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H.E.P. Downes

H.E.P. Downes.

SOME ASPECTS OF APTITUDE AND INTELLIGENCE TESTING OF NEW ZEALANDERS - MAORI AND PAKEHA

Being a thesis presented in partial requirement
for the degree of Master of Arts

by

Statistical data used in this thesis were obtained in the course of personnel selection work in the New Zealand Military Forces, and are published here by kind permission of the Adjutant-General, although the conclusions reached are in no way to be construed as being the official or unofficial opinions of the Army or of the Adjutant-General.

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INTRODUCTION - THE PROBLEM

This investigation was undertaken in an attempt to shed some light on a problem which is encountered in any psychometric work carried out in New Zealand, the problem of the differences between Maori and Pakeha. As will be shown below, it appears to be fairly well established that there are differences in intellectual capacity between the two races, and the problem is rather that of determining whether that difference is innate, that is, whether it is a racial characteristic, or whether it is partially or totally accounted for by cultural factors. The practical application of the problem is one of establishing the degree of difference between test results with the two groups, and of determining to what extent such results may be considered valid when mixed groups of Maori and Pakeha are tested.

A secondary point of interest which arose in the course of the investigation was the appearance of statistically significant differences between the norms established over large samples in the United Kingdom, and the results obtained with a fairly large group of New Zealanders of European race.

PREVIOUS INVESTIGATIONS

An investigation such as this must be seen as a part of a much wider field, that of the mental and psychophysical differences between racial and cultural groups in general. A great deal of detailed work has been done in this field, much of it by highly skilled investigators; that the results have not been more conclusive is probably due largely to the difficulty found in the work which is the subject of this thesis, that of isolating cultural factors which may be expected to bear upon the test situation.

Most modern definitions of intelligence include some reference to goal-directedness; thus Knight[1] defines intelligence as -

> "The ability, when we have some aim or question in mind, to discover the relevant qualities and relations of the objects or ideas that are before us, and to evoke other relevant ideas. In other words it is the capacity for relational, constructive thinking, directed towards some end." (Underlining mine)

It is obvious that this concept of an end or goal will materially affect the test situation, there being a very real practical difficulty in framing tests where the goal to be attained will have the same value or call forth the same effort in members of different cultures.

Another factor entering into most tests of intelligence or intellectual ability is that of speed, in respect of which many writers have stressed the differ-

(1) Knight, R. Intelligence and Intelligence Tests, p.16.

ences of attitude and value obtaining in different cultural groups.[1]

Klineberg[2] quotes a large number of investigations into aspects of racial differences, and after reviewing them exhaustively concludes "that there is no scientific proof of racial differences in mentality." He points out however, that this does not entitle us to assume that such differences do not exist, and that improved techniques may discover such differences, but that there is no present ground for their assumption.

Knight,[3] on the other hand, though quoting from his authorities with some caution, appears to tend to the general view that there are innate differences in intelligence as between different racial groups, and uses this conclusion in support of the importance of heredity as opposed to environment in the determination of intelligence. He appears, however, to take for granted that the tests used were in fact an accurate measure of the same factors in all the groups tested, and bearing in mind the factors of speed and goal-value mentioned above, this assumption appears to be one which must be made with considerable caution.

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(1) Klineberg, O. Race Differences, p. 160.
(2) ibid. p. 345.
(3) Knight, R. op.cit., p. 72-74.

It will be noted that the investigations studied by the authorities quoted above are very largely of American origin. The problems of racial differences have exercised American psychologists to a greater degree, perhaps, than those of any other country, not only because of the variety of racial groups to be found within the United States, apart altogether from the dichotomy of "white" and "coloured", but also because of the powerful social attitudes towards different racial groups, and the consequent immediate value in practice of an authoritative ruling on this vexed question.

Porteous,[1] however, in a very thorough and exhaustive study of the mental and psychophysical characteristics of the Australian aboriginal, finds similar problems with regard to speed and interest, and summarises his results by suggesting that, considering their unfamiliarity with the situation and on material with which they were familiar, the aboriginals' responses were little inferior, if at all, to those of whites, in tests of prudence and planning capacity, discrimination of form and spatial relations, although their scores were lower on tests requiring speed or rote memory. He concludes -

---

(1) Porteous, S.D. The Psychology of a Primitive People, p. 420.

"They are not unintelligent, but are certainly unadaptable to a civilised environment."

It should be noted, in this respect, that the Australian aboriginal has long been held as the prototype of primitive man, and has by many writers been taken as the classic case of hereditary low intelligence.(1)

Some work has been undertaken on the problems of Maori as opposed to Pakeha intelligence, but little has been concluded beyond the bare observation that the Maori does not score so highly as the Pakeha on Pakeha tests, together with a certain amount of speculation as to the reason for this difference. Some writers have maintained that the Maori, given equal opportunities, is fully as intelligent as the Pakeha,(2) but most have refrained from any but the most cautious of comments. Local investigations are discussed more fully in the text of this study. It is probable, however, that this is the first occasion on which there has been opportunity to test a reasonably large sample of Maori together with, and under equal conditions with, an adequate Pakeha sample.

---

(1) ibid, pp. 199-216.
(2) McKenzie, N.R. The Educability of the Maori.

CONSTITUTION OF THE SAMPLES

An intake of approximately two thousand recruits to the Army was tested, and was later divided for statistical purposes into three groups. The first group consisted of New Zealanders of European race, who had passed all, or the greater part of their lives in New Zealand, and who had, at least, been educated in this country. This group numbered 1,626, although in some of the tests and hence in the correlations, this number was diminished by a few who had missed one test, or whose paper was invalid for some reason. In no case, however, was the group less than 1,600.

