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THE EFFECT OF TIME-EXPANSION ON LISTENING COMPREHENSION OF HIGH SCHOOL STUDENTS IN SECOND-YEAR FRENCH CLASSES

DISSERTATION

Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Philosophy in the Graduate School of The Ohio State University

By

Sister Etienne Flaherty, B.A., M.A.

* * * * *

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1975

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CHAPTER I

INTRODUCTION

The Problem

Three and four decades ago, foreign-language educators, focusing attention on the reading skill, devoted little time and space to suitable techniques for training students in aural comprehension. In this respect they were no different from colleagues teaching students their native language. Taylor estimates that 90 percent of all listening research has been done since 1952 (1973, p. 3). American education was built on a study of the three R's. It was assumed that listening was a skill that did not need to be taught formally.

Wartime Army Specialized Training Program (ASTP) experiments, by emphasizing the spoken language, contributed to a reassessment of the place of listening and speaking in second-language learning. Linguistic studies, which gave primacy to the spoken word, led foreign-language educators to a new interest in the aural-oral skills. The development of more sophisticated recording and playback equipment facilitated implementation of new theories. Practice often lagged behind theory, however, and theories themselves should sometimes have been more carefully scrutinized.
Official sanction of a sort for emphasizing the audiolingual skills came from an international seminar on the teaching of modern languages which was held in Ceylon in 1953 under UNESCO auspices. A majority of the delegates accepted the general principle that a primarily oral approach should be used by language teachers. They agreed that understanding, speaking, reading, and writing were the four fundamental skills to be taught and that they should be taught in that order (1955, p. 50). The endorsement was repeated at an international conference held in Berlin in 1964. Mildenberger (1965, p. 111) reported that the members of a secondary education committee had unanimously agreed that in teaching modern foreign languages in secondary schools, the major emphasis should be upon language as communication, and the four skills should be developed.

Aural comprehension tests were used in conjunction with the University of Chicago investigation of second-language teaching (Agard and Dunkel, 1948). Five years after the publication of the project report, however, Furness commented on the scarcity of listening comprehension tests. She noted that no attempts had been made to validate tests which did exist, and included in her censure those which had been used in the Chicago study (1953, p. 27).

In the early 1950's, Scherer urged fellow members of the American Association of Teachers of German to give
more attention to audio comprehension in basic courses (1952, p. 227); yet, more than a decade later, Newmark and Diller declared that most programs neglected listening and treated it as incidental to the speaking skill. They saw a need for research on methods for teaching listening (1964, p. 18). Paradoxically, in that same year, Brooks assured teachers that nearly all students could learn to listen and comprehend satisfactorily (1964, p. 278), but a few years later at a Northeast Conference on the Teaching of Foreign Languages he admitted, "We are still far from comprehending what happens when language comes at us ready made, as it does in listening and reading" (1970, p. 141). In fact, Brooks had already acknowledged that popular theories of foreign-language education might be unsound. He had said, "Up to the present, what is called the new approach is largely an act of faith; research to prove the validity of its basic principles is scanty" (1966, p. 359).

Promoters of the audiolingual approach to language teaching formulated learning objectives for the skills and issued directives and guidelines for classroom teachers. A Working Committee of the 1959 Northeast Conference presented a "blueprint" for a six-year sequence beginning in grade nine. The use of "authentic speech" on the first day in class and throughout the sequence was recommended to teachers. Such speech was defined as "the target language used in
complete and meaningful sentences by a native speaker, or a person who is fully or nearly bilingual, speaking at a normal rate of speech" (Silber, 1959, p. 14). This statement is representative of many which have appeared in professional publications in recent decades.

Most theorists of the evolving methodology allowed no compromise in the matter of speech rate. Even those who permitted a "fairly normal rate of speech" for an initial presentation called for a slightly faster repetition and clearly stated that "artificially slow speech should never be presented, even at the beginning of language study" (Holton et al., 1961, pp. 137-38).

The terminology has varied somewhat and included such expressions as "the conversational speed of the native," "normal speed," "normal colloquial speech," and "a normal rate." Usually no attempt has been made at a definition of "normal speed." Only occasionally was there an indication that the term could cover a range of rates depending upon the speaker, the audience, the nature of the message, and the situation.

A notable exception was the work of Marty, one of the first to attempt to program a basic language course. He found it desirable to specify terminal behavior using rather detailed descriptions (1962, p. 1). By careful measurement of the rate of delivery on native recordings, he set a minimum rate of speech to be comprehended by the first-stage
learner. He also formulated objectives in terms of variables like distance and room size, reaction time, presence or absence of speaker, and sound-to-word ratio. (1968, p. 100). His program incorporated exercises to develop auditory retention and comprehension and a judicious mix of self- and machine-paced drill. Unfortunately the tapes which were a costly component of other language programs were generally not prepared with the same care.

The profession is also indebted to Rivers for some significant pages on listening comprehension in second-language learning (1964, ch. 5; 1968, ch. 6; 1972, ch. 6, 7; 1975, ch. 3). "Thorough training" and "much practice" (1968, p. 143) are key ideas of her message, and they imply roles for teacher and for student. She gives advice on both the designing of exercises and on their presentation. "All utterances for listening comprehension," she insists, "should be delivered at normal speed from the earliest lessons" (1968, p. 154). However, she specifies that she does not mean "rapid native speech" but rather a slower rate which a native would not find "unduly labored" because natural rhythm, intonation, word groupings, elisions, and liaisons would be retained (1968, p. 155). She accords more importance to the length of speech segments and pauses than to phonation rate.

As early as 1960, Carroll expressed concern over educational policy on foreign-language teaching which lacked
a research basis (1960, p. 129). Bazan also entered a plea for analysis, research, experimentation, and evaluation, saying, "We are at present proceeding on the basis of many assumptions which may or may not be well-founded" (1964, p. 337). She pointed, in particular, to unexamined assumptions in the area of aural perception (p. 344).

Even if the theories had been well grounded, implementation was virtually impossible in some instances. Implicit in the basic assumption about speech rate was a presupposition that American language teachers were capable of using native speed in their classrooms. Yet when representatives of the Modern Language Association outlined qualifications for secondary school modern language teachers, they considered it necessary to describe a minimal level of aural understanding that consisted of "the ability to get the sense of what an educated native says when he is enunciating carefully and speaking simply on a general subject" (1955, p. 46). This, it must be remembered, was a description of teacher skill. Boyer, reporting nearly a decade later on United States Office of Education remedial measures, expressed the opinion that two or even three summer institutes would be needed to bring many minimally and non-qualified teachers up to the level of "good" according to MLA specifications (1964, p. 16). To have set student standards at a level teachers had not attained now appears to have been both ambitious and unrealistic.
In 1964, Ausubel suggested the use of a slower rate at the beginning of language study:

... practice in listening improves oral comprehension ability primarily insofar as what is heard is also understood. Thus if the sample of speech to which the learner listens is too rapid for him to understand, it does little to enhance his ability to comprehend the spoken language. ... Hence, since learning to comprehend the spoken language is a very gradual process, it should undoubtedly be assisted in the beginning by means of a slower rate of speech that is progressively accelerated as oral comprehension improves (1964, p. 424).

Since then others (Rubin, 1968, pp. 85-86; Jarvis, 1970, p. 93; Chastain, 1971, p. 116; Collins, 1972, p. 134) have gone on record as questioning the use of native speed at all stages of language learning.

Many language students would probably endorse the suggestion. Inability to cope with the spoken language has been termed "the most prevalent reason why students drop a foreign-language course" (Ornstein, Ewton, and Mueller, 1971, p. 110). Benevento reported on a questionnaire used with high school language students regarding their end-of-year expectations. She remarked that they were more realistic than the researcher had been. They chose from six listening objectives given in hierarchical order. Of the 297 first-year French, German, and Spanish students questioned, only one out of twelve expected to be able to understand natives speaking standard language at an average
rate of speed. Well over half (62 percent) did not expect to be able to understand a native speaker at all even if he were speaking carefully about topics they had studied in class. The same choices were presented to 198 second-year language students. More than half of these still had no expectation of understanding anyone speaking the target language other than their teacher and classmates. Some (12 percent) expected to be able at the end of their second year of language study to understand a small part of what went on in class (1970, 1971).

The policy of barring any rate less than "normal" has been defended in two ways. In the first place, proponents of the use of native speed point out that the listener, unlike the speaker, reader, or writer, is not free to choose his own speed. Students must, therefore, be prepared to adapt to a pace set by the native speaker. Secondly, they explain that slowing down speech distorts it. Students, they believe, should not be exposed to the unnatural.

There seem to be valid reasons for questioning the policy. They are related to: (1) linguistic influences, (2) learning conditions and processes, (3) the listening process, (4) second-language listening materials, and (5) methods of altering speech rate.

Assumptions underlying the audiolingual method developed in part from theories of linguists, some of whom
assisted with the ASTP. In that project, they were faced with an urgent need to prepare students to communicate with native speakers of the languages they were studying. Aside from involvement in wartime language teaching programs, however, men like Bloomfield were concerned with "study of language" as opposed to "language study." It is easy to see how Bloomfield might have influenced those who advocate the use of normal speed. To study and to codify a language he needed "copious records of normal utterances" (1933, p. 277). His Outline Guide for the Practical Study of Foreign Languages was addressed to the linguist who would learn with the help of a native informant a language in which it was difficult or impossible to get formal instruction. He, therefore, emphasized the importance of speed in writing down the informant's words because "the less we slow up the informant, the more naturally he will speak" (1942, p. 10). In another place we read, "A dictated text is likely to contain unnatural forms which are peculiar to excessively slow speech," and so, one should "encourage the informant to talk as much as possible in a natural way" (1942, p. 14).

Linguists, who have studied the way children acquire a first language, have noted that youngsters are constantly exposed to speech delivered at normal speed. Some language methodologists have assumed that there is a close analogy between the acquisition of a first and of a second language and have, consequently, advocated the exclusive use of
native-speed renditions in language classrooms. Others have argued that adults frequently slow down oral speech when addressing children and that language teachers are also justified in using a rate that is slower than that generally used by native speakers.

Not all teachers caught up in the New Key movement were as discerning as Pillet's master teacher, Mademoiselle Colombe:

Though she understood the scientific concern for impartial observation of structures as they spontaneously occurred without thought of controlling vocabulary or modifying normal speed of delivery, she was not convinced that concessions were not necessary at the instructional level. . . . She rather suspected that relentlessly exposing a class to utterances delivered at conversational speed was character-building for the better students and unfortunately, mystifying for others (1965, p. 118).

Perhaps Bloomfield would have understood her suspicion, for he wrote, "Above all, what is read or spoken should be well within the competence of the learner; solving puzzles is not language learning" (1933, p. 506).

Gagné defines learning as an event that happens under conditions which can be observed and which can also be altered and controlled (1970, p. 2). Some of these conditions are characterized as internal to the learner, others as external to him (p. 23). To specify an uncompromising use of native speed seems to preclude adjustments to the capabilities and aspirations of the learner; it appears to place restrictions on the management of external conditions.
Indeed, it focuses on the matter to be learned and not on
the learner; it emphasizes language teaching as contrasted
with language learning. In terms of communication theory,
it disregards the receiver and concentrates on the source
as though the latter could engage in communication inde­
pendently of the former. Berlo has said, "We cannot predict
the success of the source from his skill level alone—we
have to consider it in relationship to the levels of par­
ticular receivers" (1960, p. 53).

Gagné considers assessment of the learner's initial
capabilities to be a crucial part of planning for learning
(1970, p. 26). The listener's "skill level" is one such
capability. Educators may be making unjustified assumptions
about the listening ability of students. Markgraf (1957)
gathered data showing that high school students spend 53
percent of the school day listening in classrooms. Camp­
bell, in a more recent survey of juniors and seniors, found
that they prefer electronic media to printed media (1969,
p. 5). This experience does not assure that they are good
listeners, however, and Taylor (1973, p. 4) has evidence
that even in their native language many American teenagers
are poor listeners. Besides assuming good general listening
ability in the native language, foreign-language teachers
may also be supposing that students are skilled in auditory
subtasks. From listening discrimination scores of Pennsyl­
vania Project students, Valette concluded that "most
students after two years of study still have not mastered the sound system of the language they are learning" (1969, p. 402). Lundsteen wonders if students are even capable of accurate discrimination. Citing the noise level of our cities and the media habits of the young, she remarks that "otologists report that prolonged exposure to a noise level above 85 decibels (lower than heavy city traffic) can eventually result in loss of hearing for sounds in the range most crucial for understanding human speech" (1971, p. 6).

Sometimes, of course, we may simply have a case of a practice mentioned by Gagné (1965, p. 5). There are teachers who prefer to state objectives in terms of what is to be attempted rather than what is to be accomplished, a his-reach-must-exceed-his-grasp attitude. Those who study learning recognize that it is closely related to the kind and degree of success or failure experienced by the learner. The need to reach repeatedly beyond his grasping limit has a negative effect on him. According to Atkinson (1965, p. 31), a learner is generally not highly motivated by the very easy task, but he tends to avoid the one which is excessively difficult and does not give him a reasonable probability of success. Success builds his confidence, creates satisfactory associations for him, and strengthens his expectancy of success. Failure depresses his confidence, increases his anxiety, and weakens his expectation and chance of success. The use of native speed may raise
the comprehension task beyond the intermediate level of difficulty which encourages perseverance.

Jarvis finds it difficult to reconcile insistence on use of native speed from the beginning with "the long-standing principle that one simplifies in the early stages of a learning task." He remarks that "simplification in no way delimits or vitiates the terminal behavior" (1970, p. 93). Insistence on normal speed from the inception of language study because the ultimate objective is comprehension of a native speaking at normal speed seems to confound end and means. It makes no distinction between the goal to be achieved and the process by which the learner reaches the desired level of competence. This process is hierarchical in nature. Glaser and Reynolds explain:

Attainment of terminal behavior is achieved by teaching sub-objectives, which taken together comprise mastery, and sub-tasks which represent successively finer approximations to the terminal behavior (1964, p. 69).

