THE EFFECTS OF PRE-READING PERIODS OF VARIOUS LENGTHS IN A BEGINNERS' FRENCH COURSE

A thesis
submitted for the Degree of
Doctor of Philosophy
at the
University of Waikato
by

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University of Waikato
1976

ABSTRACT

An investigation was carried out within the framework of the University of Waikato Team Teaching Unit into the effects upon achievement of five different timing sequences in the introduction of reading and writing in a beginners' French course.

A review of previous research indicated that, in general, a pre-reading period had been of benefit in listening and speaking, but that a benefit to reading and writing which had been predicted by some advocates of the pre-reading period did not materialise.

Ten classes in five intermediate schools in Hamilton took part in the experiment, each of the five treatments being applied to two classes located in different schools. The treatments varied from an immediate introduction of reading and writing to a 20-week delay in both.

The scores obtained in a modern language aptitude test showed no significant pre-treatment differences between the five groups, but the margin was slight, and scores obtained on this test were used as a covariate in subsequent analyses. Beta coefficients were calculated with a view to weighting the part scores of the aptitude test so as to maximise its predictive power, but the multiple correlation coefficient obtained did not differ significantly from that derived from the raw scores, which were therefore retained.

All other tests used - achievement tests in four language skills, delayed achievement tests in three, and an attitude questionnaire - were constructed for the purpose. Ideas were available from various sources, but batteries of tests appropriate to a very elementary level were not located and some of the techniques used, particularly in the administration of the speaking test, were exploratory. All test materials were pre-tested at least once, and selection was based on an item analysis. Subsequent checks on item quality and test reliability indicated that, apart from minor details, the tests were satisfactory.

Tests in listening, reading and writing were taken at the end of the experimental year by 363 pupils, in approximately equal groups for each of the five treatments. The speaking test was also taken by 176 pupils. Analysis of covariance for each test revealed significant differences in the listening, reading

and writing test scores, but not in those of the speaking test. The levels of significance varied from test to test, but inspection of scores indicated that in every test the third treatment, consisting of a ten-week delay in the introduction of both reading and writing, yielded the highest adjusted means, while those of the first and fifth treatments were the lowest.

A follow-up test given to 99 pupils a year later revealed only one residual inter-treatment difference, between the reading scores of the first and fifth groups combined, and those of the other three groups combined.

These findings resemble those of some earlier research in that a pre-reading period was found to benefit achievement in listening skills. They differ from these earlier findings in two ways: the speaking skill was not shown to be significantly improved by a pre-reading period, while reading and writing were improved, suggesting that some transfer of learning from oral to graphic skills may have occurred.

ACKNOWLEDGEMENTS

During the course of this investigation, I have received assistance from many sources, and I wish to express my thanks to all those who have helped in any way. I am particularly indebted to the following:

To Professor F.W. Marshall and Miss A.T. Halcrow, for encouraging me to draw on the research potential of the University of Waikato Team Teaching project, and for allowing me total freedom within its framework to conduct this investigation;

To the Principals, staff, and pupils of the intermediate schools of Hamilton, for their co-operation in the experiment, and of several high schools in which preliminary and follow-up tests were conducted; in particular, to Miss J. Salt, Mr B. Ducker, and Mr M. Hainsworth, who conducted early trials of test materials with their high school classes;

To the New Zealand Council for Educational Research, for assistance in obtaining aptitude testing materials, and for a grant towards their cost;

To Mr P.E. Bull and Mr W. Rogers for advice on statistical problems, and for assistance in computer processing;

To Mr B. Leprêtre, Mr R. Scoliège, and Dr C. Hainsworth, who showed meticulous care in their recordings of listening tests and dictations;

To Mr R. Cloître, conseiller pédagogique at the French Embassy in Wellington, for supplying information on various French language courses;

To Miss F.G. Shine, of London, for assistance in obtaining published materials and details of references not readily available in New Zealand;

To Mrs G. Jones, for her patient attention to detail in typing the final draft;

To my family, who have continually given assistance in marking and item analysis, and who have tolerated the

gradual take-over of so much storage space by reams of paper; in particular, to my son, the same age as the pupils taking part in the experiment, for acting as a preliminary sounding board in questions of item difficulty, wording of test instructions, and clarity of illustrations;

And to Professor P.S. Freyberg, who has constantly given assistance in matters both theoretical and practical, and whose guidance and constructive criticism throughout the investigation have been invaluable.

M.J. Collett

April, 1976

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VOLUME 1

I. STATEMENT OF THE PROBLEM

Summary

The emergence of second-language teaching courses in which the main emphasis is placed on the primary skills has raised questions about the sequencing of skills in a teaching programme. A delay in the introduction of secondary skills has been frequently advocated. Possible benefits and disadvantages resulting from this procedure are suggested and variables which may influence its effectiveness are mentioned. The purpose of the present study is to assess the effect of pre-reading periods of varying lengths in one language learning situation.

A complete and fully effective second language course would produce in the learner terminal skills resembling those of a native speaker in all aspects of language behaviour. Many factors, however, especially that of time, make the realization of this ideal an exception to the rule. In certain language learning situations, such as a two-year course conducted in the United States and called Reading French [Mackey, 1965, pp.152-3], a reduction in the number of skills involved was deliberate policy. Such neglect of the speaking and listening skills was common, if not always deliberate, and the fact that external examinations concentrated on reading and writing offered little encouragement to teachers to devote much of their class time to the teaching of primary skills.

The theories of language learning which evolved from the 1940s onwards, placing greater emphasis on listening and speaking, redressed the balance, and the aim of most second language courses now offered is to develop all language skills - receptive and productive, aural/oral and graphic. But is the learning more efficient when these skills are introduced together from the outset, or when the introduction of the secondary skills of reading and writing is delayed?

Many writers [for example Brooks, 1960, p.50; Bennett, 1968, p.75; Donoghue, 1968, pp.22-3; Finocchario, 1964, p.66] have advised against simultaneous training in aural-oral and graphic skills in the early stages of learning a second language. While the ear and tongue are getting accustomed to new sounds, learning to distinguish them from each other and from those of the first language, and endeavouring to articulate them accurately, the simultaneous presentation of printed forms of the new language may represent an unwelcome complication, and hinder the growth of ability in discrimination and pronunciation. This danger is particularly acute where the printed forms used in the first and second languages are similar but the sounds which they represent differ. The sound/symbol links of the first language are so firmly established in the behaviour patterns of the learner that he may act as though the same links exist in the second. Interference is most likely to occur at a time when it can do most damage, that is, when the new set of pronunciation habits is in the process of being established in the learner's repertoire.

To counteract this danger, many course compilers [Appendix A] and teacher-training establishments - CREDIF[1], for example - recommend the use of a pre-reading period in which the learner has the printed forms of the second language withheld from him for a certain length of time - days, weeks, or even months - long enough, it is hoped, for habits of good pronunciation to be established firmly and to withstand the danger of interference when it eventually arises. The delayed presentation of reading and writing is an extension of current linguistic theories con-

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[1] Centre de Recherches et d'Etudes pour la Diffusion du Français, Ecole Normale Supérieure de St. Cloud, 11, Avenue Pozzo-di-Borgo, 92, St. Cloud.

cerning the primacy of speech and the secondary nature of graphic skills, and also reflects the order of first language learning.

However, the value of a pre-reading period has not been universally accepted [for example Rivers, 1968, pp.217-20], for certain first and second language combinations produce much less risk of interference than others, and the adoption of the pre-reading period contains its own potential dangers, whatever the languages. The restriction to learning through one of the senses instead of two greatly increases the difficulty for certain learners. They may have become too book-oriented to feel able to cope without the support of the printed word; and, to compensate for its absence, some students attempt to devise their own phonetic spelling of the language being studied, these invented forms producing another type of interference when, later on, the correct printed forms are to be learned. If it is true that the younger the child, the less his dependence on the written word, then the age of the learner may also influence the effectiveness of a pre-reading period. Taking such variables into account, it is clear that the value of a pre-reading period can only be assessed in terms of a given situation.

In the language learning situation with which this study was concerned, English was the first language and French the second. The location was New Zealand, whose remoteness from France may have been a factor in shaping pupils' motivation. The pupils, nearly all aged 12, began their study of French in Form Two of intermediate schools.[2] The organisation of classes was within the framework of the University of Waikato Team Teaching Project

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[2] The intermediate schools of New Zealand provide a two-year programme [Forms 1 and 2] for the majority of pupils within the state system from age 11.

[Collett, Marshall, and Halcrow, 1973].

In this situation, can a pre-reading period significantly improve pupils' achievement in oral skills? If so, what is the optimal length of that period? And will it have any effect on other second language skills? Before describing the experiment, the purpose of which was to find an answer to these questions, it is appropriate to survey the conclusions derived from prior research in this area, and in the following section the literature relating to the use of a pre-reading period in foreign language teaching is reviewed under three headings:

A. Changing views on modern language teaching; general trends and their implications for the use of a pre-reading period.

B. Other issues relevant in determining the length of a pre-reading period.

C. Research which has been carried out into the effects of a pre-reading period.

II. A REVIEW OF THE LITERATURE

A. CHANGING VIEWS ON MODERN LANGUAGE TEACHING

Summary

An introductory review of recent developments in modern language teaching theory distinguishes three major trends: an increased emphasis on speech; the growth of the audio-lingual approach; and a challenge to audio-lingual theory and practice, with greater emphasis on cognitive learning. In subsequent sections, these three aspects of development are discussed in more detail.

A statement of the primacy of speech from the linguist's point of view is followed by a description of the audio-lingual approach: the impetus it derived from the work of B.F. Skinner and the programmed learning movement; its attempts to meet the problems of interference by the application of contrastive linguistics; and its widespread acceptance by the teaching profession. Challenges to the audio-lingual movement are described, including Chomsky's theories on language learning, a reassessment of the role of meaning in second language acquisition, and growing doubts from within the profession as to the wisdom of imitating the first-language learning situation with regard to the sequencing of skills.

1. Introduction

The last thirty years have witnessed a change in the relative importance attached to the oral and graphic aspects of language teaching, and the primacy of listening and speaking over reading and writing is now widely accepted. During this period, profound changes took place in modern language teaching practices in a steadily increasing number of schools all over the world. Among the factors which determined the nature and extent of these changes were certain specific events in France and the United States. At the military headquarters of NATO, a new French course specifically designed for a multi-national group and using slides and tape-recorders proved very successful [Dutton, 1965, p.10]. Also in France, following the establishment of CREDIF, the research centre at St. Cloud,

surveys led to the drawing up of a basic teaching vocabulary, le français fondamental, and this list came to be regarded as an almost indispensable tool for compilers of new French courses [Dutton, 1965, p.12]. In the United States the study of Amerindian languages led to emphasis being placed on the learning of structures and structural changes rather than grammatical rules [Dutton, 1965, p.13]. Such events contributed to the development of a new style of teaching based on the assumption that foreign language learning is primarily a process of habit formation. This approach was further influenced by the application of operant conditioning techniques, and language laboratories and audio-lingual courses began to appear. The distinguishing features of the new courses, such as pattern practice and mimicry-memorization drills, were derived from Skinnerian principles of successive approximation to desired behaviour. Listening and speaking took precedence over reading and writing, as indicated, for example, by the title of a course-book which was widely used: Ecouter et Parler, [Côté et al., 1962], and in the early stages of a course consideration of meaning was sometimes postponed in order to stress the development of automatic responses [for example Morton, 1960]. To reduce phonetic, structural, semantic and orthographic interference between languages - major sources of student error - the following techniques were applied:

a. Contrastive analysis, that is, a specification of differences between two languages with a view to locating potential learner problems and reducing or even eliminating them by systematically concentrating on the areas of language in which they occur [for example Lado, 1957; Politzer, 1965 and 1972, pp. 87-133].

b. Exclusion of the learner's first language from the classroom [for example the CREDIF courses Bonjour Line, Voix et Images de France, De Vive Voix].

c. A delay between the introduction of primary and secondary skills [also CREDIF].

Planners of the new approach to language learning expected student motivation to be high in a learning situation which was different from the traditional approach because:

a. It avoided printed texts.

b. Full use would be made of modern technological equipment.

c. Steady and error-free progress could be experienced [Dutton, 1965, pp.35-37].

But the audio-lingual approach came to be challenged on both theoretical and practical grounds. Chomsky [1966, p.152] questioned the truth of the statement that language is habit, and doubted the possibility of acquiring a language by reinforcement, association and generalization alone. Other writers who expressed their doubts as to the effectiveness of the audio-lingual approach included Rivers [1964], Carroll [1965a], Jakobovits [1970], and Smith [1971]. Language teachers had found the results of the audio-lingual approach disappointing [Valdman spoke of "deep frustration and disillusionment", 1969, in Lugton, ed., 1970, p.170], and began to question the value of pattern practice and learning by heart. The role of cognitive processes in language learning was re-examined, the importance of meaning was stressed, and the help which the learner could obtain from seeing as well as from hearing was affirmed. Listening and speaking followed by reading and writing was still the preferred order of learning, but emphasis on the delay between the introduction of the two sets

of skills was reduced, and certain published courses reflected this change. Kamenew, for example, the author of the TAVOR course [1960], approved of the addition of Reading and Writing with TAVOR [Sadler and Paine, 1971] to his materials.

It was found, for example by Rivers [1972, p.109, p.138], that the expected high level of student motivation had not been achieved through the audio-lingual approach. Repetition of structures and manipulation of patterns, often without awareness of their meaning, became monotonous, while some pupils, having to rely on the sense of hearing alone, without the support of reading material, felt uncertain and lacking in confidence. Burstall [1974, p.168] found that pupil rejection of purely auditory presentation was increasingly marked at secondary level. In attitude questionnaires [Burstall, 1970, p.182], 61 per cent of primary school pupils taking part in a survey stated that seeing a French word written down helped them to say it, while the responses of secondary school pupils were generally critical of the absence of written work at the primary stage. More recently recommended approaches [Chastain, 1971; Lugton, 1971; Smith, 1971] have stressed the re-establishment of meaning as a central consideration, earlier introduction of the printed word, and the role that intelligence rather than just memory can play in language learning.

But such modifications to the audio-lingual approach may recreate the situation in which errors caused by interference can occur. If the meaning of an utterance is known to the student, then its representation in his own language will not be far from his mind, even if it is not explicitly stated. And if the graphic representation of the second language is presented to him too early, then reading habits from the first language may interfere with his pronunciation of the second.

A compromise between the two approaches may be a solution, that is, an intermediate approach which will facilitate the balanced development of all skills with minimal interference from the first language, while creating or at least maintaining positive attitudes towards language learning in the student.

In the following pages the developments outlined above will be discussed in more detail. Consideration will be given to the opinions of linguists, psychologists and language teachers who not only experienced these developments, but also played a part in determining their course.

2. The Primacy of Speech

A major feature of the growth of linguistics as an independent discipline has been a revaluation of the relationship between writing and speech. While the earlier attitude attached greater importance to written language, the more recent attitude has elevated speech to a prime position, with writing secondary to it and dependent on it. Wilkins [1972] gave the following reasons:

a. Given physiological, neurological and psychological normality, a child will talk just as surely as he will walk. But there is not the same inevitability with regard to reading and writing, as can be seen in many present-day societies where these skills are unknown, and in the high number of people who remain illiterate even in societies where reading and writing are common.

b. The existence of illiterate peoples indicates that the skill of speaking preceded that of writing in the process of human evolution.

c. Every individual learns to listen before he learns to read and to speak before he learns to write. Indeed he learns to listen and to speak whether we 'teach' him or

not. It would be much more difficult to learn to read and write without help. In fact, when reading and writing are learned, they are accepted as a representation of speech which has been acquired previously.

d. In the course of time languages change, and speech is the most influential agent of change. Where change has occurred in speech, the written language may eventually be changed to accommodate it. But where such changes in writing are not made, as is often the case, then an increasing difference develops between writing and speech, and the one serves less and less as an accurate guide to the other. Changes may be unsuccessfully resisted by society on the grounds that the new forms are wrong, but structural development of a language is almost always influenced by speech [Wilkins,1972, pp.7-8].

3. The Audio-Lingual Approach to Modern Language Teaching

a. The influence of B.F. Skinner

Studies carried out by B.F. Skinner [1957, 1959] contributed to the development of programmed learning and to developments in related aspects of language learning. Skinner had been influenced by Bloomfield [1933, 1942] who had made the first thorough application to language study of the principles of behaviourism, stressing what he regarded as the mechanistic nature of the process, and underlining the idea of language as a set of habits rather than as a body of knowledge. Bloomfield's approach was shown to be successful when applied in the Armed Forces language schools, and the same basic tenets were applied to school language programmes in the years following the war.

It was in the next phase of development, towards the end of the 1950s, that Skinner's ideas became a major influence. In his Verbal Behavior [1957] and Cumulative Record [1959] he described verbal behaviour as a collection of stimulus-response bonds, and language learning as active responses to stimuli, followed by immediate reinforcements. The basic principles of programmed learning - minimal steps, active responses, error-free progression, and immediate reinforcement - were superimposed by Skinner on the Bloomfieldian idea of language as a set of habits. At precisely this point in time technology was able to supply the types of teaching machine which could arrange for the presentation of aural-oral language learning materials in minimal steps, with active responses from the learner, and with immediate reinforcement of responses. Language laboratories were constructed in many schools, and language courses henceforth usually included material which would lend itself to the laboratory situation - imitation drills, structure drills, transformation drills, mimicry-memorization and pattern practice drills - all planned to lead the learner towards the desired behaviour by series of successive approximations. The drills were designed to be rapid and error-free, leading to mastery of the second language at an automatic, habitual level. Courses were based on the premise that grammatical rules were to be excluded from language learning, and extension of what had been learned was to be by generalization based on analogy.

b. Contrastive Linguistics and the Problem of Interference

In the language learner's performance in any second language skill, the influence of his mother-tongue is a frequent problem and the source of many misunderstandings and errors. Transfer by individuals of forms and meanings from a known into a partially known language is caused by some point of similarity between the two. Where similarity can lead to positive transfer, it is of great assistance to both teacher and learner, but if similarities are misleading and likely to interfere in the learner's progress towards mastery of the second language, then preventive measures are required. To predict such errors and to prevent them are the main aims of contrastive linguistics. A major contributor in this area was Robert Lado [1957], who assembled a large number of examples of interference, classified them, and suggested specific counter-measures, including the use of a pre-reading period.

One of several types of interference which occur between first and second language arises when reading skills developed in a first language are applied in error to printed forms of the second language, resulting in incorrect pronunciation. To counter this, a pre-reading period is recommended, to establish second language speech habits firmly enough to resist this type of interference. This temporary exclusion of graphic forms of the second language from the learning situation reflects the new priority given to speech; the question is thus raised not only of the relative importance of the aural-oral and graphic skills, but also of their order of presentation to the learner.

c. The Spread of Audio-Lingual Teaching

The new attitude towards the relationship between speech and writing, the development of programmed learning, and work in contrastive linguistics lay at the base of the sweeping changes which took place in the field of modern language teaching in the years following World War II, and countless books and articles appeared on and around the subject, commenting, explaining, advising, advocating, and sounding notes of caution. New professional associations such as the Audio-Visual Language Association [London, 1962] came into being, publishing a journal three times a year, their aim being to promote language teaching by audio-visual and audio-lingual methods. The first issue of Le Français dans le Monde; Revue de l'Enseignement du Français hors de France, appeared in 1961, with an article by Gauvenet [p.31] indicating clearly that among the aims of the new journal was to advise and inform on audio-visual language teaching methods and materials.

The general tone throughout the fifties and early sixties was one of confidence and optimism, actively encouraged in the United States by the National Defense Education Act. One of the main spokesmen for the audio-lingual movement when it was moving towards its zenith was Nelson Brooks, whose Language and Language Learning: Theory and Practice [1960] was considered by many to contain the final statement as to how languages should be taught in the 'New Key', as the new oral approach came to be called. This work was distributed widely and freely to schools in the United States, as if it were an official

handbook.

On the relationship between speech and writing in the language learning programme, Brooks [1960, p.52] stated that the learner should hear only authentic foreign speech, hear much more than he speaks, speak only on the basis of what he has heard, read only what has been spoken, write only what he has read, and analyse - if he does so at all - only what he has heard, spoken, read, written, and learned. In another work, Brooks [1961, p.16] referred to the need for a pre-reading period of some length, stating that language is something you understand and say before it is something you read and write, that language learning for communication involves the learning of all the skills - hearing, speaking, reading, and writing, and in that order. They should not be engaged in simultaneously from the start, but a period of at least some months should precede the introduction to reading and writing. A language learning programme should not permit the student to have constant recourse to a printed script.

