Noesis

The Journal of the Hoeflin Research Group

(Issue 31, October 1988)

Editorial

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May's patent: Richard W. May has been awarded a patent for his board game. I will reproduce this patent in the next issue of Noesis.

New norming of the Mega Test: Using new data concerning the distribution of scores on the Scholastic Aptitude Test obtained by member Keith Raniere from officials at the Educational Testing Service, I have completed a new norming of the Mega Test, which I reproduce in the present issue of Noesis.

Rockefeller Prize: I recently won a national competition for a philosophical essay. Information concerning this prize is reproduced in this issue.

How colleges handle SAT's: On the final page of this issue I reproduce a clipping from the New York Times that describes how colleges in the United States deal with SAT scores when an individual attempts the test more than once.

H. W. Corley and Family (Photo)

The Fifth Norming of the Mega Test

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The fourth norming of the Mega Test was based on scores reported by Mega Test participants on five previously taken tests: the Army General Classification Test, the California Test of Mental Maturity, the Wechsler Adult Intelligence Scale, the Stanford-Binet, and the Langdon Adult Intelligence Test. Three commonly reported test results--on the Scholastic Aptitude Test, the Graduate Record Exam, and the Miller Analogies Test--were discarded on the grounds that their means and standard deviations with respect to the general population are quite uncertain.

Recently, however, fresh information on the distribution of scores on the Scholastic Aptitude Test has been obtained by Keith Raniere, a member of the Hoeflin Research Group, from senior statisticians at the Educational Testing Service. Using this information, it is now possible to norm the Mega Test by comparison with a test for which an unusually large sample is available. For whereas most conventional intelligence tests are normed using a sample of 3,000 or so participants, the new SAT data consists of the performances of 964,739 individuals who took the test as high-school seniors in 1984. Moreover, this data shows combined verbal and mathematical aptitude scores, whereas all previous data has consisted of separate data for the verbal and for the mathematical portions of the SAT, leaving the distribution of combined scores a matter of uncertainty and conjecture.

There is still some uncertainty as to how the new data relates to the general population, since not all high school seniors attempt the SAT, but using the Educational Testing Service's conjecture that more than 95% of the most able one percent of high school seniors attempt the SAT each year, it is possible to arrive at some fairly plausible norms for the Mega Test, which reaches the 99th percentile at a fairly low raw score. In fact, the results are almost identical to those arrived at in the fourth norming despite the strikingly different sources of these two normings.

The present norming is presented in the form of seven charts, whose contents can be summarized as follows:

Chart A: This chart shows the distribution of scores on the SAT for 964,739 high-school seniors in 1984.

Charts B, C, and D: These charts show (A) the distribution of SAT scores reported Mega Test participants, (B) the distribution of Mega Test raw scores of these same participants, and (C) a smoothed distribution of Mega Test raw scores for these participants.

Chart E: This chart shows the scores on the SAT and on the Mega Test that are equivalent to various percentiles vis-a-vis the general population based on comparisons of Charts A, B, C, and D as well as estimates (reported orally to Keith Raniere by Educational Testing Service officials) concerning what percentage of high-school seniors at various ability levels attempt the SAT and what percentage of SAT data is from foreign students.

Chart F: This is a graph of the results from Chart E.

Chart G: This chart gives IQ's and percentiles for each raw score on the Mega Test as read from Chart F.

Chart A

1984 National College-Bound Seniors
SAT V + M Test Score Distributions

Score	Frequency	Cumulative frequency
1600	5	964,739
1590	0	964,734
1580	27	964,734
1570	19	964,707
1560	39	964,688
1550	75	964,649
1540	96	964,574
1530	108	964,478
1520	188	964,370
1510	217	964,182
1500	278	963,965
1490	316	963,687
1480	404	963,371
1470	473	962,967
1460	617	962,494
1450	601	961,877
1440	795	961,276
1430	874	960,481
1420	1,071	959,607
1410	1,196	958,536
1400	1,323	957,340
1390	1,439	956,017
1380	1,621	954,578
1370	1,871	952,957
1360	2,028	951,086
1350	2,267	949,058
1340	2,495	946,791
1330	2,698	944,296
1320	3,155	941,598
1310	3,334	938,443
1300	3,661	935,109
1290	3,730	931,448
1280	4,099	927,718
1270	4,393	923,619
1260	4,762	919,226
1250	4,923	914,464
1240	5,623	909,541
1230	5,701	903,918
1220	6,143	898,217
1210	6,797	892,074
1200	6,678	885,277
1190	7,091	878,399
1180	7,500	871,308
1170	7,981	863,808
1160	8,346	855,827
1150	6,790	847,481