Content and rate are separate aspects of the oral message, and each can be described in a series of sub-objectives. Drawing up specifications for a language proficiency test, Carroll wrote:

It is worthwhile to specify the level of competence desired in each of them [the four skills] independently of essential 'language-fact' mastery, because each involves elements of quickness of response. . . . In fact, the specification could well be partly in terms of rates, i.e., rate at which material of some set standard of difficulty could be heard and understood. . . .

Listening is an integral part of so many commonplace activities that we easily underestimate its difficulty unless we stop to think about it. Ordinarily we do not think about it because we perform it without conscious attention to the process and with no apparent effort. Since aural comprehension is almost wholly a matter of covert operations, its complexity is masked. We tend, then, to overstress the aspect we are most sure of, the hearing, and to regard that as nothing more than perception of sounds, a kind of passive absorption, with the sound source performing the more essential function.

Educators often speak of listening as one of four language skills, somehow by such a reduction strategy giving the impression of manageable proportions. Bakan took a more realistic approach when he suggested that we must teach "a multiplicity of listening skills instead of a unitary skill" (1956, p. 109). From the suggestion follow serious questions about an individual's potential and actualized capacity in each of these separate auditory skills.

Scientists are cautious in their statements about the process of listening comprehension since it cannot be directly observed. They are in agreement, however, on the fact that it is complex. According to Miller, the phonemic decoding of the acoustic signal is in itself intricate. Each succeeding phoneme requires a set of discriminations since some eight to ten distinctive features distinguish
one phoneme from another and each of these features is binary or ternary in nature (1956, p. 89). Fry mentions the further complication of a single phonemic class including numerous variations. Voices are male and female, adult and child, loud and weak, and they are marked by regional and social differences. Position and contiguous sounds determine variations too (1970, p. 34).

Phonemic categorization, however elaborate an operation it may be, is just one phase in the decoding. Because the listener receives a string of phonemes and a sequence of words, we are tempted to think in terms of linear operations. Van Teslaar likens the process to shooting at several moving targets simultaneously (1965, p. 84). For one thing, suprasegmental and kinesic signals arrive along with the stream of sounds. Then the listener, as Fry describes him, must segment and group at different linguistic levels at the same time, as he deals with the morphological, syntactic, and semantic elements of the utterance (1965, p. 49). There is reason to suppose that he proceeds by elimination at each level using what he knows of the sequential probabilities of the language involved.

Clearly the listener cannot be considered a mere passive receiver. Neisser believes that it would be impractical for the listener to await the conclusion of an utterance and then make a single decision. He must construct the utterance from the stream of sound as he receives
it. Comprehension depends upon his attempting to anticipate what is forthcoming; yet, he must also lag behind the speaker in order not to misinterpret the message. He forms hypotheses and then continually matches these against the actual message to verify or to reject and then reformulate (1967, p. 194).

The continuous readjustment of his interpretation of the utterance presupposes that the listener has some form of auditory retention at his disposal. He is required to retain what he has already recognized until he is able to establish its relationship to succeeding segments. Broadbent has developed a widely-accepted theory concerning the flow and retention of information. He believes that information passes through a limited-capacity channel and is held in a short-term store as long as it can pass repeatedly through the same limited-capacity channel. When fresh information reaches this channel, it is, of course, no longer available for recirculation of the older items of information, and they are then lost (1963, p. 35). Because of the limitations on the amount of oral language that he can receive, process, and remember, it is important that sufficient time be available to the listener.

Understanding language calls for more than comprehending the explicit linguistic data. It is assumed that the listener has a store of prior knowledge which enables
him to contribute what is implicit in the message. Familiarity with the whole cultural context, for example, is assumed. Prior knowledge also aids the listener to separate the essential cues from the irrelevant and redundant elements of the message.

For the novice student of a second language there are added problems. He has been subjected to what Bauer calls "cultural-linguistic conditioning." He, therefore, reacts to the target language stimuli largely in terms of his native-language perceptual habits and utilizes the referents of his own cultural background (1963, p. 201). That is why Bauer sees a need for a period of adaptation and training until the learner builds up the necessary frame of reference.

Each language presents particular problems to the learner depending on how and to what extent it differs from his first language. Ornstein, Ewton, and Mueller (1971, pp. 112-113) indicate some of the difficulties encountered by the speaker of English learning French. The beginner gets an impression of great speed from the regular rhythm of the French language. He feels overwhelmed and disconcerted by the apparent rapidity of the delivery. He is lost without the cues conveyed in English by accent since all the French syllables receive equal stress. He tries in vain to locate word boundaries since the individual words are joined in French into breath groups by
liaison and elision. He must learn to focus attention on such slight cues as final pronounced consonants which play a grammatical role they do not have in English (e.g., *gros /gro/, grosse /gros/; *il finit /il fini/, *ils finissent /il finis/). He has to attune himself to the higher pitch of French and not be misled into believing it denotes the anger, tension, or fear commonly associated with higher pitch in English.

In the early stages of language study, the student-listener is unable to distinguish between the essential and the redundant. All elements of the utterance take on equal importance. Because his knowledge of the foreign language and culture is so limited, he is not yet able to anticipate the message or reconstruct what he may have missed and must, therefore, grasp everything he can. He may also need some additional time for some degree of translation since he very likely arrives at comprehension of the target language through his native tongue.

Any consideration of listening practice in foreign-language education should give some attention to the quality of equipment and recorded materials designed for use in language courses. Locke (1965, p. 251) has called for research to support the need for better quality equipment. Carroll (1963, p. 1081) has pointed out the lack of experimental evidence concerning the effectiveness of the recorded language materials which are available.
Standards were set up under the auspices of the Modern Language Association (Ollmann, 1962, p. 147). According to these basic criteria, language recorded for listening is acceptable when it is "linguistically and culturally authentic in every respect" with "normal pace, intonation, and pauses."

Is it possible for materials prepared for the use of beginners to be "linguistically and culturally authentic?" Obviously the recordings do not present spontaneous speech as the frequent use of the dialogue form would suggest. Recorders are, in reality, reading prepared texts, materials contrived for use with language students. As Valdman has pointed out, the contriver, if he is realistic about facilitating language acquisition by beginning and intermediate students, must be prepared to sacrifice something in the outward form (1972, p. 89).

The speaker who has a prescribed text to follow tends to maintain a more even tempo than the person who composes as he speaks. It is not surprising that the rate of oral reading has generally been found to be faster than that of spontaneous speech. Goldman-Eisler (1968) did measurements of the temporal properties of oral English. Grosjean and Deschamps (1972, 1973) conducted similar experiments with French. Researchers found conversational speech more highly fragmented and discontinuous than oral reading in both English and French.
It must also be remembered that languages are characterized by a certain amount of redundancy. Time is provided for the listener, including the native, because the amount of information in a given sound sequence is reduced. The amount of redundancy, estimated at 50 percent in normal conversation (Carroll, 1964, p. 59), is drastically reduced in the messages deliberately constructed and recorded for listening practice.

Rivers (1968, p. 156) underlines the importance of pauses during which the listener can rehearse subvocally and strengthen memory traces. Pointing out that natural speech supplies pauses by such means as hesitations and repetition, she notes that artificially prepared speech omits these elements and delivers information at a faster rate. Recorded listening comprehension materials are, thus, made more difficult to comprehend than teachers realize.

Moreover, the setting is never adequately portrayed by recorded materials. Gestures, facial expressions, and all other non-verbal clues, which are part of face-to-face communication and help to give meaning to the speaker's words, are also absent. Furthermore, the recorded voice moves relentlessly on without making the adjustments that a speaker normally makes when he sees that his listener is not following him, for in direct oral communication there is really an exchange of messages between speaker and listener.
Thus, the student-listener is asked to cope with a speech stream composed almost entirely of items essential to understanding, and he must depend on aural perception alone. "We may well be demanding more of our foreign-language listeners in the exercises we present than is demanded in native-language listening," affirms Rivers (1975, p. 63).

Most language methodologists who ban all use of artificially slow speech do so because they wish to exclude unnatural and distorted speech. They are, in general, thinking of word rate as it is controlled by the speaker. Any appreciable deceleration on his part does bring undesirable changes in phonemes, stress, intonation, rhythm, elisions, liaisons, syllabification, and word grouping. It is not, therefore, a totally satisfactory procedure.

The rate can also be changed by playback at a slower speed than the one used during the recording. This method can hardly be considered useful for language classes. It involves a downward shift in the frequency components of the voice signal that destroys all semblance of naturalness and seriously impairs intelligibility.

A further rate-changing process, time-expansion by electromechanical devices, is now commercially available, and rate can be altered without a corresponding shift in pitch. No attempt will be made to explain the technique with any detail. The reader may wish to consult a major
source of information about rate-controlled speech, a three-volume anthology and bibliography prepared by Duker (1974).

Time-compression and expansion require an input of pre-recorded tape that is processed by playing it through the mechanism at the desired percentage of the original rate. Compression is accomplished by discarding small segments of the recorded message and blending the remaining parts into a continuous whole. The output may be amplified and played as it is being produced, or it may be recorded for later use on standard playback equipment. Replay of time-compressed speech requires less time than the original recording did. Expansion is achieved by periodically repeating a minute portion of the signal to produce speech that sounds slower than the master recording. In both time-compressed and time-expanded speech it is possible to vary the temporal value of the deletions and repetitions. In both cases, the pitch of the original tape is preserved, and there is little or no interference with intonation, stress, or word groupings.

Most compressor-expanders are unselective in that they affect the signal at fixed intervals without reference to the contents. Thus, brief sections of both vowel and consonant phonemes as well as pauses can be discarded or repeated. Some types of equipment use a more selective
technique that reacts to the type of sound or absence of sound.

Researchers working with rate-controlled speech have suggested possible uses, particularly of slowed speech, in second-language teaching (Orr, 1974, p. 40; Foulke, 1967b, p. 153; Friedman and Johnson, 1971b, pp. 157-63). Some language educators have also suggested that speech compression and expansion might be useful tools for language teachers (Hutchinson, 1966, p. 228; Jarvis, 1970, pp. 92-93; Hocking, 1971, p. 214; Collins, 1972, p. 142). Reports of some experimentation in second-language learning are now beginning to appear in professional publications.

Purpose of the Study

The purpose of this investigation was to determine if there is any effect on listening comprehension scores of high school French students when rate of presentation of recorded materials is varied by time-expansion.

The following null hypotheses were formulated for testing:

1. There is no significant difference in listening comprehension performance of subjects who listen to the French Aural Comprehension Test (FACT) as recorded on Tape A (100% of original time), Tape B (135% of original time), or Tape C (170% of original time)
2. There is no significant difference in listening comprehension performance on the FACT completion subtest of subjects who listen to Tapes A, B, and C.

3. There is no significant difference in listening comprehension performance on the FACT rejoinder subtest of subjects who listen to Tapes A, B, and C.

4. There is no significant difference in listening comprehension performance on the two FACT subtests by subjects of a given rate group.

5. The differences in listening comprehension performance on the FACT between male and female subjects do not vary significantly as a function of rate of presentation.

6. The differences in listening comprehension performance on the FACT between subjects of different grade levels do not vary significantly as a function of rate of presentation.

Plan of the Study

Experimental materials were prepared using a multiple-choice listening test of completion and rejoinder items which was constructed by the investigator. This test, the French Aural Comprehension Test (FACT), was recorded at the Center for Rate-Controlled Recordings at the University of Louisville by a native speaker of French. Three tapes were generated from the master recording. These three recordings require 100, 135, and 170 percent of the original time for playback.
High school students in second-year French classes were randomly assigned to listen to one of the three recordings and select appropriate answers from suggested oral completions and from printed English rejoinders.

Three comprehension scores were obtained for each subject: two subtest scores and a total score. These scores were analyzed to determine significant differences related to the rate of presentation, the type of listening task, and the sex and grade level of the subject.

Definition of Terms

Aural or listening comprehension is synonymous with what Brown calls "auding" and defines as "listening to, recognizing, and interpreting spoken symbols" (1950, p. 128)

Aural or listening comprehension performance is defined as the score or subscore achieved on the French Aural Comprehension Test presented under one of three conditions

Expanded speech is defined as speech decelerated by the sampling method

Normal speed, for this study, is considered to be that rate used by the native speaker on the original recording of the French Aural Comprehension Test

Rate refers to the overall speed used during the reading of items, including intra-item pauses but exclusive of inter-item pauses
Retention interval designates the time span from the moment the speaker begins an item up to the moment he begins the succeeding item and thus includes speaking time and pause time provided for student reading and response.

Utterance denotes a unit in conversational interchange whether it be a word, series of words, sentence, or series of sentences.

**Basic Assumptions**

It was assumed in this study that:

1. Listening comprehension is measurable in quantitative terms by multiple-choice items of the completion and rejoinder types.

2. No subject was incapable of reading with ease the English options of the second part of the test.

3. No subject had a serious hearing loss.

4. No subject had had prior training or experience with time-expanded speech.
CHAPTER II

REVIEW OF RELATED RESEARCH

Second-Language Research

The topic of aural comprehension has often been treated in the literature of foreign-language education. Much of what has appeared, however, has been theoretical in nature, the expression of unverified opinion or personal preference, the account of techniques that have been tried and subjectively evaluated. Fewer reports of empirical results have been published, and in much of the research, achievement in listening comprehension was not the primary interest of the investigator.

Listening ability was tested during broad methodological studies and in conjunction with comparisons of classroom procedures. Sometimes the research was focused on the equipment used in listening training and testing. In some instances, the effect of learner variables was being investigated. In these projects a listening comprehension test was only one of the criterion measures.

