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A Pilot Investigation into the Assessment of
Changes in the Psycholinguistic Abilities of
New-Entrant Maori School Children using the
Illinois Test of Psycholinguistic Abilities

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SOME ISSUES CONCERNING LANGUAGE, EDUCATION
AND THE MAORI CHILD

The role of language as the principal medium of instruction within the New Zealand (N.Z.) educational system has recently received increasing attention both from researchers and those responsible for the formulation of our national educational policy. In particular, much attention has been directed toward the Maori pupil and the use of the English language as the medium for his instruction. The range of literature on this question includes controlled research studies on English usage by Maori children, educational policy statements concerning the medium of instruction to be employed in New Zealand schools and writings of a more speculative, and potentially political nature, questioning educational policy and the role of language in "Maori education".

At this point it must be made clear that the present author does not subscribe to the view that there is a "Maori education problem" as distinct from the "education problems" of any other ethnic group within New Zealand's educational system. Rather, it seems preferable to take the more general view that some groups in New Zealand dwell under conditions such that their overall environment is not conducive to the adequate development of certain behaviours crucial for educational achievement. Behaviours such as adequate language development

are commonly considered prerequisites and taken as "givens" already possessed, in some degree, by every child entering our "middle-class oriented" educational system. Children from experientially limited environments have been variously described as "culturally deprived, culturally different, culturally disadvantaged, psychosocially deprived, socially deprived, economically disadvantaged and working class". (Mitchell, 1968, p. 3).

Following Mitchell's (1968) lead it is useful to note that "which ever of these terms is used to describe these children, they usually come from homes which do not transmit the cultural patterns, experiences, skills and values necessary for the types of learning characteristic of middle-class schools and the larger society". (p. 3)

Recognising that such category labels as "culturally deprived" or "culturally disadvantaged" are both relative, and value loaded, hence judgemental with pejorative connotations, they still represent attempts to depict characteristics of a group located in a larger yet equally heterogeneous society. Such characteristics - values, beliefs, the behavioural repertoire - language included, may prove to be detrimental, if not inimical, to the individual in both institutional and wider social settings beyond the bounds of his immediate family, subculture, and/or class milieu.

At present a considerable proportion of the Maori school population of New Zealand is being handicapped by such disadvantages relative to the requirements of the educational system. For this group the importance of language lies in its function as the primary mediator of the educational process. This process is seen as the most suitable social palliative available for the amelioration of most, if not all, of the "disadvantages" associated with cultural and/or ethnic marginality.

Historically, the dialogue on "language and Maori education" has centred around two main issues.

Firstly, in which language should the Maori pupil receive instruction - his ethnic tongue, Maori, or the language of the Pakeha, English? Given the resolution of this first issue, which has favoured instruction in English, a second question arises: what particular problems does the Maori pupil face in learning and utilizing the English language in a way congruent with the expectations and dictates of the educational system and society at large? For the Maori pupil this involves both the acquisition of the correct grammatical, lexical and syntactical components of English and also a congruence between his verbal behaviour, both oral and written, and that advocated, taught and accepted by the educational system.¹

In reference to the first issue Barrington (1966) notes the

growth of insistence that the instruction of the Maori pupil be undertaken solely through the use of the English language. Under the Native Schools Department of Education Act of 1867 a national system of village day schools was established. These were controlled and administered by the Department of Native Affairs. The medium of instruction was English and the curriculum was that of the English primary school.

"Mastery of English by the children was emphasized as the most important part of the Maori school teachers' work by most of the inspecting officers, but it was also by far the most difficult subject the teacher had to deal with". (Barrington, 1966, p.3).

The administrative changes of July 1879 transferring the control of Maori schools from the Department of Native Affairs to the Department of Education did not involve policy changes regarding the medium of instruction for the Maori pupil. The Native School Code of 1880 provided for the instruction of the Maori child in reading, writing and the speaking of the English language, and also in arithmetic, geography and "such culture as would fit them to become good citizens". (Barrington, 1968[?], p.4).

James Pope, the then organizing-inspector of Maori schools, emphasized the teaching of the English language as being the most important subject of instruction. This, however, does not mean that everything Maori, including the Maori language was

forbidden in the school environment?²

Despite various attempts to find a satisfactory English teaching method for use with Maori pupils, their overall improvement in the mastery of English proved difficult to achieve, resulting in a hardening of attitudes against the use of the Maori language in schools. Pope's successor, William W. Bird, was particularly adamant on this issue, his desired objective being "the instruction of the natives in the English language only". (Bird, 1928, p.62)³

Concern over the command of the English language was not a consideration unique to those involved in the formulation of educational policy. Barrington (1966) reports Ngata (1940) advocating the placement of an even greater emphasis on the teaching of English to the Maori pupil despite the stress that was already placed on instruction in oral and written English by the teachers of Maori children. To quote Ngata, mastery of the English language was the "key with which to open the door to the sciences, the mechanized world and many other callings". (Barrington, 1966, p.8).

The reality of English as the language of formal education in New Zealand, and of linguistic commerce in the wider society, for both Maori and Pakeha is now beyond question. The area of concern is the second issue in the "Language and Maori Education" equation; the difficulties experienced by the Maori pupil in

his acquisition and use of English as his linguistic code relative to his Pakeha counterparts.

The depth of this concern is reflected not only in the establishment of such organisations as the Maori Education Foundation but also in the increased quality and quantity of research generated. This research has not only focused on the analysis of Maori-Pakeha discrepancies in educational attainment, (Lovegrove, 1966) but is now clearly aimed at the specification, analysis and remediation of particular educational difficulties experienced by the Maori pupil. It is encouraging to observe the attention being given to the field of language.

Parsonage (1956) discussing "Maori Education" remarks that "there is a need to study further the special problems encountered in the initial [infant room] stages of English language teaching". (p. 10-11) The Currie Report (1962) called attention to the English language difficulties of the Maori pupil but found on the basis of the then available research that it was impossible to separate language from other factors in school performance. This difficulty is emphasized by the following quotation from the report: "How far difficulties with the use of English as the language of instruction contributes to weaker performance of Maori pupils later in their school careers is a vexed question. It is rendered difficult by the fact that so many factors combine to influence Maori pupils that to assess the

importance of any one of them accurately by simple observation is impossible and research results are meagre". (p. 424)

Ritchie (1963) expressed the view that language was important both educationally and attitudinally for the Maori child. "The initial language problem Maori children have to face in the first year of school places them in an invidious light if they compare their performance with that of their Pakeha class-mates with an English-speaking home background". (Ritchie, 1963, p. 116)

RECENT RESEARCH ON THE ENGLISH LANGUAGE
OF THE MAORI CHILD

It is in Maxwell's (1962) report, Research Needed in the Education of Maori Children, that the first systematic attempt is made to specify immediate research needs. To quote Maxwell, ... "much concern is still expressed that Maori school children are not taking full advantage of the educational opportunities that are available and it has often been stated that research needs to be carried out into specific problems of the schooling of Maori children". (p. 5) One of the specific areas of concern was language; "It is important to provide general language experience, but we need not only to expose children to language experience, but also to help them learn to use language effectively ... [for]... without language there can be no adequate communication and without adequate communication there can be little learning". (p. 15)

Maxwell (1962) first calls attention to the "need for clarification and analysis of the structure and range of the language and mixtures of languages spoken by Maori children in N.Z." (p. 15). This is seen as the initial step before any sound evaluation of the adequacy of these languages can be made.⁴

Maxwell (1962) contends "that studies of the phonology and structure of the English language spoken by the Maoris together with the production of a lexicon would be invaluable". (p. 15). Given this, Maxwell hopes for an increased awareness and understanding on the part of teachers of the linguistic situation of their children, particularly an awareness and understanding of differences between the teacher and the children beyond considerations of complexity of construction and vocabulary.

Cognizance is given to the role of the environment of the Maori pupil beyond the school. Maxwell points out that while it remains impossible to negate all detrimental home and community influences on language development it is important to explore fully the ability of the school to generate adequate language skills.

The importance of language in concept formation, particularly at an abstract level, is given recognition by Maxwell. If the environment restricts the development and appreciation of linguistic abstractness and elaboration, instead demanding the use of a "restricted and concrete code" then the work of

Bernstein (1959, 1960, 1961, 1964) will become increasingly relevant.

Despite recurrent emphasis on the vitality of the Maori language and its significance in terms of "Maoritanga", Maxwell thinks it is certain "that English will increasingly be the functional language of the Maori people (p. 17). Following on from this prognostication, she outlines five "needed" research projects relating to language use and instruction.

(a) The Structure of Language: that a structural analysis of the language, both Maori and English, as used by the Maori should be undertaken.

(b) Deficiencies of Language Structure: that in the light of the above structural analysis comparisons could be made of the structure of Maori children's English and the English considered desirable and acceptable. Presumably differences between actual and desired usage would provide the teacher with a specific focus for his instruction of English to Maori pupils.

(c) Vocabulary: in that the semantic variations in the English language as used by Maori children warrants investigation. Coupled is the need to inquire into the knowledge of word use possessed by the Maori pupil in relation to actual range employed.

(d) Methods of Teaching: that in view of the inadequate command of English by Maori pupils, there is a need for experimentation with teaching methods.

(e) Tests of Attainment: that a series of tests should be developed to trace the Maori pupil's attainment in English at all levels.

To date these needs have been only partially fulfilled.

Benton (1965) presents an analysis of the English language difficulties of Maori children. He specifically gives detailed attention to structural and vocabulary weaknesses, to vocabulary development in comparison to European children and to the phonetic difficulties experienced by the Maori child in using English. The influence of use and/or knowledge of the Maori language⁵ upon the acquisition and utilization of English is considered in terms of the influence of Maori grammar and syntax upon speech. Data on teacher opinions of difficulties experienced by Maori pupils in using the English language is also presented.⁶

Two of Benton's (1965) conclusions are immediately relevant, firstly that "Maori children taken as a group had more difficulty in handling English than the European children with whom they were compared". (p. 94).

Secondly, Benton stresses the significant role of language in education; "one of the major prerequisites for success in the educational field is adequate linguistic development, and the efforts of teachers must be directed towards providing Maori children with the means to attain this end". (p. 94).

Barham (1965) describes his study, The English Vocabulary

and Sentence Structure of Maori Children, as a limited and exploratory examination of "the vocabulary and sentence patterns of some young Maori and Pakeha children who have been carefully matched on certain factors that could affect their language development". (p. 1) A sample of six and eight year old children was employed on the basis that if Maori children have restricted experience with words early identification and remediation would be desirable. In considering Barham's (1965) study it is important to note the difficulties experienced in trying to match Maori and Pakeha children. Barham (1965) reports that despite care given to matching the groups on factors considered relevant, the groups finally chosen were not perfectly comparable. As Barham (1965) remarks "... the experience gained in trying to cope with this requirement in designing the study has raised serious doubts about the practicability of locating groups of Maori children who would be strictly comparable in all the factors that might affect their language development". (p. 10)⁷

Granting limitations in sample matching, Barham's (1965) study was concerned with both Maori and Pakeha children from a working-class background. In discussing background effects on language development of children, Barham calls attention to the insights offered by Bernstein (1959, 1960, 1961, 1964). Barham's (1965) analysis of data on vocabulary development showed

that on estimates of both word recognition and word use Maori children had smaller vocabularies than the Pakeha children.⁸ However, his examination of the meaning quality of those words known to Maori children on two different word lists did not, in his estimation, reveal any great differences from those of the Pakeha respondents.

Barham's (1965) conclusion, "that the capacity to give more subtle definitions of words was more a function of age and size of vocabulary than of being Maori or Pakeha" (p. 38) is not supported by his earlier comment that the Maori groups studied had smaller vocabularies than the Pakeha groups. If the Maori has a smaller vocabulary then, relative to the Pakeha, his capacity to give more subtle vocabulary definitions, as analysed by Barham (1965) may be seriously handicapped. Furthermore Barham gives no indication of the difficulty-level of words defined more "abstractly" by a segment of his Maori sample in comparison with the Pakeha.

An analysis of sentence patterns from transcriptions of tape-recordings of the spoken language of the Maori and Pakeha children was presented and Barham (1965) reports that comparisons "failed to reveal any large, firm and consistent, or pedagogically meaningful differences among them". (p. 56) The conditional statements added by Barham to this remark substantially reduce its validity.

It is unfortunate that Barham (1965) in his conclusion after acknowledging the limitations in the scope, design, and methodology of his study should posit a single cause of Maori difficulties with English language use, namely vocabulary. Similarly his advocacy of teachers giving attention to programmes to extend the vocabulary of Maori pupils is of dubious value. The mere teaching of words and definitions is no guarantee of the expansion of their usage in language behaviour. It would seem more important that the Maori pupil be taught to use the vocabulary he already possesses more adequately. This would provide a basis for vocabulary expansion rather than just teaching him new words without consideration of the linguistic framework within which his language behaviour takes place.

Finally, Barham's (1965) study is marred by a lack of sophisticated statistical analysis which reduces the impact of many conclusions. What can only be inference or suggestion may well have been firm statement if founded on adequate quantitative analysis.

McCreary (1966) has examined some of the difficulties Maori children experience in reading and understanding English.

While avoiding a single factor as the cause of Maori educational retardation he considers linguistic problems to be important and states that "language difficulties should not be ignored". (p. 40) McCreary's study was conducted in an isolated,

rural Maori community "Ngahere", a fact which places severe restrictions on any attempt to generalize from the results obtained. It was found that "Ngahere" children could recognise written English words to an extent congruent with their place in school but were failing to achieve the same standard in their understanding of written English. For McCreary (1966) the probable factors upon which the understanding of words of a particular language depend are: "direct instruction in the meaning of words, hearing the language spoken, reading in the language, and writing and speaking the language oneself". (p. 49).

This view is wider than that of Barham (1965) for, whereas Barham was prepared to view vocabulary instruction as the means to improve the English language performance of Maori school children, McCreary (1966) emphasises the necessity of understanding the words being used and the conditions under which such understanding is generated. For McCreary (1966) understanding is only to be achieved through the "opportunity to recognise the words in a wide variety of contexts". (p. 49).

