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ABSTRACT

Graphs and charts pertaining to testing in affirmative action are presented. Data concern the following: the predictive validity of College Board admissions tests using freshman grade point average as the criterion; validity coefficients of undergraduate grade point average (UGPA) alone, Law School Admission Test (LSAT) scores, and undergraduate average combined with LSAT scores; validity coefficients for five predictors of success in graduate school in nine fields; the proportion of students at various levels of Graduate Record Examination Advanced test scores in chemistry, physics, and psychology who attained the Ph.D. within ten years; scatter plot diagrams showing prediction without selection and prediction with selection; a hypothetical example showing effect of restriction in range of talent on the size of the validity coefficient; multiple validity coefficients (LSAT and UGPA) for two successive first year classes in 95 law schools; proportion of successful selectees as a function of validity and selectivity; predicted and actual grades for black and Mexican American students; cross-plot of deltas for white-Northeasterns, white-Southeasterns, Afro-Americans, Puerto Ricans, Mexican Americans, and Latin-Americans. (SW)

Inservice Education Program (IEP)

Paper Presented at a Seminar for State Leaders in Postsecondary Education

THE ROLE OF TESTING IN AFFIRMATIVE ACTION

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October 1978

IEP Paper No. 505

Education Commission of the States

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SHEEO

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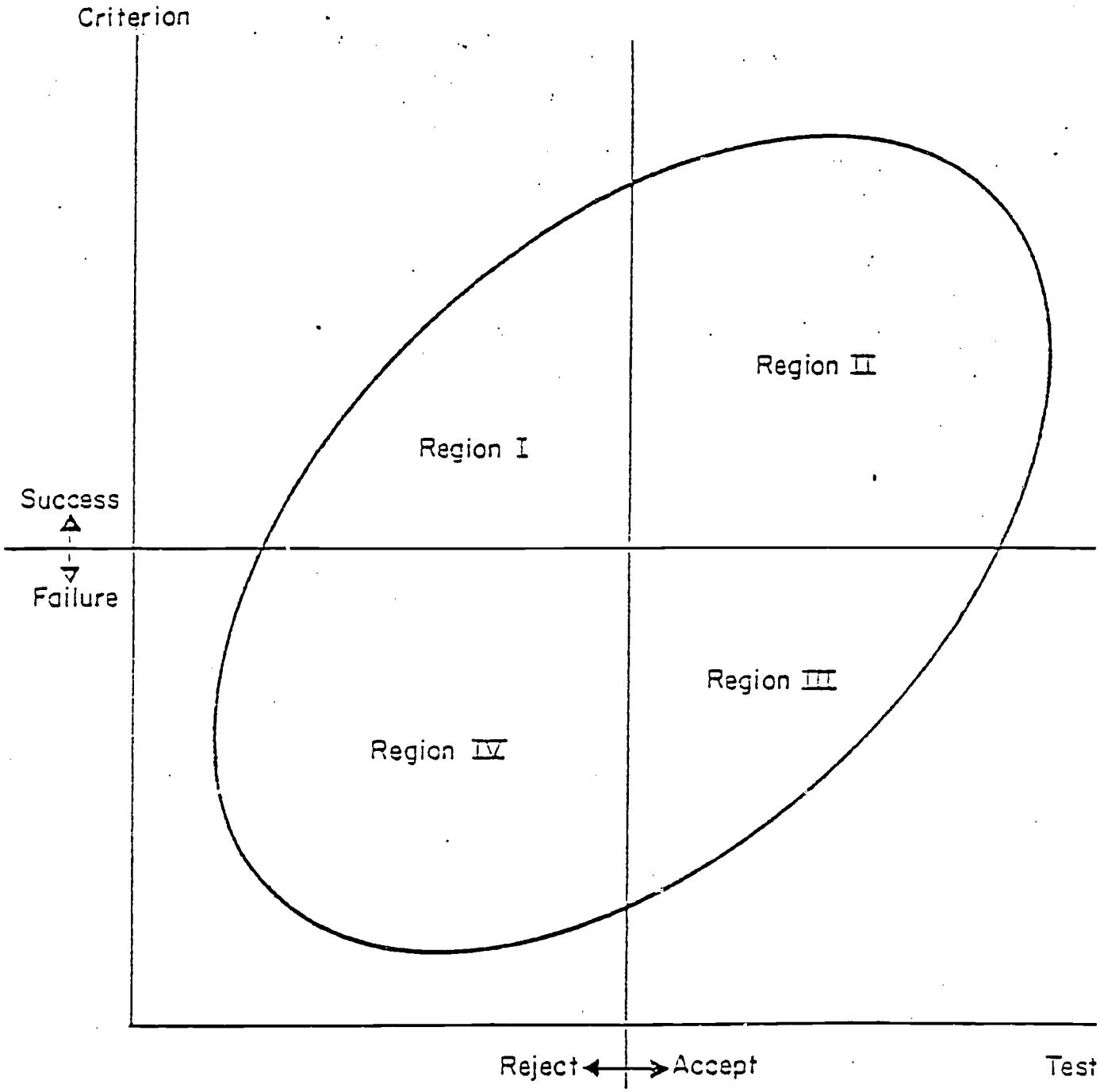
Criterion
Region II
Region I
Success
Failure
Region III
Region IV
Reject
Accept
Test

Median Validity Coefficients in a Representative Group of Studies Using Freshman Average Grade as the Criterion*

	Men	Women	Combined
SAT-V	.33	.41	.39
SAT-M	.30	.36	.33
High school record	.47	.54	.55
Multiple correlation	.55	.62	.62
Number of groups	116	143	51

*From Schrader, B. The predictive validity of College Board admissions tests, in Angoff, William F. The College Board Admissions Testing Program. New York: College Entrance Examination Board, 1971.)

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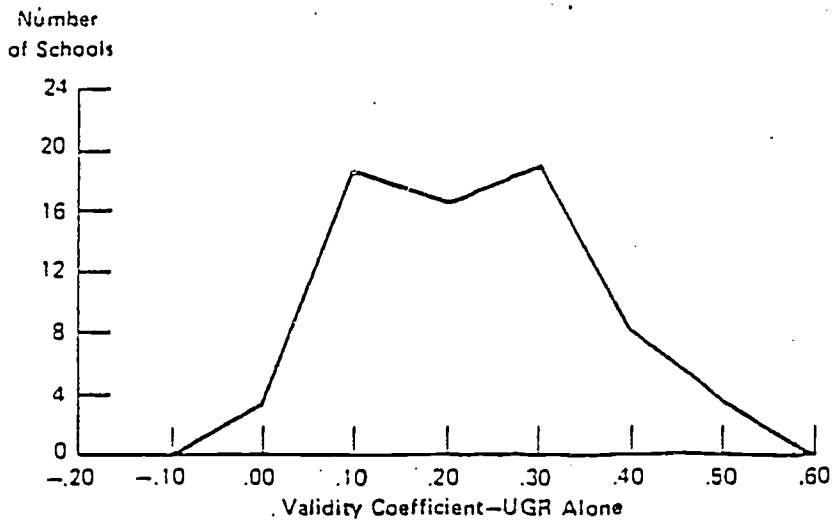
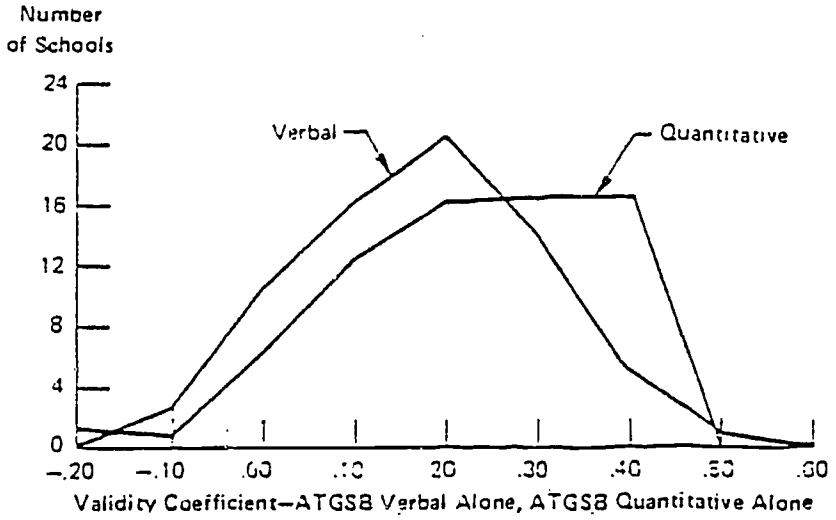