Some experimenters (Gideon, 1957; Tezza, 1962; Asher, 1969) devised methods of listening training in an effort to help students achieve greater proficiency in the skill.
Others experimented with techniques for evaluating aural comprehension (Spolsky et al., 1968; Harris, 1970; Whitson, 1972). Some investigators concentrated on a single auditory skill like discrimination (Politzer and Weiss, 1969). Finally, a small part of the research in second-language has been concerned with the interaction between the temporal properties of speech signals and achievement in listening. These experiments will be described later in greater detail.

Some of the investigators presented listening test scores favoring a specific approach; others introduced evidence for the possible influence of intervening variables. The more global studies provided some general information about proficiency levels of American high school students. From their findings emerges a profile of students with limited ability to understand native-speed recorded materials.

An early study on the efficacy of the audiolingual approach was undertaken by Agard and Dunkel under the aegis of the University of Chicago. They concluded that students receiving aural-oral instruction did not perform significantly better in listening comprehension than students whose training had emphasized reading and writing (1948, p. 289). They saw in the results "proof that the aural skill is acquired slowly and increases towards the end of two years"
of study" (p. 88). A more recent methodological study involving high school French and German students was the Pennsylvania Project. Performance on listening tests showed that, in general, the Project classes were not achieving at the levels indicated by the test norms (Smith, 1970, p. 239). Carroll, in his survey of graduating college seniors with foreign-language majors, found generally low proficiency levels in the audiolingual skills even among these more advanced students who were about to assume responsibility for the training of younger learners (1967a, p. 134). Seemingly, students are not learning to comprehend as well as they are expected to.

Listener variables

Part of the reason for the student's failure to reach the goals set for him lies with the listener himself. Research points to a listening ability that varies from individual to individual and that needs to be developed.

Rankin, in an investigation of ability to understand spoken English, found large individual differences in aptitude to learn through listening (1926). In testing American high school students, Caffrey found evidence to support his hypothesis for the existence of an auding ability which could be reliably measured (1955, p. 308). In another study of American adolescents, Holmes and Singer isolated an auding or listening comprehension factor
Spearritt, in a study of comprehension of English by Australian children, also gave decisive support to Caffrey's theory. He identified a separate auditory factor and concluded that training in other curricular areas did not guarantee development in listening comprehension (1962, p. 101). Loban, who conducted a longitudinal K-12 study of children's language, reported on the listening ability of the subjects during their high school years. He found that some students had received listening test scores in the eighth grade that others had not yet achieved in twelfth grade after four additional years of schooling (1967, p. 117).

Individual variations in listening ability appear to play a vital role in second language learning. The Modern Language Aptitude Test (Carroll and Sapon, 1959) was published after a great deal of preliminary testing. From this testing Carroll concluded that "facility in learning to speak and understand a foreign language is a fairly specialized talent (or group of talents), relatively independent of those traits ordinarily included under intelligence" (1962, p. 89). He saw grounds for believing that aptitude consists of at least four identifiable abilities. One of these he called "phonetic coding" and defined as "the ability to code auditory phonetic material in such a way that this material can be recognized,
identified, and remembered over something longer than a few seconds" (p. 128). Two parts of the aptitude test are recorded on tape and presented to the examinees as auditory stimuli.

Cloos examined the predictive value of certain measures for achievement in high school German courses. Of the independent variables he investigated, the MLAT and the Brown-Carlsen Listening Comprehension Test had the most significant relationship to achievement on the final test. He found that the Paired Associates and Phonetic Script subtests of the MLAT had the greatest power as predictors (1965). Arendt studied aptitude of high school French and German students. He found that the Phonetic Script subtest was the best single predictor of achievement in German listening and one of the most powerful for French. He also noted that musical ability as measured by the Seashore Measures of Musical Talent contributed to the prediction of success in all of the language skills in both languages (1968).

Pimsleur, author of the Language Aptitude Battery (LAB) (1966a), found that talent for language seemed to reside principally in the ability to process information received through the ear (1968, p. 74). He identified sound discrimination and sound-symbol association as two components of auditory ability. The first he defined as
"ability to remember sounds and their significance." He described the second as "the ability to associate sounds with written forms accurately and rapidly" (Pimsleur, Sundland, and McIntyre, 1963, p. 61). The LAB includes two pre-recorded sections which measure auditory ability, a sound discrimination test and a sound-symbol test.

Pimsleur and his associates found auditory ability to be an important factor in differentiating the successful language student of high school age from the underachiever (Pimsleur, Sundland, and McIntyre, 1963, p. 61). Connor, in a study of able non-achievers in audiolingual foreign-language classes, found that they were poorer in audio and verbal learning skills than their more successful classmates (1968). Mueller and Leutenegger found a correlation between ease of foreign-language learning and auditory ability as measured by the Seashore Measures. Comparing the scores of students who withdrew from elementary French courses with scores of those who completed that level, they found that the unsuccessful students had significantly lower scores on the tonal memory, time, pitch, and timbre tests (1964, p. 93). Experiments performed with German students have suggested that pitch discrimination is an important factor in the acquisition of a second language by high school pupils taught by the audiolingual method (Westphal, Leutenegger, and Wagner,
It appears, then, that auditory ability can be crucial in second-language learning. There is also evidence that the listener's sex and grade level have a bearing on his listening skill and on his achievement in foreign-language class.

Second-language research points to sex-related differences in both aptitude and achievement at the secondary school level. Connor (1968), who drew her subjects from audiolingual language classes, found that the majority of the achievers were girls. Cloos noted a pervasive and significant superiority of the female in foreign-language aptitude and achievement in his study of high school language students (1971, p. 418). In the course of the Pennsylvania Project, the sex variable emerged as an important correlate of learning at the first level of study, but it was less frequently a significant factor by the end of the second level (Smith, 1970, p. 232). Smith does point out, however, that the sex variable played a lesser role in determining results on listening tests than on other measures (p. 161).

Grade level appears to be a more significant factor than chronological age in success on first- and second-language tasks. Caffrey, testing students in their native English, found that mean auding scores rose from grade to grade. Although he noted that when sex means were compared, a difference of two grades was required before significant
differences were found, he also found that when male and female scores were combined, all differences were significant (1955, p. 305). Dye and Very also did experiments with high school students in their mother tongue and found that sex and grade in school were significant variables in a number of tasks, including those which measured a perceptual speed factor (1968). The Pennsylvania Foreign-Language Project report showed differences related to grade level at the conclusion of the second level course (Smith, 1970, pp. 221-22). While Gideon (1957) concluded that German aural comprehension seemed more closely related to duration of study than to age or grade, her findings seem to support the Dye and Very supposition that grade in school is influential because it is related to educational, social, and cultural experiences (1968, p. 82). Eleventh and twelfth graders involved in the present study had not studied French for a longer time than the younger subjects, but they had had an additional one or more years' experience in study of a classical language or another modern language. An educational experience like that could have been advantageous to them in further language study.

**Rate and Related Variables**

Failure by the student to reach a high level of aural comprehension can also be explained in part by characteristics of the message, among them the temporal
properties of the signal. Auditory input is a temporal phenomenon. It is not surprising, therefore, that Friedman and Johnson reported finding repeatedly that "temporal variables are critical to the understanding of second language listening behavior both as they vary in the language and in the listener's deployment of work and priorities" (1971a, p. 326).

The control of speech rate made possible by the development of equipment for speech compression and expansion has stimulated a great deal of research with the temporal properties of the native language of subjects. Some of this work may have implications for second-language learning.

In many of the studies, comprehension has been measured as a function of rate. Fairbanks, Guttman, and Miron (1957a, p. 20) found that subjects could tolerate a certain amount of compression before there was a substantial reduction in comprehension. Recent research has confirmed their findings although the point at which the decrease in comprehension becomes significant has been reported at various rates (Foulke, 1968, p. 206; Foulke and Sticht, 1967a, p. 24; Reid, 1968, p. 242; Langford, 1968). The Langford study involved high school juniors representing three ability-achievement groupings. With these subjects comprehension was effective up to 275 words per minute.
(w.p.m.) with accelerated losses thereafter (1974, p. 892).

Experiments done with languages other than English have yielded results similar to those just described. Meyerson worked with messages in Mandarin Chinese, Japanese, and Hindi, as well as in English. These messages were compressed 30, 40, 50, and 60 percent. She found that as compression levels increased, comprehension scores decreased in all of the languages. Subjects indicated that at 50 and 60 percent compression they could understand individual words but the information came too quickly to absorb and remember. The same reaction was voiced by subjects from all language groups and by those who received high and low scores (1971). Goldhaber compressed speech in English, Navajo, and Spanish for playback at 328 w.p.m., a rate slightly faster than that at which others have noted a sharp decline in listening scores. He concluded that native speakers could comprehend compressed speech in these languages significantly better if they were trained to do so (1974, p. 734).

In summary, then, it appears that word rate in the native language can be increased to some extent without interfering seriously with comprehension. Beyond a certain point, however, comprehension seems to decline rather rapidly.
Foulke ascribes this red* ^ed efficiency to an interaction between rate and the information-processing capacity of the listener (1968, p. 206). Broadbent has done numerous experiments on multichannel listening which tend to show that the listener has a limited capacity, that he can apprehend and recall only a few discrete items when he hears them just once (1958, p. 17). He has found, however, that at low rates of input and output there is much less difficulty in storing several items (p. 283).

Miller too has found that there is an upper limit to the amount of oral information the human can receive, process, and remember (1956, p. 86). He has concluded that the memory span is about seven bits of information (p. 90), but he has found that the amount of information processed can be increased by recoding the bits of the stimulus input into a sequence of larger chunks. The listener can, thus, compensate for the limitations of his capacity for processing and storing information (p. 93).

It appears that one might aid the listener by manipulating the speech stream. A slower rate would allow him more time for perception and rehearsal of items. Pauses would also provide processing time, or they might assist him with the chunking and recoding recommended by Miller.

Because presentation rate affects perceptual processes, one can hypothesize that time-expansion would
aid the high school language student to achieve greater accuracy in aural comprehension by allowing him more time for the task. It is equally plausible to theorize that a slower rate would impair accurate comprehension by prolonging the time the utterance must be held in the short-term memory and allowing more time for memory traces to fade because rate also affects mnemonic processes. Native-language studies provide empirical evidence for both possibilities.

Pollack, Johnson, and Knaff measured auditory digit span and found a significantly lower span at the fastest rate of presentation and a significantly higher span at the shorter message length (1959, p. 139). Conrad, on the other hand, noted that when the interval between presentation and recall was trebled, subjects forgot approximately double the number of digits (1957, p. 832). Broadbent describes an experiment which dealt with short-term memory for items which were followed by a fixed number of interfering items presented at various speeds. Slow speeds produced inferior performance. This evidence is consistent with a decay theory (1963, p. 39). Presentation rate and length of sequence were two of the variables manipulated by Laughery and Pinkins in a recall task involving letters. In their study, performance varied inversely with the length of the sequence and directly with the rate, the effect of rate being greater for the longer sequences (1966, p. 285).
Limitations imposed by the span of immediate memory take on added significance when it is a question of processing a foreign-language signal. Lado describes experiments which consistently found memory span of adult students shorter in a foreign language than in their native language. The span did increase as students became more proficient in the target language (1965). Data from a pilot study done by Pimsleur of the short-term memory span of high school students in English, their first language, and French, the target language, point to a parallel situation in that age group. Pimsleur suggests that:

... students enter the foreign-language class with a certain inherent ability to remember utterances and that this ability soon reaches about half of what it is in the native language. Thereafter progress is very slow, and two full years of instruction in French only improve their memory span a little, bringing it up perhaps to two-thirds of what it is in English (1971, p. 113).

He considers these to be very tentative findings, however.

Studies of listening comprehension at compressed rates reveal the existence of individual differences here just as in comprehension of normal-rate speech in the first or in the second language. From their own experimentation and from study of rate-controlled speech research in English, Foulke and Sticht have learned that:

... some listeners show good comprehension of speech presented at a rate of 350 wpm or faster, and with little or no prior experience in listening to such speech. Other listeners show poor comprehension of accelerated speech, even after prolonged exposure to such speech (1967b, p. 15).
There is evidence, however, that practice and training can facilitate comprehension of speeded speech. Orr, Friedman, and Williams found that subjects who were given systematic practice could learn to process highly compressed speech more effectively (1965, p. 152). In a follow-up study Orr and Friedman confirmed the efficacy of even a small amount of practice (1967, p. 227). Goldhaber assessed the effects of a brief training program on comprehension of compressed speech in their native languages by speakers of English, Navajo, and Spanish. He found statistically significant improvement with these subjects (1974, p. 734).

In view of individual differences in ease of processing speeded speech, Carver decided to look at the amount of time available per unit rather than the rate of presentation. He replotted data along the dimension of seconds per word instead of words per minute. He found reasonable evidence that "when an individual is presented with speech at increasingly high rates, there will be little decrease in his understanding of the thoughts until the minimum amount of time required to process each word, each group of words, or each thought is exceeded" (1973, p. 123).

This is an approach of measuring listening time rather than speaking time. It looks at the time needs of the individual listener, rather than the rate at which the speaker or mechanical source delivers the speech stream.
The student of a second language listening to a native-speed recording may be in a situation similar to that of the person listening to accelerated speech in his first language. He may not have sufficient time to process the information presented to him, and he may need more time per unit than some of his fellow students. He may, within the limits of his personal capabilities, profit from training programs and from practice, but the base rate may have to be adjusted to his needs if he is to derive maximum benefit from his efforts to process information presented in the language he is learning.

Some of the most recent research with rate-controlled speech has been directed toward a study of comprehension at the higher rates where losses are greater, in an effort to ascertain the respective roles of the message, the process, and the listener in the erosion of comprehension. Topics of intelligibility, distortion, and aptitude have been explored.