Clay's (1967) article, The Reading Behaviour of Five Year Old Children: A Research Report, while not specifically a comparative analysis of the emergent reading behaviour of Maori and Pakeha children, does provide a comprehensive foundation for such a study. The subsequent development of linguistic competence is not unrelated to the initiation of children into

efficient and productive reading behaviours and to this end Clay's work is important for the identification of specific inefficient reading behaviours in any group of children. It is only through such identification that effective steps can be undertaken to aid the child in improving his reading skills.

McEldowney's (1965) study on the range and frequency of syntactical patterns in the written English of N.Z. school children also raises the question of comparative studies. Since the reported research was based on Pakeha children, a comparative study of similar Maori children would be valuable.

McEldowney did not break down her data in terms of the five categories, as defined by paternal occupation, of the children in her sample. With a clearer specification of group characteristics beyond paternal occupation ranking and increased sample size, data analysis could well reveal significant group differences in the syntactical patterns employed by the children.

Returning to the issue in question, "Language and Maori Education", the N.Z. Institute of Education Report and Recommendations on Maori Education (1967) provides the most recent reappraisal. In one chapter, Language and the Child, this report states, "language obviously provides a most serious education problem for the Maori child", (p. 26) and is quick to reproach the educational system for its failure to eliminate the English language deficit of the Maori school child even after

four or five generations of commerce amidst the Maori people. In considering the present position, the report recognises both the impact of the child's environment upon his language behaviour and the real sense of identity a child gains through and from his language. Yet, despite these considerations, if a child's language is conspicuously incapable of serving as a medium for his continued education he must learn to change it. Equally, we must learn to help him develop this adequate language behaviour in a way that neither demeans nor hurts him, personally or socially.⁹

It is in the N.Z.E.I. report that attention is specifically drawn to language as a learned behaviour and the fact that changes in language behaviour involve the child in re-learning. The studies of Benton (1965), Barham (1965), McCreary (1966), Clay (1968) and McEldowney (1968) which all have implications for the question of language, the Maori child, and education, explicitly or implicitly acknowledge that learning is involved in language acquisition. However the research, methodology, the data collected, and the methods of analysis have not been concerned so much with the actual processes involved in language learning as with the product of such learning experiences which may, or may not, have been available to certain groups of children. The position represented by the N.Z. studies reviewed can best be summarized as being a "product orientation" rather

than a "process orientation" towards the study of language behaviour. It is, therefore, important that attention be directed towards the analysis of the learning processes involved in language behaviour and its development in order to plan for both meaningful and relevant instruction in language once the parameters of difficulties and differences have been outlined for various groups of children.

A LEARNING MODEL OF LANGUAGE BEHAVIOUR

The analysis of language as a learned behaviour, with specific and defined processes contributing to the end product of adequate language use, has remained dependent upon the formulation of a logically derived and parsimonious theory of the learning processes and the interrelationships involved. Osgood (1957a, 1957b) has produced such a model of the communication processes on the basis of Hullian learning theory. From Osgood's (1957a, 1957b) original model, in conjunction with the theoretical formulations of Wepman, et al. (1960) on aphasia, McCarthy and Kirk (1961) have attempted to list and define essential processes in the learning and the use of language - the necessary psycholinguistic abilities. From this specification the generation of a method of assessing psycholinguistic abilities became feasible. The Illinois Test of Psycholinguistic Abilities (Experimental Edition) by McCarthy and Kirk (1961) has resulted

from such considerations.

THE ILLINOIS TEST OF PSYCHOLINGUISTIC ABILITIES (Experimental Edition, 1961) ¹⁰

The ITPA, developed at the University of Illinois, has been designed to identify psycholinguistic abilities and disabilities in children from two and one-half to nine years. The details of construction, standardization and the statistical characteristics of the ITPA are presented by McCarthy and Kirk (1963) and further validity studies are reported by McCarthy and Olson (1964). However, a fuller consideration of the model of psycholinguistic abilities underlying the ITPA is warranted at this juncture.

McCarthy and Kirk (1961, 1963) and Kirk (1966) provide the most comprehensive outline of the model of psycholinguistic abilities (Figure 1, pp.22-23) upon which the ITPA is based. It is from their presentation that the following overview of the constituent elements has been abstracted.

Three major dimensions are postulated to specify given psycholinguistic abilities : (a) channels of communication, (b) levels of organization and, (c) psycholinguistic processes.

(a) Channels of Communication; this dimension refers to various combinations of stimulus input and response output. The three major modes of input are auditory, visual and tactual. The major modes of output are vocal and motor. In sum the dimension

represents the spectrum of sensory-motor modalities by means of which linguistic symbols are received and responded to. The individual channels within this dimension include auditory-vocal, auditory-motor, visual-vocal, visual-motor, tactual-vocal and tactual-motor combinations. The final ITPA battery tests only the auditory-vocal and visual-motor channels, these being deemed the most intimately related to the acquisition and use of the English language by children.

(b) Levels of Organization; this dimension describes the functional complexity of the organism. Some psycholinguistic abilities exhibited by humans appear to demand much higher levels of organization than others. Osgood (1957a, 1957b) has postulated three distinguishable levels, two of which shall be discussed.¹¹

i) The representational level, which is sufficiently organised to mediate activities requiring the meaning or significance of linguistic symbols.

ii) The automatic sequential level, which mediates activities of a more automatic or habitual nature including the acquisition of linguistic symbol sequences and response chains, closure and perceptual speed, and the ability to predict future outcomes from past events.

The normal acquisition and use of language is dependent upon both of these levels.

(c) Psycholinguistic processes; this dimension encompasses the acquisition and use of the habits involved in normal language use. The explanation of their complete acquisition and use is dependent upon learning theory. Subsumed under psycholinguistic processes are three main sets of habits:

i) Decoding, or the sum total of those habits required to ultimately obtain meaning from either visual or auditory linguistic stimuli.

ii) Encoding, or the sum total of those habits required to ultimately express oneself in words or gestures.

iii) Association, or the sum total of those habits required to manipulate linguistic symbols internally.

A particular psycholinguistic ability is defined as a given process operating at a given level via a given channel. The construction of tests from the theoretical model was convenient in that the model defined the type of test actually required to assess various psycholinguistic abilities.

McCarthy and Kirk (1963) give a detailed description of the construction of the present test battery of nine subtests, outlining the process and rationale behind the reduction to the present nine subtests from a theoretically possible eighteen. Our purpose is sufficiently well served here by first considering the ITPA battery as currently implemented and the relation of the nine subtests to the model behind the ITPA. (Figure 1, pp. 22-23)

The Psycholinguistic Abilities¹²

The nine psycholinguistic abilities are defined below, each definition being accompanied by a brief explanation of the method by which the ability is assessed. The numbers assigned refer to those in Figure 1 (pp.22-23).

i) Tests at the Representational Level

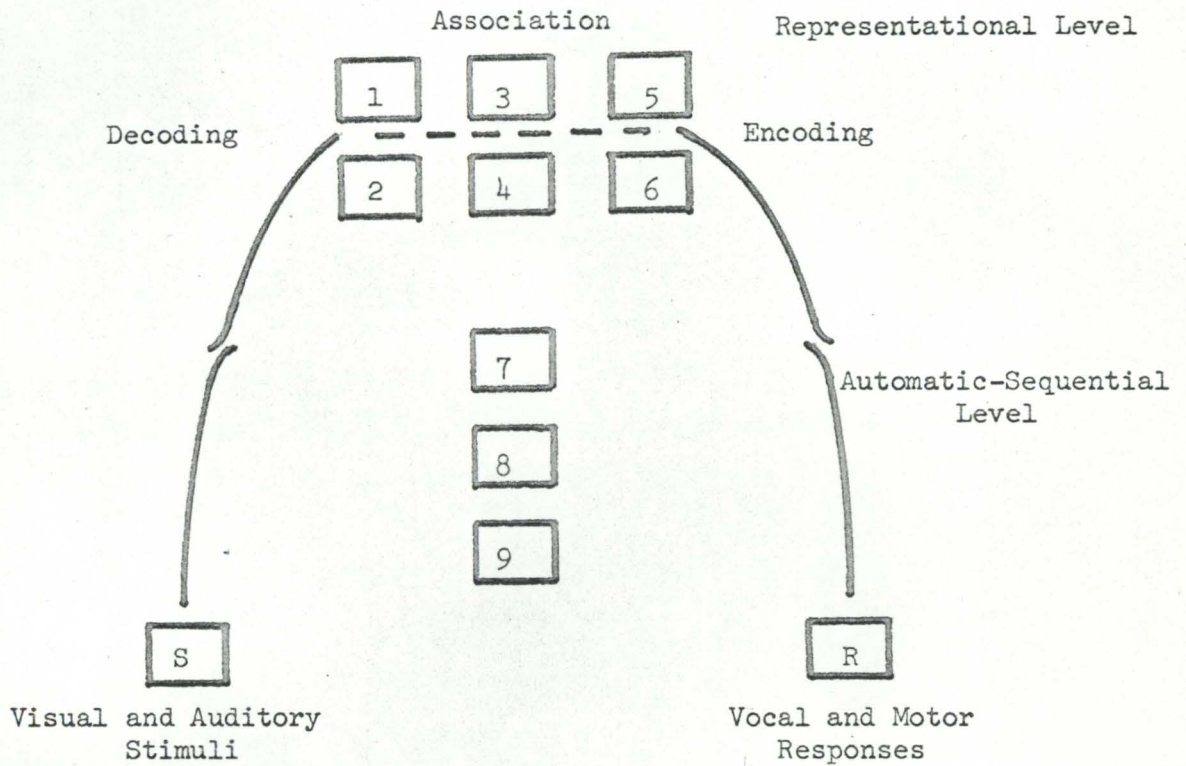
The tests at this level assess some aspect of the subject's ability to deal with meaningful linguistic symbols - to understand the meaning of symbols (decoding), to express meaningful ideas in symbols (encoding) or to relate to symbols on a meaningful basis (association).

A. The Decoding Tests; decoding is the ability to comprehend auditory and visual symbols, that is, the ability to comprehend spoken words, written words and pictures.

Subtest 1: Auditory Decoding is the ability to comprehend the spoken word. This is assessed by a controlled vocabulary test in which the subject is asked to respond by a simple "yes" or "no", or by gesture either in the affirmative or negative, through a series of graded questions (e.g. Do females slumber?). Since the answer depends upon the subject's knowledge of the words involved more than upon content it is assumed therefore that failure is due to an inability to decode.

Subtest 2: Visual Decoding is a

FIGURE 1
THE CLINICAL MODEL FOR THE
ILLINOIS TEST OF PSYCHOLINGUISTIC ABILITIES



Representational Level

1. Auditory Decoding
2. Visual Decoding
3. Auditory-Vocal Association
4. Visual-Motor Association
5. Vocal Encoding
6. Motor Encoding

Automatic-Sequential Level

7. Auditory-Vocal Automatic
8. Auditory-Vocal Sequential
9. Visual-Motor Sequential

From: McCarthy and Kirk (1963) p.5.

Notes to Figure 1:

The numbers in this figure (1,2,.....,9) correspond to the respective subtests of the ITFA battery and are placed within the model to indicate the channel, level and organization. For example, Test number 1 (Auditory Decoding) measures decoding through the auditory channel at the representational level, while Test number 2 (Visual Decoding) refers to decoding through the visual channel at the representational level.

(Kirk and McCarthy, 1961, p.402)

comparable test in a different channel. It is an effort to measure the child's ability to gain meaning from visually presented material. Visual decoding is the ability to comprehend pictures and written words. Clearly, written words could not be used if the test was to be appropriate for pre-school children; consequently a picture test was employed. Assessment is by a picture identification technique in which the subject selects from among a set of comparison pictures the one which is most nearly identical, on a meaningful basis, to a previously exposed stimulus picture. In the test situation the subject is shown a stimulus picture which is then removed. Next, he is shown a set of four comparison pictures (one of which is perceptually, rather than physically similar, to the stimulus picture). Item difficulty is increased by using pictures of increasingly less familiar stimulus objects and also by making the selection of the correct comparison object more difficult by introducing irrelevant similarities into the "incorrect" comparison pictures. Selection by means of simultaneous stimuli-comparison matching is avoided by the sequential arrangement of the pictures in the Picture Test Book (McCarthy and Kirk, 1961). The photographs used are devoid of background, thus eliminating distraction. The subject is simply required to point to the correct comparison picture, thus encoding is maintained at a simple level and failure is assumed to be the result of decoding defects. A typical subtest

item would be a photograph of an office table, presented as the stimulus object, whilst a photograph of a coffee table, as the correct comparison object, is included amongst photographs of three other incorrect objects subsequently presented on the comparison card.

B. The Association Tests

Association is the ability to relate visual or auditory symbols (which stand for ideas) in a meaningful way.

Subtest 3: Auditory-Vocal Association is the ability to relate spoken words in a meaningful way. In this subtest the auditory perception and vocal expression require minimal ability while the central process of making the association is tested by items of increasing difficulty. Assessment of the association ability is by means of a version of the familiar "analogies" test in which the subject must complete the test statement by supplying an analogous word (e.g. SOUP IS HOT; ICE CREAM IS _____.) In other words, the analogies test employed is a "controlled" association test utilizing a sentence completion technique. McCarthy and Kirk (1963) attempted to construct each item in the test so that decoding and encoding requirements were at least two years below the level for which a given analogy was designed. Failure, then, would probably be due to a defect in association ability - rather than either decoding or encoding. The degree to which this end has been

accomplished by this procedure has yet to be fully determined by data analysis but McCarthy and Kirk (1963) are optimistic on the basis of the then current data.

Subtest 4: Visual-Motor Association

is the ability to relate visual symbols in a meaningful way. In this test, the subject is required to relate pictures of common objects, either on a transitional basis (sock goes with shoe), or on a substitutional basis (boys and girls are people). The subject selects, from among four pictures, the one which "goes with" a given stimulus picture.

