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AGO-PRS, T.D.A. Unit, Rittner-Danish, Rept-361

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AN ANALYSIS OF THE TIME TREND IN GCT ARMY GRADE DISTRIBUTIONS OF SELECTIVE SERVICE INDUCTEES

INTRODUCTION:

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GCT Army Grade distributions reported from the field for recent selective service inductees differ from those reported for earlier inductees. The former group tends to score lower than the latter. The average GCT Army Grade reported for selectees, white and negro, inducted and sent to replacement training centers between March and May, 1941 was 2.88; it fell to 2.92 during the period between June and August, 1941 and to 3.07 during the period between September and February, 1942\*. The Army Grade percentage distributions for these periods also show this trend (TABLE I). The percentage of men increases in Army Grades III, IV, and V and decreases in Army Grades I and II for the men inducted more recently.

TABLE I

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GCT Army Grade Percentage Distributions for Selective Service Men Processed through Replacement Training Centers and Inducted during Two Quota Periods

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Period	GCT Army Grades					N
	V	IV	III	II	I	
March 1941 - Aug. 1941	12.0	18.0	28.2	32.4	9.4	295,751
Sept. 1941 - Feb. 1942	12.5	22.6	31.2	26.8	6.9	411,330

The tendency for more recent selective service inductees processed through replacement training centers to make lower GCT scores is clear; the explanation for this tendency is not immediately apparent. It is the purpose of this report to review the evidence in regard to possible bases for this tendency. The observed trend might be due to several factors, working alone or in combination, which may be summarized as (1) an increasing use of a more difficult form of the GCT, and (2) differences in the character of the samples tested. These sampling differences may be those of age, of educational level, of corps area of induction, type of residence (urban or rural), etc. Such differences may be due to biased sampling of returns from the field or to actual changes in the type of men inducted.

The pertinent factors will be discussed in the following order: (1) differential difficulty of GCT test forms, (2) variation in sampling of corps areas, (3) variation in educational level, (4) variation due of

\* The higher the Army Grade numerically, the lower the level of ability as measured by the test.

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age composition, (5) variation in racial composition, (6) variation due to selection of men for assignment to replacement training centers or to field units.

The data discussed below are, in most instances, based on selectees processed through replacement training centers. The most complete reports to this office of sampling characteristics related to GCT scores are for this group. Selective service inductees are also sent directly to field units, but little data are now available for this group. However, wherever possible, comparisons of these two groups of selectees will be made. It should be noted that both the observed GCT trend and the data discussed below are based only on selectees; they do not pertain to the Army as a whole. First, men in the Regular Army differ from the selectees in regard to education, age, racial composition, state of residence, and reason for induction. Further, the Regular Army is a large segment of the total Army. In March, 1941, the earliest date of the GCT reports discussed, the ratio of selective service inductees to Regular Army enlistments was in the neighborhood of 5:7. In February, 1942, the terminal date of the reports, the ratio had changed to about 3:2. The standing strength of the Regular Army in February, 1942, was more than 800,000; that of selectees more than 1,200,000. It is to be emphasized then, that the following discussion pertains only to the selective service inductees.

DIFFERENTIAL DIFFICULTY OF GCT TEST FORMS:

Prior to October, 1941, 1a and 1b were the only forms of GCT in use. Since October, when they were first issued to the field, 1c and 1d have gradually supplanted 1a and 1b in use.

In the course of its standardization, 1c and 1d were found to be more difficult than 1a and 1b. The standardization sample showed lower average GCT raw scores on 1c and 1d than on 1a and 1b. Some of the differential difficulty was compensated for in setting the standard score equivalents so that the standardization sample gave the Army Grade percentage distribution for the two test forms shown in Table II. Because the difference in difficulty was not totally compensated for, a change in the observed direction of the GCT distribution would be expected with an increasing use of 1c and 1d in the field. How great this change would be depends on the magnitude of the difference in difficulty. 1a and 1b having been taken prior to 1c or 1d by all men in the standardization sample, an accurate estimate of differential difficulty can not be made from these data. However, such an estimate is of primary importance for meaningful analysis of trends in GCT distributions reported from the field.

TABLE II  
GCT-1a,1b and GCT-1c,1d Army Grade Percentage Distributions  
for the GCT-1c,1d Standardization Sample

Test	GCT Army Grades				
	V	IV	III	II	I
GCT-1a and 1b	10.2	14.5	26.7	38.2	10.4
GCT-1c and 1d	9.0	17.6	27.6	33.6	12.2

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This problem of differential difficulty of GCT test forms can be investigated adequately by means of two types of studies: (1) the same test forms can be given to the same men according to a procedure which will eliminate the effect of practice on other forms of the GCT; (2) the test forms can each be given to either random or matched samples of a population, geographic and temporal factors being made comparable for the samples. Neither of these requirements have been met satisfactorily in the data currently available.