It is important to distinguish between the two related but distinct phenomena of intelligibility and listening comprehension. Harwood has explained that the former is a function of the signal and of the message in terms of the listener; whereas, the latter is the function of the listener himself in terms of the signal and the message. The listener cannot comprehend if the signal and
the message are not intelligible (1950, p. 11). Foulke and Sticht measured the intelligibility of single words and the comprehension of connected speech at several compressions in time. Mean intelligibility scores were higher than mean comprehension scores (1967a, p. 25). It has been proposed that a similar distinction be drawn in the case of the student-listener of a second language. The speech might be intelligible for a native listener. The vocabulary and the syntax might be within the grasp of the student. An intelligibility score might reveal that he experienced no difficulty understanding individual words. The speech might still be too fast for him to comprehend adequately (Friedman and Johnson, 1971a, p. 324).

It is inevitable that the quality of speech compressed by the sampling method be modified to some degree. The time-compressed version consists of samples which have been extracted from the original signal while other portions have been discarded. Intelligibility is related to the compression ratio, that is, the proportion of the signal discarded. Sticht, to test the hypothesis that comprehension difficulties might be the result of signal distortion alone or in combination with rate, separately evaluated the effects of these two forces upon comprehension. He concluded that both factors affect listening comprehension but that rate appears to be more potent than
signal distortion (1969, p. 171). The barrier to comprehension appears to be within the information-processing capacities of the individual rather than in shortcomings of the technical process. He extended this research and substantiated the earlier findings. The factors limiting comprehensibility of rapid speech in the native language apparently reside more with the inability of the listener to process the rapid rates of speech than with the distortion produced by the compression equipment. The deterioration of the signal does, of course, interfere with comprehension (1970, p. 107).

One might consider that when confronted with a native-speed recording in a second language the unskilled listener experiences a form of distortion even when the signal per se is faultless. If the information-storage capacity of the individual is overtaxed by the rapidity of the speech stream, segments of the message are, as it were, lost or discarded. The message no longer remains intact for the student; hence, there is a greater need for him to supply missing elements. Skill in deducing the whole of a message from bits and pieces is related to the listener's familiarity with the linguistic system. The ability to draw such inferences may, nevertheless, be a specialized talent, and willingness to venture a guess may be a trait not possessed to the same extent by all persons.
Friedman and Johnson, noting that listening comprehension at normal speech rate did not correlate with comprehension at high rates of compression, proposed that comprehension of highly compressed speech might be dependent upon skills which are not crucial in normal or near-normal rates. They postulated the existence of a special competence and attempted to identify correlates of comprehension at normal and at compressed rates (1968, p. 208). Their results seemed to indicate that a general language aptitude which appeared to be involved in comprehension at normal-rate presentation was relatively less important at higher rates. On the other hand, an ability marginally involved at slower rates became significant as a correlate of comprehension at rapid rates. They singled out the ability to infer semantic relations, to compare ways in which verbal concepts are meaningfully connected, as a source of individual variation (p. 214).

This faculty may be related to the grammatical sensitivity or the inductive language learning ability which Carroll identified as contributing to aptitude for learning a second language. The first of these is a sensitivity to functions of words, and the second is an ability to infer linguistic forms, rules, and patterns from new contexts (1962, pp. 129-30). There may likewise be some relationship to a LAB subtest, the linguistic analysis test, in which
students are to deduce from a given number of foreign-language forms how other things are said in the language (Pimsleur, 1966b, p. 179).

Other studies done at the American Institutes for Research suggest that good performance at higher speed might be associated with another special skill, listening for meaning rather than concentration on specific words and details. Carver, Johnson, and Friedman tested this theory that the ability to comprehend rapidly presented speech may be related to being field independent. Field independency (Witkin et al., 1962, p. 2) is a theoretical construct which consists of the ability to keep things apart in a perceptual field, to see patterns, and to respond without stress in novel situations. Field dependent people are unable to disregard the more superficial aspects in order to detect order in the unfamiliar. They cannot see the forest because they are so aware of the individual trees. Faced with rapid speech, they may concentrate more on rate and less on content. From the analysis which they did, Carver and his associates concluded that the ability to comprehend highly speeded speech probably involves an ability to be field independent (1971-72, p. 49).

Their findings are reminiscent of those reported by Steer who did naval research on effective listening. Although Steer worked with normal-rate speech, his subjects had to contend with the conditions of high-level noise
caused by planes. He found that the inefficient listener concentrated on isolated or unintelligible words rather than on the entire message and did not attempt to construct a whole from a partial pattern. Inefficiency was related to an overly tense attitude and to a preoccupation with what had been missed that caused the listener to miss further portions of the message (1945, p. 218).

Although Chastain does not explicitly use the term "field dependent," his description of student reaction to native-speed renditions in the early stages of language learning is suggestive of that approach to a problem (1971, p. 171). Pimsleur, Sundland, and McIntyre also noted in college underachievers an "anxious urgency to deal with small instead of large auditory units" (1963, p. 61).

There is a dearth of research involving expanded speech, even with the subject's native language, and the studies have for the most part concerned the aged, the aurally handicapped, the mentally retarded, and the emotionally disturbed. These investigations have, in some respects, yielded conflicting results.

In one such study (Altshuler, 1964) of young adult and aged subjects, some with normal hearing and others with impaired hearing, increased expansion yielded a greater number of correct responses for all subjects. Waas and Beedle (1974, p. 934), on the other hand, found that
expanded speech rate offered advantages to aged hearing-impaired males but had negligible effects on comprehension by college-age normal hearers. Kurtzrock found that expansion beyond eleven times the original rate had little effect on intelligibility (1957, p. 94); yet, some of the limited data available suggest that expansion of 10 or 20 percent depresses intelligibility scores (Luterman, Welsh, and Melrose, 1966, p. 228). Schon tested 30 and 50 percent expansion conditions with young and aged subjects having normal and impaired hearing. He too obtained depressed scores for the expanded conditions but noted that expansion had a lesser effect on intelligibility than compression did ([1968], 1974, p. 921).

Waas and Beedle reported that some of their subjects from both the normal and hard-of-hearing groups found a 60 percent expanded speech too slow. They suggested that "speech intelligibility may begin to decline at expansion rates of 50 percent or more just as speech discrimination ability appears to decrease following compression rates of 50 percent or greater" (1974, p. 934). Kurtzrock has offered an explanation similar to that proposed earlier in this chapter. The demands upon the memory span associated with excess duration make word identification appreciably more difficult ([1956], 1974, p. 304).

Rate research involving a foreign language is much more limited than first-language research with unaltered
and time-altered speech. Treisman (1965) and Gerver (1971) experimented with bilingual or near-bilingual subjects shadowing and translating oral messages in French and English. They tested the hypothesis that rate of presentation of information is the crucial factor in these tasks, both of which involve the handling of input and output concurrently. Treisman's experiments confirmed the hypothesis (1965, p. 369). She also found that when their proficiency was not maximal in both languages, subjects made 17 percent fewer correct responses with the foreign language than they did with their native language (p. 376). Gerver extended her work with a more methodical variation of the presentation rate. He also tried to study the output for clues to the process involved. He noted that faster input rates caused interpreters particularly to lag behind and to make more errors (1971, p. 183).

The performance demanded of those who have a good familiarity with a language and engage in shadowing and interpreting is vastly different from the demonstration of listening comprehension required of the beginning student; yet, one might speculate that the two listeners face comparable challenges and have like problems. Gerver saw in his findings evidence for a system of information-handling which is subject to overload when it is required to carry out complex processes at too fast a rate (p. 184).
To decrease over-all speaking rate, some researchers have segmented utterances and inserted pauses between the segments. Johnson and Friedman found in native-language experiments that subjects comprehended better when passages were segmented at major syntactic junctures (1971a, p. 152). Their findings in second-language studies involving students of Russian and Vietnamese paralleled those of the earlier experiments in English (Friedman and Johnson, 1971a, p. 325). Experiments done in France with students of English as a second language varied the articulation rate, number of pauses, and length of pauses (Lane et al., 1973). Kemp tested American high school students of French. He too manipulated pause time rather than speaking time, working from the hypothesis that pauses allow time for processing by the listener and permit speaking at native speed within the segments (1974, p. 16). In these investigations, subjects seemed to benefit significantly from the additional time.

Friedman and Johnson also exposed students of Russian and Vietnamese to gradually increasing rates of compressed speech in an effort to improve comprehension at normal speed. The treatment did not, however, yield significantly better performance, and difficulty in recall was increased by compression (1971b, p. 160).

Huberman and Medish report that they have successfully used time-compressed speech in combination with an
added-parts technique and insertion of pauses to train college students of several languages in listening comprehension (1974, p. 675).

Littell (forthcoming) also used gradually increasing rates in an experiment she did with middle school students of German. She used time-expanded rather than time-compressed speech. One group of subjects heard expanded speech and heard it only once. Another of the experimental groups heard successive approximations to the normal rate. She reports some beneficial effects. She also cites an unpublished study done by Mizell and Thomas in 1972 in which better listening performance in second language was obtained through use of reduced rates, but she gives no details on their experiment.

No other reports of research comparing the relative efficiency of presenting second-language materials at normal and time-expanded rates were found.

Summary

To summarize, individuals vary in auditory ability, a competence which appears to play a significant role in achievement in foreign-language programs which emphasize the audiolingual skills. Research suggests that many American high school language students are not able to comprehend fluent, native speech. When they hear native-speed recordings, they may be in a situation comparable to
that of persons trying to understand time-compressed speech in their native language where the information-processing capacity of the listener limits comprehension. Findings of time-compressed speech research may, therefore, have implications for second-language acquisition. This is an approach which is virtually unexplored. From such findings, foreign-language educators might gain insights into the complexities of the listening process itself and into listener aptitude, problems, and needs. They might find that deceleration by means of the time-expansion technique would offset difficulties which stem from the listening process and enable students to learn gradually to cope with native-rate speech. Contrariwise, they might discover that prolongation placed undue strain upon the auditory memory of the student-listener.
CHAPTER III

DESCRIPTION OF THE STUDY

Subjects and Settings

Subjects were 226 high school students in the final quarter of their second year of French. They were students in eleven French classes in six four-year high schools. In addition to the above, 66 students from four other schools participated to some degree in the study.

The decision to test second-year students was based on considerations related to contents of the evaluation instrument and the number and nature of the subjects. The choice allowed testing of more content than would have been possible with beginning classes using diverse learning materials. It made possible testing of a larger and less select group of students than would have been enrolled in third- or fourth-level classes.

The cooperating schools are affiliated with the Roman Catholic diocese of Columbus, Ohio. Three of the diocesan schools which have French in their curricula did not take part in the study. At the request of the diocesan education office and for reasons not associated with the French classes, no contact was made with one school. A second
school was not involved because of its small enrollment and its special pre-school through grade twelve program. Staff members of a third school declined to participate.

Originally, second-year French students from the ten remaining schools were to have been the subjects. Later in this chapter a detailed explanation will be given for the exclusion of students from four of the schools from the data analyses. They were, however, involved in the testing program, and their scores were used to compute test reliability. Descriptive material will, therefore, be given not only for the sample of 226 subjects but also for the total group of 292 students tested. Subjects were from schools 1, 2, 3, 8, 9, and 10.

The six schools from which the subjects were drawn have little in common beyond their sponsorship. They are supervised to some extent by a central office but are administered locally and characterized by diversity. Three of the six institutions are located in a city with a population of nearly 540,000. They are in various sections of the city and enroll young people from a variety of socio-economic backgrounds. Three of the schools are situated in smaller communities located at varying distances from the urban center. Total school enrollments ranged from 236 to 1,019 students with an average of 613 students in attendance. Mean enrollment for city schools was 852;
schools in outlying areas had a mean enrollment of 307. The participating classes had enrollments ranging from 15 to 43 persons with an average class size of 23 students. More complete data on the schools can be found in Table 1. Table 2 presents similar information on the ten schools in which tests were administered.

Classes in the six schools were taught by six different teachers. Some of the students had studied under another teacher during the preceding year; none had been taught by a native speaker of French. Language is an elective subject in all of the schools. The classes were regularly taught at various times in the school day, all class periods from 8:20 a.m. through 2:45 p.m. being represented. None of the schools has language laboratory equipment. While some subjects had listened regularly for nearly two years to tapes played on tape recorders in their classrooms, others had had much less experience with recorded French materials. Table 3 summarizes class statistics for subjects. Table 4 gives comparable data on the larger group.