Decoding in this test is kept simple by using photographs of familiar objects, with no distracting background. To encode, the subject simply indicates his answer by pointing. Failure, presumably, results from faulty association.

The "correct" answer to each item is the one which most children in the standardization sample selected. It was considered that adult judgement about which alternative would be selected could often be at variance with children's performance. Objects, instead of pictures, are used for the first four test items as a concession to very young subjects.

C. The Encoding Tests

Encoding is the ability to put ideas into words or gestures.

Subtest 5: Vocal Encoding is the ability to express ideas in spoken words. In this test, the

subject is asked to describe a simple object such as a block or a ball. His score depends on the number of unique and meaningful ways in which he characterises a given test object i.e. the number of discrete concepts enumerated.

The basic strategy is to present the subject with an object which he cannot fail to recognise. Thus, if he fails the task it would not be due to a lack of recognition (decoding) but to an inability to encode. Objects selected were more or less regular in shape, of solid colour, without pattern and homogeneous in composition; this selection allows for a wide variety of characteristics and a minimum of minor details. Being an open ended test scoring problems arise, since each one of a possible infinity of childhood responses must be evaluated. Improvement in test characteristics has been accomplished chiefly by increasing the objectivity of the scoring system - in the sense that each response can be unambiguously evaluated for all subjects and not overly influenced by the examiner's interpretation.

Subtest 6: Motor Encoding is the ability to express one's ideas in meaningful gestures as assessed by a gesture manipulation test. In this test, the subject is shown a picture of an object and asked to "SHOW ME WHAT YOU SHOULD DO WITH THIS". The first two items consist of actual objects (a toy gun and a toy pitcher) for the benefit of younger subjects. Difficulty is achieved through grading the

appropriateness of the responses, these being listed in the scoring standards of the test manual.

ii) Tests at the Automatic Sequential Level

This level mediates less complex, more automatic processes than the representational level. Tests at this level deal with the non-meaningful use of symbols, principally their long term retention and the short term memory of symbol sequences. Defects at this level interfere with sequential imitation and the ability to retain sequences of visual and/or auditory stimuli.

Unlike the representational level tests no attempt has been made to subdivide the automatic-sequential level tests into their decoding, association and encoding aspects because of the lack of theoretical clarity at this level.

A. The Automatic Test: Our frequent use of language with its abundant redundancies, leads to highly over-learned or automatic habits for handling its syntactical and inflectional aspects without conscious effort. So familiar are we with linguistic structure that we come to expect or predict, among other things, the grammatical structure of what will be said, or read, from what has already been heard or seen. In speaking or writing, these automatic habits permit one to give conscious attention to the content of the message, while the words with which to express that message seem to come automatically.

Subtest 7: Auditory Vocal Automatic

This ability permits one to predict future linguistic events from past experience. It is called "automatic" because it is usually done without conscious effort. It is assessed by requiring the subject to complete a statement with a inflected word, for example, "HERE IS AN APPLE, HERE ARE TWO _____". This statement is supplied by the examiner in conjunction with the appropriate picture of "meaningful" and familiar objects, in this case, a page displaying a single apple and two apples separated by a line dividing the page.

The nature of the inflected response will indicate the ability of the subject to predict what will be said.

Linguistically normal children learn these inflections in a rather systematic way and a certain number of errors are expected right up to the end of the test. Only when excessive errors are made, is disability inferred.

Although this is an auditory-vocal test, pictures are employed. These are viewed as providing support for the test task rather than information.

No suitable visual-motor counterpart for this test could be designed for the present battery.

B. The Sequencing Tests: Sequencing, as used here, is the ability to correctly reproduce a sequence of symbols and is largely dependent upon visual and/or auditory memory.

Subtest 8: Auditory-Vocal Sequencing

This is the ability to correctly repeat a sequence of previously heard symbols. It is a test of immediate auditory recall as assessed by a series of digit-span repetition items.

Subtest 9: Visual-Motor Sequencing

is the ability to correctly reproduce a sequence of visual stimuli previously seen. It is measured by requiring the subject to duplicate the order of a sequence of pictures (for younger subjects) or geometrical designs displayed for five seconds and then randomly displaced for reconstruction into the original sequence by the subject.

Ensminger and Smith (1965, pp. 97-98) provide the following summary of the nine assessment tests of the ITPA.

- (1) Auditory Decoding; understanding what is heard.
- (2) Visual Decoding; understanding what is seen.
- (3) Auditory-Vocal Association; drawing meaningful relationships from what is heard.
- (4) Visual-Motor Association; drawing meaningful relationships from what is seen.
- (5) Vocal Encoding; expressing ideas verbally.
- (6) Motor Encoding; expressing ideas through gestures.
- (7) Auditory-Vocal Automatic; using the grammatical structure of language automatically.
- (8) Auditory-Vocal Sequential; recalling a series of digits presented auditorily.

- (9) Visual-Motor Sequential; recalling a series of (pictures or) geometrical forms presented visually.

The assessment of psycholinguistic abilities is achieved by the individual testing of subtests with the ITPA. The administration of the ITPA requires the examiner to be thoroughly familiar with the instrument and with administrative procedures for each of the nine subtests. McCarthy and Kirk (1961, pp. 27-28) describe the general examiner requirements and test conventions. The specific instructions for the administration recording and scoring of each subtest are outlined in the Examiners' Manual (1961, pp. 29-60), along with a brief description of the purpose of the subtest.

It is important to note that seven of the subtests have both basal and ceiling levels. The two remaining subtests, Vocal Encoding (subtest 5) and Motor Encoding (subtest 6) must be administered in their entirety. With reference to basal and ceiling levels, McCarthy and Kirk (1961) make the following notes:

"a. On tests in which both ceiling and basal levels are used begin testing with the appropriate item and continue until either the ceiling level or end of [sub_]test occurs, whichever is first. At this point, if it has not already been automatically established in the course of testing [the examiner must_] go back and establish the basal level. As a general principle the ceiling level is established first and the basal level last.

b. Ceiling [levels_] allow the examiner to stop giving the

[sub] test, even though he has not administered all the items. Ceiling levels are stated in a criterion number of consecutively failed items; no credit is given for items above the ceiling level on the assumption that the subject would fail them.

c. Basal levels are required when the easier test items are eliminated on the assumption that the subject would pass them anyway. Passing a specific number of items or reaching a basal level verifies this assumption. When a subject fails to pass the specified number of items, progressively easier items are administered until the basal level is reached, credit being allowed for all items below that point". (p. 22)

The specific criteria for ceiling and basal levels are noted in the relevant subtest instructions within the Examiners' Manual. (McCarthy and Kirk, 1961).

McCarthy and Kirk (1961) make an effort to reduce the length of the test by introducing the automatic crediting of a number of the first items of some subtests if the particular subject has an established "mental age" of a specified level. However, certain circumstances may require the examiner to administer at least some of these credited items to establish a more accurate basal level after the ceiling level has been achieved. Details on these manoeuvres are also to be found in the Examiners' Manual. (McCarthy and Kirk (1961)).

For scoring purposes typical credit and no-credit responses

are listed in the manual as well as the amount [points] of credit for particular item responses. Specificity of item scoring is aimed for, in the scoring standards provided, in an effort to reduce subjectivity and bias in response evaluation.

The Raw Score totals of each subtest may be transformed into language age and/or standard score form. Normative conversion tables, derived from the standardization sample for the ITPA, are provided for this purpose. (Examiners' Manual, McCarthy and Kirk, 1961, pp. 109-128).

Summated subtest raw scores can be converted into a Total Language Age score and /or a Total Score Standard score.

The Language Age norms for the ITPA are derived solely by reference to the raw scores for the particular subtests and Total Raw Score whereas the Standard Score norms are derived by cross-referencing both the obtained raw scores and the appropriate age category of the particular subject.

In selecting the type of norms for analysis of test data McCarthy and Kirk (1961) comment, "Language-age norms have been provided in order that the results of the ITPA may be compared with the many other psychological and physical measures of children that are expressed in terms of age score.

Standard score norms provide a more versatile means of comparing S [the subject] with his own standardization group than do language age norms. For instance, the level of S's

[the subject's] performance indicates his position in relation to others in the norm group. In addition, when standard scores are used the results of any [sub] test of the battery can be compared directly with the results of any other [sub] test in the battery". (p. 96)

McCarthy and Kirk (1961) conclude; "It is recommended: (i) that the language age norms be used for comparing the results of the ITPA with other instruments whose scores are expressed in terms of age; (ii) that standard score norms be used for comparing [sub] tests within the battery with each other; and (iii) that raw scores be used for comparing test and retest results for the same S. (p. 96)

Points (ii) and (iii) above: comparison of [sub] tests in the battery, and the comparison of test-retest results, are given extended consideration by McCarthy and Kirk (1961, pp. 96-105) in relation to subtest reliability coefficients and the standard error of measurement for the respective subtests.

Kirk (1966) reports more fully on the diagnostic and remedial prospects of language programmes based on the ITPA for individual subjects.

The record form provides for the drawing up of a psychodiagnostic profile from the derived standard scores from each of the subtests. With the ultimate goal of the ITPA being differential diagnosis, the psychodiagnostic profile is an attempt to depict

the abilities and disabilities of a particular child. It is hoped by McCarthy and Kirk (1961) that this method of diagnosis will "lead to a program of remediation or treatment which will utilize the child's assets to develop his areas of deficiency". (p.8) In 1961 it was further noted that, "At present research is in progress to determine the effects of remedial programs on the specific deficits in children". (McCarthy and Kirk, 1961,p.8).

RECENT RESEARCH WITH THE ITPA

Research into psycholinguistic abilities and disabilities using the ITPA has been extensive in terms of both the programmes initiated for the remediation of psycholinguistic disabilities and in the groups of children with whom the test has been used as a basis for assessment.

The publication Selected Studies on the Illinois Test of Psycholinguistic Abilities, Sievers et al., (1963) brings together some of the initial work undertaken during the construction of the ITPA at the Institute for Research on Exceptional Children, University of Illinois. Sievers' paper, Development and Standardization of a Test of Psycholinguistic Growth in Pre-School Children, concerns the predecessor of the ITPA, the Differential Language Facilities Test (DLFT). The second paper, Qualitative and Quantitative Differences in the Language Abilities of Young Cerebral Palsied Children, by McCarthy makes use of the DLFT in comparing

spastic, athetoid and normal children. Olson reports on the use of the ITPA in a comparison of receptive aphasic, expressive aphasic and deaf children. The fourth paper, a report by Bateman utilizes the ITPA in assessing the reading and psycholinguistic processes of partially sighted children. The final paper reports Kass' study on some psychological correlates of severe reading disability (Dyslexia). The ITPA was used as the basis for assessment, and in addition five other short tests were adapted to provide further information at the automatic-sequential level (to Kass, the integrational level). An attempt was made to locate the additions in the model of the ITPA to provide for Kass "a clinical model of reading processes". (p. 90).

Mueller and Smith (1964) report on the analysis of the data of Smith (1962) for the stability of gains observed in the language abilities of educable mental retardates in an experimental language development programme over gains made by an educable mental retardate control group. This follow-up study failed to find significant differences between the experimental and control group. From this Mueller and Smith (1964) conclude that the gains initially exhibited by the experimental group were not stable and that the three month period of language stimulation given was not sufficient to make a lasting difference in the linguistic difficulties of educable mental retardate children. Longer stimulation programmes are suggested. Further work with the ITPA to assess the

psycholinguistic abilities of mental retardates is reported by Mueller and Weaver (1964).

Bateman (1965) provides summaries of some twenty-four studies undertaken with the ITPA. In this volume her presentation is divided into three broad areas; statistical studies, remediation studies and language disorder studies. The language disorders are the result of definable conditions including the mentally retarded, the gifted children with reading disorders, the visually handicapped, the aphasic, the auditorily impaired and the "culturally deprived".

Further consideration is given to the question of the psycholinguistic aspects of mental retardation by Bateman and Wetherall (1965). Quereshi (1964, 1967) has reworked the data from the standardization sample of the ITPA. Firstly, in 1964, to investigate the effects of performance on individual ability tests as a function of various scoring cutoffs, the ITPA providing the data for the analysis. Secondly, in 1967, Quereshi investigated the same data by factor analysis for patterns of psycholinguistic development during early and middle childhood".¹³

Ensminger and Smith (1965) provide a short summary of some research with the ITPA. For Ensminger and Smith "one reason for the lack of language research was the absence of such an instrument as the ITPA. Prior to the advent of the ITPA such classical and non-theoretical measurements as mean sentence length,

number of words spoken per unit of time and vocabulary level were used to qualify language development. Although these instruments were useful it appears that they were assessing primarily one language ability, vocal encoding" (p. 17).

Ensminger and Smith (1965) raise a number of specific questions related to then current research as well as raising questions in need of further research. Specifically they inquire, what are the effects of longer treatment periods on language ability than those previously initiated? What is the relationship between language gain and intellectual functioning? What are the effects of a language development programme on academic achievement?

In reply, Ensminger and Smith (1965) note "that short term language programs can be effective in increasing the rate of language development" but "that such gains may or may not appear stable since little is known about the consequent rates of language change after discontinuing a treatment program" (p. 106). An important point raised by Ensminger and Smith (1965) was that, on the basis of assessment by the ITPA, specific areas of language instruction with appropriate reinforcement contingencies must be investigated. Smith and May (1967) report on the influence of examiners of different ethnicity on the ITPA performance of Negro children. Significant examiner differences were found in the overall language score and on five subtests. The above authors question the usefulness of the normative value

of scores obtained under such conditions as different examiner and subject ethnicity.

More recently the ITPA has been put to use as one of a number of evaluative instruments in projects involving children with specific learning disabilities and with the "culturally disadvantaged" (Haring and Ridgway, 1967; Karnes, Hodgins and Teska, 1968; Gray and Klaus, 1965; Klaus and Gray, 1968; McConnell, Horten and Smith, 1969).

