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AUTHOR Roberts, Arthur D.; And Others
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ABSTRACT

This study examined the hypothesis that subjects experiencing a minicourse curriculum would show greater cognitive and affective gains than subjects in a traditional curriculum. The Watson-Glaser Critical Thinking Appraisal, Cooperative English, JIM Scale, and Gable-Roberts Attitude Toward School Subjects were administered (September-June) to 500 11th grade students. Two-way analyses of variance (sex and curriculum) were employed. Minicourse subjects gained more on one critical thinking scale, while traditional curriculum subjects gained more in two reading comprehension areas. No differences in affective gains were found. Traditional subject males gained more on the critical thinking inference side. (Author)

AN EVALUATION OF MINICOURSE CURRICULA IN SECONDARY SOCIAL STUDIES*

Arthur D. Roberts
Robert K. Gable
Steven V. Owen

University of Connecticut

During the last twenty years we have seen an unprecedented effort to initiate curricular reform in the public schools of the United States. However, there is a very real question on the part of educators and critics as to how much effect these efforts have had on the school curriculum. Charles Silberman, speaking for many critics, also feels that the major problem in American education is the continued failure to develop "sensiti , autonomous, thinking, human individuals." We have done this by creating a false dichotomy between the "cognitive" and "affective" domains, between thinking and feeling.[1]

Obviously, no panacea exists to end the "mindlessness" of which we are accused and to interrelate the cognitive and affective domains in education. One curricular innovation, however, that offers possible hope for the improvement of instruction in our secondary schools is the "minicourse curriculum." In this study minicourses were defined as short term courses with highly specialized content that ran for a time period of nine weeks. An academic year in any secondary subject matter area, thus, would consist of four minicourses. Other definitions of the minicourse exist, i.e., there are one week minicourses, two week courses, between semester courses, etc., but the nine week course seems to be the most prevalent. Students in any minicourse curriculum may choose th course work from a wide range of offerings which might include such topics, for example, as Isms, the Depression, American Inventiveness, Political

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[1]Silberman, Charles E., Crisis in the Classroom (New York: Random House, 1970), pp. 158, 159.

Cartooning, Comparative Religions, et al. Guided self-selection with few, if any, prerequisities is usually possible within a subject matter area.

A curriculum built on minicourses is based on a far larger, and usually far broader, range of offerings than one based on either semesters or a one year block of time. It is not unusual for a single department, Social Studies for example, to offer as many as forty to fifty minicourses as compared with seven or eight courses in the more traditional setting. Students are given a great deal of freedom in choosing from this wide range of offerings.

Minicourses thus far in their development have suggested a number of positive advantages that are both cognitive and affective in nature. In the cognitive realm students have the opportunity to study a greater number of subjects in greater depth. It can be argued, for example, that many of the broad survey courses that are taught, notably in the social studies and English, are often superficial and redundant. By the time a student takes high school American History, to cite one example, he/she may have studied some of the content three or four times. A wide range of minicourses offers the opportunity for challenging, in-depth study of a particular subject. In areas where it is felt that there must be a common core, minicourses can be used for enrichment. In either case, the curriculum offers more challenge and the opportunity for sophisticated study.

In the affective domain choice is a key word. Students choose at least four separate courses in which they are interested each year. Students can pick what they really need or want to know and can skip that which is unnecessary. This is a natural selection process, and it can be very healthy for the curriculum. Students literally vote with their feet for a curriculum development when they make their choices. Subjects which are outmoded or irrelevant can be discarded, revised, or drastically altered. Basic process skills can still be taught in those subjects which remain.

Students also reap some fringe benefits. They may study with many different teachers; repeat only a quarter's work, not a full year's, if they fail a course; and choose work in areas where they need specialized help in developing skills.