It was assumed that all subjects had normal hearing and were capable of reading simple English prose since all were enrolled in regular high school classes and in language classes which put some stress on the aural-oral skills. The assumptions were verified by questioning the teachers
<table>
<thead>
<tr>
<th>School Number</th>
<th>City Population(^a)</th>
<th>Miles from Central City(^b)</th>
<th>Total Enrollment(^c)</th>
</tr>
</thead>
<tbody>
<tr>
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<td>...</td>
<td>632</td>
</tr>
<tr>
<td>2</td>
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<td>236</td>
</tr>
<tr>
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<td>41,836</td>
<td>34</td>
<td>340</td>
</tr>
<tr>
<td>10</td>
<td>33,045</td>
<td>56</td>
<td>346</td>
</tr>
</tbody>
</table>


\(^c\)Department of Education, Diocese of Columbus, Ohio.
TABLE 2
DATA ON SCHOOLS IN WHICH TESTING WAS DONE

<table>
<thead>
<tr>
<th>School Number</th>
<th>City Population</th>
<th>Miles from Central City</th>
<th>Total Enrollment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>539,677</td>
<td>...</td>
<td>632</td>
</tr>
<tr>
<td>2</td>
<td>539,677</td>
<td>...</td>
<td>1,019</td>
</tr>
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<td>539,677</td>
<td>...</td>
<td>906</td>
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<tr>
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<td>539,677</td>
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<td>338</td>
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<tr>
<td>5</td>
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<td>537</td>
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<td>6</td>
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<td>7</td>
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<td>236</td>
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<td>9</td>
<td>41,836</td>
<td>34</td>
<td>340</td>
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<tr>
<td>10</td>
<td>33,045</td>
<td>56</td>
<td>346</td>
</tr>
</tbody>
</table>


\(^{c}\) Department of Education, Diocese of Columbus, Ohio.
### TABLE 3

**FRENCH TWO CLASSES AND LANGUAGE OFFERINGS IN SCHOOLS FROM WHICH SUBJECTS WERE DRAWN**

<table>
<thead>
<tr>
<th>School Number</th>
<th>No. of Classes</th>
<th>No. Enrolled</th>
<th>No. Tested</th>
<th>Languages Offered</th>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>German</td>
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<tr>
<td>1</td>
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<td>x</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>63</td>
<td>61</td>
<td>x</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>43</td>
<td>35</td>
<td>x</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>28</td>
<td>23</td>
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<td>x</td>
</tr>
<tr>
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<td>2</td>
<td>40</td>
<td>40</td>
<td>x</td>
</tr>
<tr>
<td><strong>N</strong></td>
<td><strong>11</strong></td>
<td><strong>257</strong></td>
<td><strong>226</strong></td>
<td></td>
</tr>
<tr>
<td>School Number</td>
<td>No. of Classes</td>
<td>No. Enrolled</td>
<td>No. Tested</td>
<td>Language Offered</td>
</tr>
<tr>
<td>---------------</td>
<td>----------------</td>
<td>--------------</td>
<td>------------</td>
<td>------------------</td>
</tr>
<tr>
<td></td>
<td>French Two</td>
<td></td>
<td></td>
<td>Fr.</td>
</tr>
<tr>
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<td>1</td>
<td>15</td>
<td>14</td>
<td>x</td>
</tr>
<tr>
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<td>x</td>
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<td>5</td>
<td>1</td>
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<td>x</td>
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<td>15</td>
<td>343</td>
<td>292</td>
<td></td>
</tr>
</tbody>
</table>

*Students required to take a language.
to determine if they knew of subjects who had hearing or reading problems. It was further assumed that none of the subjects had had prior experience or training with time-expanded speech, a technique that is not widely used.

Experimental Materials

Experimental materials were prepared using a multiple-choice listening comprehension test, the French Aural Comprehension Test (FACT), which was constructed by the investigator. The first part of the FACT is composed of thirty completion items. The stems and the four alternative completion suggestions for each item are recorded. The thirty items of the second part are of the rejoinder type. Only the utterance of the first speaker is recorded. Four suggested rejoinders appear on the answer sheet in English.

Standardized tests were considered as possible instruments. Use of them was, however, ruled out. While each test that was examined suited the purposes of the investigator to some extent, each had features which might have had an undesirable measurement effect. A major drawback of these tests was the use of a format which tests the student's ability to read French as well as to comprehend the spoken form. A printed English version might have been substituted for the original French on the answer sheet. Such a procedure would, however, have been meaningless when the item was intended to test ability to associate a sound with its
printed symbol. Items involving a distinction between two French forms which do not have corresponding English forms would also have lost value through translation. For example, when a student is being asked to choose between *ils* and *elles*, the English *they* is not an adequate substitute. Another undesirable feature was the inclusion in all tests of lexical and syntactical materials which were unfamiliar to the students who were to be tested.

Contents of the FACT were matched with the learning materials used in the ten schools in which testing was done, in an effort to eliminate anything which could have been unfamiliar to subjects. Although knowledge of content does not follow necessarily upon exposure to it, working within the restrictions imposed by textbooks assured a measure of content validity. The task presented some problems since the classes had used sixteen different books. Appendix A is a list of these instructional materials.

Students in one of the schools had learned only the present and the passé composé verb tenses. It was, therefore, necessary to exclude all other tenses. Few of the textbooks differentiate between active and passive vocabulary; hence, the investigator, in constructing the test, had to assume she could hold subjects responsible for any words introduced in the lessons they had studied. Many items which were developed could not be used when it appeared that a key word or words would have been completely
new to students in one or two of the ten schools. The answer choices are sometimes less than ideal because of such constraints.

The multiple-choice response modality and the completion and rejoinder types of exercises were employed because they are frequently and successfully used in foreign-language testing and are familiar to subjects. Division of the test into two sections was intended to reduce the likelihood of subjects becoming bored or fatigued. Use of the two types of exercises, one completely recorded and the other involving printed material, permit an examination of the effects of rate changes and alterations in memory load on comprehension. The dialogue form was avoided so that the additional variable of a second voice was not introduced. Use of the native language reading format not only precluded the contaminating effect of mixing language skills but allowed greater latitude in composing the options.

A preliminary version of the FACT was examined by two French teachers, one of them a native speaker of French. A pilot test was conducted with thirty-six diocesan French students to assess individual items, format of the answer sheet, directions script, and time required for responses. For this pilot test, the researcher read the items at a normal rate. Validity and reliability scores were obtained, and on the basis of these, some responses and distractors were modified. Further information on the performance of
this preliminary version is given in chapter 4. In the course of the revision, students who had participated in the pilot testing were interviewed regarding some of their choices. The revised version was reviewed by a third French teacher. In both the first and the final form of the FACT the order of the items was randomly determined. Copies of the tape script and of the student answer sheets are included in appendix B.

Test directions were recorded in English by a native American. The test items were recorded by a native speaker of French using his normal speed of delivery. Pauses of five seconds were introduced between the items of Part I, and in Part II, eleven-second pauses were allowed for reading and response.

Three recordings were generated from the master tape. Tape A is identical to the master recording in that normal speaking rate is maintained throughout the playback. Although duration of the message was not changed, the new recording was made to control for instrument noise. On Tape B the items were subjected to 35 percent expansion. On Tape C the test items were altered by 70 percent. Directions and pauses were not time-expanded and are, then, uniform on all tapes. One sample item was given to illustrate each exercise. These formed part of the instructions and were not, therefore, expanded.
Total playing time for Tape A is 23 minutes 15 seconds. Tapes B and C require 27 minutes 27 seconds and 31 minutes 39 seconds respectively. The introductory message, directions, and pauses between the sections consume 3 minutes 15 seconds of the time. Pause time allotted for responding totals 8 minutes for Parts I and II. These measurements are uniform on all tapes.

Table 5 shows the time utilization for the thirty test items of Part I and the thirty items of Part II. The average time per item corresponds to the interval during which subjects were required to retain the oral message. It will be noted that the retention interval for the completion exercise of Part I is longer than that for the rejoinder exercise of Part II.

<table>
<thead>
<tr>
<th></th>
<th>Part I</th>
<th></th>
<th>Part II</th>
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<tr>
<td></td>
<td>Total</td>
<td>Ave.Time per Item</td>
<td>Total</td>
<td>Ave.Time per Item</td>
</tr>
<tr>
<td>Tape A</td>
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<td>17.7&quot;</td>
</tr>
<tr>
<td>Tape B</td>
<td>14'12&quot;</td>
<td>28.4&quot;</td>
<td>10'</td>
<td>20.0&quot;</td>
</tr>
<tr>
<td>Tape C</td>
<td>17'14&quot;</td>
<td>34.5&quot;</td>
<td>11'10&quot;</td>
<td>22.3&quot;</td>
</tr>
</tbody>
</table>

The half-track recordings were prepared by readers and technicians at the Center for Rate-Controlled Recordings at the University of Louisville under the supervision of
Emerson Foulke. They were made for playback on a reel-to-reel tape recorder at 7 1/2 i.p.s.

A male reader was used because of his availability and because sex of reader appeared to be an indifferent matter. There is some evidence that sex of speaker does not have a significant effect on the aural comprehension of normal-rate, mother-tongue recordings (Kibler, Barker, and Cegala, 1970, p. 291). It appears that some voices withstand compression better than others do (Foulke, 1967a, p. 68) and that a male voice is less affected by speech compression than a female voice (Lass, 1973, p. 3). Research, however, has yielded significant differences in comprehension of male and female readers only at higher rates of compression (Zemlin, Daniloff, and Shriner, 1968, p. 880). No information is available regarding the resistance of male and female voices to time-expansion. The voice quality of the FACT reader and his sex were, then, accepted as representative of the speech of native speakers of French, a policy consistent with that followed by producers of materials recorded for classroom use.

Rate of speech can be measured in terms of units of speech output per unit of time or in terms of units of time per speech-output unit. The first of these methods is more commonly used, speech rate being expressed in words per minute or syllables per minute. Carroll (1967b, p. 90) has presented measurements of oral reading in English to show
variations from reader to reader. Marty (1968, p. 100) and Malecot, Johnson, and Kizzear (1972) have provided comparable evidence for material recorded by native speakers of French. Such data are generally not furnished for commercially prepared foreign-language recordings. The reader is accepted as presenting normal-rate speech. The same criterion was adopted for the FACT.

It is customary to describe time-compressed and time-expanded speech in terms of words or syllables per minute or to specify the amount of compression or expansion as a percentage of the time required for the original recording. It was felt that foreign-language educators, who rarely work with rate measurements, would find the latter method of computation the more meaningful. Since no reports were read of research utilizing time-expanded French, no precedents existed in the matter of rate. From samples of recorded French that had been subjected to varying amounts of time-expansion, the researcher arbitrarily selected two rates. The effects of the expansion treatment were barely discernible at expansion to 135 percent of the original time. At expansion to 170 percent, effects were noticeable even to those having little experience with oral French. These rates seemed to differ enough from the original time and from each other that the differential effects they might have upon comprehension would be evident.
In speech research, measurements are sometimes based on overall rate, including speaking time and pauses, and sometimes on articulation time alone. Since few pauses were made in the short utterances of the FACT, gross rate was considered an adequate measure.

**Procedures**

A letter was sent to eleven high school principals indicating that the coordinator of diocesan secondary schools had given permission for the contact. The letter outlined the project and asked for authorization to approach the French teacher about participation. A sample of this letter is included in appendix C. The appendix also includes a copy of the letter which was sent to the teachers and a copy of the form which accompanied it and was to be completed and returned to the researcher. The letters to the principals and to the teachers varied somewhat when the investigator was acquainted with these individuals. Ten teachers expressed willingness to cooperate.

Experimental materials were then prepared using the information supplied by teachers. Circumstances beyond the control of the researcher delayed arrival of the taped materials for several weeks, and testing was postponed until the final weeks of the academic year. Principals and teachers willingly allowed students to be tested; however, they were generally hesitant about devoting more than one or two class
periods to the project so late in the year. End-of-the-year activities affected class schedules and attendance and, therefore, the testing timetable and the number of students tested. In two schools, courses were concluded before testing could be completed. For these reasons, the investigator was able to play all three recordings of the listening test in only six of the ten schools which she visited. Testing was actually done at ten different places with students from fifteen French classes. In only six of these schools, however, were data on comprehension of the three tapes at the three different speeds collected. Consequently, the 226 second-year French students from these six schools who took the listening test were, in the final analysis, considered to have participated in the experiment. The term subjects will be used in reference to these students. The word examinees will be used to describe the larger group which was involved in the testing. Table 6 shows the number and percentage of the subjects who were randomly assigned to listen to the tapes. Table 7 gives distributions by sex and by grade level of these students. Table 8 gives similar data for the larger group of examinees.

At the beginning of each testing session, cooperating teachers and examinees were told by the investigator that the effectiveness of various rates and methods of recording were being investigated. They were informed that tapes differed in the amount of time required for playing
### TABLE 6
ASSIGNMENT OF SUBJECTS TO TAPES A, B, AND C

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<thead>
<tr>
<th></th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tape A (0% expansion)</td>
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</tr>
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<td>Tape B (35% expansion)</td>
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<td>Tape C (70% expansion)</td>
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</tr>
</tbody>
</table>

### TABLE 7
DISTRIBUTIONS BY SEX AND GRADE LEVEL OF SUBJECTS

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<th></th>
<th>Tape A</th>
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<th>Tape B</th>
<th></th>
<th>Tape C</th>
<th></th>
<th>Total</th>
<th>%</th>
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</thead>
<tbody>
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<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
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<td>Sex</td>
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<td>1.30</td>
<td>2</td>
<td>2.56</td>
<td>3</td>
<td>4.22</td>
<td>6</td>
<td>2.66</td>
</tr>
<tr>
<td>10th</td>
<td>73</td>
<td>94.80</td>
<td>55</td>
<td>70.51</td>
<td>46</td>
<td>64.79</td>
<td>174</td>
<td>76.99</td>
</tr>
<tr>
<td>11th</td>
<td>...</td>
<td>...</td>
<td>14</td>
<td>17.95</td>
<td>2</td>
<td>2.82</td>
<td>16</td>
<td>7.08</td>
</tr>
<tr>
<td>12th</td>
<td>3</td>
<td>3.90</td>
<td>7</td>
<td>8.98</td>
<td>20</td>
<td>28.17</td>
<td>30</td>
<td>13.27</td>
</tr>
<tr>
<td>Total</td>
<td>77</td>
<td></td>
<td>78</td>
<td></td>
<td>71</td>
<td></td>
<td>226</td>
<td></td>
</tr>
</tbody>
</table>
TABLE 8

DISTRIBUTIONS BY SEX AND GRADE LEVEL OF EXAMINEES

<table>
<thead>
<tr>
<th></th>
<th>Tape A</th>
<th></th>
<th>Tape B</th>
<th></th>
<th>Tape C</th>
<th></th>
<th>Total</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>61</td>
<td>61.62</td>
<td>55</td>
<td>55.00</td>
<td>58</td>
<td>62.37</td>
<td>174</td>
<td>59.59</td>
</tr>
<tr>
<td>Male</td>
<td>38</td>
<td>38.38</td>
<td>45</td>
<td>45.00</td>
<td>35</td>
<td>37.63</td>
<td>118</td>
<td>40.41</td>
</tr>
<tr>
<td>Total</td>
<td>99</td>
<td>100</td>
<td>93</td>
<td>100</td>
<td>93</td>
<td>100</td>
<td>292</td>
<td>100</td>
</tr>
<tr>
<td>Grade</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9th</td>
<td>2</td>
<td>2.02</td>
<td>2</td>
<td>2.00</td>
<td>3</td>
<td>3.225</td>
<td>7</td>
<td>2.40</td>
</tr>
<tr>
<td>10th</td>
<td>90</td>
<td>90.91</td>
<td>65</td>
<td>65.00</td>
<td>59</td>
<td>63.44</td>
<td>214</td>
<td>73.29</td>
</tr>
<tr>
<td>11th</td>
<td>3</td>
<td>3.03</td>
<td>16</td>
<td>16.00</td>
<td>3</td>
<td>3.225</td>
<td>22</td>
<td>7.53</td>
</tr>
<tr>
<td>12th</td>
<td>4</td>
<td>4.04</td>
<td>17</td>
<td>17.00</td>
<td>28</td>
<td>30.11</td>
<td>49</td>
<td>16.78</td>
</tr>
<tr>
<td>Total</td>
<td>99</td>
<td>100</td>
<td>93</td>
<td>100</td>
<td>93</td>
<td>100</td>
<td>292</td>
<td>100</td>
</tr>
</tbody>
</table>
them and that sometimes the speech would be slower than what they were accustomed to hearing.