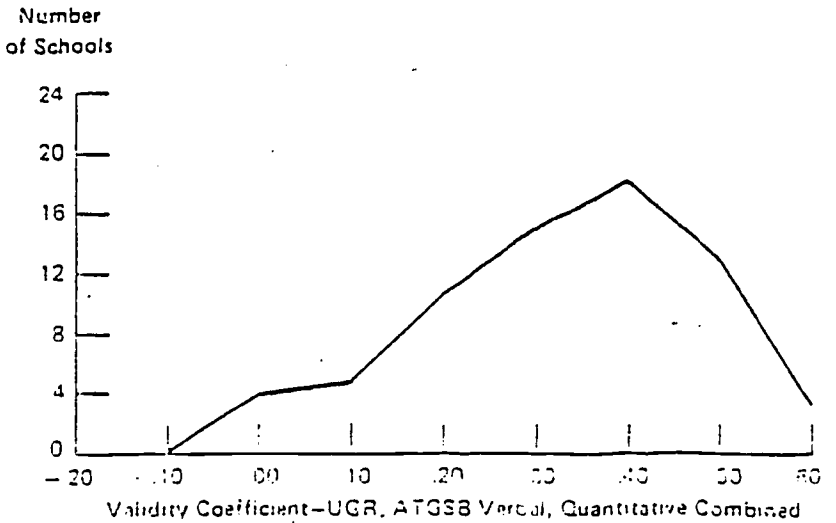
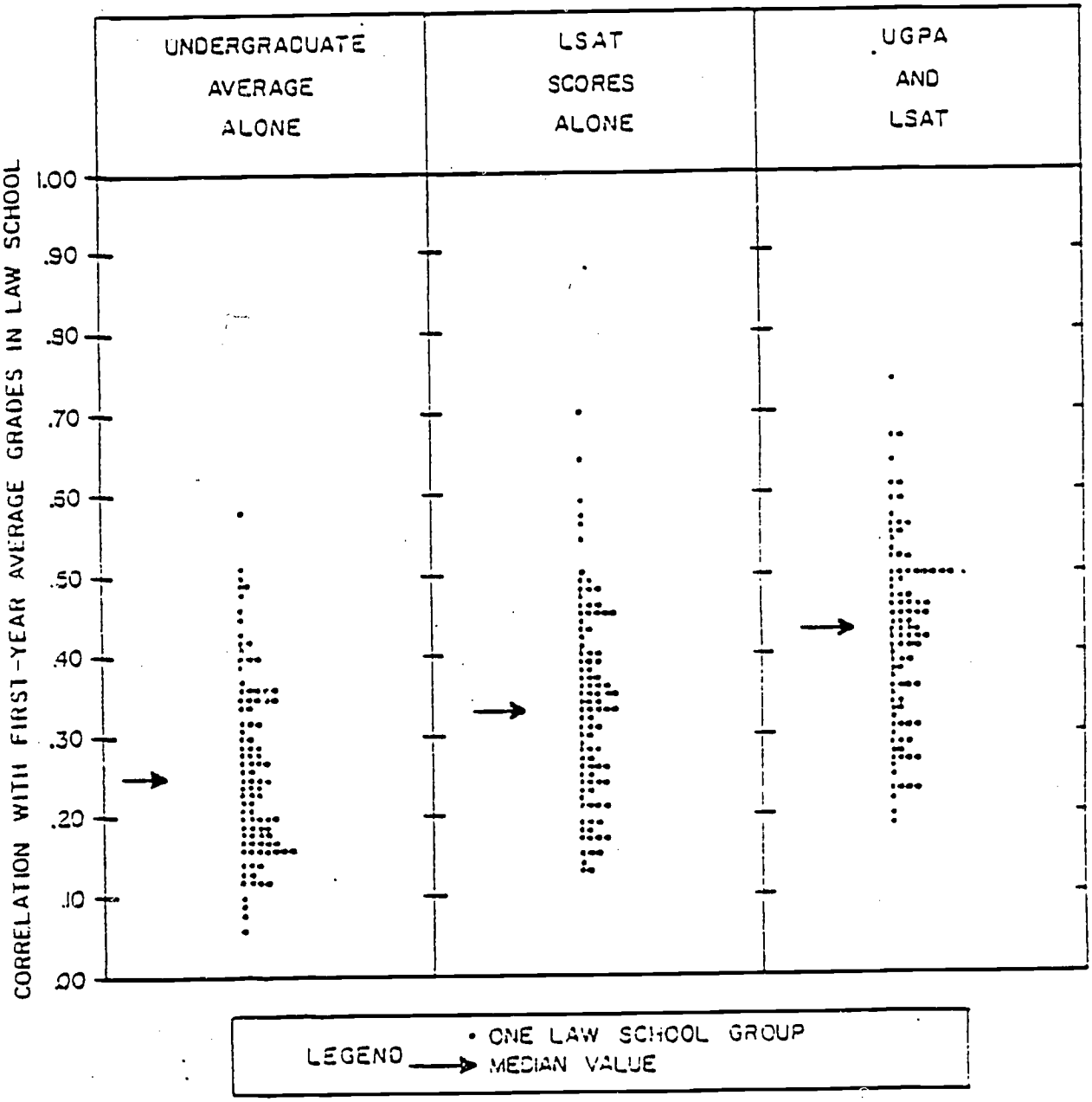


FIGURE 1

Distributions of validity coefficients for undergraduate record alone, ATGSB Verbal scores alone, ATGSB Quantitative scores alone, and UGR and ATGSB V and Q scores combined. (Based on 69 studies conducted in 1967-68—1969-70 for 57 graduate schools of business.)



Validity coefficients of undergraduate average alone, LSAT scores alone, and undergraduate average combined with LSAT scores. (Based on studies conducted in 1972-73 for 99 law schools.)

Table 1. Median validity coefficients for various predictors and criteria of success in graduate school. (The number of coefficients upon which each median is based is given in parentheses. Coefficients involving dichotomized criteria were sometimes reported as biserials and sometimes as point-biserials.)

