Chapter VI

STANDARDIZATION PROCEDURE - II

THE FINAL ADMINISTRATION OF THE TEST

Introduction

After the try-out version of the test was modified on the basis of item analysis, the final version was got printed and was ready for administration on a wider sample. The present chapter describes the administration of the final form of the test.

(A) The Three-fold Purposes of Final Administration

(1) The first purpose of final administration is development of norms and calculation of measures of central tendency and variability.

(2) The second purpose of final administration of the test is to establish its reliability and validity. If reliability and validity indices are to be found, they should be found for the final version only.

(3) The third purpose of final administration, if the test is a complex battery of a number of tests, is to ascertain the factorial validity through factor analysis.

(B) Selection of Sample

    (a) Sampling Technique Adopted
        in The Present Study

Every test is designed for use with a specified population, or group. Different types of tests are designed for individuals of different age groups, schooling, family background, geographical locality (residence), sexes etc. In any event, the test must be standardized on a group that is a representative sample of the total population for which it is intended.

A sample can be said to be representative when the statistics based on it are equivalent to the parameters of the whole population, except for the sampling errors and chance errors.

The sample should yield unbiassed data of the population it purports to represent, and should be large enough to provide statistically valid results for the traits or skills or functions being measured.

If the population is diversified and divided into a number of non-overlapping categories, and when

the researcher feels that these strata are going to
affect the findings of his research, then he would be
best advised to resort to stratified sampling. The
number taken in the sample from each category is in
the same proportion to the number of members in that
category in the total population. More specifically
this is called the 'proportionate stratified sampling',
and is most frequently used in educational and psycho-
logical work.

The population for this test is the college-
entrant students, that is the pre-university class
students. It is a very diversified population, divided
into a number of categories or strata, which definitely
influence the student performance in the field of
language ability. There are boys and girls; students
residing in rural, semi-urban and urban localities;
students belonging to Arts, Science and Commerce facul-
ties; etc. These strata should find proportionate
representation in the sample. But at the same time, the
benefits of random sampling should be taken as far as
possible. So the sampling technique adopted for this
investigation was "Stratified Random Sampling". Accord-
ing to it, the sample is divided into strata; to each
stratum is assigned number of members proportionate to
the number obtaining in the population; but within each

stratum, the members are selected randomly. As Cochran (1953) says,

> The basic idea behind stratification is to subdivide a heterogeneous population into sub-populations, each of which is internally homogeneous.

The superiority of this technique to random sampling is discussed by Walker (1959) as follows :

> Sometimes the research worker knows or surmises that the universe he wishes to sample can be divided into a number of groups each of which is relatively homogeneous with respect to the character sampled, and that either the frequency or the size of that character varies considerably from subgroup to subgroup. In this situation it is better to take advantage of stratified-random sampling, which is more efficient than drawing a sample at random from the entire population.

The strata represented in the present sample are:

(1) Boys and Girls.

(2) Students residing in Urban, Semi-urban and Rural localities.

(3) Faculties;the students belong to -

Arts, Science, Commerce.

Table 6.1, given below, shows the sex-wise and
faculty-wise distribution of the total pre-university
student population in the State of Gujarat. The sample
for the final version is selected in such a manner as to
be as much representative of this strata break-up as
possible.

Table : 6.1

PRE-UNIVERSITY STUDENT ENROLMENT IN THE THREE MAJOR UNIVERSITIES OF GUJARAT STATE, 1970-71.

Name of the University	Faculty	Boys	Girls	Total
(A) Gujarat University	Arts (Regular)	4823	3399	8222
	Science	3616	1736	5352
	Commerce	7306	2297	9603
Total ...		15745	7432	23177
(B) South Gujarat University	Arts	902	681	1583
	Science	1136	654	1790
	Commerce	1375	585	1960
Total ...		3413	1920	5333
(C) Saurashtra University	Arts	2448	2115	4563
	Science	1471	298	1769
	Commerce	3617	265	3882
Total ...		7536	2678	10214
GRAND TOTAL ...		26694	12030	38724

Boys : 69 %		Arts:	37 %	14368
		Science:	27 %	8911
Girls : 31 %		Commerce:	36 %	15445

Separate norms for the two sexes and three faculties have been developed. Separate norms for each of the four component tests are also developed.