The second group consisted of recruits of Maori race. Some difficulty is always experienced in an investigation of this nature, in determining racial divisions. The 1936 census gave the proportion of Maori of full Maori blood in the Maori population as being approximately 68 per cent, although the Government Statistician, in his report, suggested that this figure was over-stated, and that a truer figure would be from 45 to 50 per cent of the total persons with Maori blood.(1)

As reliable data as to racial status were not available, the criteria of selection of this group must be considered as at least partly cultural. Only those cases were accepted who classified themselves as Maori,

(1) New Zealand Official Year Book, 1945. p.31.

the majority of whom asked for and accepted posting to a Maori unit. A number who classified themselves as half-caste or part-Maori were rejected, even though they accepted posting to a Maori unit, as it was considered that neither on racial nor on cultural grounds could they be considered representative of the Maori race. It should be pointed out that acceptance of posting to a Maori unit implies that the recruit feels himself a Maori, feels at home in a Maori cultural environment, and in most cases speaks the Maori tongue. One or two part-Maori soldiers who were posted to Maori units, were later granted reposting at their own request on the ground that they did not speak Maori and felt themselves "out of the group".

The majority of the Maori recruits had been recommended by tribal committees, and the greater number of those in the group selected for statistical purposes were products of a strongly Maori background, many speaking Maori as their primary tongue. This group numbered 214, and all figures given are based on a group of at least 200.

The third group comprised all those cases rejected in the selection of the other two groups. It consisted of a few recent immigrants, a few persons of foreign birth and education, or who had been brought up in homes or with backgrounds which differed markedly from New

Zealand norms, and those cases where difficulty was encountered in allotting either to Maori or to Pakeha groups. This whole group was discarded for statistical purposes.

It was hoped by this division of cases to obtain two groups each of comparative homogeneity with regard to cultural background, and each of as homogeneous a nature with regard to race as could be obtained within the limits of time available. It is considered that, as they stand, each group is representative of the race in question, that each is free as far as possible from cultural influences which might be expected to bear predominantly only on the other, and that both are free of cultural influences which may be considered foreign to New Zealand social patterns.

COMPOSITION OF THE GROUPS

Both groups were broken down by educational attainment, and Tables I and II below show educational attainment ranged against raw scores in the Raven Progressive Matrices test. Owing to the nature of the divisions of the educational attainment scale, which are made according to the information available, and make no pretence at showing an even progression, no attempt has been made to

extract correlation coefficients from this material. It is felt, too, that academic attainment is not in itself merely a measure of intellectual ability, as, for example, no measure is given of the number of years of study required to pass a certain examination, and this must be linked, to some extent, with economic and cultural factors. Nevertheless, intelligence must be expected to exert a limiting influence on such attainment and this is borne out by the pattern of the data in these tables.

TABLE I

Showing the Educational attainment and Raven scores relative to that attainment in 1,605 Army recruits of European race.

Attainment	0-9	10-19	20-29	30-39	40-49	50-59	Total	Total %
Degree				1	2		3	.18%
University				5	19	15	39	2.43%
Post-Matric				6	13	4	23	1.43%
Matric) School Cert.)			1	6	24	4	35	2.18%
Form V			2	28	55	6	91	5.67%
Form IV		2	11	90	87	7	197	12.27%
Form III		8	25	95	69	1	198	12.34%
Std. 6	9	46	155	339	170	4	723	45.05%
Std. 5	3	33	93	68	22		219	13.65%
Std. 4	4	14	21	17	4		60	3.74%
Std. 3	1	3	5	3			12	.75%
Std. 2	1	1	1	1			4	.25%
Std. 1				1			1	.06%
Total	18	107	314	660	465	41	1605	100.00%

TABLE II

Showing the Educational Attainment and Raven Scores relative to that attainment in 214 Army recruits of the Maori race.

Attainment	Raven Scores							
	0-9	10-19	20-29	30-39	40-49	50-59	Total	Total %
Degree								
University				1	1		2	.93%
Matric.) School Cert.)		1			1		2	.93%
Form V		1		3	7		11	5.14%
Form IV		2	2	5	6		15	7.0 %
Form III		5	4	6	1		16	7.5 %
Std. 6	1	17	20	19	4		61	28.5 %
Std. 5	7	18	23	17	1		66	30.9 %
Std. 4	2	19	6	6			33	15.4 %
Std. 3		2	2				4	1.85 %
Std. 2	2	1	1				4	1.85%
Std. 1								
Total	12	66	58	57	21	—	214	100.00%

A further analysis was made of the Maori group to determine the distribution of occupations within the group. This, however, was not particularly valuable as many of the Maori, when questioned, can give no fixed occupation. Many too, are engaged on seasonal work, filling in intervals between this type of employment by taking various labouring work as it becomes available. A further factor is that many give an occupation which they consider likely to be of value in securing them some preferred occupation in the Army; a large number declared themselves to be truck-drivers by trade and requested driving jobs in the Army, though comparatively few of these could produce a trade licence or any other evidence of having been employed as drivers. This factor was even more common with certain sections of the European intake, and allied to the youth of many of the recruits, and their comparative inexperience in any occupation, made a similar analysis of their group seem pointless and it was accordingly not undertaken.

Table III shows the distribution of occupations within the Maori group.

TABLE III

Showing distribution of occupation and Raven scores relative to occupations among 214 Maori recruits.

