DOCUMENT RESUME

ED 229 441 TM 830 346

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|---|---|
| TITLE | Teacher Testing and Assessment: An Examination of the National Teacher Examinations (NTE), the Georgia Teacher Certification Test (TCT), the Georgia Teacher Performance Assessment Instrument (TPAI) for a Selected Population. |
| INSTITUTION | Southern Regional Education Board, Atlanta, Ga. |
| PUB DATE | 82 |
| NOTE | 58p.; Appendices C and E contain small print. |
| AVAILABLE FROM | Southern Regional Education Board, 1340 Spring Street, N.W., Atlanta, GA 90309 ($3.00). |
| PUB TYPE | Reports - Research/Technical (143) |
| EDRS PRICE | MF01/PC03 Plus Postage. |
| DESCRIPTORS | Accountability; Achievement Tests; *Beginning Teachers; *Comparative Analysis; Elementary Secondary Education; Minimum Competencies; *Minimum Competency Testing; Norm Referenced Tests; Outcomes of Education; *Public School Teachers; State Programs; *Teacher Effectiveness; *Teacher Selection |
| IDENTIFIERS | National Teacher Examinations; Teacher Certification Tests (Georgia); Teacher Performance Assessment Instrument |

ABSTRACT

The Southern Regional Education Board (SREB) Task Force on Higher Education and the Schools calls for states "to consider the feasibility of developing a regional assessment of teacher selection techniques" (SREB, 1981). This recommendation reflects concerns about the need for: (1) more states to develop new teacher certification tests, and (2) applicants to be given a state's required test if they have already taken and passed another test required elsewhere. The Task Force strongly endorses a policy of requiring minimal competency of teacher applicants on content areas. The issue of whether there is a relationship between content mastery and the ability to "put it over" continues to be debated. This examines the relationship between the Georgia Teacher Certification Tests (TCT) and the corresponding area tests on the National Teacher Examinations (NTE). A second part of the study examines the relationships between the TCT scores and the ratings on the Georgia Teacher Performance Assessment Instrument (TPAI), and the scores on the NTE and the TPAI ratings. The existing research base is not consistent as to the relationship between teacher testing and student criterion, or teacher performance assessment and student outcomes. Previous research and this study tend to support the idea that a teacher's knowledge base, as measured by a paper-and-pencil test, does not have a linear relationship with the ability to "put it across." (Author/PN)

# Teacher Testing and Assessment: An Examination of The National Teacher Examinations (NTE) The Georgia Teacher Certification Test (TCT) The Georgia Teacher Performance Assessment Instrument (TPAI) For a Selected Population





Southern Regional Education Board

# TEACHER TESTING AND ASSESSMENT: AN EXAMINATION OF THE NATIONAL TEACHER EXAMINATIONS (NTE) THE GEORGIA TEACHER CERTIFICATION TEST (TCT) THE GEORGIA TEACHER PERFORMANCE ASSESSMENT INSTRUMENT (TPAI) FOR A SELECTED POPULATION

Southern Regional Education Board
1340 Spring Street, N.W,
Atlanta, Georgia 30309
1982
$3.00

The improved selection of public school teachers has become an important policy objective throughout the Southern region. Indeed, the Southern states have been leaders in developing selection techniques to insure minimum competency of beginning teachers. Three states, Georgia among them, have developed their own tests for teacher applicants. The tests are developed from objectives related to the curriculum taught in the states' schools, with input by teachers within these states on defining the objectives such tests are to cover.

Several Southern states have required prospective teachers to take the National Teacher Examinations (NTE), which were developed by the Educational Testing Service (ETS) (ETS, 1981). These examinations are norm-referenced, so that scores of individual students may be compared against the distribution of scores of all the students who have taken the test. Cut-off scores have not yet been established by several Southern states using these NTE tests.

## PURPOSE

Georgia is unique among all states since teacher education majors from public institutions have been taking both the National Teacher Examinations, which provide achievement measures in three areas of teacher preparation (general education, professional education, and specialty areas) and the state-developed Teacher Certification Test (TCT), which assesses teaching field knowledge (Georgia Department of Education, 1981). Both test "content" areas. Additionally, Georgia's beginning teachers are assessed on their on-the-job performance with the Teacher Performance Assessment Instrument (TPAI) which assesses 14 competencies of teachers. This data base presents a unique opportunity to analyze for one group of teachers the relationship, if any, between content-testing results on a state-developed, criterion-

referenced test and a nationally normed test, as well as the results of either test against the performance assessment of teachers on the job; especially since the Board of Regents has recently dropped its requirement for students to take the NTE.

The SREB Task Force on Higher Education and the Schools in its report, The Need for Quality, calls for states "to consider the feasibility of developing a regional assessment of teacher selection techniques" (SREB, 1981). This recommendation reflects concerns about the need for (1) more states to develop new teacher certification tests, and (2) applicants to be given a state's required test if they have already taken and passed another test required elsewhere. The recommendation also mirrors concern on whether the content to be mastered by teachers in any one state differs, or should differ, from what is needed in other states.

The Task Force strongly endorses a policy of requiring minimal competency of teacher applicants on content areas, despite the continuing charge from some quarters that content mastery has little to do with the ability of a teacher to perform in the classroom. Thus, the issue of whether there is a relationship between content mastery and the ability to "put it over" continues to be debated, and bears researching where data permit its evaluation. Georgia, being the first state with a comprehensive assessment of beginning teacher performance skills as well as of content mastery, provides the opportunity to analyze this important question.

## Research Questions

The following questions will be studied in each of the content areas for which matching data exist:

> What is the relationship between the Georgia Teacher Certification Test raw score and the scaled score on the National Teacher Examination Area Test for a selected population?

For the population subgroup which passes each Teacher Certification Test, what are the corresponding scores on the NTE?

What relationships exist between the scores on the NTE area test, NTE Common, NTE Professional Education, TCT, and the on-the-job performance rating (Teacher Performance Assessment Instrument) for a selected population?

## Related Literature

Teacher Testing and Student Achievement. Many of the studies on the relationship between teacher testing and student performance are characterized by methodological problems. Lins (1946) reported moderate correlations between student achievement and NTE Common scores of teachers, but small samples were used. Significant relationships between NTE Common scores of teachers and the achievement of their students in vocabulary and mathematics were reported by Sheehan and Marcus (1978), although they cite a study showing an inverse relationship between NTE and pupil achievement.

Teacher Testing and Performance Evaluation. Several studies have examined the relationship of the National Teacher Examinations to on-the-job performance. Most of the research studies have used ratings by supervisors or principals of student teachers or classroom teachers. Results have been mixed, but generally low correlations have been observed (Quirk, Witten, and Weinberg, 1973). One study, which looked at weighted common scores, selected area examinations, and supervising teachers' ratings, reported both positive and negative correlations that were significant, but very few in number. The authors questioned the rating instruments that were used (Andrews, Blackmon, Davidson and Mackey, 1982). Medley and Hill (1970) studied the relationship between the Common subtest scores of the NTE and teaching style, using a low inference instrument, and found correlations with a median of .25. (Low inference instruments measure the presence or absence of behaviors of the teacher in the classroom; high inference

instruments use some type of rating system of these behaviors based on judgments of the raters.) Piper and Sullivan (1981) report a significant correlation of .43 between scores on the NTE elementary education test with ratings of university supervisors during student teaching. The results of the research are mixed, but generally support the view of ETS (1978) that the NTE is not a predictor of classroom performance.

Performance Assessment and Student Criterion. Coker, Medley and Soar 1980) report mixed results in a study of student achievement and attitudes related to low inference teaching measures. Their data indicate that behaviors "thought" to characterize the effective teacher may not be true. This idea is supported in the work of Medley (1977) and Rosenshine (1976). Capie (1981) reports results of various studies examining the relationship of the Georgia Teacher Performance Assessment Instrument to student achievement. He reports significant correlations between the TPAI ratings and achievement gains as measured by teacher-made tests. Mixed results are reported with the TPAI when student achievement is measured by standardized tests.

Performance Assessment Instrumentation. What is the relationship between various types of instruments used to assess teacher performance? Ratings of teacher performance historically have been suspect, and results of correlations of various systems with different criteria have yielded no conclusions (Quirk et al., 1973). With the assumption that teachers do affect pupil learning, and that the learning is somehow related to what the teacher does in the classroom, different types of assessment systems have been devised.

The TPAI is the first statewide effort at employing a performance assessment with data collectors carefully trained to make observations. Interrater agreements are reported to be in excess of .80 for in-the-classroom

observations (Capie, 1981). In a comparison of the TPAI with an instrument developed by Coker (interrater agreements reported to be .80)(Coker and Coker, 1982), researchers observed 18 competencies of student teachers and found the correlation on the two instruments to be virtually zero, leading the researchers to conclude that teacher observation is highly dependent on the instrument (Dickson and Wiersma, 1980).

## METHODOLOGY

### Design

This is an ex post facto study (Kerlinger, 1973) examining the relationship between the Georgia Teacher Certification Tests (TCT) and the corresponding area tests on the National Teacher Examinations (NTE). A second part of the study examined the relationships between (1) the TCT scores and the ratings on the Georgia Teacher Performance Assessment Instrument (TPAI), and (2) the scores on the NTE and the TPAI ratings.

The variables of the study were:

1. The raw scores on the Georgia Teacher Certification Test.
2. The scaled scores on the National Teacher Examinations area tests, the weighted Common Examinations score, and scores on the subtests of the Common Examinations.
3. The Teacher Performance Assessment Instrument results expressed as the percentage of indicators above or at the minimum level for each of the 14 competencies.

### Populations

In some cases students took tests more than once. Only scores for the first administration were used. Data were analyzed separately for each of the subject areas. Students who took tests in other areas were not included because no comparable tests existed for a particular area or numbers were less than 30 students.

Population for the study of the relationship of the area scores on the TCT to the area test scores on the NTE. The total population (n=2231) consisted of graduates of the University System of Georgia between the years 1978-1980, who had taken the National Teacher Examinations from 1978-1980, and who also had taken the Georgia Teacher Certification Test during the years 1978-1981 in one of the following areas: art (n=107), business (n=121), communicative arts (n=98), early childhood (n=828), home economics (n=91), health and physical education (n=327), industrial arts (n=32), mathematics (n=61), mental retardation (n=274), music (n=128), and social studies (n=164). Corresponding tests on the NTE were: art education, business education, English language and literature, early childhood education, home economics education, physical education, industrial arts education, mathematics education, education of the mentally retarded, music education, and social studies.

Population for the study of the relationship of the TCT to the Teacher Performance Assessment results. The population (n=1115) for this part of the research consisted of those persons who were first year teachers in a public school in Georgia during the 1980-81 school year, who were required to be assessed for certification, and who had taken the TCT during the years 1978-1981. Areas included were: art (n=35); communicative arts (n=84); early childhood (n=452); home economics (n=35); health and physical education (n=138); mathematics (n=42); mental retardation (n=123); music (n=62); social studies (n=76); and science (n=68).

Population for the study of the relationship of the NTE tests to the Teacher Performance Assessment results. The population (n=305) for this part of the research consisted of those persons who were first year teachers in a public school during the 1980-1981 school year, who were required

to be assessed for certification, who had graduated from the University System of Georgia 1978-1980, and who had taken the NTE examinations. Areas included were: early childhood education (n=179), education of the mentally retarded (n=61), and physical education (n=65).

Data Collection

All data were treated with utmost security. No scores or individual results were reported at any time. The data base for the project included:

1. Computer data base of the University System of Georgia, which contained NTE scores.
2. Computer data base of the Georgia State Department of Education, which contained TCT scores and the results of the Teacher Performance Assessment for the population.

Instrumentation

National Teacher Examinations. The tests are composed of 25 Area Examinations and the Common Examinations. The Common Examinations consist of a test in professional education, and one in general education (the latter has 3 subparts): written English expression; social studies, literature, and the fine arts; and science and mathematics. A Weighted Common Examinations Total (WCET) is a combination of the above tests, with professional education receiving a weighting of 4.0; social studies, 2.5; written English expression, 1.0; and science and mathematics, 2.5. The sum of the products is the total weighted score (WCET) with possible values ranging from 250-990.