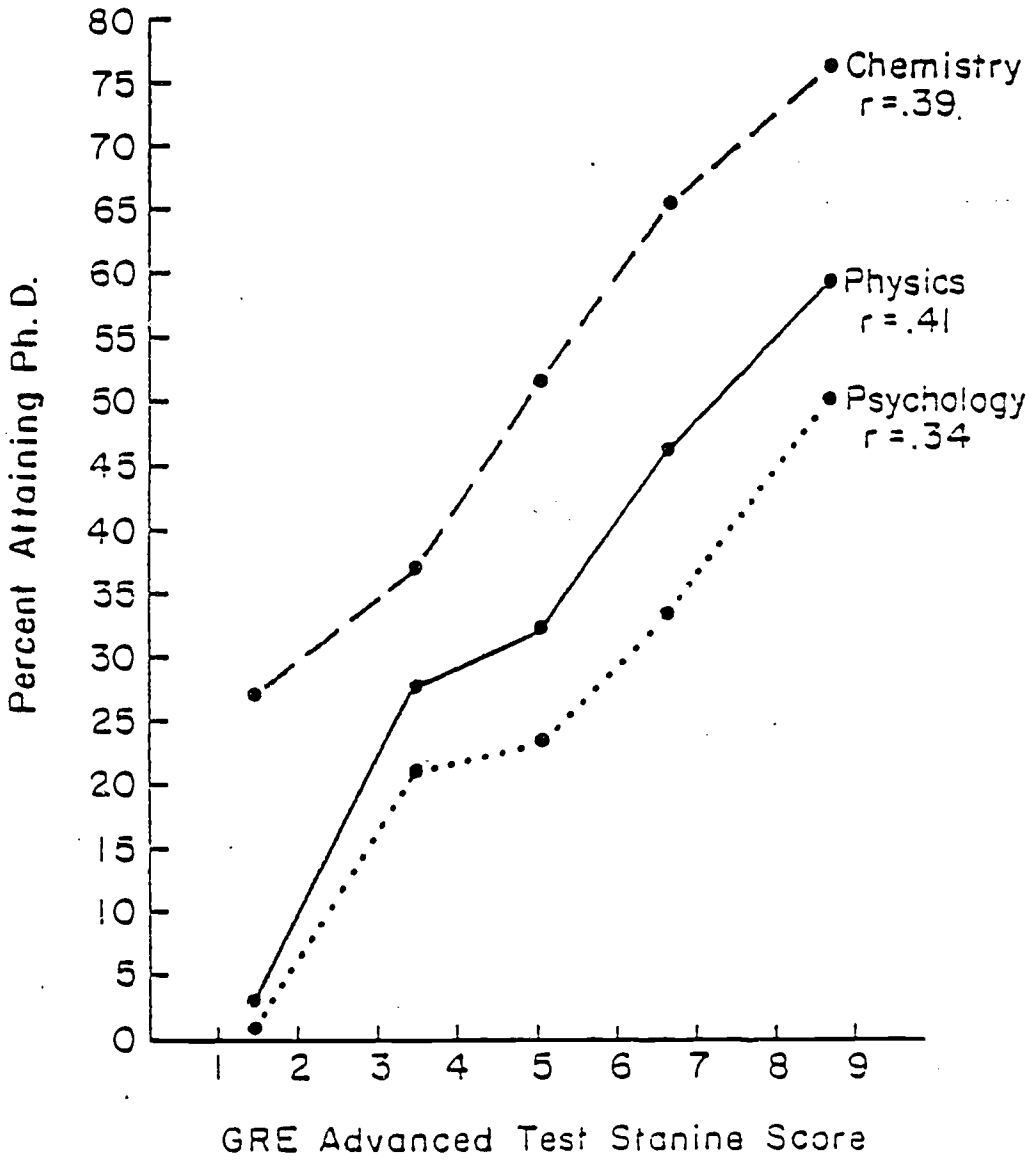
Predictors	Criteria of success				
	Graduate GPA	Overall faculty rating	Departmental examination	Attain Ph.D.	Time to Ph.D.
GRE-verbal	.24 (46)	.31 (27)	.42 (5)	.18 (47)	.16 (18)
GRE-quantitative	.23 (43)	.27 (25)	.27 (5)	.26 (47)	.25 (16)
GRE-advanced	.30 (25)	.30 (8)	.48 (2)	.35 (40)	.34 (18)
GRE composite	.33 (30)	.41 (8)	*	.31 (33)	.35 (18)
Undergraduate GPA	.31 (26)	.37 (15)	*	.14 (30)	.23 (9)
Recommendations	*	*	*	.18 (15)	.23 (9)
GRE-GPA composite	.45 (24)	*	*	.40 (16)	.40 (9)

* No data available

Table 2. Median validity coefficients for five predictors of success in graduate school in nine fields. (The number of coefficients upon which each median is based is given in parentheses. Coefficients involving dichotomized criteria were sometimes reported as biserials and sometimes as point-biserials. In those sets of data where two criteria were included, one was selected in the following order of priority: GPA, attain Ph.D., departmental examination, and faculty rating.)

Predictors	Biological science	Chemistry	Education	Engineering and applied science	English	Mathematics	Physics	Psychology	Social science
GRE-verbal	.18(7)	.22(14)	.36(15)	.29(11)	.21(6)	.30(6)	.02(6)	[illegible]3)	.32(11)
GRE-quantitative	.27(8)	.28(13)	.28(14)	.31(10)	.06(6)	.27(6)	.21(6)	.23(22)	.32(10)
GRE-advanced	.26(5)	.39(9)	.24(6)	.44(7)	.43(3)	.44(5)	.38(5)	.24(17)	.46(5)
Undergraduate GPA	.13(2)	.27(7)	.30(5)	.18(4)	.22(4)	.19(4)	.31(4)	.16(15)	.37(6)
GRE-GPA composite (weighted)	.35(3)	.42(6)	.42(7)	.47(4)	.56(2)	.41(3)	.45(2)	.32(4)	.40(5)

Proportion of students at various levels of GRE Advanced test scores in chemistry, physics, and psychology who attained the Ph.D. within 10 years.#



From Creager, 1965 National Research Council Study.

SHRUNKEN MULTIPLE CORRELATIONS OF SAT-V, SAT-M, and HSGPA for GRADES IN VARIOUS COURSES

Regression Equations for Each Class*

	N	$\hat{R}$
Psychology	100	.44
Biology	33	.57
Chemistry	33	.49
Physics	68	.32
Sociology	20	.64

*(Goldman, R.D., and Slaughter, R.E., "Why College Grade Point Average is Difficult to Predict." Journal of Educational Psychology, 1976, 66, 1, 9-14.)

"In sum we believe that the validity problem in GPA prediction is a result of the GPA criterion rather than the tests that are used as predictors. Recognition of this phenomenon would eliminate much pointless argument about the merits of standardized tests for college selection." (Op. Cit., p. 14)