A complete statement of the advantages to be expected from such an approach was drawn up by Brooks [1960, chapters 10 and 12], and his advice was systematically, even rigidly applied in schools throughout the United States and elsewhere. P.D. Smith Jr. conveyed the feeling of optimism and confidence felt by language teachers at that time, describing the early sixties as 'heady times for those of us active in the change process. Life was exciting. Times were good' [Smith, 1971, p.2]. He explained how federal funds had dramatically

narrowed the profession's communications gap, so that the theoreticians of second language learning came to work closely with the language teachers. Many National Defense Institutes, workshops, curriculum guides, articles and newsletters compared the shortcomings of the 'traditional' approach with the virtues of the new 'functional' method.

While the audio-lingual movement grew in the United States, parallel growth was taking place in Europe. In many cases the use of film-strips as well as tapes was a major feature of the courses produced there, and the term 'audio-visual' was perhaps more wide-spread and better known than 'audio-lingual'.[1] Again, numerous catalogues, articles and books appeared, giving advice and encouragement to teachers who were using or who were contemplating using the new materials. A large amount of work in course production [Voix et Images de France, Bonjour Line, De Vive Voix] and in the distribution of accompanying ideas, aids, and advice has been accomplished by CREDIF, the research centre at St. Cloud. The CREDIF insistence on the primacy of speech over writing and on

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[1] It should be made clear that the term 'visual' in the label 'audio-visual' refers to slides, filmstrips, or any other method of illustration, including pictures printed in books, the purpose of which is to show the learner the situation in which a conversation takes place or to illustrate the meaning of a word, phrase, or sentence. It does not refer to seeing the printed forms of the language, and there is no contradiction when an audio-visual method is said to rely on one sense modality. The emphasis is on the language being heard rather than seen. The effectiveness of the visual element - to make a very broad comparison, whether A-V is superior to A-L - is not a concern of the present investigation.

its precedence in the teaching sequence followed the pattern of Brooks' recommendations. Girard [1972, p.22] stated that an adequate command of the spoken language should be the first aim of every audio-visual method, while comprehension of written texts and the writing of original compositions should not be expected of the pupil until the foundations of oral proficiency had been firmly laid. The length of the exclusively aural-oral period would vary according to the particular form of method employed, but it should rarely be shorter than fifty hours, allowing ample time for a thorough assimilation of the basic structures [ibid., p.30].

Official policy statements soon began to make reference to the audio-lingual approach. In 1960, for example, a statement on the objectives of foreign language teaching, compiled by the National Educational Association, gave advice similar to that of Brooks and Girard on the importance of the exclusion of printed material during the initial stages of language learning, which could be as long as three years at the elementary school level [Starr et al., 1967, pp.336-8].

The extent to which this advice was followed in elementary schools can be judged from the results of a survey conducted in 1964 by the FLES Committee of the American Association of Teachers of French, "The Correlation of a Long Language Sequence Beginning in the Elementary School" [Donoghue, 1968, pp.30-36]. The survey covered 160 schools in 43 states, and of these, 75 per cent delayed the introduction of reading and 81 per cent delayed the introduction of writing. The average pre-reading period was two years.

The general situation with regard to the introduction of reading was summarised by Carroll [1963, p.1078]. He stated that proponents of 'new type' courses which initially emphasized audio-lingual skills claimed that reading skills would be more fluent and facile if the teaching of reading was delayed until the student had achieved a certain degree of mastery of audio-lingual skills. He added that no research was available at that time to indicate how sound such claims were, or how long the teaching of reading should be delayed. Reindrop [1957] had suggested that reading could start at any time as long as it was preceded by a 'reasonable' mastery of basic sounds and structures, while others [Grew, 1956] had proposed to delay reading until an advanced degree of mastery of audio-lingual skills had been achieved.

These two points of view appear to typify the attitudes towards the use of a pre-reading period which prevailed during the period when the audio-lingual approach was in high esteem. The principle of a pre-reading period was accepted; opinions varied as to how long it should be.

4. Challenges to the Audio-Lingual Approach

a. Criticisms of Audio-Lingual Teaching

Chomsky's [1959] critical review of Skinner's Verbal Behavior [1957] contributed to gradually increasing doubts of the efficacy of the audio-lingual approach to language teaching. That the implications of Chomsky's views took some years to emerge in terms directly related to language

teaching can perhaps be accounted for in two ways:

i. The impetus given to the audio-lingual movement by the National Defense Education Act, including the widespread distribution of Brooks' work [1960], and the general feeling of optimism and confidence experienced in the language teaching profession.

ii. Chomsky's own statement that he doubted the relevance to language teaching of the insights achieved in linguistics and psychology [Allen and Van Buren, eds., 1971, p.152].

Nevertheless, the seeds of doubt had been sown, and the term 'traditional' even came, in time, to be applied to the Skinnerian approach [Jakobovits, 1968, p.54].

It is beyond the scope of the present work to explore Chomsky's theories in detail, but certain features can be examined as they appear to relate to language learning, and in particular as they differ from those current in audio-lingual theories.

Audio-lingual strategy derived a major component of its theoretical basis from contrastive linguistics and a structural framework based thereon, a framework which stressed the uniqueness of each language, without any reference to language universals. Chomsky [1957], on the other hand, held the view that the deep structures of language, 'abstract representations of underlying conceptual categories and patternings of these' [Catford, 1969, p.82] were universal, that is, the same for all languages.

A knowledge of these language universals was believed by Chomsky [1965, pp.51-8] to be innate in every child, and specifically a human characteristic, whence the inade-

quacy of Skinnerian theories, based largely on animal behaviour. How the child would discover the locally appropriate expression of these underlying universals would certainly depend upon imitation, to acquire the units of language, and repetition, to 'stamp it in' - an expression used by Jakobovits [1968, p.67], possibly to avoid such terms as 'pattern practice' or 'memorization', which would indicate a close alignment with the audio-lingual approach. But these activities have been found to be far less efficient learning devices than Skinner's disciples believed [Chastain, 1969, pp.117-8], and totally inadequate to account for the enormous learning task which is accomplished in a comparatively short space of time by a very young child. Miller et al. [1960, p.146] stated that a childhood one hundred years long, with no interruptions for sleeping or eating, with perfect retention of every string of twenty words after one presentation, would be necessary to account for the language skill, if language learning occurred solely as a result of stimulus-response learning. An additional factor was required to account for what actually happens in language learning, and this factor was the 'language acquisition device' postulated by Chomsky, by which the learner creates language in accordance with universal 'rules'. McNeill [1965, p.115] described the process as more like writing a play than appearing in one, and Spolsky [1966, p.120] stated that it involved not just the performance of language-like behaviour, but an underlying competence that made such performance possible.

The audio-lingual school insisted on unconscious use

of language, leaving the mind free to concentrate on content. Its critics agreed that this was the situation in structural manipulation of language by a native speaker [Chastain, 1969, p.120], but in the process of developing speech into an automatic, unthinking skill, they stressed the cognitive, conscious aspects of language learning. Chastain [1969, p.120] suggested, as a comparison, the example of a man who ties a tie or drives a car without conscious awareness of the component actions, but while he was learning to do these things, he was aware of each step. Awareness of grammatical rules had not been encouraged in the audio-lingual approach, and Politzer [1965, p.25] had referred to the 'students' rationalizing and thinking about the pattern' as a danger which was likely to occur sooner or later in any case, and which was a constant threat to his unselfconscious performance in the second language. Donaldson [1970] was critical of such attitudes, rejecting the idea that 'eighteen-year-old freshmen are not rational human beings and should be kept from intellectualizing about foreign language' [p.124].

One of the most firmly held tenets of the audio-lingual approach was the introduction of the skills of reading and writing some time after those of listening and speaking. Donaldson questioned this, and concluded that a sound signal alone was inadequate as a basis for language learning activities [1970, pp.126-9]. As support for this view, he quoted Carroll's [1965a] conclusion that 'other things being equal, materials presented visually are more easily learned than comparable

materials learned aurally' [p.105].

Yet another attack on audio-lingual theories was directed at the work done in contrastive linguistics to prevent or reduce interference between languages [Donaldson, 1970, p.130]. Structural drills were based covertly on a contrastive study of two languages, and yet the target language was never to be described to the student overtly in terms of the native language, but only, if ever, in its own terms. Donaldson concluded that such monolingual description of the target language without overt comparison was a harmful deterrent to the student, and prevented him from effecting a potentially large positive transfer from one language to the other.

Thus the audio-lingual approach was criticised for its neglect of the universals of language, for its over-insistence on mechanistic methods of learning and the consequent neglect of cognitive processes, for its over-reliance on the sense of hearing alone in the early stages, and for its discouragement of positive transfer between languages. Its frequent exclusion of considerations of meaning from the language learning situation was a further criticism which will now be discussed.

b. The Importance of Meaning

The audio-lingual approach had placed prime stress on the acquisition by the language learner of oral fluency in the foreign language, and any arrangement of materials or activities which would contribute to the realization of this aim was implemented. The de-

laying of the introduction of reading and writing skills and the application of contrastive linguistics to reduce the amount of interference from the learner's native tongue were two of the techniques used in an attempt to eliminate from the learning situation any influence which did not contribute directly to oral mastery. In many cases, consideration of the meaning of what was being said was among the facets of language to be excluded. Concern for how to say something in the foreign language, with accurate pronunciation and intonation and with a fair measure of fluency, excluded consideration of what was being said.

An extreme example of this approach could be found in the courses developed by Rand Morton at the universities of Harvard, Berkeley and Michigan, in which the first 150 hours or so were spent on 'phonematization', 'vocalization', and 'acoustic signifiers' before the student became aware of what he was saying, or at least, before he needed to be aware of what he was saying in order to follow the programme and make the required responses [Dutton, 1965, pp.172-5].

Politzer stated that understanding was a type of interference which hindered the acquisition of automatic responses [1965, p.25], and many textbook writers seem to have acted on his advice and to have deliberately constructed pattern drills which students can use without any reference to the meaning of the items. Stack listed many types of pattern drills in which the pupil would not need to be aware of the meaning of any of the items to answer them correctly; that is, in none of them does

the meaning enforce the selection of one response rather than another [Stack, 1966, pp.87-143].

Pattern practice was one of the recommended activities in the audio-lingual approach. Mimicry-memorization was another, starting from dialogues based on everyday situations, such as those in Ecouter et Parler [Côté et al., 1962]. The student was expected to imitate and repeat the material often enough for it to be committed to memory.

But certain studies have thrown doubt on the value of frequent repetition in language learning [Chastain, 1971, pp.136-7]. Rock [1957] divided the learning of stimulus-response associations into two phases: their formation, and their strengthening, and concluded that a single trial was sufficient to form associations, repetition playing the role of strengthener of associations. This in itself represents no attack on audio-lingual theories, since stimulus-response bonds do need to be strengthened in language learning, and repetition was the recommended method of achieving this. But Rock 'precipitated a great deal of research on the subject' [Chastain, 1971, p.136], and subsequent studies examined in more detail the effects of repetition. Clark et al. [1960] found Rock's conclusions difficult to accept, but obtained similar results in their own investigations. Estes [1960] reported research which had found only the first few repetitions to be effective in strengthening stimulus-response bonds, while Murdock and Babick [1961] had found repetition to have no discernible effect in assisting recall.

Not only is doubt cast by these studies on the value of frequent repetition for mastery of structures, but its effect on the student's awareness of meaning is also questioned. Lambert and Jakobovits [1960] investigated the phenomenon of verbal satiation, and found that the subjects' awareness of meaning was weakened with frequent repetition of words or even disappeared altogether. Wertheimer and Gillis [1958] reported similar findings.

Meaning plays very little part in pattern practice, which is one of the central features of audio-lingual teaching; and in another, mimicry-memorization, it is rapidly eclipsed. And yet there are a number of studies of verbal learning in which the importance of meaning is underlined. Speilberger [1965], for example, conducted a series of four experiments to test the validity of behaviourist claims that efficient learning can take place without awareness of meaning. In each of them he found that 'performance gains were limited to subjects who were aware of the information supplied by the reinforcing stimulus' [Donaldson, 1970, pp.131-132].

Chastain also reported the following criticisms of teaching procedures based on the behaviouristic approach: a questioning of the value of practice without understanding, by Taba [1962, p.82]; a statement that overt responding, practice, and reinforcement can be overemphasised 'to the neglect... of subsumption and other cognitive processes', by Briggs and Hamilton [1964, p.546]; and a finding by McKinnon [1965] that structural drills had proved inadequate to teach meaning [cited by Chastain,

1969, p.116].

Further doubt on a habit-formation theory which emphasised automaticity over meaning was cast by Carroll [1965a] who concluded from his survey of research that 'the more meaningful the material to be learned, the greater the facility in learning and retention' [p.105]. Donaldson [1970] was more specific in his conclusions and more obviously critical of the audio-lingual approach when he stated that meaning should always play a central role in practice, the 'arbitrary ban on translation should be rescinded', and tape scripts should no longer contain 'mindless structure drills and dialogues for memorization' [p.133].

c. A Re-examination of Basic Assumptions

Not everyone was converted to the audio-lingual approach, but early notes of warning were ignored by the most enthusiastic. Smith [1971, p.2] described how critics and voices of caution were disregarded by many of the 'New Key "Young Turks"!. But as time passed, some of the earlier advocates of audio-lingual methods began to have second thoughts. Smith [1971, p.1] referred to the 'first flush of enthusiasm of 1961' which had become 'a slight case of hardening of the arteries by 1965'. And Carroll, at the 1964 International Conference on Modern Foreign Language Teaching in Berlin declared that 'the audio-lingual theory ... is ripe for major revision' [Smith, 1971, p.1]. The absence of rigorously conducted supportive research was pointed out by Smith [1971, p.3] and Carroll [1963, p.1078], while failure on the part of

students to respond enthusiastically to the new methods and the unattainability of Brooks' 'co-ordinate bilingualism' both contributed to the feeling of disenchantment [Smith, 1971, p.3]. Brooks himself had to acknowledge that the proof he had hoped for had not been forthcoming, and that the new approach was 'largely an act of faith' [Smith, 1971, p.4].

Chomsky's [1959] challenge to the Skinnerian view of language learning as habit formation was repeated in terms less remote from the classroom with the publication of W. Rivers' The Psychologist and the Foreign Language Teacher [1964], in which each of the major assumptions of the audio-lingual approach was subjected to close scrutiny, even including the statement that speech should precede writing.

Using the order of skills as they were learned in the first language [L_1] as a justification for imposing the same order in the learning of a second language [L_2] was criticised in view of the great differences between the learning situations. In the L_1 learning situation the learner is developing the use of his organs as he learns the language. He uses what he hears, because that is all there is for him to use. He has not yet learned how to engage in the activity of reading. By contrast, the L_2 learner has usually mastered the skills of how to speak, read and write. He has also usually learned how to extract information from books. He has already mastered the concepts which enable him to come to terms with his environment and learned how to satisfy his physical needs. The one language which he has mastered is

normally sufficient for his survival; a second is not necessary.

Another difference between the L_1 and L_2 learning situations is that of opportunity. The L_1 learner is steeped in the sound of the language he is learning all day long, while the L_2 learner has an hour a day, if that, and for a limited number of years.

The attitudes of teachers to errors in the two languages differ greatly. The L_1 learner uses single words which do the work of sentences, he uses mispronunciations, wrong word formations, wrong order of words - and is praised and rewarded. He is stretching to communicate, and succeeds. The L_2 learner is encouraged to use complete sentences, to form them correctly, and to follow exact pronunciation patterns at every stage. There is little experimentation, and little tolerance of error. Communication is minimised.

The analogy between L_1 and L_2 learning was thus argued by Rivers to be an inadequate justification for the presentation of the L_2 skills in the order listening, speaking, reading, writing [LSRW]. Other justification was sought from a logical analysis of the situation. New sounds must be heard before the learner can utter them. The sounds cannot be derived from a script which has different sound-symbol associations from those of L_1. Is LSRW the 'logical' rather than the 'natural' order? Rivers turned to Hebb's The Organization of Behavior [1949] to seek an answer to this question, and the 'organization' of the title is a key to much of her subsequent discussion

of this matter.

Of three kinds of perceptual unity - that of a figure distinct from its background, of a figure affected by experience, and of a figure defined by properties of association - only the third level is recalled with ease. In this third level of perception, similarity or otherwise to other figures is involved, including 'organization' of figures within a set [Rivers, 1964, pp.19-35]. Licklider and Miller [1951] suggested that perceptual unity in speech follows the same triple pattern - noise detached from its background, noise with rhythm, with a rise and fall of the voice, affected by personal experience with language, and an identification of noise which is more than just hearing it but includes associating it with other noise patterns, 'organizing' it. Only speech perception at this third level, they maintained, can readily be recalled.

The relevance of this type of organization of perception to language learning is particularly clear if consideration is given to 'information', to the question of how vital each phoneme, each word, each phrase even, is to the communication of any given message. If a unit of language is not vital to comprehension of the total message, it carries little if any information, but if the message cannot be understood without it, then it contains significant information. Much of what is heard or read in L_1 is redundant because of the mental gap-filling which is supplied by those who listen or read. In L_2, however, there is little if any chance of making use of the predictability or partial predictability of any item of language. The learner does not know the language well

enough to organise or reconstruct a sentence which has been partially heard, or to choose between two possible interpretations. The sounds and combinations of sounds may be unusual, and unsuspected problems of phonemic discrimination may add to the difficulty of listening.

Dakin [1973, p.166] referred to its 'ephemerality' as a distinguishing feature of the spoken word, and for a learner to catch the intonation, the organization of syntax, the sound discriminations, and the meaning of an utterance 'out of the air' is an enormous task. For many it may be impossible without a script to which they can anchor what they hear, to study it and to organize it. And without the organization which is imposed by the script, there is a danger that the learner may invent his own. The difficulties and the dangers may be particularly great for the 'eye-minded' student, eye-mindedness being conceived of as either a relatively permanent constitutional trait or a result of a predominantly visual emphasis in the individual's school experiences [Dunkel, 1948].[2]

With a script in front of him, the pupil risks interference from L_1 associations occasioned by the orthography of L_2, but Rivers maintained that this is a small risk when compared to the gain in organization and confidence provided by the presence of the script, and it is a risk which has to be run sooner or later in any case. It can be minimised by stressing the links between orthography and sound as items occur. This recalls the findings

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[2] The possible effects of teaching method on student motivation are considered in more detail in a later section; pp.37-39.

of Marty, that no matter how long or how short the time lag, students at a high level of ability learn to counter interference, while the pronunciation of poor students is constantly threatened [Marty, 1960, pp.75-6]. Any long time lag has the further disadvantage mentioned by Rivers and Marty, that correct spelling habits are delayed and 'phonetic' spelling is invented.

In a later work, Rivers [1968, p.218] returned to this question again, saying that some weeks or even months of purely oral work can result in excellent articulation and pronunciation, but deterioration can set in as soon as reading is introduced, whenever this may be. Until then, some pupils surreptitiously take orthographically inaccurate notes, and the unlearning of mistakes may be difficult. There may be anxiety in the absence of written support, and pupils may turn to ill-informed parents or old-fashioned text-books for help. Such anxiety may create a mental block which hinders future development.

In the face of these considerations, some favouring a pre-reading period, and some high-lighting its dangers, Rivers [1968, p.219] advocated a compromise between a lengthy delay to the introduction of reading and its very early introduction. This compromise would be to spend sufficient time working orally on each point or unit of a language course to establish correct pronunciation over that area only, and then to introduce reading and writing related to that segment of the language. Instead of L - S - R - W or any other arrangement with long spacing between the introduction of sub-

sequent skills, pupils would follow the pattern LSRW within each unit of work.