The Area Examinations test the content of an undergraduate special field or major in undergraduate education. Area test scores range from 250-990, with the third digit always reported as zero. Area Examination scores cannot be compared across areas. Scores may appear to be similar, but a particular score does not necessarily represent the same level of proficiency from test to test. The test format is multiple choice questions

that measure principles and concepts from teacher education programs (ETS, 1981). Scaled scores are assumed to approximate interval data.

The coefficient of reliability (Kuder-Richardson 20) for the WCET is reported to be .964, with a standard error of measurement of 21. The Area Examinations have reliabilities ranging from .913 to .953 (Kuder-Richardson 20), with a standard error of measurement from 20-29 for tests that were used for this research (ETS, 1978). Validity of the tests is expressed as a comparison between the content of the tests and what is included in teacher education programs. The tests were prepared after extensive discussions with teachers and teacher educators, and examination of course materials (ETS, 1981).

Georgia Teacher Certification Tests. The Georgia tests are criterion-referenced tests that assess an individual's knowledge of content in his or her teaching field. The tests were developed as part of the performance-based certification policy of the State of Georgia. Cut-off scores and minimal performance standards were set in 1977-1978 by the Department of Education, with cut-off scores two and one-half standard errors of measurement below the determined minimal level. The tests were designed to reflect the instructional content of Georgia public schools. A large number of teachers were included in the process to review objectives of the tests in order to maximize the degree of content validity. The reliability data are expressed as Kuder-Richardson 20 coefficients. The coefficients on the tests range from 0.85 to 0.94. The final scaled score is an adjustment of raw scores so that the same cutting score of 70 on all of the tests corresponds to different percentage correct values, depending on the test taken (Georgia Teacher Testing Program...,1981).

Teacher Performance Assessment Instrument. The TPAI is used for an on-the-job assessment of teaching plans and materials, classroom procedures and interpersonal skills, as demonstrated by a teacher in an actual teaching situation.

The development of the TPAI began with a search of the literature related to teaching competencies and their validation. A large number of Georgia educators reacted to an initial list of competencies, and those rated as "essential" by a majority were used.

The instrument is composed of 14 generic competencies (see Appendix A). These competencies are assessed by 45 indicators which have four or five descriptors each. A team of three data collectors assesses each teacher twice during the school year. The team is composed of an administrator in the school (such as the principal), a peer, and a data collecter from outside the school system. All are trained to use the instrument in a 50-hour program. The program includes study of the instrument in detail, along with experience at rating portfolios, interpreting written interview data, interviewing peers, and rating classroom videotapes. Trainees undergo a proficiency check at the end of the training program (Capie et al., 1979; Capie, 1981). A teacher must demonstrate mastery on all 14 of the competencies. Mastery is attained when 75 percent of the indicator ratings are at or above a prescribed minimum level over two consecutive assessments. Three years are allowed to demonstrate mastery (Georgia Department of Education, 1981). Interrater agreement rates of 60 percent are reported after viewing videotaped lessons, but agreement rates in excess of 80 percent have been noted for in-the-classroom observations (Capie, 1981). The content validity of the instrument is based on the development of the instrument from competencies that had been affirmed as "essential" for effective teaching.

Construct validity studies have resulted in three strong factor solutions: planning, learning environment, and classroom management. Combined, these factors accounted for 60 percent of the common variance in the set of TPAI scores. Criterion-related validity studies have been carried out with criterion measures, such as learning environment, pupil engagement, and achievement gains. Two studies report moderate correlations (up to .7) of TPAI measures and learning environment as reported by pupil perceptions. A number of studies have sought to explore the criterion related validity of the TPAI, using pupil achievement as the criterion. Correlations using teacher-made tests have produced significant results; with standardized measures as the criterion, results have been mixed (Capie, 1981).

Analyses

Analysis of the relationship of the NTE area scores and the TCT scores in corresponding areas. To determine the relationship between the corresponding area scores on the NTE and the TCT, a bivariate correlation analysis was performed for each area using PROC CORR (SAS, 1979). PROC PLOT (SAS, 1979) was used to produce scattergrams of the data for each area.

Analysis of the relationship of the TCT raw scores and the NTE scaled scores to the performance indicators on TPAI. To determine the relationship between the score on the TCT, the NTE area scores, the NTE weighted common score, the NTE professional education score and each performance competency, a bivariate correlation analysis was performed for each using PROC CORR (SAS, 1979).

## RESULTS

### Georgia Teacher Certification Tests and the National Teacher Examinations

To answer the question--"What is the relationship between the Georgia Teacher Certification Test raw score and the scaled score on the corresponding National Teacher Examination Area Test for a Selected Population?"--Pearson-product moment correlations were calculated for each area (Table 1). (See Appendix B for the complete set of correlations.) The correlation

TABLE 1

PEARSON-PRODUCT CORRELATIONS FOR THE TCT AND NTE FOR SELECTED POPULATIONS

| TCT AREA | N | NTE AREA | | NTE WEIGHTED COMMON | |
|---|---|---|---|---|---|
| | | r | r2 | r | r2 |
| Art | 107 | .75 | .56 | .68 | .46 |
| Business | 121 | .70 | .49 | .73 | .54 |
| Communicative Arts | 98 | .68 | .46 | .78 | .61 |
| Early Childhood | 828 | .63 | .40 | .73 | .53 |
| Home Economics | 91 | .83 | .68 | .80 | .64 |
| Health and Physical Education | 327 | .68 | .47 | .69 | .48 |
| Industrial Arts | 32 | .82 | .67 | .65 | .42 |
| Mathematics | 61 | .83 | .69 | .67 | .45 |
| Mental Retardation | 274 | .71 | .50 | .80 | .64 |
| Music | 128 | .82 | .67 | .62 | .39 |
| Social Studies | 164 | .79 | .62 | .77 | .60 |

coefficients for the TCT with the NTE Area Examinations range from .63 for early childhood to .83 for mathematics and home economics. The range for the TCT with the NTE Weighted Common Examinations is from .62 for music to .80 for home economics and mental retardation. Commonalities range from 40 to 69 percent for the area tests and from 39 to 64 percent for the TCT with the NTE Weighted Common Examination (WCET) scores.

A second question--"What are the corresponding scores on the NTE for each population subgroup which passes each Teacher Certification Test?"--led to a comparison of the number of individuals who would pass or not pass the NTE, if a cut-off score were set on the NTE to pass approximately the same number of persons that passed the TCT. Percentage agreements were calculated for each area, using the set cut-off score on the NTE and the existing cut-off score of 70 on the TCT. Percentage agreements ranged from 73 percentage agreement for home economics to 97 percentage agreement for music. Passage rates for first testing on the TCT range from 55 to 97 percent (Table 2).

TABLE 2

NUMBERS OF PERSONS PASSING OR FAILING TCT
WITH NTE COMPARISONS FOR SELECTED
GEORGIA POPULATION

TCT ART --- NTE ART EDUCATION

N = 107
NTE Cut-off = 530, 27 Percentile*
% Agreement = 85%
% Passing TCT = 79%

| Non-agreement | | Agreement | |
|---|---|---|---|
| Fail TCT | | | Pass TCT |
| Pass NTE | 9 | 77 | Pass NTE |
| **Agreement** | | **Non-agreement** | |
| Fail TCT | | | Pass TCT |
| Fail NTE | 14 | 7 | Fail NTE |

TCT BUSINESS --- NTE BUSINESS EDUCATION

N = 121
NTE Cut-off = 590, 44 Percentile
% Agreement = 83%
% Passing TCT = 61%

| Non-agreement | | Agreement | |
|---|---|---|---|
| Fail TCT | | | Pass TCT |
| Pass NTE | 11 | 64 | Pass NTE |
| **Agreement** | | **Non-agreement** | |
| Fail TCT | | | Pass TCT |
| Fail NTE | 36 | 10 | Fail NTE |

TCT COMMUNICATIVE ARTS --- NTE ENGLISH LANGUAGE

N = 98
NTE Cut-off = 520, 23 Percentile
% Agreement = 89%
% Passing TCT = 81%

| Non-agreement | | Agreement | |
|---|---|---|---|
| Fail TCT | | | Pass TCT |
| Pass NTE | 6 | 74 | Pass NTE |
| **Agreement** | | **Non-agreement** | |
| Fail TCT | | | Pass TCT |
| Fail NTE | 13 | 5 | Fail NTE |

TCT EARLY CHILDHOOD --- NTE EARLY CHILDHOOD EDUCATION

N = 828
NTE Cut-off = 520, 22 Percentile
% Agreement = 93%
% Passing TCT = 94%

| Non-agreement | | Agreement | |
|---|---|---|---|
| Fail TCT | | | Pass TCT |
| Pass NTE | 27 | 752 | Pass NTE |
| **Agreement** | | **Non-agreement** | |
| Fail TCT | | | Pass TCT |
| Fail NTE | 20 | 29 | Fail NTE |

TCT HOME ECONOMICS --- NTE HOME ECONOMICS EDUCATION

N = 91
NTE Cut-off = 620, 50 Percentile
% Agreement = 73%
% Passing TCT = 55%

| Non-agreement | | Agreement | |
|---|---|---|---|
| Fail TCT | | | Pass TCT |
| Pass NTE | 15 | 40 | Pass NTE |
| **Agreement** | | **Non-agreement** | |
| Fail TCT | | | Pass TCT |
| Fail NTE | 26 | 10 | Fail NTE |

TABLE 2

Continued

TCT MATHEMATICS --- NTE MATHEMATICS EDUCATION

N = 61
NTE Cut-off = 570, 46 Percentile
% Agreement = 92%
% Passing TCT = 74%

| Non-agreement | | Agreement | |
|---|---|---|---|
| Fail TCT | | | Pass TCT |
| Pass NTE | 3 | 43 | Pass NTE |
| **Agreement** | | **Non-agreement** | |
| Fail TCT | | | Pass TCT |
| Fail NTE | 13 | 2 | Fail NTE |

TCT MENTAL RETARDATION --- NTE EDUCATION OF THE MENTALLY RETARDED

N = 274
NTE Cut-off = 500, 17 Percentile
% Agreement = 92%
% Passing TCT = 91%

| Non-agreement | | Agreement | |
|---|---|---|---|
| Fail TCT | | | Pass TCT |
| Pass NTE | 12 | 238 | Pass NTE |
| **Agreement** | | **Non-agreement** | |
| Fail TCT | | | Pass TCT |
| Fail NTE | 13 | 11 | Fail NTE |

TCT MUSIC --- NTE MUSIC EDUCATION

N = 128
NTE Cut-off = 480, 11 Percentile
% Agreement = 97%
% Passing TCT = 97%

| Non-agreement | | Agreement | |
|---|---|---|---|
| Fail TCT | | | Pass TCT |
| Pass NTE | 2 | 124 | Pass NTE |
| **Agreement** | | **Non-agreement** | |
| Fail TCT | | | Pass TCT |
| Fail NTE | 2 | 0 | Fail NTE |

TCT HEALTH AND PHYSICAL EDUCATION --- NTE PHYSICAL EDUCATION

N = 327
NTE Cut-off = 610, 49 Percentile
% Agreement = 77%
% Passing TCT = 60%

| Non-agreement | | Agreement | |
|---|---|---|---|
| Fail TCT | | | Pass TCT |
| Pass NTE | 39 | 159 | Past NTE |
| **Agreement** | | **Non-agreement** | |
| Fail TCT | | | Pass TCT |
| Fail NTE | 93 | 36 | Fail NTE |

TCT SOCIAL STUDIES --- NTE SOCIAL STUDIES

N = 164
NTE Cuf-off = 520, 25 Percentile
% Agreement = 87%
% Passing TCT = 86%

| Non-agreement | | Agreement | |
|---|---|---|---|
| Fail TCT | | | Pass TCT |
| Pass NTE | 10 | 130 | Pass NTE |
| **Agreement** | | **Non-agreement** | |
| Fail TCT | | | Pass TCT |
| Fail NTE | 13 | 11 | Fail NTE |

*ETS. NTE Program Data, 1978-1981.

Mean scores on the NTE area tests for Georgia students are higher than the mean scores for the population represented by the accumulated program data, reported by NTE (Table 3). Scattergrams show the distribution for each subject area (Appendix C). Note that scales differ for each subject, therefore, care should be used in visual comparison from one graph to another.