The available data for studying this problem are such that in one instance only were both la and lc given a large group of men. This procedure was followed in the standardization of lc and ld. However, since all the men had taken la first (on induction), and lc and ld some time later, the resulting data are inadequate. The effect of practice of la on lc or ld scores cannot be analyzed out and therefore obscures the difference in difficulty of the two test forms. Since practice effect and differential difficulty work in opposite directions--the former making for higher and the latter for lower lc and ld scores--any estimate of differential difficulty based only on the observed difference will be less than that which actually obtains.

TABLE III presents the mean values on each GCT test form for the two orders of test administration. At the minimum, it is estimated that lc is .62 standard score points more difficult than la, and ld is 1.01 standard score points more difficult than la. (A largely independent estimate, based on the average of the difference between the sums of the lc and the sums of ld scores, indicates that ld is .48 standard score points more difficult than lc.) The degree to which the greater difficulty of lc and ld are underestimated cannot be determined from these data.

TABLE III  
GCT-la, lc and ld Mean Standard Scores  
for the lc and ld Standardization Sample

Test Form Order	N	la	lc	ld
la, lc, ld	846	105.15	104.53	106.74
la, ld, lc	913	102.48	104.65	101.47

The second approach to the problem of differential difficulty of GCT test forms was also employed in only one instance. At the Presidio of Monterey Reception Center, during February, 1942, each inductee was tested with one of the four GCT forms and with MA-1. The report to this office was in terms of means and standard deviations on GCT and MA-1 for the groupstaking each test form. The results are shown in TABLE IV.

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TABLE IV  
Standard Score Means and Standard Deviations  
on GCT-1a, 1b, 1c, 1d and MA-1 for Four Groups of Men Tested  
at the Presidio of Monterey Reception Center during February, 1942

	FORM OF GCT							
	1a		1b		1c		1d	
	M	$\sigma$	M	$\sigma$	M	$\sigma$	M	$\sigma$
GCT	103.6	20.6	107.9	22.6	100.1	21.7	95.8	21.5
MA-1	95.2	19.8	98.8	22.0	96.8	20.8	93.6	20.5
N	601		550		545		695	

The data in TABLE IV would lead to estimates of the difference in difficulty between 1a and 1c and between 1a and 1d of 3.5 and 7.8 standard score points respectively. However, the accuracy of these estimates is open to serious question. While geographic and temporal factors have been fairly well controlled, the accuracy of these estimates is still dependent on the method of assignment of man to test form. The method used is not known, but the differences in mean MA-1 scores suggest that assignment was not sufficiently random to make the differences in mean GCT scores indicative only of test form difficulty. If, for example, each test was given for one week, any consistent difference in the characteristics associated with GCT scores among the men inducted toward the end of the month as against those inducted at the beginning would influence the results. The estimates based on the Presidio of Monterey data would probably tend to underestimate the difference in difficulty between 1a and 1c, and to overestimate the difference between 1a and 1d, since the 1c group has a higher mean MA-1 and the 1d group a lower mean MA-1 than that of the 1a group. This error in the estimate would be true to the extent that GCT and MA-1 are correlated.

In summary, then, the available estimates point to a difference in difficulty between 1a and 1c of from .6 to 3.5 standard score points. Correspondingly, the difference in difficulty between 1a and 1d is estimated to be from 1.0 to 7.8 standard score points. Where in these ranges the true differences lie, or whether they lie outside these ranges cannot be determined from available data.

In order to secure a better estimate of differential difficulty, it is recommended that this problem be kept in mind in designing future studies. The problem could easily and adequately be studied as a rider attached to other projects. Slight readjustments in the design of studies should yield the necessary data on large groups for whom the pertinent variables have been adequately controlled.

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**RESTRICTED****VARIATION IN SAMPLING OF CORPS AREAS:**

A second factor which may account for the observed GCT trend is a change in the proportional representation of the nine corps areas among the test scores reported to this office. A change of this nature would have a considerable effect on the GCT distribution for the total population reported since corps areas are known to differ widely in average GCT Army Grade and in their Army Grade percentage distributions. This change in sampling could be traced to one or both of two circumstances. Each corps area may actually induct a different percentage of the total number of men inducted during successive periods. Further, each corps area may have reported test scores to this office during successive periods for a different percentage of the men inducted in the corps area since only the scores of men sent to replacement training centers are reported and the ratio of such men to those sent directly to units may vary from period to period.