Tests were administered during all the various periods of the school day from 8:20 a.m. to 2:45 p.m. The testing was done in May of 1975 during a nineteen-day period. All days of the school week Monday through Friday were utilized.

Insofar as possible, administration procedures were standardized. The researcher went to all of the schools so that the possibility of a reactive effect from her presence would exist in all of the testing situations. She used the same tape recorder, a Wollensak of the 1500 series similar to those commonly used in classrooms. A policy for the repetition of items was formulated before the testing program was begun. This policy was explained at the beginning of each session. In the event of an unusual interference which clearly prevented all subjects from hearing the speaker, the item masked by the noise was to be repeated. In case of doubt, the item would be omitted from the analysis. Replay was necessary on five occasions when a bell, a motorcycle, corridor noises, and two public address announcements prevented subjects from hearing the tape.

Physical conditions could not be perfectly standardized because rooms were acoustically unequal and the noise level within rooms and in their environs varied. Although no student signified inability to hear the tape, all were
not equidistant from the sound source. Room temperatures could not be held constant. These, however, are the conditions under which language students cope with recorded materials in American schools.

Notes were made on the testing environments, on student reactions, and on potentially disruptive occurrences. These notes were consulted during the interpretation of test results.

Answer sheets asked for subject's name, sex, grade, and average French mark. Names were used in reporting scores to teachers. The offer to share results with the teachers had been made in the preliminary correspondence. Data on sex and grade level were used for testing the relationship of these variables to subscores and to total scores. Information on French marks was not used. It was not supplied by all subjects, and a fairly large number modified the letter grades with plus or minus or circled two letters.

Data Analyses

Statistical analyses were performed at the Instruction and Research Computer Center of The Ohio State University. The programs were prepared at the Research Consulting Services of The Ohio State University College of Education.

An item analysis was done and reliability of the investigator-constructed test was calculated using Kuder-Richardson formulas. These were based on the scores of the
292 students who listened to the tapes and completed answer sheets.

All other analyses concerned the scores of the 226 subjects from the six schools in which all tapes were played.

Mean scores and standard deviations were computed for each part of the FACT and for the complete test for rate groups A, B, and C, and for the total group of subjects. Means were also found by sex, grade level, and school. One-way analysis of variance for unequal sample sizes was employed to test the hypotheses of no difference in performance due to rate of presentation. Post hoc comparisons were done using a Scheffé procedure and evaluating for significance according to the method outlined by Guilford and Fruchter (1973, p. 243). The significance of the difference in performance on Part I and Part II was determined for each rate group by a t-test. Differences by sex and by grade level were also analyzed by means of t-tests.

The 5 percent level of significance was set for rejecting null hypotheses.
CHAPTER IV

FINDINGS

Introduction

The study reported here was designed to test the effect of time-expansion on listening comprehension performance of high school French students of both sexes and of four grade levels. To gather data the French Aural Comprehension Test (FACT), a sixty-item multiple-choice test, was recorded, time-expanded, and then presented to subjects at three different rates, 100, 135, and 170 percent of the original message time. Responses of the 226 subjects comprise the raw data. These can be consulted in appendix D. The report on the results of the testing will be preceded by information on the performance of the FACT itself. The findings in relation to rate of presentation, kind of listening task, sex, and grade level will then be presented and discussed.

Test Reliability

Thirty-six high school French students were tested using a preliminary version of the FACT. With a range of scores from 20 to 48, the mean total score for the group
was 36.17, and the standard deviation was 8.64. Use of the Kuder-Richardson Formula 21 yielded a reliability coefficient of .82 for the test administered to the pilot group.

The revised form of the listening comprehension test was administered to 292 students. Indexes of the internal consistency of the test were provided by the Kuder-Richardson Formulas 20 and 21 which, according to Isaac and Michael, provide "relatively conservative estimates of the coefficient of equivalence" (1971, p. 87). The first of these gave a reliability estimate of .83, and the less accurate Kuder-Richardson Formula 21 yielded .80.

Presentation of the Data

Rate and Comprehension. One point was allowed for each correct choice on the four-alternative multiple-choice listening comprehension test; hence, the maximum possible score for the total FACT was 60.

Performance data for Groups A (0% expansion), B (35% expansion), and C (70% expansion) on the total FACT are presented in table 9. It should be noted that the highest mean score (26.66) was achieved by Group C, the mean for Group B (26.40) being only slightly lower, with that of the normal speed group (23.48) being lowest.

Table 10 summarizes the results of the analysis of variance used to test the significance of differences between
### TABLE 9

**MEANS, STANDARD DEVIATIONS, AND RANGES FOR RATE GROUPS ON TOTAL FACT**

<table>
<thead>
<tr>
<th></th>
<th>Group A</th>
<th>Group B</th>
<th>Group C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean score</td>
<td>23.48</td>
<td>26.40</td>
<td>26.66</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>8.10</td>
<td>8.61</td>
<td>7.45</td>
</tr>
<tr>
<td>High score</td>
<td>52</td>
<td>49</td>
<td>46</td>
</tr>
<tr>
<td>Low score</td>
<td>9</td>
<td>12</td>
<td>11</td>
</tr>
<tr>
<td>Range</td>
<td>43</td>
<td>37</td>
<td>35</td>
</tr>
<tr>
<td>N</td>
<td>77</td>
<td>78</td>
<td>71</td>
</tr>
</tbody>
</table>

### TABLE 10

**ANALYSIS OF VARIANCE: TOTAL SCORES**

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rates Within</td>
<td>472.672</td>
<td>2</td>
<td>236.336</td>
<td>3.614*</td>
</tr>
<tr>
<td>Groups</td>
<td>14,583.788</td>
<td>223</td>
<td>65.398</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>15,056.460</td>
<td>225</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < .02
the mean scores of the rate groups. The obtained F value was significant at the .02 level. Not surprisingly, a Scheffé test showed that the difference between the means for the two expanded conditions was not significant; whereas, the differences between the means of the normal-rate presentation and the slowed renditions were significant.

In addition to the total FACT score, subscores for performance on the two sections of the test were available for each subject. Table 11 summarizes the performance data related to these subscores.

Results on the 30-item completion exercise were similar to those on the total test. The analysis of variance yielded an F ratio of 3.886, which was significant at the .02 level, as is indicated in table 12. Again, the Scheffé technique showed the differences between Group A and the other two groups to be significant, while the means of the two groups exposed to expanded speech were not significantly different.

On the second part, a 30-item rejoinder exercise, differences between the groups were not statistically significant at the .05 level set prior to the analysis. Table 13 summarizes the analysis of variance.

Listening Task and Comprehension. To assess the differential effect a given rate might have upon comprehension of the completion exercise and the rejoinder exercise, the difference between the two mean subscores obtained by
### TABLE 11

**MEANS, STANDARD DEVIATIONS, AND RANGES FOR RATE GROUPS ON FACT PARTS**

<table>
<thead>
<tr>
<th></th>
<th>Group A</th>
<th>Group B</th>
<th>Group C</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Part One</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean score</td>
<td>11.12</td>
<td>12.69</td>
<td>12.66</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>4.02</td>
<td>4.10</td>
<td>3.83</td>
</tr>
<tr>
<td>High score</td>
<td>26</td>
<td>24</td>
<td>23</td>
</tr>
<tr>
<td>Low score</td>
<td>4</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Range</td>
<td>22</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td><strong>Part Two</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean score</td>
<td>12.36</td>
<td>13.71</td>
<td>14.00</td>
</tr>
<tr>
<td>Standard deviation</td>
<td>4.81</td>
<td>5.19</td>
<td>4.70</td>
</tr>
<tr>
<td>High score</td>
<td>26</td>
<td>26</td>
<td>24</td>
</tr>
<tr>
<td>Low score</td>
<td>5</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Range</td>
<td>21</td>
<td>22</td>
<td>19</td>
</tr>
<tr>
<td><strong>N</strong></td>
<td>77</td>
<td>78</td>
<td>71</td>
</tr>
</tbody>
</table>
### TABLE 12
**ANALYSIS OF VARIANCE: PART I SCORES**

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rates</td>
<td>123.730</td>
<td>2</td>
<td>61.865</td>
<td>3.886*</td>
</tr>
<tr>
<td>Within Groups</td>
<td>3,550.450</td>
<td>223</td>
<td>15.921</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>3,674.180</td>
<td>225</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* p < .02

### TABLE 13
**ANALYSIS OF VARIANCE: PART II SCORES**

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rates</td>
<td>114.729</td>
<td>2</td>
<td>57.365</td>
<td>2.379*</td>
</tr>
<tr>
<td>Within Groups</td>
<td>5,378.036</td>
<td>223</td>
<td>24.117</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>5,492.765</td>
<td>225</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* p < .10
the same group of listeners was examined. As reported in table 11, subjects in the three rate groups performed better on the rejoinder exercise of Part II than on the Part I completion exercise. The numerical differences between the means were nearly equal for the three groups. Part II means exceeded Part I means as follows: A, 1.24; B, 1.02; and C, 1.34. Differences between the pairs of means were tested by a series of t-tests. As reported in table 14, these revealed that the difference between the subscores of the A group could only be considered significant at the .10 level. The same relationship obtained for group C subscores. Group B subscores were not significantly different even at this level.

### TABLE 14

**T-TESTS: LISTENING TASK MEANS**

<table>
<thead>
<tr>
<th>Rate Group</th>
<th>t</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>A (normal rate)</td>
<td>1.72</td>
<td>p &lt; .10</td>
</tr>
<tr>
<td>B (35% expansion)</td>
<td>1.35</td>
<td></td>
</tr>
<tr>
<td>C (70% expansion)</td>
<td>1.85</td>
<td>p &lt; .10</td>
</tr>
</tbody>
</table>

**Sex and Comprehension.** When the data were rearranged by the sex differential, it was noted that female subjects outperformed males in all instances. Mean subscores and
scores by sex for the three presentation rates are presented in table 15.

TABLE 15

MEAN SUBSCORES AND SCORES FOR MALE AND FEMALE SUBJECTS

<table>
<thead>
<tr>
<th></th>
<th>Group A</th>
<th>Group B</th>
<th>Group C</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Part I</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>10.18</td>
<td>11.71</td>
<td>12.00</td>
</tr>
<tr>
<td>Females</td>
<td>11.86</td>
<td>13.34</td>
<td>13.04</td>
</tr>
<tr>
<td><strong>Part II</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>11.09</td>
<td>12.10</td>
<td>12.19</td>
</tr>
<tr>
<td>Females</td>
<td>13.37</td>
<td>14.77</td>
<td>15.04</td>
</tr>
<tr>
<td><strong>Total FACT</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>21.26</td>
<td>23.81</td>
<td>24.19</td>
</tr>
<tr>
<td>Females</td>
<td>25.23</td>
<td>28.11</td>
<td>28.09</td>
</tr>
</tbody>
</table>

A series of t-tests, which is summarized in table 16, was used to evaluate the differences between mean total scores for male and female subjects of the three rate groups. These tests showed a statistically significant difference (p < .05) between the means for the two expanded conditions. The 3.97-point difference between male and female means for the unaltered rate was not statistically significant at
the level set for this investigation. It must be noted that the variances were larger for this rate group. Female scores, in particular, had a wide range from 10 to 52 correct answers.

TABLE 16
T-TESTS: SEX MEANS

<table>
<thead>
<tr>
<th>Rate Group</th>
<th>t</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>A (normal rate)</td>
<td>1.85</td>
<td>p &lt; .10</td>
</tr>
<tr>
<td>A (35% expansion)</td>
<td>2.22</td>
<td>p &lt; .05</td>
</tr>
<tr>
<td>C (70% expansion)</td>
<td>2.17</td>
<td>p &lt; .05</td>
</tr>
</tbody>
</table>

Grade Level and Comprehension. Reference to table 7 in the preceding chapter will show that tenth graders predominated in the total group, comprising nearly 77 percent of it. Only six ninth graders participated, and eleventh and twelfth graders were not well distributed among rate groups. It also appeared that in the case of ninth and eleventh grade subjects, instead of testing differences by grades, one would, in reality, be testing them by school. Five of the six ninth graders were from a single school, and all of the subjects at that grade level were enrolled in schools having school means below the means for the larger
group. A disproportionate number of eleventh graders were from a single school, and all eleventh graders were drawn from schools with lower means. The decision was, therefore, made to limit analysis to differences between grades ten and twelve and to interpret these with caution since more twelfth graders had been assigned to group C than to the other two groups. Trends were noted for scores of ninth and eleventh graders, and comments on these will be included with the interpretation of statistical data.