Rivers' re-examination of the basic principles of the audio-lingual approach was noted by the teaching profession, and changes in practice occurred in some areas. Donoghue [1968, p.62] observed that in Cleveland, Ohio, it had been stressed in 1958 that there should be no reading or writing in junior French classes, but by 1964 there was reading in the 6th grade. He also noted that in Beverley Hills, California, reading was introduced in grade 5 and writing in grade 7 in 1960, but by 1963 reading was being introduced by the second semester of grade 2, with some formal reading and writing by grade 3. Guides issued to teachers often left the final decision in their hands, and the strict taboo on reading for long periods became less noticeable. As an example, Donoghue [1968, p.62] referred to directives from the Board of Education for the City of Chicago [1962, p.xiii] in which teachers were advised to let the ability and progress of the class determine the point at which reading was introduced.

B. ISSUES RELEVANT IN DETERMINING THE LENGTH OF A PRE-READING PERIOD

Summary

Suggested components and sources of pupils' attitudes are indicated, with an outline of opposing opinions as to the effects which a pre-reading period may have on pupil motivation. Many combinations of skill sequences and spacing are possible, and Mackey's suggestions concerning programme description and further sub-divisions of skills are included. Different combinations of first and second languages present interference problems of differing magnitude, and this may help determine the optimum length of a pre-reading period. Consideration of the advantages and disadvantages of different ages for language study leads to the observation that the benefits to be obtained from a pre-reading period may vary with the age of the learner.

1. Motivation in Language Learning

Several studies have confirmed that pupils' interest in foreign language study is generally low, lower at least than in other areas of study. Wykes and King [1968] found that French was rated lowest of six subjects by pupils at all levels in high schools in Australia, and their attitudes towards particular aspects of the subject - for example, how interesting they found their study, or how useful they thought it would be - were generally poor. A marked decrease in the number of students through the forms and a deterioration in the attitudes of those who remained were noted. The problem of falling rolls in foreign language study in Australia was also discussed by Horwood [1972]. Jakobovits [1970, pp.66-8] reported a survey among university students which revealed deep dissatisfaction with the work load in foreign language study, with foreign language requirements in college, and with the benefits obtained from their foreign language courses.

Jakobovits [1970, pp.75-6] reviewed the problem and stressed the need for better trained teachers, an earlier start to foreign language learning, and improved motivation. He suggested that this third element would involve an accurate understanding from the pupils of the complexity of language learning and of the relevance of classroom activities, and from the parents an appropriate level of expectation and an awareness of the cumulative nature of foreign language study.

Attempts have been made to define the constituent elements of motivation and their sources. A division into two types of motivation was suggested by Lambert et al. [1962, 1963]: integrative motivation - a measure of interest in and respect for the foreign country, its culture and its people; and instrumental motivation - a measure of interest on the basis of utility, to improve one's general education, to facilitate later studies, or to obtain certain qualifications. Their findings suggested that foreign language learning is more likely to be successful if the student's motivation is integrative rather than instrumental. Burstall [1970, 1974] confirmed a link between attitudes and achievement, but found that the majority of students could not be classified as mainly instrumental or mainly integrative in their motivation, there being a widespread desire for contact and communication with French people as well as an emphasis on enhanced employment opportunities following the learning of a second language. Gardner and Santos [1970] found that in the Philippines, where knowledge of a second language has clear instrumental value, those students with instrumental motivation were more successful than those with integrative motivation.

Spolsky [1969, p.274], Lambert et al. [1962, pp.473-91] and Gardner [1960, p.213, p.216] found that parental attitudes were the major factor in determining pupils' positions on the integrative-instrumental scale. Their studies were located in Canada, where problems of bi-cultural existence and a greater awareness of inter-cultural tolerance or conflict may be found. Gardner and Santos [1970] reported that in the Philippines, where instrumental motivation was linked to success in language learning, the tendency was even more marked in the case of those pupils whose parents favoured language learning because of its relevance to their children's employment prospects. Burstall [1974, p.60] also observed a link in Britain between parental support for foreign language learning and their evaluation of its potential value in employment. In their studies of pupils' attitudes towards foreign language learning in Australia, Wykes and King [1968, p.149] reported that the influence of parents was marked, and regretted the inability of many parents, who had no knowledge of or interest in the foreign culture or the learning process, to bring any positive influence to bear on the formation of their children's attitudes.

As well as the motivation which a child may bring with him to the classroom, derived from the society in which he lives and especially from his parents, there is the type of motivation which can be created within the classroom. Novak referred to this motivation as 'cognitive drive' and to 'positive motivation resulting from the learner's awareness that he is learning meaningfully' [Novak, 1969, cited by Chastain, 1971, p.244]. Christensen and Shaw suggested that motivation can be created

by the presentation of a well-articulated sequence of language structures and concepts, and by the ability of the teacher to help the learner 'internalize' the structures of the language without the interference of sophisticated grammar analysis or undue communication in the learner's native tongue [Christensen and Shaw, 1968, cited by Chastain, 1971, p.244]. Chastain referred to a 'rapport' between teacher and taught - not just being popular, but setting up a classroom atmosphere in which students are stimulated to learn, where they are co-operative and diligent, where they want to learn what is being taught. His conclusion was that 'motivation is the result of good teaching' [Chastain, 1971, p.244].

Wykes and King [1968, p.93] had attempted to isolate aspects of the learning situation in which the teacher might be able to influence pupils' motivation, but in their survey of the attitudes of Australian pupils they found that little was being achieved [p.34]. Thirty-eight per cent of the pupils gave negative responses on the 'interest' items of the questionnaire. Interest might have been stimulated by the use of a variety of aids, but 74 per cent of pupils gave negative responses to the items dealing with this aspect. The novelty of a different way of life and considerations of French culture might have caught the imagination of some children, but Wykes and King [p.149] found that very little of this subject area had been taught, and that what had been taught had had very little influence on overall attitudes.

Achievement in a subject is one area of the learning situation which is certainly linked to motivation [Gardner and Lambert, 1972, pp.111-14]. But it is very difficult to identify

cause and effect, and however true it is that achievement can influence motivation, it is no solution for the teacher, who is equally if not more concerned with the problem of how to improve achievement. He is more interested in causation in the reverse direction, in the possibility of improving motivation which will, in its turn, have a beneficial effect on attainment.

Lambert et al. [1962] found that intelligence and aptitude on the one hand, and attitudes and motivation on the other, acted separately and independently as determinants of foreign language achievement. Similar findings were reported by Gardner and Lambert [1959] and Gardner [1960], but in these cases it was found that four independent factors contributed towards a student's achievement in foreign language study: aptitude, verbal I.Q., attitudes towards the French community [integrative motivation], and intensity of desire to learn French [instrumental motivation].

In his Language Aptitude Battery, Pimsleur [1966] acknowledged that motivation was relevant in predicting attainment, for he included an 'interest' score in his battery, though it carried only eight points out of a total of 117 for the battery as a whole. Carroll [1962], however, stated that motivational differences had little effect on students' achievement, as long as they actively engaged in learning, whether they wanted to or not. And yet he agreed that a favourable home environment could contribute to high levels of attainment because the students were 'better motivated to learn' [Carroll, 1967, p.138].

More recently, Jakobovits [1970, p.98], on the basis of studies by Carroll [1962], Carroll and Sapon [1959], Flaughter [1967], Gardner and Lambert [1965], and Pimsleur, Sundland, and McIntyre [1964],

has listed his estimate of the variance contribution of the various factors involved in foreign language achievement as follows: aptitude, 33%; intelligence, 20%, perseverance and motivation, 33%, others, 14%.

The effect of a pre-reading period on motivation has been described as both beneficial and harmful. Advocates of the audio-lingual approach were confident that student motivation would be improved by the observance of an introductory period devoted solely to listening and speaking activities. Jerman suggested that if pupils were given language that they were able to use immediately, a feeling of 'motivation due to success' was likely to be aroused in them [Jerman, 1965, pp.35-36]. Wykes and King made an observation similar to Jerman's, saying that the audio-lingual approach would give pupils a feeling that they could use French [Wykes and King, 1968, p.149]. Jerman referred to 'immediate tangible competency', even if in only one aspect of the language, which would result in better motivation. Fewer of the students would be likely to 'fall by the wayside', and more of them would want to push their studies further. He claimed that there could be observed in an audio-visual classroom 'astonishing interest and enjoyment, ... a degree of attention and absorption that is lacking in normal work even with a good teacher' [Jerman, 1965, p.24], and added that the temporary exclusion of the written language added to rather than distracted from it, for the spoken language 'opens a window on a culture in a far more realistic and meaningful way than any study of the written language can ever achieve' [p.24].

But confidence in the positive motivational effect of the new approach was not universal. As early as 1948, Agard and Dunkel questioned the belief that students were more highly

motivated in classes which emphasized listening and speaking, having found that the 'relentless regularity' of structural drills was tiring and oppressive to students [Agard and Dunkel, 1948, p.291].

The effect of the approach used on a pupil's motivation was investigated by Dunkel and Pillet [1962, pp.46-7]. A planned 96-hour pre-reading period [two years] was reduced to 72 hours, for it was observed that pupils became bored with a strictly aural-oral approach, and both pupils and parents developed the opinion that their language study was unimportant since it used no books. The shortened period appeared to reverse the observed deterioration of attitudes, and the introduction of reading material was popular with all pupils, including the non-starters, to whom the reading material offered a second chance.

The absence of a supportive text was suggested as a possible reason for low motivation in some students by Mueller and Leutenegger [1964] and Mueller and Harris [1966], who observed that the student drop-out rate was higher in classes in which the students were forced to rely on only one sense modality. Carroll [1963, p.1071] and Rivers [1964, p.93, p.106] described the difficulties experienced by pupils when they are asked to manage without the familiar support of a text. Many of them are already very tense about foreign language study. If they also suffer from poor auditory perception, the resultant feeling of insecurity may lead them to seek help through other channels, destroying their confidence in their teacher and his methods, and reducing the rapport which the teacher is trying to establish. Rivers commented that such experiences early in a course could give students an early aversion to foreign language study which would have a detrimental

effect on later attitudes, and some students may fall so far behin their fellows that they feel 'frustrated, embarrassed, and humiliated' [Rivers, 1964, p.92].

This is a far cry from the 'astonishing interest and enjoyment' mentioned by Jerman [1965, p.24].

Stern suggested that pupils' feelings of tenseness, insecurity or anxiety may be eased by an explanation from their teacher of what they are doing and why, for children are not incapable of understanding the limitations of writing as a representation of the spoken language; they can be made aware of their own 'handicap' as readers of one language trying to read another, and understand the need for tackling the oral and graphic aspects separately and in stages. But such explanation may not always be successful, he warned, for pupils will find it hard to understand the 'emotional taboos on reading and writing imposed by audio-lingual fanatics', and they may be puzzled to find that reading and writing are 'virtues in the native language and vices in the foreign language' [Stern, 1966, p.269].

2. Skill Sequences and Spacing between Skills

In most language teaching materials developed during and since the audio-lingual era, and in most of the discussions which have taken place concerning their application and evaluation, the order of skill acquisition recommended or assumed has been listening, speaking, reading, writing [LSRW]. Brooks [1960] regarded it as the 'natural' order, because it was the order followed in L_1 learning, while Rivers [1964] referred to it as the 'logical' order, dictated by the nature of the materials and skills involved. It was in the spacing between the skills that their views differed. But even in the post-war period, when the primacy of

speech has been the guiding principle in the planning of materials and courses, LSRW was not the only skill sequence advocated.

The positions of reading and writing in the sequence were reversed by the compilers of Voix et Images de France [CREDIF, 1960] and of the later course De Vive Voix [CREDIF, 1972]; they recommended that the writing of dictations should precede reading. In terms of Rivers' 'logic', this would not seem to be possible. How can a pupil write anything before he has read it, unless he is guessing, and probably committing errors? It is a question of definition. He must obviously have seen the parts of what he writes before he writes it, but it is possible for him to write recombinations of the letters or words he has seen without previously reading these recombinations. This is so in the case of the advanced student, for example, who writes a dialogue or an essay in the foreign language. He has certainly not read them elsewhere. But it can also be the case for the beginner, who can recombine letters to write words which he has not yet read. This approach was described in detail by Boudot [1969, 1970], the member of the CREDIF team specially concerned with how to introduce reading and writing to pupils during the teaching of the CREDIF courses. The original decision to approach reading through the writing of dictations was made in 1960, and Boudot's articles, written after ten years of experience with this method, reaffirmed his confidence in this decision. He advised 50 hours or so of purely aural-oral work, at the end of which pupils would begin to learn mots clés [spelling keys] and acquisitions de mémoire [idiomatic phrases], whereupon they would be able to write, from dictation, hitherto unseen sentences. Reading of material other than the spelling keys and the pupils' own dictation exercises would be the last skill to be introduced.

Boudot's '50 hours' has elsewhere [CREDIF, 1972a] been expressed as 'after Unit 12' [p.39] when the course is taught intensively or 'after Unit 6' [p.36] when the course is taught extensively, as in the usual school situation. The time this takes will vary according to the teacher and the class, but the present writer has spent approximately one school term on the first six units of Voix et Images de France.

Another arrangement was suggested by Bolinger [1967, pp.294-5]. He examined the claims made on behalf of the audio-lingual approach, with particular reference to the recommended skill sequence of LSRW, 'a tenet borrowed from the old direct method'. But he suggested that a passive to active arrangement, that is, LR followed by SW, would have just as much to recommend it.

Chastain mentioned the possibility of RWLS as a possible skill sequence [1971, pp.361-3]. But he was not advocating a return to the days when reading and writing were the measure of a pupil's achievement, with listening and speaking perhaps added on as an afterthought. He acknowledged the contrast between his suggestion and the skill sequence generally followed in audio-lingual teaching, but suggested that, from the point of view of the nature of written and oral skills, such an arrangement might be preferable. He pointed out that oral language is much faster and must be processed mentally at a much greater speed than written language, while in reading and writing the students have time to pause, to consider, and to reflect. Chastain wondered if the assimilation of conceptual knowledge might not be easier in the written skills and if the ability to operate at this slower speed first might not facilitate and improve skills at the more rapid rate later.

It was in the spacing of skills that the contrast between the recommendations of Brooks and those of Rivers was most marked. Published course recommendations and classroom practices reflect these differing points of view, ranging from virtually no time delay between oral and graphic skills, to a matter of years. There are also differences between which skills are spaced and which are not. If the various possible arrangements and the varying time delays are taken into account, the total possible combinations are countless. Mackey used the following method to indicate the combined skill sequence and timing delay: L-[4]-R-[2]-S-[3]-W; that is, four months listening, to which reading is added for two months before speaking is introduced, and writing is included three months later [Mackey, 1969, pp.73-7].

The percentage of time devoted to maintaining one skill while another is being introduced can vary. For example, if this skill maintenance time were zero, the programme could be summarised thus:

	L	-	S/L	-	R/L/S	-	W/L/S/R
%	100		100/0		100/0/0		100/0/0/0

If numbers are inserted into this summary to indicate the amount of time between each skill introduction, comparison of entire systems may be possible at a glance.

This division of language learning activities into four separate skills is an over-simplification, for the exact measurement of time spent on any one skill is difficult. While a pupil is listening, his visual recall may be activated as an aid to comprehension; while he is reading, he may recall the sound of a word as an aid to comprehension. Conversation practice includes listening and speaking, usually more of the

former than of the latter, but how much more would be difficult to assess. Dictation exercises involve listening and writing. How much of each? The question becomes meaningless, and statements concerning percentages of skills used at any stage cannot be accurate. Mackey proposed a further subdivision of skills as a means of assessing skill involvement [1969, pp.73-7]. Using such divisions as he suggested, it would be possible in theory - though very difficult in practice - to stage separately not only the skills themselves but their components: sound discrimination [D]; phonemic identification [the grouping of discriminated sounds into functional units] [P]; comprehension [C]; alphabet identification [A]; word identification [I]; reading comprehension [M]; phonetic utterance [articulation] [U]; sentence pronunciation [N]; letter configuration [F]; orthography [O], and so on. An example of staging, in hours, might then read: D-3-DU-5-CDU-15-P-5-CPN-15-AI-2-IO-3-CNO, instead of '23 hours listening'.

Such subdivision of skills and any totalling of time derivable from it would be very difficult for the classroom teacher continually to bear in mind, but consideration of them could be useful when planning a course in broad terms.

3. Language Differences

If the introduction of reading is delayed, it is in the hope that oral habits will be strongly enough established in the learner to withstand the threat of interference from L_1 reading habits. This threat is greatest in the case of languages which use the same type of symbols, but whose sound-symbol relationships are most at variance with those

of the learner's own language. In such cases, and in the absence of counter-acting factors, a long pre-reading period would be needed. If, on the other hand, there is a close parallel between the phonetic and orthographic features of the two languages, then there is less risk of harming newly-established pronunciation habits when the pupil is presented with the printed form, and the pre-reading period can be short. Asher referred to a 'phonetic fit hypothesis' [1964, p.255] when he located different amounts of transfer from visual to aural learning and vice versa in various languages. It could thus be argued that the English-speaking pupil needs to master the pronunciation of French more thoroughly prior to reading than is necessary in Spanish. In the CREDIF language courses, for example, the pre-reading period in French is three times as long as that of its Spanish counterpart. The possibility that different languages have different pre-reading requirements was discussed by Sawyer et al. [1963] and by Hawkins [1971], and their research findings are detailed in a later section.

4. Age of the Learner

The FLES movement in the United States [Stern, 1966, pp.253-283] and the experiment conducted in Britain by the National Foundation of Educational Research, in which 6000 eight-year-old beginners took part [Burstall, 1968] are examples of an earlier start to language learning than was generally the case in the past. Mackey [1965, p.120] referred to isolated cases which had been described by Ronjat [1913], Pavlovitch [1920], and Leopold [1939-49] of very young children in exceptional circumstances who completely

mastered a second language in a relatively short period of time, with apparently greater ease than is ever experienced by an adult. Penfield and Roberts [1959] explained this language learning facility in young children by reference to the physiology of the human brain, and concluded that after the age of nine the brain loses the plasticity necessary for foreign language learning and becomes 'progressively stiff'. To support this theory they referred to cases of serious injuries to the area of the brain which controls motor activities. Children below the age of puberty thus afflicted were able to relearn a language completely, to a level of native fluency, whereas adults failed to achieve this level of relearning. In the case of families who move to a country where a different language is spoken, the parents generally speak the new language with a marked accent, while the children usually reach native fluency. But different opportunities may partially explain such apparent differences in language learning ability, for the children will normally attend school, while the parents may have less contact with the adopted community.

The theories of Penfield and Roberts have been challenged by other writers who have claimed that there is no decline in language learning ability up to age 21. Yeni-Kamshian et al. compared the ability of five-year-old and twenty-one-year-old subjects in the learning of phonemic discrimination and production in Arabic, and concluded that their results did not provide any evidence to indicate that children are better than adults at acquiring novel speech sounds [Yeni-Kamshian et al., 1969, p.276, cited by Jakobovits, 1970, p.56]. Stroud and Maul have demonstrated that the ability to remember both rote

and meaningful materials increases with age up to the fourth decade of life [Stroud and Maul, 1933, cited by Mackey, 1965, p.131]. Jakobovits stated that a college level foreign language course of one semester was typically considered to be the equivalent of a whole year of study at the high school level, implying that the older student made faster progress than the younger, and he also referred to the undoubted success of the Army Language School [Jakobovits, 1970, p.56]. In evaluating such findings, however, it must be acknowledged that other factors - different levels of motivation, for example - may have influenced the results.

Despite these challenges to the theories of Penfield and Roberts, belief in the value of an early start to foreign language learning is widespread. In his outline of the reasons for this belief, Stern mentioned the younger child's greater ability to imitate, the flexibility of his brain and speech organs, his comparative lack of self-consciousness, and his greater willingness to accept language without analysing it in terms of his own language. The total length of time available and the facilitation of the later study of other languages were also mentioned. But he laid particular stress on the difference between the types of learning which occur before and after the age of ten, describing the former as 'conditioned learning' and the latter as 'conceptual learning' [Stern, 1967, pp.19-23]. The point of view can be challenged, but if one assumes, as Stern does, that language learning needs to be more a process of conditioning than of concept formation, then a start to language learning before the age of ten is to be preferred.

Yet Stern did not deny the possibility of successful language learning at a later age; on the contrary, he listed certain disadvantages of an early start, and advantages which may be experienced with a later start, among them the danger of confusion between languages if the first language is not firmly embedded, and the greater mental capacity and improved memory of the older student [Stern, 1967, p.21].