TABLE V summarizes the average Army Grades for men sent to replacement training centers from the different corps areas for the different periods. When corps areas differ so much among themselves in their average GCT level, a spurious trend over several months can become apparent if the proportion of scores reported from each corps area changes from period to period. That the proportion of returns from corps areas does change a great deal is shown in TABLE VI. In the period from March to May, 1941, the corps areas with the higher GCT scores (Corps Areas I, II, VI, VII, IX) supplied 61% of all the scores reported while Corps Area IV supplied but 9%. In June to August, 1941, the returns from the former corps areas decreased to 49% while those from the latter increased to 20%. This observed shift toward lower-scoring corps areas contributing greater proportions to the total returns in more recent periods should tend to give lower average GCT scores in these periods.

It should be noted that a shift in the sampling proportions in these data reported from each corps area for men sent to replacement training centers may or may not reflect a corresponding shift in the proportion of selective service men being inducted from the respective corps areas and a corresponding change in the character of the selective service population. Whether it does or not depends on the proportion and type of men being sent directly to field units. Data with respect to this latter consideration are not currently available for analysis. Such analysis must be done before an evaluation can be made of the relation to the observed GCT trend of such variation in sampling of corps area.

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TABLE V  
Average GCT Army Grades by Period for Selectees  
Sent to Replacement Training Centers  
from Each of the Mine Corps Areas

Corps Area	3/41 - 5/41			6/41 - 8/41			3/41 - 8/41			9/41 - 2/42		
	White	Negro	Combined	White	Negro	Combined	White	Negro	Combined	White	Negro	Combined
First	2.81	3.50	2.83	2.63	3.36	2.65	2.72	3.45	2.74	2.80	3.41	2.81
Second	2.61	3.95	2.70	2.46	3.87	2.58	2.56	3.92	2.66	2.72	3.71	2.77
Third	2.76	4.20	2.91	2.64	4.05	2.82	2.69	4.11	2.86	2.81	4.09	2.97
Fourth	3.48	4.64	3.88	3.29	4.51	3.61	3.33	4.56	3.68	3.51	4.40	3.78
Fifth	2.60	3.63	2.69	2.90	3.87	2.94	2.77	3.73	2.83	3.01	3.81	3.07
Sixth	2.68	3.74	2.72	2.60	3.89	2.64	2.64	3.80	2.68	2.85	3.82	2.91
Seventh	2.72	4.00	2.85	2.76	3.99	2.80	2.75	3.99	2.83	2.86	4.18	2.94
Eighth	3.22	4.54	3.36	3.06	4.30	3.24	3.17	4.45	3.32	3.34	4.31	3.45
Ninth	2.49	3.38	2.50	2.47	3.58	2.50	2.48	3.51	2.50	2.83	3.76	2.85
TOTAL	2.75	4.21	2.88	2.77	4.24	2.92	2.76	4.22	2.90	2.95	4.16	3.07
Total Number of GCT Scores Reported for Each Period												
White	128495			138182			266677			370338		
Negro	13004			16070			29074			40992		
Combined	141499			154252			295751			411330		

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TABLE VI

Percentage of the Total Number of GCT Scores Reported for Selectees Sent to Replacement Training Centers during Each Period from Each Corps Area

Corps Area	3/41 - 5/41			6/41 - 8/41			3/41 - 8/41			9/41 - 2/42		
	W <sup>1</sup>	N <sup>2</sup>	C <sup>3</sup>	W	N	C	W	N	C	W	N	C
I	4.6	1.6	4.4	4.1	0.9	3.8	4.4	1.2	4.1	5.8	0.4	5.3
II	20.8	14.5	20.2	11.5	8.9	11.2	16.0	11.4	15.5	15.5	7.5	14.7
III	11.2	12.8	11.3	15.6	20.0	16.0	13.4	16.8	13.8	12.1	15.4	12.4
IV	6.4	33.5	8.9	16.5	49.9	20.0	11.6	42.6	14.7	10.8	41.9	13.9
V	12.8	11.4	12.7	15.2	6.2	14.3	14.1	8.5	13.5	12.1	8.3	11.7
VI	18.8	7.8	17.8	16.1	4.0	14.8	17.4	5.7	16.2	13.9	7.9	13.3
VII	6.9	7.4	6.9	10.5	3.4	9.7	8.7	5.2	8.4	12.4	7.1	11.9
VIII	8.2	9.8	8.3	3.3	4.9	3.5	5.7	7.1	5.8	8.1	9.6	8.2
IX	10.3	1.2	9.5	7.2	1.8	6.7	8.7	1.5	8.0	9.3	1.9	8.6
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Percent	128,495	13,004	141,499	138,182	16,070	154,252	266,677	29,074	295,751	370,338	40,992	411,330