Mean subscores and scores for the tenth and twelfth grade groups are given in table 17, and table 18 presents results of associated t-tests. The t-tests showed a highly significant ($p < .001$) superiority of twelfth graders over tenth graders who listened to the A recording. In the 35 percent expansion group, the older students received higher scores, but the difference between the means was not statistically significant. At 70 percent expansion, tenth graders achieved a small but nonsignificant advantage over twelfth graders.

The t-tests comparing scores of tenth graders in the various rate groups gave a $t$ of 2.75, significant at the .01 level, for the difference between A and B means, and a $t$ of .23 for the difference between B and C means. The latter was not statistically significant, of course.
### TABLE 17

**MEAN SUBSCORES AND SCORES FOR TENTH AND TWELFTH GRADERS**

<table>
<thead>
<tr>
<th></th>
<th>Group A</th>
<th>Group B</th>
<th>Group C</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Part I</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tenth graders</td>
<td>10.74</td>
<td>12.78</td>
<td>13.00</td>
</tr>
<tr>
<td>Twelfth graders</td>
<td>20.00</td>
<td>16.14</td>
<td>12.20</td>
</tr>
<tr>
<td><strong>Part II</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tenth graders</td>
<td>11.99</td>
<td>13.84</td>
<td>14.09</td>
</tr>
<tr>
<td>Twelfth graders</td>
<td>21.33</td>
<td>15.29</td>
<td>14.20</td>
</tr>
<tr>
<td><strong>Total FACT</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tenth graders</td>
<td>22.74</td>
<td>26.63</td>
<td>27.09</td>
</tr>
<tr>
<td>Twelfth graders</td>
<td>41.33</td>
<td>31.34</td>
<td>26.40</td>
</tr>
</tbody>
</table>

### TABLE 18

**T-TESTS: GRADE LEVEL MEANS**

<table>
<thead>
<tr>
<th>Rate Group</th>
<th>t</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>A (normal rate)</td>
<td>4.48</td>
<td>p &lt; .001</td>
</tr>
<tr>
<td>B (35% expansion)</td>
<td>1.31</td>
<td></td>
</tr>
<tr>
<td>C (70% expansion)</td>
<td>.38</td>
<td></td>
</tr>
</tbody>
</table>
Interpretation of the Data

Hypothesis 1. There is no significant difference in listening comprehension performance of subjects who listen to the French Aural Comprehension Test (FACT) as recorded on Tape A (100% of original time), Tape B (135% of original time), and Tape C (170% of original time).

On the basis of the data, the hypothesis of no difference was rejected. Subjects who listened to the time-expanded Tapes B and C performed better than those who listened to the unaltered rate of Tape A, and the differences between means were statistically significant (p < .02). It appears that time-expansion of French materials recorded for use with high school students can facilitate listening comprehension of second-year students. Playing time for the 35 percent expansion is 4 minutes 12 seconds longer than for the original message. Within the limits of the present investigation, investment of a little more than four additional minutes was profitable for subjects in that they had a statistically significant advantage over those who heard normal-rate speech. The results, in addition to being significant in a statistical sense, seem also to be significant in a broader pedagogical context. The average difference was about 3 points or 5 percent of the 60 points in the total test. Since students, on the average, selected the correct answer less than 40 percent
of the time at normal speed, a 5 percent increase can probably be considered enough to justify lengthening a test from 23 minutes 15 seconds to 27 minutes 27 seconds.

Subjects who listened to the 70 percent expanded version of Tape C and, therefore, spent an additional 8 minutes 24 seconds on the test, did not, however, perform so much better than those who heard Tape B that the difference between means was statistically significant. While the mean score for Group C was higher than for Group B, the difference was minimal. The results tend, then, to demonstrate that at some undetermined point use of time-expansion becomes less efficient since improvement in comprehension is no longer proportional to time devoted to listening. This point of diminishing returns may be at a rate between 0 percent and 35 percent expansion, or, as the results of the present investigation suggest, it may lie between the two expanded rates that were utilized.

Setting aside the question of efficiency in comprehension which would depend upon the amount of time used, an optimal rate might be set in terms of the percentage of comprehension achieved without reference to the time devoted to listening. Since the C mean, equivalent to 44 percent comprehension of the FACT, was highest, it is possible that mean comprehension scores might have continued to increase if rates slower than 70 percent expansion had been tested. It is also possible that use of other rates between 35 and
70 percent expansion would have produced higher means than that of group C because the percentage of comprehension had begun to decline by 70 percent expansion.

The discussion would be incomplete without reference to what may have been a biasing factor in the study. Two-thirds of the twelfth grade subjects were assigned to Tape C. The mean score of the few seniors who listened to Tape A exceeded all other mean scores achieved on the FACT, but mean scores for twelfth graders, unlike those for other groups, declined as rate decreased. These facts suggest that a better distribution of seniors among the rate groups might have yielded somewhat different results for the investigation. Had more of the older students been selected for the A and B groups, their presence might have raised mean comprehension scores for these groups. On the other hand, presence of fewer seniors in the C group might have raised the mean score for that group too.

**Hypothesis 2.** There is no significant difference in listening comprehension performance on the FACT completion subtest of subjects who listen to Tapes A, B, and C.

This hypothesis must also be rejected. The analysis of variance performed with Part I mean scores yielded results not unlike those for the total FACT. Here the differences between means as analyzed by Scheffé tests followed the same pattern. Deceleration to 135 percent of original time made a significant difference in listening
comprehension performance; deceleration to 170 percent did not substantially improve comprehension. In other words, subjects benefited significantly from having an additional 3 minutes 2 seconds to process the 30 items of Part I as recorded on Tape B. On a per-item basis, they had an average of 6.1 seconds of additional processing time. While such expansion adds time for decoding the message, it also lengthens the retention interval and may make excessive demands upon the memory span. The 28.4 seconds average time per item for the 35 percent expanded condition of Part I apparently did not overtax the short-term memory span. It may be that failure to perform significantly better when materials were expanded by 70 percent can be explained by prolongation beyond the limits of the auditory memory. Further research with other rates and other kinds of listening tasks would be needed to decide the matter with any certitude.

Hypothesis 3. There is no significant difference in listening comprehension performance on the FACT rejoinder subtest of subjects who listen to Tapes A, B, and C.

The data fail to reject this hypothesis. Performance on the rejoinder exercise of Part II was not improved by expansion to 135 or 170 percent of the original time to a point where differences between means were statistically significant at the level set prior to the study. The
results of the analysis of variance reported in table 13 show an F value of 2.379 which is significant only at the .10 level. Time-expansion of this listening task by 35 percent added only 1 minute 10 seconds to the total exercise time, and expansion by 70 percent increased playing time by 2 minutes 20 seconds. This was tantamount to increasing the mean playing time per item by 2.3 seconds (Tape B) or 4.6 seconds (Tape C). Perhaps not enough time was added to make a statistically significant change. No other explanation was found for the smaller nonsignificant differences in scores on the rejoinder exercise than on the completion exercise. Subjects did not label the exercise as too easy, nor, on the other hand, did they express a need for more time for reading and responding. Moreover, they did not suggest repetition to refresh the memory trace as they did in commenting on problems they encountered with Part I. It must be remembered, of course, that mean scores did improve with each decrease in tempo even if the differences between them did not reach the .05 level of significance. On the whole, statistically significant differences on total scores appear to be related to differences on Part I.

In considering effects of rate variations on the FACT and its parts, it is interesting to consider the distribution of scores. Referring to table 9, we see that as rate decreased, range of scores narrowed, and distribution
approached the normal curve. The trend may be the result of deceleration being an aid to those having more difficulty with comprehension and a hindrance to the more able subjects and those more accustomed to native-rate recordings. Evidence which would tend to support this supposition came to light when examinees were invited to comment on their testing experience. Particularly in the schools where mean scores were highest, students who were exposed to the slowest rendition found the rate generally too slow. For them, it was irritating at first, and after a time it became soporific. In those places where students had had less experience with commercially prepared French listening materials and averaged fewer correct responses, reactions toward this degree of expansion were more positive.

**Hypothesis 4.** There is no significant difference in listening comprehension performance on the two FACT subtests by subjects of a given rate group.

The data fail to reject this hypothesis. The differences between mean subscores were not large enough to be significant. The direction of the differences indicated, however, that subjects generally found the rejoinder items easier to comprehend.

As was mentioned above, the 3 minutes 2 seconds of additional time provided for Part I by expansion to 135
percent of original time produced a statistically significant difference between subscores. For Part II items, however, neither the 1 minute 10 seconds difference between Tapes A and B nor the 2 minutes 20 seconds difference between Tapes A and C sufficed to raise scores significantly. The time differential between the items of Part I and Part II is 2 minutes 20 seconds on Tape A, 4 minutes 12 seconds on Tape B, and 6 minutes 4 seconds on Tape C. Once again, these seconds can be viewed as lengthening or shortening duration of the retention interval or as increasing or decreasing processing time. Although the data do not warrant rejection of the hypothesis, the results suggest that the length of time an item is held in the short-term memory store can be overextended so that it works counter to the provision of more processing time. It also appears that more than temporal measurements must be considered when comparing types of listening tasks since the amount of time that produces significant gains across rates, will not do so when it is a matter of two different kinds of tasks. Not only the amount but the kinds of information to be retained probably need to be examined. In a completion exercise like that of Part I of the FACT where the total item is recorded, stem and suggested endings must, presumably, all be retained until the final answer option has been given. The information is in a sense dichotomized into problem
and solutions, and each of the latter has to be judged in relation to the other options and to the stem. Processing the many bits of competing information would appear to be a complex operation. The rejoinder item with printed options may, by contrast, require retention of only one thread, the problem.

Another factor to be considered is one which would, one might suppose, ease the memory load of the Part I type of item. The subject has the foreknowledge that the item will terminate with option d and may even be able to make his answer choice before reaching that point. Since the utterance length in Part II varies from seven to twenty-six syllables, there is an element of uncertainty about the terminal point which may force postponement of the response choice until all or nearly all of the stimulus utterance is heard. In the present case, however, there appeared to be no connection between length of the stimulus and number of subjects who selected the appropriate rejoinder.

Failure to find significant differences may also be related to the nature of the comparison which involved two different kinds of listening exercises. It might well have been more meaningful and more fruitful to construct two exercises of the same general type, one with printed options and the other without.

**Hypothesis 5.** The differences in listening comprehension performance on the FACT between male and female
subjects do not vary significantly as a function of rate of presentation.

The observed differences were sufficiently large to cause this hypothesis to be rejected. The data regarding listening comprehension performance of females as compared to that of males corroborate the findings of earlier second-language research (Connor, 1968; Cloos, 1971), which favor females. In the study reported here, males benefited some from each successive deceleration on both listening exercises. On the completion exercise, females were penalized by deceleration to 170 percent of the master recording time. While both males and females achieved higher mean scores on Part II than on Part I at all presentation rates, this tendency was more marked among female subjects of all rate groups.

Hypothesis 6. The differences in listening comprehension performance on the FACT between subjects of different grade levels do not vary significantly as a function of rate of presentation.

It appeared that data for ninth and eleventh graders were too limited to warrant analysis. This hypothesis was tested, therefore, only in relation to tenth and twelfth graders. As it relates to them, the hypothesis must be rejected, but the uneven distribution of twelfth grade subjects among rate groups makes even these results to be of questionable value.
On each exercise and on the total FACT tenth graders' mean scores increased as rate decreased. Expansion to 135 percent of original time was nearly as helpful to them as expansion to 170 percent. These trends are not surprising since this grade level group was nearly identical to the total group of subjects. A t-test comparing means of tenth graders in the A and B rate groups yielded a t of 2.75 which was significant at the .01 level. A similar test of B and C means yielded a nonsignificant t of .23.

Mean scores and subscores for twelfth graders, on the other hand, showed an inverse relationship to rate. Each deceleration gave a lower mean total score and lower mean subscores. Their mean for the A recording was nearly double those of other grade levels, still exceeded all other groups for Tape B, but was very close to or lower than means for the other classes for Tape C.

Comparisons of tenth and twelfth grade means by t-tests showed the difference at normal rate to be highly significant, \((p < .001)\), while the other differences were nonsignificant.

The results suggest that after two years' study of French tenth grade students having their first experience of foreign-language study are, on the average, helped by a slower-than-normal rate of presentation. Older students who have elected to study French after some experience with Latin or a modern language are more likely to comprehend the
normal-rate message and may find that time-expansion handicaps them. It is also conceivable that seniors who choose to study French differ from sophomores in having greater aptitude for foreign-language study and in being more highly motivated to succeed at it. These findings, of course, must be considered rather tentative since few twelfth graders participated in the testing project and two-thirds of them were assigned to the slowest version of the test.

Contrary to all other trends noted in the study of the data, mean scores for the few ninth and eleventh graders were virtually unaffected by rate changes. The eleventh grade group had the lowest scores. As has already been mentioned, these subjects were enrolled in schools having lower mean comprehension scores.

Other Observations

A survey of the instances of no response revealed that there was no consistent relationship between item difficulty and failure to respond. There was a concentration of no responses at the beginning of the test with more subjects (6 percent) omitting the first item than any other single item of the test. Most omissions of the first few items were associated with the 70 percent expansion condition. These trends suggest that the single sample item given at normal rate was insufficient preparation, particularly for the slower of the time-altered recordings. It was
also noted that there were more omissions on Part I than on Part II. This may indicate that there is a need for the examiner to repeat at least the stem of completion items. Failure to make a decision was more often associated with normal speed and less often with a slower pace. The lowest incidence of blanks occurred among those who listened to the 35 percent expansion. This may be further indication that subjects benefited by having additional time for processing utterances.