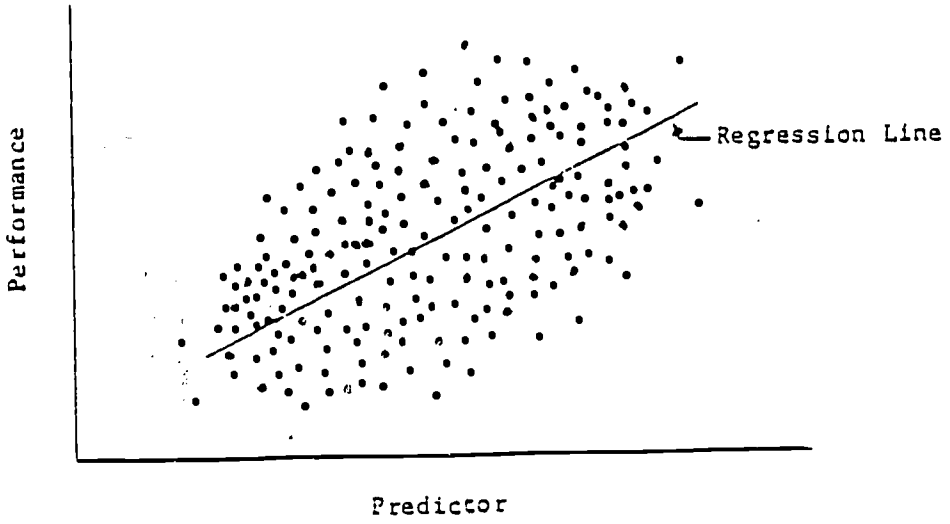


Figure 1. Prediction Without Selection

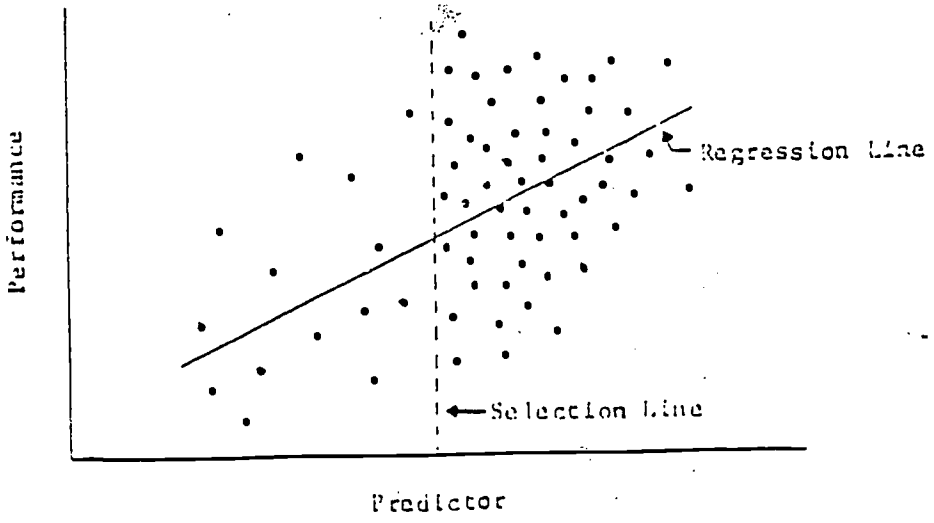
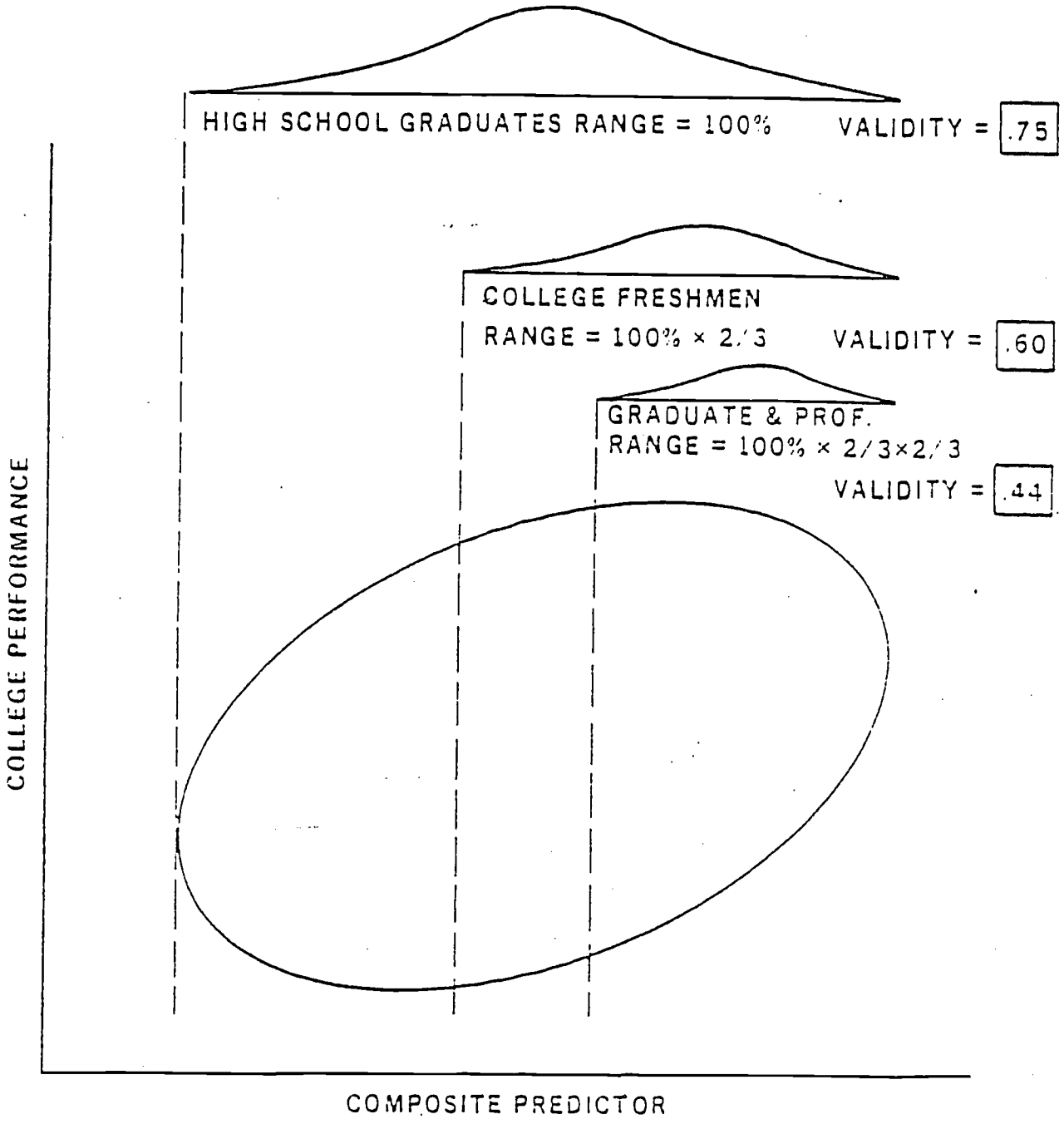


Figure 2. Prediction With Selection



Hypothetical example showing effect of restriction in range of talent on the size of the validity coefficient

Range of Correlation Coefficients That Would be Expected to Include 95 Percent of Observed Values for Selected Population Values and Sample Sizes*

Population value of correlation coefficent	Expected range of observed coefficients when sample size is: 50	100	200
.40	.14-.61	.22-.55	.28-.51
.50	.26-.68	.34-.63	.39-.60
.60	.39-.75	.46-.71	.50-.68
.70	.52-.82	.58-.79	.62-.76

*Calculated using Fisher's z-transformation. Tables of z in McNemar (1962) were used.
(From Schrader, B. The predictive validity of College Board admissions tests, in Angoff, William F. The College Board Admissions Testing Program. New York: College Entrance Examination Board, 1971.)

Multiple validity coefficients (LSAT and UGPA) for two successive first year classes in 95 law schools (N's range from 90 to 500 and average about 175)

