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ABSTRACT

The present study is a replication of the initial use of the Teams-Games-Tournament (TGT) technique in the primary grades. TGT is a classroom management technique in which (1) students are placed on four member teams; (2) the student teams compete in regularly scheduled tournaments; and (3) the tournaments are structured around instructional games. Fifty-four third grade students were randomly assigned to either a TGT or control condition. Both treatment groups were exposed to a six-week curriculum unit teaching language arts skills. The results indicate a positive TGT effect on language arts skills and on classroom social processes. This study provides important validation of the effectiveness of TGT in the primary grades. (Author)

TEAMS-GAMES-TOURNAMENT IN THE ELEMENTARY CLASSROOM:

A REPLICATION

Contract No. NE-C-00-3-0114

Work Unit No. 3

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Introductory Statement

The Center for Social Organization of Schools has two primary objectives: to develop a scientific knowledge of how schools affect their students, and to use this knowledge to develop better school practices and organization.

The Center works through three programs to achieve its objectives. The Schools and Maturity program is studying the effects of school, family, and peer group experiences on the development of attitudes consistent with psychosocial maturity. The objectives are to formulate, assess, and research important educational goals other than traditional academic achievement. The School Organization program is currently concerned with authority-control structures, task structures, reward systems, and peer group processes in schools. The Careers program (formerly Careers and Curricula) bases its work upon a theory of career development. It has developed a self-administered vocational guidance device and a self-directed career program to promote vocational development and to foster satisfying curricular decisions for high school, college, and adult populations.

This report, prepared by the School Organization Program, presents a replication study of the use of the Teams-Games-Tournament instructional process in a third-grade language arts classroom.

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Abstract

The present study is a replication of the initial use of the Teams-Games-Tournament (TGT) technique in the primary grades. TGT is a classroom management technique in which (1) students are placed on four member teams, (2) the student teams compete in regularly scheduled tournaments, and (3) the tournaments are structured around instructional games. Fifty-four third grade students were randomly assigned to either a TGT or control condition. Both treatment groups were exposed to a six-week curriculum unit teaching language arts skills. The results indicate a positive TGT effect on language arts skills and on classroom social processes. This study provides important validation of the effectiveness of TGT in the primary grades.

INTRODUCTION

Recent empirical research with adolescent students suggests that the Teams-Games-Tournament (TGT) instructional approach is effective in teaching various academic skills (See DeVries & Edwards, 1974 for review). TGT restructures the classroom by (1) placing students in cooperative teams, (2) creating simple instructional games played regularly by the students, and (3) forming an ongoing game tournament as the basis for the team competition.

A recently reported study of TGT (DeVries & Mescon, 1975) extended the use of the technique to the elementary grades. They report a study with 60 third-grade students in which TGT was compared with a control group (involving traditional, group-based instruction) using a language arts curriculum unit. TGT positively ($p < .05$) affected both academic achievement and classroom social processes (e.g., frequency of peer tutoring). The results indicate that TGT, a technique involving the student in a complex set of both cooperative and competitive social structures, can work effectively even with young children. Because the DeVries & Mescon (1975) study stands alone as a test of TGT in the elementary grades, the present study was designed as a replication to determine if the TGT effects on young children can be cross-validated.

What is TGT?

Social scientists (e.g., Deutsch, 1949; Coleman, 1959; Bronfenbrenner, 1970) have suggested for some time that team competition (with intrateam cooperation paired with interteam competition) could serve a constructive

role in the classroom. TGT, which consists of three components--teams, games, and tournaments--is an extension of the general concept of team competition. The team component involves placing students on four or five-member teams. The teams are created to form maximal heterogeneity within each team (on such dimensions as student academic ability, sex, and race) and comparability across teams. Team membership is kept intact, and intrateam cohesion is fostered by regularly scheduled team practice sessions as well as the placing of teammates in adjacent seats.

The games component is defined by a series of instructional games. In order to win at the games, the students must acquire the concepts or skills addressed by the target curriculum unit. In most instances the participating teachers design their own games (based on a Generalized Instructional Gaming Structure, GIGS) using multiple choice, true-false, or other objective-type items.

The games are played in weekly tournaments in which each student competes with two other students of comparable ability representing other teams. At the end of each tournament session (typically lasting from 30 to 45 minutes) a "top scorer," "middle scorer," and "low scorer" is declared at each three-person game table. The individual student's game scores are converted to team scores and winning teams are declared. Classroom newsletters (distributed weekly) provide public feedback and reinforcement for both team and individual scores after each tournament. For a more detailed description of TGT classroom procedures see DeVries, Fennessey & Edwards (1973).

Present Study

As noted earlier the present study is a replication of the DeVries & Mescon (1975) study. DeVries & Mescon (1975) tested the effects of TGT (contrasted with traditional instructional technique) on language arts achievement, classroom social processes, and student attitudes. The study used 60 third-grade students for a six-week (50 minutes per day) language arts curriculum unit. Students were randomly assigned to either a TGT or control condition. The two teachers involved were regularly rotated across the two treatments as a partial control (by balancing) for the teacher effect. The results indicated significant positive TGT effects (when comparing TGT vs. control) on several scales of both the Hoyum-Sanders Elementary English Test and a treatment-specific test of language arts skills. TGT also affected classroom social processes by (1) increasing cohesion among the students, and (2) decreasing the number of social isolates in the classroom. No TGT effects were noted on students' attitudes toward the class.

The parameters of the present project match those of the DeVries & Mescon (1975) study in all respects except the following. The study was conducted a year later (winter 1975) with a different sample of third grade students. The difference in the samples may be important because of the disproportionate number (70%) of male students in the original sample. Because both treatments and dependent variables used are identical to those used in the original study, detailed descriptions of these components will be omitted in the current report.

METHOD

Subjects

Fifty-four (54) third-grade students from an elementary school in the Syracuse, New York area participated in the study. Fifty-two (52) percent of the students were females. The Gates-MacGinitie Reading Test, Primary C, Form B (administered in month one of the third grade academic year) was used as a measure of the students' verbal ability. The average grade equivalent scores for the Vocabulary section on the Gates-MacGinitie is 4.3 (range from 1.5 to 7.1), and for the Comprehension section is 4.2 (range from 1.4 to 7.0). The distribution of verbal ability is comparable to that of the DeVries & Mescon (1975) sample.

Procedure

The study was conducted for a six-week period and employed a simple, two-group comparison, contrasting TGT with a control treatment involving traditional instructional approaches. Each treatment group comprised a separate language arts class, with both classes meeting during the same time period of the day. Students were assigned, on a stratified-random basis (stratifying on verbal ability), to either of the two treatment groups. Each treatment group met daily for a 50-minute period. Teacher effect was partially controlled by rotation of teachers across treatment groups every 5 7 days, resulting in equal exposure of both teachers to both treatment conditions. Pre- and post-test measures of academic achievement were obtained. Posttest measures of classroom social process and student attitudes were also administered.

Independent Variables

The independent variable of interest is instructional approach. Other factors which might affect learning were held constant. Of particular importance is the set of curriculum objectives addressed during the six-week period. Both treatment groups received comparable exposure to each of seven language arts objectives. These included, among others, differentiating between sentences and non-sentences, identifying proper plural forms of nouns, and using correct past-present verb forms.

TGT treatment--The implementation of the TGT treatment followed the structure described in the TGT Teacher's Manual (DeVries, et al., 1973), with the following minor variations in reward and task structures. With regard to student teams, the twenty-seven member class was divided into six teams, three having five members, and three having four members. The six teams were divided into two three-team leagues, entitled the "American League" and the "National League." The tournaments were organized around 22 simple instructional games that were designed by the participating teachers using the GIGS structure outlined in DeVries, et al., (1973). The teachers also designed a worksheet for each game containing items from the game. The TGT students were required to complete the worksheets during the frequently held team-practice sessions.

TGT tournaments were conducted twice weekly. Classroom newsletters were prepared and distributed once each week, summarizing the students' performance over the two prior tournament sessions. At the end of the six-week experimental period, "playoffs" were conducted between the first place teams from the two leagues, at the end of which a class championship team was declared.