TABLE 3

SCORES ON SELECTED NTE AREA TESTS FOR GEORGIA AND THE NATION

| NTE AREA TESTS | NATIONAL MEAN* | GEORGIA MEAN+ |
|---|---|---|
| Art Education | 579 | 592 |
| Business Education | 593 | 615 |
| Early Childhood Education | 593 | 630 |
| Education of Mentally Retarded | 586 | 606 |
| English Language and Literature | 580 | 596 |
| Home Economics Education | 602 | 615 |
| Mathematics | 577 | 617 |
| Music Education | 592 | 632 |
| Physical Education | 600 | 620 |
| Social Studies | 576 | 591 |

*Based on data for 1978-81 NTE program data
+Based on data for 1978-81 Georgia population

Note: Scores cannot be compared across areas

## Georgia Teacher Certification Tests and the Teacher Performance Assessment Instrument

The relationship between the Georgia Teacher Certification Tests and the Georgia Teacher Performance Assessment Instrument competencies was explored by calculating Pearson-product moment correlations for the subject area subpopulations. Correlations were calculated using the raw score on the area test and the percentage of indicators which had been passed at the specified minimum level for each competency. Possible raw score ranges on the TCT were from 0 to approximately 110, depending on the test. Ranges on the TPAI were from 0 to 100 percent for each competency. Correlations are shown for both the spring and fall assessments, with a range of -.27 to .45 (Appendix D). Of particular interest is competency number 10--"Demonstrates an understanding of the school subject being taught and demonstrates its relevance." The correlation ranges from -.10 to .35 for the fall assessment, and from -.07 to .34 for the spring assessment. These data must be examined with the notion that the competency is composed of two indicators: "Helps learners recognize the purpose and importance of topics or activities," and "Demonstrates knowledge in the subject area." Therefore, when interpreting the correlation of the content tests with the performance asessment competency, not only knowledge of the subject matter is assessed. In addition, the minimum standard for the first indicator is that the teacher conveys "the purpose or importance of most topics or activities studied."

## National Teacher Examinations and the Teacher Performance Assessment Instrument

The competencies on the TPAI were correlated with scaled scores on the NTE Area Examinations, the professional education examinations which are a part of the Common Examinations, and the Weighted Common Examinations (WCET). As with the TCT correlations, the percentage of indicators that

were at the minimum level or above was used as one variable, with the scaled scores on the respective test used as the other variable. Correlations are shown for both the fall and spring assessments for the respective areas, with a range of -.12 to .52 (Appendix E). Of particular interest are competency number 10 correlations with the NTE area tests, with ranges from .23 for physical education to .33 for mental retardation in the fall, and .02 for mental retardation to .25 for early childhood in the spring.

Teacher Performance Assessment Instrument Mastery versus Non-mastery

Mean TCT and NTE scores for those teachers who did or did not demonstrate mastery of all 14 TPAI competencies during their first year of teaching are shown in Tables 4 and 5. In addition, percentages of those teachers demonstrating or not demonstrating mastery are shown for each subject area.

TABLE 4

MEAN NTE SCORES FOR MASTERY VERSUS NON-MASTERY GROUPS ON THE TPAI FOR FIRST YEAR TEACHERS WHO GRADUATED FROM UNIVERSITY SYSTEM OF GEORGIA

| | MASTERY | NON-MASTERY |
|---|---|---|
| EARLY CHILDHOOD EDUCATION | N = 139 (78%) | N = 40 (22%) |
| NTE Area Test Mean | 636 | 610 |
| NTE Professional Education Mean | 59.3 | 56.4 |
| NTE WCET Mean | 567 | 543 |
| EDUCATION OF THE MENTALLY RETARDED | N = 43 (70%) | N = 18 (30%) |
| NTE Area Test Mean | 638 | 582 |
| NTE Professional Education Mean | 60.9 | 54.6 |
| NTE WCET Mean | 581 | 532 |
| PHYSICAL EDUCATION | N = 19 (29%) | N = 46 (71%) |
| NTE Area Test Mean | 611 | 625 |
| NTE Professional Education Mean | 50.6 | 49.3 |
| NTE WCET Mean | 532 | 516 |

Note: Area test scores cannot be compared across subject areas.

TABLE 5

MEAN TCT SCORES FOR MASTERY VERSUS NON-MASTERY GROUPS
ON THE TPAI FOR FIRST YEAR TEACHERS

| | MASTERY | NON-MASTERY |
|---|---|---|
| ART | N = 18 (51%) | N = 17 (49%) |
| TCT Raw Score Mean | 93.0 | 89.0 |
| TCT Scaled Score Mean | 78.2 | 73.9 |
| COMMUNICATIVE ARTS | N = 47 (56%) | N = 37 (44%) |
| TCT Raw Score Mean | 84.9 | 82.5 |
| TCT Scaled Score Mean | 74.3 | 72.3 |
| EARLY CHILDHOOD | N = 319 (71%) | N = 133 (29%) |
| TCT Raw Score Mean | 86.9 | 80.6 |
| TCT Scaled Score Mean | 79.1 | 73.8 |
| HOME ECONOMICS | N = 18 (51%) | N = 17 (49%) |
| TCT Raw Score Mean | 85.3 | 84.6 |
| TCT Scaled Score Mean | 78.3 | 77.7 |
| HEALTH AND PHYSICAL EDUCATION | N = 99 (72%) | N = 39 (28%) |
| TCT Raw Score Mean | 92.3 | 88.2 |
| TCT Scaled Score Mean | 72.7 | 69.4 |
| MATHEMATICS | N = 20 (48%) | N = 22 (52%) |
| TCT Raw Score Mean | 78.1 | 76.2 |
| TCT Scaled Score Mean | 77.6 | 76.0 |
| MENTAL RETARDATION | N = 86 (70%) | N = 37 (30%) |
| TCT Raw Score Mean | 86.0 | 81.9 |
| TCT Scaled Score Mean | 77.1 | 73.5 |
| MUSIC | N = 22 (35%) | N = 40 (65%) |
| TCT Raw Score Mean | 91.7 | 92.6 |
| TCT Scaled Score Mean | 82.5 | 83.3 |
| SCIENCE | N = 31 (46%) | N = 37 (54%) |
| TCT Raw Score Mean | 77.8 | 74.4 |
| TCT Scaled Score Mean | 77.3 | 75.1 |
| SOCIAL STUDIES | N = 35 (46%) | N = 41 (54%) |
| TCT Raw Score Mean | 88.0 | 84.5 |
| TCT Scaled Score Mean | 80.6 | 77.7 |

Note: Raw scores cannot be compared across subject areas.

## SUMMARY AND CONCLUSIONS

### National Teacher Examinations and Georgia Teacher Certification Tests

The correlations between the National Teacher Examinations Area Tests and the corresponding Teacher Certification Tests, in the range of .63 to .83, indicate that the common variance of the tests is from 40 to 69 percent. The tests do not purport to measure the same information--the NTE tests the content of teacher education programs, and the TCT measures content of the curriculum in Georgia public schools--yet both tests do cover substantive knowledge of fields taught in the schools. An examination of the objectives of both tests on early childhood, which have the lowest correlation of those examined, reveal that the NTE is testing growth, development, and learning, along with curriculum organization and activities for young children. The TCT tests for the development of children and their activities, and for basic knowledge in language arts, mathematics, science, social studies, art, music, health, and physical education. It is interesting to note that, for this particular comparison, the correlation of the TCT with the NTE Common Examinations is higher than with the NTE Area test, a possible explanation being the emphasis on basic subject areas. The TCT includes a number of general education objectives. The two mathematics tests have the highest correlation. From the objectives of both tests, the content of the TCT is fairly consistent with the NTE. However, the NTE includes questions on professional education and the history of mathematics to a greater degree than the Georgia test. A closer examination of the content of the NTE tests with the state tests might be warranted.

The examination of corresponding scores on the NTE for those persons passing or not passing the TCT relates to a number of issues. The percentage of agreement between the two tests on numbers of persons passed or failed

(when an NTE cut-off score is used that passes the same number of persons as the TCT) ranges from 73 to 97 percentage agreement. The tests are essentially being used to screen out those who cannot perform at a particular standard. The results of this study help decide whether or not another test could be used for reciprocity agreements if percentage agreement of numbers of persons passing one state test with the other test is relatively high. It is interesting to note that all of the areas which were examined fall into a similar narrow range of correlation coefficients and percentage agreements on pass/fail. Eight of the 10 areas (Table 2) fall into the 83 or higher category on percentage agreement, with four at or above 92 percentage agreement.

Does each state have a unique knowledge base on which teachers must be tested? The correlations for the Georgia population indicate relatively high common variances between the NTE and TCT. Are states willing to relinquish the supposed uniqueness of a state-developed test so that certification could be facilitated for out-of-state teachers who have taken a different test?

In using standards, should the states not look at the standard of quality that has been set by their testing requirements? Are levels set equitably for different subject areas? The standards of states using testing are now set at minimum levels, with only those persons at the bottom being screened out. Is it important for states that are using some type of testing program to create a data base for monitoring their population in terms of the exclusion for any one subject area to a greater degree than any other? Shouldn't the states have some type of yardstick to permit such monitoring? In this study, when NTE cut-off scores were arbitrarily set so that similar numbers of persons would "pass" the two tests, national percentiles varied from the 11th to the 50th percentile. Six of the test areas were at or below the 27th percentile (ETS, 1981). Why does this great variation exist? Differences in passage rates for prospective teachers

of different subjects are puzzling. For the different areas, the TCT pass rates on first test takers range from 55 percent on home economics to 97 percent on the music test (Table 2). Overall passage rates upon retakes will be higher.

SREB states should definitely examine the data from their test populations to decide whether or not reciprocity agreements could be worked out for those teachers who migrate into or within the region. Examination of the Georgia population data supports the notion that reciprocity could be worked out among the SREB states, using tests that are currently being used or are currently available.

Because of the ex post facto design of the study, limitations are inherent. The reported high reliabilities of the TCT and NTE instruments mean attenuation problems were at a minimum (Thorndike, 1971). Errors in measurement tend to make correlation coefficients smaller than they would be if no measurement errors existed. In addition, extraneous variables that were not accounted for, such as time differences in taking the two tests or the fact that the TCT is required for certification purposes and the NTE is not, could have influenced test scores. Results should be examined with those factors in mind.

National Teacher Examinations and the Teacher Performance Instrument.

Pearson-product moment correlations between the NTE weighted Common test, the professional education subtest, and the Area test for the three subpopulations are mixed, but generally low. Of particular interest is competency 10 because it concerns the relationship between a paper-and-pencil test on subject matter being taught in the schools, and an assessment of whether or not the teacher shows competency in demonstrating an understanding of the subject matter and conveying the importance of most activities or

topics studied to the learners. The fall correlations for the Area tests range from .23 on physical education to .33 for mental retardation. These correlations tend to support previous studies indicating that the common variances between NTE tests and measures of teacher performance are low. The findings would support the view of ETS and the Georgia Department of Education that knowledge is only one part of the complex process called teaching. At the same time, ETS questions the present measurement of "teaching success" because of the instrumentation, and the observation that "teacher behaviors themselves tend to be somewhat unreliable" (ETS, 1978, p.1).

## Georgia Teacher Certification Tests and the Teacher Performance Assessment Instrument

Examination of the Pearson-product correlations between the Georgia Teacher Certification Test and the TPAI for each subject area are quite mixed. They range from -.20 to .45 for the fall assessment. For competency 10, the academic subjects tend to show positive correlations for the fall, although very weak, with ranges from .04 in communicative arts to .35 for mathematics, indicating a common variance from approximately one to 12 percent. The subjects of art, home economics, and music all show negative correlations, very weak, with ranges from -.03 for music to -.10 for home economics, indicating common variances of under one percent. One limitation of the comparison of the TCT with the TPAI is that those persons who did not pass the TCT will most likely not be teaching, although a one-year grace period is allowed before passage of the TCT.

No definitive answer has come from this study on whether or not a paper-and-pencil test and the ability to put the knowledge across are related. The data suggest two possibilities: either content knowledge, as measured by the TCT or NTE, accounts for only a small percentage of teacher performance; or the performance instrument is not differentiating between those who do or do not perform.