Occupation	Raven Scores							
	0-9	10-19	20-29	30-39	40-49	50-59	Total	Total%
Agricultural & Pastoral	2	28	22	25	6		83	38.8
Labourers	5	16	10	6	2		39	18.25
Transport	1	5	8	5	3		22	10.25
Miscellaneous Trades		3	5	8	3		19	8.9
Factory Worker (incl. Dairy)	1	4	3	4	1		13	6.1
Freezing Workers	1	3	3	3	1		11	5.1
Forestry & Mills	1	4	3		2		10	4.7
Building & Construction	1	1	3	3	1		9	4.2
Clerical & Professional		1		1	1		3	1.4
Students			1	1	1		3	1.4
Fishing		1		1			2	.9
Total	12	66	58	57	21	—	214	100.00

Ages in both groups ranged from 20 to 45 years, although in both the mode was between 21 and 24 years. The greatest proportion of the recruits was therefore young and vocationally inexperienced, but sufficiently mature to be classed as adults for the purpose of scoring tests.

THE TESTS

Four tests are normally applied to all recruits. These are all self-administering, paper-and-pencil, group tests. They comprise:

(1) The Raven Progressive Matrices Test, 1938. (20 minute version).

(2) The Bennett Test of Mechanical Aptitude and Knowledge.

(3) The SP25, a verbal test based on synonyms, homonyms and rhymes, and constructed by British War Office psychologists specifically for military use.

(4) The SP3A, a test of number and mathematical knowledge, also constructed for military use.

Considerable research has been carried out on these and other military tests by Vernon[1] and relevant extracts from his results are summarised in Table IV below.

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(1) Vernon, P.E. Occupational Psychology (Apr.1947) XXI: 53-74.

TABLE IV

Statistical details of tests used in the selection of Army recruits. (Adapted from Vernon)

Test	Time (mins)	Reliability	g	k:m	v:ed	Sub-factors
Raven	20	.88	.79	.15		k
Bennett	15	.85	.58	.40		in
SP25	16	.97	.75		.47	v, 2ry
SP3A	16	.95	.72		.43	n
Koh's Blocks			.50	.54		k

v = verbal
m = mechanical-practical
2ry = secondary
k = visuo-spatial
in = information
ed = Educational
n = numerical

The SP3A Mathematical Test was not used in this investigation as it appeared to add little to the statistical picture given by the first three tests quoted, and introduced no heavy loading of any new factor. It is, in point of fact, a test rather of attainment than of innate ability and is so used in Army selection work.

Koh's Blocks are not used except in cases of illiteracy or partial literacy, when there appears to be some doubt as to the reliability of an individual score, or

when a subject makes such consistently low scores that it seems unlikely that he can be of any value to the army. In these cases Koh's Blocks are used as a check on other tests.

THE RESULTS

The results of the three tests taken for statistical purposes are shown in tabular form in Table V below. Distributions for Maori and Pakeha are shown graphically in Appendices I, II and III.

Test	Mean.	Standard Deviation	Median	Correlation with Raven r
Raven				
Pakeha	34.7 ± .15	9.2 ± .11	35.9 ± .19	
Maori	32.0 ± .84	18.2 ± .57	30.41 ± 1.05	.57 ± .03

TABLE V

Statistical details of test results. N = 214 Maori recruits and 1,624 Pakeha recruits.

Test	Mean.	Standard Deviation	Median	Correlation with Raven r
Raven Pakeha	34.7 ± .15	9.2 ± .11	35.9 ± .19	
Maori	25.7 ± .48	10.4 ± .34	24.9 ± .6	
BENNETT Pakeha	23.35 ± .15	9.16 ± .11	23.42 ± .19	.5 ± .01
Maori	18.94 ± .37	7.93 ± .46	18.92 ± .46	.51 ± .04
SP25 (verbal) Pakeha	49.7 ± .38	22.6 ± .27	49.7 ± .48	.58 ± .01
Maori	32.0 ± .84	18.2 ± .57	30.41 ± 1.05	.57 ± .03

As these tests were originally standardised in the United Kingdom, British norms were worked out for them. These were supplied to divide selectees into six groups on a decile basis, and were the first and third deciles, the median, and the seventh and ninth decile for each test. It may be interesting to compare Maori, Pakeha and British results on this basis. This is done in Table VI.

TABLE VI

Median and distribution of tests. United Kingdom results compared with New Zealand Pakeha and Maori results.

Test	10%ile	30%ile	Median	70%ile	90%ile
RAVEN					
Pakeha	21	31	35	40	44
Maori	12	18	24	32	39
British	18	27	33	39	45
BENNETT					
Pakeha	11.0	18.3	23.4	28.4	35.4
Maori	8.1	14.7	18.9	23.4	29.3
British	10	18	22	27	34
SP25 (Verbal)					
Pakeha	19.9	36.5	49.7	62.9	80.5
Maori	10.3	20.9	30.4	40.6	59.3
British	14	36	54	69	89

The Raven scores are given in whole numbers, these figures having been calculated from ungrouped data.

DISCUSSION OF RESULTS

Study of the results in Tables V and VI and of the graphs in Appendices I, II and III, shows a tendency for the distributions of Pakeha scores to be curtailed at the upper limits. This is particularly noticeable in the graph of Raven scores (Appendix I), where there is a sharp drop after the 40-45 group. The Raven has been extensively used in New Zealand, particularly in military testing, and has usually been found to have a slight ceiling effect when used with groups which may be expected to make higher scores. The tendency to curtailment of the distribution is borne out by the data in Table VI where it is seen that the gap between British and New Zealand European scores tends to decrease as the upper limit of the distribution is reached. In the tabulation of "Verbal" scores this becomes a negative gap before reaching the median and this negative tendency increases towards the upper limits. The only test in which the distributions of European New Zealand and British scores appear to be markedly similar is the Bennett. This similarity may be explained by the possibility of a cultural pattern in New Zealand which places more emphasis and a higher value on mechanical ingenuity and ability than is the case in Great Britain. Certainly experience with British and New Zealand troops

has led to the opinion that the average New Zealander is "handier" with his hands, and has a well-marked genius for improvisation. As it is probable that the 'k' and 'm' factors are subject to some extent to development by training, such an hypothesis as this may prove, on scientific analysis, to be tenable. If this be the case, a more representative sample might be expected to show an increasing difference from British scores towards the upper limits of tests with heavy 'k' or 'm' saturation.