Control treatment--The control classroom activities were addressed to the same set of curriculum objectives addressed by the TGT class. The instructional activities revolved around daily teacher lectures in which either new cognitive material was presented, or already presented material was reviewed. Students also performed daily on the same worksheets as those used in the TGT class. Students were nominally assigned to five-member teams, and teammates were encouraged to work together during work sessions centered around the practice sheets. All feedback on performance (often in the form of number grades) was given at the individual student level. To control for a possible "Hawthorne Effect" explanation of TGT effects, the control students were regularly exposed to a variety of "new" learning activities including a variety of simple learning games. No formal contingencies, however, were attached to such activities.

Dependent Variables

The dependent variables measured were (1) language arts skills, (2) classroom group process, and (3) student perceptions of the class.

Language Arts Skills: Both a standardized (Hoyum-Sanders Elementary English Test) and a treatment-specific test of language arts skills were administered. Both tests were administered on the first and last days of the experimental period.

The Hoyum-Sanders Elementary English Test is a general test of knowledge of rules governing correctness in writing and ability to apply the rules to a variety of sentences. Two parallel forms of the test for grades II-IV were used: Test II-Form A was given as the pretest and

Test I-Form A was administered as the posttest. The 95-item test consists of six subtests, each measuring a separate skill area: I-Sentence Recognition; II-Capitalization; III-Punctuation; IV-Contractions, Possessives, Spelling; V-Usage; and VI-Alphabetization.

A problem in using the Hoyum-Sanders as a measure of the treatment effect is that several of the skill areas assessed by the test were not directly covered by the curriculum unit. Consequently the authors devised a test which more directly measured the targeted skill areas. This sixty-two item, multiple choice test, entitled "The Treatment-Specific Achievement Test," consists of three subtests: Part I: Grammar, Contractions, Possessives, Endings (23 items); Part II: Commas and Abbreviations (17 items); Part III: Quotation Marks and Sentence Types (22 items). DeVries & Mescon (1975) cite evidence concerning the reliability and validity of both measures of language arts skills.

Classroom Group Process: A student self-report measure, involving two sociometric-type questions, was administered on the last day of the experimental period. Students were asked to indicate (1) "which students in the class are your friends," and (2) "which students in this class have helped you with your language arts work." A 3 X 8 inch blank space was allotted for responses to each question.

Student Perceptions of Class: Eight student self-report questionnaire items were administered on a posttest basis assessing the following factors: (1) Attitude Toward Class, (2) Peer Climate, (3) Difficulty of Class, and (4) Importance of Doing Well. The students were presented with the following response format: "Yes", "No", and "Not Sure." Each item measures a

somewhat unique perception and, consequently, is analyzed separately. Estimates of the test-retest reliability of the items are reported in DeVries & Mescon (1975).

RESULTS

The analyses of the test of language arts achievement employed the general linear model approach to the analysis of covariance, as recommended by Cohen (1968). The general linear model has proven to be a useful analytical tool, particularly in cases in which aptitude-by-treatment interactions are of potential interest.

Language Arts Skills

The results of the general linear analysis for the Hoyum-Sanders Elementary English Test scores are summarized in Table 1, with treatment group means and standard deviations included in Table 2. Separate analyses were conducted for each of the six subtests as well as the total Hoyum-Sanders. In each analysis the independent variables were entered in the

Insert Tables 1 and 2 About Here

order they are listed. The A effect represents the correlation of the pretest Hoyum-Sanders score with that of the posttest; the B effect depicts the multiple partial correlation of one treatment dummy variable (as suggested by Cohen, 1968) with the dependent variable. The A X B interaction term is derived from the product of A times B (Cohen, 1968) and constitutes a direct test (using multiple partial correlations) of the Aptitude-by-Treatment interaction effect. The Incremental R^2 term

(cf. Table 1) indicates the amount of additional variance in the dependent variable explained by the addition of the term to the model. Of particular interest for the current study is the Incremental R^2 for the B effect, which represents the amount of variance in the dependent variable explained by treatment group differences.

As Table 1 indicates, strong and significant treatment effects were obtained for three of the six Hoyum-Sanders subtests, as well as the Total score. For Part I: Sentence Recognition, the treatment effect accounted for 12% of the variance in the dependent variable ($F(1,51) = 7.32$, $p < .01$); for Part III: Punctuation, the treatment effect accounted for 24% of the variance ($F(1,51) = 19.00$, $p < .01$); for Part IV: Contractions, Possessives, Spelling, the treatment effect accounted for 8% of the variance ($F(1,51) = 4.63$, $p < .05$); and for the Total score the treatment effect accounted for 11% of the variance ($F(1,51) = 15.52$, $p < .01$). As indicated in Table 2 and Figures 1 through 4, all significant treatment effects are due to greater pre-posttest increases by the TGT subjects. For only one of the seven tests with the Hoyum-Sanders was there a significant ability-by-treatment interaction effect (Part I: $F(1,51) = 7.08$, $p < .05$). Because the single effect could be due to chance alone, it is not further explored.

Insert Figures 1 through 4 About Here

The results of the general linear analyses for the Treatment-Specific Achievement Test scores are summarized in Table 3. Strongly significant treatment effects were noted for Parts II, III, and the Total, accounting for 16%, 12%, and 15% of the dependent variable variance, respectively

(Part II: $F(1,51) = 14.51$, $p < .01$; Part III: $F(1,51) = 10.21$, $p < .01$; Total: $F(1,51) = 25.35$, $p < .01$). A marginally significant treatment effect was also detected for Part I: $F(1,51) = 3.88$, $p < .10$. As Table 2 and Figures 5 through 8 indicate, all treatment effects are due to greater pre-posttest gains by the TGT students than by the Control group students. No significant Ability-by-Treatment interactions were detected for any of the four analyses.

Insert Table 3 and Figures 5 through 8 About Here

An important question to ask is whether the two treatment groups were indeed equivalent, at pretest time, on the dependent variables of interest. Although the students were randomly assigned, stratifying on the Gates-MacGinitie, it is possible that the treatment groups could vary significantly at the outset of the experiment due to the small sample size. The pretest scores in Table 2, for both the Hoyum-Sanders and the Treatment Specific Achievement Test, indicate no significant differences between the treatment groups, suggesting the two groups were roughly comparable.

Classroom Group Process

The sociometric data were aggregated in two ways. The first, a simple measure of the number of times a student was selected by classmates, indicates the level of cohesion existing (at posttest time) in the classroom on both task-oriented and more strictly social dimensions. An examination of treatment group means indicates greater cohesion in the TGT condition for the task-oriented dimension (Who helped you: TGT $\bar{x} = 3.04$, Control $\bar{x} = .93$, $t = 5.69$; $df = 52$, $P < .001$, two tailed test, $\omega^2 = .37$), but not for the friendship (Friends: TGT $\bar{x} = 4.78$, Control $\bar{x} = 5.81$; $t = 1.52$; $df = 52$, n.s.).

A second set of measures derived from the sociometric data focuses on the number of social isolates in the class. The two social isolate measures reflect the number of students in the class who (1) were not helped by any more than one of their classmates, and (2) were not listed as a friend by any more than one of their classmates. Both measures reflect the number of students who are recipients of minimal social contacts. For the "Who helped you with language arts" item, two of the 24 TGT students (8%) were defined as social isolates, whereas 17 of the 24 Control students (71%) appeared to be social isolates ($\chi^2 = 19.60$, df = 1, $P < .001$). The positive TGT effect noted for helping was not observed for the friendship item ($\chi^2 = 1.01$, df = 1, n.s.). In summary, TGT created more positive classroom social climate on task-related (helping) dimensions. However, the effect did not generalize to non-task (friendship) dimensions.

Student Perceptions of Class

Table 4 summarizes the results for student perceptions of the class. The table lists, separately for each item, the response distributions of both treatment groups. Also depicted are the Chi-square tests of associations for each item. None of the Chi-square tests reached statistical significance, indicating no differences in student perceptions between TGT

Insert Table 4 About Here

and Control groups. What is clear upon examination of the response distributions is that the vast majority of the students in both classes (1) feel positively toward the class, (2) believe their classmates are

friendly to them and want them to work hard, (3) view the classwork as relatively easy, and (4) believe it is important to do well in class.