Research concerning the use of these performance assessment instruments, especially for certification decisions, is very limited. We note the differential percentages of teachers of different subject areas reaching mastery of the TPAI after the two assessments of the first year (Table 4 and Table 5). Do the differences in passage rates for different subjects continue to exist after the three years that are allowed for mastery? If so, why are differences present? In the summary of the mastery versus non-mastery groups (with the exception of music for TCT, and the physical education NTE area test) teachers who complete mastery in one year have slightly higher mean scores than those who do not. Does this continue to be the case after the three-year period?

Performance ratings in general have been attacked, and studies involving the correlation of those ratings with student performance as measured by teacher-made and standardized tests have been mixed (Coker et al., 1980; Capie, 1981). Differences in the ability of teacher observation instruments to measure teacher performance have been suggested (Coker, et al., 1980; Dickson and Wiersma, 1980). Additional research needs to be conducted concerning the ability of these instruments to differentiate teacher performances which are linked to student learning and attitudes.

## Conclusions

The public is demanding accountability. The perception that large numbers of unqualified students are graduating from college and moving into teaching positions has led states to mandate tests for teachers and, in some cases, some kind of on-the-job assessments. Across the region approximately 5 to 15 percent of prospective teachers are being eliminated. The question of the ultimate impact these programs will have on students remains to be seen. The existing research base is not consistent as to

the relationship between teacher testing and student criterion, or teacher performance assessment and student outcomes.

States are spending large amounts of money to create and validate tests of knowledge for teachers, with the idea that a minimum knowledge level is essential. It appears from the data in this study that reciprocity could be worked out for teacher testing in the SREB states, using existing state and/or national tests. States should monitor results of testing carefully, examining passing percentages for subject areas and for minority representation.

The question of whether or not performance assessment is accomplishing its goal needs further study. Previous research and this study tend to support the idea that a teacher's knowledge base, as measured by a paper-and-pencil test, does not have a linear relationship with the ability to "put it across." However, the instrumentation used to assess teachers in this and other studies must be examined to a greater extent. Just as with testing for knowledge, it appears that the chances of mastering the performance competencies depend somewhat on the subject matter field.

Many states now apply a combination of paper-and-pencil tests and performance evaluations to separate those teachers who are believed to be competent from those who are not. Two vital questions need further research: Does the demonstration of a combination of paper-and-pencil knowledge and performance skills enhance the overall quality of teachers? What performance skills does an effective teacher possess? The bottom line should be student learning and attitudes. States should continually attempt to gather data on the processes they have in place and refine those methods, if necessary.

## References


Andrews, J., Blackmon, C. R., Davidson, C. W., & Mackey, J. A. Predicting seniors' National Teacher Examination scores while sophomores. The Boardman. Baton Rouge, La: Louisiana School Boards Association, 1982.

Capie, William. Teacher Performance Assessment Instruments, Administration Technical Manual. Athens, Georgia: University of Georgia, 1981.

Capie, W. Anderson, S. J. Johnson, C. E. Ellet, C. D. Teacher Performance Assessment Instruments: A Handbook of Training Activities, Athens, Georgia: University of Georgia, 1979.

Coker, H., Medley, D. M., & Soar, R. S. How valid are expert opinions about effective teachers? Phi Delta Kappan, October, 1980, 131-134.

Coker, J. G., & Coker, H. Classroom Observations Keyed for Effectiveness Research 1982, User's Manual. Carrollton, GA: 1982.

Dickson, G. E. & Wiersma, William. Research and Evaluation in Teacher Education. Toledo, Ohio: The Center for Educational Research and Services, University of Toledo, May, 1980.

Educational Testing Service. The National Teacher Examinations, Notes on Their Reliability & Standard Error of Measurement. Princeton, N. J.: ETS, April 14, 1978.

Educational Testing Service. Interpreting National Teacher Examinations Scores. Princeton, N. J.: ETS, 1981.

Georgia Department of Education. Performance Based Certification in Georgia. Atlanta: State Department of Education, 1981.

Georgia Teacher Testing Program...a Review. Report to Georgia State Board of Education, 1981.

Kerlinger, F. N. Foundations of Behavioral Research (2nd ed.) New York: Holt, Rinehart & Winston, 1973.

Lins, L. The prediction of teaching efficiency. Journal of Experimental Education, 1946, 15, 2-60.

Medley, D. M., & Hill, R. A. Cognitive factors in teaching style. Paper presented at the annual meeting of the American Educational Research Association, Minneapolis, March, 1970.

Medley, D. M. Teacher Competence and Teacher Effectiveness. Washington, D.C.: American Association of Colleges for Teacher Education, 1977.

Piper, M. K., & Sullivan, P. S. The National Teacher Examination: Can it predict classroom performance? Phi Delta Kappan, January 1981, 401.

Quirk, T. J., Witten, B. J., & Weinberg, S. F. Review of studies of the concurrent and predictive validity of the National Teacher Examinations. Review of Educational Research, 1973, 43, (1).

Rosenshine, B. Classroom instruction. In NSSE, Psychology of Teaching Methods, (75th Yearbook of National Society for the Study of Education). Chicago: University of Chicago Press, 1976.

SAS. SAS User's Guide, 1979 Edition. Cary, North Carolina: SAS Institute Inc., 1979.

Sheehan, D. S., & Marcus, M. Teacher performance on the National Teacher Examinations and student mathematics and vocabulary achievement. The Journal of Educational Research, 1978, 71, 134-136.

Southern Regional Education Board, The Need for Quality. Atlanta, Georgia: SREB, 1981.

Thorndike, R. L. (Ed.) Educational Measurement (2nd ed.). Washington, D.C.: American Council on Education, 1971.

## APPENDIX A

### Teacher Performance Assessment Instrument Competencies

Teaching Plans and Materials

TPM I: Plans instruction to achieve selected objectives

TPM II: Organizes instruction to take into account individual differences among learners.

TPM III: Obtains and uses information about the needs and progress of individual learners

TPM IV: Refers learners with special problems to specialists

TPM V: Obtains and uses information about the effectiveness of instruction to revise it when necessary

Classroom Procedures Instrument

CP VI: Uses instructional techniques, methods, and media related to the objectives

CP VII: Communicates with learners

CP VIII: Demonstrates a repertoire of teaching methods

CP IX: Reinforces and encourages learner involvement in instruction

CP X: Demonstrates an understanding of the school subject being taught and demonstrates its relevance

CP XI: Organizes time, space, materials, and equipment for instruction

Interpersonal Skills Instrument

IS XII: Demonstrates enthusiasm for teaching and learning and the subject being taught

IS XIII: Helps learners develop positive self-concepts

IS XIV: Manages classroom interactions

APPENDIX B

Correlations of Georgia Teacher Certification Tests (TCT) with the National Teacher Examinations (NTE)

| TCT (Raw Score) | NTE AREA | NTE PROFESSIONAL EDUCATION | NTE WRITTEN ENGLISH | NTE SOCIAL STUDIES | NTE SCIENCE & MATH | NTE WCE? |
|---|---|---|---|---|---|---|
| Art | .74657 | .62730 | .60513 | .56842 | .55098 | .68002 |
| Business | .70062 | .68176 | .56047 | .59855 | .63345 | .73396 |
| Communicative Arts | .67739 | .68181 | .67606 | .71751 | .64714 | .78061 |
| Early Childhood | .63009 | .65683 | .61612 | .53222 | .68141 | .72896 |
| Home Economics | .82615 | .73272 | .52651 | .67871 | .71356 | .80114 |
| Health and Physical Education | .68439 | .58485 | .50872 | .58839 | .61922 | .69037 |
| Industrial Arts | .81697 | .64875 | .40997 | .54714 | .57596 | .64751 |
| Mathematics | .82805 | .57032 | .45300 | .52381 | .61314 | .66901 |
| Mental Retardation | .70633 | .74062 | .56287 | .64816 | .73700 | .79905 |
| Music | .81602 | .45697 | .58230 | .55737 | .54840 | .62175 |
| Social Studies | .78574 | .63281 | .57111 | .70868 | .72398 | .77444 |

## APPENDIX C

Scattergrams of Correlations Between NTE and TCT Test Results in Selected Subjects

Art

Business

Communicative Arts

Early Childhood

Health and Physical Science

Home Economics

Industrial Arts

Mathematics

Mental Retardation

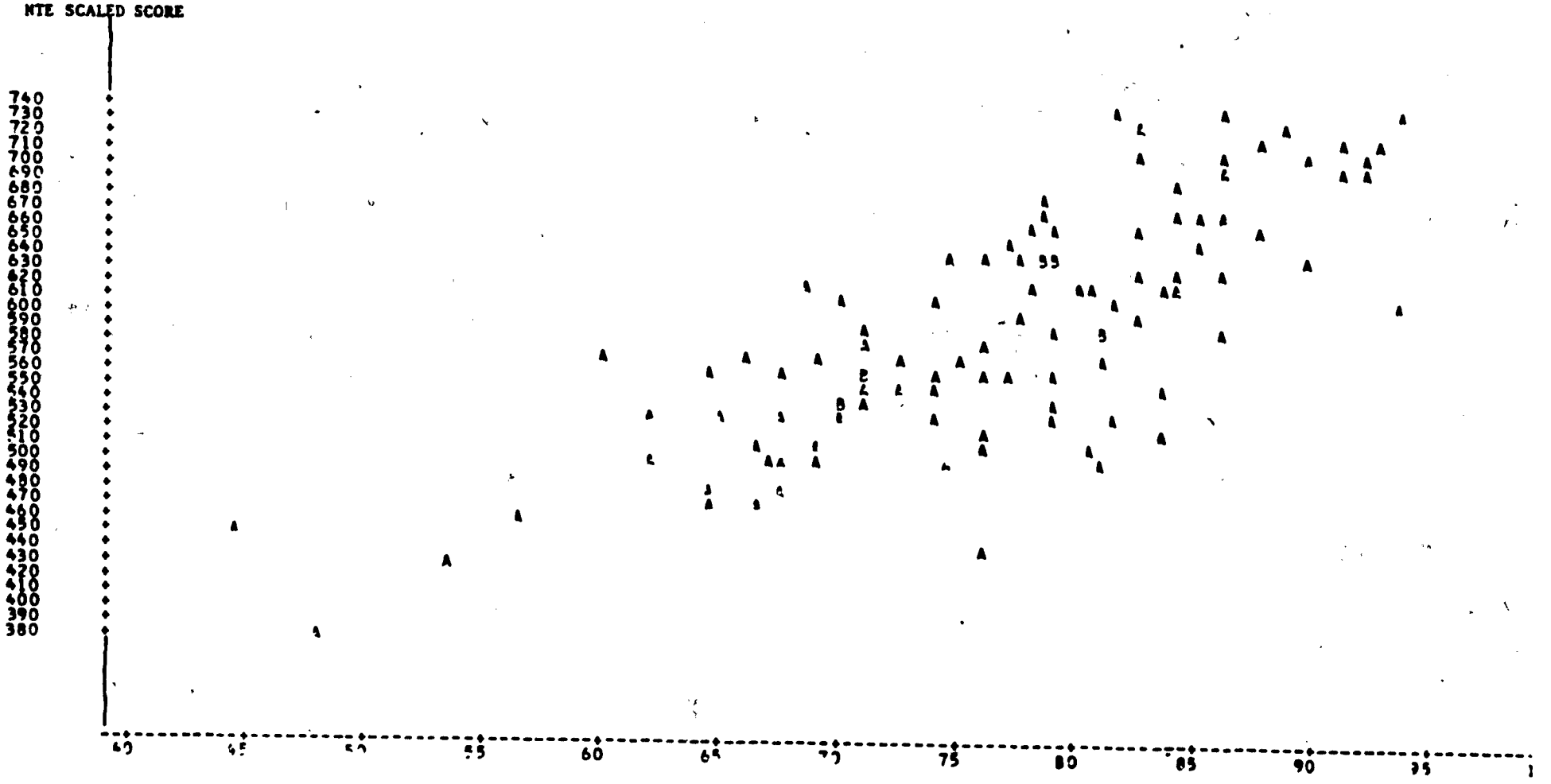
Music

Social Studies

STATISTICAL ANALYSIS SYSTEM

PLOT OF NTEAREA*TCTSCA LEGEND: A = 1 OBS, B = 2 OBS, ETC.