As regards the other two tests however, we must, if we accept the British standards, regard the Pakeha group under study as being of a lower verbal and educational standard than a corresponding British group, and of a lower standard in these specifics than we should expect from a study of their Raven scores. While it is unwise to attempt to explain such a difference without further investigation along scientific lines, there are one or two points which should be considered.

Experienced officers were of the opinion that the educational standard of this draft was lower than the average of troops which they had previously handled, basing their opinion on the standard of writing and spelling appearing in returns, forms and other papers which the men were required to complete, and while this is not adduced as scientific evidence it cannot be denied

that a consensus of experienced opinion is likely to come very near the truth in such a matter. In considering this fact, together with the curtailment of the upper end of the distribution curve, the composition of the group itself must be studied.

The only factor which dictated the formation of the group was a willingness to serve in the Army. This factor, however, is capable of analysis into a number of sub-factors, of which we may take as examples, attitude to the Army, attitude to travel overseas, economic considerations and investment in the future. It is this latter factor which appears to be most significant in this consideration, although again no valid conclusion can be drawn without scientific analysis. It appears likely, however, that a large proportion of the more intellectually gifted of the section of the population who might be expected to volunteer for service, have considerable investment in the future in the nature of advancement in chosen careers, courses of academic study or technical training, or that they merely feel that service in the Army offers little opportunity of advancement to any permanent socially approved status, and that service of the type envisaged would entail sacrifice of this investment. Whether this be the explanation,

or a part of the explanation of the difference, or whether other factors have entered into the formation of the group under consideration, there appears to be a definite falling off towards the upper levels of the distribution.

Although some attempt at explanation is possible for the differences between New Zealand and British scores in the case of the two tests which are heavily loaded with specific factors, this is considerably more difficult in the case of the small but apparently significant difference between the British and New Zealand scores in the Raven Progressive Matrices. It is probable that no satisfactory approach can be made to this problem until further research has been made with groups more carefully controlled to ensure a representative sample. If, as suggested above, there is a significant difference in the distribution of the 'k' factor as between the two populations, the operation of the loading of .15 for this factor (see Table IV) may conceivably affect the resulting scores, but this investigation does not supply sufficient material for more than surmise on this point.

Little can be said with regard to the constitution of the Maori group, owing to the extreme practical difficulty of arriving at any norm or standard of the consti-

tution of the Maori race. There appears to be a bi-modal tendency in the curve given in Appendix I for Maori Raven Scores, and this tendency may be born out by the "tail" appearing in the graph in Appendix III. It is probable, however, that this bi-modality is a result of grouping and that the curve is markedly platykurtic.

The most salient factor emerging from these results, however, is the marked difference between the means and distributions of the Maori and Pakeha scores. This is born out by previous researches such as that of Ball(1) who finds from one to two years' retardation in school subjects among Maori children when compared with Pakeha standards, although as he was using attainment tests, his results may be queried as a measure of intelligence. Similarly Hearnshaw(2) finds from five to fifteen months' retardation, but points out that factors other than purely intellectual may have influenced this. On the other hand, we observe that the Maori adapts to the Army life with ease, and that Maori scoring low on the tests appeared so to adapt better than Pakeha making similar scores. Against this it may be argued that the Army situation is easier

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(1) Ball, D.G., quoted in McKenzie, N.R. The Educability of the Maori.

(2) Hearnshaw L., quoted in Beaglehole, E. & P. Some Modern Maoris p. 165.

for the Maori, particularly when, in a Maori unit, he finds something of the cultural matrix of his own social pattern already established; it may be, in effect, that he adapts to a relatively less complex situation, or on a different level.

At this point we are faced with the basic problem of all investigations into this subject. The problem may be phrased this way: "To what extent are tests of intelligence indicative of the actual intellectual potential of the Maori as compared with the Pakeha, and to what extent may their findings be expected to correlate with his ability to adapt to new situations, which in the practical aspect, are generally based on a cultural pattern which is Pakeha rather than Maori?"

Tests are constructed to measure certain factors insofar as they can be isolated, but they are constructed by and for people with a certain cultural background. It seems most likely, therefore, that there is in every test tacit acceptance of a cultural factor or factors, which being relatively constant within a given cultural group, do not affect the distribution of scores, but which may materially alter that distribution when two different cultural groups are involved.

There is a close correspondence between the correlations shown in Table V, both as between the Maori and Pakeha groups, and with the theoretical coefficients.

As calculated from the factor loadings given in Table IV, these should be:

Raven / Bennett r = .52

Raven / SP25 (verbal) r = .59

This correspondence would seem to indicate that the same intellectual factors are isolable in Maori as in Pakeha, or in other words that tests are measuring the same "g" and "s" in both races. However, this does not rule out the possibility of the operation of the cultural factor or factors suggested above, nor does it enable tests to be used to compare groups comprising members of different races. It does indicate a point which is of some practical use, that such tests may be considered as reliable within groups consisting solely of members of one race or the other.

