contacts to boys in mathematics. This finding is especially interesting in light of the parallel achievement differences found so often in the literature.

Literature that looks at race differences in relationship to instructional differences is scant. The largest body of such literature comes out of research on desegregation (see, for example, reviews by Crain & Mahard, 1977, St.John, 1975, and Weinberg, 1975, 1977). In general, it has been found that white performance is unaffected by desegregation while blacks perform better in predominantly white schools, especially in the early grades. These studies look at the affect of a social intervention on black and white achievement, but do not document in-class treatment. To put the issue succinctly, Crain and Mahard state, "The common error of this research can be stated in five words: Desegregation is not a treatment" (1977, p.31).

A few studies have included variables other than desegregation but they are usually school level variables such as expenditures or average teacher training (e.g., Armor, 1972). While these school factors do not appear to explain differences in black and white achievement, one still does not know if there are in fact differences at the classroom instructional level. Rist (1978) observed classroom level differences in the treatment of black and white children in a newly integrated school. He notes such factors as isolation, more managerial contacts, inappropriate (effusive) positive contacts, and less instruction to the black students in predominantly white classrooms. While enlightening, this work does not provide for adequate comparison with white students in the school, nor does it report any student performance differences.

There are no studies that we found of differential treatment within special education environments. The previous discussion, however, points out the issues of interest for the current study as we examine sex and race differences in the placement, treatment, and prediction of outcomes for learning disabled students.

Methods

This paper addresses three questions. First, do children that are served in LD classrooms get placed there using differential standards for disability depending on the personal characteristics of race and sex? Initial inspection of the psychological evaluations used for placement showed no differences in reasons given for placement. In order to answer this question more precisely, a series of contingency table analyses were done. Each student was scored as to his/her degree of underachievement based on chronological age and WRAT test performance (given concerns of bias and inappropriateness for black and LD populations, IQ scores were not used). A modified version of the Bateman (1965) approach was used to distinguish "achievers" from "underachievers".

The second question is, do students receive different instruction and/or behave differently with respect to learning depending on their race or sex? In order to answer this question, a two-way ANOVA (sex x race) was done using the following variables: pretest, posttest, overlap, pacing, rewards, cognitive press, teacher instruction, silent reading, oral reading, waiting and management, and off-task.[1]

And third, do students respond differently to the same types of treatment depending on their race or sex? To examine this question, an analysis of regression slopes was done by sex and by race and was compared to the pooled regression. (See Humphreys, 1972, McCandless, Roberts, and Starnes, 1972, and Reynolds, 1979 for other examples using this approach.) These regressions posited a two-stage model: the first stage examined how student learning behaviors were affected by student pretest performance in reading, and by teacher behaviors as measured by amount of instruction, cognitive press, rewards and pacing; the second stage examined how student test performance was influenced by student pretest behavior, student learning behaviors including silent reading, oral reading, and indirect reading activities, and the relevance of instruction for the posttest (i.e., overlap) (Leinhardt, Zigmond, & Cooley, in press).

Data Source

The evaluation unit of the Learning Research and Development Center (LRDC) studied reading instruction in an urban school district's elementary classrooms for the learning-disabled for two years. The details of observation methods and the overall results are reported elsewhere (Cooley, Leinhardt, & Zigmond, 1979; Leinhardt & Seewald, in press; Leinhardt, Zigmond, & Cooley, in press). In order to assess the relative efficacy of specific practices, 105 students were pretested in the fall of 1978 using the Level I Reading Subtest of the Wide Range Achievement Test (WRAT; Jastak, Bijou, & Jastak, 1976), and Spache Diagnostic Reading Scales (Spache, 1972). They were

posttested in the spring of 1979 using the WRAT, the Spache, and the Comprehensive Tests of Basic Skills (CTBS; CTB/McGraw-Hill, 1974). Students and teachers were observed for an average of 30 hours over a 100-day period. The 105 students represented the total population of all 11 LD elementary classrooms in the district. Of the original 130 students, 25 were lost due to transfers or because parental permission was denied. There were 73 males and 32 females, 71 whites and 34 blacks. Students ranged in age from 6 to 12.

Results and Discussion

Placement

The results of the analysis regarding differential placement strongly suggest that there is a race and sex relationship to placement. Tables 1, 2, and 3 report the results. The three-way contingency table analysis (Table 1) indicates that there are a disproportionate number of whites, and that a far smaller proportion of black females in LD classes are achievers than are white males. As discrepancy between age and performance is one of the main reasons for placement, it appears that black girls, while they are less likely to be placed overall, are more likely to be placed correctly. A more precise analysis of race within sex (Tables 2 and 3) suggests that there is a disproportionate number of achieving white males and females. That is, it appears that black students tend to be more appropriately placed than white students.