Studies by Kirsch [1956], Anderson [1960], and Larew [1961] cited by Jakobovits [1970, p.52] aimed to determine the optimum age for beginning language study, but no clear advantage was found for any age. Jakobovits concluded that generalizations about the optimum age which failed to take context into account were almost certain to be false [1970, p.74]. Walsh, however, considered that the time factor should override all other considerations. He strongly recommended a start no later than grade 3, if there was to be sufficient time to 'get the job accomplished' by the end of grade 12 [Walsh, 1963, p.344]. Carroll suggested that, other things being equal, the earlier a child is introduced to a foreign language, the better his pronunciation will be, and that, in general, facility in acquiring good pronunciation is a decreasing function of age and levels off at about the age of puberty. But he pointed out the absence of evidence to suggest that children learn other aspects of language any better or any faster when account is taken of the amount of time they spend on learning [Carroll, 1960, pp.12-15].

Thus Stern [1967, p.21], Walsh [1963, p.344] and Carroll [1960, pp.12-15] shared the opinion that the total amount of time spent on learning was of greater importance in determining levels of achievement than the age at which study was

begun. This point of view was recently restated by Carroll [1975], following his study of a survey carried out by the International Association for the Evaluation of Educational Achievement [I.E.A.] into the teaching of French as a foreign language in eight countries, including New Zealand. He concluded that time was the most important predictor of success in learning French, and that the only advantage of an early start was that it allowed a longer period of learning. Burstall, however, reviewing the findings of researches into the teaching of French from age eight rather than eleven, examined the degree of mastery achieved by the earlier start, to see if there was any substantial gain. The question was answered "unequivocally in the negative" [Burstall, 1974, p.243]. The accuracy of this conclusion in the light of the evidence provided by Burstall has, however, been questioned by Bennett [1975, pp.339-40].

Whichever starting age is observed, then the materials and methods employed should suit the needs of learners of that age. The gradual shift of the starting age down through the grades in various countries has produced a new wave of published materials aimed at the needs and interests of younger pupils [for example: P. Symonds' French through Action, O.U.P., 1969; Bonjour Line from CREDIF; Frère Jacques from BELC[3] and the Mary Glasgow Baker publications Boum!, Ça va!, Chez nous, etc.].

The younger child is disposed to learn through activity and play, while to the secondary pupil such an approach

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[3] Bureau pour l'Enseignement de la Langue et de la Civilisation Françaises à l'Etranger;
9, Rue Lhomond, Paris, 5e.

may be less acceptable. The younger the pupil, the more unconscious habit formation is possible, whereas with older pupils analysis and abstraction seem to a certain extent inevitable, whether or not they are encouraged by the teacher. Such considerations may influence decisions concerning the length of the pre-reading period. Mackey compared the two months pre-reading period recommended for ten-year-old pupils in a Hungarian experiment with the twelve-month period tried out and approved in England with eight-year-olds [Mackey, 1969, p.75]. He concluded that the optimum spacing seemed to decrease with age, and also observed that reading and writing may not be possible in foreign language courses for very young children, since they are not yet fully literate in their own language, while at the secondary school the learner is so letter-bound that any long delay between speech and reading may result in the learner forming his own ideas of how the language must look in writing and devising his own system of spelling [Mackey, 1965, p.234].

Malmberg suggested that linguists and teachers may too often have forgotten that the choice of method must depend on a student's starting point, his capacity and his goal. He illustrated the point by considering his own needs if he were to learn Welsh or Albanian. He said that he would protest violently if his teacher gave him pattern drills and put him in a language laboratory. He would want a grammar, paradigms, vocabulary, rules, whereas a ten-year-old boy's reaction would certainly be partly different [Malmberg, 1971, p.8].

C. RESEARCH INTO THE EFFECTS OF A PRE-READING PERIOD

Summary

The use of a pre-reading period has been found to be of benefit in the formation of aural-oral skills, but the effects have been slight. In certain cases a pre-reading period has been found to have a negative effect on these skills. Any beneficial effect which a pre-reading period may have on the formation of other skills has not been demonstrated. It does not appear to be the case that aural-oral competence automatically creates reading or writing ability. In fact, pupils' skills seem to be linked directly to the type of foreign language course they have followed, though laboratory studies have found transfer between sense modalities to operate in both directions. Studies of the effect of a pre-reading period on pupil motivation have been few and inconclusive.

The benefits expected from the use of a pre-reading period could include:

1. Improved pronunciation because of an increased concentration on listening and speaking during the initial period of second language learning and because of less interference from the written forms of the first language.
2. Subsequent improvement in other areas of language study, since by then the basic forms and structures of the language would be 'known' orally, possessed by the learner as a habit, on which he could draw to perform correctly in other language areas. He would be able to read in the real sense of the word, rather than decode, and writing would be a putting down on paper of something already known, rather than a laborious encoding.
3. Improvement in the motivation of the learner, who would be using language orally, in a very practical, real and everyday manner, instead of by the traditional book-oriented approach to learning.

On the other hand it is possible that the simultaneous in-

troduction of listening and speaking on the one hand and reading and writing on the other could be preferable, since it offers the following possible advantages:

1. An avoidance of the pupil having to rely on his sense of hearing alone[4]. The additional help offered by the sense of sight - seeing the printed forms of the language - could improve comprehension, retention, and recall.
2. A reduction of the insecurity felt by the pupil who otherwise had to rely on listening alone, when his previous educational experiences had conditioned him to rely heavily on reading. His motivation would be thereby improved.

Several studies have been specifically designed to assess the effects of a pre-reading period. Circumstances have been varied, experimental designs employed have been dissimilar, and conclusions have differed.

The following section will consider in turn those studies which have attempted to assess:

1. The effect of a pre-reading period on oral-aural skills.
2. Its effect on other skill areas.
3. Its effect on pupil motivation.

1. The Effect of a Pre-Reading Period on Aural-Oral Skills

In several accounts of research into the effects of a pre-reading period, some benefit to oral skills was reported. All such studies outlined in the following pages were conducted

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[4] Many courses of the type which employ a pre-reading period make use of tape-recordings and slides, thus involving looking as well as listening, but the visual element of this type of instruction is not in a particular language. The pupil is not seeing the graphic forms of the language being studied when he looks at a picture on a screen and hears an appropriate caption.

in the United States, the majority of them with high school classes. They were concerned with the teaching of European languages only - French, German, Spanish and Portuguese - and the duration of the experiments ranged from ten class sessions to two years. These studies were conducted at a time when the general framework of teaching methods within which experimentation was carried out was largely influenced by the audio-lingual approach. One of the aims implicit in all the studies reported here, though their authors may not have used precisely these terms, was an evaluation of the audio-visual and audio-lingual course recommendation that a pre-reading period should be observed. The methods and materials used were such that reading and writing could be added, or not, to an already complete learning package - complete in the opinion of the proponents of the pre-reading period. Such courses would typically use tape-recordings and, less regularly, illustrations, to present dialogues and pattern practice materials. Meaning would be transmitted explicitly, by the use of English, or implicitly, by pictures, by classroom demonstrations, or by the defining qualities of a particular situation, such as a person making a telephone call and asking "Qui est à l'appareil?", where the meaning of the total utterance may be understood but not that of its parts. It was not the purpose of the investigations reported here to compare the effectiveness of the various methods available to convey meaning, nor to assess the relative appropriateness of the different types of symbols used for presentation and/or reinforcement - for example, mime, illustrations, or written symbols. Their purpose, and that of

the present experiment, was to compare the effects of withholding written symbols early in the course with the effects of providing them.

Hamilton and Haden [1950] compared the effects of programmes with different emphases on written and oral aspects of second language study. Their experimental subjects were university students beginning French and Spanish. While control groups followed a course which emphasized reading and writing, the experimental groups received two weeks of pronunciation training alone at the beginning of the course, including diagrams of the vocal organs, physiological descriptions of their articulations, and lists of phonetic symbols. These symbols continued to be used for the first six weeks of the course, conventional orthography being introduced in weeks seven and eight. For the remainder of the two-semester course the experimental groups also received more training in listening than the control groups. Tests were conducted on four occasions: at mid-term, and at the end of each semester. The experimental groups showed an advantage over the control groups in listening tests [more marked in French than in Spanish] and a slight disadvantage, in French only, in reading and writing tests. The conclusions were that while increased emphasis on oral-auditory aspects of the language was reflected in the results, the differences were "considerably less than is often assumed" [p.89].

In an investigation conducted by Richards and Appel [1956] at the Boston University College of Business Administration, the effects of written words in beginning Spanish were assessed. One group of 14 students studied

with tapes and film-strips only, while the other group of 14 had the printed script also. Tests were given during the third week, in the fifth hour of study. The non-reading group scored significantly higher than the reading group in oral production and pronunciation tests [$p < 0.04$ and $p < 0.03$ respectively], but in vocabulary and aural comprehension tests the differences were not significant.

Experiments at Middlebury College with pre-reading periods of various lengths, up to 24 weeks, were reported by O'Connor [1960, p.44, cited in Donoghue, 1968, p.63]. As a result of tests conducted at the college over 20 years, the use of a pre-reading period was continued, but the conclusion was reached that no more advantage was to be obtained from a short delay than from a long one.

An investigation by Scherer and Wertheimer, described by Valdman as "the classical method comparison experiment in foreign language instruction" [1969, p.171], examined the relative efficacy of audio-lingual language teaching and a more traditional approach. It was found that the group which had had a twelve week pre-reading period in their German studies was, at the end of one year of study, ahead of the other group [no pre-reading] in listening and speaking tests. After two years they were ahead on the speaking skill only [Scherer and Wertheimer, 1964].

The effect of early exposure to the written word upon pronunciation and intonation of 10th, 11th and 12th grade beginners in Portuguese was studied by Muller [1965]. Ten training sessions were given to two groups. Picture cards were used to convey meaning, and the cards of one group only had appropriate printed captions, the other group having no

access to related reading material, and scoring significantly higher [$p<0.01$] on pronunciation tests. No conclusion was possible, however, in the case of intonation. Muller concluded that early exposure to the written word adversely affected students' pronunciation of Portuguese. A repetition of this experiment by Muller and Muller [1968] produced similar results. An analysis of errors revealed interference caused by differing pronunciations in the two languages of orthographic symbols common to both.

A comparison of the effectiveness of a pre-reading approach and of the 'ordered multiple' approach as described by Rivers [1968, p.219] was made by Lange [1966]. Tests were conducted after 12 weeks, that is, at the end of the pre-reading period, at which time the pre-reading group was found to be ahead of the ordered multiple group in oral skills.

An experiment was conducted by Baranyi [1970] with 111 9th, 10th and 11th grade beginners in French. One group used oral and aural skills only, the other group using oral, aural and reading skills, over a period of 15 class sessions. A mid-treatment test revealed no differences, while only one post-treatment difference was found, in favour of the non-reading group, in the mimicry section of the MLA speaking test, form LB [MLA Co-operative Foreign Language Tests, 1963]. In all other sections, however - reading aloud, answering questions about pictures, free oral description of a picture - pre-reading made no apparent difference to pupils' performance.

Thus it was discovered that some benefit to aural-oral skills could be obtained from the use of a pre-reading period, but the effects were sometimes only slight, and sometimes

only observable in certain aspects of aural-oral work. In two of the studies mentioned above, follow-up measures were taken to assess the permanence of obtained effects. Scherer and Wertheimer [1964] found that the gain achieved by their pre-reading group in listening skills had disappeared by the end of the second year, and the differences discovered by Lange [1966] in favour of the pre-reading group had disappeared by the end of one year.

Other studies have been conducted in which the use of a pre-reading period was found to make no significant difference to pupil performance. Hawkins [1971], for example, having noted that previous studies had usually dealt with a single language, and that results had varied, suggested that variables other than pre-reading or its absence may have contributed to the findings. His experiment with 43 pupils beginning German, 98 beginning Spanish and 112 beginning French compared the effect on pronunciation of a three week pre-reading period with that of simultaneous presentation of sound and script. After the pre-reading period, pupils' pronunciation was tested four times in six weeks. There was no significant difference between the two treatments for females in French and for both sexes in Spanish. In fact, Hawkins found the simultaneous use of sound and script to be superior for both sexes in German and for males only in French.

Other researchers, too, found that pre-reading had a detrimental effect on pupils' oral skills. Sawyer et al. [1963], for example, investigated the effect of the presence of a text on students' pronunciation of Japanese. One group of beginners was provided with a text in Romaji orthography, while the other group had no text. Those who combined listening and reading

performed with 'better articulatory fluency' [$p<0.05$], and the conclusion reached was that the presence of the text was a 'slight benefit' in the development of student pronunciation. It was pointed out, however, [p.157] that the facilitation from the use of texts which had been discovered in this investigation had occurred when the text looked familiar to the learner and could be read almost immediately without special training, and that their findings in no way suggested that early introduction of texts in irregular orthographies would facilitate learning.

In an experiment conducted by Lipton [1970] with grade 4 beginners in French, it was found that the group which had engaged in reading from the outset had significantly higher scores in listening comprehension than the pre-reading group. Other skills were not compared, however, and the subjects taking part in the experiment were described as 'gifted children'.

Carroll [1969, p.872] summarised research findings on the use of a pre-reading period up to that time, saying that in most cases introduction of the written form early in instruction tended to have a negative effect on pronunciation. The occurrence of findings which differ from this, however, suggests that other variables may be influencing the results. This was Hawkins' [1971] interpretation, and he showed it to be true as far as sex and the differences between languages were concerned. The findings of Sawyer et al. [1963] differed from the majority, but they were using a non-European language and an artificial, phonetically oriented script. Student aptitude may have played a part in the differences; Lipton's [1970] pupils were 'gifted'. They were also much

younger than pupils engaged in other experiments reported here. None of the investigations appeared to take into account the possible existence of 'modality preference' [Pimsleur, Sundland, and McIntyre, 1964, p.136], which may be a determining factor in the effectiveness or otherwise of a pre-reading period at the level of individual learners rather than classes as a whole.

2. The Effect of a Pre-Reading Period on other Skills

Some studies have demonstrated that the use of a pre-reading period can be beneficial to pupils' oral performance. But it had also been maintained by the advocates of the pre-reading period that its use would produce further benefits later in the course - that the skills of reading and writing would be improved because of the good oral grounding received in the pre-reading period [Carroll, 1963, p.1078]. Fewer investigations have been conducted into this aspect of the possible effects of a pre-reading period than into its effects on oral skills, while in some cases the same piece of research investigated both aspects. Results indicated that the pre-reading period did not have a beneficial effect on reading and writing skills. On the contrary, the withholding of the printed forms of the language appeared to hinder their acquisition.

Scherer and Wertheimer [1964] found that the pupils in their investigation who did not have a pre-reading period were ahead of the others in reading and writing skills after one year, and still ahead in writing only after two years. Lange [1966], however, found no differences between her two groups in reading and writing skills.

In a programmed approach to the learning of Russian

script, Saltzman [1963] found that an integrated audio-visual programme appeared to be more efficient than a sequence presenting sound and then script separately, and Estarellas and Regan concluded that simultaneous presentation of auditory and printed forms of the language helped the students in learning and 'probably in retention and recall' [1966, cited by Chastain, 1971, p.133].

Chastain observed that the contention that concentration on oral skills improved reading and writing had not been supported by research [1971, p.131].

3. The Transfer of Learning across Sense Modalities

Some studies comparing learning by listening and by reading have been expressed in terms of the ability of a learner to transfer learning from one sense to another, that is, in terms of how easy or how difficult it is to learn to handle material in reading and writing after it has been learned by listening and speaking, compared with the ease of the second learning if the order of the pairs of skills is reversed. Such studies have usually been conducted in a laboratory rather than under classroom conditions, and Asher observed that whereas classroom studies had generally compared the effects of providing reading with those of withholding it by having reading included in the activities of one group only, laboratory studies could arrange an experimental design in which subjects would learn through one sensory channel and then relearn through the other [Asher, 1964, p.256].

Pimsleur and Bonkowski [1961] found that faster learning of paired associates was achieved by listening than by read-

ing, and that there was greater transfer from learning by listening to learning by reading than vice versa. Each pair consisted of a nonsense word and a colour name, for example 'Polef - Green, Medon - Purple'.

Cox [1966] tested the hypothesis that subjects would learn a list of foreign words, including paired associates, in fewer trials and with fewer errors, if printed and spoken forms of the words were presented together rather than in separate sequences. The hypothesis was rejected. It was concluded that an auditory presentation followed by a graphic presentation was more effective than the two combined.

If such laboratory findings were generalizable to the classroom, they favour the use of a pre-reading period. But other studies have provided contrary evidence. For instance, Krawiec compared learning and retention of paired associates presented in printed and in spoken forms. His findings indicated that visual learning was more rapid than aural learning and that retention of material thus learned was superior [Krawiec, 1946, cited by Asher, 1964, p.256].

Dunkel conducted research into the learning of Persian from printed presentation, auditory presentation, and the two combined. While vocabulary was learned equally well under all three conditions, printed presentation was superior for the teaching of grammar [Dunkel, 1948, p.119].

Kessman compared the effectiveness of reading and writing both preceding and following listening and speaking for the learning of paired associates. Learning was found to be faster when the graphic skills were employed first [Kessman, 1959, cited by Asher, 1964, p.256].

Pimsleur returned to the subject and further study led him to modify his 1961 conclusions. Earlier findings on the ease of transfer from listening to reading were reiterated, but for low ability pupils and in the early stages of language learning only. High ability students were found to perform better with reading followed by listening. Neither finding was significant, however, when the experiment was repeated two weeks later, and the final conclusion was that the two orders were approximately equal in facilitating learning [Pimsleur, Sundland, Bonkowski, and Mosberg, 1964, p.102].

Asher [1964], like Hawkins [1971], suspected that differing results in such investigations may have been related to the particular languages being used, and he investigated the relationship between reading and listening in the learning of several languages. Groups were matched on sample tests and on Modern Language Aptitude Tests. Half the subjects learned material presented in written form, while material was presented aurally to the other half. After accurately measured lengths of time on the learning tasks, the sense modalities were reversed. Performance on the initial learning phase established a control for the second phase. If, for example, listening produced positive transfer to reading, then errors in reading relearning by initially 'listening' subjects should be significantly less than in initial reading learning by 'reading' subjects.

The gains in the two directions, from auditory learning to graphic learning and the reverse order, were compared, and the reading-listening gain was generally larger. In terms of different languages, the following were among the conclusions drawn:

1. A marked gain in reading-listening: Spanish, Japanese [Romaji orthography], and Turkish.
2. A high gain in listening-reading, though less than the reading-listening gain: Spanish, Japanese.
3. A slight gain in reading-listening: Russian.

Asher concluded that much of the transfer data seemed to be accounted for with a 'phonetic fit hypothesis' - that positive transfer was a function of the congruent match between the spoken and the written language [Asher, 1964, p.255].

Carroll made a similar point when he had observed the discrepancy between the findings of Pimsleur and Bonkowski [1961] and those of Krawiec [1946] and Kessman [1959]. He suggested that one variable which needed investigation was the influence of the orthographic characteristics of the written language in relation to their auditory counterparts [Carroll, 1963, p.1079]. This resembles observations made above in connection with studies by Hawkins and Sawyer.

4. The Effect of a Pre-Reading Period on Pupil Motivation

Studies of the effects of a pre-reading period have concentrated on locating and measuring any differences in the various language skills, almost to the exclusion of consideration of its influence on pupils' attitudes. Those reports which considered pupil motivation did so in varied terms and arrived at different types of conclusion.

A high drop-out rate from audio-lingual French programmes had been observed by Mueller and Leutenegger [1964]. A suggested reason was that the students were disturbed at having to talk so soon and felt that too much emphasis was placed on sound. Muller and Harris [1966] attempted to eliminate the source of dissatisfaction 'without changing

the original goals of the course' [Jakobovits, 1970, p.70], that is, without recourse to reading. A new course was devised making full use of programmed instruction techniques. The students were still given very little visual support, and sometimes worked without knowledge of the meaning of what was being said. The drop-out rate at the end of the first year of the new course was 20 per cent lower than before.

A comparison of the effects of a pre-reading period and of simultaneous introduction of all four skills, with ten-year-old Hungarian children learning Russian, produced the conclusion that pupils of that age could not follow a purely oral course with attention and interest for more than a three month period, and a pre-reading period of two months was recommended [Mackey, 1969, p.75].