Ignoring the sampling errors, which do not in fact seem sufficient to explain the divergence, we are left with a marked difference between the levels of Maori and Pakeha scores. There appear to be two possible explanations for this - either that there is an absolute difference in intellectual ability between the two races, or that there is in operation a cultural factor or factors influencing test performance, adaptation to the test material or to the test situation. Without necessarily discarding the first of these hypotheses there appears to be considerable ground for assuming the truth

of the second, at least in part.

There is a definite difference between the character structures of Pakeha and Maori. In this respect Beaglehole[1] says:

> "This character-structure enables you to accept implicitly certain social values - such values as punctuality, hard work, perfectionism, thrift, economic responsibility, moral responsibility, and what is more, to practice putting such values into operation on the pain of feeling anxiety - ridden and guilty if you fall too far away from accepted and conventional standards."

There is no doubt the value of "perfectionism" and possibly that of hard work enter into the test situation, and if there is, as Beaglehole suggests, a difference in these respects between Pakeha and Maori we may have the genesis of the observed differences. Look at phylogenetically, in the evolution of our pattern of culture, of what has been called an acquisitive-competitive pattern, we may be expected to have evolved a general type of reaction to test situations. A history of test situations stretching back to medieval guilds and universities, stretching back even further indeed to Anglo-Saxon times, may well have left us, as part of our social heritage, an implicitly accepted attitude to tests of all types, and to the competition element implicit in tests. The puzzle, for example, which is a type of test, calls forth endeavour merely through such an

(1) Beaglehole, E. & P. Some Modern Maoris p.335.

attitude; test papers, whether psychological or otherwise, seem to us to invite the response of trying"to see how well we can do." Indeed in one or two cases servicemen have asked to be allowed to undergo selection tests simply, apparently, for this end. If there be such an attitude inherent in our culture, it is strengthened in our schooling where tests and examinations are used continually as a means of stimulating endeavour by implicit competition.

Now the Maori has no such tradition, nor do native schools lay the same stress on examinations as do those administered by Education Boards. Thus the Maori may not feel the same need to strive in the test situation, nor, perhaps the incipient anxiety at the thought of "failure". Nor is there any reason why we should suppose that success in such a test would satisfy any felt need within him - we have no authority to suppose, in other words, that the Maori has any incentive to exert effort in the prosecution of a paper-and-pencil test.

Finally it should be noted that the time factor is an important one in the psychological tests used. Rightly or wrongly, it is generally supposed that speed correlates with intelligence. Time, however, has a different value to the Pakeha and to the Maori. We have a strong cultural emphasis on the value of time

and the need for speed which is mirrored in our whole lives and in all our artifacts - indeed a great deal of modern inventive genius is devoted not to doing things better, but to doing them faster. There appears, on the other hand, no valid reason for supposing that the Maori places any value on time in the sense in which we are accustomed to conceive it. Indeed, casual observation leads inevitably to the oft-expressed opinion that "the Maori has no sense of time".

These facts appear to be supported by observed differences in behaviour during the working of the Koh's blocks test. As explained above, Koh's blocks were used as a check in a few cases of illiteracy or near illiteracy, or when the Raven score was so low that there was some doubt as to whether the recruit had sufficient intelligence to be worth training even for simple repetitive tasks. Both Maori and Pakeha recruits were tested and a difference was clearly apparent. The Pakeha tended to be anxious, however reassuring the manner of the tester, he frequently fumbled, and in some cases tremors were apparent in his hands. The Maori, on the other hand, tended to be quite undisturbed by the situation, was generally interested in the brightly coloured blocks, and tended to treat the whole performance as rather an amusing game. One case indeed, completely ignoring the stop-

watch, produced tobacco and papers and proceeded to roll a cigarette while pondering a problem. The Pakaha generally gave the appearance of being acutely conscious of being under test, even though he camouflaged this with a casual off-handedness, while the Maori gave no such impression.

This may perhaps be summarised by parodying Spearman's famous mechanical analogy, and suggesting that we are testing the Pakeha intellect at peak load whereas we are testing the Maori at little more than idling speed.

Speaking of a situation in many respects similar, Sutherland(1) writes:

> "But it has recently been convincingly argued that the case is still unproved that the Negro is inherently inferior in intelligence. The home and community life of the two groups are very different. That of the Negro puts little emphasis, for example, on the speed factor so prominent in tests, nor is there from a sufficiently early age equal opportunity to become acquainted with the concepts and material involved in the tests. Nor are there equal or similar opportunities to profit from opportunities or to achieve under test conditions .... Reliable test comparisons of racial or social groups with reference to capacity have been shown to depend definitely from an early age upon a similar nurture, a fact which should be kept clearly in mind in making comparisons in New Zealand...."

(1) Sutherland I.L.G. Maori Mentality, in Maori and Education, p. 77-78.

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CONCLUSIONS - SUMMARY

The conclusions arrived at in this investigation may be summarised under four heads:

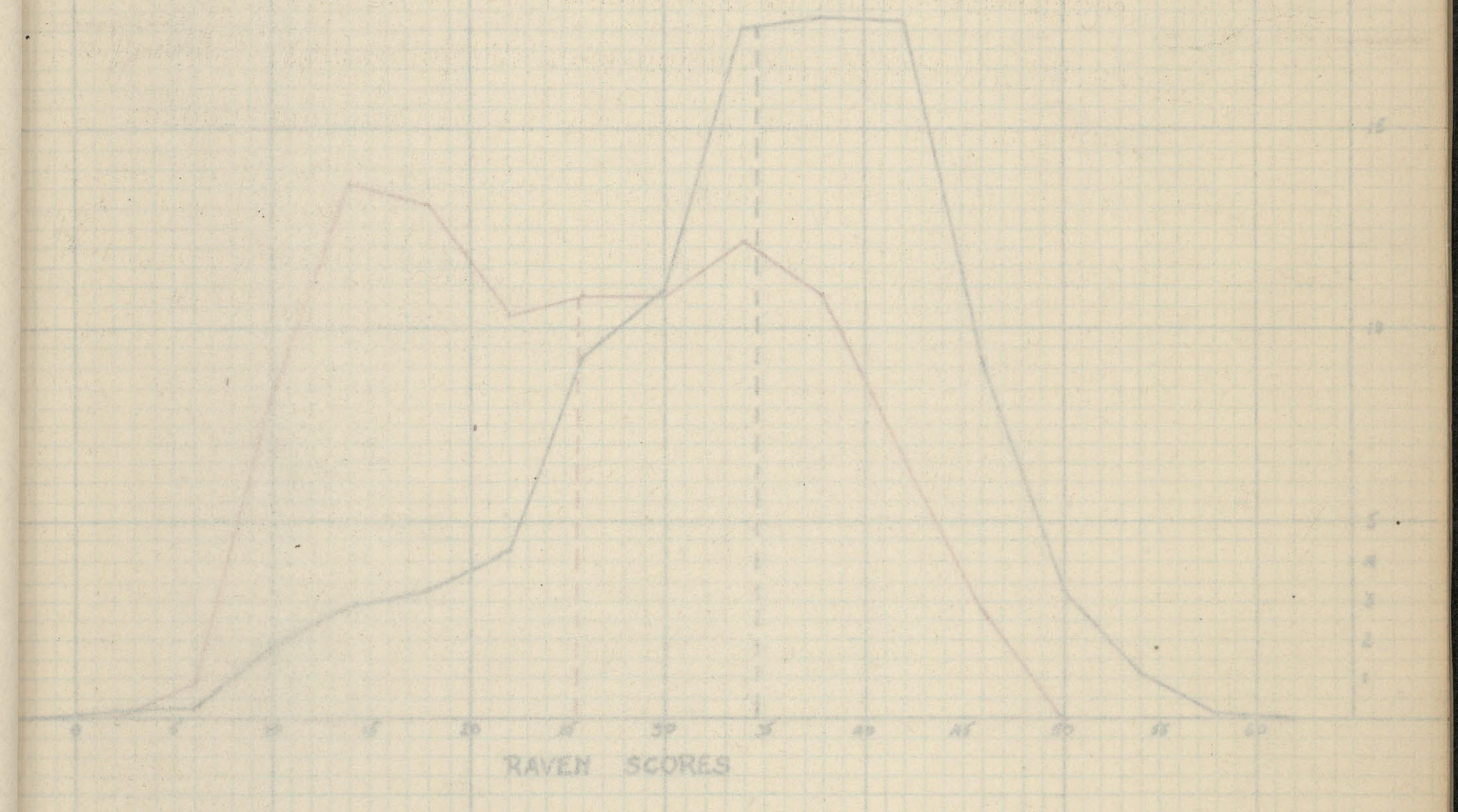
(1) There is a statistically significant difference between the test results achieved by Maori and Pakeha, the Maori score being consistently lower than the Pakeha. This may or may not indicate a racial difference in the levels of innate intellectual ability between the two races, but it appears likely that cultural factors operate to some extent in the test situation, and that these may be responsible in whole or in part for the observed differences.

(2) The differences between Maori and Pakeha intelligence and aptitudes will not be satisfactorily assessed, either as to quantity or as to quality, until techniques have been evolved which provide equal incentive and conditions relative to cultural backgrounds between the two races, or until some method is developed to isolate the cultural factors entering into testing.