(b) Sample Size for
the Present Study

The larger the size of a sample, the more reliable are the results. Sampling error is always going to be there, but it goes on decreasing, as the sample is made larger and larger.

The answer to the question of the sample size that is required depends upon the margin of error that can be tolerated in the final estimate of the population parameter. According to Mouly (1962), in order to meet the accepted ideal condition of 2 % error at the 95 % confidence interval, a sample of at least 246 subjects is needed. This is so, because the dependability of Mean and S.D. rests upon the size of the sample, which determines the standard error (SE). Standard Errors vary inversely as the squareroot of the sample-size; so the larger the N, the smaller the S.E.. Therefore, within the limits prescribed by the considerations of administrability and expenditure, the sample should be as large as possible.

For the present investigation a sample of 1000 pre-university class students was selected, which

was subdivided into various strata as follows. (Actually 1089 students were tested, but afterwards, data regarding 89 students were discarded.)

Table : 6.2

	Arts		Science		Commerce		Total
	Rural	Urban	Rural	Urban	Rural	Urban	
Boys	62	146	53	141	49	169	620
Girls	39	103	39	67	32	100	380
Total	101	249	92	208	81	269	1000
	350		300		350		

(c) Geographical Area Covered

The sample covered the geographical area of whole Gujarat; but it was not possible to include each district or taluka in the sample. The main reason for this is that usually college classes are of the size of 100 to 120 students. It is not administratively possible to administer the test to a section of the class and not to the remaining students. It has to be administered to the whole class. Consequently, for a sample of 1000 students, a researcher can cover at the most 10 to 12 colleges. A list of colleges selected for the final administration is given below in table 6.3.
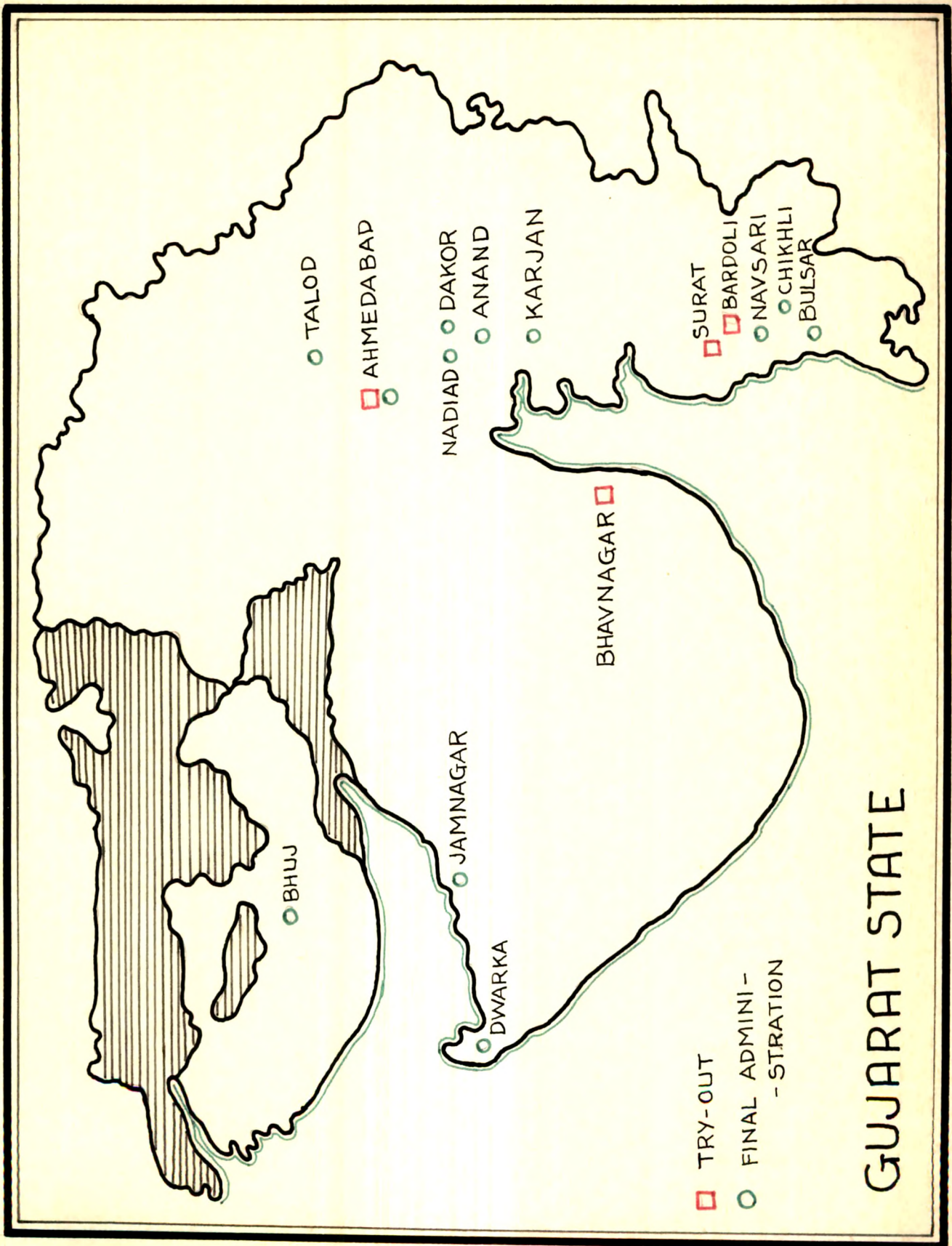
TALOD