The minicourse offers the possibility of increased motivation, more positive attitudes towards subject matter, and a more favorable attitude towards teachers. This potential is based on the self-selection process, the potential motivation inherent in a wide range of offerings, and the student opportunity to study high interest material in greater depth. These potential advantages have been observed

in the secondary schools especially in social studies and English where curricula based on minicourses have grown rapidly. Survey evidence suggests that the adoption of minicourses may be a rapidly growing grass roots movement, although, as yet there has been virtually no evaluation of the phenomena.[2]

Teachers in a minicourse curriculum have a rare opportunity to involve students in their own learning. Students may assist in the creation of courses in which they are interested, or quite possibly teach a course if they have a unique ability. Teacher-pupil cooperation is especially apropos if a major affective outcome that we seek is a change in both student and teacher attitudes. School should be a place of involvement, not a prison for a captive audience.

Teachers are also given a rare personal opportunity in a curriculum which is based on minicourses. Most college and university education is based on highly specialized courses. The average teacher rarely gets a chance to teach either what he/she really knows or what he/she is really interested in. By specializing, teachers have an opportunity to display their talents rather than just cover large blocks of general material. Not only can they utilize their subject matter competency, but also select courses that reflect their special interests as well. Thus, for student and teacher alike the opportunity "to do their thing" is there but without the flabbiness that this catch phrase often connotes since the structure and rigor of a subject matter field are still maintained.

Finally, the minicourse also offers some general curricular possibilities. Traditional departmental lines which are often more difficult to breach at the high school level than at the college level may take on less importance. Minis which start in one department can end up in another as teachers discuss and work together on their interests. There is reason to believe that there is less emphasis on grades in a minicourse curriculum. People are studying what they are interested in and grades are not as important. This condition may well lead to a blurring of the traditional teacher-learner concept as the two groups work in a climate of real interest, talent and enthusiasm.

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[2]Roberts, Arthur D. and Gable, R. K., "The Minicourse: Where the Affective and Cognitive Meet," Phi Delta Kappan, May, 1973 and Guenther, John and Ridgway, Robert, "Mini-Courses: Promising Alternatives in the Social Studies," The Clearing House, April, 1973.

All of these real or hoped for advantages, of course, assume that minicourses are more than year-long courses broken down into four quarters. There are other real and potential disadvantages as well. Teachers may try to compress too much into a mini. The result could well be an extensive tobacco auction.

Scheduling can be a major problem, especially when a school first attempts a mini-course program. This can be overcome as the successful operations of several schools illustrate. Computer assistance is helpful to this end. Schools report initial success of 85-90% of students computer scheduled the first time through. Experience can and does improve this situation.

Another possible disadvantage is the large number of preparations that a teacher may have during a session and/or a school year. If truly based on interest, this would not be a great problem, but if teachers are arbitrarily assigned to sections that they must teach, then, minicourses could be more of a burden than the traditional semester or year-long course. Some teachers also fear that they may not get to know their students as well as in the longer time block but others who have taught minicourses argue vehemently that this is not so.

The major criticism of the minicourse curriculum that can be currently offered is that it has not been adequately evaluated. Before the minicourse bandwagon rolls too far, we should find out if in fact it fulfills its basic promise. Evaluation of the minicourse curriculum should include measurement of yearly changes in both the cognitive and affective areas for two groups of students randomly assigned to a mini or traditional curriculum model. A number of pertinent questions need to be asked. For example, does exposure to a greater variety of subject matter help the individual to develop the ability to define a problem, select pertinent information for the solution of a problem, recognize stated and unstated assumptions, formulate and select relevant and promising hypotheses, draw valid conclusions, and judge the validity of inferences? Watson and Glaser have defined these statements as the ability of think critically.[3] It is also reasonable to expect that the new method should generate skill development in other areas besides critical thinking. Since vocabulary building, reading comprehension, and reading speed are important indicators and prerequisites for future academic success, they too should be evaluated.[4]

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[3]Watson, Goodwin and Edward Glaser, Watson-Glaser Critical Thinking Appraisal (New York: Harcourt, Brace, and World, 1951).

[4]Cooperative English Tests (Princeton: Educational Testing Service, 1960).