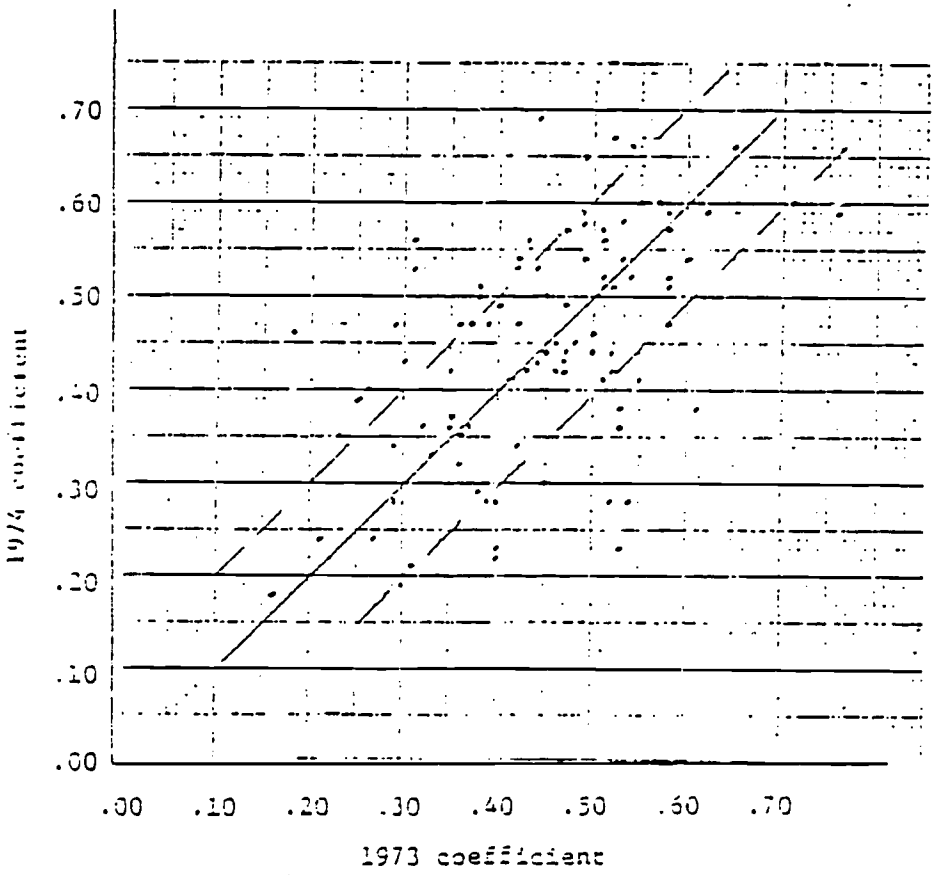


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Table 1

Proportion of Successful Selectees as a Function of Validity and Selectivity*

Validity	Selectivity (Percent Selected)					
	5%	10%	20%	30%	[illegible]%	50%
.00	.50	.50	.50	.50	.50	.50
.05	.54	.54	.53	.52	.52	.52
.10	.58	.57	.56	.55	.54	.53
.15	.63	.61	.58	.57	.56	.55
.20	.67	.64	.61	.59	.58	.56
.25	.70	.67	.64	.62	.60	.58
.30	.74	.71	.67	.64	.62	.60
.35	.78	.74	.70	.66	.64	.61
.40	.82	.78	.73	.69	.66	.63
.45	.85	.81	.75	.71	.68	.65
.50	.88	.84	.78	.74	.70	.67
.55	.91	.87	.81	.76	.72	.69
.60	.94	.90	.84	.79	.75	.70
.65	.96	.92	.87	.82	.77	.73
.70	.98	.95	.90	.85	.80	.75
.75	.99	.97	.92	.87	.82	.77
.80	1.00	.99	.95	.90	.85	.80
.85	1.00	.99	.97	.94	.88	.82
.90	1.00	1.00	.99	.97	.92	.86
.95	1.00	1.00	1.00	.99	.96	.90
1.00	1.00	1.00	1.00	1.00	1.00	1.00

*Adapted from Tiffin, 1965, p. 652.

RELATION BETWEEN STANDING ON A PREDICTOR
AND STANDING ON CRITERION FOR VALIDITY
COEFFICIENTS OF .00, .40 and .60

Validity	Standing on Predictor	Percent of Students in Each Criterion Group		
		Bottom Fifth	Middle Three Fifths	Top Fifth
.00	Top fifth	20	60	20
	Middle three-fifths	20	60	20
	Bottom fifth	20	60	20
.40	Top fifth	7	55	38
	Middle three-fifths	18	64	18
	Bottom fifth	38	55	7
.60	Top fifth	2	48	50
	Middle three-fifths	16	68	16
	Bottom fifths	50	48	2

Hypothetical Expectancy
Table for School X

Score Level	CHANCES IN 100 OF EARNING VARIOUS FIRST-YEAR AVERAGE GRADES			
	Failing Grades	Passing Grades (Above Failing but Below Honors)	Honor Grades	Passing or Honor Grades
600-649	0	44	56	100
550-599	3	50	47	97
500-549	7	59	33	92
450-499	17	60	23	83
400-449	27	59	14	73
350-399	31	61	8	69
300-349	50	45	5	50