Score	Frequency	Cumulative frequency
1140	9,470	838,691
1130	9,715	829,221
1120	10,293	819,506
1110	10,639	809,213
1100	11,136	798,574
1090	11,268	787,438
1080	11,713	776,150
1070	12,224	764,437
1060	12,652	752,213
1050	13,057	739,561
1040	13,733	726,504
1030	14,064	712,771
1020	14,333	698,707
1010	15,109	684,374
1000	15,082	669,265
990	15,118	654,183
980	15,440	639,065
970	15,566	623,625
960	16,294	608,059
950	16,368	591,765
940	16,640	575,397
930	16,899	558,757
920	16,539	541,858
910	17,351	525,319
900	17,089	507,968
890	17,138	490,879
880	16,936	473,741
870	17,233	456,805
860	17,155	439,572
850	17,439	422,417
840	16,933	404,978
830	16,801	388,045
820	16,903	371,244
810	16,639	354,341
800	16,061	337,702
790	15,862	321,641
780	15,540	305,779
770	15,681	290,239
760	14,992	274,358
750	14,778	258,366
740	14,413	244,588
730	14,061	230,175
720	13,761	216,114
710	13,365	202,353
700	12,795	188,988

Chart A (continued)

Score	Frequency	Cumulative frequency
690	12,094	176,193
680	11,942	164,099
670	11,579	152,157
660	10,532	140,578
650	10,727	130,046
640	9,990	119,319
630	9,674	109,329
620	9,512	99,655
610	8,621	90,143
600	8,417	81,522
590	7,958	73,110
580	7,304	65,152
570	7,139	57,848
560	6,412	50,709
550	5,974	44,297
540	5,654	38,323
530	5,086	32,669
520	4,796	27,583
510	4,216	22,787
500	3,769	18,571
490	3,275	14,802
480	2,812	11,527
470	2,439	8,715
460	1,785	6,276
450	1,737	4,491
440	1,107	2,754
430	665	1,647
420	431	982
410	326	551
400	204	225
390	0	21
380	1	21
370	3	20
360	1	17
350	3	16
340	1	13
330	1	12
320	2	11
310	2	9
300	0	7
290	0	7
280	0	7
270	3	7
260	3	4
250	0	1
240	1	1
230	0	0
220	0	0
210	0	0
200	0	0

Distribution of SAT Scores Reported by Mega Test Participants and the Distribution of Their Mega Test Raw Scores

Chart B

SAT Scores (V + M)

1100	xx	900	
1110		910	
1120	x	920	x
1130		930	
1140		940	
1150	xxx	950	x
1160	xx	960	x
1170	x	970	
1180	x	980	
1190	xx	990	
1200	xxxxx	1000	
1210	x	1010	
1220	x	1020	
1230	xxx	1030	
1240	xx	1040	
1250	xxxx	1050	x
1260	xxxxx	1060	
1270	xxxx	1070	
1280	xxx	1080	
1290	xxxxxxx	1090	x
1300	xxxxxxxxxx		
1310	xxx		
1320	xx		
1330	xxxxxxxxxx		
1340	xxxxxxx		
1350	xxxxxx		
1360	xxxxxxxxx		
1370	xxxx		
1380	xxxxxxxxxx		
1390	xxxx		
1400	xxxxxxx		
1410	xxxxxx		
1420	xxxxxxx		
1430	xxxxxx		
1440	xxxxx		
1450	xxxxx		
1460	xxxxxxx		
1470	xxxxx		
1480	xxxxxx		
1490	xxxxxxxxxx		
1500	xxxxxx		
1510	xxxxx		
1520	xxxxxxx		
1530	xxx		
1540	xxxxx		
1550	xxxx		
1560	xxx		
1570	x		
1580	xxx		
1590	x		
1600			

Chart C

Mega Test Raw Scores of Those Reporting SAT Scores (Unsmoothed)