The limited number of practitioners who have been involved in teaching a minicourse curriculum are quite willing to testify that positive changes in attitude occur among their students. Students are thought to enjoy the minicourse subject matter more than they did the traditional curriculum. Is this testimony valid, or simply the result of enthusiasm for something new? Research is clearly needed to answer such questions as: Do students experiencing a minicourse show greater changes in attitude toward subject matter,[5] or motivation to learn,[6] than students experiencing the traditional model? Also, do minicourse students have more positive end-of-the-year attitudes toward teachers than a comparable group of traditional-course students? It was the need to have answers to these questions that led to this study.

Hypotheses

In light of the above review, the following hypotheses were advanced in the null form for purposes of statistical analysis:

H_0 There will be no difference between students in the minicourse curriculum and the traditional curriculum on the following dependent variables:

Cognitive

Critical Thinking

1. Inferences
2. Recognition of Assumptions
3. Deduction
4. Interpretation
5. Evaluation of Arguments

Reading Comprehension

6. Vocabulary
7. Level of Comprehension
8. Speed of Comprehension

Affective

9. Motivation Toward Education

Attitude Toward Social Studies

10. General Interest
11. Usefulness

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[5]Gable, R. K. and Roberts, A. D., "The Development of an Instrument To Measure Attitudes Towards School Subjects" Paper presented at the Northeastern Educational Research Association Annual Meeting, Boston, 1972.

[6]Frymier, J. R., JIM Scale (Columbus, Ohio: The Ohio State University, 1965).

Attitude Toward Teachers

12. Presentation of Subject
13. Interest in Job
14. Teaching Techniques
15. Total Attitude Toward Teaching

Procedure

Sample. The sample consisted of 500 eleventh grade students from two comparable high schools in a small city of approximately 46,000 people. The community served by these schools is essentially white middle class (both blue and white collar). There was no evidence to indicate that the two schools differed significantly on any selection variable. A later section of this paper will note that the lack of difference between the two samples on all the pretest measures further suggests the relative equivalence of the two groups.

Curricula. The minicourse curriculum consisted of four self-selected nine-week courses chosen from a list of specialized content areas such as those mentioned earlier in this paper. The traditional curriculum consisted of a year long course in eleventh grade American History.

Instruments. The Watson-Glaser Critical Thinking Appraisal was used to obtain scores in the following areas: Inference, Recognition of Assumptions, Deduction, Interpretation, and Evaluation of Arguments. The second cognitive measure employed was the Cooperative English Tests-Reading Comprehension which yields scores on Vocabulary, Level of Comprehension, and Speed of Comprehension. Reliability and validity of these measures is well supported in the literature.

In the affective area the first measure used was Frymier's JIM Scale Student Questionnaire, a single score instrument, which measures motivation toward education. Reliability and validity data are supportive; scores on the instrument have been found to discriminate between overachievers and underachievers.[7]

The Gable and Roberts Attitude Toward School Subjects (GRASS) measure was used to measure student attitude toward social studies. This 23 item Likert instrument yields a total attitude score as well as scores on two dimensions of attitude toward social studies: general interest in the subject and usefulness to students. Content

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[7]Frymier, J. R., Development and Validation of a Motivation Index: A Sixth Report (Columbus, Ohio: The Ohio State University, 1965.

validity was generated by the judgements of social studies educators; construct validity was supported by a principal components factor analysis followed by an oblique rotation. Alpha internal consistency reliabilities for 600 eleventh graders were found to be .95, .94, and .70 respectively.[8]

The final affective measure employed was the Roberts and Gable Attitude Toward Teachers Scale (RGATS). This 22 item Likert type measure yields a total Attitude Toward Teacher score as well as scores on Presentation of Subject, Interest in Job, and Teaching Techniques; construct validity was supported by a principal component factor analysis. Alpha internal consistency reliabilities were found to be .92, .86, .85, and .80 respectively.[9]

Analyses. All instruments except the RGATS were administered on a large group or classroom basis in September and June. Since the students may not have formed attitudes toward some teachers early in September, the RGATS was given as a post-test only.