1 = White  
 2 = Negro  
 3 = Combined

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## VARIATION IN EDUCATIONAL LEVEL

The observed GCT trend may possibly be accounted for by a change in the educational level of the men inducted during successive months, for education and GCT scores are frequently found to be related to a considerable degree. If the data indicate that educational level falls concomitantly with GCT scores, it is likely that educational variation at least partially may account for the observed GCT trend. The detailed educational pattern by month for all selective service men inducted from March, 1941 to February, 1942 is shown in TABLE VII. Instead of becoming progressively lower, the educational level shows a definite upward turn in the months of the summer quota, and then falls to below the initial educational level.

It should be noted that the sample on which TABLE VII is based includes both the men sent to replacement training centers and those sent directly to units. If, as is possible, the educational level of men sent directly to units differs significantly from that of men processed through replacement training centers, the inclusion of data on the educational level of the former group might confuse the picture. To eliminate this possibility, the distribution of education for only those men who were processed through the replacement training centers during each quota period was determined (TABLE VIII). The latter data do not lend themselves to as concise a description as the former; no single representative index can be determined since the nature and size of the class intervals are unclear. However, the percent of men with at least 12 years of schooling (high school graduation or better) can be useful in reflecting educational variation. For all corps areas combined, this percentage increases from 36.7 in the spring quota to 38.9 in the summer quota, and decreases to 36.5 in the fall-winter quota. This upward gradation in educational level during the summer is found in eight of the nine corps areas, with Corps Area V alone showing a decrease in this percentage from period to period. It is probable, then, that the pattern of change in education of selective service men sent directly to units and of those processed through replacement training centers are not significantly different. In neither case is the pattern of change in education from period to period the same as that in GCT distributions.

Cautious interpretation should be made of the fact that education does not seem to account for the observed GCT trend. Most studies revealing the correlation of GCT scores and education have been based on men relatively homogeneous with respect to corps area, where the meaning of the educational categories is, on the whole, the same. When all corps areas are represented, however, the meaning of the educational categories varies. The same categories of education usually indicate less schooling for the south than for the north, for the rural areas than for the urban. When the definition of the categories of education shifts so, any trend that exists may well be obscured.

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**TABLE VII**  
**Cumulative Percentage of Men at Each**  
**Educational Level by Month for All Selective**  
**Service Men Inducted from March 1941 to February 1942.**

	3/42	4/42	5/42	6/42	7/42	8/42	9/42	10/42	11/42	12/42	1/43	2/43
Grade School*	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
High School	65.5	61.9	61.4	66.4	69.0	67.7	67.8	69.3	67.7	66.5	65.8	62.8
9	57.3	54.1	53.4	58.5	61.4	59.7	60.0	61.0	59.4	58.0	57.2	54.0
10	47.5	44.7	43.5	49.0	52.7	50.4	50.3	51.1	49.9	48.2	47.4	44.0
11	39.8	37.2	35.7	41.9	45.7	43.0	42.8	43.3	42.3	40.8	39.8	36.3
College	14.0	12.6	12.8	15.8	20.1	18.2	16.7	14.0	13.5	12.3	12.5	11.6
13	9.3	8.3	8.6	11.2	15.0	13.3	11.7	9.0	8.5	7.8	8.1	8.0
14	6.0	5.4	5.7	7.7	10.9	9.5	7.9	5.6	5.1	4.6	5.1	5.2
15	4.5	4.0	4.3	5.8	8.0	6.9	5.6	3.8	3.6	3.2	3.6	3.8
P. G.	0.9	0.6	0.4	0.5	0.4	0.05	0.04	0.01	0.01	0.02	0.02	0.01
N.	153,437	124,982	62,456	105,200	62,158	53,439	40,340	87,353	49,153	26,603	99,663	165,370
Median Years Education	9.7	9.4	9.3	9.9	10.4	10.1	10.0	10.1	10.0	9.8	9.7	9.4

\* 'Grade school' includes those with 0 to 9 years of schooling..