In these studies the primary interest has been in gross changes in psycholinguistic functioning as evidenced by either:

- (a) changes in the standard score profile.
- (b) changes in the total standard Language Score.
- (c) changes in the Language Age of subtest performance.
- and/or(d) changes in the total Language Age.

The ITPA has been but one of the assessment techniques utilized and amidst a wide variety of remedial activities undertaken specific test results could not, confidently, be related to particular aspects of the remedial programmes. Parallel to these broad studies, aimed primarily at "helping" the "disadvantaged child" either at school or at the pre-school to acquire certain educationally relevant behaviours, there are a number of studies concerning the psycholinguistic abilities and disabilities of specific groups of "disadvantaged" children.

Bateman (1965, pp. 36-37) reports Weaver from the Early

Training Project¹⁴ on the psycholinguistic abilities of "culturally deprived" children. Weaver's purpose was to explore the psycholinguistic patterns of "culturally deprived" children and to evaluate the efficiency of a pre-school training project in increasing the language ability of the "culturally deprived" child. Two experimental "enrichment" groups and one control group were employed. Bateman (1965, p. 37) reports Weaver's findings briefly as:

(1) The profiles of the two experimental groups were generally higher than the control group, but retained basically the same shape.

(2) That the visual-motor-sequencing subtest continued its erratic behaviour noted in previous investigations and defied analysis. Presumably, since Bateman gives no further details, this subtest has displayed marked variability, evidencing little stability and/or erratic increments over the age group of the test.

(3) All three groups demonstrated the expected weakness in auditory-vocal-automatic (grammar), pointing to the necessity for careful clinical interpretation of the subtest when the subject comes from a background other than white, middle-class.

(4) The strength shown by all three groups in auditory-vocal sequencing has been observed by this

reviewer [Bateman] infrequently, and then only with Negro groups.

Weaver and Weaver (1967) report further on the psycholinguistic abilities of "culturally deprived" Negro children from work undertaken with the Early Training Project (see Klaus and Gray, 1965, 1968). Weaver and Weaver summarize this study thus; "ITPA profiles of three groups of culturally deprived Negro children were examined for (a) similarity to profiles from groups of educateable and trainable children [mental retardates] previously studied and (b) differences between the experimental and control groups. As predicted, a distinctive profile similar to that found with educables and trainables [retardates] was found. This profile showed these children to have significantly greater difficulties in the utilization of auditory and vocal channels of communication as compared to their use of visual and motor channels. Also, the experimental groups were significantly higher than the control group in total ITPA Language Score". (p. 190)

Schwartz, Deutsch, and Weissmann (1967) report on the testing of the hypothesis that "superior performance on a test of psycholinguistic abilities (the ITPA) will be achieved by a group of "enriched but socially disadvantaged young children when ... compared with a group of non-enriched controls of similar background". (p. 169) The subject pool consisted of lower socio-economic status Negro children who were randomly

assigned to the experimental or control group. The enrichment programme for the experimental group stressed the development of language, cognition, perception and a positive self-image. Testing on the ITPA was initiated early in the first year, after the experimental group children had received two years of enrichment experience while the controls had only a regular kindergarten experience. Both groups were retested on the ITPA early in the second grade.¹⁵

Statistical analysis of the test-retest data led Schwartz, et al., (1967) to three broad conclusions:

- i) that a significant performance difference existed between the experimental and control subjects over the two years.
- ii) that all significant subtest differences over the two years favour the experimental group, with the differences primarily a function of control group decrement.
- iii) that both groups showed similar patterns of psycholinguistic performance.

An inspection of the data of Schwartz, et al., (1967) indicates specific and consistent psycholinguistic difficulties, relative to the remaining subtests, with the Auditory Decoding, Auditory-Vocal-Automatic, Motor Encoding, and Auditory-Vocal Automatic subtests.

For Schwartz, et al., (1967) the findings overall, "support the hypothesis that early enrichment helps to offset language

disability related to the socially disadvantaged condition".
(p. 169)

Following on from the study of Weaver and Weaver (1967), who described the lower social class or "culturally deprived" child as having significantly greater difficulties in the adequate utilization of auditory and vocal channels of communication as compared with their use of visual and motor channels, and also from McCarthy and Kirk's (1963) earlier statement to the effect that children of higher social class perform significantly better on the ITPA is the study reported by Teasdale and Katz (1968).

Teasdale and Katz (1968) compared first grade children of different socio-economic status and different ethnic background on two tests of language development, the Peabody Picture Vocabulary Test(P.P.V.T.) and the ITPA. Lower socio-economic status children and part Aboriginal children performed at a significantly lower level than upper socio-economic status children, on the tests.

Teasdale and Katz (1968) found that by "utilizing ITPA subtest scores, it was evident that this significant difference was the result of low achievement on subtests measuring the auditory and/or vocal components of psycholinguistic ability. On subtests measuring the visual and/or motor components differences between groups were minimal". (p. 155) These results

were seen as further support for the now widely held and validated view that familial experiences differentially affect the acquisition of adequate language skills, among others, as demanded by current educational systems both in theory and in practice.¹⁶

THE PRESENT STUDY

A synthesis of the extensive introductory remarks results in four main considerations crucial to the purpose of the present study. These are:

(a) that some groups of children have a background of learning experience that are at variance to the expectations and on-going practices of current educational systems.

(b) that in New Zealand many Maori pupils fall within this group, as children who must also rapidly master English as their functional language at school and in the wider society.

(c) that previous research in New Zealand on the use of English by groups of Maori children has not considered language behaviour in terms of possible 'processes' involved in its acquisition and use, and

(d) that a test instrument, the ITPA, has been devised as a first attempt to assess some of the relevant processes in the acquisition and use of the English language. This instrument has increasingly been applied to groups of "disadvantaged children" to gather data for the analysis, and possible remediation,

of psycholinguistic abilities.

STUDY AIMS

In the light of the above four considerations the present study attempts to: i) make an initial investigation into the psycholinguistic abilities and disabilities of a group of young Maori children using the ITPA.

ii) assess, with the ITPA, any changes brought about by a broad programme of "Language Enrichment" when comparing an experimental and a control group of young Maori children. The language enrichment programme being based upon data obtained from a previously tested group of comparable young Maori children,

and iii) to make a tentative comparison of the psycholinguistic patterns of young Maori and Pakeha children when an attempt had been made to control for socio-economic status (S.E.S.) variables.

METHOD

THE TEST

The assessment of the psycholinguistic abilities and disabilities of all the children in the respective groups was with the ITPA (Expt. Edition 1961) as described above (refer pp. 19-32).

A number of items in the subtests were obviously unsuitable for use on the present samples because of cultural idiosyncrasies. However, rather than exclude items entirely, substitutes were

devised. The specific item changes were as follows:

Auditory-Vocal Association Test (Subtest 3) (p. 41)¹⁷

Item 6: A SCISSORS CUTS; A PENCIL _____.

changed to: A PAIR OF SCISSORS CUT; A PENCIL _____.

Item 14: COTTON IS SOFT; STONES ARE _____.

changed to: COTTONWOOL IS SOFT; STONES ARE _____.

Item 18: A PICKLE IS FAT; A PENCIL IS _____.

changed to: AN ONION IS FAT; A PENCIL IS _____.

Item 19: COFFEE IS BITTER; SUGAR IS _____.

changed to: LEMON IS BITTER; SUGAR IS _____.

Auditory Decoding Test (Subtest 1) (p. 55)

Item 1: Do you smoke?

changed to: Do you puff out smoke?

The qualification "like a chimney" was added if the subject remained unsure or hesitant in responding. Credit was still given for the item if answered correctly.

Item 20: DO FRANKFURTERS FROWN?

changed to: DO SAUSAGES SCOWL?

Two acceptable item responses were also specifically added to the scoring standard sample provided in the Manual, namely,

i) to the Auditory-Vocal Automatic Test (subtest 7), Item 6, the response "crashed" was credited. (p. 73)

ii) to the Auditory-Vocal Association Test (subtest 3), Item 2, the response "mug" was credited. (p. 73)

Apart from these specific item and response modifications no other changes were introduced in items, item presentations, administration procedure or the scoring standards as set out in the ITPA Examining Manual (McCarthy and Kirk, 1961).

SUBJECTS

All subjects were drawn from three primary schools located in two rural centres in the Waikato. School 1 (S1) which provided the Experimental Maori sample (EM) and School 2 (S2) which provided the Control Maori sample (CM) were predominantly Maori in pupil population (approximately 60-70 per-cent Maori) and situated near to the local maraes, both of which continue to play an active part in the respective Maori communities.

School 3 (S3) provided a Pakeha sample (PS). S3 was located in the same town as S1 but at some distance from the marae and drew upon a different "catchment area" for its pupils. In S3 the Maori/Pakeha proportion was approximately one to one.

Schools S1 and S2 contributed to a sample of Maori children (MS) tested at the end of one year's schooling in the year prior to the present study.

In view of the sample population sought and the need for the children to have experienced a similar environment both beyond the school and within it, several selection criteria were imposed. The EM and CM samples contained children of known Maori parentage, part-Maori children being excluded. Fathers' occupational status

ranking, as based on the Congalton and Havighurst Scale (1954), was used to classify the children into broad SES groupings. Only children whose fathers' occupations were given point rating of 6 - semi-skilled workers, or 7 - unskilled repetitive workers, on this scale were included. Children of migrant or short-term residency families (less than one year) in the community were excluded, as were children who had experienced more than two classes and/or teacher changes within a one year period. This last condition did not effect the EM or CM groups during the year of the study. These same criteria applied to the PS group of children except that both parents were of New Zealand European descent.

The application of the above criteria to the small numbers in the initial population pool reduced the final sample sizes, precluding subject matching between the EM and CM groups, or a random selection of the samples from the final population pool. The final samples employed comprised all children who remained in the population pools after the application of the selection criteria.

Four specific samples were employed in the study:

- 1) A sample of 34 Maori children (MS) tested during December 1967 (Dec 67) at the end of one year of schooling. The sample was drawn from schools S1 and S2.

- 2) The EM sample of 11 Maori children from S1, all new

entrants, were pre-tested during February 1968 (Feb 68) and post-tested after one year's schooling during November-December 1968 (N-D 68).

3) The CM sample of 11 Maori children from S2, all new entrants, were pre-tested during Feb 68 and post-tested after one year's schooling during N-D 68.

4) The PS sample of 14 Pakeha children from S3 had completed one year's schooling when tested during December 1968 (Dec 68).

The age and sex characteristics of the samples are reported in Table 1 (p. 50).

PROCEDURE

The ITPA was administered individually to each child in the respective samples. All testing was conducted by the present author. The subjects were withdrawn from the classroom to the test room, which in the case of school S1 was the medical room and for schools S2 and S3, small library rooms. The classes from which the samples were drawn were familiarized with these rooms prior to any testing.

The testing situation, desk and chair heights for subjects, seating arrangements, lighting and so on conformed to the general requirements of McCarthy and Kirk (1961). Every attempt was made to reduce distractions within, and external to, the testing situation. No testing was conducted during routine school intervals or outside school hours. Individual testing commenced after a ten-fifteen

TABLE 1

Sample Group Size, Age and Sex
Characteristics

	MS (Dec 67)	EM (Feb 68)	EM (N-D 68)	CM (Feb 68)	CM (N-D 68)	PS (Dec 68)
Total Sample Sizes						
n	34	11	11	11	11	14
Chronological Age (years)						
\bar{X}	5.89	5.25	5.97	5.11	5.98	6.31
SD	0.53	0.28	0.25	0.10	0.12	0.39
Sample Composition by Sex						
Male	23	7	7	6	6	7
Female	11	4	4	5	5	7

minute (approximately) "rapport" establishment period. Testing typically ranged from 45 to 60 minutes. Neither time nor resources allowed for the accurate establishment of "mental ages" for "base line" purposes, consequently all subjects commenced each subtest with item 1, proceeding through until the ceiling level was reached.

Guide lines for examiner behaviour were drawn from the Examiner's Manual (McCarthy and Kirk, 1961) and from Deutsch, Fishman, Kogan, North, and Whiteman (1964). As noted previously the study involved three phases of testing:

- a) the testing of the MS sample during Dec 67.
- b) the testing of the EM and CM samples during Feb 68.
- and, c) the retesting of the EM and CM samples during N-D 68, plus the testing of the PS sample during Dec 68.

On the basis of the psycholinguistic difficulties evidenced by the MS sample (Dec 67) after one year's schooling a "language enrichment" programme was outlined for use with the EM sample throughout 1968.

Language Enrichment Programme

Over and above the normal programme and organization of activities generally undertaken with first-year new entrant children, four special conditions were introduced to the EM situation throughout 1968 as an attempted "language enrichment" experience. Changes in the pattern of psycholinguistic abilities of the EM sample were sought as a result of this intervention.

Particular emphasis was placed on increasing the capacity of the EM children to draw meaningful relationships from their auditory, visual and tactile worlds and to express these relations and experiences via language. The opportunity to learn and the ability to use grammatically correct English was likewise emphasized.

These two priorities in modification of psycholinguistic abilities were based on the marked psycholinguistic disabilities evidenced by the ITPA profile of the MS (Dec 67) sample (Figure 2, p. 62) at the completion of one year's schooling. In particular, ITPA subtest 3 and 7, which assess the ability to draw meaningful relationships from auditory stimuli (subtest 3 - Auditory-Vocal-Association) and the ability to use the grammatical structure of language automatically (subtest 7 - Auditory-Vocal-Automatic), were severely depressed with regards the MS mean performance.

The four major "language enrichment" intervention activities as applied to the EM sample are outlined below:

a) The Two Teacher Variable:

The EM class had two teachers throughout the year 1968 [one male, (Pakeha), one female, (Maori)] giving an overall teacher/pupil ratio of 1:14 (remembering that non-sample new entrants were also in the class). The possibility of greater opportunities for teacher-pupil interaction was facilitated by this ratio, particularly in the case of one to one, or small group, language interaction.