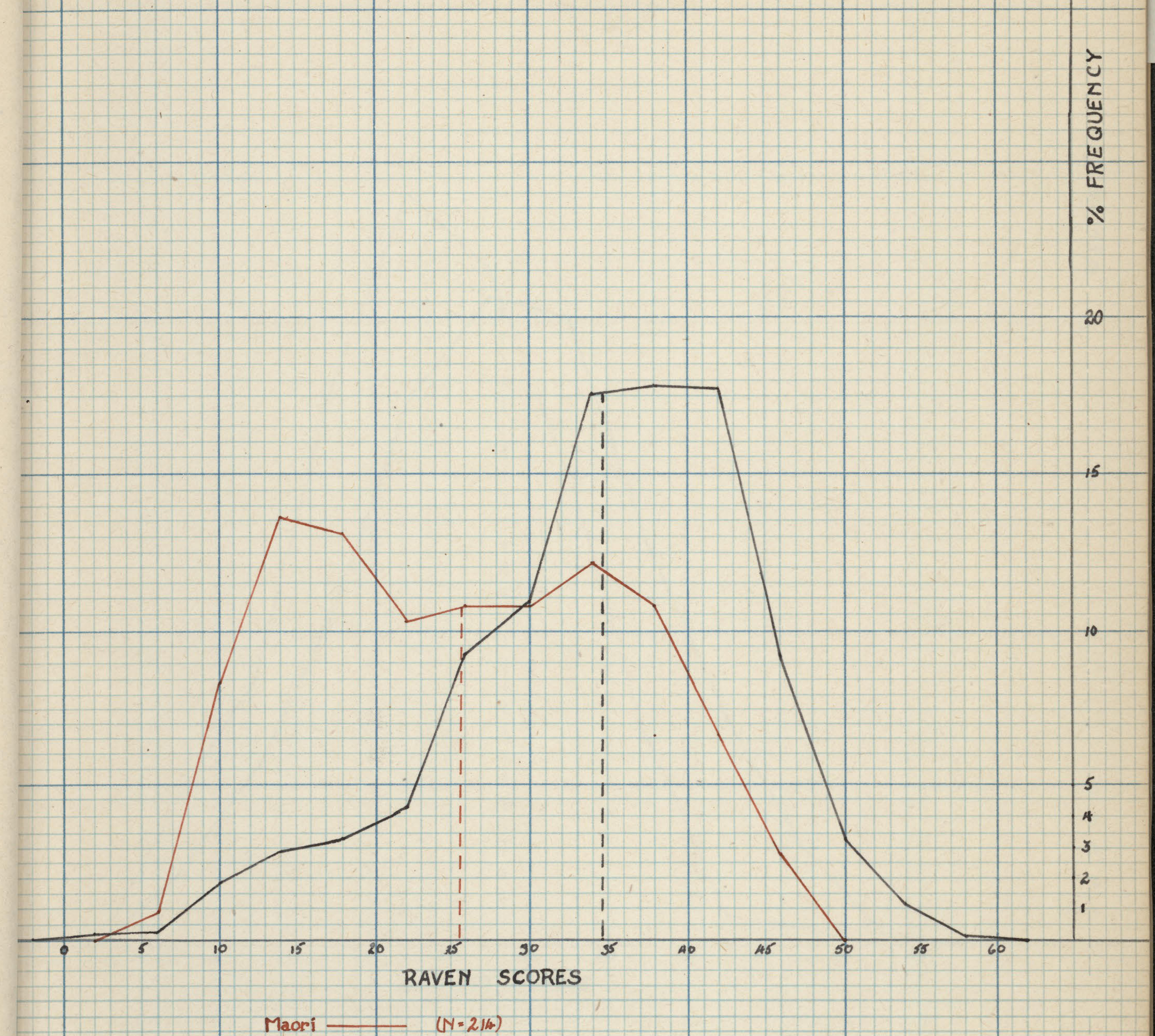
(3) There appear to be smaller but significant differences between the scores obtained by European New Zealanders and by British subjects, New Zealand scores being higher in the Raven and in the Bennett Mechanical tests, but lower in the Verbal. It is not considered that the groups studied give sufficient evidence for

generalisation at this stage, but that the problem should be attacked with larger and more representative samples.

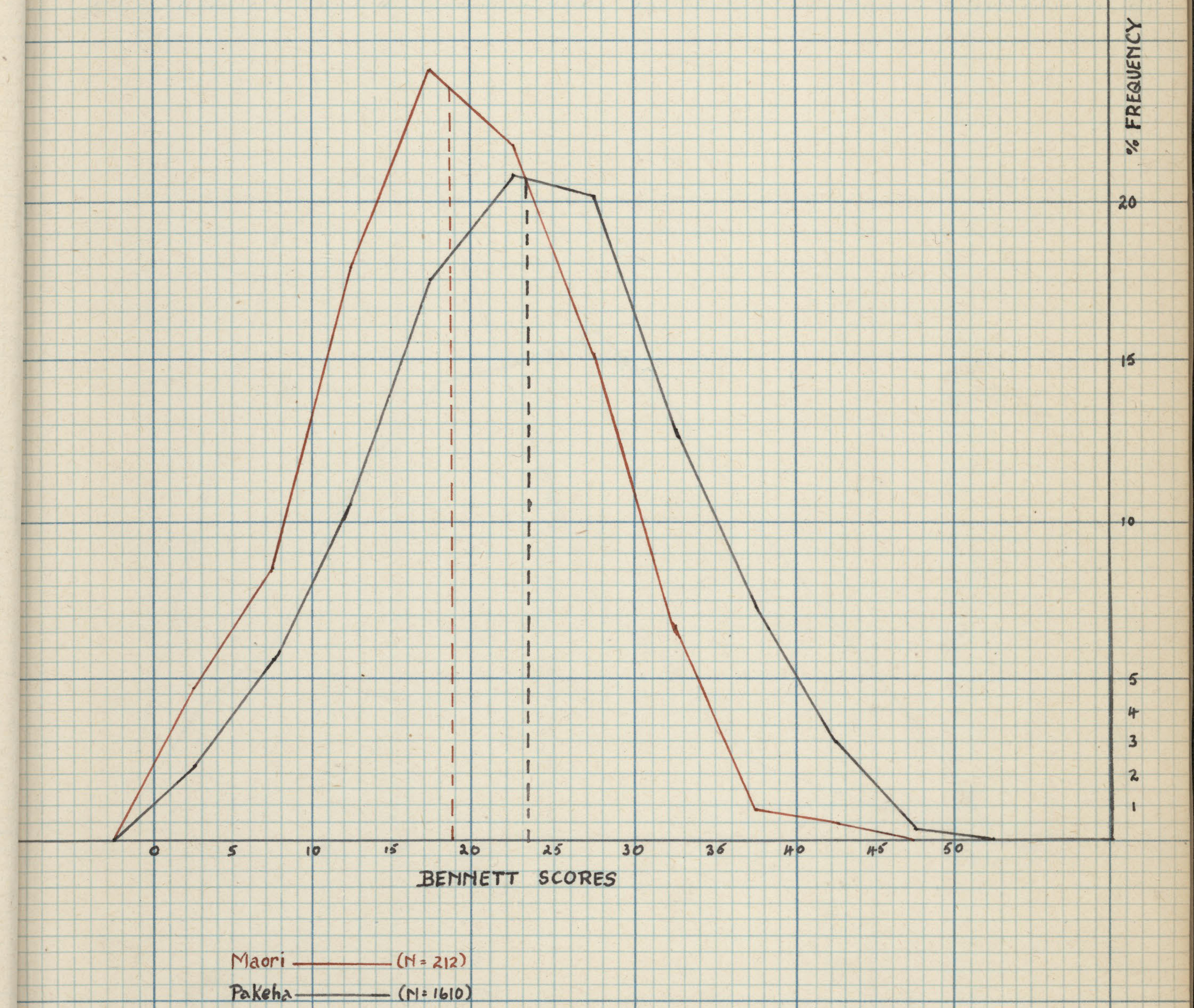
(4) That as both problems are of importance in psychometric work in New Zealand, and have a bearing on social and ethnological problems apart from purely theoretical questions of intelligence, further research is most necessary.