Summary

In general, TGT created greater achievement for both measures of language arts skills. Not only did TGT create a positive effect for the treatment-specific measure, but the effect also generalized to a standardized measure of language arts skills. Significant but localized TGT effects were also noted for classroom social processes. TGT increased classroom cohesion and decreased the number of social isolates, on task-related dimensions only. No TGT effects were observed on student perceptions. The TGT and Control students were very positive toward the work in the classroom.

DISCUSSION

Because the present study is a replication of an earlier TGT study, it is important to assess the extent to which the profiles of results for the two studies are similar. Table 5 lists, separately for each study,

Insert Table 5 About Here

the R^2 Incremental, p-level, and direction of effect for each dependent variable. Table 5 begins with the Hoyum-Sanders Elementary English Test. For the Hoyum-Sanders, TGT effects were noted for two subtests in the original study (listed as Study 1 in Table 5). For the present study (Study 2) TGT effects were obtained for three of the subtests. A significant TGT effect was obtained in both studies for only one subtest

of the Hoyum-Sanders (Part III). For the Treatment-Specific Achievement Test, the pattern of TGT effects indicated in the present study almost completely replicates that found in the first study. The results for classroom group process for the present study are identical to those found in the original study, with a positive TGT effect on the helping dimensions only. In short, except for the Hoyum-Sanders, the results of the present study provide strong cross-validation of the positive TGT effects on language arts skills and classroom social process noted in DeVries & Mescon (1975).

Language Arts Skills

In interpreting the positive TGT effect on language arts skills it is useful to focus on the level of strength of the effect. As noted in Table 5, the amount of variance in language arts skills accounted for by TGT in the present study was relatively large (compared with many other studies of instructional program interventions). For the Hoyum-Sanders Total test score, TGT accounted for 11% of the variance (ranging up to 24% for specific subtests), and for the Treatment-Specific Achievement Total test the effect was even larger (accounting for 15% of the variance for the total score). These results indicate that TGT has a powerful effect on students' language arts skills.

Another way to assess the power of the TGT effects is to treat the data using a "mastery learning" approach. Such an approach sets an arbitrary absolute criterion (for example, 90% of items correctly answered) for defining whether students acquired the targeted skill areas.

If one uses the conservative 90% correct criterion for the Treatment-Specific Achievement Test, the results of the current study can be summarized as follows. Of the 27 TGT students, none evidenced mastery on the pretest, whereas 14 (or 52%) achieved mastery at posttest time. Of the 26 Control students, one (4%) had mastered the material at pretest, compared with 3 (12%) at posttest time. These results also clearly indicate the powerful impact of TGT by virtue of the fact that a majority of the TGT students achieved a high level of mastery of a complex skill area within a span of six weeks.

Why does TGT work?

Although the present study provides additional evidence of the efficacy of TGT as an instructional technique, the nature of the experimental design leaves unexplained the reasons for such effects. What social and intrapersonal forces are enlisted by TGT to produce increased achievement? The effects on social processes detected in the current study suggest that students help each other more frequently in TGT classes. How much helping affects achievement by students is, however, still an unanswered question. Earlier research on TGT which more directly tested the question of why TGT has the observed effects can be reviewed by the interested reader (cf. DeVries & Edwards, 1973, 1974; Slavin, et al., 1975). In general, on the basis of past research TGT appears to systematically affect a student's beliefs by (1) making success in the classroom (on academic skills) of greater importance, and (2) increasing the belief that the student has a good chance of success in the classroom. Both changes in beliefs are likely to have direct and positive impact on the student's level of involvement in the classroom.

What is the next step?

The current study represents a useful cross-validation of the initial experiment with TGT in the primary grades (DeVries & Mescon, 1975). The replication has real limitations, however, and additional cumulative evidence concerning TGT in the primary grades should be collected. Experiments should be conducted which, either individually or collectively, sample a variety of teachers, student populations, subject-areas, and grade levels.

References

Bronfenbrenner, U. Two worlds of childhood. New York: Russell Sage, 1970.

Cohen, J. Multiple regression as a general data-analytic system. Psychological Bulletin, 1968, 70, 426-443.

Coleman, J.S. Academic achievement and the structure of competition. Harvard Education Review, 1959, 29, 339-351.

Deutsch, M. An experimental study of the effects of cooperation and competition in small groups. Human Relations, 1949, 2, 199-231.

DeVries, D.L. & Edwards, K.J. Learning games and student teams: Their effects on classroom process. American Educational Research Journal, 1973, 10, 307-318.

DeVries, D.L. & Edwards, K.J. Expectancy theory and cooperation-competition in the classroom. Paper presented at the Annual Convention of the American Psychological Association, New Orleans, Louisiana, September, 1974.

DeVries, D.L., Edwards, K.J. & Fennessey, G.M. Using Teams-Games-Tournament (TGT) in the classroom. Center for Social Organization of Schools, The Johns Hopkins University, Baltimore, Maryland, June, 1973.

DeVries, D.L. & Mescon, I.T. Teams-Games-Tournament: An effective task and reward structure in the elementary grades. Center for Social Organization of Schools, The Johns Hopkins University, Baltimore, Maryland, Report No. 189, January, 1975.

Slavin, R.L., DeVries, D.L. & Hulten, B.H. Individual vs. team competition: The interpersonal consequences of academic performance. Center for Social Organization of Schools, The Johns Hopkins University, Baltimore, Maryland, Report No. 188, January, 1975.

Table 1

Results of General Linear Analyses for
Hoyum-Sanders Elementary English Test

DEPENDENT VARIABLE	SOURCE OF VARIANCE	DF_1	Incremental R^2	F Ratio[1]
PART I	Ability (A)	1	.03	1.71
Sentence Recognition	Treatment (B)	1	.12	7.32**
	A X B	1	.11	7.08*
	Total		.26	
PART II	Ability (A)	1	.11	6.53*
Capitalization	Treatment (B)	1	.01	< 1
	A X B	1	.01	< 1
	Total		.13	
PART III	Ability (A)	1	.11	6.41*
Punctuation	Treatment (B)	1	.24	19.00**
	A X B	1	.01	< 1
	Total		.36	
PART IV	Ability (A)	1	.01	< 1
Contractions,	Treatment (B)	1	.08	4.63*
Possessives,	A X B	1	.01	< 1
Spelling	Total		.10	
PART V	Ability (A)	1	.41	34.85**
Usage	Treatment (B)	1	.00	< 1
	A X B	1	.01	< 1
	Total		.42	
PART VI	Ability (A)	1	.39	32.28**
Alphabetization	Treatment (B)	1	.00	< 1
	A X B	1	.01	< 1
	Total		.40	
TOTAL	Ability (A)	1	.55	61.59**
Hoyum Sanders	Treatment (B)	1	.11	15.52**
	A X B	1	.00	1.32
	Total		.66	

*P < .05
**P < .01

[1] $df_2 = 51$

Table 2

Treatment Group Means and Standard Deviations
for Language Arts Achievement Tests

		TGT		CONTROL	
		Pre	Post	Pre	Post
Hoyum-Sanders Elementary English Test					
PART I Sentence Recognition	$\bar{x}$	6.15	9.37	6.62	8.62
	S.D.	1.56	.79	1.47	1.42
PART II Capitalization	$\bar{x}$	11.63	12.67	11.62	12.23
	S.D.	2.17	1.66	2.53	1.97
PART III Punctuation	$\bar{x}$	7.48	11.70	8.15	9.46
	S.D.	2.68	2.09	2.44	2.49
PART IV Contractions, etc.	$\bar{x}$	4.04	6.82	4.50	5.69
	S.D.	1.16	1.84	1.48	1.93
PART V Usage	$\bar{x}$	25.67	26.33	26.23	27.00
	S.D.	4.07	3.58	3.77	3.71
PART VI Alphabetization	$\bar{x}$	6.82	6.41	6.89	6.19
	S.D.	1.98	2.06	1.86	2.58
TOTAL Hoyum-Sanders	$\bar{x}$	61.78	73.30	64.00	69.15
	S.D.	8.59	7.44	9.50	10.03
Treatment-Specific Achievement Test					
PART I Grammar, etc.	$\bar{x}$	15.30	20.15	16.12	19.31
	S.D.	4.36	2.15	3.51	2.84
PART II Commas, etc.	$\bar{x}$	10.15	14.37	10.69	12.39
	S.D.	3.12	2.60	3.38	2.64
PART III Quotations, etc.	$\bar{x}$	14.00	18.82	13.85	16.46
	S.D.	3.11	3.05	3.04	3.27
TOTAL Treatment-Specific	$\bar{x}$	39.44	53.33	40.65	48.15
	S.D.	8.74	7.25	8.04	7.57