APPENDIX C






ART

STATISTICAL ANALYSIS SYSTEM

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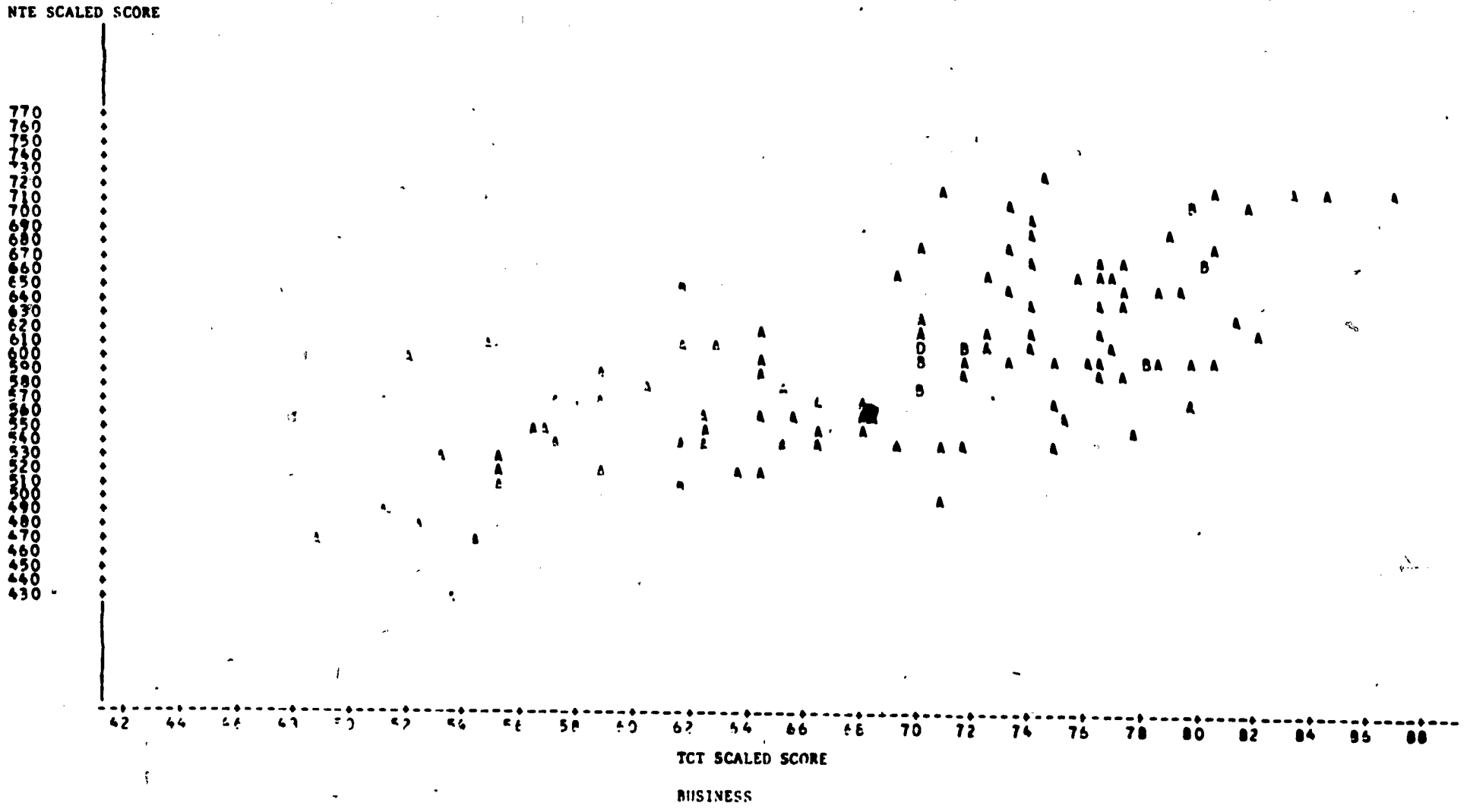
APPENDIX C
CONTINUED



STATISTICAL ANALYSIS SYSTEM

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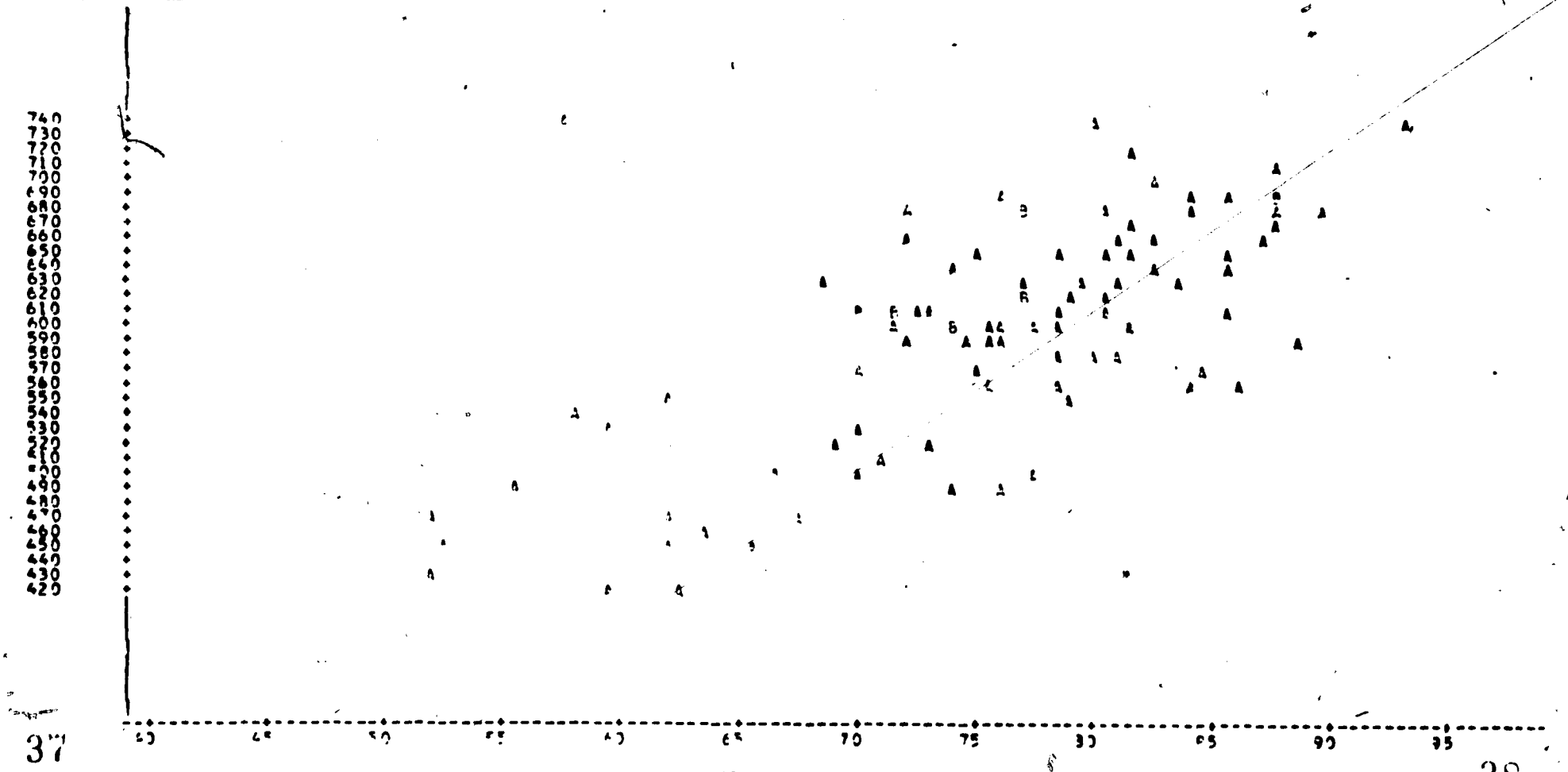

STATISTICAL ANALYSIS SYSTEM

APPENDIX C
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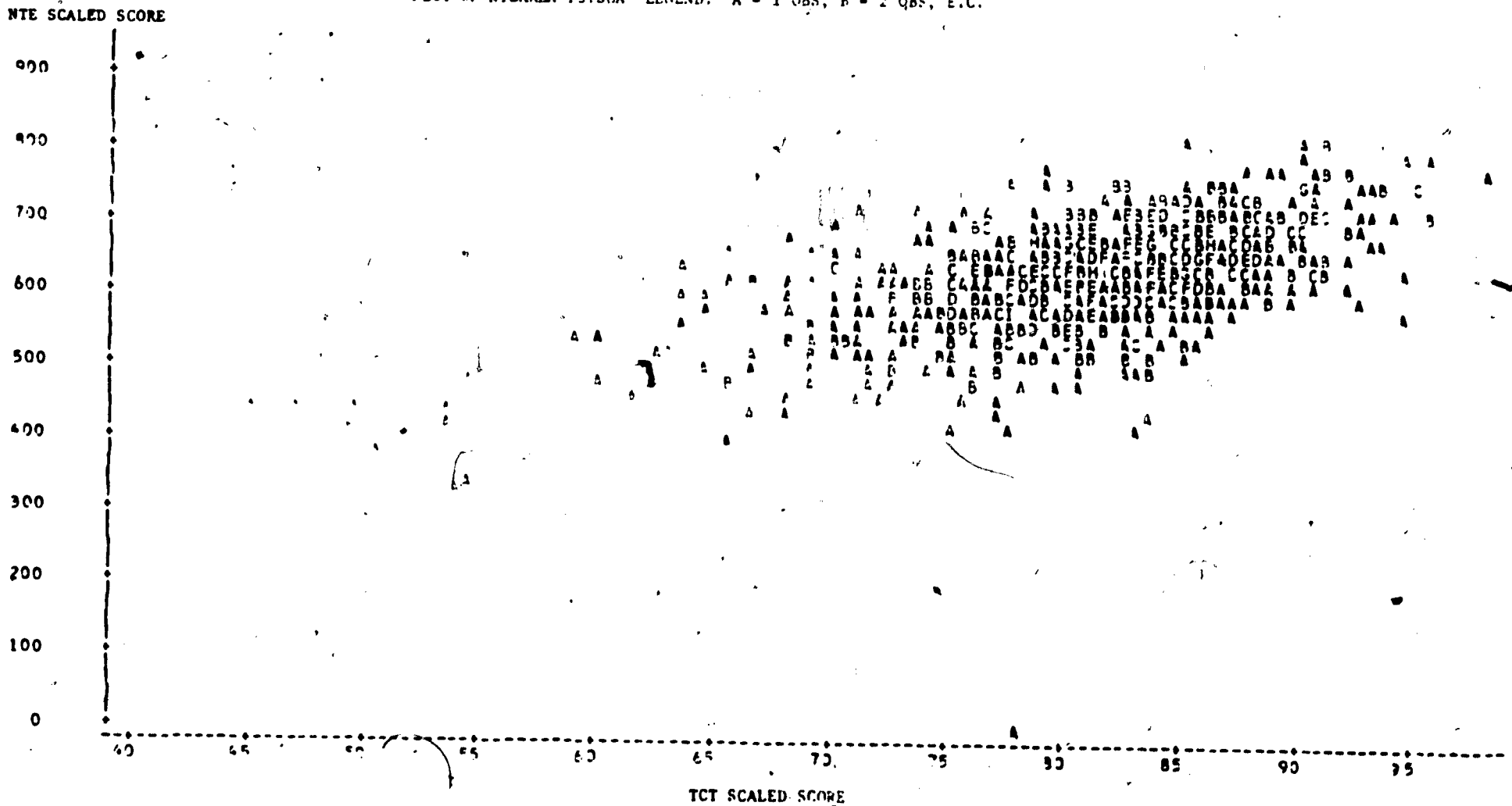
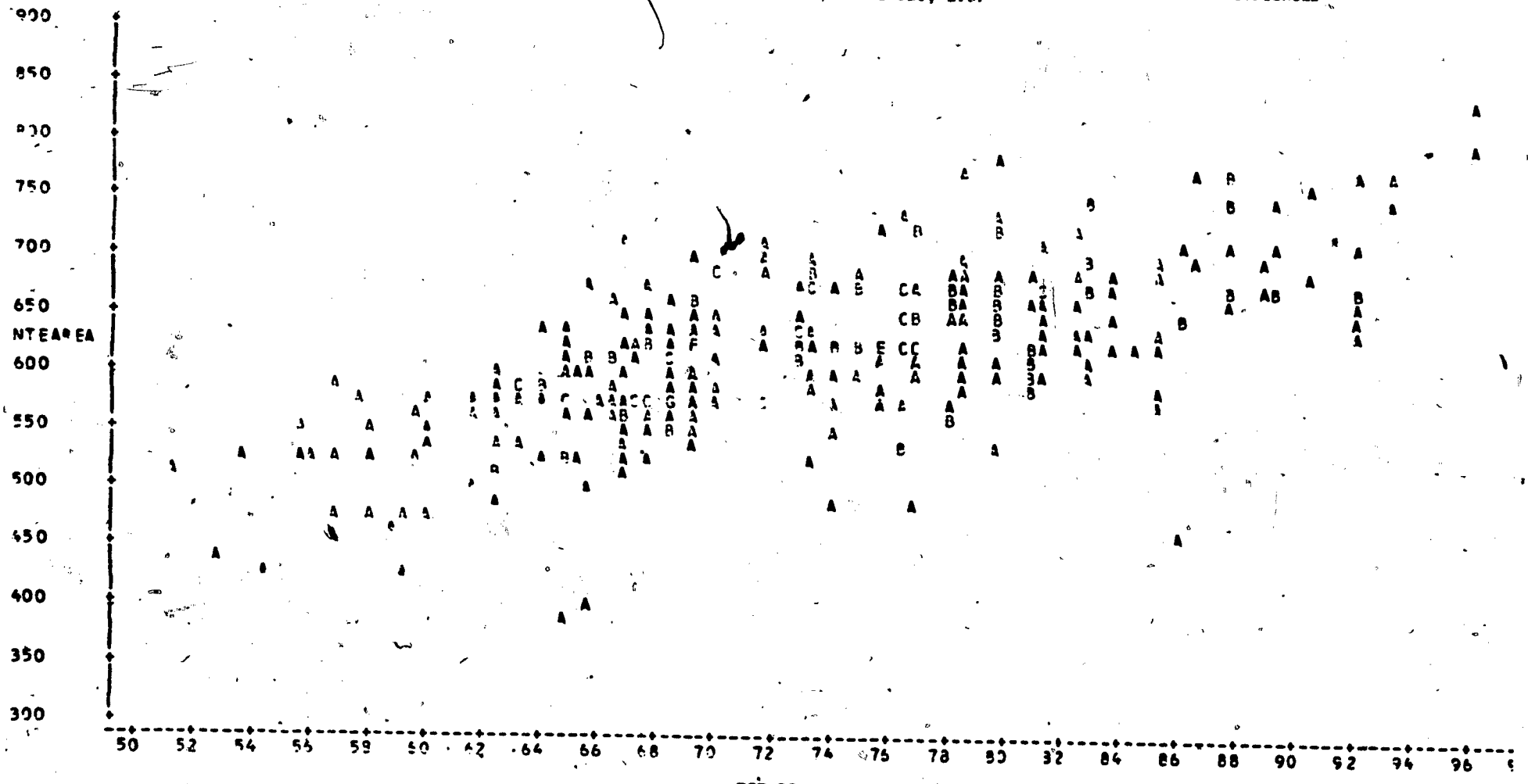