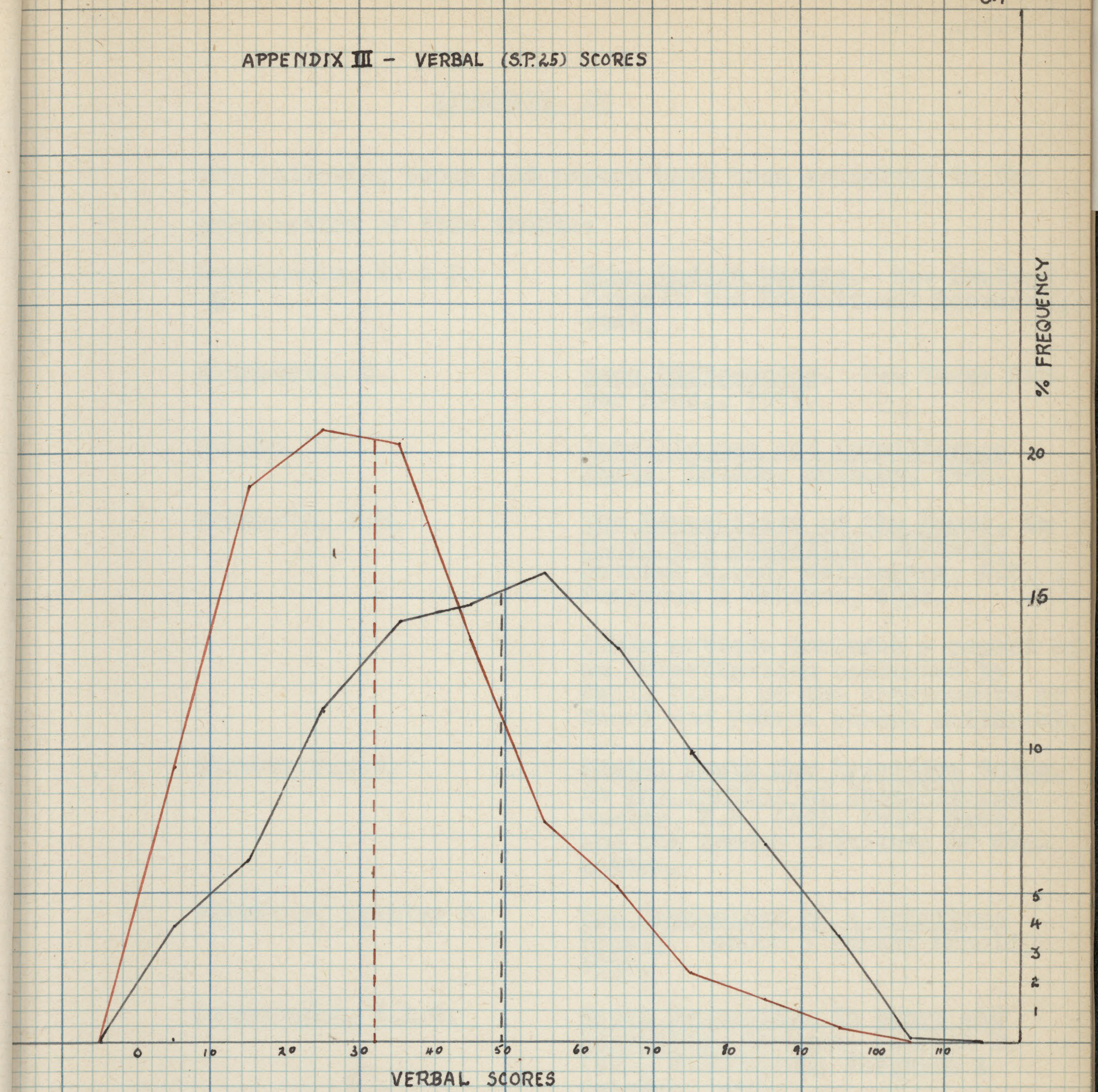
APPENDIX I - RAVEN SCORES



APPENDIX II - BENNETT SCORES



APPENDIX III - VERBAL (S.P.25) SCORES



Maori ———— (N = 212)

Pakeha ———— (N = 1604)

APPENDIX IV

The following books and papers have been consulted in the preparation of this thesis:

Beaglehole, E. & P. — Some Modern Maoris. New Zealand Council for Educational Research, 1946.

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Knight, R. — Intelligence and Intelligence Tests. London: Methuen, 1946.

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Oliver, R.A.C. — Mental Tests for Primitive Races, in The Testing of Intelligence. Hamley, H.R. (ed), Evans Bros. and the London Institute of Education.

Porteous, Stanley D. — The Psychology of a Primitive People. London : Edward Arnold, 1931.

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Vernon, P.E. — Psychological Tests in the Royal Navy, Army and A.T.S. in Occupational Psychology, (1947) XXI:53-74.

Wechsler, D. — The Measurement of Adult Intelligence. Baltimore: Williams & Wilkins, 1944.

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