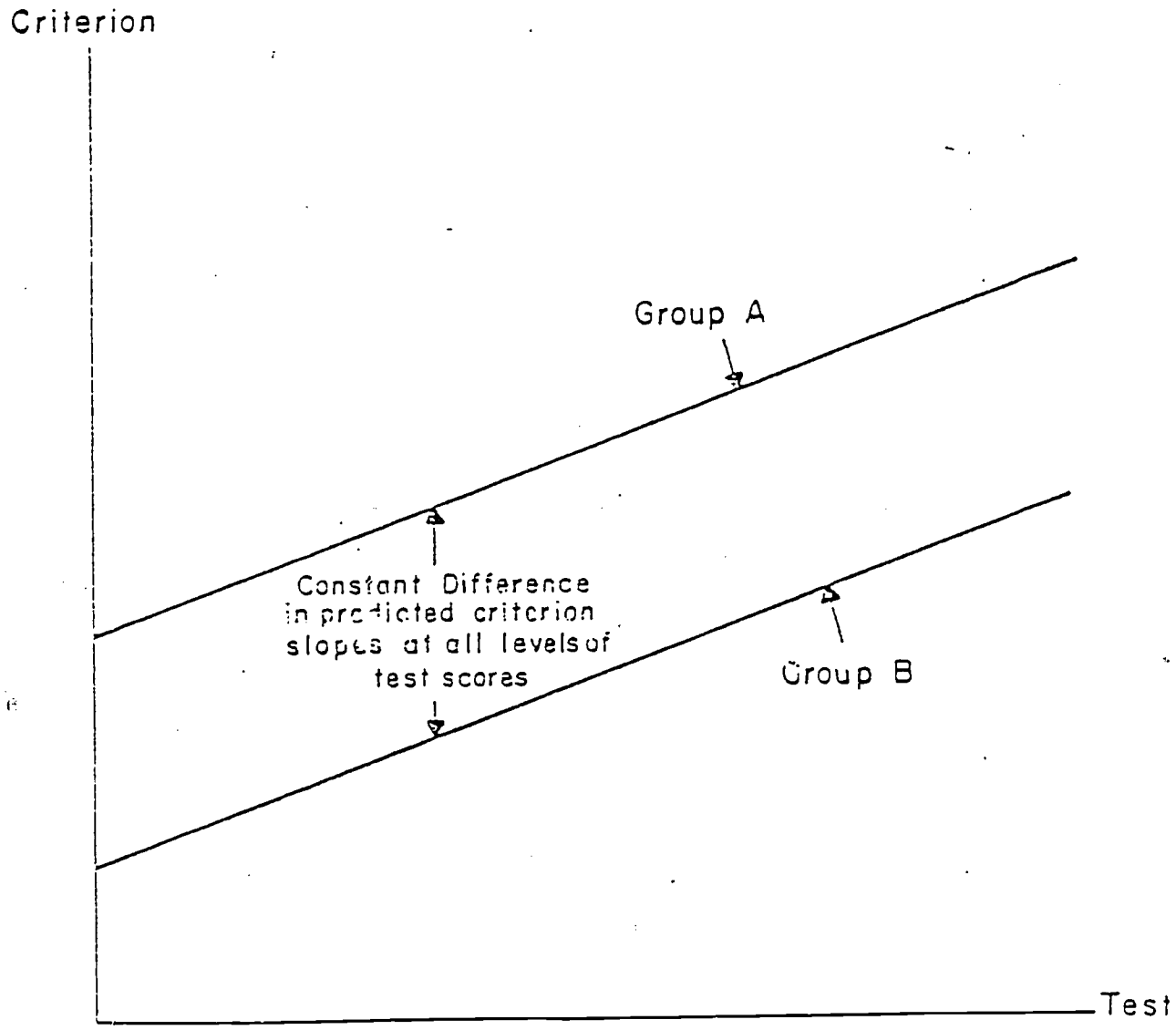

Figure 3

Illustration of regression lines with equal slopes but unequal intercepts

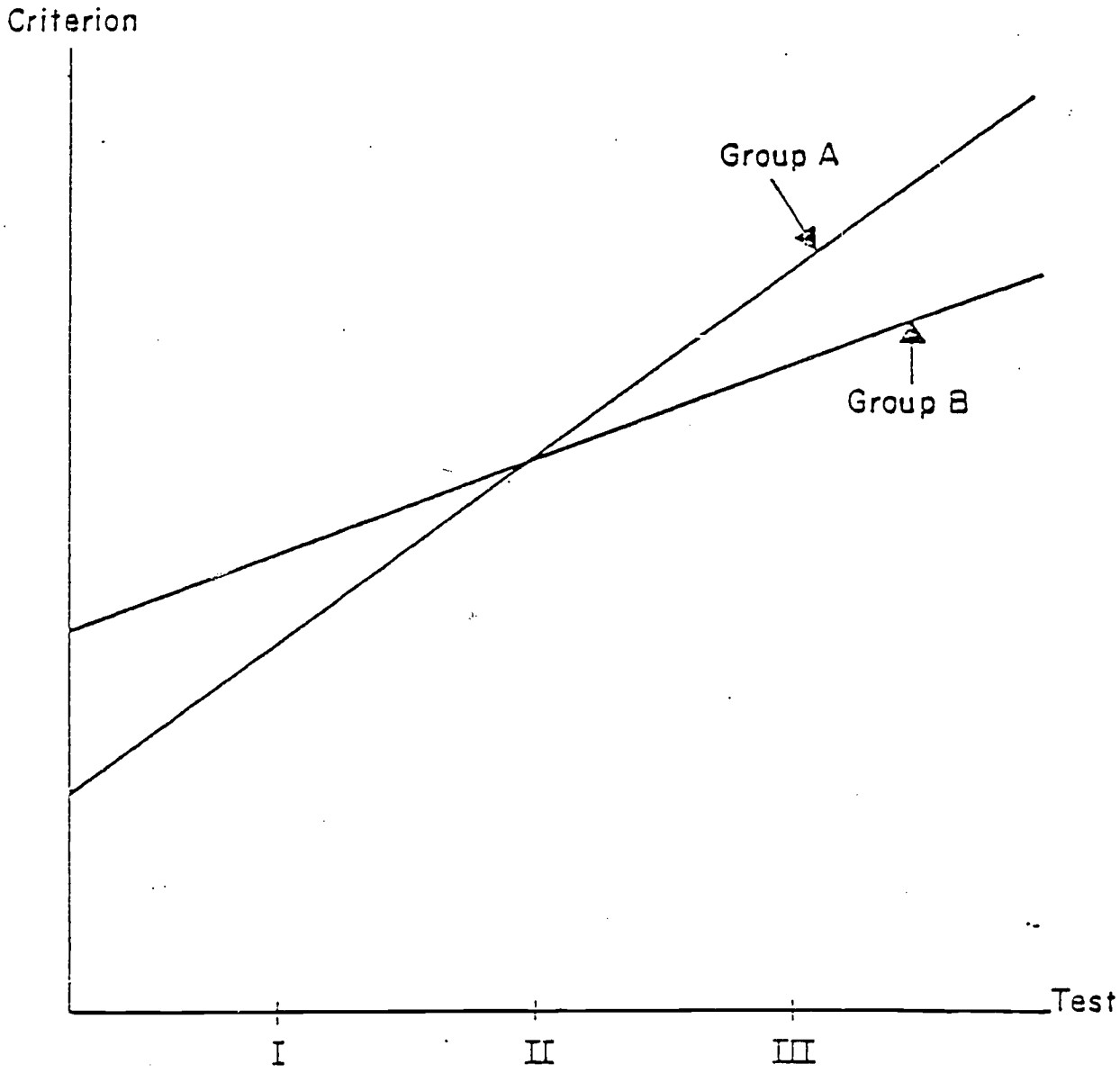

Figure 2

Illustration of regression lines with unequal slopes

Table 2

Predicted and Actual Grades for Black and Mexican American Students[a]

Study & School	Predicted Average Grade[b]	Actual Average Grade	Amount of Over-prediction
	Black Students		
II-A	39	36	3
II-B	42	37	5
II-C	40	38	2
II-D	40	36	4
II-E	40	38	2
III-D	36	33	3
III-E	39	36	3
III-F	39	37	2
III-G	44	42	2
III-H	40	36	4
III-I	38	33	5
III-J71	40	35	5
III-J72	40	36	4
	Mexican American Students		
III-A	40	36	4
III-B	49	44	5
III-C	41	38	3

[a]The predictions are based on UGPA and LSAT using the combined group consisting of the total black or Mexican American sample and the proportional white sample.

[b]Grades were scaled to have a mean of 50 and a standard deviation of 10 for the combined group of students within each school. Predictions are for UGPA and LSAT scores at the mean of black or Mexican American students within each school.