0	
1	
2	
3	xx
4	xx
5	xxxx
6	xxxx
7	xxxxx
8	xxxxx
9	xxxxx
10	xxxxxx
11	xxx
12	xxxxxxxxxx
13	xxxxxx
14	xxxxxxx
15	xxxxxxxxxx
16	xxxxxxxxxxx
17	xxxxxxxxxx
18	xxxxxxx
19	xxxxxx
20	xxxxxxxxx
21	xxxxxxxxxxx
22	xxxxxxxx
23	xxxx
24	xxxxxxxx
25	xxxxx
26	xxxxx
27	xxx
28	xxxxxxxx
29	xxx
30	xx
31	xxxxxxx
32	xxx
33	xxxxx
34	xxx
35	x
36	xxx
37	
38	
39	xx
40	x
41	
42	
43	xx
44	xx
45	
46	
47	
48	

Chart D

Mega Test Raw Scores of Those Reporting SAT Scores (Smoothed)

0	
1	
2	
3	xx
4	xx
5	xxxx
6	xxxx
7	xxxxx
8	xxxxx
9	xxxxxx
10	xxxxxx
11	xxxxxxx
12	xxxxxxx
13	xxxxxxxx
14	xxxxxxxx
15	xxxxxxxxxx
16	xxxxxxxxxx
17	xxxxxxxxxx
18	xxxxxxxxxx
19	xxxxxxxxx
20	xxxxxxxxx
21	xxxxxxxx
22	xxxxxxxx
23	xxxxxx
24	xxxxxx
25	xxxxxx
26	xxxxxx
27	xxxxxx
28	xxxxxx
29	xxxxx
30	xxxxx
31	xxxxx
32	xxxx
33	xxxx
34	xxxx
35	xx
36	xx
37	x
38	x
39	x
40	x
41	x
42	x
43	x
44	x
45	
46	
47	
48	

Chart E

(1) Percentile	(2) Equivalent standard deviations above mean (from standard statistical tables)	(3) Adjusted number of U.S. 18-year-olds exceeding this level in 1984	(4) Equivalent S.A.T. level (from Chart A)	(5) Number of S.A.T. scores reported by Mega Test participants that exceeded this level (from Chart B)	(6) Equivalent Mega Test raw scores (comparing Charts B and D)
90	1.3	322,701	987	219	4
97	1.9	100,844	1175	207	7
99	2.3	32,270	1288	174	12.5
99.7	2.7	10,212	1385	108	19
99.9	3.1	3,227	1449	71	23.5
99.97	3.4	1,021	1496	38	29
99.99	3.7	323	1529	19	33
99.997	4.0	102	1553	9	36
99.999	4.3	32	1575	4	40.5
99.9997	4.5	10	1583	2	42.5
99.9999	4.8	3	1599	0	44.5

Comments on Column (1): The 97, 99.7, 99.97, etc., percentiles are abbreviations for the 96.837723, 99.6837723, 99.96837723, etc., percentiles. The latter even out the ratios between each successive percentile such that 1/3.162277 as many people socre above the 96.837723 percentile as score above the 90 percentile, 1/3.162277 as many score above the 99 percentile as above the 96.8377223 percentile, and so forth.

Column (2): Since I am mapping raw scores on the Mega Test into a normal or Gaussian distribution curve, each percentile will always equate with a single specific standard deviation, as specified in standard statistical tables.

Column (3): The Reader's Digest Almanac and Yearbook for 1981 estimates the number of high-school graduates in the U.S. in 1984 at 2,684,000 (see p. 202). The New York Times reported in its Sept. 22, 1988 issue that 86.5 percent of 25-34 year olds in the U.S. were high-school graduates. This would put the total 18-year-old population in 1984 at about 3,102,890 (solving for x in the equation 2,684,000 = .865x). The Educational Testing Service estimates that more than 95% of those in the top one percent in ability in the U.S. take the S.A.T. It also says that about 2% of S.A.T. participants are foreigners, who score mostly in the top 25% on the test. So I adjusted the 3,102,890 figure down by 4% to adjust for the non-participation of some of the ablest U.S. 18-year-olds, and up again by 8% to adjust for the participation of foreigners, for a net gain of about 4% to 3,227,006. From this figure I derived the figures shown in Column (3).