AHMEDABAD

DAKOR

ANAND

NADIAD

KARJAN

SURAT

BARDOLI

NAVSARI

CHIKHLI

BULSAR

BHAVNAGAR

BHUJ

JAMNAGAR

DWARKA

□ TRY-OUT

◯ FINAL ADMINI-
  -STRATION

□ ◯

GUJARAT STATE

Table : 6.3

SAMPLE OF THE FINAL TEST-VERSION
WITH STRATA-WISE BREAK-UP

Name of the College	Locality	Region	Students Tested
URBAN:			
1. C. U. Shah Commerce College, Ahmedabad.	Urban	North Gujarat	104
2. Bhavan's College, Dakor (Dist. Kaira).	Urban	Central Gujarat	63
3. Surajba Mahila Arts College, Nadiad (Dist. Kaira).	Urban	Central Gujarat	56
4. Science College, Bulsar, (Dist. Bulsar).	Urban	South Gujarat	112
5. Nalini & Arvind Arts College, Vallabh Vidya Nagar, (Dist. Kaira).	Urban	Central Gujarat	87
6. Garda College of Arts and Commerce & Baria Institute of Science, Navsari (Dist. Bulsar).	Urban	South Gujarat	182
7. D. K. V. Arts and Science College, Jamnagar.	Urban	Saura-shtra	63
8. Shri Ramji Rauji Lalan Arts and Science College, Bhuj.	Urban	Kutch	59
			726

Table : 6.3
(Contd.)

Name of the College	Loca-lity	Region	Students Tested
SEMI-RURAL/RURAL:			
9. Smt. H. C. Patel Arts and Commerce College, Karjan, (Dist. Baroda).	Rural	Central Gujarat	82
10. Smt. S. M. Panchal Science College, Talod, (Dist. Sabarkantha).	Rural	North Gujarat	65
11. Shardapith Arts College, Dwarka, (Dist. Jamnagar).	Rural	Saura-shtra	41
12. Arts and Commerce College, Chikhli, (Dist. Bulsar).	Rural	South Gujarat	86
			274
		Total ...	1000

SEX-WISE BREAK-UP			LOCALITY-WISE BREAK-UP		
Boys	:	620	Rural	:	274
Girls	:	380	Urban	:	726
	Total :	1000		Total :	1000

Table : 6.3
(Contd.)