Note: For all dependent variables, N = 27 for TGT, N = 26 for Control

Table 3

Results of General Linear Analyses for

Treatment-Specific Achievement Test

DEPENDENT VARIABLE	SOURCE OF VARIANCE	DF_1	Incremental R^2	F Ratio [1]
PART 1				
Grammar, Contract-	Ability (A)	1	.33	25.18**
ions, Possessives	Treatment (B)	1	.05	3.88*
and Endings	A X B	1	.00	< 1
	Total		.38	
PART II	Ability (A)	1	.27	18.72**
Commas and	Treatment (B)	1	.16	14.51**
Abbreviations	A X B	1	.01	< 1
	Total		.44	
PART III	Ability (A)	1	.31	23.43**
Quotations and	Treatment (B)	1	.12	10.21**
Kinds of Sentences	A X B	1	.00	< 1
	Total		.43	
TOTAL	Ability (A)	1	.55	61.37**
Treatment Specific	Treatment (B)	1	.15	25.35**
	A X B	1	.01	1.12
	Total		.71	

*P < .10

**P < .01

[1] $df_2 = 51$

Table 4

Response Distributions for Attitude and Classroom Process Self-Report Measures

DEPENDENT VARIABLE	TREATMENT GROUP	YES	NO	NOT SURE	chi-square
ATTITUDES					
(1) Like coming to class	TGT	92%	4%	4%	1.07
	Control	96%	0%	4%	df = 2
(2) Happier if not have to come to class	TGT	8%	88%	4%	3.78
	Control	0%	84%	16%	df = 2
(3) Like learning Language Arts	TGT	92%	4%	4%	2.17
	Control	100%	0%	0%	df = 2
PEER CLIMATE					
(1) Other students want you to work hard	TGT	63%	4%	33%	.40
	Control	56%	8%	36%	df = 2
(2) Other students friendly to you	TGT	88%	0%	12%	.98
	Control	72%	0%	28%	df = 1
DIFFICULTY OF CLASS					
(1) Work hard to do well	TGT	0%	75%	25%	1.09
	Control	4%	68%	28%	df = 2
(2) Easy to do well	TGT	67%	8%	25%	2.20
	Control	56%	24%	20%	df = 2
PERCEIVED IMPORTANCE					
(1) Important to do well in class	TGT	88%	0%	12%	1.51
	Control	100%	0%	0%	df = 1

Note: For all analyses N = 24 for TGT and N = 25 for Control

Table 5

Summary of Results for Both Studies

DEPENDENT VARIABLES	STUDY I			STUDY 2		
	R_I^2	P-Level	Direction	R_I^2	P-Level	Direction
Hoyum-Sanders Elementary English Test						
PART I	.00	n.s.	0	.12	.01	+
PART II	.09	.05	+	.01	n.s.	0
PART III	.11	.01	+	.24	.01	+
PART IV	.04	n.s.	0	.08	.05	+
PART V	.01	n.s.	0	.0C	n.s.	0
PART VI	.01	n.s.	0	.00	n.s.	0
TOTAL				.11	.01	+
Treatment-Specific Achievement Test						
PART I	.07	.06	+	.05	.10	+
PART II	.13	.01	+	.16	.01	+
PART III	.08	.05	+	.12	.01	+
TOTAL				.15	.01	+
Classroom Group Process						
(1) # Times Selected						
Helping	.14	.01	+	.37	.001	+
Friends	.03	n.s.	0	.02	n.s.	0
(2) # Social Isolates						
Helping		.02	+		.001	+
Friends		n.s.	0		n.s.	0