The teachers were instructed and guided in demanding language interaction with the children in the class, even if, initially a child's language behaviour was poor. This interaction was encouraged in order to establish a language basis which the teacher could then attempt to modify and extend through a "successive approximations" process. Whereas the EM class teacher/pupil ratio reached 1:14, the CM class ratio reached 1:32 by the end of 1968.

b) The Ready-to-Read Series Variables:

The introductory reading series in use in both EM and CM classes were the 12 Little Books of the Ready-to-Read Series (1963). An analysis of the 12 Little Books was undertaken for concepts and settings alien to the EM sample children.¹⁸ This reading series was used in conjunction with acting-out and role playing of the stories by the children. This often involved the setting up of a scene, similar to that of the book, in the class for the children to act out, and served as a way of introducing them to new concepts and sets of relationships through concrete objects or a sequence of events in which they were involved.

Language expression was encouraged through the verbalization of actions, through recounting past events, present actions and relating possible future events and the relationship between them. Where appropriate written accounts were made by the children and art was also employed as another medium enabling the children to express their view of the events of, or ideas generated by a story

and its related activities.

Emphasis was placed on the teacher's prompting the children to recount the story, to draw relationships from the acted-out events and other similar events in their own experiences, and to relate these by language to the teacher, to a group, or the class depending on circumstances operating in the class at that time.

c) Experiential Variables:

Where appropriate, every attempt was made to engage the EM class children in their local environment and its events in an effort to provide a basis of experience which could be directed into language behaviour. Besides directing the children's attention to events near the school (drain-diggers, houses being built, the eel factory, etc.) three, more extensive, excursions were undertaken beyond the immediate environment of the school and community. The major demand upon the children was that they expressed their experiences, ideas and feelings through language. Later they were asked to recall events and often to record them, either in writing or by drawing. In these 'field experiences', linguistic correctness was not the initial or primary aim regarding the child's use of language. Initially, emphasis was laid upon freedom for the children to say what they wanted about what they were experiencing or had experienced. Progressively, for each child, on the basis of teacher judgements as to the child's confidence to use language, notions of grammatical correctness were introduced

and positively reinforced when employed.

Intensive questioning about the 'field experiences' and the relationships between events in these experiences was emphasized to facilitate the drawing of meaningful relationships through an auditory channel and the expression of these events and relationships vocally.

d) Language Master Variable:

Individual tuition was given to the EM children on a Language Master Machine (Bell and Howell, Model No. 711 BX), through which related visual and auditory stimuli could be presented to the individual. The child was required to then make a vocal response which was recorded and presented again following the initial auditory stimuli so the child could compare his performance. Both teachers reported that the machine was particularly useful in the development of grammatical correctness and in the production of inflectional endings to words.

Initially only single words and object pictures were used on the machine. By the end of the year the children were using the machine to present short sentences describing a pictured object or scene.

The above four activities were incorporated into the on-going organization of the classroom to avoid sharp discontinuities. It was not feasible to impose a particular or strict regime for each

child to work through. The author's role was in the delineation and definition of the above activities and the maintenance of direction and guidance for the teachers of the class throughout the year.

The nature of the intervention was such that aspects of each of the four major areas of "language enrichment" overlapped into the on-going activities of the class. This precludes any attempt to posit one-to-one causal relationships between particular "language enrichment" events and experimental results.

Quantitative data was not collected on the use of particular intervention techniques and practices with any particular child during the year. Within the EM class, the teachers did, however, construct schedules on the use of, and attainments on, the Language Master. Data was also collected on pronunciation difficulties and on grammatical errors. Conceptual difficulties were also recorded.¹⁹

No attempt was made to intervene in the CM class - the teacher was not told that she could possibly use different approaches to facilitate language behaviour and development in her class, nor was she informed of the nature of the EM class programme. A brief outline of the general routine of the EM and CM classes is presented in Appendix 1.

Within the EM class the work conducted with the 'Ready to Read Series' and the 'experience variables' were designed to

enable the drawing of meaningful relationships from a variety of materials and encourage the child to relate these experiences and relationships through language. The instruction undertaken with the Language Master Machine was designed to teach and expand the correct use of the grammatical structure of English. The contribution of the two teachers to the EM class situation was more encompassing. They produced greater opportunities for language interaction with the children. Their roles in prompting and reinforcing particular forms of language interaction and in providing more accessible models in the class than is normally the case cannot be overlooked.

ANALYSIS OF DATA

All data analysis was undertaken with the ITPA subtest results and ITPA total scores in raw score form. Analysis was by separate t-tests, between independent or correlated means as appropriate, using a two-tailed test with $\alpha p < 0.01$ (Garrett, 1960; McNemar, 1962; Hays, 1963). Analysis has been conducted on total samples only. Sex was a sample variable but not an analysis variable. Mean performance for the various sample groups are presented in psycholinguistic profile form in standard scores derived from the ITPA Examiner's Manual (McCarthy and Kirk, 1961) by converting the mean raw score into a standard score for each of the nine subtests and ITPA total in terms of the mean age of each sample.

All calculations and t-test analysis were conducted on an Olivetti Programma P 101 desk-top computer as outlined in the Programme Manual.

RESULTS

The means and standard deviations in raw score form for the respective sample groups on the nine subtests of the ITPA and for the ITPA total are presented in Table 2 (p. 59).

The t-ratios are given in Table 3 (p. 60), listing the comparisons undertaken and the direction of t reaching α ($p < 0.01$) for mean sample age, the mean raw scores for the nine subtests of the ITPA and the mean raw score for the ITPA total.

On the basis of chance alone one of the results could be significant at the 0.01 level. The number actually significant at the 0.01 level was 26 which is far above that expected by chance, therefore the validity of considering the 26 significant t-test results individually is assured.

Figures 2 to 5 (pp. 62-65) present the psycholinguistic profiles, plotted in standard scores, for the mean performance of:

- i) the MS (Dec 67) sample,
- ii) the EM sample at Feb 68 and N-D 68,
- iii) the CM sample at Feb 68 and at N-D 68, and
- iv) for the PS (Dec 68), EM (N-D 68) and CM (N-D 68) samples respectively.

TABLE 2

Raw Score Means and Standard Deviations for the respective samples on the nine ITPA subtests and the ITPA Total Score

	MS (Dec 67)	EM (Feb 68)	EM (N-D 68)	CM (Feb 68)	CM (N-D 68)	PS (Dec 68)
Auditory Decoding (1)						
\bar{X}	15.53	7.64	12.91	12.73	16.91	20.71
SD	7.22	7.50	2.77	7.39	6.06	3.45
Visual Decoding (2)						
\bar{X}	10.50	8.09	12.91	12.09	12.64	11.14
SD	3.24	2.21	2.66	2.02	2.87	3.63
Aud-Voc Association (3)						
\bar{X}	8.85	2.81	9.82	6.18	12.36	15.14
SD	4.20	1.25	3.92	3.25	2.87	3.80
Vis-Mot Association (4)						
\bar{X}	10.41	5.00	13.00	6.09	11.55	12.79
SD	5.82	5.88	4.49	4.39	4.57	3.95
Vocal Encoding (5)						
\bar{X}	13.03	7.55	10.18	9.43	12.64	14.86
SD	3.92	3.30	3.60	2.21	3.20	4.05
Motor Encoding (6)						
\bar{X}	10.47	8.91	10.55	8.91	12.00	10.93
SD	3.40	2.70	3.05	1.30	2.86	3.02
Aud-Voc Automatic (7)						
\bar{X}	4.68	2.18	4.09	4.36	7.09	10.64
SD	2.71	1.89	2.39	0.81	3.42	3.43
Aud-Voc Sequencing (8)						
\bar{X}	20.41	16.00	16.55	21.09	21.73	20.71
SD	5.90	3.74	4.48	5.20	4.29	6.31
Vis-Mot Sequencing (9)						
\bar{X}	10.82	6.27	12.09	7.18	12.27	13.29
SD	2.81	2.97	3.02	2.93	2.83	2.09
ITPA Total						
\bar{X}	104.71	64.45	102.09	88.09	118.27	130.21
SD	19.50	17.52	6.11	13.04	19.12	21.23

TABLE 3

Age, ITPA subtests and ITPA Total 't' ratios for the ten total sample comparisons undertaken

t test Comparisons	Age	Aud Decod.	Vis Decod.	Aud-Voc Assoc.	Vis-Mot Assoc.	Voc Encod.	Mot Encod.	Aud-Voc Autom.	Aud-Voc Seq.	Vis-Mot Seq.	ITPA Total
EM v CM(Feb 68) n=22	1.53	-1.60	-4.43* CM	-3.20* CM	-0.50	-1.60	0.00	-3.52* CM	-2.63	-0.72	-3.26* CM
EM v CM(N-D 68) n=22	-0.11	-1.99	0.23	-1.74	0.75	-1.69	-1.15	-2.39	-2.77	-0.15	-2.67
EM(Feb 68) v (N-D 68) a n=22		2.09	4.96* N-D 68	6.12* N-D 68	4.03* N-D 68	3.21* N-D 68	1.71	3.60* N-D 68	0.63	4.92* N-D 68	7.26* N-D 68
CM(Feb 68) v (N-D 68) a n=22		1.29	0.58	5.57* N-D 68	3.61* N-D 68	2.59	4.02* N-D 68	3.12* N-D 68	0.41	6.83* N-D 68	5.29* N-D 68
EM v CM Gains from Feb 68 to N-D 68 n=22		0.27	3.15* EM	0.51	1.02	0.42	-1.19	-0.80	-0.05	0.94	0.97
MS(Dec 67) v EM(N-D 68) n=45	-0.47	1.17	-1.98	-0.67	-1.35	2.13	-0.06	0.63	1.99	-1.28	0.43
MS(Dec 67) v CM(N-D 68) n=45	-0.54	-0.57	-1.95	-2.57	-0.59	0.30	-1.34	-2.37	-0.68	-1.48	-2.02
MS(Dec 67) v PS (Dec 68) n=48	-2.63	-2.56	-0.60	-4.84* PS	-1.40	-1.45	-0.44	-6.32* PS	-0.16	-2.95	-4.02* PS
EM(N-D 68) v PS(Dec 68) n=25	-2.45	-6.10* PS	1.35	-3.43* PS	0.13	-3.00* PS	-0.48	-5.38* PS	-1.85	-1.17	-4.24* PS
CM(N-D 68) v PS(Dec 68) n=25	-2.64	-1.98	1.12	-2.01	-0.73	-1.49	0.90	-2.57	0.46	-1.03	-1.46

* p<0.01

a t tests between correlated means

Subscripts (CM, EM, PS, N-D 68) in the table indicate the favoured significant sample or test condition.

It is noted that Weener, Barritt, and Semmel (1967) suggest that total scores should be obtained "from a combination of subscale [subtest] standard scores rather than raw scores" to ensure "the assignment of equal weights to each subtest in the overall test score". (p. 373) This technique was not applied as the utility of their suggestion has not, as yet, been established and comparability with previous studies would have been impaired.

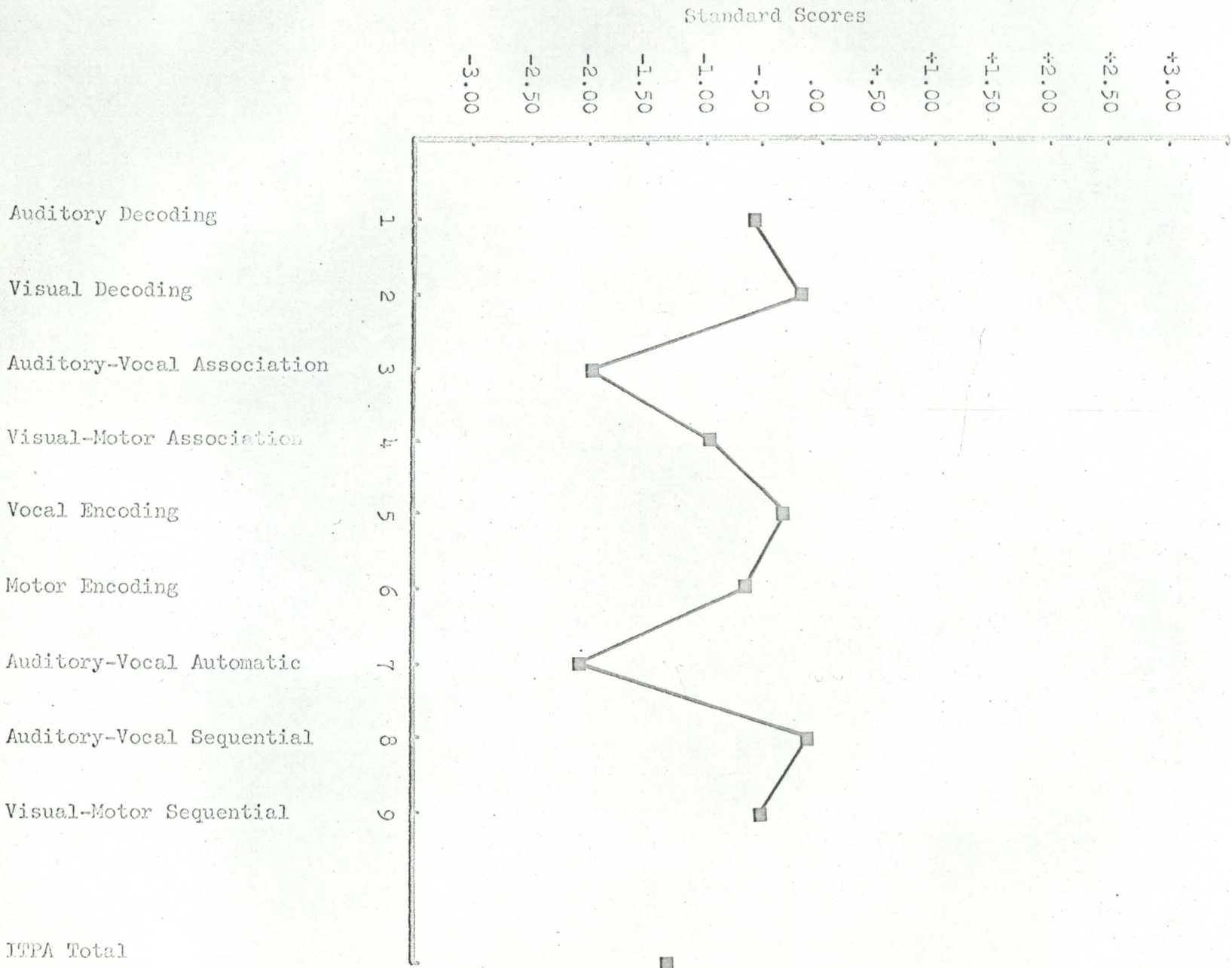
Significant differences ($p < 0.01$) were found in favour of the CM sample over the EM sample at pre-testing (Feb 68) on the Visual Decoding, Auditory-Vocal Association, Auditory-Vocal Automatic subtests and on the ITPA Total. No significant differences were found between the EM and CM samples on the post-test data (N-D 68).