All pretest measures, except teacher attitudes (RGATS), were analyzed with one-way analyses of variance on the respective scale and total scores to ascertain if any initial group differences were present. Since no significant differences ($p < .05$) were present, the subsequent analyses were carried out on the posttest measures.

Because of the moderate intercorrelations among dependent variables, it was clear that univeriate analyses would obscure group differences. Thus, multivariate analyses of variance (MANOVA) were run to determine if there were overall differences in the specified sets of dependent variables between the two curricular groups. Where the MANOVA indicated that group differences were present, stepwise discriminant function analysis (SDFA) was employed to ascertain the relative worth of the dependent varibles in distinguishing between the two curricular groups.

On the first MANOVA the Watson-Glaser scales were used. The second used the Cooperative English scales; the final MANOVA was seen on the combined set of attitudinal measures: the JIM motivation scale and the GRASS attitude toward school subjects scale.

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[8]Gable, R. K. and Roberts, A. D. "The Development of an Instrument to Measure Attitudes Towards School Subjects," Paper presented at the Northeastern Educational Research Annual Meeting, Boston, Mass. 1972.

[9]Copies of this instrument may be obtained fromt he authors.

The fourth quarter RGATS attitude toward teacher data were analyzed using t-tests to compare differences between the two curricular groups.

It should be noted that different sample sizes were used for each analysis. This was necessitated due to some complete classrooms of missing data. Discussions with the department chairmen and teachers indicated that no systematic differences between the two curricular groups could be attributed to the omission of some classrooms from the data matrix. Specifically, the department chairmen did not efficiently arrange the testing procedures. Since there was no apparent biasing selectivity in the missing data, the researchers are confident of the stated results.

Results and Discussion

This section will describe the results of the MANOVA and DFA in two parts: Cognitive Outcomes and Affective Outcomes.

Cognitive Outcomes. Table I contains the means and standard deviations for the mini and traditional groups on the Watson-Glaser Critical Thinking Appraisal scales: Inferences, Recognition of Assumptions, Deduction, Interpretation and Evaluation of Arguments.

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Insert Table I here

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The MANOVA F for the test of equality of the mean vectors for the mini and traditional groups was rejected ($F = 6.02$; d.f. 5/384; $P < .0001$). While the mean vectors were not equivalent, it should be noted that the mean differences did not all favor the mini group. The traditional groups slightly outperformed the mini group on the Inference and Deduction scales.

A step-wise discriminant function analysis was run to determine which of the Watson-Glaser scales could best account for any differences in critical thinking between the two curricular groups. This analysis indicated that the Evaluation of Arguments and Inferences scales best distinguished between the two curricular groups ($F = 13.36$; d.f. 2/387; $P < .01$). But note that while the mini groups outperformed the traditional groups on the Evaluation of Arguments scale, the traditional group was superior on the Inferences scale. Further evidence regarding the lack of consistent superiorty of either group can be obtained by examining the ability of the derived discriminant function to properly classify students into either the mini or traditional curriculum groups. This classification is based on the scores

on the two Watson-Glaser scales which provided maximum available discrimination between the groups. Table 2 contains the number of students properly classified ("hits") into the mini or traditional groups based upon the discriminant function using the Evaluation of Arguments and Inferences scales. Also included are the prior probabilities based upon simple ratios of actual group membership. Inspection of the percentages of hits indicates that the discriminant function was quite efficient in classifying students as members of the mini groups, but failed to properly assign traditional students. Most traditional curriculum students (N=104) were classified as belonging to the mini curriculum groups.

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Insert Table 2 here
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Thus, while the overall mean vectors on the dependent variables were significantly different in a statistical sense, the mini group was not consistently superior to the traditional group in the selected critical thinking areas. Further, the discriminant function containing the two critical thinking areas best distinguishing between the two groups did not efficiently classify the traditional curriculum students into the traditional group. Based upon their critical thinking scores, the traditional students were very much "like" the members of the mini curriculum group. Thus, it appears that no large practical difference in critical thinking ability occurred between the students experiencing the two curricula.