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TABLE VIII  
 Cumulative Percentages of Men at Each Educational Level in Each Corps Area for Selectees Processed Through Replacement Training Centers during Each Quota Period  
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All CA's	I	II	III	IV	V	VI	VII	VIII	IX
<u>SPRING QUOTA</u>									
Ill.*	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
SS	96.5	99.0	99.3	97.2	83.8	99.0	98.9	96.5	91.0
GS	83.0	91.7	85.1	80.1	57.9	90.2	92.0	86.9	65.1
NB	40.0	41.0	41.6	38.6	20.0	46.1	45.1	39.0	28.6
HS	36.7	37.6	35.9	34.2	19.4	44.6	41.1	37.2	27.4
C-TC	4.1	3.9	6.3	4.2	1.4	3.9	4.3	2.9	2.4
PG	0.5	0.5	1.1	0.7	0.1	0.4	0.3	0.2	0.1
N	144,523	6205	29351	16074	14059	18082	25092	9974	12160
<u>SUMMER QUOTA</u>									
Ill.*	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
SS	99.4	99.6	99.6	99.5	98.7	99.6	99.9	99.6	98.0
GS	81.2	86.1	87.4	73.5	62.0	82.4	92.2	84.7	75.0
NB	41.4	44.9	47.0	43.1	27.9	40.4	48.3	43.4	33.8
HS	38.9	39.9	42.0	39.4	26.8	38.9	45.3	41.6	32.9
C-TC	5.8	8.6	9.3	6.0	3.7	4.9	6.0	5.0	5.2
PG	0.6	1.1	1.5	0.6	0.3	0.5	0.6	0.5	0.4
N	163,616	5784	18015	24682	32065	23372	24648	16795	7029
<u>FALL - WINTER QUOTA</u>									
Ill.*	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
SS	99.4	99.9	99.8	99.7	98.6	99.2	99.9	99.5	98.7
GS	80.8	86.4	88.7	79.6	57.4	82.6	91.0	82.5	73.1
NB	38.3	45.9	43.5	37.6	23.1	40.1	41.7	37.9	31.8
HS	36.5	42.0	40.2	35.3	22.3	38.8	40.3	36.6	30.6
C-TC	3.5	5.4	6.2	3.4	2.1	2.8	3.0	2.6	2.8
PG	0.4	0.8	0.9	0.4	0.2	0.2	0.3	0.2	0.1
N	410,960	21655	60250	51218	57168	48318	54566	48747	33773

\* Men classified as "Non-English" are omitted. The abbreviations represent the following categories:

Ill. = Illiterate  
 SS = Some schooling  
 GS = Completed grade school  
 NB = Completed night or business school  
 HS = Completed high school  
 C-TC = Completed college or technical college  
 PG = Post-graduate work

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TABLE IX

Age Sampling Characteristics by Month  
of Induction of All Selective Service Men  
Inducted from March 1941 to February 1942

	Q <sub>1</sub>	Median	Q <sub>3</sub>	Number
1941				
March	22.4	24.3	27.5	153,437
April	22.4	24.2	27.3	124,982
May	22.3	24.2	27.3	62,456
June	22.4	24.2	27.1	105,200
July	22.2	23.2	24.5	62,158
August	22.0	23.2	24.9	53,439
September	21.6	22.9	24.7	40,340
October	21.1	22.4	24.3	87,359
November	20.9	22.1	24.1	49,153
December	21.1	22.4	24.4	26,603
1942				
January	22.2	23.5	25.5	99,663
February	22.6	24.4	<b>27.2</b>	165,370

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## VARIATION IN AGE COMPOSITION:

Changing policy in the administration of the Selective Service Act suggests that more older men might be inducted during more recent months. Since many studies point to a small negative correlation between age and GCT scores, a significant age change might partially account for the observed GCT trend. The pattern of change in age composition of all selectees from period to period does not substantiate this possibility (TABLE IX). Men inducted from June to December, 1941, are younger than those inducted from March to May, 1941. If the effect of the actual change in age were apparent in the GCT distributions, these distributions would be higher in that half year period; they are, on the contrary, lower. In January and February, 1942, men inducted into the Army were older, and this trend toward higher mean age seems to be continuing. In March, 1942, for instance, the quartile points are 23.8, 28.0, and 31.6. It is possible that a change in GCT distributions might yet result from this trend if it continues. This age change will have to be considerable to noticeably affect GCT scores since, when random sampling conditions are approximated, the correlation of GCT and age is about  $-.10$ . However, for the period under consideration, from March, 1941 to February, 1942, variation in the age composition of the selective service inductees is not a likely factor underlying the observed GCT trend.