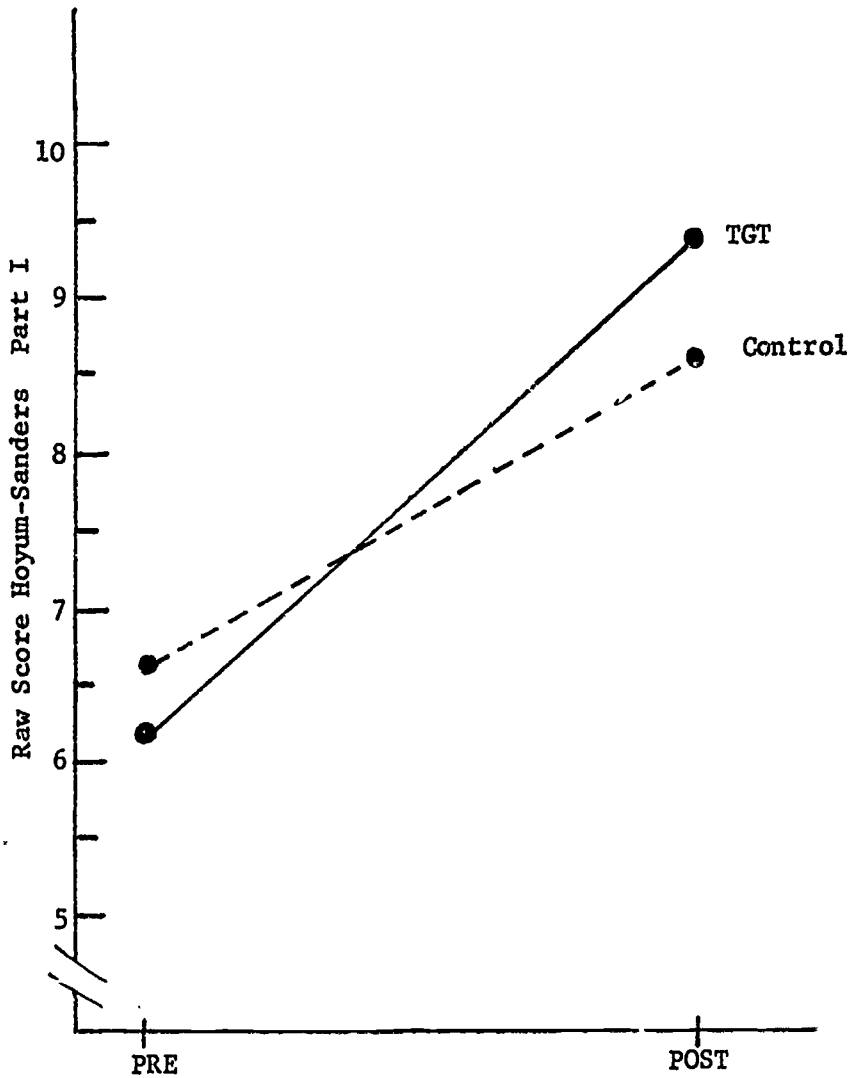

Figure 1 Treatment Group Means for Hoyum-Sanders Part I

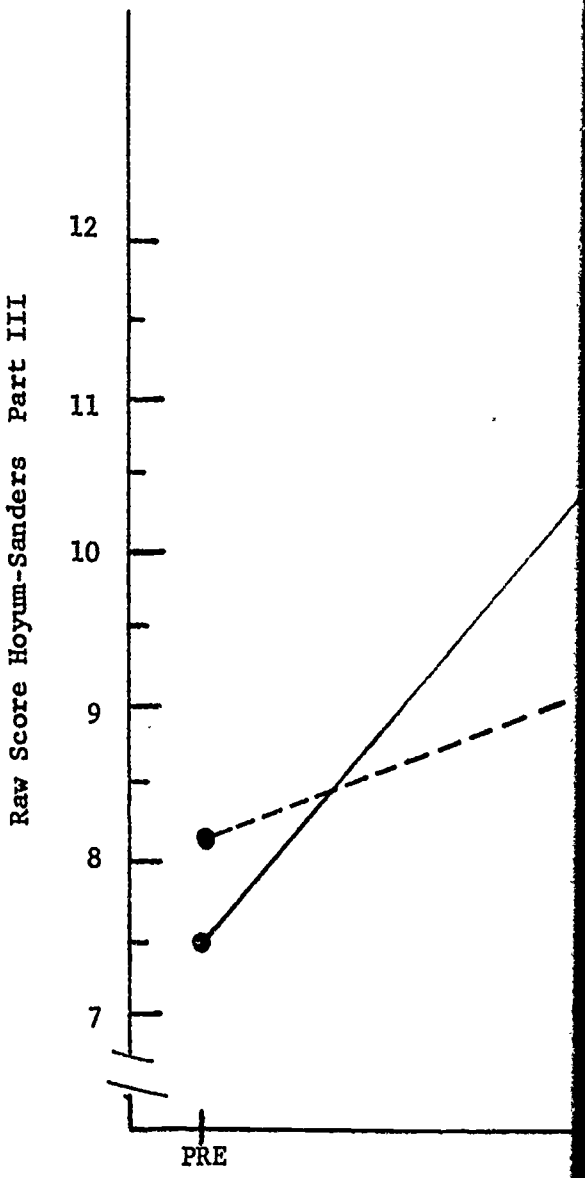

Figure 2 Treatment Group Me
Part III

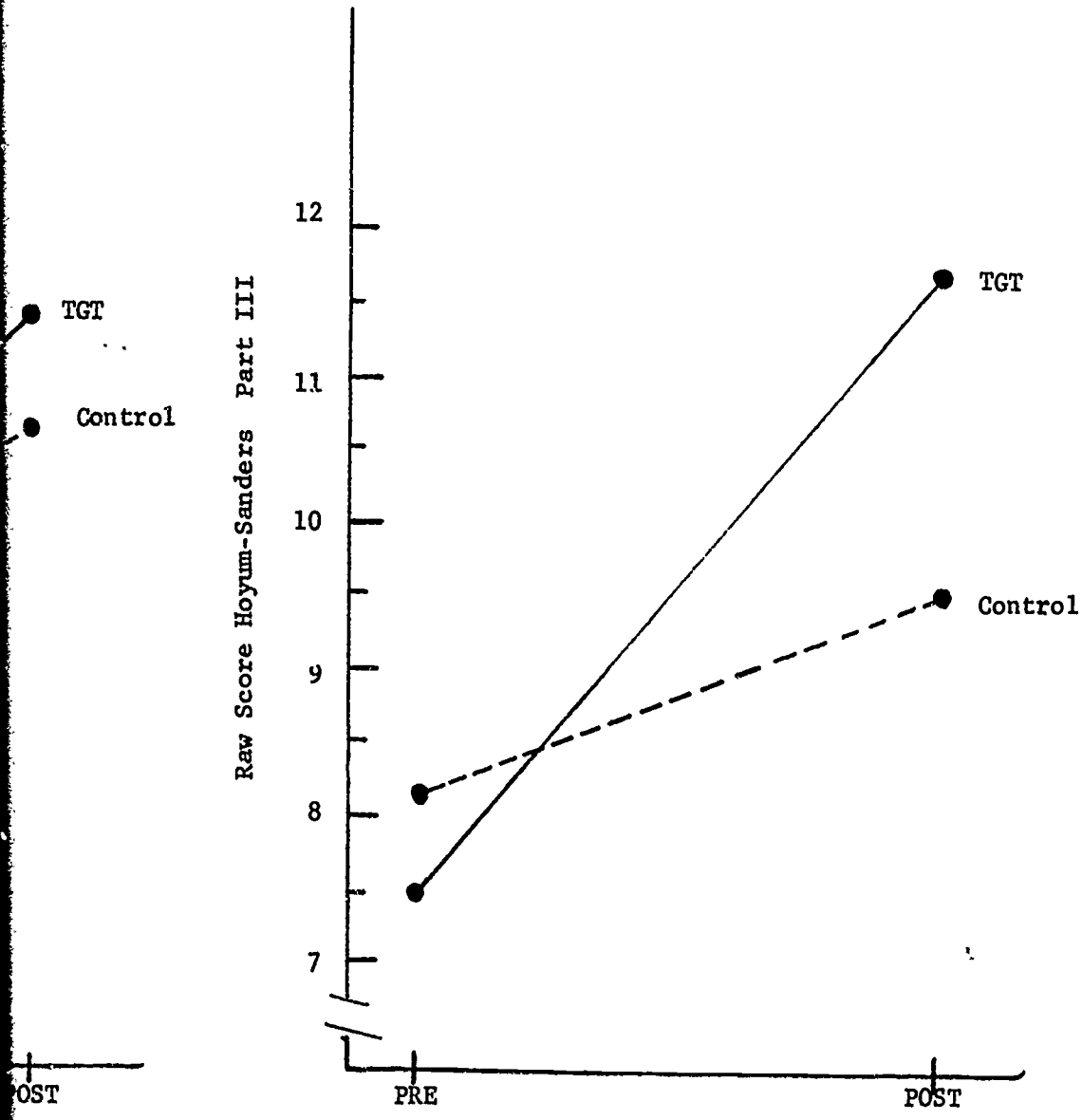

Figure 2 Treatment Group Means for Hoyum-Sanders Part III

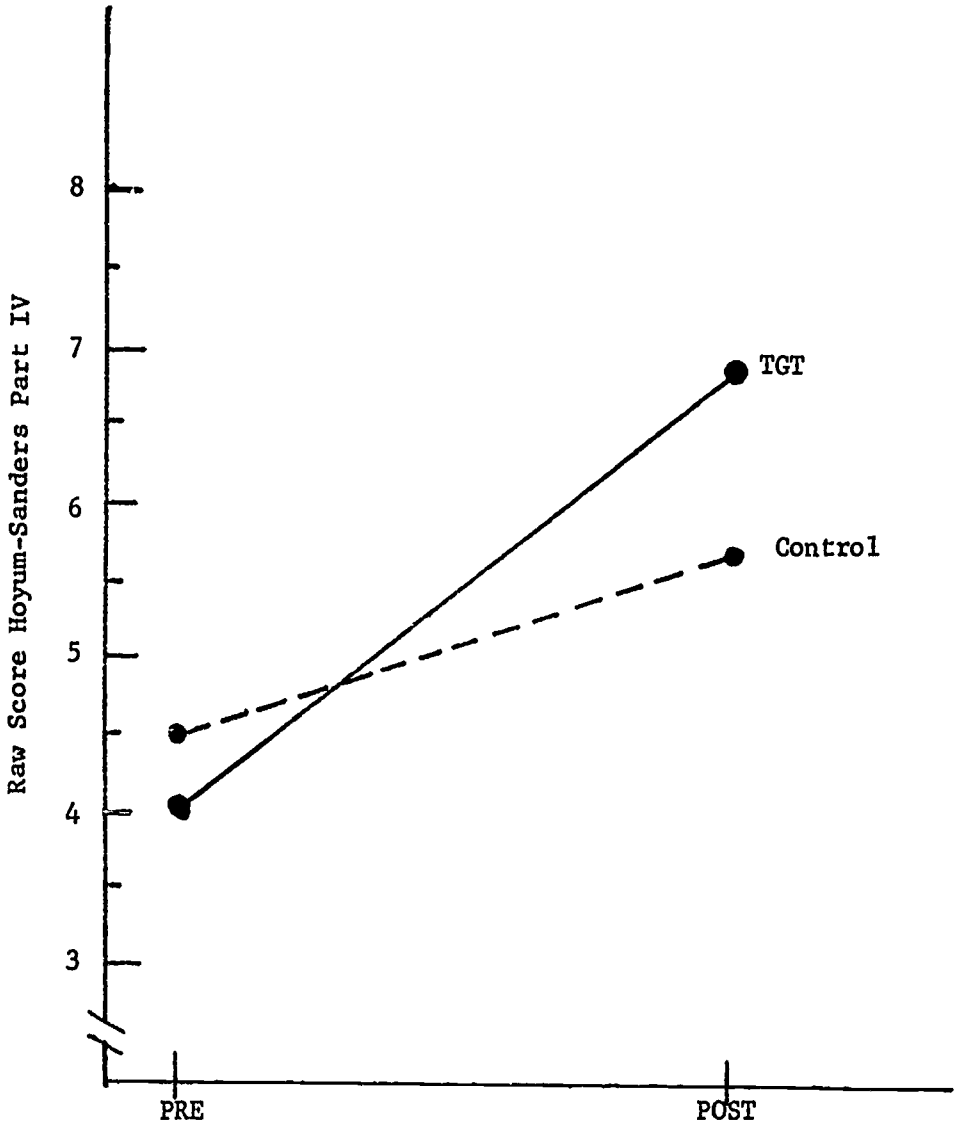