Column (4): I assumed that the number of people achieving each score level on the S.A.T. (see Graph A) are spread evenly over a 10-point interval starting 5 points below the specified score and ending

5 ppints above that specified score. Thus, for example, the top 5 scorers would be spread over the interval from 1595 to 1605, with one person in the interval 1595 to 1597, one in the interval 1597 to 1599, and so forth. So since about 3 people should be credited with a one-in-a-million performance on the S.A.T. (the 99.9999 percentile), it follows that this percentile should be set equal to an S.A.T. score of about 1599.

Column (5): Of those who attempted the Mega Test, 222 reported S.A.T. scores. If one individual reported two S.A.T. scores, the first of these was eliminated on the assumption that it was achieved during the junior rather than senior year in high school. Scores from 1245 to 1254 were rounded to 1250, and likewise for the other score intervals. Then it was assumed that all those scoring from 1245 to 1254 are spread evenly over the interval from 1245 to 1255 for purposes of determining how many participants scored over each of the S.A.T. scores specified in Column (4).

Column (6): Chart C showing Mega Test raw scores for the 222 who reported S.A.T. scores was smoothed out to yield the distribution shown in Chart D. Of the 222 reported S.A.T. scores, 219 were above 987 (verbal and math aptitude combined), which I rate as equivalent to the 90 percentile for all U.S. 18-year-olds. In Chart D, 219 have Mega Test raw scores of 4 or above, so I set a raw score of 4 on the Mega Test equal to 987 on the S.A.T. and to the 90 percentile for the general population. I did likewise for each of the other percentile levels above 90. The smoothed chart (Chart D) does not yield significantly different results from the unsmoothed chart (Chart C) but was adopted primarily to give a more even distribution for Mega Test raw scores above 36, where the amount of data from those reporting S.A.T. scores is rather thin. The following comparison can be made between the results yielded by the unsmoothed data (Chart C) and the smoothed data (Chart D) as well as the Fourth Norming of the Mega Test.

Equivalences Between Percentiles and Mega Test Raw Scores

Percentile	Smoothed (Chart D)	Unsmoothed (Chart C)	4th Norming
90	4	4	5
97	7	7	7
99	12.5	12.5	13
99.7	19	19.5	19
99.9	23.5	23.5	24
99.97	29	28.5	29
99.99	33	33	32.5
99.997	36	36	36
99.999	40.5	41.5	40
99.9997	42.5	43.5	43
99.9999	44.5	44.5	45

Here I have rounded the Mega Test raw scores to the nearest half point. The Educational Testing Service assumes that only about 75% rather than 95% of those in the top 10% in ability try the S.A.T., but even making an adjustment for this at the 90 percentile puts the S.A.T. score equivalent to this percentile at about 1025 rather than 987. This does not alter my results because there are still only 3 reported S.A.T. scores below 1025 in Chart B, just as there are also just 3 below 987, leaving the equivalent Mega Test raw score at 4.