## VARIATION IN RACIAL COMPOSITION:

A change in the racial composition of the selective service population might enter into the determination of the GCT time trend. The GCT distributions of white and negro selectees differ widely, as is shown in TABLE X. If then, the ratio of negro to white inductees changes from period to period, a time trend in GCT distributions may be produced.

TABLE X  
GCT Army Grade Percentage Distribution by Race  
of Selective Service Men Processed Through  
Replacement Training Centers and Inducted  
Between March, 1941 and February, 1942

RACE	GCT ARMY GRADE					N
	V	IV	III	II	I	
Negro	47.4	30.4	16.5	5.0	0.6	70,066
White	8.4	19.6	31.4	31.8	8.8	637,015

TABLE XI clearly indicates that there is no change of practical consequence from period to period either in the proportion of negroes among selectees processed through replacement training centers or in

their average GCT Army Grade. Therefore, variation in racial composition is not a likely basis for the time trends observed in GCT. (A more detailed picture of racial differences is given in TABLES V and VI).

TABLE XI  
Proportion of Negroes Among Total Selectees Processed  
Through Replacement Training Centers During Each  
Quota Period; Average GCT Army Grade for These Negroes

	3/41 - 5/41	6/41 - 8/41	9/41 - 2/42
Number Negroes per 1000 Selectees	92	104	100
N: Negroes	13004	16070	40992
Average GCT Army Grade, Negro	4.21	4.24	4.16

The data above suggest that negroes form a relatively constant proportion of the selective service inductees processed through replacement training centers and that variation in racial composition does not account for the observed GCT trend. The question arises whether negroes are also a constant proportion of all selective service inductees. TABLE XII summarizing the racial composition of all selective service inductees from March, 1941 to April, 1942 shows that the percentage of negroes in this population varies greatly from period to period. Since such variation is not characteristic of selectees processed through replacement training centers, it is probably characteristic of those selectees who are sent directly to field units. To evaluate the relation of such variation in racial composition to GCT scores, data are needed on the GCT distributions of men sent directly to field units during the same periods.

VARIATION DUE TO SELECTION OF MEN ASSIGNED TO REPLACEMENT TRAINING CENTERS OR TO FIELD UNITS:

The GCT data discussed above were based on selectees processed through replacement training centers. The data on age, education, and race were based on the same men in some cases, and in other cases on all selectees including both those processed through replacement training centers and those sent directly to field units. Comparable GCT data are not available for men sent directly to field units. (Hereinafter, RTC men will refer to men processed through replacement training centers; Unit men, to those sent directly to field units). From the previous data, it seems probable that Unit Selectees do not significantly differ from RTC selectees in education, but they probably do differ in racial composition and in variability of racial composition from month to month. The data

TABLE XII  
 Racial Composition of All Monthly Selective  
 Service Inductions from March, 1941 to April, 1942

	White	Negro	Other	Number
1941				
March	86.3	10.4	3.3	153,434
April	85.0	12.0	3.0	124,982
May	79.8	19.1	1.1	62,456
June	91.4	7.6	1.0	105,200
July	88.5	10.4	1.1	62,158
August	85.9	13.1	1.0	53,439
September	86.2	12.3	1.5	40,340
October	89.5	8.8	1.7	87,359
November	89.1	9.1	1.8	49,153
December	85.4	10.0	4.6	26,603
1942				
January	86.2	11.6	2.2	99,663
February	86.6	11.9	1.5	165,370
March	96.3	0.9	2.8	186,489
April	91.5	7.1	1.4	216,490

on these two points are insufficient bases for evaluating the effect on the observed GCT trend of selection of men for field units. Usually a change in racial composition would be expected to result in a change in educational level. Since, in this instance, no such concomitant variation is found, it is not possible to predict what the effective factors would be in determining the characteristic GCT Army Grade distribution for Unit selectees. Because the sampling characteristics of Unit selectees cannot be determined, the effect of selection of these men on the GCT distributions of RTC selectees cannot be determined. If (1) the nature of men selected for shipment directly to field units and (2) the percent of such men being shipped should vary, the time trend in the GCT distributions might result. Data are now being accumulated on the Army Grade distributions of RTC men and of Unit men separately. These data are based on all men inducted during each period, including both selectees and voluntary enlistments. The results for three such periods are summarized in TABLE XIII. The tendency for white Unit men to show a GCT Army Grade distribution lower than that of white RTC men is slight during the first period, but is very pronounced in the second and third periods. The tendency is consistently in the reverse direction for the negroes, Unit men scoring slightly higher than RTC men. Where the trend for the white men is pronounced, the picture for the total group is little affected by the opposite trend for the negroes, for they are but a small percent of the total group.