Table 3 contains the Cooperative English means and standard deviations for the Vocabulary, Level of Comprehension, and Speed of Comprehension scales. The MANOVA F for the test of the equality of the mean vectors for the mini and traditional groups on the Cooperative English scales was rejected ($F = 3.87$, $p < .009$). But note that the traditional group slightly outperformed the mini group on the Vocabulary and Speed of Comprehension scales. The step-wise discriminant function analysis indicated that the composite of Level of Comprehension and Speed of Comprehension best distinguished between the two groups ($F = 5.40$; d.f. 2/546; $p < .05$).

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Insert Table 3 here
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Table 4 contains the frequencies and percentages of hits (proper assignment of S_S to the group) and misses for the mini and traditional groups using the discriminant function with the variables Level of Comprehension and Speed of Comprehension.

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Insert Table 4 here

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Inspection of the percentage of S_S properly classified into the mini and traditional curricular groups, as well as the increase in the percentage of hits using the prior probabilities, suggests again that little practical significance is associated with the statistically significant classification. In other words, while the large sample sizes contributed to a statistically significant difference between the mini and traditional groups on the composite Level and Speed of Comprehension scales, the statistical significance probably has little practical importance. It appears that the curriculum did not make a great deal of difference in this cognitive area.

Affective Outcomes.

Table 5 contains the JIM scores and the GRASS general interest and usefulness scale means and standard deviations.

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Insert Table 5 here

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The MANOVA F for the test of the equality of mean vectors for the two curricula groups was not significant ($F = 1.35$, $p < .26$). Thus, the two curricular groups were not different on these particular attitude measures.

Table 6 contains the post-only means and standard deviations for the student attitude toward teacher scores on the RGATS Attitude Toward Teacher scale. Note that scores were obtained for the mini curriculum group at the end of each of the four mini curriculum quarters and in June for the traditional curriculum group. Inspection of the means for the four mini quarters suggests relatively small differences in attitudes toward teachers across the four quarters.

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Insert Table 6 here

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Of particular importance are the comparisons between the fourth quarter mini scores and the scores for the traditional group. The t values listed in Table 6 indicate that the mini curriculum students rated their teachers significantly higher on Presentation of Subject, Interest in Job, and Teaching Techniques than the traditional students. Mini students also indicated a significantly higher total attitude toward teacher than did the traditional students. Since the two groups

were not randomly assigned to the two curricular models, the assumption of no critical attitudinal differences cannot be made as no pretest data were available. The mini curriculum students may have had higher attitudes toward teachers that could reflect school differences instead of type of curriculum. Therefore, these findings are only descriptive and open for further investigation.

Conclusions

The predicted cognitive outcomes favoring the students experiencing the mini curriculum were not found. In fact, the two groups of students appeared to remain relatively the same in the critical thinking and verbal skills areas. While there were also no differences found in motivation toward school and attitudes toward school subjects, students in the mini curriculum were found to have higher end of the year attitudes towards teachers. These findings are consistent with those obtained in a student run survey where mini curriculum students reported great excitment with the freedom of selection and content of the minicourses. Teachers also indicated that they enjoyed the challenge of teaching a variety of subject matter where the content was largely self-selected by student and teacher interest.

Thus, it appears that selected cognitive and affective outcome measures on students experiencing the innovative minicourses were relatively the same as those for students in the traditional curriculum model. But in the affective area of reported student and teacher enjoyment, the mini students reported greater success over their former experiences under the traditional curriculum model. Perhaps these findings regarding student and teacher enjoyment are sufficient for educators to further explore use of the mini curriculum model. After all, it is not unreasonable to expect that student and teacher enjoyment of a compulsory learning experience may generalize to other aspects of the school experience.