STATISTICAL ANALYSIS SYSTEM

PLOT OF NTEAREA*TCTSCA LEGEND: A = 1 OBS, B = 2 OBS, ETC.

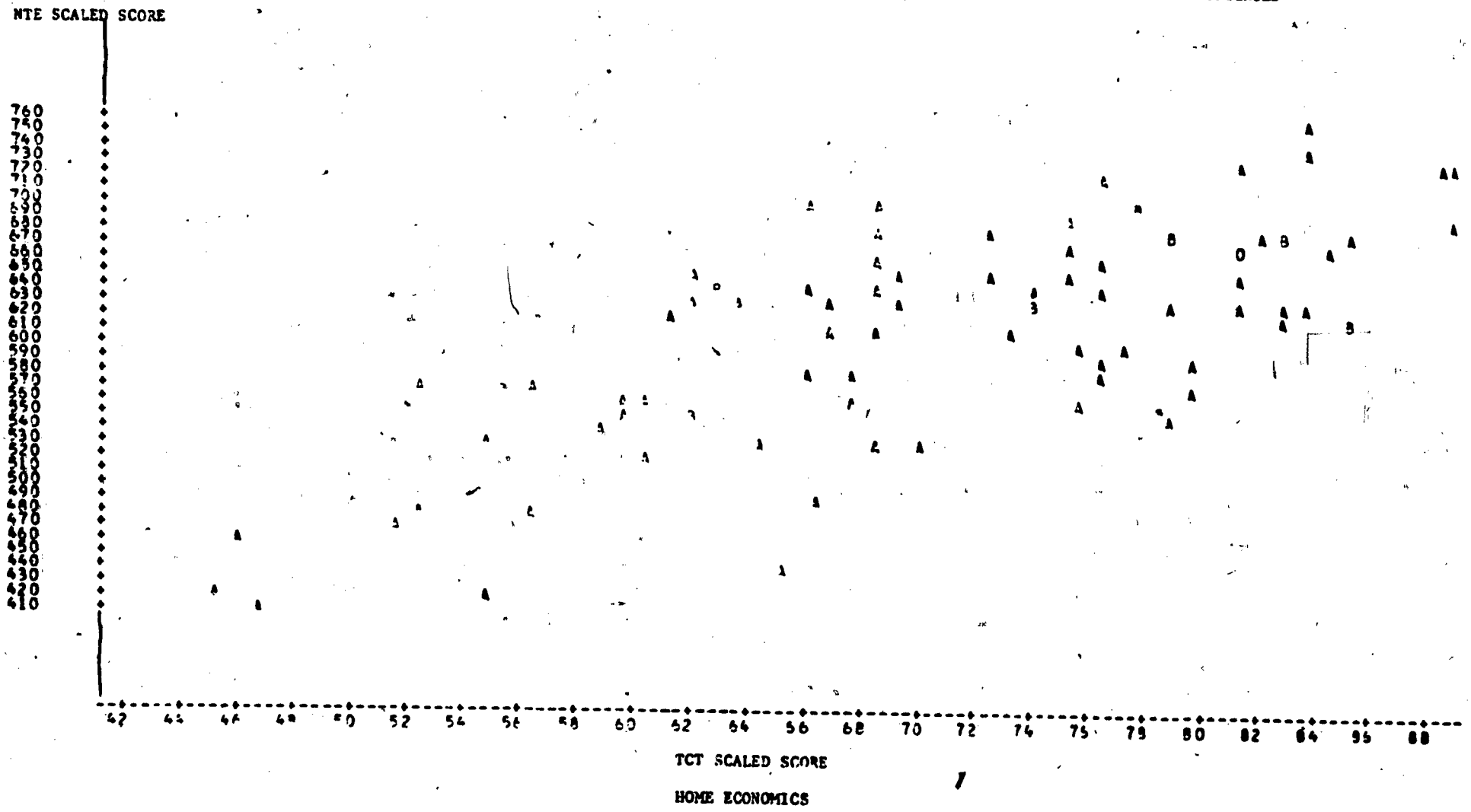



HEALTH AND PHYSICAL SCIENCE

STATISTICAL ANALYSIS SYSTEM

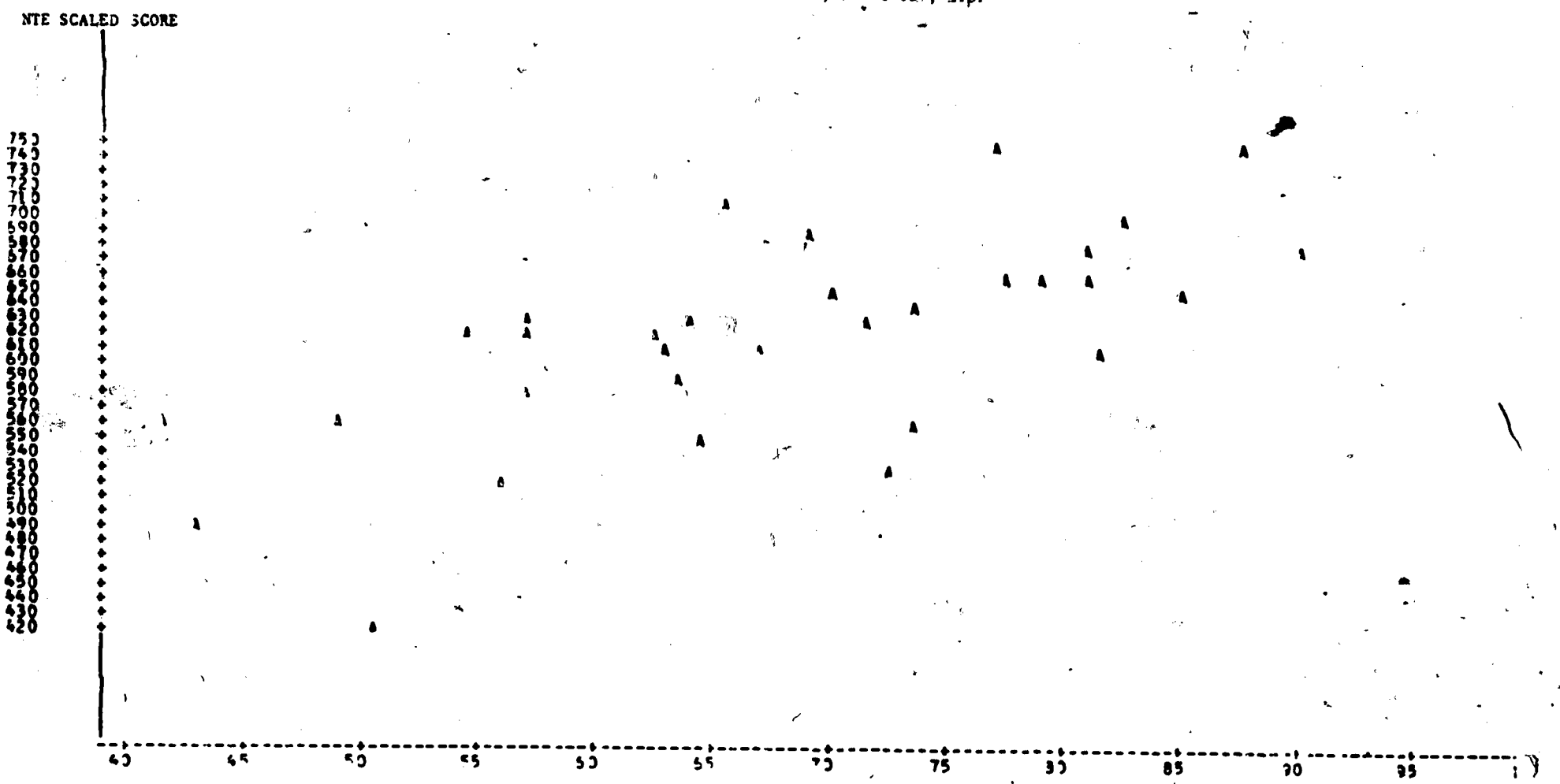
PLOT OF NTEAREA*TCTSCA LEGEND: A = 1 OBS, B = 2 OBS, ETC.

APPENDIX C
CONTINUED



STATISTICAL ANALYSIS SYSTEM

PLOT OF NTEAREA*TCTSCA LEGEND: A = 1 OBS, B = 2 OBS, ETC.




INDUSTRIAL ARTS

STATISTICAL ANALYSIS SYSTEM

PLOT OF NTEAREA*TCTSCA LEGEND: A = 1 OBS, B = 2 OBS, ETC.