More important than this difference between the GCT distributions of RTC and of Unit negroes is the proportion of negroes among all RTC and all Unit men. The negro men made much lower scores on GCT than did the white men, irrespective of the type of processing. Therefore, the racial composition of the two samples-- RTC men and Unit men --strongly determines the resultant GCT distribution. During the period from April 15 to April 30, 1942, negroes constituted 9.5% of all RTC men, but only 3.0% of all Unit men. As a result, in the total group, RTC men score slightly lower on GCT than Unit men. In May, 1942, the relative proportions were reversed; negroes constituted 5.5% of all RTC men and 12.3% of all Unit men. Consequently, the difference between the GCT distributions of RTC and of Unit men in the total group is greater than in the white group alone, since this difference is the sum of (1) the difference between the GCT distributions of the RTC and the Unit samples in the white group and (2) the difference between the racial composition in the RTC and in the Unit samples of the total group. In June, 1942, the negroes were in the same proportion in both the RTC and the Unit samples of the total group (7% in each). The difference between the GCT distributions of the RTC and Unit men in the total group is mainly due to the difference between the GCT distributions of RTC men and of Unit men in the white group. In the total group, during June, RTC men averaged higher on GCT than did Unit men, and this difference is of the same magnitude as the difference between the GCT distributions of the RTC and Unit men in the white group. In summary, then, the patterns shown for the total group in TABLE XIII are largely a function of (1) the difference in the GCT distributions of

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**TABLE XIII**  
**Army Grade Percentage Distributions**  
**for Men Sent to Replacement Training Centers**  
**and for Those Sent Directly to Field Units**

GCT Army Grade	April 15-30, 1942						May 1-30, 1942					
	White		Negro		Total		White		Negro		Total	
	RTC	UNITS	RTC	UNITS	RTC	UNITS	RTC	UNITS	RTC	UNITS	RTC	UNITS
I	6.5	5.9	0.1	0.3	5.9	5.7	8.5	6.7	0.3	0.3	8.1	5.9
II	27.5	27.1	2.4	3.8	25.1	26.4	30.2	24.2	3.0	3.7	28.7	21.7
III	33.2	33.5	11.1	13.4	31.0	33.0	32.7	31.2	11.1	14.5	31.5	29.1
IV	20.3	21.2	24.1	24.9	20.7	21.3	18.5	23.0	22.6	25.3	18.7	23.3
V	12.5	12.3	62.3	57.6	17.3	13.6	10.1	14.9	63.0	56.2	13.0	20.0
N	70.012	30,496	7466	951	78,478	31,447	134,256	60,834	7871	8566	142,127	69,400
June 1-30, 1942												
GCT Army Grade	White		Negro		Total		White		Negro		Total	
	RTC	UNITS	RTC	UNITS	RTC	UNITS	RTC	UNITS	RTC	UNITS	RTC	UNITS
	I	9.6	7.4	0.2	0.4	8.9	6.9	31.8	25.5	4.5	23.9	30.1
II	31.6	31.4	11.9	13.8	30.2	30.1	31.6	16.9	25.1	17.4	22.9	22.9
III	16.9	22.7	23.6	23.6	17.4	22.9	10.1	13.0	56.2	13.7	16.2	16.2
IV	10.1	13.0	61.4	61.4	13.7	16.2	121,132	56,246	9188	4480	130,320	60,726
V	121,132	56,246	9188	4480	130,320	60,726						

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white RTC and Unit men, and (2) the racial composition of the RTC and Unit samples in the total group.

These data are based on all men inducted including both selectees and voluntary enlistments. Since the type of processing a man receives in the Army is generally independent of whether he enlists voluntarily or is inducted by Selective Service, it is likely that this difference in the GCT distributions of RTC men and Unit men also holds for samples of selectees alone. Due to the difference in the racial composition for the two components, the size and pattern of the difference in GCT between RTC and Unit samples is likely to be more variable from period to period for selectees than for voluntary enlistments. In the period from March, 1941 to March, 1942, the median percent per month of negroes among all voluntary enlistments was 1.6%, the range from 0.7% to 7.6%. On the other hand, the median percent per month of negroes among all selectees was 10.4%, the range from 0.9% to 19.1%. As a result, among selectees the racial composition of RTC men as against that of Unit men can accentuate or confound the difference in GCT between these two groups, but among voluntary enlistments such difference in racial composition would probably have little effect on the resultant GCT distributions, since the percent of negroes among all voluntary enlistments is small.