Figure 3 Treatment Group Means for Hoyum-Sanders Part IV

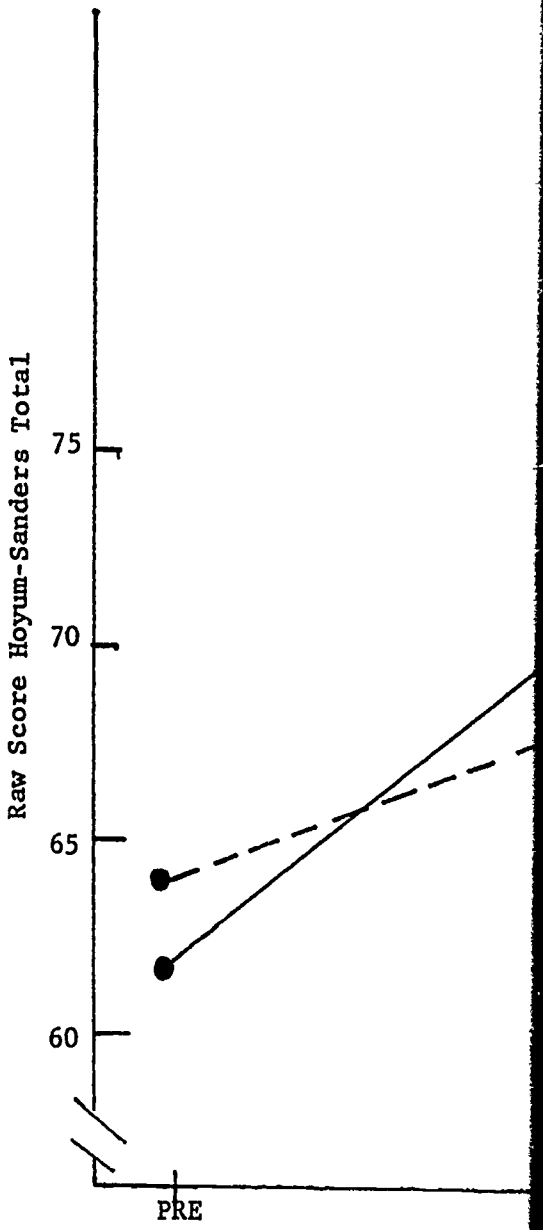

Figure 4 Treatment Group Total

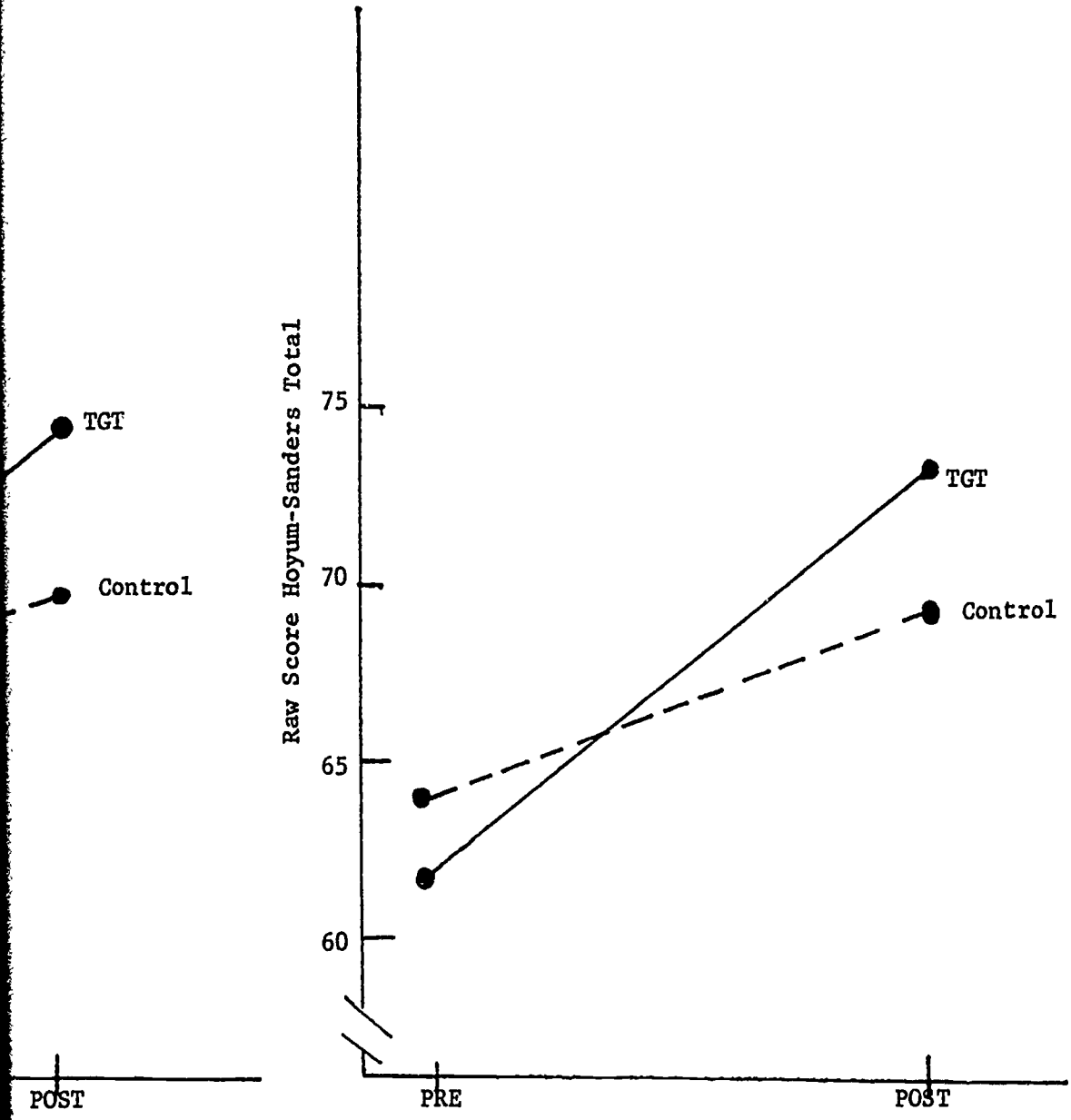

Figure 4 Treatment Group Means for Hoyum-Sanders Total

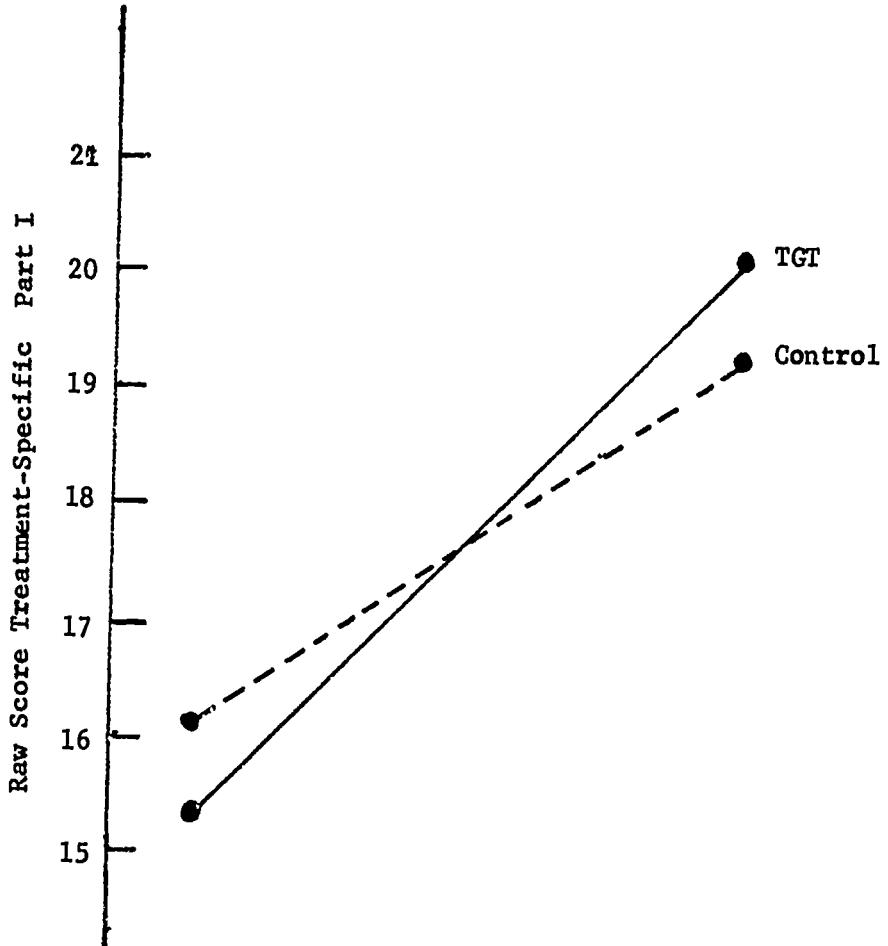