Chart P

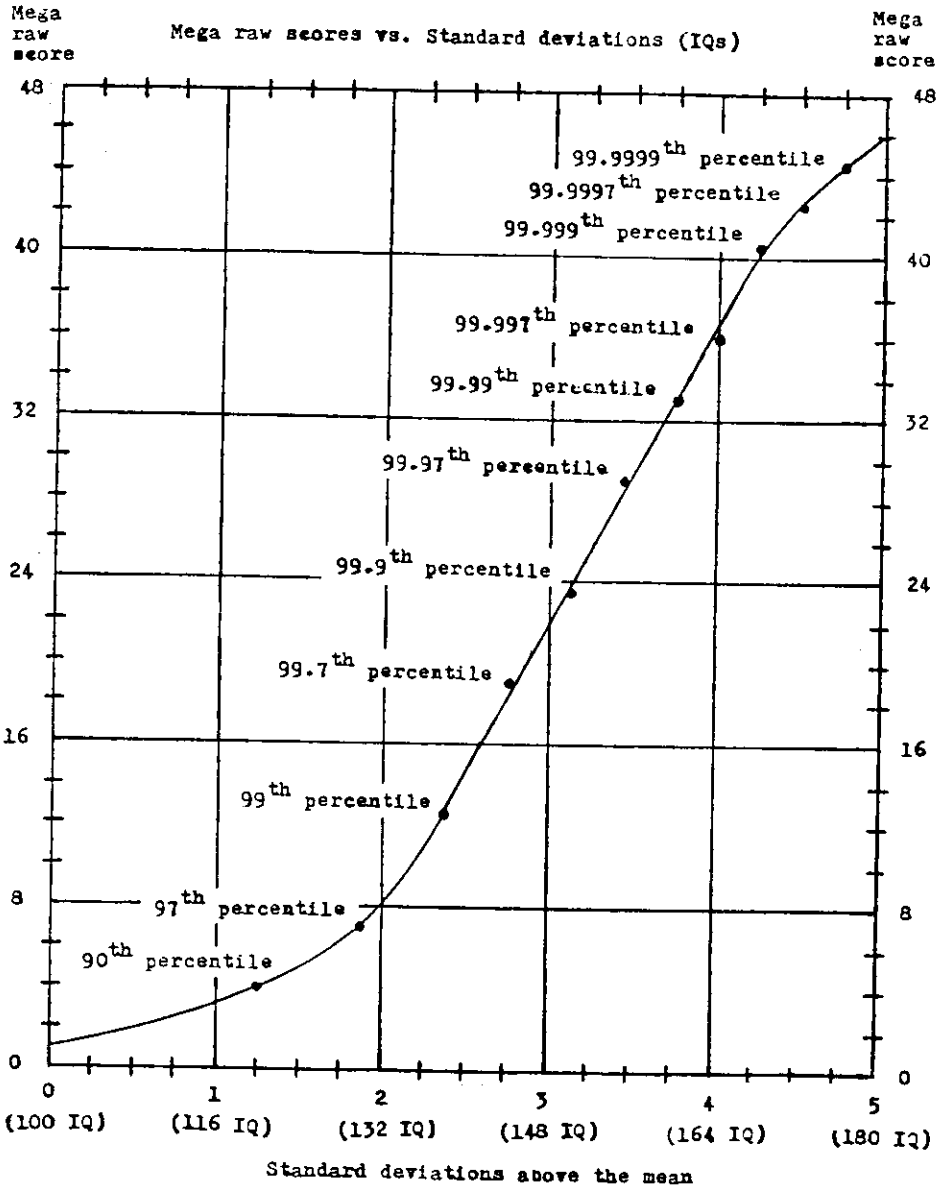
Mega raw scores vs. Standard deviations (IQs)
Mega raw score
Mega raw score
48
40
32
24
16
8
0
99.9999th percentile
99.9997th percentile
99.999th percentile
99.997th percentile
99.99th percentile
99.97th percentile
99.9th percentile
99.7th percentile
99th percentile
97th percentile
90th percentile
0 (100 IQ)
1 (116 IQ)
2 (132 IQ)
3 (148 IQ)
4 (164 IQ)
5 (180 IQ)
Standard deviations above the mean

Chart G

IQ's and Percentiles per Raw Score Based on Chart F

Mega Raw Score	Standard deviation	I.Q.	Percentile	Rarity
1	0.00	100	50	1 in 2
2	0.50	108	69	1 in 3
3	1.00	116	84	1 in 6
4	1.25	120	89	1 in 9
5	1.50	124	93	1 in 14
6	1.69	127	95	1 in 20
7	1.88	130	97.0	1 in 33
8	2.00	132	97.7	1 in 43
9	2.08	134	98.1	1 in 53
10	2.19	135	98.6	1 in 71
11	2.25	136	98.8	1 in 83
12	2.33	137	99.0	1 in 100
13	2.40	138	99.2	1 in 125
14	2.46	139	99.3	1 in 143
15	2.53	140	99.4	1 in 167
16	2.59	141	99.5	1 in 200
17	2.67	143	99.6	1 in 250
18	2.73	144	99.7	1 in 333
19	2.81	145	99.75	1 in 400
20	2.88	146	99.80	1 in 500
21	2.94	147	99.84	1 in 625
22	3.00	148	99.87	1 in 769
23	3.06	149	99.89	1 in 909
24	3.14	150	99.92	1 in 1,250
25	3.21	151	99.93	1 in 1,429
26	3.27	152	99.95	1 in 2,000
27	3.33	153	99.96	1 in 2,500
28	3.41	155	99.97	1 in 3,333
29	3.48	156	99.975	1 in 4,000
30	3.54	157	99.980	1 in 5,000
31	3.60	158	99.984	1 in 6,250
32	3.68	159	99.988	1 in 8,333
33	3.75	160	99.991	1 in 11,111
34	3.81	161	99.993	1 in 14,286
35	3.88	162	99.995	1 in 20,000
36	3.96	163	99.996	1 in 25,000
37	4.02	164	99.997	1 in 33,333
38	4.08	165	99.9977	1 in 43,478
39	4.14	166	99.9983	1 in 58,824
40	4.23	168	99.9988	1 in 83,333
41	4.31	169	99.9992	1 in 125,000
42	4.42	171	99.9995	1 in 200,000
43	4.54	173	99.9997	1 in 333,333
44	4.68	175	99.99986	1 in 714,286
45	4.83	177	99.99993	1 in 1,428,571
46	5.00	180	99.99997	1 in 3,333,333
47	5.21	183	99.999991	1 in 11,111,111
48	5.42	186	99.999997	1 in 33,333,333