It is to be emphasized that this racial variation is not characteristic of the RTC selectees inducted between March, 1941, and February, 1942--the period on which the GCT data forming the core of this report is based. There it had been found that the proportion of negroes among RTC selectees and the average GCT Army Grade for these negroes were much the same from period to period. Therefore, the conclusions from these data are not contrary to the previous finding that racial variation does not explain the GCT trend under discussion. Such racial variation is of moment, however, in describing the sampling characteristics of all selective service inductees, both those inducted recently and those inducted during the last seventeen months, for such variation holds throughout the period from March, 1941, to date (TABLE XII). Any study of all selectees must take account of the representativeness in regard to race of the samples on which it is based.

In conclusion, it is clearly indicated by the data presented in this section as well as by those in the sections on education and race that the nature and extent of selection of men for immediate assignment to field units rather than to replacement training centers may have affected the GCT Army Grade distributions which have formed the basis of discussion thus far. To study this effect, data with respect to the GCT scores of RTC and of Unit men inducted during earlier periods are needed, but they are not available.

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SUMMARY

1. GCT Army Grade distributions reported from the field for selective service inductees processed through replacement training centers during earlier periods differ from those reported for more recent periods. The latter groups tend to score lower than do the former.

2. Several factors were considered as possible bases for the trend: (a) an increasing use of more difficult GCT test forms, (b) variation in the proportion of the total returns contributed by each corps area from month to month, (c) a change in the education and age of selective service inductees, (d) variation in the racial composition of successive groups, (e) variation in the nature and incidence of selection of men being sent directly to units as against those processed through replacement training centers.

3. Available data do not yield an accurate estimate of how much more difficult are the lc and ld forms of GCT than la and lb. Because lc and ld are more difficult, an increasing use of these forms would make for a change in the GCT distribution in the direction noted. Since the magnitude of the differential difficulty could not be accurately estimated, the degree to which this GCT trend is a function of differential difficulty cannot be determined.

4. Variation in age was ruled out as an important factor underlying the GCT time trend noted for selectees processed through replacement training centers.

5. Since the proportion of negroes among selectees processed through replacement training centers and the average GCT Army Grade for these negroes were much the same from month to month, variation in racial composition was also ruled out as a possible factor underlying the GCT trend noted. However, it was found that there is a large variation from month to month in the racial composition of selectees sent immediately to units. Any analysis of the distribution of GCT scores for all selectees must consider this source of variance.

6. Education, which has frequently been found to be highly related to GCT scores, showed a pattern of change different from the pattern of change of GCT scores. It is probable that the relation of education and GCT scores was obscured by the fact that the definitions of the categories of years of schooling differ from north to south, and from urban to rural areas.

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7. The proportion of men contributed by each corps area to the total returns was found to vary, with the low-scoring areas tending to submit a greater proportion in more recent periods. This source of variation is related to other sources of variation, such as that of education, race, and type of residence (urban-rural).

8. Men sent directly to field units tend to score lower on the GCT than do those processed through the replacement training centers, according to data covering two and one-half months. Whether this was true of periods prior to April, 1942, is unknown. The nature of the selection for units may vary from period to period, and may even be a function of the incidence of such selection. GCT distributions for men assigned to replacement training centers and to field units are now coming in for each monthly period, and more conclusive evidence will soon be available. If the picture for the two and one-half months is representative, this is the only factor considered which, over the whole period, would tend to work in a direction making for a shift to higher GCT scores.

9. While the data analyzed thus far do suggest some of the more likely bases for the tendency of more recent inductees processed through replacement training centers to score lower than do earlier inductees similarly processed, conclusive results await more adequate control of pertinent variables.

CONCLUSION:

The data analyzed thus far suggest some of the more likely bases for the tendency of more recent selective service inductees processed through replacement training centers to score lower on GCT than do earlier inductees similarly processed. Some of the factors which may contribute to this tendency are: (1) an increasing use of 1c and 1d-- the more difficult GCT test forms, (2) variation from month to month in the proportion of the total returns contributed by each corps area, (3) variation in the nature and extent of selection of men being sent to field units instead of to replacement training centers. Variation in age and in racial composition do not appear to be important bases for the trend. The evidence in regard to education is inconclusive. The present study does not indicate a positive relation between the pattern of change in educational levels and that of GCT distributions; however, many previous studies strongly point out such a relation between these two variables. Therefore, no conclusive statement can be made. In no instance is the evidence for the basis of the time trend conclusive. Clear-cut results require more adequate control of pertinent variables.

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