Figure 1

Cross-plot of Deltas for White-Northeastern

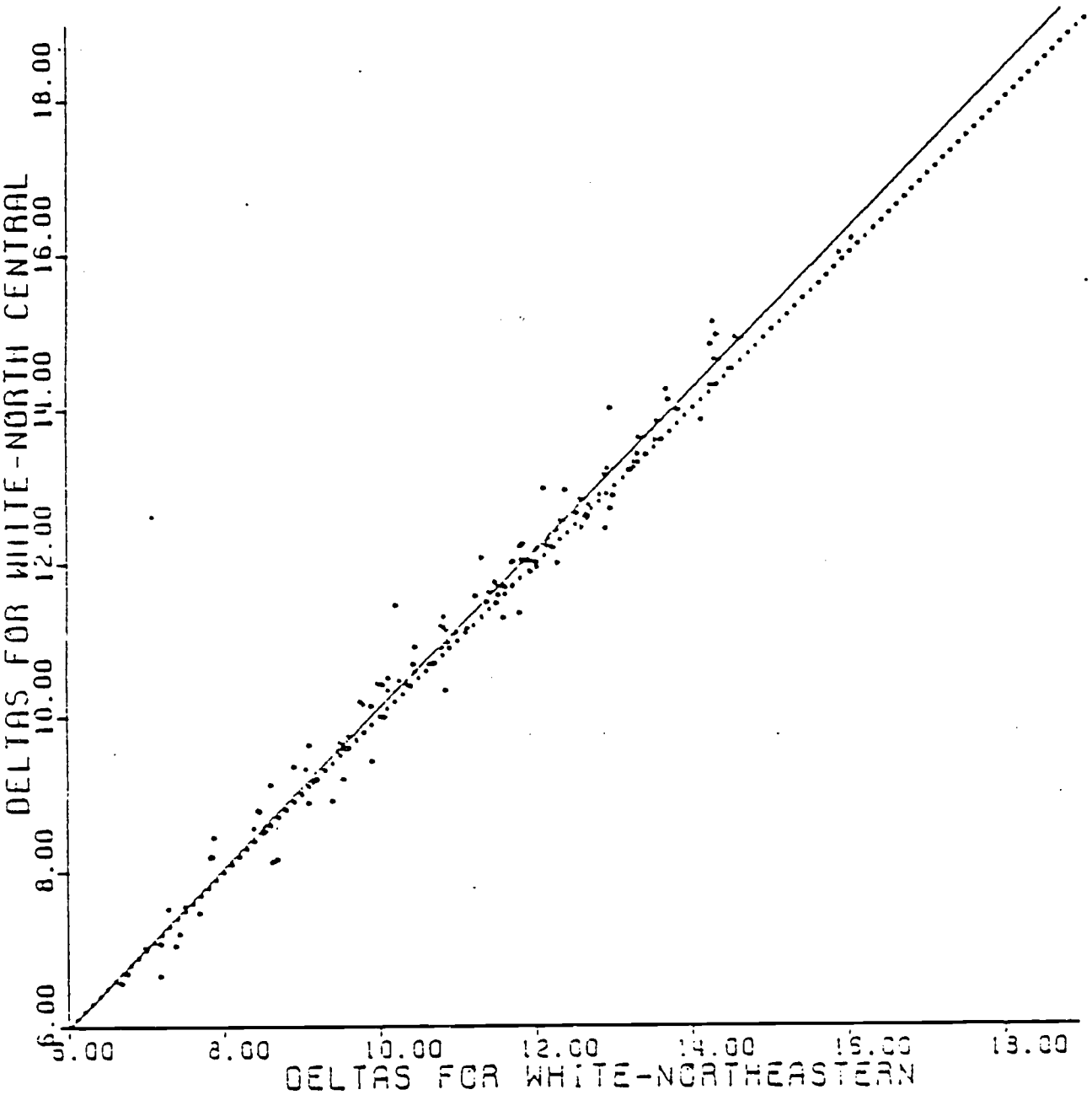

Figure 2

Cross-plot of Deltas for White-Southeastern

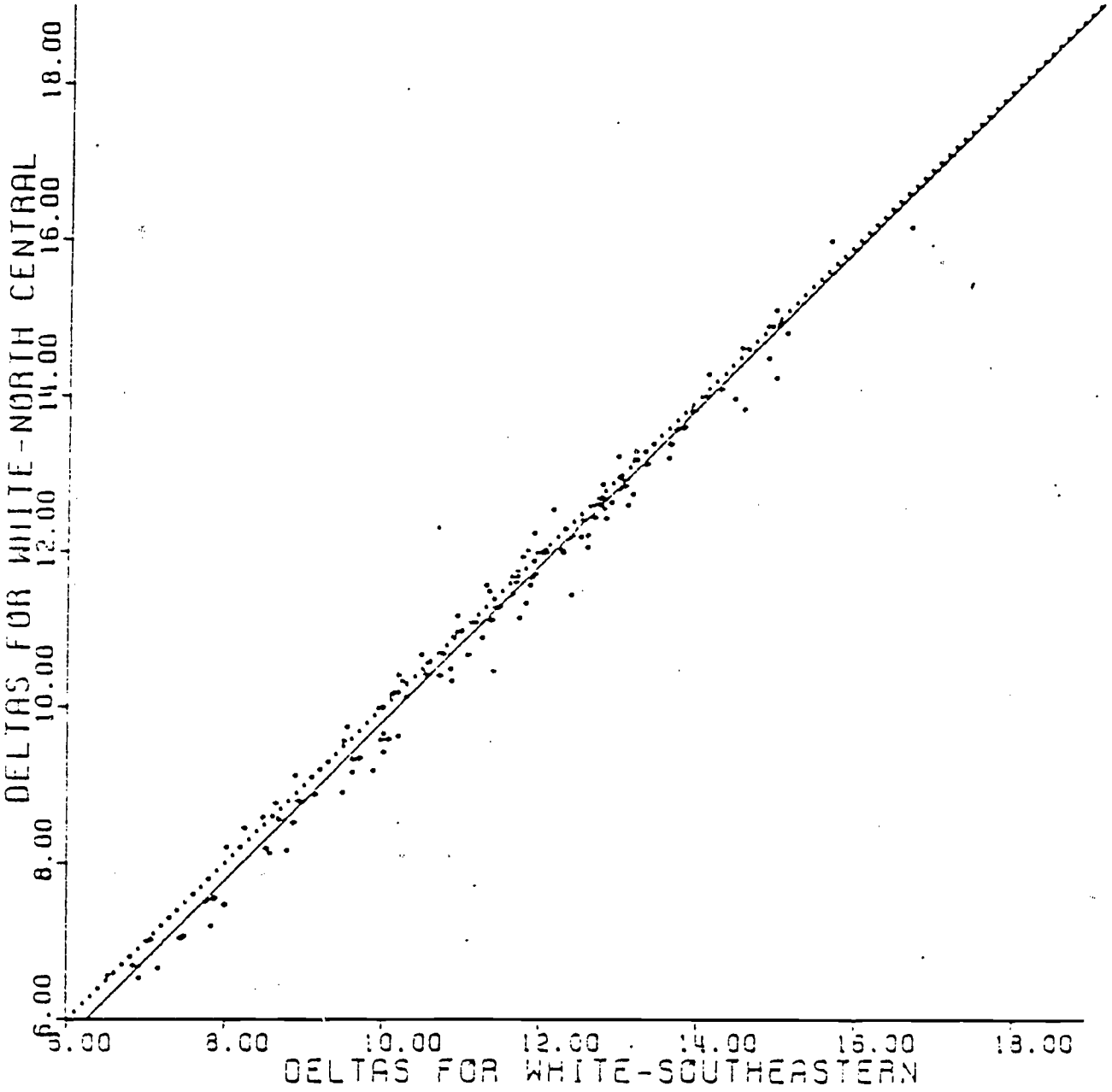

Figure 3

Cross-plot of Deltas for Afro-American