The Rockefeller Prize

Proceedings and Addresses
of
The American
Philosophical Association

January 1988
Volume 61, #3

FIFTH ANNUAL COMPETITION FOR WORK BY UNAFFILIATED PHILOSOPHERS

The APA Committee on Lectures, Publications and Research invites submissions from members for the prize awarded annually, with funds provided by a grant from the Rockefeller Foundation, for the best unpublished work in philosophy by a non-academically affiliated philosopher. This will be the fifth annual prize.

This prize was made possible by a five-year grant awarded to the APA in order to encourage writing and research by humanists not employed in an academic setting; similar prizes are awarded, also with Rockefeller funding, by the American Historical Association and the Modern Language Association.

Rules for the 1988 competition are as follows:

1. Manuscripts submitted must be unpublished and written by individuals who hold a PhD in philosophy.
2. Authors of work submitted may not have held an academic position at an institution of higher education within the last three years. Professors emeriti are not eligible; persons holding an unpaid affiliate appointment to a department, or holding only a limited and temporary adjunct appointment are eligible.
3. Manuscripts must be neatly typed, and three copies must be submitted to the subcommittee chair at the address below.
4. Deadline for receipt of submissions for the 1988 competition is June 1, 1988.

Book length manuscripts *will not be considered.* A representative chapter from a book would be considered. The manuscripts will be reviewed "blind".

Members of the Subcommittee of the Committee on Lectures, Publications and Research to award the 1988 prize are Timothy Brennan, Chair; LaVerne Shelton and Paul Woodruff. Works submitted for consideration and questions about the competition, should be sent to Timothy Brennan, c/o George Washington University, 515 22nd Street, NW, Room 401, Washington, DC 20037.

NON-ACADEMICALLY AFFILIATED PHILOSOPHER ROCKEFELLER PRIZE AWARDED

The 1987 Rockefeller Prize for the Best Unpublished Work in Philosophy by a Non-Academically Affiliated Philosopher has been won by Richard Brockhaus for "Realism and Psychologism in 19th Century Logic." The Committee did not award an honorable mention this year.

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September 12, 1988

Dr. Ronald Hoeflin
P. O. Box 7430
New York, NY 10116

Dear Dr. Hoeflin:

I am pleased to inform you that your essay, "Theories of Truth: A Comprehensive Synthesis," has won the Fifth Annual Competition for the Best Unpublished Work in Philosophy by a Non-Academically Affiliated Philosopher.

The Selection Committee congratulates you and wishes you continued success in your philosophical work.

Sincerely yours,

Norman E. Bowie

Norman E. Bowie
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How Colleges Handle S.A.T.

Is it advantageous for a college applicant to take the Scholastic Aptitude Test more than once?

The question was asked of 3,000 admissions officers by the College Board, which administers the S.A.T. Here are the replies from 325 public institutions and 694 private colleges:

¶Eight percent of the public colleges and 6 percent of the private institutions consider only a student's most recent S.A.T. scores.

¶Thirty-nine percent of the public colleges and 14 percent of the private colleges accept a student's highest combination of verbal and mathematics scores taken on a single day.

¶Thirty-four percent of the public colleges and 50 percent of the private colleges accept the highest math score and the highest verbal score, even from different dates.

¶One percent of the colleges in each group averages all of a student's scores.

Most students take the test once or twice over the course of the junior and senior years in high school.