Lange [1966] found that at the conclusion of her experiment there were significant differences in the motivation of two of the four groups involved. One of the two had had a pre-reading period, but not the other. Their commom feature was the school from which they had been drawn.

Thus while opinions concerning the effect of a pre-reading period on pupil motivation range from the 'astonishing interest and enjoyment' mentioned by Jerman [1965, p.24] to students who are 'frustrated, embarrassed, and humiliated' [Rivers, 1964, p.92], attempts to measure the effect have been few and inconclusive. They were conducted over comparatively short periods of time, ranging from as little as 15 class sessions [Baranyi] to one year [Mueller and Leutenegger, Lange]. A longer period of time may be ne-

cessary to detect significant differences in attitude arising from the method of instruction used. A summary by Burstall [1974, pp.160-8], for example, based on observation of pupils' performance over a period of several years and on an analysis of their responses to questionnaires at different points in their French course, contained the following observations [p.168]:

1. Pupils' rejection of a purely auditory presentation of material, observed during the primary stage of the experiment, became even more marked during the secondary stage.
2. There was a growing dislike of tape-recorded material and a growing conviction that it was easier to learn French from a textbook than from an auditory presentation.
3. A slight increase in the number of pupils indicating enjoyment of French during the secondary stage stemmed almost entirely from grammar school girls who welcomed the increasing emphasis on written work.
4. An increasing anxiety regarding the necessity to speak in French was noted among grammar school girls.

A prolonged pre-reading period of a year or more was the general practice in the schools which took part in Burstall's investigations. Her results indicated that such a programme could have a negative influence on attitudes, especially of high ability girls, but that the full extent of these effects only emerged later, when pupils had the experience necessary to compare one approach to language learning with another.

To sum up, then, it would appear that effects of withholding the written word for a certain length of time can be

detected, but they are certainly far less marked than either the proponents of the pre-reading period or its opponents hoped for or claimed.

Some investigators did find that a pre-reading period was of benefit to pupils' oral skills, but in certain cases, for example, Muller [1965] and Baranyi [1970], the benefit was over a narrower range of pupil activity than anticipated, while in others, for example, Richards and Appel [1956], such differences as were found were not significant. In cases where the durability of the effects was examined, by Scherer and Wertheimer [1964] and by Lange [1966], for instance, it was found that their magnitude decreased with the passage of time. Other researchers [Sawyer et al., 1963, and Lipton, 1970], found that the withholding of the printed word was even detrimental to the formation of oral skills, but the particular circumstances of these studies should be noted. In the case of Sawyer et al. [1963], the script involved was Romaji orthography of Japanese, where the sound-symbol relationship is regular and the script can be read almost immediately without special training, while Lipton's [1970] research in French was with 'gifted children'.

The hypothesis that withholding the printed word in order to concentrate on oral skills would subsequently have a beneficial effect on the skills of reading and writing finds little support in the light of research reviewed. Findings by Scherer and Wertheimer [1964], for example, indicated that the reverse was the case - that pupils who studied auditory and printed forms simultaneously had an advantage in reading and writing skills.

Research conducted under laboratory conditions into the transfer of learning from one sense modality to the other

appeared to produce contradictory evidence, the findings of Pimsleur and Bonkowski [1961] and of Cox [1966] favouring initial learning by listening, while those of Krawiec [1946], Dunkel [1948], and Kessman [1959] favoured initial learning by reading or by reading and listening combined. Later work by Pimsleur [Pimsleur, 1964; Pimsleur, Sundland, and McIntyre, 1964; Pimsleur, Sundland, Bonkowski, and Mosberg, 1964] and research by Asher [1964] suggested that variables such as the ability of pupils, their individual preferences, and the 'phonetic fit' of the language involved influenced the results.

Investigations such as those of Lange [1966] and Baranyi [1970] into the effects of a pre-reading period on pupils' attitudes found that it made no significant difference, but there are indications from reports, for example, by Mueller and Leutenegger [1964] and by Mackey [1969], that a long pre-reading period can create problems of pupil dissatisfaction, while Burstall [1974] reported that this was particularly acute in the case of more able girls.

III. AIMS OF THE RESEARCH

Summary

The aims of the present study are discussed; in particular, to gauge the effectiveness of a pre-reading period in a given language learning situation by assessing the strength and durability of its effects on pupils' oral performance, on their performance in other skill areas, and on their attitudes to second language learning. The possiblity that pupils with specific aptitude strengths may benefit from particular types of programme is also examined.

The present study was designed to assess the effectiveness of a pre-reading period for beginners in French in the teaching situation created within the framework of a continuing Hamilton team-teaching project. It aimed to compare the effects of differing lengths and arrangements of delays in the introduction of reading and writing, and, if possible, to specify which combination was most beneficial. In particular, the following issues were taken up,and will be discussed in more detail in the section on research design:

1. Several areas of pupil behaviour may be influenced by immediate or delayed introduction of the reading and writing of a foreign language, and in the present research measures were taken to locate any significant differences caused by each of five different timing schedules.
2. As the review of the literature indicates, the standard justification for the use of a pre-reading period is its beneficial influence on pupils' pronunciation. Special tests were therefore constructed to assess pupils' oral performance in the second language, including their general fluency and the accuracy of their pronunciation, following the different treatment conditions.

3. It was also an aim of this investigation to locate and measure any effects a pre-reading period might have on other skill areas. For this purpose, it was necessary to construct tests to assess listening ability and reading and writing skills.

4. It is possible that the effect of the pre-reading period on any of these skill areas may be only temporary. A further aim of the experiment was therefore to measure any residual differences between skills one year after the conclusion of the intermediate school course, when the pupils had completed their first year at high school. A further set of tests had to be constructed for this purpose.

5. Pupils' reactions to the various timing schedules may differ. Their motivation may be affected by the presence or absence of reading and writing during the first part of the year's study. Questionnaires were therefore administered at three points during the year, to measure and compare the attitudes of the various groups towards French, and in particular their changes in attitude during the year.

6. Finally, in scores on aptitude tests administered at the beginning of the course it was observed that several pupils showed considerable differences between their scores on the verbal and auditory sections of the test, advantages being found in both directions. There was a possibility that these pupils in particular would show a 'modality preference' [Pimsleur, Sundland, and McIntyre, 1964, p.136], and that their performance in various skill areas would be more clearly influenced by the use or

non-use of a pre-reading period than that of pupils with more balanced aptitude scores. The research analysis was planned to explore this point also.

IV. THE UNIVERSITY OF WAIKATO TEAM TEACHING UNIT AND OBJECTIVES OF THE TEACHING PROGRAMME

Summary

The University of Waikato's Team Teaching Project to provide regular French teaching in five Hamilton intermediate schools is described, and the objectives of the language course implemented by the mobile team are outlined in terms of phonetic coverage, grammar, vocabulary, and meanings. Statements of the allocation of time to each of the four main skills and descriptions of anticipated levels of achievement in each indicate the priority attached to aural-oral skills in this course. The formation in the pupils of positive attitudes towards second language learning is also described as an objective of the course.

A. ORGANIZATION AND AIMS OF THE TEAM TEACHING PROJECT

The experiment which is the subject of this study was conducted within the framework of a continuing project organised by the French department of the University of Waikato. The nature of the project predetermined many of the features of the specific investigation.

For many years the intermediate schools in Hamilton had not conducted regular courses in French, mainly because of the difficulty of obtaining suitably qualified staff on a regular basis. In the belief that it was important to provide opportunities for pupils to study French earlier than in their first year at high school, the University's French department organized a project in which a mobile team consisting of an experienced French teacher and a French national visited each of the intermediate schools of Hamilton to provide regular teaching. At the same time, the project aimed at exploring the possibility of in-service training in French teaching for interested staff already in the schools. In the first instance, from

February 1972 onwards, four intermediate schools took part. A fifth school was added in February 1973, thus involving all state intermediate schools within the city of Hamilton [total 1974 population, 84,000]. The study of the effects of a pre-reading period was carried out in 1974, the project then being in its third year.

In each of the five schools approximately 120 Form Two pupils[1] were taught French by the mobile team. These pupils were in three classes of approximately equal size, two classes in each school being used in this study. The method of selection of pupils to study French was determined by the Principal in each school. Pupils' previous performance, especially in English, and the wishes of parents and pupils were the guiding factors.

The mobile team visited each school once a week, for one and a half hours, and on each occasion each class received half an hour of language teaching, half an hour of cultural study, and half an hour of language extension-reinforcement activities. There was no teaching of French between each weekly visit. In the course of the year there were 38 visits to each school, amounting to approximately 57 hours of teaching, of which 38 hours were spent on language study. The language teaching, as distinct from extension and reinforcement activities, for the ten classes considered in this investigation was done entirely by the team leader - the present writer. In cases where the staff from within the

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[1] In February, 1974, at the beginning of the school year, the mean age of the pupils involved was 11 years 10 months.

school were able and willing to give assistance with the language teaching, this being part of the in-service training programme envisaged in the overall project, they worked with the third class in each school only, the pupils of which were not included in the present research. Reinforcement and extension of the language learning was conducted by the assistant, a French national. He worked with all the classes, without exception. The cultural study was carried out by teachers from within the schools, and was not assessed in this study.

B. OBJECTIVES OF THE TEACHING PROGRAMME

The general objectives of the language course conducted during the year were strongly influenced by the limitations of time and lesson frequency. The total time available did not permit an extensive learning programme, and the fact that this comparatively small total was spread over the February-December period also had the effect of reducing the possible coverage. Retention from week to week in the case of many pupils appeared to be less than is generally the case with more frequent practice.

The team was less concerned with the acquisition by pupils of a given number of discrete items of vocabulary and grammar than with practice to the point of near mastery of a narrow range of language. It was hoped to develop in the pupils the ability to use the language so freely, in such a non-reflective way, that they would do so without mental reference to English, and thus experience the French language functioning independently in its own right. In the time available, such a response could only be established over a very limited field of language.

The sequence of grammatical structures and the limited range of vocabulary which were used had been drawn up by the team leader during the first year of the project and modified from year to year in the light of classroom experience. No published course book was used by the pupils, since it was wished to control as far as possible the timing and quantity of their exposure to the printed forms. Presentation of these forms and of pictorial materials was by black-board, felt-board, cards, and overhead projector.

In view of the fact that many of the pupils would probably continue their studies of French at the high school for three years, and some even longer, there were two areas in which the success of this introductory period was regarded as particularly important:

1. Pronunciation, in the acquisition of which the younger child is believed by many to have a specific and unrepeatable advantage [Stern, 1967, p.21].
2. The formation of positive attitudes towards second language study.

With the latter aim in view, attempts were made in classroom activities to combine a sense of fun with the discipline imposed by the language, to use a wide variety of methods of presentation, and to make reference to subject areas likely to be of interest to the pupils. It was hoped thereby to counteract the elementary content level and the repetitive nature of much of the material used in the early stages of second language study.

Since those pupils continuing their study of French in Form Three would be in several high schools, possibly

using different courses and experiencing different teaching methods, it was also important to provide an introductory course which would be universally acceptable to the high school teachers of French. Continual and informal liaison was maintained with these teachers, including an invitation to observe the project in operation if they were interested in so doing.

The setting up of objectives for a foreign language course and of a programme to attain them involves the selection of items from the language and their gradation - a specification of what is to be taught and in what order. The problem can be approached in terms of the main areas of language: phonetics, grammar, vocabulary, and semantics - specifying which sounds are to be taught, which grammatical structures and variations, and which vocabulary items with which meanings. The sequence in which these items are arranged will be partly determined by their relative difficulty, but also by considerations of realism in the setting up of units of teaching. The many stages in the learning of a given item might include hearing, recognising, understanding, imitating, recalling, reading aloud, reading silently, copying, writing from sound and writing from recall. The pupils will be expected to handle some items in any of these ways, while other items will be practised in certain activities but not others - orally but not in writing, for example. How many of these types of learning activity are utilised with each item or type of item included in a course and the eventual proportions of each type of practice reflect the situation for which a particular course is planned. The selection and gradation of items and activites for use in the Hamilton pro-

ject are outlined in the following pages and in Appendices B and C.

1. Phonetics

The sounds of a foreign language are classifiable in terms of the difficulty they present to a learner. Lado [1961, pp.38-45] suggested the following categories:

a. Sounds which are the same as sounds in the first language and which present little difficulty, for example [p], [b].

b. Sounds which are different from any of the first language, and which pupils may have difficulty in articulating, for example [y], [ɛ̃].

c. Difficulties caused not by the sounds themselves but by:

   i. Different orthographic representations of the same sound in the second language, for example cent, sans, sent.

   ii. Different sounds in that language having the same spelling, for example ennemi, enfant; est [is], est [East].

   iii. More especially, different sounds in the two languages having the same spelling, for example un chat, a chat; il arrive, I arrive.

Detailed discussion of the phonetic coverage in the Hamilton course in terms of Lado's [1961, pp.38-45] categories is in Appendix B.1, where tables show that almost all French phonemes were used in the Hamilton course, and that the most common spellings of the sounds of French were included in the relatively small amount of writing practised.

2. Grammar

The programme of French grammar taught in the Hamilton course evolved during the first two years of the project. During this period, trials were conducted with different arrangements, different methods of presentation, and various types of reinforcement activity, in an attempt to find a programme appropriate to the circumstances particular to the team teaching project. The team was fully aware of the claims and counter-claims of the advocates of different approaches to the teaching of languages - in broad terms, the traditional grammar-translation method, the audio-lingual method, and the cognitive-code learning approach - but considered any definitive orientation of their methods exclusively towards any of these approaches to be unwise, given the atypical timetable and experimental framework within which the project operated.

One phase of investigation sought to assess the effectiveness of withholding from the pupils any grammatical explanations - to explore one of the theses that lie behind audio-visual methods, that the learning of oral structures should replace the learning of grammar [Dutton, 1965, p.49]. This was not conducted as a planned experiment, but rather as an attempt to arrive at a basic programme which would be adequate to the circumstances, and provide an appropriate base-line from which to pursue further inquiries. Thus an attempt was made in 1972 to delay grammatical explanation in the introductory course in the Hamilton schools, in fact, to exclude it altogether from the year's programme. In the opinion of the teaching team, this was not an unqualified

success, and certain modifications were made in 1973 and 1974. The practice/explanation ratio which was tried out appeared to be an improvement on the earlier programme, and grammatical explanation was retained in the 1975 course. The method of presentation was usually as follows: there was some practice of new forms, derived from a specifically planned situation, and arranged so as to lead pupils to feel that a pattern existed, and perhaps to seek an explanation. Then a brief explanation was provided, more by diagrams, arrows, underlinings or colour keys than by the use of grammatical terminology. This was followed by more practice, in as great a variety of situations as possible, with a variety of means of presentation, this third phase being largely the concern of the second member of the teaching team, the French national. An example of this procedure is described in Appendix B.2, and it is followed by a discussion of the interaction between extension of grammatical control and situational complexity.

The principal method of eliciting oral performance from pupils, to bring them to use the structures they were learning, was for the teacher to probe and challenge every detail of a situation, the situation having been planned and presented for this very purpose. Further discussion of this type of situational analysis, and an example, are also in Appendix B.2.

3. Vocabulary

The acquisition of a large stock of vocabulary was considered secondary to the setting up of good pronunciation habits and basic grammatical control, but a certain amount of

vocabulary was needed to provide the framework for practice of grammatical structures in varied situations, to maintain pupils' interest by the variety of the situations, and to encourage the development in the pupils of a feeling of positive progress, by allowing them to see that they were increasing the area in which they were able to use the second language [Gardner and Lambert, 1972, p.48]. How many words were selected for inclusion in the course was, however, less important than which words were selected. The criteria for that selection are now considered.

Mackey [1965, pp.176-89] discussed the following criteria for the selection of vocabulary:

a. Frequency, based on word counts of samples of the language being studied. The lists produced by CREDIF, le français fondamental, 1er degré and 2^{me} degré [3rd edition, undated] are a useful guide to the frequency of various items of French vocabulary.

b. Range - the number of samples in which a word is found.

c. Availability - the disponibilité of le français fondamental, under which heading is listed the thematic vocabulary available for use in certain situations.

d. Coverage - the number of things one can say with an item, including its usefulness for purposes of definition.

e. Learnability - similarity to the first language, clarity of demonstration, brevity, regularity, and the learning load represented.

The application of these criteria to the selection of vocabulary for the Hamilton course is discussed in Appendix B.3.

4. Meaning

In an introductory course concerned only with elementary aspects of the language, the fourth area indicated by Mackey [1965, p.190], that of the selection of meanings, required no special consideration, for only the most common meanings of any words used were involved, apart from minor exceptions in idiomatic phrases such as the use of aller in greetings. It is usually only in more advanced stages of study that the learning of more than one meaning for a given word is required. Thus in the Hamilton course va was used with its meaning of movement towards a destination, but not as an auxiliary verb in the formation of the immediate future tense. Grand was taught as an indicator of size but not eminence. Devoirs was taught as a noun and in the plural only.

5. Levels of Learning

Given the range of language items to be included in the course, it was necessary to decide how thoroughly each would be taught: to a level of use, or of recognition only; and in which types of language activity: oral only, or in reading and writing also. At all times, listening and speaking skills received greater emphasis than others, and a far wider range of items was included in these skills. Pupils learned more at the receptive than at the productive level: more listening than speaking, more reading than writing. Exact

labelling of activities in terms of one skill or another is often difficult, but when reading was included as a learning activity, it occupied between five and ten minutes of each half-hour of language teaching. Where reading and writing were involved, they occupied certainly ten and sometimes twelve minutes of the half-hour. Figure IV.1 shows the allocation of time to each of these skills in each of the five timing sequences. Only the half-hour of language teaching conducted by the team leader is shown. The weekly half-hour of reinforcement and extension work conducted by the assistant was spent on aural-oral work only.

In listening skills it was hoped to reach a level of almost total comprehension of all material used, acknowledging that for some items a clear context would often be necessary to assist in comprehension. It was expected, for example, that all pupils would easily understand une voiture, but they might not understand elle achète unless it was in a helpful context such as elle achète un poulet au supermarché.

The following levels of performance were expected in speaking ability:

a. Accuracy of pronunciation at least to a phonemic level.

b. Observance of basic grammatical distinctions such as number and gender in articles, pronouns, and adjectives.

c. Correct use of the vocabulary items which had been most frequently practised, for example un crayon but not des devoirs.

d. That pupils should speak if not fluently, at least smoothly, confidently, without undue hesitation, confusion, or embarrassment.

In reading, it was hoped that pupils:

a. Would understand the printed forms of a selection of items of vocabulary.

b. Would be aware of the presence and function of grammatical indicators such as -s, -e, il/elle, le/la, un/une.

c. Combining reading with speaking, would be able accurately to pronounce the most common orthographic representations of the sounds of French.

In writing, the aims were strictly limited to the control of:

a. The most frequently used items of vocabulary.

b. Some of the functional words of the language - prepositions, articles, third person pronouns.

c. The commonest verb forms, both regular and irregular.

d. Elementary adjective agreement.

6. Attitudes

The acquisition of a certain range of discrete items to particular levels in each skill area is one type of objective, and their amalgamation into total language behaviour, indicated by such terms as 'general fluency', is another. But a further objective of the course was to encourage in each pupil a set of positive attitudes towards second language learning. A variety of activities and aids was used to arouse or increase pupils' interest, and a difficulty level was aimed at which would neither deter the less able pupils nor bore the more able. It was hoped that

pupils' experiences in this course as well as their increasing maturity and broadening horizons would lead them to an awareness of the importance of second language study in their overall educational programme, and that they would increase in tolerance, understanding and respect for a way of life other than their own.

V. EXPERIMENTAL DESIGN AND RESEARCH HYPOTHESES

Summary

The University of Waikato's intermediate schools French project offered an opportunity to conduct an investigation into the effects of a pre-reading period, using a large number of pupils, but without the research design complications of different teachers, different courses, or different time allocations. Measures adopted to take into account other variables, such as pupil attitudes and schools, are described, and a set of hypotheses to be tested is drawn up.

The establishment of the Waikato Team Teaching Project and the subsequent development of an appropriate French language course for beginners provided a situation in which it was possible to attempt to assess the effectiveness of a pre-reading period in foreign language teaching. Fifteen classes of pupils were involved in the project, ten of which [two out of three classes in each of five schools] were included in this investigation. In the timing of the introduction of reading and writing, five different patterns were planned, ranging from immediate introduction of these skills to a 20-week delay in the introduction of both:

Treatment 1 Immediate introduction of reading and writing [LSRW].