Analysis within EM and CM samples by t-test for correlated means revealed, for EM, significant differences favouring the post-test (N-D 68) over the pre-test (Feb 68) on the subtests: Visual Decoding, Auditory-Vocal Association, Visual-Motor Association, Vocal Encoding, Auditory-Vocal Automatic, Visual-Motor Sequencing and on the ITPA Total. For the CM sample significant differences favouring the post-test (N-D 68) over the pre-test (Feb 68) were found on the subtests: Auditory-Vocal Association, Visual-Motor Association, Motor Encoding, Auditory-Vocal Automatic, Visual-Motor Sequencing and on the ITPA Total.

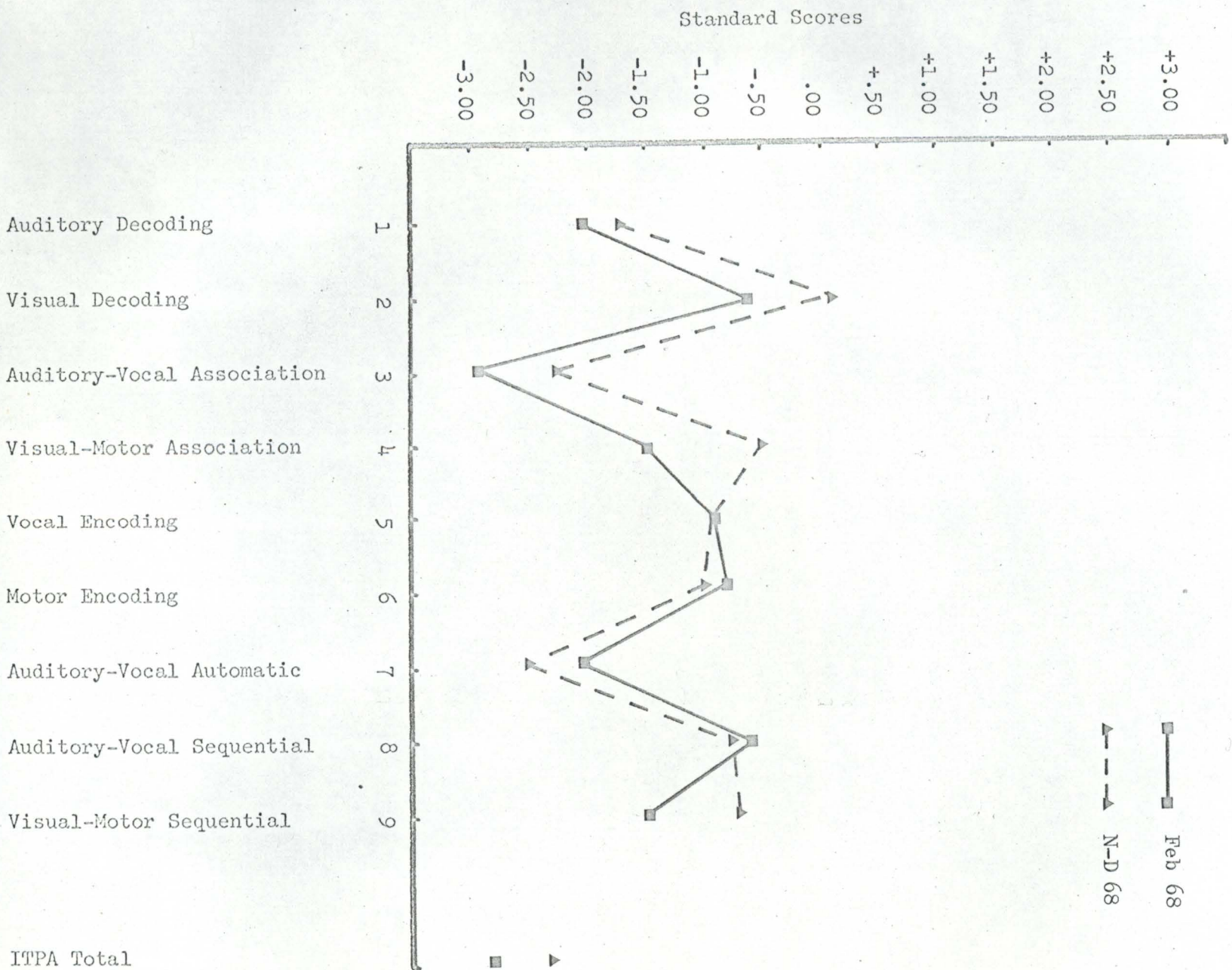
However, when pre-test and post-test results were analyzed

Figure 2

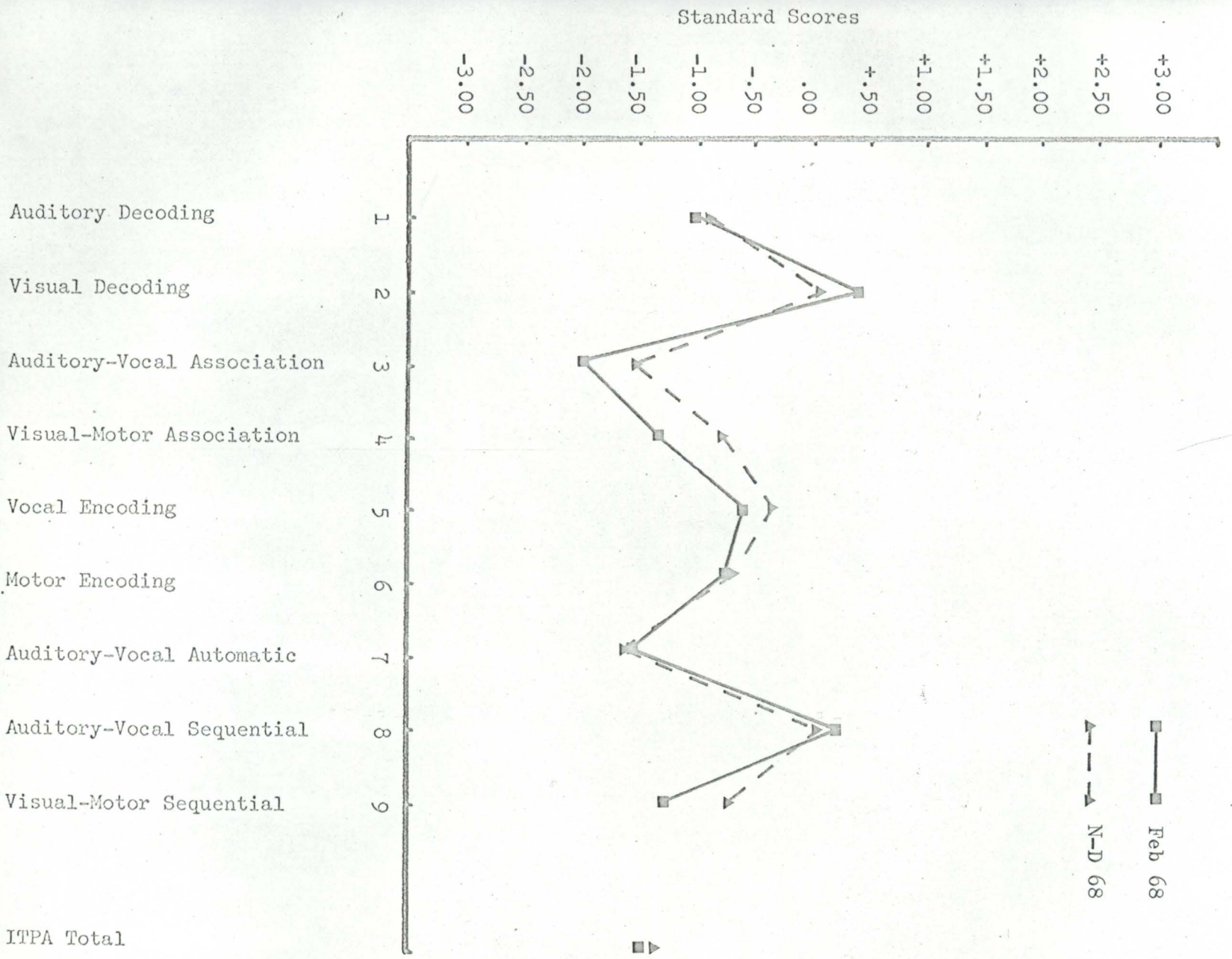
Mean Performance (Standard Scores) for MS (Dec 67) on the nine ITPA Subtests and ITPA Total



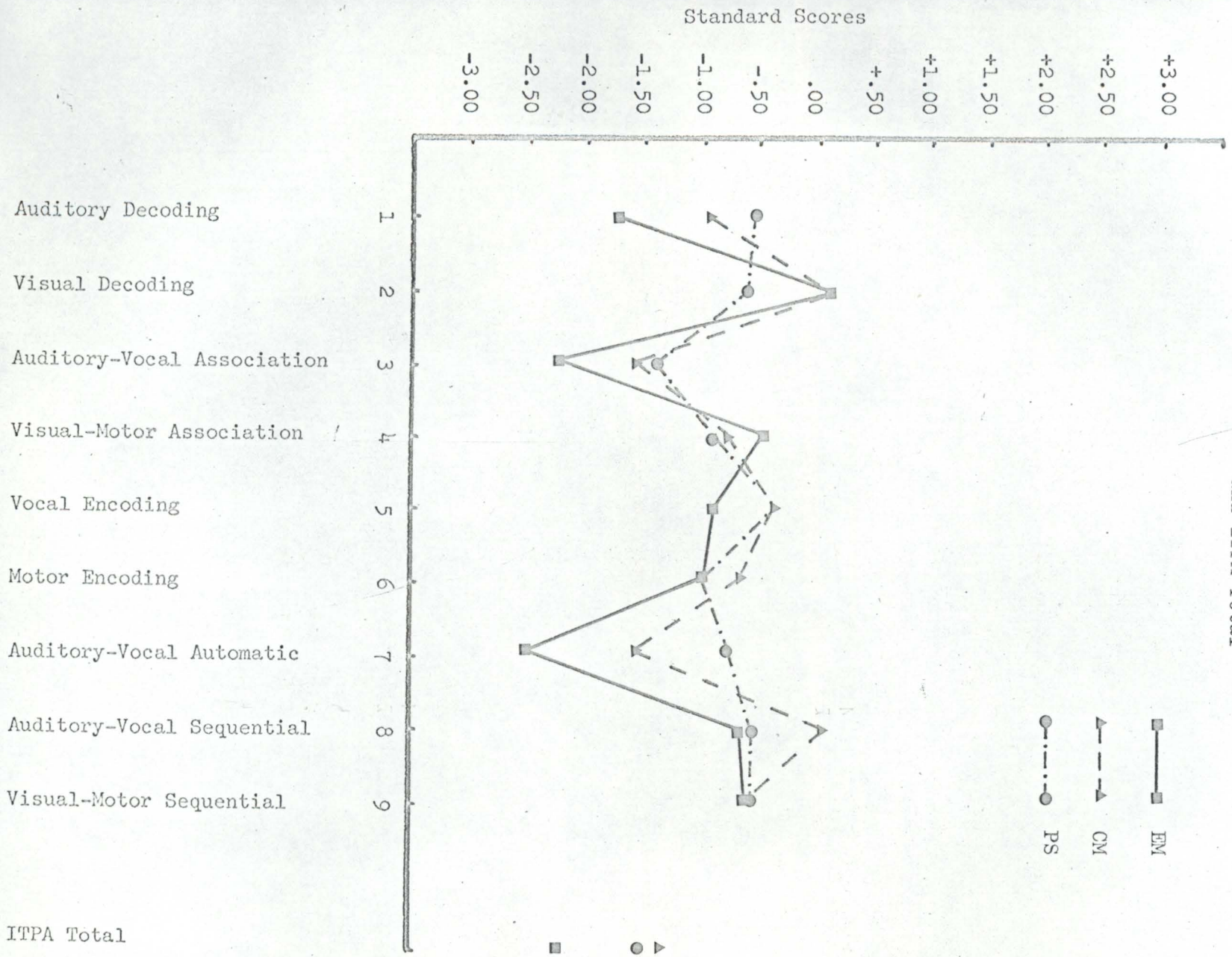
Mean Test - Retest Performance (Standard Scores) for EM sample
on the nine ITPA Subtests and ITPA Total



Mean Test - Retest Performance (Standard Scores) for CM sample on the nine ITPA Subtests and ITPA Total



Mean Performance (Standard Scores) for EM (N-D 68), CM (N-D 68) and PS (Dec. 68) samples on the nine ITPA subtests and ITPA Total



ERRATA

p. 66, line 33; for "Auditory Decoding" read "Visual Decoding."

p. 66, line 15; for "subtest" read "subtests".

in terms of gains scores for the EM and CM samples on each subtest and on ITPA Total, only one statistically significant gain was achieved, this by the EM sample on the Auditory-Decoding subtest.

Analysis between the performance of the MS (Dec 67) sample and the EM and CM samples (N-D 68) showed no statistically significant differences in psycholinguistic abilities.

The PS (Dec 68) was compared with the MS (Dec 67) sample with significant differences in performance favouring the PS (Dec 68) sample on the Auditory-Vocal Association and Auditory-Vocal Automatic subtests and on ITPA Total.