Insert Tables 1, 2, and 3 Here

There are several interpretations for this finding of differential placement. First, it is possible that smaller levels of deviance are required to place or retain a white male in a classroom for the learning disabled than for a black or female child. Second, the nature of the deviance may be different with boys being placed for behavior deviance that is not reflected by their academic behavior or their psychological records. Third, black children may be placed in other categories of handicap when they display the mild form of academic deviance shown by the white males in LD rooms (Bickel, in press). What this analysis suggests is that there is currently a lack of uniformity in standards for placement. While variation by individual is expected and valued, variation that is associated with group membership is not. What is not clear from this analysis is whether white males are being inappropriately placed, or black students are not getting access to LD services, or a little of both. Given differential placement, differential treatment becomes an issue of complexity and concern. It is important to assess whether children are getting less of what they need or more of what they don't need by virtue of group membership.

Treatments

A two-way univariate analysis of variance (ANOVA) was done to determine if there were any main or interaction effects for sex and

race on major instructional variables.[2] The results of the two-way ANOVA suggest that even though there are sex and race differences associated with placement, the level of achievement (pre and post), teacher instructional behaviors, and student behaviors are remarkably similar. Specifically, there were no significant ($p \leq .05$) main effects or interactions for sex or race on any of the following variables: pretest, posttest, level of curricular overlap with posttest, instructional pacing, cognitive press, teacher instruction, silent reading, or indirect reading. What is important about this list is that it contains the key variables found to be influential in predicting reading performance (student silent reading, student pretest behavior, and curriculum overlap) (Leinhardt, et al., in press). It also contains the key variables that influence student learning behaviors (pretest, cognitive press, and teacher instruction). Table 4 reports the means and standard deviations.

Insert Table 4 about here

Significance was attained, however, for the following variables ($p \leq .05$). There was a significant sex by race interaction for oral reading ($F_{1,101} = 7.01$) -- white girls read aloud more; a significant race effect for off-task ($F_{1,101} = 7.72$)-- whites were off-task more; a significant sex effect for rewards ($F_{1,101} = 5.95$) and waiting/managing materials ($F_{1,101} = 4.69$) -- girls got more

rewards and waited/managed more. It is important that girls both get more rewards and wait and manage more. It suggests that perhaps girls "play school" better and, rather than clearly going off task, they wait or sharpen pencils or "look busy". It may also be that it takes them longer to get materials and they are unable to get the teacher's attention, so they wait longer. Given the preponderence of boys, the latter explanation seems more likely. The significant off-task finding is of concern when we remember that more whites are initially achieving rather than underachieving. What may be happening is that some children are learning to be underachievers or are bored by the instruction.

Process-Outcome Relationships

The third analysis was designed to assess whether, in the context of similar treatments, students were responding in similar ways to those treatments. In order to do this, a series of regressions were compared. This comparison of regressions revealed similarity of slopes for both models indicating that the same things make a difference for boys and girls, blacks and whites. Tables 5 through 8 display the regression results. The F statistics reported are for the comparison of the paired regressions. The two regressions are:

Postest = pretest + silent reading + oral reading +
indirect reading + overlap

and,

Total Reading = pretest + teacher instruction +
cognitive press + rewards + pacing

Insert Tables 5-8 about here

The results show some differences, especially in total variance accounted for, but are still very encouraging. From previous work, as mentioned above, we are quite confident that we have a general picture of which types of activities help LD students learn to read (Leinhardt, et al., in press; Zigmond, Vallecorsa, & Leinhardt, 1980). An important next step was to see whether these same variables were equally important for different subgroups. It appears they are. Of course, individual children may well respond to specific approaches differently, but those unique responses are not associated with being male or female, black or white. There is some possibility that given the differences in the explanatory power (in terms of R^2) of different models that there are variables missing from the analysis for blacks in the case of total engaged reading time (Table 7) and for girls in the case of posttest (Table 8).

Conclusions

We assume that special education is a beneficial thing for those who need it, but that the sacrifices (labeling, or reduced social studies and science, for example) are inappropriate if the child does not need it. The results of this study suggest a need to increase vigilance in LD placement procedures, especially for white males. It appears that special education teachers are ignoring race and sex in

the instructional aspects of their teaching and are using individual criteria for varying practices. It also appears that students benefit from the same type (broadly speaking) of instruction and learning activities regardless of their sex or race. These results are what one would hope for primarily because of the support it gives for continuing to serve children as individuals rather than as members of a group that is determined by birth.