Treatment 2 Immediate introduction of reading, but a ten-week delay in the introduction of writing [LSR - W].

Treatment 3 A ten-week delay in the introduction of reading and writing [LS - RW].

Treatment 4 A ten-week delay in the introduction of reading and a further ten-week delay in the introduction of writing LS - R - W].

Treatment 5 A 20-week delay in the introduction of both reading and writing [LS ----- RW].

Figure IV.1 shows the five different timing patterns, each of which was applied in two of the ten classes.

Steps taken to minimize the effects of other variables present in the experimental situation were as follows:

Pupil aptitude

It was possible that the five groups of pupils in the five schools differed in their aptitude for language learning. There may have existed, for example, socio-economic differences between the areas served by the five schools, and this factor could have influenced the aptitude and attitudes of pupils. In addition, the five groups of approximately 120 pupils each were selected from total school populations which differed in size and in any case methods used by Principals in the selection of pupils to study French were not identical. Such differences could have produced apparent inter-school differences in pupil aptitude. Any such differences which existed but which were not taken into account could have had a spurious influence on the results of the experiment, and have led to incorrect conclusions.

Each of the five timing schedules was applied in two classes but these classes were in different schools. Thus in any one school, two timing schedules were employed, allowing the isolation of the effects of each timing sequence from those of any particular school environment [Figure V.1]. Within each school, allocation of pupils to each of the three classes taking French was based on random number lists.

Two measures were taken to ascertain that the five treatment groups did not differ significantly in language learning aptitude:

1. A check on language learning aptitude as measured by the Pimsleur Language Aptitude Battery was made at the beginning of the year. Differences between the scores obtained by the five groups of pupils were, strictly speaking, not significant at the 0.05 level, but came so close to that level [$F = 2.37$, $p = 0.0516$] that post-experimental comparisons of the scores of the five groups were based on analysis of covariance, with scores on the Aptitude Battery as a covariate.
2. An attempt was made to check on possible differences in I.Q. between the five groups, but the data were not available from one school. For two of the treatment groups, this reduced by approximately half the number of subjects available for this comparison. The available data indicated, however, that inter-group differences in I.Q. were unlikely to influence results.

An attitude questionnaire was also administered at the beginning of the year. The scores obtained by the five groups did not differ significantly [$F = 0.40$].

Teachers

The fact that the University of Waikato's project involved an itinerant team who visited each of five schools provided the unusual circumstances of fifteen French classes being taught the same course by the same teachers. The influence of the teacher, which would usually have been a major variable in an experiment involving this number of pupils, was thus held constant for all groups. To enable the teacher-

training aspect of the project to be continued during the year in question, five of the fifteen classes were not specifically considered in the present study. Those five classes were given the same treatment as the experimental classes throughout the year - none of the pupils were aware of the experiment - apart from the fact that they were usually taught by teachers other than the team leader in the weekly half-hour of language teaching.

Time allocation

The amount of study time - one and a half hours per week - was the same for all classes. Interruptions to the course were caused by the absence of whole classes on field trips and by public holidays such as Anzac Day, causing schools to be out-of-step with one another from time to time, but over the course of the year the study-time totals were identical. Occasionally five minutes or so were lost through unexpected irregularities in the schools' programme, but such factors were beyond the control of the teaching team, and in any case were not noticeably more frequent in one school than any other.

The day of the week on which each school was visited varied: one on Tuesday, two on Wednesday, and two on Thursday. Monday was avoided because of the frequency with which public holidays fall on this day, and, by the choice of the Principals, Friday was also avoided. In three of the schools the teaching was from 9.00 to 10.30, but in the other two it was in the afternoon, starting at 1.10 in one case and at 1.30 in the other. The teaching of each timing schedule was distributed as equally as possible between morning and

afternoon classes, four of the schedules being taught to one class in the morning and to one in the afternoon. One timing schedule - treatment 4, in schools III and IV [Figure V.1] - was taught in the morning only.

The teaching slots

In each one and a half hour session, there were three half-hour 'slots': language teaching by the team leader, cultural study taken by the intermediate school staff, and extension and reinforcement activities managed by the French national. Only one class in each school received the slots in that order on any given day. The other two classes followed different programmes. Figure V.2 shows the three arrangements used. It was possible, however, that these arrangements afforded differing qualities of learning conditions. While it was hardly practicable to apply all possible variations, it was thought that the location of the language learning slot in the first or the third half-hour would be most likely to affect learning, and accordingly a change was made half-way through the year so that both experimental classes had the language learning slot in the first half-hour for half the year and in the third half-hour for the other half-year. The second arrangement is also shown in Figure V.2.

Having taken the precautions outlined above to attempt to balance other variables which may have influenced pupils' achievements, it was believed that any significant inter-group differences obtained in tests conducted at the end of the year could reasonably be attributed to the five different skill timing schedules.

In respect of the five treatment groups, the following dependent variables were compared:

1. Pupils' overall performance in end-of-year tests.
2. Their performance in each of the four language skills.
3. Attitudes as measured by an end-of-year questionnaire.

It was also hoped to be able to determine whether one timing sequence was preferable to another for pupils with a particular relative strength in auditory or verbal aptitude.

Finally, the possibility that the varying lengths of pre-reading period may have had a significant effect in any of these areas was tested in terms of the following set of research hypotheses, expressed in the null form:

Hypothesis 1 That the varying lengths of pre-reading period would have no significant effect on:

- 1.1 Pupils' overall performance in French.
- 1.2 Pupils' ability in speaking French.
- 1.3 Pupils' ability in listening to French.
- 1.4 Pupils' ability in reading French.
- 1.5 Pupils' ability in writing French.
- 1.6 Pupils' attitudes towards the study of French.

Hypothesis 2 That there would be no interaction effects between varying lengths of pre-reading period and higher relative strength in auditory or verbal aptitude as measured by the Pimsleur Language Aptitude Battery.

Hypothesis 3 That any significant effects observed under Hypothesis 1 would not be maintained over a period of one year.

VI. DEVELOPMENT OF TESTS AND QUESTIONNAIRE

Summary

Pupils' aptitude for foreign language learning was assessed by the use of an existing Language Aptitude Battery, but specific achievement tests were designed and pre-tested for use at the end of the experimental year and in the follow-up study one year later. Details of test design, cell specification, and item construction and analysis are given, together with an account of checks on reliability - inter- and intra-judge correlations, test-retest correlations, and coefficients of internal consistency.

The construction of a questionnaire to measure pupils' attitudes towards foreign language learning is also described. After trials, items were selected to discriminate between positive and negative attitudes towards second language study.

A. APTITUDE AND ACHIEVEMENT TESTS

For the assessment of pupils' aptitude prior to the course, it was possible to use an existing test, the Pimsleur Language Aptitude Battery [1966a], consisting of grades in major subjects [16 points], interest in language learning [8 points], vocabulary knowledge and language analysis ability [39 points], and sound discrimination and sound-symbol association [54 points]. In a comparison of the predictive power of this battery and other commonly used measures, Pimsleur [Valdman, 1966, p.177] listed correlations obtained between predictors and language grades [Table VI.1], and stated that the correlation between the complete Language Aptitude Battery and language grades was 0.72 [type of correlation not stated]. Pimsleur [1966a, p.16] also cited an independent assessment of the predictive validity of the Aptitude Battery by Fay [1965, p.47], using the MLA Co-operative

French Tests as criteria, with multiple correlation coefficients as follows: R = 0.48 with the reading attainment test; R = 0.71 with the writing test; R = 0.34 with the listening test; and R = 0.70 with the speaking test [N = 46].

For other stages of the investigation it was necessary to construct and pre-test the materials required.

As a similar course was taught in the intermediate schools in 1973, the year prior to the experiment, this provided a suitable situation for trials of test materials. In fact two trials were conducted, the first one, in two of the schools, at a slightly earlier date than would be the case in the 1974 experiment, allowing time for a preliminary analysis of the test performance and some editing of items. The second trial was conducted in the remaining three schools, followed by further item analysis and rejection or rewriting of items which were still faulty. Storey [1970, p.80] suggested that item analysis was not very practical when the number of subjects dropped much below 100, but that many more than this number was not advantageous for analysis purposes. In each of the five schools there were between 100 and 120 pupils taking the French course, so that for either of the test trials one school would have been sufficient. There were two reasons for conducting the tests in more than one school on each occasion:

1. On the first trial, the relative efficiency of alternative forms of questions needed to be assessed, and using two schools made this possible.
2. All the schools required a grade for each pupil for

purposes of pupil records and end-of-year reports, and the tests provided a useful basis for grade estimation.

The chief requirement of test materials was that they should discriminate among levels of competence so that the effects of differing pre-reading periods could be compared. For each item a biserial correlation coefficient [Storey, 1970, p.171] was obtained as an index of discriminatory power and used as one criterion of item quality. A second criterion was item facility, and a third, in the case of multiple choice items, the extent to which distractors functioned adequately.

An analysis sheet [Storey, 1970, p.81] was constructed for each set of items. For the upper and lower 27% of subjects, on the basis of performance on the test as a whole, the following were listed for each item: the percentage offering the correct response, the percentage choosing each possible response in the multiple choice items, item facility and discrimination indices, and action to be taken. Given the percentage of the upper and lower group passing each item, it was possible to obtain indices of facility and discrimination from tables in Storey [1970, p.171 and p.173]. The use of the upper and lower 27% only to obtain an indication of item facility involved the assumption that the 46% of subjects omitted made correct responses in the same proportions as the upper and lower 27%. Checks were applied in several instances, and small differences were observed between the facility indices obtained by the two methods. Only in borderline items might these differences have affected a decision concerning an item, and such items

were subjected to close scrutiny in any case.

On the basis of the information thus tabulated, each item was either retained unchanged, revised, or discarded. Items were generally retained if all possible answers in multiple choice format were used and operated in the required direction, if facility indices were between 0.30 and 0.80, and if discrimination indices were above 0.30. They were generally rejected if multiple choice distractors were functioning in the wrong direction, if facility levels were below 0.20 or above 0.85, or if discrimination indices were below 0.20. Borderline items were revised for further use if they were in those parts of the test for which an adequate number of superior items had not already been located. Others were discarded.

The overall testing programme was designed to measure attainment in each of the four skill areas of listening, speaking, reading and writing, and to include the four areas of language outlined above [pp.75-79] in the statement of specific course objectives: phonetics, grammar, vocabulary and meanings. In practice, vocabulary and meanings were combined under the single heading of vocabulary, while in the speaking test an additional category of fluency was included. This provided a test grid of thirteen cells, as shown in Table VI.2. Detailed course specifications in terms of phonetic, orthographic, grammatical and vocabulary coverage [Tables VI.3, VI.4, B.1.1,B.1.2, B.1.3, B.1.4, and Appendix C] were referred to, cross-checked, and marked accordingly as the writing of items progressed. The samples of language included in the items were thus selected so as to be representative of the course as a whole.

The specification of skills to be measured in each test cell [Table VI.2] was as follows:

1. Listening: phonetics The ability to discriminate aurally between the phonemes of French when they are presented in context and at a speed approaching that of normal conversation - for example, to be able to distinguish between [y] and [u] in C'est une rue and C'est une roue.

   The ability to discriminate aurally between common intonation patterns - for example, between indicative, interrogative and imperative utterances.

2. Listening: grammar The ability to recognize and identify basic grammatical forms from their sound and when in context; to distinguish in particular number and gender in articles, pronouns and adjectives - to be able to state, for example, that une chose is feminine singular.

3. Listening: vocabulary The ability to recognize aurally and understand a range of basic words in context, mainly nouns, but including a selection of other parts of speech - to be able, for example, to give the English for a word which has been heard in context.

4. Reading: phonetics The ability to link spelling and sound; to know which items sound alike despite differences in spelling and which sound different despite similarities in spelling - to select, for example, a particular printed item on the basis of its sound rather than because of the orthographic representation of that sound.

5. Reading: grammar The ability to recognize and understand certain printed grammatical indicators; to select printed

grammatical forms to fit given contexts - for example, to select il if the antecedent is masculine singular.

6. Reading: vocabulary The ability to recognize and understand the printed forms of vocabulary; to select vocabulary appropriate for a particular context - for example, to select poulet rather than camion or maison as an item of shopping.

7. Writing: phonetics The ability to write down from dictation words or parts of words presented in a context.

8. Writing: grammar The ability to write grammatical forms to fit a given context - for example, to substitute one indicator of number or gender for another, as required by a change of context.

9. Writing: vocabulary The ability to provide in writing items of vocabulary to fit a context - for example, to provide mère as partner to père in a sentence outlining family relationships.

10. Speaking: phonetics The ability to read aloud with phonemic accuracy - for example, to distinguish orally between ils ont and ils sont.

11. Speaking: grammar The ability to use correct grammatical forms when speaking - for example, to make correct distinctions of number and gender in speech.

12. Speaking: vocabulary The ability to use vocabulary items correctly - for example, to be able to name an object depicted in a drawing.

13. Speaking: fluency The ability to speak smoothly and confidently, without undue hesitation, stumbling, or signs of dismay, within a limited range of language; to perform actions which contribute to general fluency, such

as making liaisons between words.

In the drawing up of test items to measure pupils' achievement in these thirteen skill areas, certain basic principles were observed, so that the test would reflect the objectives of the course as a whole. Thus as well as testing all four skill areas, an attempt was made to give each of them the same relative weighting in the test as they had been given in the course itself. Table VI.5 shows the number of items included for each cell in the test and the percentage score value, after weighting, of each cell.

The presentation of language in the course was always in the context of a situation and not through the use of isolated words; consequently complete utterances, however short, were used in nearly all the items in the tests. English was used sparingly in the course, with very little, if any, overt translation. The test items reflect this exclusion of English, except for one set in which the pupils were asked to provide the English for the last word of a French sentence they heard. In trials, this type of item was found to yield higher indices of discrimination than any less direct method of measuring pupils' understanding of vocabulary. Such items may contribute to the face validity of the test, for pupils regard the ability to "say what a word means" as important [Burstall, 1974, pp.138-9], even though such opinions may indicate over-simplification in their con-

cept of the nature of language learning as a whole[1].

A balance was sought between multiple choice items and free response items, and the proportions in the final test were 45% and 55% respectively.

As the test was being constructed, consideration was given to practical problems of administration. All directions for the test were given in English, and one, sometimes two, examples of items included in the instructions. All instructions and all items for the listening test were pre-recorded, in order to equate test conditions for all classes as far as possible. The items themselves were recorded by a French national whose voice was already familiar to the pupils as the assistant. The speed of the listening test was thus controlled by the tape-recording, in which ample pauses were allowed for the marking in of answers. A page of sketches was provided for every pupil for part 4 of the listening test.

Administration of the reading and writing tests was straight-forward. Printed copies of each, including instructions, were provided for each pupil. Answers were

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[1] Clark [1972, pp.38-39] noted a change of opinion concerning the use of the first language in second language tests, for while Brooks [1960, p.214] had insisted that English be used only for directions, Valette [1967] suggested a number of item types involving the use of English, Pimsleur [1966b, p.199] suggested the use of English in testing control of French spoken grammar, and for the Peace Corps language teaching programmes the Educational Testing Service developed multiple choice listening comprehension tests using printed options in English. Jennings [1967] cited several aspects of second language comprehension - knowledge of idiom, for example - which, he suggested, could be tested accurately only through translation into English.

required to be placed in boxes in the right-hand margin. The opinions of colleagues were sought on the question of the timing of the reading and writing tests, and the length of time allowed was judged to be sufficient for all but exceptionally slow pupils. When the test papers were marked, no evidence was found to suggest that any pupil had been unable to finish because of insufficient time.

Planning for the administration of the speaking test was more complicated. A face-to-face interview with each pupil was considered, but presented problems of time and time-tabling. If this method had been selected, it could have been used with only a small group of pupils. Using more than one examiner would have increased the number of pupils tested, but differences between examiners could have reduced the reliability of the test. While the ability of a pupil to hold a conversation in French, over however small a range of language, was relevant to the aims of the course, and could be an example of language being used in a realistic way, it had the disadvantage of involving both listening and speaking skills, and separate assessment of either would be difficult. In any case, the listening skill was already being assessed, and a speaking test was sought in which the listening skill would not be involved. Trials were conducted with pupils using instructions printed in English, a set of pictures, and a tape-recorder which they had been shown how to use. Pupils were able to take this test in complete isolation, perhaps reducing the embarrassment which, for some, may be a barrier to fluency. Marking the tapes was still time-consuming, but it could be done at any time. The results of trials were such as to justify the retention of this method of oral testing.

The development of items to fit each cell of the test grid is described in more detail in Appendix D, and the full texts of the final tests are given.

The median of the facility values in the test as a whole was 0.53, and the median of the discrimination indices was 0.56. Medians of the facility and discrimination indices obtained in each section of the test and in each language area are listed in Table VI.6.

Steps were taken to assess the inter-judge and intra-judge reliability of the test. A set of 36 listening, reading and writing test papers was marked by two markers, and for each of the tests the two sets of marks were identical. Thirty-two recordings of the speaking test were marked by two markers. A product-moment correlation between the two sets of marks produced a coefficient of r = 0.98 [Figure VI.1].

To assess intra-judge reliability of the test, one marker re-marked a set of papers after an interval of two months. On the listening, reading and writing tests the second sets of marks were identical to the first. The product-moment correlation between the first and second marking of the speaking test was r = 0.997 [Figure VI.2].

The entire test was taken a second time by 32 pupils after an interval of two weeks and the two performances were compared, so that test stability could be assessed. On the total test the obtained product-moment correlation coefficient was r = 0.93, and on the four separate parts of the test, as follows: Listening, r = 0.80; Reading, r= 0.68; Writing, r = 0.76; Speaking, r = 0.87 [Figure VI.3].

The possibility that the type of item used in part 3 of the listening test was inherently unstable is discussed in

Appendix D. Test-retest correlations obtained on each part of the listening test were as follows: Part 1, r = 0.82; Part 2, r = 0.60; Part 3, with correction for coarse grouping, r = 0.18; Parts 4 and 5 combined, with correction for coarse grouping, r = 0.50. But inspection of the scatter diagrams [Figure VI.4] suggested that the relationship between first and second performances on part 3 and on parts 4 and 5 combined was nonlinear, and that the obtained product-moment correlation coefficients were an underestimation of that relationship. Correlation ratios [eta coefficients, Guilford, 1956, p.290] were calculated, and were as follows:

Part 3, regression of first attempt on second: 0.34; regression of second attempt on first: 0.51. Parts 4 and 5 combined, regression of first attempt on second: 0.64; regression of second attempt on first, 0.58.

The internal consistency of the test, assessed by using the Kuder-Richardson formula 20 [Guilford, 1956, p.454], was 0.92.

A summary of the major statistical features of the set of tests is presented in Table VI.7.

B. ATTITUDE QUESTIONNAIRE

The administration of an attitude questionnaire at the beginning and end of the year was planned as a means of measuring and comparing changes in attitude in the classes taking part in the experiment, to discover in particular if the absence of the support of the printed forms of the language for a certain length of time created feelings of insecurity or dislike of foreign language study. To en-

courage honesty in the pupils' replies, these two administrations of the questionnaire were anonymous. The identity of individuals was not involved in group attitude comparisons.

The areas of attitude investigated were as follows: personal enjoyment of foreign language study, including how difficult the pupil was finding it; the relevance of foreign language study to future studies and/or employment; more specifically, the pupils' intentions with regard to courses to be taken in Form Three; pupils' assessment of the importance of foreign language study in broadening one's outlook; interest shown by the family in the foreign language programme. There were no items in the questionnaire directly related to the presence or absence of the printed forms of the language in the pupils' language study, since the experiences of classes in this respect had differed, and it would have been difficult to find wordings appropriate to all groups. It was hoped to assess the effect that these differing experiences may have had on pupils' over-all disposition towards foreign language study.