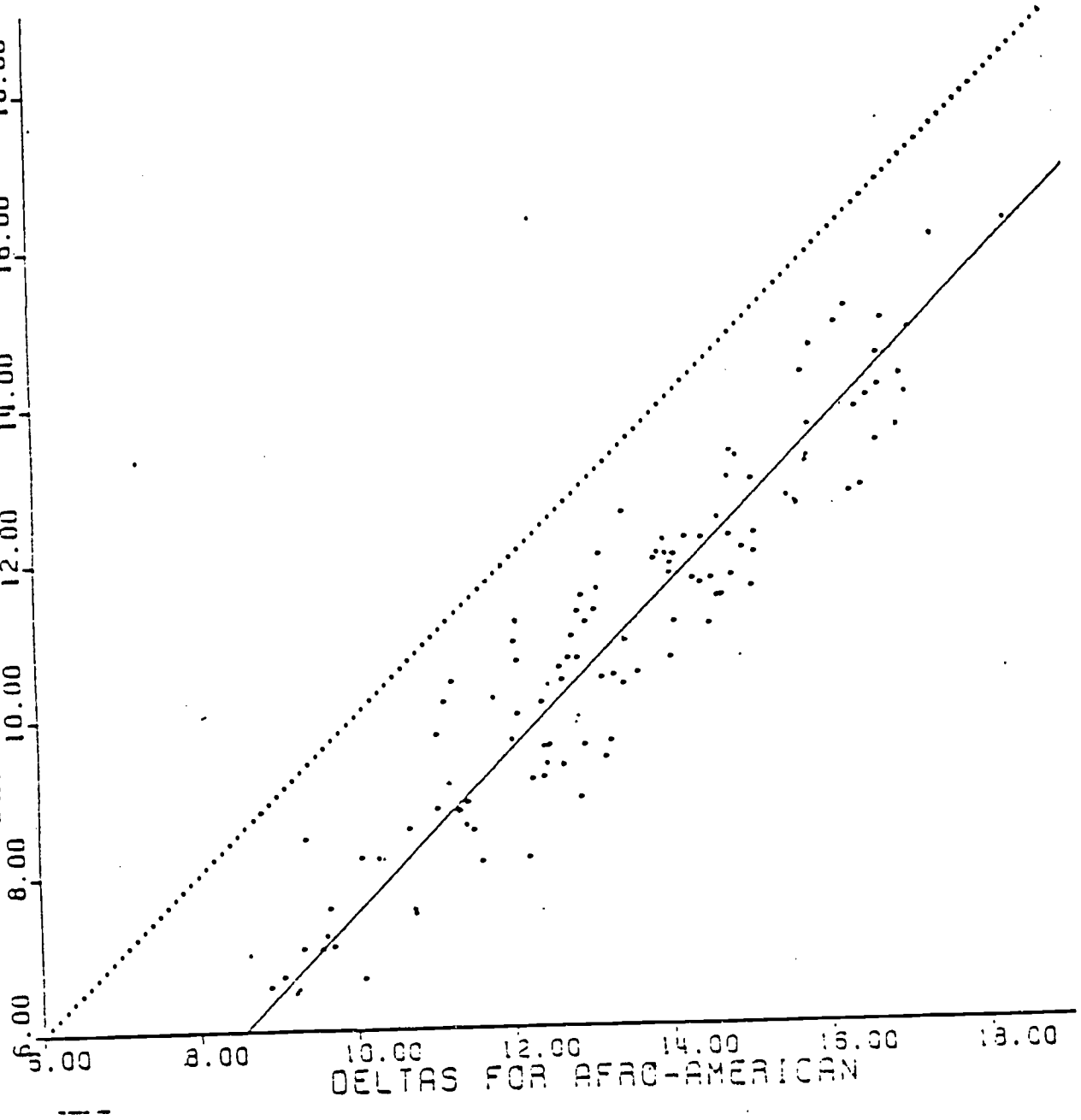

Figure 4

Cross-plot of Deltas for Puerto Rican

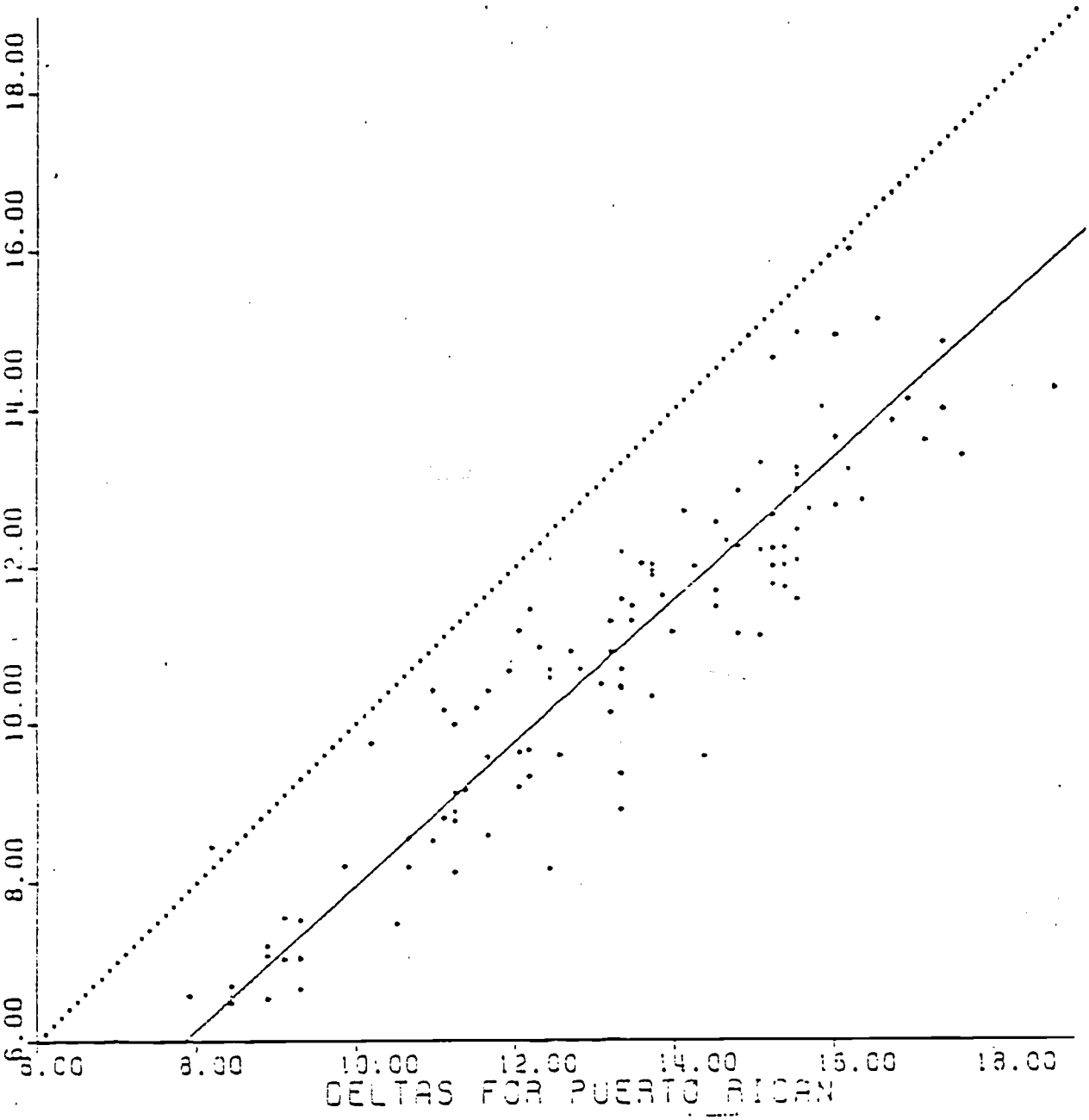

Figure 5

Cross-plot of Deltas for Mexican-American

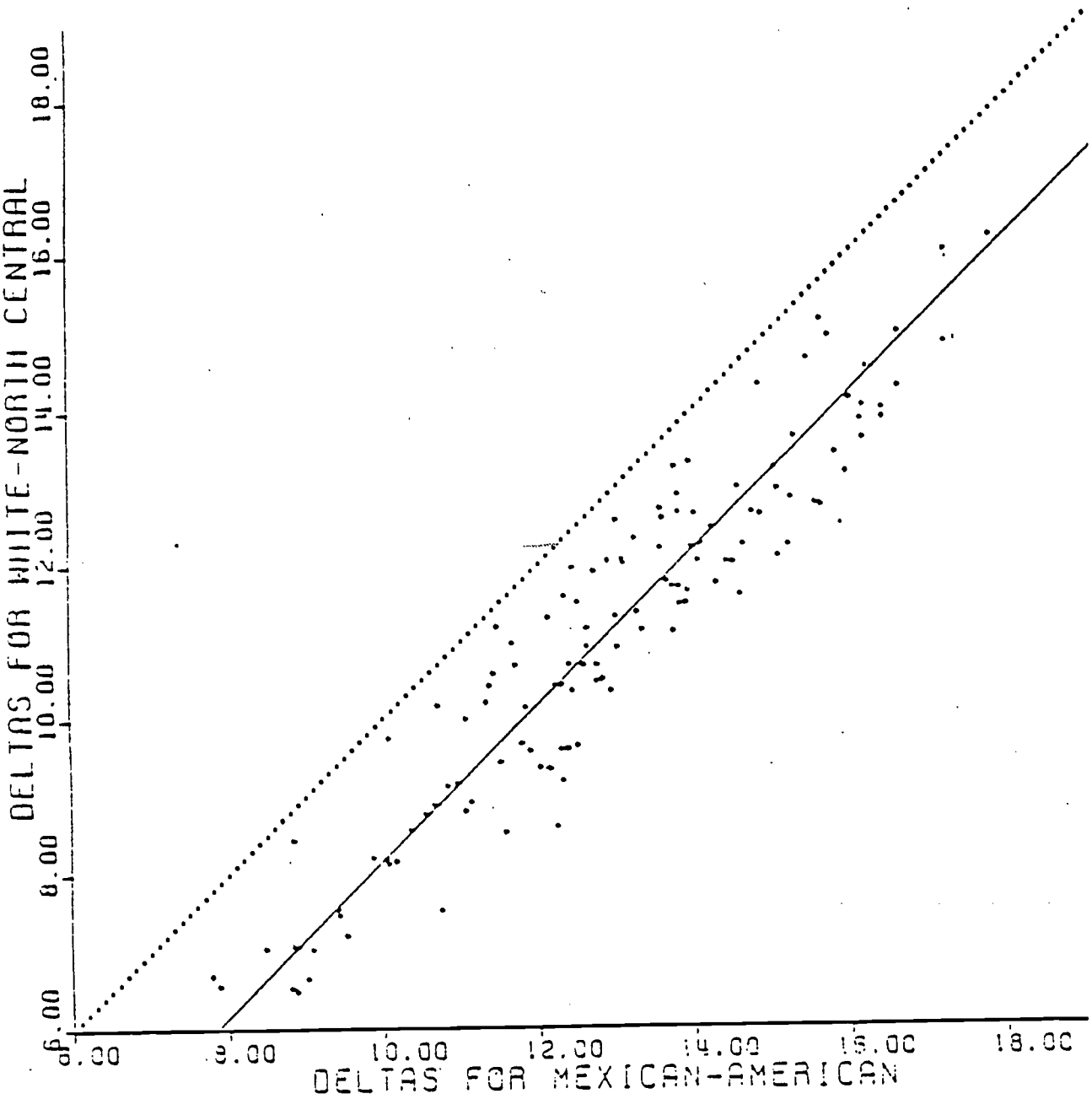

Figure 5

Cross-plot of Deltas for Other Latin-American