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Footnotes.

[1] The overlap variable is a measure of the degree to which what is being tested on the criterion measure has been taught in the classroom, and was obtained through a teacher interview.

Pacing is an estimate of the rate a student moves through reading material. This was obtained by examining consecutive days' reading assignments and counting the number of words.

The remaining variables used in the analyses (excluding pre- and posttest measures) were obtained through observation (see Leinhardt & Seewald, 1980). Teacher instruction was obtained from time samples of teacher behavior and includes model presentation, explanations, feedback, cueing, and monitoring. Rewards were measured by event sampling and reflect the average number of reinforcers received per day per child. Cognitive press was a rating done by the observer for each child for each observational session. The measure is the average rating received.

The last four variables were obtained by observing students on a time sampling basis. Silent reading means that the student was engaged with print, there was evidence that s/he was reading, but no sound was audible to the observer. On the other hand, oral reading means that the studeent was reading aloud and could be heard by the observer. Waiting was recorded if the student was waiting for something (materials, equipment, etc.) or someone (teacher, aide, group formation, etc.). The off-task category refers here to a

student who was supposed to be engaged in a reading activity but was not at the time of observation.

2 An overall multivariate ANOVA was also done and results suggest no significant main effect for sex or sex by race interaction. A significant effect was found for race ($F_{12,90} = 2.78$, $p \leq .05$).

Table 1
Three-Way Contingency Table
Achievement x Sex x Race (n = 105)

Achievers

	White	Black	
Female	9	1	10
Male	30	6	36
	39	7	46

Underachievers

	White	Black	
Female	12	10	22
Male	20	17	37
	32	27	59

$\chi_1^2 = 14.09 \ (p \leq .01)$

Table 2
Two-Way Contingency Table
Achievement x Race
for Females (n = 32)

	Achievers	Underachievers	
White	9	12	21
Black	1	10	11
	10	22	32

$\chi_1^2 = 3.84 (p \leq .05)$

Table 3
Two-Way Contingency Table
Achievement x Race
for Males (n = 73)

	Achievers	Underachievers	
White	30	20	50
Black	6	17	23
	36	37	73

$\chi_1^2 = 7.24$ ($p \leq .01$)

Table 4

Means and Standard Deviations of Variables Used in ANOVA

Variable	Black Females (n = 11)		White Females (n = 21)		Black Males (n = 23)		White Males (n = 50)	
	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
Pretest	11.19	6.96	12.48	5.70	11.36	7.13	12.26	6.04
Posttest	261.73	64.46	301.57	52.70	285.13	65.73	292.50	57.82
Overlap	56.28	22.81	51.06	26.01	55.83	28.36	58.78	28.70
Pacing	3.09	.36	2.72	.83	2.81	.82	2.66	.70
Rewards	1.99	1.71	2.55	1.50	1.65	1.11	1.63	1.39
Cognitive Press	3.82	.71	4.25	.99	4.14	.78	3.94	.79
Teacher Instruction	21.20	7.90	15.44	7.80	17.07	9.47	16.14	7.28
Direct Silent Reading	12.34	7.24	13.76	7.07	15.71	10.51	13.01	9.04
Direct Oral Reading	12.04	5.45	17.12	8.74	14.96	7.29	11.42	6.88
Indirect Reading Total	51.65	12.14	49.76	9.20	44.90	12.13	47.91	12.11
Off-Task	21.16	12.38	26.38	22.15	14.50	8.74	24.85	14.26
Waiting and Management	58.20	13.40	59.19	8.92	51.12	10.81	55.16	10.92

Table 5

Correlations of Regression Variables for Males and Females (n = 73 and 32 Respectively)