Thirty items were prepared, divided equally into positive and negative statements of attitude, and this questionnaire was tested towards the end of 1973. Pupils indicated, on a five-point scale, how much they agreed or disagreed with each statement. Their score on each item [4,3,2,1, or 0] was a measure of how positive their attitude was towards foreign language study in terms of each item, and their scores were summed. Responses given by the upper and lower 27 per cent of pupils in one school

were analysed to locate those items which most effectively discriminated between pupils with a generally positive attitude and those with a generally negative attitude. Positive response indices ranged from 0.20 to 0.77 and discrimination indices from 0.19 to 0.72.

The results from another school were analysed, omitting the ten least satisfactory items. The remaining 20 items again proved satisfactory. Not all possible answers were being used, however, and in a 20-item version prepared for a subsequent trial and for the experiment itself, the central response category - No opinion - was omitted. The items in the shortened questionnaire were rechecked for positive-negative balance, and necessary adjustments made. Appendix E gives the text of the questionnaire in its final form. Positive response and discrimination indices were assessed from responses given in February, 1974, at the beginning of the experiment [Table VI.8]. The median of both was 0.62.

Anonymity had seemed advisable in the questionnaires, but did not allow a study of the relationship between attitude and aptitude and/or achievement. For this purpose a questionnaire consisting of six items only was drawn up, the items being selected from those in the existing questionnaire, each item dealing with one of the main attitude areas: enjoyment and difficulty, future relevance, cultural outlook, high school intentions, parental interest, and general importance of foreign language study in the school curriculum. Items 2, 7, 9, 10, 18, and 20 were used. One adjustment was made to balance the number of positive and negative statements. At the same time, pupils were asked to indicate how much they liked each of their main school

subjects, and French was included in the list [Appendix E]. [Wykes and King, 1968, p.95]. This two-part questionnaire, on which the pupils' names were required, was administered half-way through the school year, that is, at as great an interval as possible from the anonymous questionnaire already being used twice. This meant that the signed questionnaire was completed just as those classes who had a twenty-week pre-reading period were reaching the end of that period. If the absence of the support of the printed forms of the language was to have an influence on pupils' attitudes, its discovery seemed more likely at this point in the year than at any other. The acquisition of data concerning pupils' rating of other school subjects made it possible to compare this with their rating of French.

The performance of 100 randomly selected pupils was analysed, and although positive response levels and discrimination indices for the six statements had already been assessed from responses given at the beginning of the year, they were recalculated, this time using as the criterion to establish the upper and lower 27% the pupils' opinion of French as given in the second part of the mid-year questionnaire. Table VI.9 shows the indices obtained, and those obtained at the beginning of the year are also given in order to facilitate comparison.

C. DELAYED TESTS

The results of the Form Two tests are discussed in the next section. It is only necessary at this point to state that the pre-reading period appeared to produce significant effects in the areas of listening, reading and writing, and that further tests were necessary to discover whether such

effects were still discernible after a given period of time. Arrangements were made for these tests to be administered to all students of French in Form Three in five high schools in Hamilton at the end of 1975, one year after the administration of the main tests.

The construction of this set of tests was easier than that of the Form Two tests. The following are among the reasons for that difference:

1. A wider range of vocabulary and structures was available for the construction of items, a factor of particular value in the selection of suitable distractors in multiple-choice items.
2. For French studies which have gone beyond the introductory stage of the Hamilton Form Two course, there exist certain published test materials [CREDIF, 1964; Pimsleur, 1967; Park and Simpson, 1974] which proved a useful source of ideas.
3. Experience with the Form Two tests had already shown that certain types of items were less effective than others.
4. Practical details such as layout and instructions had already been established.
5. Several items which were tried out for the previous tests and which had been too difficult to retain at that time were still available.

Arrangements were made for the first draft of these Form Three tests to be administered at a high school not in the Hamilton area. Ninety Form Three pupils took part in these trials, and subsequent item analysis and editing reduced the total number of items from 146 to 90. The types

of item used are listed in Table VI.10, where the figures alongside each entry indicate respectively how many items of each type were used in the preliminary trial, and how many were retained for the test in its final form, with or without modifications.

The complete texts of the final tests are given in Appendix F, together with details of their performance. A total of one hour was required for the tests: 25 minutes for the listening test and 5 minutes for the dictation, both on tape, and 15 minutes each for the reading and writing tests. In practice, the tests were administered in two separate sessions of about half an hour each. Regular French lessons could therefore be used for the tests, with little inconvenience to the high school staff.

Ninety-nine pupils from the original experimental groups were located in the five high schools in which these Form Three tests were administered. A summary of the major statistical features of their performance is given in Table VI.11, with further details shown in Figure VI.5.

VII. RESULTS OF THE EXPERIMENT

Summary

A survey of the performance of the experimental population as a whole on the aptitude test, on both sets of achievement tests, and on the questionnaire indicates the general levels obtained, and provides a check on the appropriateness of the tests. An investigation into the optimal weighting of the parts of the aptitude test indicated that the weighting as determined by the raw score was satisfactory. Results of analysis of variance of aptitude test scores warranted their use as a covariate in subsequent analyses.

In the post-experimental achievement tests, the ten-week pre-reading period yielded superior results in listening, reading and writing. One year later, residual inter-treatment differences were found in reading only, in favour of the three treatments in the centre of the range. No inter-treatment differences were found in pupils' attitudes towards French studies.

Correlations between the major variables involved in the investigation are examined, as are the achievement levels of a selection of pupils whose auditory and verbal aptitude scores showed a marked imbalance.

A. PARAMETERS OF THE EXPERIMENTAL POPULATION AS A WHOLE

1. Language Learning Aptitude

To ascertain whether or not there were any significant differences in aptitude between the five treatment groups, in spite of the control measures taken, a modern language aptitude test was used immediately prior to the beginning of the experiment.

Tests of language aptitude available in commercially published form were a Modern Language Aptitude Test [Carroll and Sapon, 1959], a Modern Language Aptitude Test - Elementary [Carroll and Sapon, 1967] and a Language Aptitude Battery [Pimsleur, 1966]. Clark [1972, p.17] noted that comparison of the predictive

efficiency of these tests was difficult on the basis of available information, but that according to the data provided in the LAB and MLAT manuals, these two instruments possessed "a rough equivalence" in predictive accuracy. The decision to use the Pimsleur LAB in the Hamilton experiment was based on two factors:

a. According to the test manuals, the EMLAT is appropriate for elementary school pupils [grades 3-6], the MLAT for high school pupils [grades 9 and above], while the LAB is appropriate for Junior High School [grades 7-8]. The Pimsleur LAB level appeared to be most appropriate for Form Two pupils in New Zealand.

b. The coverage of the LAB was broader than that of the other tests, including not only language related tasks, but also reports of pupils' recent grades in core subjects, and an indication of interest in foreign language learning.

The Pimsleur LAB is structured into six parts, weighted for total score as follows:

a. Grade Point Average in academic areas other than foreign languages. 16 points

b. Interest in learning a foreign language. 8 points

c. Verbal aptitude

   i. Vocabulary - word knowledge in English. 24 points

   ii. Language analysis - ability to reason logically in terms of a foreign language. 15 points

d. Auditory aptitude

   i. Sound discrimination - ability to learn new phonetic distinctions and to recognise them in different context. 30 points

ii. Sound-symbol association - an association of sounds with their written symbols. 24 points

Total: 117 points

In the present investigation, the experimental population as a whole [N = 363] obtained a mean total score of 65.2, standard deviation 10.3. In Table VII.1 these figures can be compared to the corresponding scores obtained during the development of the battery [Pimsleur, 1966a, p.15]. The mean total score of the Hamilton group [mean age, 11 years 10 months] most closely matched that reported by Pimsleur for the beginning of grade 8. The age of these students is not stated, but they would certainly have been a year or more older than the Hamilton group. The latter, however, had been selected to study French, whereas Pimsleur's groups, to judge from his tables of norms [1966a, pp.12-13], contained pupils of a wide range of aptitude. Comparison of the two sets of standard deviations [Table VII.1] confirms the wider distribution of aptitude in Pimsleur's group.

It is nevertheless interesting to note the relative scores in verbal aptitude and auditory aptitude obtained by Pimsleur's beginning grade 8 and the Hamilton group. Pimsleur's group scored significantly higher on the verbal aptitude test [t = 12.78], while the Hamilton group scored significantly higher on the auditory aptitude test [t = 6.25].

The division by Pimsleur of the LAB into a number of parts indicates his belief that the abilities measured by each part are relatively distinct, and this is shown to be

the case by the moderately low correlation coefficients, ranging from 0.14 to 0.50, obtained in a study of the inter-relationships between the parts [Pimsleur, 1966a, p.16]. The findings of the Hamilton experiment were similar, the inter-correlations ranging from 0.00 to 0.47. Low inter-correlations between part scores were also reported by Robinson [1975, p.46] Table VII.2, below the diagonal, shows the inter-part correlations, ranging from 0.21 to 0.47, obtained by Pimsleur from his beginning grade 8 pupils. The same table, above the diagonal, shows the inter-part correlations obtained from the Hamilton group. There are interesting differences. For example, Pimsleur's highest grade 8 inter-part correlation [0.47] was between parts 3 and 4, vocabulary and language analysis; for the Hamilton group this figure was only 0.14. On the other hand, the highest inter-correlation reported by Pimsleur from any group [0.50] and the highest from the Hamilton group [0.47] were both between parts 1 and 3, grade point average and vocabulary. Pimsleur's lowest grade 8 inter-correlation [0.21] and the lowest from the Hamilton group [0.00] were both between parts 2 and 5, interest and sound discrimination.

For the purpose of the present investigation it was necessary to consider the variance of the final scores of the five treatment groups in terms of both the independent variables and the treatments, that is, to assess separately the effects of aptitude and treatments. Correlations between scores on the Pimsleur LAB and on the final tests were calculated in order to assess the validity of the former as a predictor of the latter. Between LAB scores and those obtained on the four final tests combined [N = 176], the product-moment correlation coefficient was 0.62; between scores on the LAB

and those on the reading, writing and listening tests combined [N = 363], the value obtained was 0.59.[1]

The possibility existed that an adjustment of the relative weighting of the parts of the LAB would improve its predictive power [Pimsleur, 1966a, p.17]. Scores on parts 3 and 4 and on parts 5 and 6 were summed to provide verbal and auditory aptitude scores respectively. A stepwise regression analysis was carried out, providing standard partial regression coefficients - beta coefficients - for optimal weighting of the parts of the battery, and a coefficient of multiple correlation between the independent variables - part scores on LAB - and the one dependent variable - the final three-test total. Table VII.3 shows the analysis of variance table obtained from the stepwise regression analysis, together with the obtained beta coefficients and their *t* values [Draper and Smith, 1966, pp.171-2]. The *t* values for GPA and auditory aptitude were highly significant, for verbal aptitude it was significant at the 0.05 level only, while for interest the *t* value fell below the 0.05 level. Removal of the interest variable, however, reduced the value of the obtained multiple R only marginally, from 0.624 to 0.619.

The similarity between the multiple correlation coefficient of 0.62 obtained from stepwise regression analysis and the two correlation coefficients already mentioned [0.59 and 0.62] showed that no significant increase in predictive power was obtained from stepwise regression. It indicated that the

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[1] The correlation between the three-test total and the four-test total was 0.98, and further investigations into the predictive power of the LAB were based on the three-test total only [N = 363].

weighting of the component parts of the LAB recommended by Pimsleur was also optimal for the Hamilton experiment.

A further estimate of multiple correlation between predictors and achievement, again using stepwise regression analysis, included I.Q. as a variable along with the four parts of the LAB. The most accurate prediction was obtained from a combination of I.Q., GPA, and auditory aptitude only, yielding a multiple correlation coefficient of 0.67, a significant increase in predictability over that obtained from LAB alone. The details are shown in Table VII.4: all *t* values are highly significant.

The aptitude-achievement correlations which have been discussed are summarised in Table VII.5 in terms of the variations in independent and dependent variables which were applied.

The possible exclusion of interest and verbal ability was foreshadowed in the earlier analysis, where their *t* values were not highly significant. In view of the fact that interest was given only minor weighting by Pimsleur [8 points out of 117], its exclusion in this analysis was not surprising. In a beginners' French course such as was used in the Hamilton experiment very little analysis of language and only a narrow range of vocabulary were involved. It was therefore not surprising either that a verbal aptitude test involving these two aspects of language ranked low in the set of predictors.

The highest multiple correlation coefficient obtained was 0.67, using two parts of the LAB and I.Q. as independent variables. For the central theme of this enquiry, however - a comparison of the effects of five different pre-reading treatments - this set of independent variables was not used, since I.Q. data were not available for approximately one fifth of the

pupils, these pupils being in one school, and constituting approximately half the subjects in treatment groups 4 and 5 [Figure IV.1].

2. Achievement Tests designed for this Experiment

In order to maximise their discriminatory power, the post-experimental achievement tests were designed to produce mean scores as close to 50 per cent as possible. The complete set of Form Two tests was taken by 176 pupils, who obtained a mean total score of 53.3 per cent, standard deviation 15.6 per cent. The listening, reading and writing tests were taken by all Form Two pupils taking part in the experiment [N = 363], who obtained a mean total score of 35.7 out of 70 [51.0 per cent], standard deviation 10.3 [14.7 per cent].

The mean scores and standard deviations obtained on each of the four separate skill tests are shown in Table VII.6.

Mean scores and standard deviations obtained on each of the parts of these tests are listed in Table VII.7, as are pupils' scores in the mid-year attitude questionnaire.

The delayed achievement tests taken by 99 pupils at the end of Form Three produced a mean total score of 54.4 per cent, standard deviation 14.1 per cent. The mean scores and standard deviations obtained on each of the four parts of the test are shown in Table VII.8.

3. Attitude Questionnaires

At the beginning of the year, all pupils answered an anonymous 20-item questionnaire on their attitudes towards the learning of French. Pupils would have found many of the questions very difficult to answer before they had done any French, but it was hoped to assess their opinions and expectations at the

time when they were on the threshold of this new experience. They were therefore given the questionnaires during their second French session.

At this time, the experimental group as a whole obtained a mean score of 40.93 [68.22 per cent] out of a possible 60, standard deviation 8.88 [14.8 per cent].

The questionnaire was repeated, again anonymously, by all pupils at the end of the year, immediately after the completion of the French achievement tests. On this occasion, the mean score was 32.48 [54.13 per cent], standard deviation 12.33 [20.55 per cent].

The February-December decline in pupils' attitudes as measured by the questionnaire is consonant with similar findings by Wykes and King [1968, pp.89-145] and supports one of the conclusions reached in the Pennsylvania project by Smith and Baranyi, that "student opinion of foreign language study declines throughout the instruction, independent of the teaching strategy employed" [1968, p.viii].

There was an additional administration of part of the questionnaire - 6 out of the 20 items - in the middle of the year, and on this occasion pupils signed their answer sheets. At the same time pupils gave their rating of French and of four other school subjects, each marked on a scale of plus 3 to minus 3. On the questionnaire the mean score out of 18 was 11.19 [69.7 per cent], standard deviation 3.84 [21.33 per cent], [N = 363]. The mean rating for French was 0.65, standard deviation 1.86, while the mean rating for four other subjects combined was 1.56, standard deviation 0.87. The product-moment correlation between scores on the mid-year questionnaire and over-all achievement was 0.39, S.E. = 0.045; between rating of French and achievement, 0.32, S.E. = 0.047.

B. PARAMETERS OF THE FIVE TREATMENT GROUPS

The main features of the experimental group as a whole have been presented in terms of: language learning aptitude; achievement in post-experimental tests, both immediate and delayed; and attitudes towards French studies before and after the experiment.

These features of each of the five treatment groups will now be considered, and differences between groups assessed. In this discussion, the five treatment groups will be referred to by number - the higher the number, the longer the pre-reading period observed. Thus pupils receiving treatment 1 began reading and writing immediately; treatment 5 entailed a 20-week delay in both [Figure IV.1]. The numbers of pupils in the five treatment groups were 73, 70, 72, 70, and 78 respectively, total 363.

1. Language Learning Aptitude

Figure VII.1 shows frequency distributions of scores obtained by all pupils and by each of the five treatment groups on the Pimsleur Language Aptitude Battery. Table VII.9 gives the mean scores and standard deviations of the five groups, and the results of an analysis of variance of these scores. The differences between the groups just failed to reach the 0.05 level of significance, but the margin was very small, and subsequent study of differences between groups was based on analysis of covariance, using aptitude scores as the covariate, rather than on analysis of variance.

2. Post-Experimental Achievement Tests

a. Immediate tests

i. Over-all achievement: listening, reading and writing tests combined.

Figure VII.2 shows frequency distributions of raw scores obtained by all pupils and by each of the five treatment groups in the Form Two listening, reading and writing tests combined. Table VII.10 gives the adjusted means and standard deviations of the scores of the five groups with aptitude as the covariate, and the results of an analysis of covariance of these scores. There was a highly significant link between treatments and scores.

Inspection showed that treatment groups 2, 3, and 4 formed one set, and groups 1 and 5 another. The difference between these two sets was examined for significance by comparing $\frac{D'}{S.E_{D'}}$ with a statistic K [McNemar, 1969, p.324]. The difference was significant at the 0.001 level. No other significant inter-group differences were found.

ii. Over-all achievement, including speaking, but with reduced n of 176.

Those pupils who took the speaking test numbered 176. Figure VII.3 shows the frequency distributions of their raw scores in all four tests combined, for the group as a whole and for each of the five treatment groups. The numbers of pupils who took the speaking test in each treatment group, from 1 to 5, were 36, 41, 37, 29, and 33.

Table VII.11 gives the adjusted means and standard deviations of the scores of the five groups, and the analysis of covariance results. Inspection of the means shows a pattern of relative scores similar to that obtained on the 3-test total with an N of 363, but the

differences did not provide an F ratio large enough to be significant at the 0.05 level.

iii. Listening test

Figure VII.4 shows frequency distributions of raw scores obtained by the group as a whole and by each of the five treatment groups on the Form Two listening test. Table VII.12 gives the adjusted means and standard deviations of the five groups in the listening test, and the results of analysis of covariance. There was shown to be a highly significant relationship between treatments and scores on the listening test.

Inspection of the adjusted means reveals the same pattern as that found in the three-test totals, but their arrangement into homogeneous sets differs. The following differences between groups and sets were tested for significance by the Scheffé method [reading from lower scoring groups to higher in each line]:

1 :	5, 2, 4, 3	**
1, 5 :	2, 4, 3	*
1 :	5	*
5 :	2, 4, 3	N.S.

** $p < .01$
* $p < .05$

iv. Reading test

Figure VII.5 shows frequency distributions of raw scores obtained by the group as a whole and by each of the five treatment groups on the Form Two reading test. Table VII.13 gives the adjusted means and standard deviations of the five groups in the reading test, and the results of analysis of covariance. These

results indicate a link between treatments and achievement as measured by the reading test.

The same pattern is found here as that reported above. The differences between groups and sets of groups were examined by the Scheffé method, and again groups 1 and 5 combined differed significantly, at the 0.01 level, from groups 2, 3, and 4 combined. No other significant differences were found.

v. Writing test

Figure VII.6 shows frequency distributions of raw scores obtained by the groups as a whole and by each of the five treatment groups on the Form Two writing test. Table VII.14 gives the adjusted means and standard deviations of the five groups in the reading test, and the results of analysis of covariance. There is a very marked link between treatments and achievement as measured by the writing test.

The arrangement of groups into sets differs from the 1, 5 : 2, 3, 4 pattern which has generally occurred so far in this discussion. On this occasion groups 1, 2, and 3 form one set, differing significantly [0.001 level] from groups 4 and 5 combined. But groups 4 and 5 do not themselves form a set, the difference between them also being significant at the 0.001 level.

vi. Speaking test, taken by 176 pupils only.

Figure VII.7 shows frequency distributions of raw scores obtained by the group as a whole and by each of the five treatment groups on the speaking test. Table VII.15 gives the adjusted means and standard deviations of the five groups in the speaking test, and the results

of analysis of covariance. The mean scores of the five groups show a similar pattern to that obtained on the other tests, but the differences fail to reach the 0.05 level of significance.

Summary

Any attempt to summarize the contents of the preceding pages in a single table is hampered by the number of variables to be specified - treatments, skills, directions of differences, and their levels of significance - and it would be very difficult to achieve both clarity and accuracy. For each of the tests and combinations of tests which have been discussed, Table VII.16 ranks each of the treatment groups on the basis of their adjusted mean scores. The table fails to convey any information concerning the significance of the differences between treatments, but it does confirm the over-all superiority of treatment 3 [LS - RW] and the relative inadequacy of treatments 1 and 5 [LSRW and LS - - - RW].