Figure 5 Treatment Group Means for Treatment-Specific Achievement Test Part I

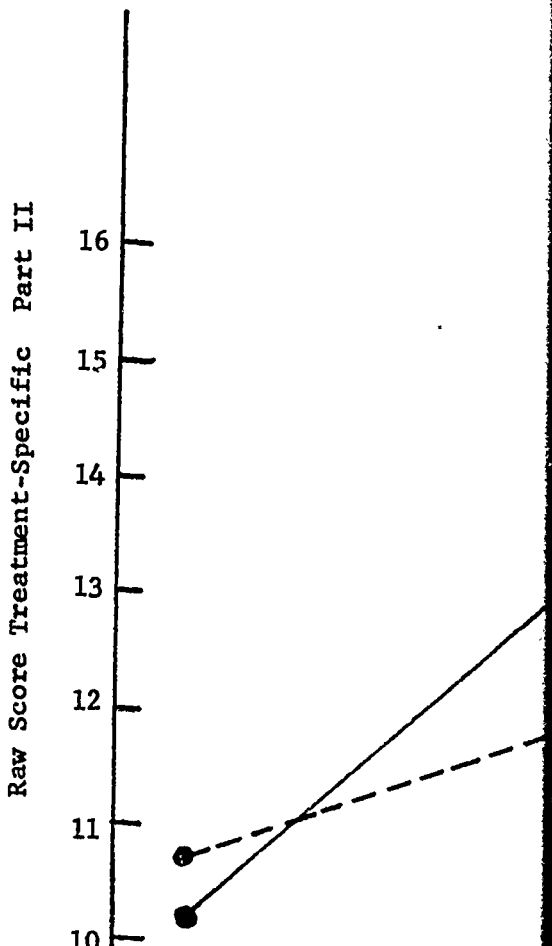

Figure 6 Treatment Group M
Specific Achievem

TGT

Control

POST

for Treatment-
est Part I

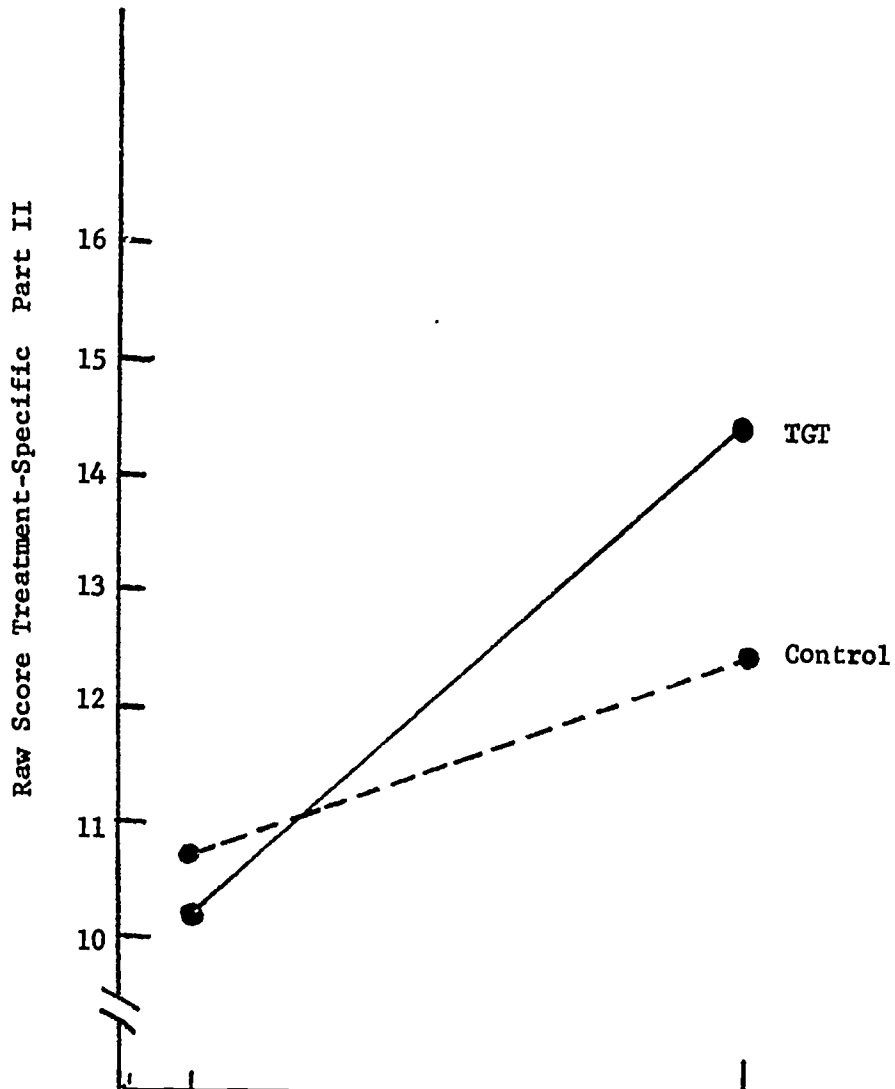

Figure 6 Treatment Group Means for Treatment-Specific Achievement Test Part II