APPENDIX C
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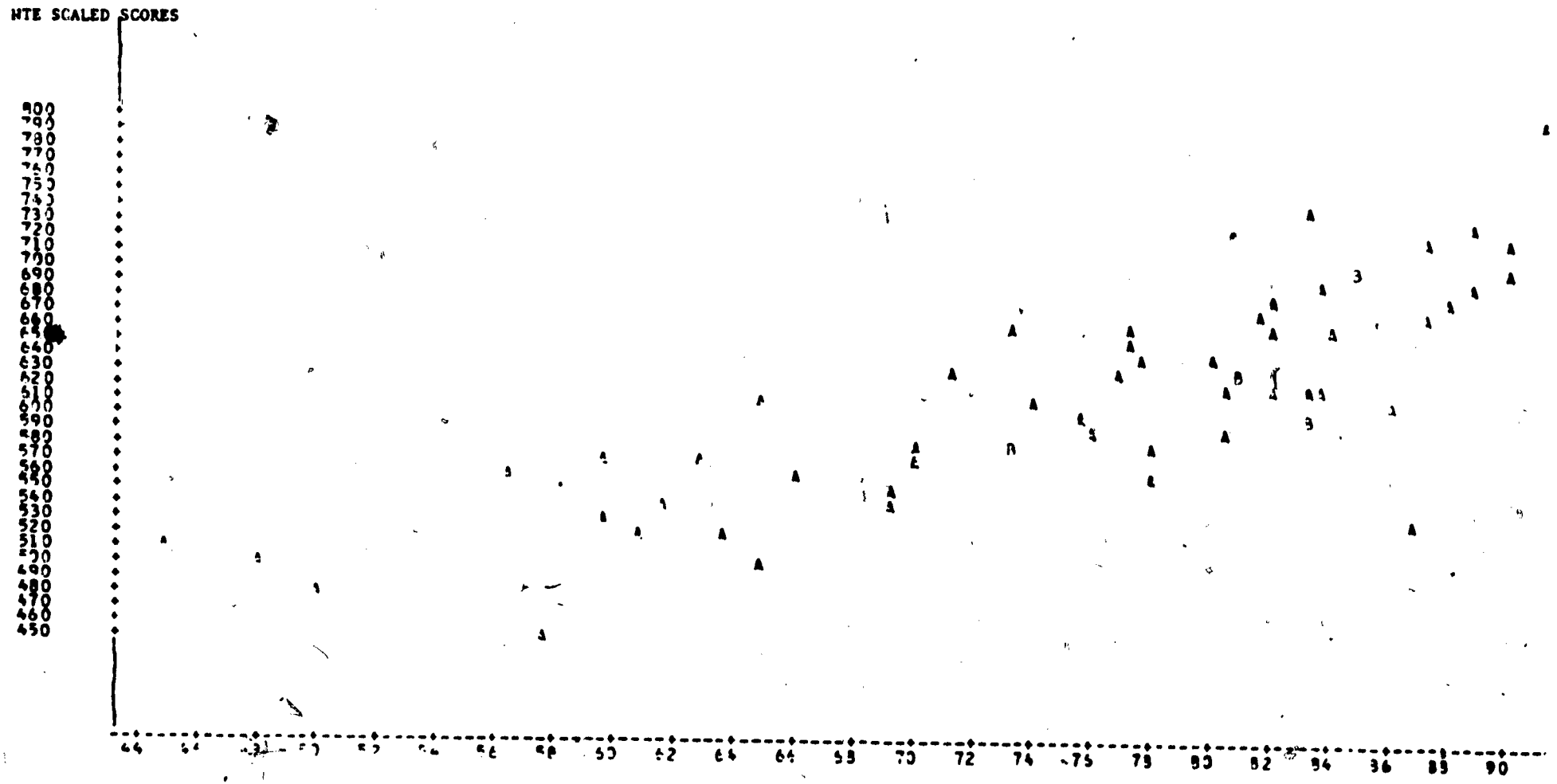
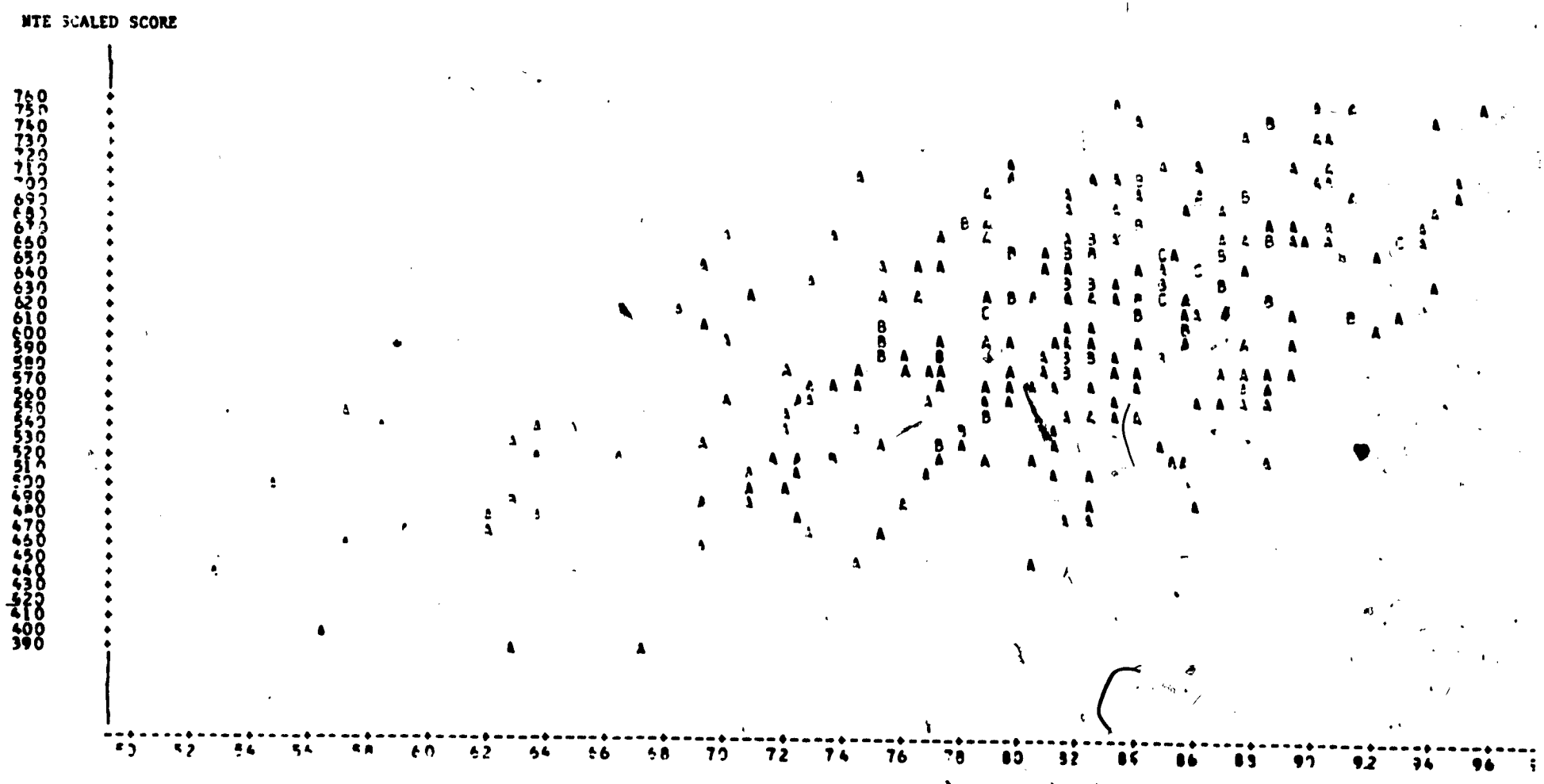


STATISTICAL ANALYSIS SYSTEM

PLOT OF NTEAREA*TCTSCA LEGEND: A = 1 OBS, B = 2 OBS, ETC.

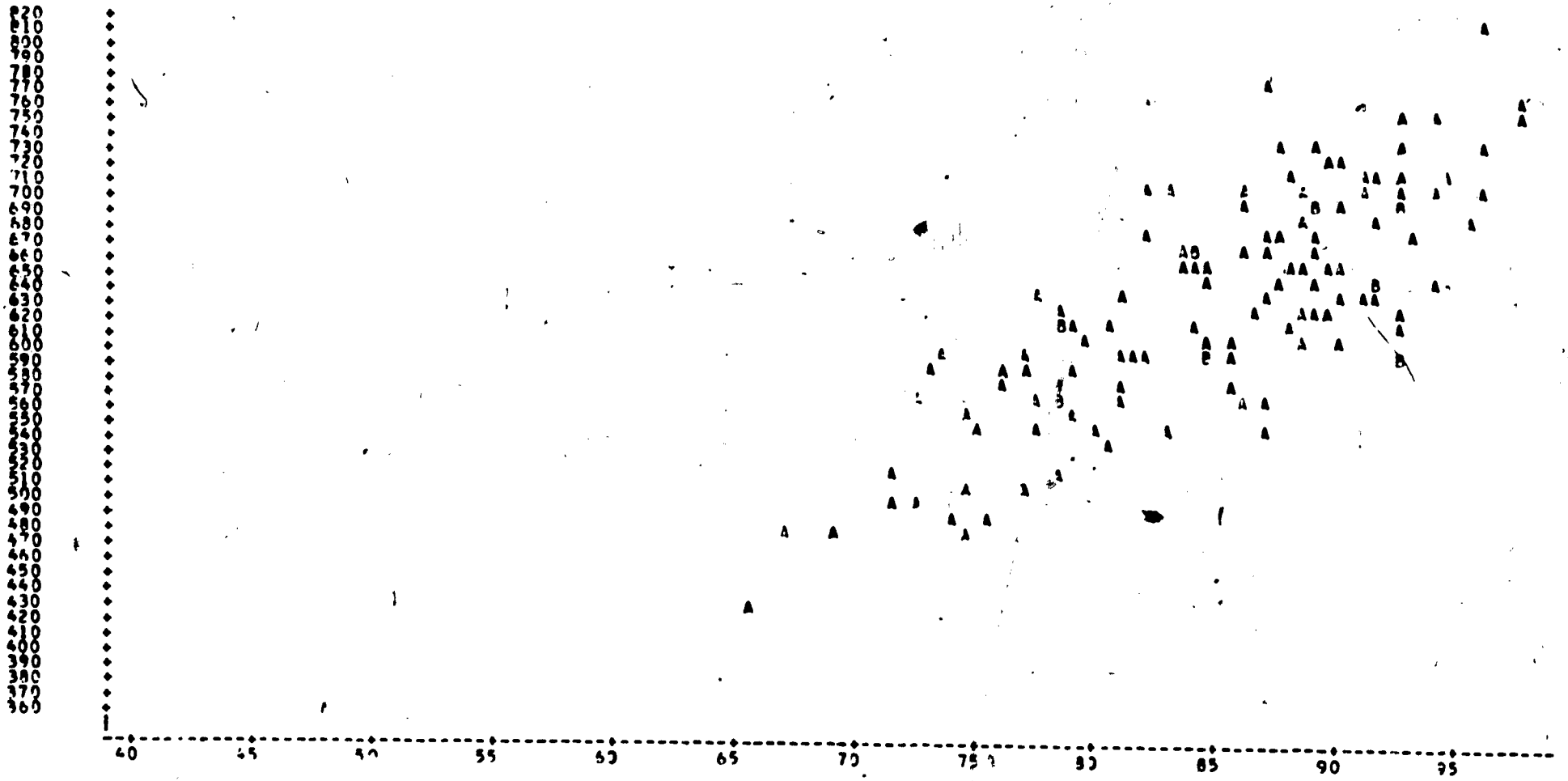
APPENDIX C
CONTINUED



STATISTICAL ANALYSIS SYSTEM

APPENDIX C
CONTINUED

PLOT OF NTEAREA*TCTSCA LEGEND: A = 1 OBS, B = 2 OBS, ETC.




MUSIC

STATISTICAL ANALYSIS SYSTEM

PLOT OF NTEAREA*TCTSCA LEGEND: A = 1 OBS, B = 2 OBS, ETC.