In Figure VII.8, which shows adjusted mean scores of each treatment group in each test or combination of tests, the pattern can be seen to be the same in all blocks. The sizes of the intervals between the mean scores of given groups may vary from test to test, but the relative effectiveness of the five treatments is clear.

b. Delayed tests

Of the original 363 pupils taking part in the experiment, only 99 were available for tests at the end of Form

Three.[2] The purpose of these tests was to assess the permanence of the inter-treatment differences which had been found at the end of Form Two. No such differences had been found in the speaking test, and the Form Three tests were therefore limited to listening, reading,and writing. A dictation, which in the Form Two test had been classified as part of the writing test, was on this occasion dealt with separately.

The tests were conducted with the Form Three pupils in five high schools. Only in the case of one of these high schools had there been an exact transfer of pupils from its contributing intermediate school. In all other cases the transferring groups went to two or more high schools, and the distribution of the original treatment groups in the high schools was irregular. In some cases, only one pupil from a given treatment group went to a particular high school. Table VII.17 shows how the 99 pupils from treatments 1 - 5 were located in five high schools A - E.

Computational complications were the empty cells, the cells with very few entries, and the fact that the row and column totals varied greatly, but the main drawback was the comparatively low total number of subjects for each treatment group.

A major feature of the Form Two results was that groups 1 and 5 had formed one set and groups 2, 3, and 4 another.

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[2] This testing situation presented an opportunity to compare the levels of achievement of those pupils who had taken French in Form Two in the Hamilton project and of those who, for various reasons, had not started French until Form Three. Details are given in Appendix G.

It was between these two sets that significant differences had been found in the three-test total, the listening test [though in this case groups 1 and 5 had also differed significantly], and the reading test. In the writing test the arrangement was different, with groups 1, 2, and 3 differing significantly from groups 4 and 5. [This pattern had also been found in the results of the dictation part of the Form Two writing test.]

At the end of Form Three, then, mainly because of the low number of subjects available, comparisons were made, not between five groups, but between two sets of groups, the composition of the sets being influenced by the previous year's findings. Table VII.18 shows the numbers of subjects thus obtained in the sets.

There were still low entries, and one empty cell. The former were a distinct disadvantage, but the latter created an obstacle to further calculation, since the computer programme being used [Wilson, 1974] would not function if any of the cells were empty. The further expedient was therefore adopted of combining two schools. School C was selected for combining with school E since its mean total score on the tests was closest to that of E. The new cell sizes are shown in Table VII.19. Each of the columns still contained one cell with a single entry, but this arrangement was the one on which subsequent calculations were based.

As with the Form Two test scores, analysis of covariance was employed, with the original aptitude scores being used as the covariate. It was necessary to consider the effects of schools on scores, any remaining traces of treatment ef-

fects, and any possible interaction effects from school and treatment combined. The scores on the Form Three tests as a whole as well as on each separate test were analysed, and three F ratios obtained in each case. Tables VII.20 - 24 give the details of these analyses.

If any residual treatment effects were to be found, then they would have shown treatments 2, 3, and 4 to be superior to treatments 1 and 5 in the three-test total and in the listening and reading tests. Within Tables VII.20, 21, and 22, there are altogether 18 pairs of means in which the two sets are compared; 17 of them are higher for treatments 2, 3, and 4 than for treatments 1 and 5 [the one exception is school B on the listening test]. But the differences between the sets are only large enough for one significant F ratio to be obtained - in the reading test, in favour of groups 2, 3, and 4 [$p < 0.05$].

In the comparison of treatments 1, 2, and 3 with treatments 4 and 5 in the writing test and the dictation, any residual treatment effects would have been in favour of groups 1, 2, and 3. Ten pairs of means are contained with Tables VII.23 and 24, eight of them showing in favour of groups 4 and 5, but neither of the F ratios derived from treatment effects is significant.

3. Attitudes in the Five Treatment Groups

a. Inter-group differences in attitude prior to the experiment

Steps were taken to check that there was no relationship between attitudes, as measured by the questionnaire, and the five treatment groups prior to the experiment - that is, that there were no significant differences in attitude

between the groups at that time. Other pre-experimental comparisons were carried out by means of analysis of variance, but the questionnaires were answered anonymously, and the data collected from them tabulated separately. While the main body of data was arranged with a view to computer usage, the comparison of questionnaire scores was done by hand. Chi square was selected as being adequate for the purpose and at the same time less laborious than analysis of variance.

All pupils were ranked on their total score on the questionnaire at the beginning of the year, and the population as a whole was divided into upper, central and lower thirds. The number of pupils from each of the five treatment groups and within each of the overall thirds was entered on a 5 x 3 table and chi square was calculated. The obtained value was 5.19 [for 8 degrees of freedom, $p < 0.05$: 15.51], indicating that prior to the experiment there were no significant differences between the attitudes of the five treatment groups as measured by the questionnaire.

A comparison of the scores of the five treatment groups on each item was also planned. The frequency of scores of 0, 1, 2, and 3 for each item within each treatment group was tabulated, and chi square was calculated for each of items 1 - 10. None of the obtained values reached the 0.05 level of significance [Table VII.25], and the remaining ten items were not examined in this way.

b. Inter-group differences in attitude following the experiment

Treatments similar to those outlined above were carried out on scores on the questionnaire at the end of the experi-

mental year. The chi square value obtained from dividing the total population into thirds and into five treatment groups was 7.49, still far short of the value of 15.51 required for significance at the 0.05 level. This indicated that the different treatments had had no significant effect on pupils' overall attitudes towards French, as measured by the questionnaire.

As before, scores on individual items were also examined. The frequency of item scores of 0, 1, 2, and 3 within the five treatment groups was tabulated for the first ten items of the questionnaire, and chi square was calculated for each item [Table VII.26]. In fact, two of these calculations produced chi square values which were significant at the 0.01 level. Inspection of the cell values and of the differences between observed and expected frequencies showed that particular cells had been largely responsible for the high values obtained. Further reference to the original sets of data, which were arranged in ten classes rather than in five treatment groups, showed that one particular school had yielded frequencies which were markedly different from those expected. Even though each of the five treatments had been applied in two schools in order to reduce the possible effects of individual schools on the results obtained, nevertheless, in these two items out of the ten which were analysed in this way, significant inter-treatment differences appeared to be present. Despite these apparent exceptions, the findings of this part of the investigation provided further indication that the differences between treatments did not give rise to significant differences in pupils' attitudes towards French, as measured by the questionnaire.

The scores of the five groups on the mid-year questionnaire [Figure VII.9] and of their rating of French were analysed to see if there were any significant inter-group differences. Table VII.27 gives the results of analyses of covariance, neither of which produced an F ratio significant at the 0.05 level.

Summary

In the comparisons made between the five treatment groups, the following were the major features to emerge:

1. Differences between the groups in language learning aptitude as measured prior to the experiment failed to reach the 0.05 level of significance, but were of such a magnitude as to warrant the use of aptitude scores as a covariate in subsequent analyses.
2. Inter-treatment differences were found in the achievement tests given at the conclusion of the experiment. In the three-test total, the listening test and the reading test, the zero delay and the 20-week delay in reading and writing produced scores which were significantly lower than those of the other three treatments.
3. In the writing test, treatment number 4 [LS - R - W] produced scores which were significantly lower than those of the first three treatments, while the scores from the fifth treatment [LS ---- RW] were lower still, both differences being very highly significant [$p < 0.001$].
4. In the speaking test and in the total which included the speaking test, differences between groups failed to reach the 0.05 level of significance.
5. Investigations into pupils' attitudes by questionnaires

and pupils' subject ratings failed to detect any differences between groups which could be attributed to the different pre-reading treatments.

C. CORRELATIONS

Some of the correlations between variables have already been referred to in connection with the various parts of the Language Aptitude Battery, to confirm Pimsleur's observation that their inter-correlations are relatively low, and that the different parts are therefore assessing different aspects of language learning aptitude.

The correlation between aptitude and achievement has also been discussed in connection with the selection of aptitude as a covariate in the analysis of the achievement of the five treatment groups.

In fact, a complete matrix of all possible inter-correlations was obtained. Only those already referred to were directly relevant to the present investigation, but opportunities to obtain such data on so many variables and from such a large number of subjects are rare. The coefficients relating to the major variables involved in the present investigation are presented in Table VII.28. Moderate to high inter-skill correlation was observed in the four sets of scores obtained on the separate achievement tests, the highest being 0.77, between listening and speaking. Correlation between aptitude test scores and scores on the four separate skill tests was moderate, and the four coefficients obtained hardly differed, ranging from 0.50 to 0.55. Correlation between mid-year attitudes and other variables was low, in some cases failing to reach the 0.05 level of significance.

D. DIFFERING TYPES OF APTITUDE

One of the aims of the investigation was to examine the achievement levels in various skills of pupils with different relative aptitude strengths. Hypothesis 2 was: that there would be no interaction effects between varying lengths of pre-reading period and higher relative strength in auditory or verbal aptitude, as measured by the Pimsleur Language Aptitude Battery. It was possible that pupils with marked auditory aptitude, for example, would do very well in a mode of learning which emphasized listening, while those with relatively weak auditory aptitude would find difficulty in learning without the support of the printed word.[3] This would imply that one type of pre-reading treatment was preferable for some pupils, and a different treatment preferable for others.

Testing of this hypothesis would involve two levels of investigation:

i. Into the relationship between relative aptitude strengths and ability in specific language skills - whether or not

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[3] The grouping of the four aptitude sub-tests into two pairs - verbal and auditory - as recommended by Pimsleur, was the arrangement used in the Hamilton investigations. Robinson [1975, p.23] observed, however, that the aptitudes as measured by the four sub-tests did not cluster naturally into two pairs - that pupils' abilities were not relatively consistent within each pair - and recommended that the scores be not paired in this way. She supported her argument with examples of how allocation of pupils to certain levels of study on the basis of such combined scores could be erroneous. But the fact that the clustering into two pairs does not occur - that examples of large discrepancies within each pair may be found - does not in itself argue against the existence of verbal aptitude and auditory aptitude as postulated by Pimsleur and as assumed in the present investigation, any more than the low inter-correlations between all parts of the aptitude battery observed by Pimsleur and Robinson and in the Hamilton experiment could be taken to indicate that those parts are not separate components of modern language aptitude as a whole.

learner potential in a particular area of language was realized.

ii. Into the effects of varying lengths of pre-reading period on the realization of this potential. Investigation into this second level would only be possible if positive results were obtained in the first. If specific aptitude strengths were not realized in corresponding skill levels, then there would be no point in comparing the effects of varying lengths of pre-reading period according to differences in aptitude.

To enable scores on the auditory and verbal aptitude tests to be compared, both sets of results were converted to standardized scores with means of 50, standard deviations 10. Those pupils whose auditory and verbal aptitude scores differed by more than 20 points [two standard deviations] were then located. There were precisely the same number of cases in each direction - 15 with auditory advantage, 15 with verbal advantage.

The assumption being tested was that high auditory aptitude would be conducive to high achievement scores in listening [and perhaps speaking], while high verbal aptitude would be reflected in high scores in the reading and writing tests. Less than half the group of 30 pupils whose scores were being analysed had, however, taken the speaking test, and the following aptitude - achievement comparisons were planned:

		Achievement	
		Listening	Reading and writing
Aptitude	Auditory		
	Verbal		

The four sets of scores were arranged in rank order and the following Spearman rho coefficients were obtained:

1. Between the two types of aptitude, $\rho = -0.55$ [$p < 0.01$] - the result of the marked contrasts which were the basis of the selection of pupils for this study, and a base-line against which to assess subsequent correlations.
2. Between listening scores and reading-writing scores, $\rho = 0.63$ [$p < 0.01$]. The marked polarity in aptitude had been completely reversed in achievement and replaced by an even more positive correlation between the two skill areas.
3. Between auditory aptitude and listening score, $\rho = 0.41$ [$p < 0.05$].
4. Between verbal aptitude and reading-writing total, $\rho = -0.19$ [N.S.].

These results indicate that specific aptitude strengths did not greatly affect corresponding levels of achievement.

A further set of comparisons was made, of the mean ranking within the group of 30 pupils of each sub-group of 15 pupils. Obviously these mean ranks for verbal aptitude and auditory aptitude would be 7.5 and 22.5, according to which skill they were related to, the first 15 places and the last 15 places each being shared by the pupils who had been selected on those very grounds. [In fact, there was some sharing of places, and the obtained figures differed slightly from 7.5 and 22.5.] If there was a link between aptitude and achievement in each area, then the mean ranking on achievement would tend towards the mean ranking on aptitude, and the large difference between the mean ranking in one type of aptitude and another [7.5 and 22.5] would be reflected in a difference between the mean ranking on the two types of achievement. No such pattern emerged, as can be seen from Table VII.29, where the levelling off of mean ranking scores in each column after the second entry is clear.

The results of this part of the investigation also seem to indicate that specific aptitude strengths did not greatly affect corresponding levels of achievement. It was therefore not profitable to pursue the question of what effects the varying lengths of pre-reading period might have had upon the relationship between aptitude and achievement.

There is an indication in Table VII.29 that pupils with a marked auditory advantage did better on the whole than pupils with a marked verbal advantage - their mean ranking was lower in reading-writing, in listening, and in total achievement. It could be argued that this reflects the nature of the Hamilton course as a whole, which concentrated on the spoken rather than the written aspects of language learning. This in turn would be to suggest, however, that there is a link between specific aptitude strengths and levels of achievement, despite the above analysis of the performance of 30 pupils which indicated that this was not the case. It does offer some support to Pimsleur's contention [Pimsleur, Sundland, and McIntyre, 1964, p.135] that if there is one factor above all others which influences eventual achievement in French <u>as a whole</u>, then it is skill in listening.

VIII. CONCLUSIONS

One way in which the new emphasis on oral skills in language teaching has found expression has been in the recommendation that the 'natural' sequence be followed in the learning of the separate language skills - listening and speaking followed by reading and writing. The observance of a pre-reading period became common practice. It was expected that levels of achievement in listening and speaking would be improved by the increased time spent on them and by the avoidance of that type of interference which arose from the presence of the printed word; the skills of reading and writing would, later on, be more effectively learned, since this learning would be based on an oral foundation. But investigations such as that by Scherer and Wertheimer [1964] showed that the postulated transfer from oral to written skills did not occur in practice. While the primary purpose of the pre-reading period - to improve pronunciation and general proficiency in listening and speaking - was often realized, as in the investigations by Scherer and Wertheimer [1964], Muller [1965], and Baranyi [1970], its subsequent benefit to reading and writing was not. The pupils tended to learn what they were taught, and the time spent on each skill seemed to determine the level of pupils' achievement in that skill.

In the present experiment, the hoped-for increase in speaking ability which was a primary objective in delaying the introduction of reading and writing was not realized, and hypothesis 1.2 - that the varying lengths of pre-reading period would have no significant effect on pupils' ability in speaking French - is supported. In evaluating this finding, which is

at variance with those of certain earlier investigations [Scherer and Wertheimer, 1964; Muller, 1965; Lange, 1966; Baranyi, 1970], certain factors should be noted:

1. The speaking skill was the only one of the four in which the observed inter-treatment differences did not reach a significant level in favour of the treatments in the centre of the range.
2. In terms of relative size, the five treatment means on the speaking test followed the same pattern as the means obtained on the other skill tests.
3. The speaking test has particular problems of subjective assessment, scorer reliability, and practical administration, though these may be largely overcome. For the majority of pupils it represents a situation of greater anxiety than other types of language test, and the extent to which competence is revealed by performance may be influenced by personality factors more than in other tests, which would tend to reduce its validity. It is therefore possible that the test used in the present experiment failed to distinguish some inter-treatment differences which actually existed.

Such considerations give some support to the view that the treatments may have affected pupil achievement in speaking, but that the full extent of these differences did not appear in the test scores. It may be that the null hypothesis is false, but the available test failed to reject it. If this is so, then a Type II error has occurred [Edwards, 1960, p.19].

On the other hand, the findings may be reliable. The speaking skill may in fact be less susceptible to treatment effects than the other three skills, though this has not been

found to be the case in other research. Or perhaps the unusual organizational framework of the Hamilton project may have operated in such a way as to prevent the full potential of the various treatments from being realized in this particular area. The usual statistical checks which were applied to the speaking test, as to the other three, indicated that it functioned well.

In the listening test results, the value of the pre-reading period was clearly shown, and hypothesis 1.3 - that the varying lengths of pre-reading period would have no significant effect on pupils' ability in listening to French - is rejected. Pupils in the first treatment, who engaged in reading and writing from the outset, had less time for listening practice, and may also have been hindered by interference from the printed language. The two most effective treatments for the listening skill were the third and fourth, in which reading was introduced after a ten-week delay. For pupils in the fifth treatment group, however, a 20-week delay was too long. They appear to have needed the organisation which can be derived from a text and the assistance it gives in identification of vocabulary and structures.

In the reading test, a similar pattern emerged, and hypothesis 1.4 - that the varying lengths of pre-reading period would have no significant effect on pupils' ability in reading French - is also rejected. The findings here are of particular interest in that they run counter to the general trend observed in previous research, in which achievement was linked to time spent on learning. Pupils in the first two treatments engaged in reading for ten weeks before those in treatment 3, yet their performance in reading was inferior, and the reading skill was

eventually more effectively established in those pupils who had spent additional time on oral skills early in the year. A 20-week delay, however, was counter-productive, there being a lower mean reading performance in treatment 5. Treatment 3 combined the advantage of non-interference from the printed forms of the language during the first ten weeks of the course with that of practice in reading during the second ten-week period. It is possible that in these circumstances there occurred a certain amount of transfer from oral to graphic skills.

The advantage found in the three "central" treatments over the other two in the reading test is not only crucial in that it indicates possible transfer from oral to graphic skills, but also in that this particular inter-treatment difference was still in evidence a year later - the only such difference located at that time. Hypothesis 3 - that any significant effects of the varying pre-reading periods would not be maintained over a period of one year - is rejected in the case of the reading skill only. In fact, the delayed tests took place nearly two years later than the first ten weeks of the first year when the treatment differences were applied. This finding is at variance with those of previous research. Lange [1966], for example, found no residual differences after one year, while Scherer and Wertheimer [1964] found a speaking advantage for their 'audio-lingual' group at the end of the second year, and an advantage in writing and translation for their 'traditional' group. Reading differences had disappeared.

The fourth test, writing, was similar to the others in that it revealed the superiority of treatment 3, and hypothesis 1.5 - that the varying lengths of pre-reading period would have no significant effect on pupils' ability in writing - is rejected.

Again, given circumstances in which interference was reduced while a certain amount of practice time was retained, there is some evidence of transfer from oral to written skills. Pupils for whom writing was delayed for ten weeks, and who had therefore concentrated more on oral skills, did better in the writing test than those who had been writing from the beginning of the course. The ten-week delay was an advantage in treatment 3, but the 20-week delay in writing was even more clearly a disadvantage in treatments 4 and 5. In the case of these pupils, the amount of time spent on the particular skill related closely to their level of achievement.

The results of the four tests have been discussed separately, but the general conclusions, based on over-all results, are similar. When the speaking test was included, the differences failed to reach a significant level, and hypothesis 1.1 - that the varying lengths of pre-reading period would have no significant effect on pupils' overall performance in French - is supported. But in the other three tests combined, there was a clear advantage in treatment 3, in which both reading and writing skills had been excluded for the first ten weeks of the course.

These results confirm that, within the language learning situation provided by the University of Waikato Team Teaching Unit, a ten-week pre-reading period was beneficial to pupils' levels of achievement. That this was the case in listening is not unexpected, for in the relevant treatment groups more time was spent on activities which practised this skill. The absence of similar findings for speaking may partly stem from the difficulties of testing in this area.

Of greater consequence is the confirmation that such a period was also of benefit to reading and writing, for it shows that, in certain conditions, transfer of learning from oral to graphic skills may occur.

How long the pre-reading period should be for its benefits to be fully realized is undoubtedly closely related to the particular circumstances of a given learning situation. For the Hamilton project, a clear answer has been obtained. A further piece of research would be required to provide an answer appropriate to beginners' classes in high schools, where the length and frequency of lessons are different, and the pupils slightly older.