A comparison between EM (N-D 68) and PS (Dec 68) samples showed significant differences on the Auditory Decoding, Auditory-Vocal Association, Vocal Encoding, and Auditory-Vocal Automatic subtest plus the ITPA Total favouring the PS (Dec 68) sample.

A comparison between CM (N-D 68) and PS (Dec 68) revealed no statistically significant differences in psycholinguistic performance.

In the comparisons outlined above there were no significant differences between the mean ages of the samples concerned.

DISCUSSION OF RESULTS

The comparison between the EM and CM samples at Feb 68, on entry to school, showed marked superiority in the performance of

the CM sample on the Visual Decoding, Auditory-Vocal Association and Auditory-Vocal Automatic subtests and on the ITPA Total. In terms of the subtest descriptions the CM sample were better able to:

- i) understand what was seen,
- ii) relate verbal symbols on a meaningful basis, providing the appropriate vocal response, and,
- iii) to use the elementary grammatical and syntactical construction of language automatically.

That these differences were evident upon entry to school points to marked differences in the experiential background of the two sample groups, favouring the CM sample where language behaviour and development is concerned. As play centre/kindergarten records were incomplete for both communities an investigation of any relationship between superior psycholinguistic abilities and these forms of pre-school experience was precluded. The differences do, however, caution against wide generalizations as to the psycholinguistic abilities and disabilities of new entrant Maori children.

The comparison made between the EM and CM samples at N-D 68 failed to reveal any significant differences on the ITPA subtests or ITPA Total. Clearly the EM sample had made substantial gains in the psycholinguistic abilities as measured by the ITPA in that deficits initially displayed, in comparison to the CM sample, were

no longer apparent. It is to be remembered that the magnitude of these gains will be compounded with the degree to which the CM sample's psycholinguistic abilities failed to develop or were retarded during one year's schooling.

When comparisons were made, using t-ratio for correlated means, for differences in performance from Feb 68 to N-D 68 the EM sample evidenced significant gains by N-D 68 on the Visual-Decoding, Auditory-Vocal Association, Visual-Motor Association, Vocal Encoding, Auditory-Vocal Automatic and Visual-Motor Sequencing subtests and on the ITPA Total. These results indicate that by N-D 68 the EM sample were better able to:

- i) understand what was seen,
- ii) relate verbal symbols on a meaningful basis, providing the appropriate vocal response,
- iii) relate visual symbols on a meaningful basis, providing an appropriate motor response,
- iv) express ideas verbally characterizing an object,
- v) use the elementary grammatical and syntactical construction of language automatically,
- and vi) use visual-sequential memory.

For the CM sample, over the same time period significant gains, by N-D 68, were evidenced on the Auditory-Vocal Association, Visual-Motor Association, Motor Encoding, Auditory-Vocal Automatic and Visual-Motor Sequencing subtests plus the ITPA Total.

For the CM sample these results signify improvements in the ability to:

- i) relate verbal symbols on a meaningful basis, providing the appropriate vocal response,
- ii) relate visual symbols on a meaningful basis, providing an appropriate motor response,
- iii) express meaningful ideas through gesture,
- iv) use the elementary grammatical and syntactical construction of language automatically,
- and v) to use visual-sequential memory.

When the EM and CM sample data was subject to analysis in terms of gain scores only one significant gain was evidenced between samples, this being on the Visual-Decoding subtest, favouring the EM sample in the ability to gain meaning from visually presented stimuli.

As mentioned previously the nature of the "language enrichment" intervention with the EM sample prevented the positing of one-to-one correspondences between particular aspects of the programme and particular subtest results. Some general remarks are, however, warranted.

Support of the utility of the language enrichment intervention can be derived from the cancellation of significant differences between the EM and CM samples by the end of the year. That the EM sample were able to overcome their initial psycholinguistic

deficits, which are interpreted as being experiential linguistic handicaps from the pre-school environment, to develop the psycholinguistic abilities during the school year to match the CM sample by N-D 68 lends support to the efficacy of the programme. The greater magnitude of gains made by the EM sample enabling them to perform comparably with the CM sample gives weight to this conclusion.

Over the year, within sample groups, significant improvements were shown on a number of subtests. Both groups improved significantly on the Auditory-Vocal Association, Visual-Motor Association, Auditory-Vocal Automatic and Visual-Motor Sequencing subtests. Improvement was also evidenced on the ITPA Total. That the EM sample showed significant improvements on the Visual-Decoding and Vocal Encoding subtest not evidenced by the CM sample, and that the CM sample showed significant improvements on the Motor Encoding subtest not evidenced with the EM sample is worthy of note.

From the nature of the subtests it would appear that the EM sample gained significantly in its ability to obtain meaning from visually presented stimuli and to express ideas characterizing an object (or event) verbally, whereas the CM sample gained significantly in its ability to express ideas through meaningful gesture.

Since the "language enrichment" programme sought to direct the EM sample children towards gaining meaning from the world of

visual stimuli which they inhabit, both in the school and beyond, and to express this sense data and its relationships verbally, that is through language, rather than through gesture, then the above results support the programme as a determinant in the outcomes.

In the comparison of gain-scores over the year between the EM and CM samples the only significant gain - made on the Visual Decoding subtest in favour of the EM sample - is an outcome of some importance in view of the role of "visual perception" in the emergent reading behaviour of young children as outlined by Clay (1967).²⁰ This appears to be an important skill for children to make a successful transfer in associating verbal language and its written form - letters, words and sentences.

When the EM and CM samples (N-D 68) were compared with the performance of the MS (Dec 67) no significant differences were obtained. Neither sample was therefore performing differently in psycholinguistic abilities from their counterparts of one year earlier.

Three comparisons were undertaken with the PS sample (Dec 68).

Firstly, between MS (Dec 67) and PS (Dec 68) significant differences favoured the PS sample on the Auditory-Vocal Association and Auditory-Vocal Automatic subtests and on the ITPA Total.

The subtest results indicate that after one year at school the PS group were better able to relate verbal symbols on a meaningful

basis by providing the appropriate vocal response and to use the elementary grammatical and syntactical construction of language automatically.

The second comparison was between EM (N-D 68) and PS (Dec 68). Significant differences favoured the PS sample on the Auditory Decoding, Auditory-Vocal Association, Vocal Encoding and Auditory-Vocal Automatic subtest and on the ITPA Total. In terms of the subtest descriptions these results are indicative of the PS sample's superiority in:

- i) understanding what is heard,
- ii) relating verbal symbols on a meaningful basis, providing the appropriate vocal response,
- iii) expressing ideas characterizing an object verbally,
- and iv) in using the elementary grammatical and syntactical construction of language automatically.

The third comparison was between CM (N-D 68) and PS (Dec 68), no significant differences were obtained.

That similar socio-economic background Pakeha children performed significantly better on a number of subtests in two of the comparisons raises a number of questions in giving a clear interpretation to the data.

Both schools S1 and S2 contributed to the MS (Dec 67) sample. While there were no significant differences between the groups from each school, two subtest results approached significance in

favour of the S2 group. This was the school that contained the CM sample during the following year and this sample CM (N-D 68) showed no significant differences in psycholinguistic abilities from the PS (Dec 68) sample at the end of the year. The EM (N-D 68) sample from school S1 did, however, display marked psycholinguistic deficits in comparison to the PS (Dec 68) sample and the contribution of S1 to the MS (Dec 67) tended towards such deficits. These results support the view that there existed real and marked differences in the language development and abilities of the two groups of children from the two schools. For these children, from outwardly similar communities and socio-economic circumstances, it would appear the nature of the processes relevant for satisfactory language development, the language patterns, employed in the home, the availability of suitable models, the demands made for certain styles of expression and grammatical correctness, the availability and use of pre-school facilities and other such factors deemed important in language development are in need of more intensive consideration in view of the marked psycholinguistic differences.

In the comparisons made with the PS (Dec 68) group the sensitivity of the occupational status-ranking scale employed as an index of S.E.S. needs to be considered. It is possible that despite socio-economic background similarities, on the basis of the scale applied, that there are real and meaningful differences favouring the language development of the Pakeha children, during

their pre-school years, differences to which broad S.E.S. categories are insensitive.

It is also possible, despite difficulties the PS (Dec 68) children may have experienced with language upon entry to school, in comparison with the "middle-class child" upon which the ITPA as a language assessment instrument was developed, that they, by virtue of their culture and previous experiences were "tuned or cued" both cognitively and culturally to gain more in language development from the school and its relatively congruent culture than were culturally different Maori counterparts from a seemingly similar socio-economic background.

In all probability both the above factors were operating. Their importance in such cross-cultural studies remains to be established.

It will be noted that ITPA total scores were not discussed, this is in view of the uncertainty as to what exactly an ITPA total means. Karnes, Studley, Wright, and Hodgins (1968) note that a total score may represent an overall assessment of a child's level of psycholinguistic functioning but that at no time can it be construed to mean or represent his proficiency in each of the nine subtests. Since the ITPA aims to be an instrument for differential diagnosis of language abilities the contribution and meaning of a global score remains uncertain.

In relation to the study aims the results indicate:

- i) that there is a distinctive pattern of psycholinguistic abilities and disabilities, as assessed on the ITPA, for young Maori children from a "deprived" or "disadvantaged" background. Disability was associated primarily, but not wholly, with the auditory and/or vocal channels of communication relative to the visual and/or motor channels on the ITPA.
- ii) that changes reducing the extent of psycholinguistic deficits evidenced by Maori children on the ITPA could be made through a programme of "language enrichment" with an experimental group in comparison to changes made by a control group.
- iii) that there were marked differences in the psycholinguistic abilities of Maori children and similar socio-economic background Pakeha children, favouring the Pakeha children. This challenges the generality of the view that there is a characteristic pattern of psycholinguistic disabilities for all children from low socio-economic backgrounds. Possible factors influencing this outcome were discussed above.

The two other outcomes of this investigation worthy of further mention at this point were:

- i) that the differences evidenced between the psycholinguistic abilities of Maori children from two schools cautions against

generalization about the language difficulties of Maori children.

- ii) that while not specifically hypothesized the "language enrichment" programme was designed to facilitate improvement in the auditory and/or vocal channels of communication of the EM sample. While gains were made in these aspects of psycholinguistic abilities for the EM sample, the most marked gain was on the Visual-Decoding subtest. This result is interpreted as a programme effect and its commonality with the visual perception ability outlined by Clay (1967) points to a hitherto overlooked factor in the development of language skills as the child moves from oral to written comprehension and expression - an experience in which visual symbols as well as sounds take on meaning.²⁰

CONCLUSION

The pilot study nature of this investigation dictates against the drawing of a host of broad conclusions and generalization on the possibility of dramatically modifying the language behaviour of new entrant Maori children. On the basis of the assessments undertaken with the ITPA it has been demonstrated that a programme of "language enrichment" was effective in reducing the psycholinguistic deficits of a group of Maori children, during their

first year at school. While a number of interventions were employed in the language enrichment activities and the establishment of one-to-one causal relationships between events and subsequent test results is not possible, it is instructive to consider the role of the emphasis placed on the use of language in the class by the teachers during the programme. That the EM sample gained in the ability to express ideas verbally, whereas the CM sample improved in gestural expression does support the view that the emphasis may be a significant determinant of the nature of the child's response. While research is needed to support this contention with regards language behaviour, the work conducted on expectancy effects on other aspects of teacher-pupil behaviour and interaction (Rosenthal and Jacobson, 1968) points towards the possibilities for substantially modifying behaviour by manipulating the expectancies upon which much behaviour is initiated. If the teacher will not accept one form of communication (gesture) as sufficient and is an active agent in providing and expecting a suitable alternative from the child, then there is the possibility of change towards a pattern of language behaviour more congruent with that of the school and that necessary for successful educational experiences.

It is important that in evaluating the quantitative results on language behaviour generated with the ITPA, to keep in mind that it is described as the "experimental edition". As such,

results obtained are indicative, rather than definitive, of psycholinguistic abilities and disabilities. Weener, Barritt, and Semmel (1967) have made a cogent critical evaluation of the statistical characteristics of the ITPA. The potency of their criticisms is such, that a response by McCarthy (1967) fails to detract from the importance of Weener et al's (1967) analysis. This analysis cautions the researcher against the drawing of hard and fast conclusions on the basis of evaluations of psycholinguistic abilities on the ITPA. That a number of theoretical issues in deriving the ITPA subtests from the proposed clinical model are unclear has been raised by the present author (St. George, 1969).

While the force of these critical reviews may have been mitigated somewhat by the publication of the Revised ITPA (1968), they both raise important questions for the user of the Experimental Edition ITPA and in laying guidelines for evaluating the Revised Edition.

The long term effectiveness of a one year "language enrichment" programme with the children included in the present study is in need of further consideration, remembering that Mueller and Smith (1964) found no stability in gains made by an experimental educable mental retardate group over a control group after a three month language enrichment programme.

The propriety of the time of intervention with "language enrichment" programmes is an issue of current concern (Bereiter

and Englemann, 1966; Brotzman, 1968) and early intervention during the pre-school years is held to be the most successful point in assisting and substantially modifying the rate and direction of language development. With the children considered in this investigation, greater gains in psycholinguistic abilities would no doubt have been evidenced had effective language enrichment been made available earlier. The school, however, remains for many of these children, the first major confrontation with a language environment involving a quality evaluation dimension in which the inadequacies in their own language behaviour and development become obvious. In that change in this language pattern is a necessary prerequisite for continued successful education, it is important that methods of analysis and techniques of language modification, within the scope of teachers facing these children, be made available. Likewise, teachers may need to be made aware of their role as both as a model and as a person to whom children react to in terms of certain expectancies. These pervasive aspects of being a teacher can be made to operate in favour of language development once the teacher has established and supports a particular style of interaction in the classroom.

As previously mentioned, the study results point towards marked differences in the psycholinguistic abilities of groups of Maori children drawn from what 'appeared' to be two similar communities. These results are interpreted as being an effect of

the differential role which familial experiences play in language development. That one group of children should be so markedly favoured in psycholinguistic abilities over a group of 'similar' children from another community questions the usefulness of such phrases as the "Maori child's language problem" and action based upon such broad and inaccurate statements.