APPENDIX C
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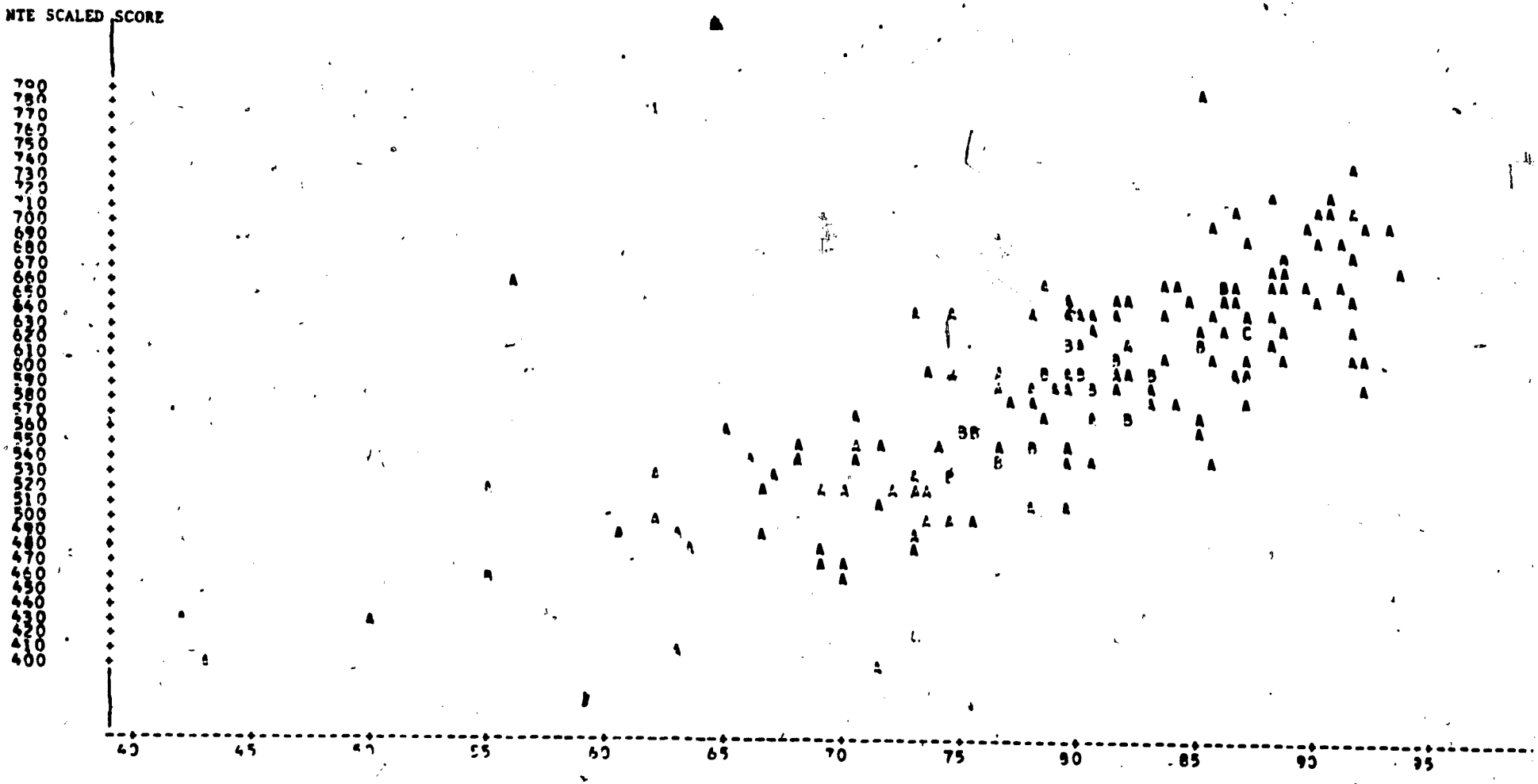

## APPENDIX D

### Correlation Coefficients for TPAI Competencies with the Georgia TCT

| COMPETENCY | Science N = 68 | | Art N = 35 | | Communicative Arts N = 84 | | Early Childhood N = 452 | | Home Economics N = 35 | | Mathematics N = 42 | | Music N = 62 | | Mental Retardation N = 123 | | Physical Education N = 138 | | Social Studies N = 76 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Fall | Spring | Fall | Spring | Fall | Spring | Fall | Spring | Fall | Spring | Fall | Spring | Fall | Spring | Fall | Spring | Fall | Spring | Fall | Spring |
| 1 | .31773 | .10071 | .25881 | .32522 | .09409 | .28958 | .25830 | .28215 | .13101 | -.01328 | .08041 | .05687 | .00606 | .19357 | .25131 | .28731 | .28403 | .30865 | .02571 | .21944 |
| 2 | .17518 | .11296 | -.00914 | .07525 | -.13975 | .13679 | .28961 | .25208 | .13837 | .31157 | .20957 | .23372 | -.08640 | -.05108 | .35233 | .25241 | .26164 | .26333 | .00909 | .14524 |
| 3 | .05264 | .01606 | .09560 | -.21539 | -.13243 | .15793 | .12052 | .17115 | -.02585 | .26649 | .13487 | .04079 | -.01660 | .01277 | .03428 | .16758 | .24729 | .34279 | .09481 | .08590 |
| 4 | -.00156 | .09604 | -.01703 | -.16990 | -.06504 | .22853 | .12121 | .11944 | -.08334 | .11890 | .25755 | .11883 | .04529 | -.09327 | .26431 | .22943 | .10411 | .25978 | -.02996 | .14858 |
| 5 | .14430 | -.11165 | .00254 | .04308 | .08954 | .21423 | .21661 | .26945 | .16332 | .06264 | .15966 | .13701 | -.07209 | -.02665 | .29277 | .21436 | .32453 | .29192 | .03736 | .14527 |
| 6 | .21679 | .02314 | .12196 | .00979 | -.04615 | .07961 | .24669 | .26867 | .18741 | .15529 | .14592 | .03862 | -.06675 | -.04694 | .36723 | .15826 | .17026 | .19065 | .04293 | .24299 |
| 7 | .33549 | -.03165 | .14357 | -.10274 | -.01431 | .11330 | .32475 | .41924 | .17887 | .25120 | .45325 | .20520 | .06235 | .01093 | .21899 | .30498 | .33479 | .29784 | .19183 | .24865 |
| 8 | .09354 | -.04301 | .05786 | .24169 | .02468 | -.00940 | .12313 | .14846 | .35306 | .21180 | -.13031 | .05188 | -.16791 | -.11162 | .24733 | .20063 | .16666 | .11337 | .09074 | .01885 |
| 9 | .17282 | -.04112 | .08118 | .09534 | -.13190 | .03241 | .18564 | .26078 | .04462 | .01886 | .24821 | .08540 | -.11728 | -.03275 | .29525 | .22224 | .19168 | .12926 | .25686 | .21476 |
| 10 | .15997 | .01778 | -.08307 | -.07065 | .03862 | .25783 | .24610 | .33572 | -.09699 | .01799 | .35323 | .07964 | -.02590 | .17585 | .32002 | .16946 | .34748 | .25977 | .25218 | .31083 |
| 11 | .12551 | -.17272 | .07791 | -.25258 | -.13650 | -.11777 | .03508 | .09265 | -.05700 | .14708 | .19804 | -.14162 | -.01689 | -.05988 | .16183 | .17465 | .08999 | .24508 | .12628 | .14151 |
| 12 | .12977 | -.05278 | .01573 | .13344 | .00121 | .05885 | .22277 | .31786 | .14051 | -.24433 | .13637 | -.03512 | .03134 | -.04712 | .23060 | .29098 | .19790 | .26148 | .16948 | .07857 |
| 13 | .25290 | -.09469 | -.07927 | -.03417 | -.10770 | .02327 | .22456 | .23777 | .25447 | .09495 | .38681 | .27346 | .04974 | .00179 | .21497 | .15230 | .17544 | .22103 | .04823 | .10847 |
| 14 | .22388 | -.26521 | -.00920 | .04895 | -.15666 | -.12152 | .07279 | .13463 | -.20417 | -.04547 | -.05642 | -.05889 | -.13729 | -.13515 | .14712 | .08957 | .03346 | .16792 | .17248 | .01742 |

## APPENDIX E

### Correlation Coefficients for TPAI Competencies with NTE

| COMPETENCY | Early Childhood N = 179 | | | | | | Mental Retardation N = 61 | | | | | | Physical Education N = 65 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | NTE AREA | | NTE PROFESSIONAL EDUCATION | | NTE WCET | | NTE AREA | | NTE PROFESSIONAL EDUCATION | | NTE WCET | | NTE AREA | | NTE PROFESSIONAL EDUCATION | | NTE WCET | |
| | Fall | Spring | Fall | Spring | Fall | Spring | Fall | Spring | Fall | Spring | Fall | Spring | Fall | Spring | Fall | Spring | Fall | Spring |
| 1 | .22765 | .21855 | .16984 | -.23325 | .14594 | .21176 | .30089 | .20483 | .23068 | .14117 | .27465 | .20097 | .08456 | -.02654 | .22797 | .09116 | .19648 | .13255 |
| 2 | .31190 | .04281 | .23150 | .06297 | .21658 | .09530 | .50496 | .24253 | .44420 | .17156 | .36825 | .23492 | .06680 | -.02570 | .10542 | .14433 | .12159 | .16208 |
| 3 | .17485 | -.01141 | .15952 | .03679 | .11826 | .02704 | .26282 | .08563 | .31564 | .07047 | .20568 | .18450 | .10236 | .07712 | .17991 | .23933 | .21186 | .26950 |
| 4 | .10606 | .06905 | .04953 | .06234 | .06398 | .05746 | .40012 | .19670 | .43376 | .14980 | .44069 | .26990 | .09611 | -.04708 | .05443 | .07118 | -.01472 | .05454 |
| 5 | .20908 | -.02908 | .18596 | -.01223 | .18462 | .01600 | .47546 | .03332 | .51648 | -.01065 | .47186 | .03434 | .27077 | -.05018 | .24866 | .16566 | .30654 | .14250 |
| 6 | .25402 | .31282 | .17761 | .28647 | .18215 | .24568 | .37694 | -.00573 | .28785 | -.00608 | .33344 | .04144 | .14421 | -.05559 | .25730 | .10565 | .28754 | .12872 |
| 7 | .29209 | .35266 | .24280 | .28390 | .25041 | .28568 | .19063 | .31654 | .18881 | .33126 | .20729 | .43834 | .28076 | .01979 | .32437 | .12973 | .36030 | .15959 |
| 8 | .12353 | .10503 | .08783 | .09141 | .07372 | .09221 | .40238 | -.02992 | .34487 | -.09729 | .24557 | -.11596 | .19208 | -.01953 | .23737 | .09847 | .25677 | .15655 |
| 9 | .21139 | .22801 | .15486 | .20848 | .14151 | .19662 | .36877 | .13070 | .28500 | .03289 | .29809 | .03649 | .15469 | .00325 | .23099 | .08972 | .25588 | .07978 |
| 10 | .27797 | .24794 | .24160 | .24733 | .22010 | .21702 | .32654 | .02215 | .36116 | .04451 | .31776 | .12513 | .23126 | .13281 | .30246 | .24350 | .34614 | .28070 |
| 11 | .08877 | .05650 | .04336 | -.00792 | .04449 | -.03334 | .20629 | .11468 | .14828 | .02410 | .12493 | .01111 | .08650 | .05002 | .20119 | .15680 | .20481 | .11153 |
| 12 | .23988 | .25170 | .23062 | .18879 | .21043 | .23418 | .26373 | .18386 | .31048 | .19062 | .25823 | .24379 | .06718 | -.01779 | .16371 | .13998 | .14311 | .11566 |
| 13 | .19789 | .22032 | .14323 | .14539 | .13716 | .16898 | .06459 | .06133 | .09584 | .09857 | .12427 | .16003 | .08498 | .04736 | .09869 | .05660 | .08710 | .15301 |
| 14 | .17100 | .21612 | .12400 | .15519 | .14603 | .13886 | .24688 | .14058 | .21894 | .02939 | .31922 | .13641 | .01032 | .05485 | .09133 | .18684 | .17258 | .18623 |