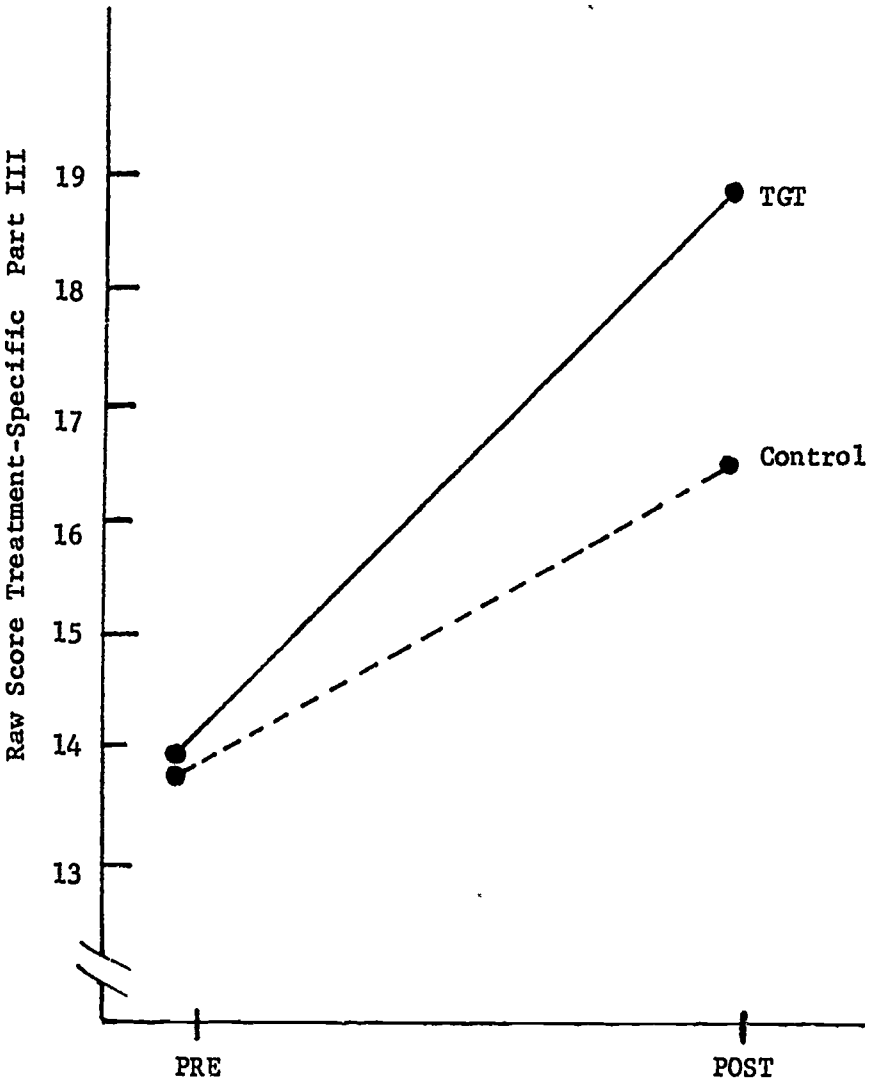

Figure 7 Treatment Group Means for Treatment-Specific Test Part III

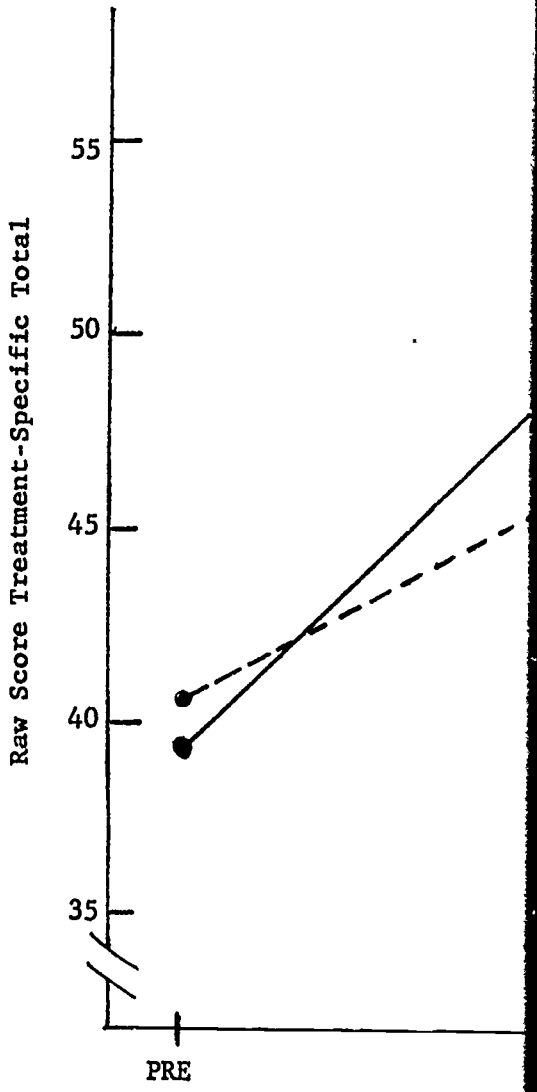

Figure 8 Treatment Group M
Specific Test To

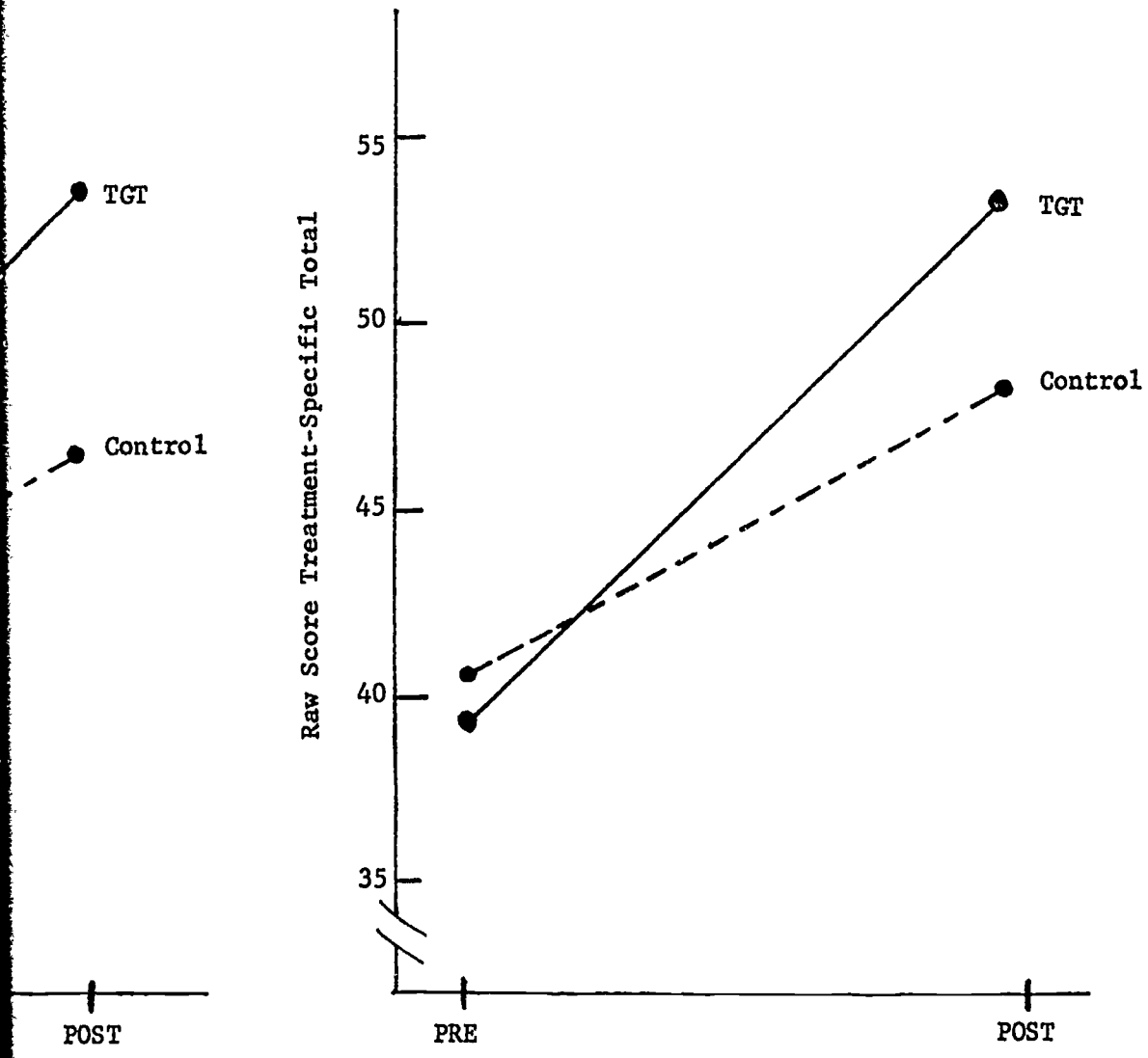

Figure 8 Treatment Group Means for Treatment-Specific Test Total Score