Within this study children tested individually were pooled into sample groups and the "language enrichment" programme was outlined for a group of children. It must be remembered, however, that the "language enrichment programme", and the activities undertaken in the other sample groups were effective upon individuals. It would be wrong to suppose that effects were spread evenly over the groups or that increments in psycholinguistic abilities involves equal gains for all children. Haring and Ridgway (1967) are of the opinion that the initiation and maintenance of a programme of change, for instance in language behaviour, once the parameters have been outlined as accurately as present instruments allow with confidence, will be the responsibility of those in the teaching or remediation situation. For Haring and Ridgway (1967) these are the only people able to make the sorts of individual behaviour analysis upon which individually meaningful interventions can be based once drawn from an outline.

Haring and Ridgway (1967) comment further that "it must also be remembered that learning deficits may be as much a function

of the learning environment as they are a function of the organism. Possibly, in many instances of learning disabilities, the crux of this may involve on-going relationships between the two. Should this become more evident, teaching may require a continuous functional analysis of behaviour on the part of the teacher to insure appropriate behaviour management". (p. 393)

In the absence of adequate behavioural correlates for the remediation of specific deficits, as evidenced on the subtests of the ITPA, and, since the nature of the results is questionable, Haring and Ridgway's (1967) remarks have increased significance. In the absence of empirical evidence for particular discrete remedial procedures for deficit evidenced on any of the nine subtests of the ITPA, those persons involved in remediation on the basis of psycholinguistic deficit highlighted by the ITPA will, in future, need to conduct on-going individual behavioural analyses in order to gauge the direction of change and its rate, and to isolate and employ individually effective remedial techniques.

At present this will be a necessary step in following through from initial assessments of children with the ITPA, for to date weaknesses in the test characteristics and the model upon which it is based are such that reliable and valid individual differential diagnosis of psycholinguistic abilities and disabilities is not possible.

The value of this study has been to demonstrate the possibility

of change, to outline a number of possible techniques and to raise important questions, as well as to bring forth the critical comment necessary for initiating meaningful and soundly based programmes for changing the patterns of language skills. This need for change in the pattern of language skills of various children is a result of the intentional and unintentional linguistic prerequisites demanded by the school and its representatives in the classroom, - teachers.

RECOMMENDATIONS FOR FUTURE RESEARCH

With regards future research on the early language development of Maori children and the use of the ITPA in New Zealand a number of specific suggestions are warranted.

1.) On the basis of the ITPA, there is a need for a more extensive study of the psycholinguistic abilities and disabilities of New Zealand school children, Maori and Pakeha, from all socio-economic levels in the society.

2.) Within the social framework of N.Z. there is a need to establish the probabilities of certain educationally relevant behaviours and materials being available in the homes of children from varying socio-economic circumstances. As an aid to meaningful research such an analysis would be invaluable, for at present one assumes that certain behaviours and materials are available on the basis of some external criteria of S.E.S. e.g. father's occupation.

The validity of this assumption is in doubt.

3.) The continuing use of the ITPA in New Zealand highlights the need to collect data generated with a view towards a local standardization, if not across the whole instrument age-range then at least at the lower age levels when educationally relevant learning with regards language is taking place.

Concurrently, the issues raised by Weener, et al. (1967) and the present author (St George, 1969) need consideration and review. It is recognised that the Revised ITPA may account for these critical evaluations of the test and its model.

That Smith and May (1967) found a marked examiner influence on the ITPA scores of Negro children highlights a small but necessary research project to establish the significance of this effect in New Zealand when using the ITPA on ethnically and/or culturally different children.

4.) Specific behavioural correlates for the remediation of psycholinguistic deficits as evidenced on the subtests of the ITPA need to be established in such a way that, wherever possible, the techniques are within the scope of teachers faced with such children. Such techniques will only be satisfactorily established by well conducted empirical research that tests both the effectiveness of the remedial technique and its generality.

In the outlining of remedial or language enrichment activities the operation of 'Hawthorne effects' needs to be considered also.

In addition to these major research needs future studies, utilizing the ITPA, investigating the questions of:

- a) male/female differences in performance,
- b) which children in a group contribute most to gains made on the ITPA, those with initially superior psycholinguistic abilities or those with initially inferior psycholinguistic abilities and,
- c) the fluctuations, if any, in psycholinguistic development similar to those observed by Freyberg (1968) in regular assessments of cognitive development, are warranted.

Certainly the universe of necessary research for continued use of the ITPA in New Zealand is not exhausted by these suggestions, rather they represent just some of the imperatives if meaningful evaluations of psycholinguistic abilities and disabilities are going to be made and appropriate action initiated.

At a more general level it is important to consider the prospects of language enrichment interventions during schooling. The changes achieved in the present pilot study cannot be considered great in terms of the effort expended and the long-term effectiveness of such programmes is in doubt. There is a need for a thorough analysis of the origins of the language difficulties of various groups of New Zealand school children with a view towards early intervention. While the extrapolation of ideas and insights and the drawing of parallels from overseas research

on the influence of pre-school familial, cultural, and sub-cultural experiences on language development is possible, it remains important to establish the significance, extent, and intensity of such factors locally for sound education planning.

Nor should we in our desire for change overlook the need for a clear conception of precisely what it is about a particular style of language behaviour that needs changing.

The possibility that artificial linguistic prerequisites and expectancies are operating in the classroom should not be overlooked. Such prerequisites, if fulfilled on the part of the children, may contribute substantially to easier teaching but do not necessarily debar a child from successful learning experiences if not fulfilled, given that communication in the learning situation is adaptable to the scope and level of development of the child's language behaviour.

It is important that these more general questions be asked and, if possible, resolved for they too contribute to our view of what will constitute appropriate action.

LIST OF FOOTNOTES

1. It is important to note that an artificial distinction has been made between these two issues for reasons of conceptual clarity. It is not implied that one issue evolved and was resolved in disregard of the other, though a temporal location does exist with regards emphasis in both policy and research.
2. Barrington (1966) expands this point.
3. Bird, in his official capacity, not only commended those teachers who had ceased to use the Maori Language in their classes but also suggested that they should encourage the use of English by Maori pupils in the school playground. (Barrington, 1966)
4. "these languages" refers to the fact that some Maori children speak the same English as Pakeha children, that others use a different form of English and still others speak mainly Maori. On the related question that the actual Maori spoken by such children is "bastardized" or "pidgin Maori", Benton (1965) comments that the proponents of such a view ignore the fact that the transfer of vocabulary items from other languages is a normal feature of language growth. It is not necessary that the original meaning of the words concerned be retained in the process of adaption. "The retention of grammatical and syntactical relationships and of phonetic patterns, even when vocabulary items are imported is also ignored". (p. 78)

5. Such children being referred to as either active or passive bilinguals.
6. Benton's primary feedback to the teacher facing difficulties in English usage by Maori pupils is his publication Teaching English to Polynesian Children, Dept. of Education, 1964.
7. Barham sought to match on factors such as: number of schools attended, regularity of attendance, location and stability of present place of residence, sex, family size and position (of child), cultural level of the child's home, opportunity to attend a pre-school, father's occupation, teacher estimates of intelligence, whether books read to child within family circle and so on. Factors which Barham asserts are "known to affect language development". (p. 9)
8. Barham's data was obtained by tape recordings of the children discussing topics, themes or objects, from their oral definitions of the first twenty words of the Stanford-Binet vocabulary subtest and from oral definitions of the words of the Peabody Picture Vocabulary Test (P.P.V.T.) that the child had identified by pointing to the appropriate picture.
9. These specific issues and others concerning Maori schooling are touched upon by Watson (1963) in his incisive essay, Horizons of Unknown Power.
10. Henceforth called the ITPA - referring only to the Experimental Edition, (1961).

11. Osgood's third level, the projection level, deals primarily with innate physiological processes. Since this level cannot be altered through learning it is not given further consideration in McCarthy and Kirk's psycholinguistic model.
12. The following description is based on McCarthy and Kirk (1961, 1963) and Kirk (1966).
13. The age range investigated was two and one half to nine years.
14. The Early Training Project is fully reported by Klaus and Gray (1968).
15. The group ages are reported as six years on initial testing and seven years at retesting.
16. Consideration of the role of familial and social background experiences upon the linguistic development of the child is to be found in the studies of Bernstein (1959, 1960, 1961, 1964), Bereiter and Englemann (1966), John and Goldstein (1964), and Brotzman (1968).
17. All page numbers quoted in reference to item substitutes refer to the ITPA Examiners Manual, McCarthy and Kirk (1961).
18. The initial analysis was undertaken by P. McManus through the University of Auckland. This data was made available January 1968. Further analysis along the lines outlined by McManus was undertaken by the teachers of the EM class.
19. See. Summary of Progress on Language Research Programme at Bernard Fergusson School 1968. T. Skelsey, lodged with South

Auckland Education Board, Hamilton.

20. Clay (1967) notes in the emergent reading behaviour of children the importance of visual sensitivity to letter and word forms which the children have to learn. She reports under the heading 'Perceptual Correlates' that children studied over a year from the age 5 years to 6 years when classified into reading progress groups (high, high-medium, low-medium, low) on the basis of word recognition tasks obtained correlations with the perceptual tasks of 0.40 at 5 years and 0.80 at 6 years. The perceptual tasks consisted of letter identification, knowledge of the conventions of written English and the categorizing of visual stimuli within the directional constraints of written English.

The results of Clay's (1967) report are indicative of the important relationship between the child learning an adequate discrimination of letter and word forms and his reading progress.

Clay (1968) outlines further data on studies in beginning reading, concluding that her data from longitudinal studies "underlines points made frequently in the literature, that the initial stages of learning are very important" and "that visual perception learning is taking place". (p. 11)

Both the perceptual tasks outlined by Clay (1967, 1968) and those involved in the Visual Decoding subtest of the ITPA demand the gaining of meaning from visual stimuli on the part of the child. While the actual tasks involved are dissimilar, the similarities in

the perceptual and cognitive skills involved in the tasks at a higher level of analysis warrant further consideration. The current work of Clay on the reading behaviour of young Samoan and Maori children in relation to the perceptual tasks assessed will help clarify the relative importance of this 'visual perception' factor for these children.* The relationship of these tasks with the Visual-Decoding subtest of the ITPA remains, at present unclear, but does warrant researching.

* Personal Communication, September, 1969.

APPENDIX I

EM Class, Organization Outline

Development Period

Class engaged upon some talking point or centre of discussion. The children were involved in relating their activities, and/or experiences to the class through language, with the aid of teacher prompting when necessary. The class was commonly broken into two groups to pursue a topic of interest, being later reunited to share findings and outcomes. The overriding accent was upon positive and selective reinforcement of the children's language behaviour by the teacher.

Structured Writing and Reading Period

The primary objective was in the development of reading and writing skills. Attention was directed specifically to letter and word recognition tasks and the reproduction of symbols (letters) and symbol sequences (words) that have meaning. In this activity the presence of two teachers increased both opportunity for, and duration of, individual attention and guidance. The 12 Little Books of the Ready-to-Read Series (1963) were introduced during this period. Role enactment sequences and verbal exchanges involving the whole class were used when 'alien' concepts or settings depicted in the stories were reached. Once having established a 'meaning' to certain events or concepts the focus

on reading could be re-established in the hope that 'meaning' was being derived from the related reading activities.

Mathematics Block

Concerned with the introduction of mathematic concepts under the New Maths programme. Emphasis was placed on the labelling of objects and establishing their relations to other similar or dissimilar objects on the basis of quality and quantity, and over time and space.

Manipulations with objects (Cuisenaire Blocks) facilitated the introduction of ideas of addition and subtraction.

Unstructured Period

Devoted to physical education, dramatics, song or dance. At intervals the children were encouraged to describe their behaviour, to verbally control their behaviour by describing what they had to do, what they were doing and what they had done.

Structured Language Programme

A number of card series, presenting clear pictures of numerous common objects, were constructed. In two groups the children worked through each series by:

- i) labelling the objects,
- ii) adding qualifiers to the label to describe the object,
- iii) adding verbs and adverbs to the qualified label-describing actions of the object,
- iv) constructing simple sentences about the object.

As well as pictures of objects, the object itself was introduced if readily available. During the third term scenes depicting events were introduced. The children were encouraged to describe the scene and also make inferences from it.

Social/Nature Studies Block

The children were engaged in small study activities, gathering experience and small quantities of data on various topics. The period served primarily to extend the children's experiences and draw their attention to aspects of their environment which could then be called upon and discussed in other class situations. The children were involved in excursions around their own community as well as to more distant places. Attention was given to having the children describe elements of these experiences during, as well as after, the event, in recall activities such as discussing or writing a short story.

CM Class, Organization Outline

Development Period

A topic of interest was taken and discussed by the teacher and the children. When the children had an idea of the event they could draw it, or paint it. The teacher added short captions to the work of the children which they could trace or copy.

Reading Block

The children were introduced to the Ready-to-Read (1963) series

of books. The teacher read through the story whilst the children followed using their own copies. They then read sections to the teacher. The teacher had individual children read a piece of the current reader as a means of defining the child's progress and enabling individual attention to be given to reading.

Activity Block

A number of activities were undertaken during this period. Individual children were engaged in copying short sentences, making up short sentences with new words, reading short paragraphs (or having them read) and then drawing a picture of the event described.

A variety of class games were employed to encourage the children to listen attentively, to distinguish and to recognise sounds. Song and dance was also undertaken at this time.

Number Block

The children were introduced to New Maths. Initially naming was a predominant activity - objects were described as the same or different, big or small and so on. Quantity and quality concepts were given a predominant emphasis over mathematical relationships and manipulations with numbers or objects (i.e. addition and subtraction).

Unstructured Block

This period was devoted primarily to story-telling to the children, to dramatics, to playing games, to music and movement.

A number of outings were undertaken around the environs of the school and its nearby community. These were in the nature of walks and were relatively unstructured.

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