	Females										
	1	2	3	4	5	6	7	8	9	10	11
1 Pretest		.78	.24	.17	-.27	.25	-.14	.77	-.15	-.24	.11
2 Posttest	.84		.25	-.18	-.02	.22	-.17	.67	.05	-.15	.23
3 Overlap	.47	.59		.09	-.35	-.28	.11	.05	-.22	-.16	-.19
4 Pacing	.58	.59	.58		-.30	.38	.18	.31	.15	-.05	.18
5 Rewards	-.06	.01	-.17	-.63		.09	.35	.07	.36	.67	.64
6 Cognitive Press	.34	.42	.21	.47	.11		.13	.50	.18	.13	.39
7 Teacher Instruction	.10	.15	.34	.10	.29	.04		.19	.12	.62	.54
8 Direct Silent Reading	.60	.62	.38	.45	.14	.56	.20		-.02	.02	.44
9 Direct Oral Reading	.15	.20	.26	.40	.20	.30	.36	.34		.23	.64
10 Total Indirect Reading	.06	.06	.10	.00	.41	.06	.61	.12	.17		.76
11 Total Engaged Reading	.38	.41	.34	.36	.39	.41	.60	.68	.63	.73	
	1	2	3	4	5	6	7	8	9	10	11

Males

Table 6

Correlations of Variables Used in Regression for Whites and Blacks (n = 71 and 34 Respectively)

	Whites										
	1	2	3	4	5	6	7	8	9	10	11
1 Pretest		.79	.33	.51	-.01	.34	.15	.57	.06	.18	.37
2 Posttest	.88		.50	.45	.09	.38	.17	.60	.13	.14	.39
3 Overlap	.56	.52		.42	-.20	-.02	.30	.19	.10	.11	.18
4 Pacing	.43	.27	.51		.00	.47	.23	.43	.35	.15	.40
5 Rewards	-.37	-.23	-.31	-.32		.21	.24	.24	.40	.41	.49
6 Cognitive Press	.25	.32	.25	.38	-.14		.28	.61	.30	.22	.50
7 Teacher Instruction	-.12	-.07	.24	-.11	.49	-.32		.32	.33	.64	.63
8 Direct Silent Reading	.76	.72	.55	.36	-.17	.36	-.02		.29	.31	.71
9 Direct Oral Reading	.07	.22	.11	.25	.00	.16	.18	.09		.24	.65
10 Total Indirect Reading	-.36	-.25	-.14	-.27	.68	-.21	.62	-.25	.15		.79
11 Total Engaged Reading	.20	.32	.26	.11	.42	.12	.53	.43	.58	.67	
	1	2	3	4	5	6	7	8	9	10	11

Blacks

Table 7

Comparison of Regressions on Total Reading by Sex and by Race

Total Reading[a] Female	=	20.5 +	.7PT (.3)[b]	+ .6TI (.2)	+ 2.5CP (2.1)	+ .06R (.01)	+ 5.2P (2.9)	$R^2 = .70$
Total Reading Male	=	7.5 +	.7PT (.3)	+ 1.2TI (.2)	+ 6.6CP (2.2)	+ .03R (.01)	+ 1.9P (2.7)	$R^2 = .61$

$F_{(5, 93)} = 1.15$ (ns)

Total Reading White	=	12.7 +	.6PT (.3)	+ 1.2TI (.2)	+ 4.4CP (2.0)	+ .04R (.01)	+ 3.2P (2.5)	$R^2 = .66$
Total Reading Black	=	21.0 +	.7PT (.4)	+ .9TI (.3)	+ 4.8CP (3.3)	+ .04R (.02)	+ 1.3P (3.7)	$R^2 = .50$

$F_{(5, 93)} = 0.29$ (ns)

[a] Where: PT = pretest
TI = teacher instruction
CP = cognitive press
R = rewards
P = pacing

[b] Standard errors are enclosed in parentheses

Table 8

Comparison of Regressions on Posttest by Sex and by Race

Posttest[a] Female	=	162.7 +	6.2PT + (2.0)[b]	1.5DS + (1.6)	1.3DO − (.9)	.1IT + (.7)	.3OV (.3)	R^2 = .67
Posttest Male	=	180.5 +	6.1PT + (.7)	1.0DS − (.5)	.05DO − (.5)	.1IT + (.3)	.5OV (.1)	R^2 = .78

$F_{(5,93)}$ = 0.66 (ns)

Posttest White	=	191.0 +	5.5PT + (.8)	1.6DS + (.6)	.1DO − (.5)	.3IT + (.3)	.5OV (.1)	R^2 = .73
Posttest Black	=	152.8 +	7.4PT + (1.3)	.8DS + (.9)	1.4DO + (.8)	.2IT + (.5)	.02OV (.3)	R^2 = .80

$F_{(5, 93)}$ = 1.28 (ns)

[a] Where: PT = pretest
DS = direct silent reading
DO = direct oral reading
IT = indirect reading total
OV = overlap

[b] Standard errors are enclosed in parentheses