FACULTY-WISE BREAK-UP			REGION-WISE BREAK-UP		
Arts	:	350	North Gujarat	:	169
Science	:	300	Central Gujarat	:	288
Commerce	:	350	South Gujarat	:	380
	Total..	1000	Saurashtra	:	104
			Kutch	:	59
			Total..		1000

(C) Time Limit

The students were allowed as much time as they needed during the administration of the final version as this test was meant to be a power test.

Mean time taken at the Final Administration was :

Part I	:	45 mts.
Part II	:	40 mts.
Part III	:	40 mts.
Part IV	:	45 mts.

(D) Administration of
The Final Version

The investigator selected the sample for the final administration on the basis of stratified random technique.

The next step was to administer the tests. He went to nine out of the twelve colleges listed above. At the remaining colleges the work was done by local professors. He met the principals of these colleges and arranged for the administration of the tests.

The tests were administered in four sessions. On the first day, Part I and II were administered. An appropriate time interval was allowed between Part I and Part II. On the next day, Part III and IV were administered on similar lines. Thus, in each college, the administration of the tests was spread over two days and four sessions.

The investigator followed the following practice as a rule while administering the tests. He would enter the pre-university class ten minutes before the actual time for the commencement of testing. He would introduce himself to the students, explain the purpose behind his research and stress the importance of the tests they were going to take. He would request them to take the whole thing seriously. He would motivate them to show their best spirits in the job. Then he would ask them to read general instructions. He would also explain the special instructions for a couple of tests, where the mode of responding was a little different from others. Then he would ask the students

to start answering. Test-booklets and answer-sheets, of course, would be distributed before instructions are explained. The investigator would have one or two teachers from the college to help him in distributing and collecting test-booklets and answer-sheets and in managing the class.

After Part I is over, the booklets and answer-sheets would be collected. There would be an interval (a recess, in practice) between Part I and Part II. Again, five minutes before the time of actual commencement of the next session, the students would take their seats. The investigator would distribute test-booklets and answer-sheets, and then ask the students to start answering. Again, when Part II is over, the investigator, with the help of local teachers, would collect papers.

The same procedure would be followed on the next day for Part III and IV.

The investigator could not go personally to Jamnagar, Dwarka and Bhuj. At the remaining nine colleges he went personally and administered the tests. At Jamnagar, Dwarka and Bhuj, the work was done, exactly on the lines described above, by the teachers of the respective colleges. The investigator, thus,

visited Ahmedabad, Dakor, Nadiad, Vallabh Vidya Nagar, Karjan, Bulsar, Navsari, Chikhli and Talod, for the work of the administration of the final version of the test.

The investigator would like to note his experiences during this field work. At some places, at first, the principals would be a little hesitant about providing facilities for administering the test. But after the importance and usefulness of the research are explained, they would be willing to make arrangement. At other places, the principals readily responded to the request and immediately gave all facilities. The teachers of Gujarati in the colleges were also very helpful. Thus the investigator got good cooperation from the principals and teachers.

The students were interested in the whole affair. They took the taking of the test partly as a challenge, partly as self-appraisal and partly as fun. But it seemed that they took it earnestly and put in their best effort with sincerity. The students of Arts faculty were more at home while taking the test, as compared to those of Science and Commerce faculties. But as percentile norms and distribution of scores for the three faculties would show, there is no appreciable

difference in their performance. Thus students also
cooperated in taking the tests.

In this way, the battery of four tests was
administered to about 1089 students. Afterwards, the
data of 89 students from different colleges were
ignored or discarded, and that of 1000 students were
included in computing statistical measures, percentile
norms and correlation co-efficients.

This leads us to the next two chapters which
deal with the reliability and the validity of the test,
and the statistical analysis and interpretation of the
collected data.

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