Another perspective is that the mini curriculum did not seem to limit growth in cognitive areas. This conclusion appears especially important when school critics are casting increasingly skeptical glances at curricular innovations. The practical implication of this perspective is straight forward. Although mini curricula may not enhance cognitive growth, neither do they depress it. Thus, decisions to implement minicourses might well be based on student (and teacher) feelings toward minicourses.

Table 1

Means and Standard Deviations for
Mini and Traditional Groups on the
Watson - Glaser Critical Thinking Test

Scale		Mini N= 260	Traditional N= 130
Inferences	$\bar{X}$	9.30	10.69
	SD	3.46	8.56
Recognition of Assumption	$\bar{X}$	10.70	10.56
	SD	3.13	3.28
Deductions	$\bar{X}$	16.03	16.09
	SD	3.57	3.57
Interpretation	$\bar{X}$	15.78	14.73
	SD	3.90	2.68
Evaluation of Argument	$\bar{X}$	8.41	7.01
	SD	5.16	3.47

Table 2

Percentage of Students Properly Classified Into a Curriculum Group Using the Discriminant Function

Group	N	Prior Probabilities	Hits	Misses	% of Hits Using DFA	Increase in % of Hits Beyond Chance Assignments
Mini	260	.667	255	5	98	31
Traditional	130	.333	26	104	20	-13

Table 3

Means and Standard Deviations for Mini and Traditional Groups on the Cooperative English Tests

Scale		Mini N= 273	Traditional N= 276
Vocabulary	$\bar{X}$	35.17	35.72
	SD	8.50	10.50
Level of Comprehension	$\bar{X}$	21.86	22.74
	SD	6.63	7.64
Speed of Comprehension	$\bar{X}$	35.84	34.97
	SD	12.96	13.42

Table 4

Percentage of Students Properly Classified Into a Curriculum Group Using the Discriminant Function

Group	N	Prior Probabilities	Hits	Misses	% of Hits Using DFA	Increase in % of Hits Beyond Chance Assignment
Mini	273	.497	150	123	55	5
Traditional	276	.503	150	126	54	4

Table 5

Means and Standard Deviations for Mini and Traditional Groups on the Jim Scale Student Questionnaire and the Gable and Roberts Attitude Toward School Subjects Measures

Scale		Mini N= 74	Traditional N= 185
Jim			
Motivation	$\bar{X}$	123.93	117.57
	SD	19.49	59.64
Grass			
General Interest	$\bar{X}$	32.62	33.64
	SD	2.85	5.13
Usefulness	$\bar{X}$	14.61	14.88
	SD	2.30	6.11

Table 6

Means, Standard Deviations and t values for Post Test Scores on Roberts and Gable Attitude Toward Teacher Scale: Presentation of Subject, Interest in Job, Teaching Techniques, Total Attitude Toward Teacher

	$\bar{X}$	SD	
Mini 1 (N=413)			
Presentation of Subject	27.3	5.3	
Interest in Job	24.9	4.3	
Teaching Techniques	19.9	3.6	
Total Attitude Toward Teacher	72.0	11.7	
Mini 2 (N=308)			
Presentation of Subject	27.9	5.1	
Interest in Job	25.4	4.2	
Teaching Techniques	20.9	3.9	
Total Attitude Toward Teacher	74.3	11.7	
Mini 3 (N=301)			
Presentation of Subject	26.7	5.6	
Interest in Job	24.8	4.6	
Teaching Techniques	20.7	4.0	
Total Attitude Toward Teacher	72.2	12.6	
Mini 4 (N=185)			
Presentation of Subject	27.7	5.5	t=5.75*
Interest in Job	24.9	5.0	
Teaching Techniques	20.6	4.4	t=4.1*
Total Attitude Toward Teacher	73.2	13.5	
Traditional (N=309)			t=5.2*
Presentation of Subject	24.5	6.7	
Interest in Job	23.0	4.6	
Teaching Techniques	18.4	4.3	t=5.7*
Total Attitude Toward Teacher	66.1	13.6	

* $p < .001$; all t's were pooled variance except for Presentation of Subject, which was a separate variance t.