Aural comprehension ability of participating students as measured by the FACT is generally not impressive. A mean total score for all rates of 25.49 represents 42 percent of the possible maximum score of 60. The highest mean achieved by students of a single school was 35.52 or 59 percent comprehension of the total FACT. Generally speaking, these results cannot be attributed to a lack of content validity. When means for individual schools are examined in the light of teaching and testing conditions, test results seem to be closely related to the amount of listening practice teachers have provided for students, to class size, and to acoustics and noise level of the classrooms. Practice with recorded materials appears to be the most important of these factors, even though practice with normal-rate recordings on a regular basis over a two-year period did not, in this instance, enable most of the students to comprehend with ease French spoken at a normal tempo by a native speaker.
While some students who were accustomed to the voice of a female teacher may have been disadvantaged by the male voice of the recorder, in general, sex of teacher did not appear to be related to test results.

Although student reactions to the three rates varied, there appeared to be general agreement in all schools about the difficulties that beginning students experience when confronted with native-speed recordings in a new language. There was also an expression of interest in use of slowed speech to assist learners in the early stages.
Summary

The review of theory and research revealed that most foreign-language educators advocate use of "normal" or "native" speaking rate at all times from the very beginnings of language study. Others, however, have questioned the advisability of absolute adherence to the policy in view of evidence for the limited information-processing capacity of the human perceptual system. Some have pointed to the electromechanical technique of speech expansion as a rate-changing process by which materials prepared for use with second-language students might be successfully altered.

The primary purpose of this study was to ascertain what effect the use of expanded speech might have on the listening comprehension performance of second-year high school French students. Accordingly, stimulus materials recorded at expansion rates of 0, 35, and 70 percent were played for subjects and the scores compared. The effect of time-expansion on performance in two kinds of listening tasks, a completion exercise and a rejoinder exercise, was also examined. Finally, the interactions of two organismic
variables, sex and grade level, with presentation rate and with type of listening task were investigated.

The recorded aural comprehension test was administered in ten Central Ohio high schools to 292 second-year French students. Test reliability computations were based on their scores. Other statistical analyses were performed using the scores and subscores of 226 of these examinees. They were ninth, tenth, eleventh, and twelfth graders in six of the participating schools.

The following questions were posed:

1. Does time-expansion by 35 percent or by 70 percent significantly affect listening comprehension performance of high school French Two students as measured by the FACT?

2. Does such expansion significantly affect performance on the completion-format listening exercise included as part of the FACT?

3. Does such expansion significantly affect performance on the rejoinder-type listening exercise which constitutes one-half of the FACT?

4. Do subjects within a given rate group achieve significantly better on one of the two listening tasks?

5. Do variations in rate of presentation effect significant differences in performance on the FACT by male and female listeners?
6. Do variations in rate of presentation effect significant differences in performance on the FACT by listeners of different grade levels?

The answers which the study provided for these questions can be summarized as follows:

1. Expansion by 35 percent significantly affected performance on the FACT. While expansion by 70 percent resulted in slightly better comprehension, it did not do so to a statistically significant degree when compared to comprehension of speech expanded by 35 percent.

2. Expansion by 35 percent made a statistically significant difference in performance on the completion part of the FACT, but the improved comprehension resulting from expansion by 70 percent was not statistically significant.

3. Performance gains on the rejoinder part of the FACT were not statistically significant at either level of time-expansion.

4. In all rate groups, subjects performed better on the rejoinder exercise than on the completion exercise; however, the difference between exercise means was not statistically significant for any rate group.

5. While females consistently scored higher than males and subjects of both sexes appeared to profit by 35 percent expansion, further expansion penalized females. They, nonetheless, achieved a statistically significant
superiority over the male subjects at both of the time-expanded rates.

6. Tenth grade subjects benefited to a statistically significant degree by 35 percent expansion and benefited too, though not significantly, by 70 percent expansion. Twelfth graders achieved significantly higher mean scores than tenth graders at the normal rate of presentation, \((p < .001)\), but their mean scores decreased with each increment in expansion.

Limitations

The following limitations associated with the data sources should be borne in mind:

1. Subjects were high school French students completing two years' study of the language

2. Listening comprehension performance was defined as the score or subscore achieved on the FACT

3. Two kinds of listening tasks, the completion and the rejoinder types, were selected for inclusion in the evaluation instrument

4. Exercises and items were presented in a fixed order to all subjects

5. All items were recorded by one male native speaker of French

6. Normal speed, for purposes of this investigation, was defined as the rate used by this speaker on the master recording of the FACT
7. Three rates, the unaltered original rate, expansion to 135 percent, and expansion to 170 percent were utilized.

8. No provision was made for systematic repetition of all items.

One cannot, therefore, safely generalize the findings of this investigation beyond the second-year French students enrolled in the six Central Ohio schools in which subjects were tested. These schools, however, as was pointed out in chapter three, cannot be described as uniform. Test results offer further evidence for this diversity.

School means for Tape A ranged from 16.35 to 33.06 correct answers, for Tape B from 19.15 to 35.52, and for Tape C from 19.13 to 33.50. Clearly, class groups cannot be considered equivalent. Yet, as a group, the subjects do not appear, by and large, to differ greatly from the larger group of examinees into which they can be subsumed. When the 226 subjects and the 66 other students who took part in the testing are merged into the group of 292 examinees, four additional schools where class mean scores ranged from 19.61 to 34.35 are included. When rate is disregarded, mean score for the total group of French students tested was 25.68, while subjects of the three rate groups averaged 25.49 points correct. When rate is considered, the differences between means for the two
groups are minimal: 1.52 (Tape A), 1.48 (Tape B), and .47 (Tape C). Subjects had the slight advantage for Tape B, but the other group excelled under the other two conditions.

The possibility of wider applicability, then, seems to exist, and it may well be that samples drawn from a much larger population of high school students completing a second-year French course and assigned to listen to the FACT recorded at the three rates would perform much as the subjects of this study did.

Implications and Recommendations

In view of its findings and its limitations, this study appears to have implications for instructional strategies and materials, testing, and further research in foreign-language education. Some of these implications together with related recommendations will be discussed below.

Instructional strategies and materials. Generally, results of this investigation support the usefulness of time-expanded speech for presenting recorded speech at various speeds to groups of language students. The study did not, of course, deal with the effect of such rate variation during instruction. Since subjects, on the whole, did not demonstrate a high level of achievement in aural comprehension, and since they did benefit from a first
exposure to time-expanded French, one might hypothesize that a more extended use of the technique would also be advantageous to them. If language learners working in a group could comprehend better at an expanded rate, they might profit even more if the rate of recorded materials could be accommodated to their individual needs where language instruction is individualized. It must be remem­bered, however, that all students do not appear to benefit from such deceleration and that all percentages of time-expansion may not be equally effective.

Test results underline the importance of the systematic training recommended by Rivers (1972, pp. 102-4) which would develop ability to decode and then recode oral language for retention. It also appears that it would be desirable for foreign-language educators to formulate more precise definitions of terms such as "normal rate" or "native conversational speed" and to develop more explicit learning objectives in listening comprehension, allowing for gradations in rate as well as in lexical, morphological, and syntactical aspects of utterances. The value of more careful measurement of the temporal features of recorded target-language materials may also be implied. In addition, results of the study suggest that the compressor/expander could be an effective tool for specifying levels of performance and for grading listening materials.
Testing. The outcomes of this investigation suggest that examiners might utilize time-altered speech to implement a proposal made by Valette (1968, p. 117). She has proposed that type of delivery (e.g., carefully enunciated speech, normal and rapid conversational tempos, and rapid conversational tempo distorted by white noise) serve as a basis for testing degrees of competence in listening comprehension. It would then be possible to measure the examinee's listening rate just as his speaking or reading rate is evaluated by other tests.

Further research. The present study indicates a need for further experimental manipulation of the various temporal properties of utterances presented to non-native listeners. Comparison of the effects of such manipulation upon comprehension might prove fruitful. Given the limitations of this investigation, similar studies could be undertaken with other levels of language learners, rates of delivery, and kinds of listening comprehension exercises. It is important that some future experimentation be based on measurement of the word or syllable rate of the master recording since there is, it seems, considerable variability in what can be called "normal." Analyses could also be performed with a number of listener variables. Research aimed at discovering the optimal rate for language learners of various levels and their preferred rates could
be useful. The extent to which the speaker's sex determines comprehension, particularly of time-expanded speech, is also a question to be explored. Research is also needed to determine how a period of training and practice with time-expanded speech affects students' ability to comprehend a new language. Second-language experimentation should not, of course, be limited to French since languages seem to be affected differently by time-alteration (Meyer-son, 1971). Finally, it would seem highly desirable for language educators to study time-compressed speech research with a view to extending the experimentation into the area of second-language acquisition.

In conclusion, the writer wishes to emphasize that the recommendation that time-expanded speech be used in foreign-language education should not be construed as advocacy of a change in the ultimate goal, ability to comprehend speech of native speakers talking at their normal conversational rate. On the contrary, it should be viewed as an effort to promote attainment of that goal. As such, it is offered, not as a replacement for other instructional strategies or other techniques for altering speech rate, but as an additional means for helping language students to develop listening comprehension.

Since Fairbanks, Everitt, and Jaeger (1954) published a description of an apparatus capable of compressing and expanding recorded sound and reported on their first
experiments with the mechanism (1957a, 1957b), interest in and understanding of the technique and its potentialities have grown considerably. Unfortunately, the prohibitive costs of equipment have prevented widespread use of it. However, a very recent listing of available compressor/expanders includes several portable models that incorporate cassette transports and are much less costly than the earlier machines (Foulke, 1975). This article also reports that one research group has licensed a number of manufacturers of sound-producing devices to incorporate its circuitry into their equipment. These firms, we are told, are now actively engaged in developmental programs. Availability of inexpensive compressor/expanders should foster research and its application in many curricular areas, including foreign-language education.
APPENDIX A: BOOKS USED BY PARTICIPATING CLASSES
APPENDIX A: BOOKS USED BY PARTICIPATING CLASSES


Rosselot, LaVelle; Wood, Margaret; Favrot, Alain; and Wilgocki, Edward F. Je parle français: Premier degré. 2d ed. Chicago: Britannica Education Corp., 1969.
Valdman, Albert; Belasco, Simon; and Steiner, Florence.
APPENDIX B: FRENCH AURAL COMPREHENSION TEST

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APPENDIX B: FRENCH AURAL COMPREHENSION TEST

TAPE SCRIPT

This is a French listening test. You should be able to hear this tape very clearly. If you cannot hear clearly, please raise your hand now because after the test begins, it will continue to the end without stopping. Now listen to the instructions. They will be given only once.

Find part one at the left side of your test sheet. For each number in part one, you will hear an incomplete statement spoken by a French person. Then you will hear four suggested endings for the statement, a, b, c, and d. You are to decide which ending makes the most sense and then circle the letter that corresponds to that ending. Look at the sample. It is numbered zero. Let's listen to the sample. You hear:

Nous entrons dans ....
   a le livre
   b la maison
   c le sandwich
   d le tableau

The second ending is the most appropriate, Nous entrons dans la maison. We enter the house, so the letter b is circled. Each statement will be said only once. Always wait until the speaker has given all four endings before marking your answer. Then mark it very clearly.

Now get ready for sentence one. We will begin now.

1. Nous pouvons entrer ici. Voilà ....
   a la chance
   b le menu
   c la porte
   d le printemps

2. J'ai deux soeurs et un frère. Je sors souvent avec ....
   a elles
   b eux
   c lui
   d moi

3. Ne parlez pas. Papa ne peut pas ....
   a dormir
   b marcher
   c rester
   d voir
4. Regardons la télé. Je vais faire mes devoirs ....
   a. hier soir
   b. jamais
   c. plus tard
   d. samedi dernier

5. En avion on voyage ....
   a. maintenant
   b. toujours
   c. trop
   d. vite

6. Je pense que j'entends ....
   a. jeudi
   b. le téléphone
   c. du pain
   d. quinze minutes

7. J'ai vu Brigitte avec ....
   a. le dimanche
   b. son ami
   c. les mathématiques
   d. la plage

8. Dans ma chambre j'ai une jolie ....
   a. maison
   b. photo
   c. rue
   d. salle

9. Je n'aime pas la campagne. Je préfère ....
   a. le football
   b. un hôtel
   c. la viande
   d. la ville

10. Il pleut aujourd'hui. Je vais ....
    a. faire une promenade
    b. jouer au tennis
    c. rester à la maison
    d. travailler dans le jardin

11. J'ai un ami qui habite ....
    a. un chapeau
    b. sa famille
    c. cette maison
    d. le soir
12. Pierre reste au lit parce qu'il est ....
   a cher
   b fatigué
   c noir
   d sérieux

13. Cet après-midi je vais écouter ....
   a mon déjeuner
   b la cuisine
   c notre maison
   d la radio

14. Voilà Georges. Il lit ....
   a sa chambre
   b le dîner
   c un journal
   d un malade

15. Les jeunes filles sont dans la salle à manger. Elles ....
   a déjeunent ensemble
   b dorment bien
   c jouent du piano
   d se lavent

16. Au petit déjeuner Marie prend ....
   a l'autobus
   b du café au lait
   c la cuisine
   d un poisson

17. Mon frère ne joue pas au football. Il n'est pas assez ....
   a américain
   b beau
   c grand
   d intéressant

18. Mes grands-parents viennent chez nous. Ils vont arriver ....
   a demain soir
   b hier matin
   c l'été passé
   d mardi dernier

19. Je cherche la chemise de Marc. Elle est ....
   a blanche
   b facile
   c jeune
   d pressée
20. Jean n'aime pas faire du ski. Il ....
   a est sportif
   b neige beaucoup
   c tombe souvent
   d va mieux

21. Je vais en ville acheter ....
   a mes amis
   b un devoir
   c des livres
   d la vendeuse

22. Lave-toi les mains maintenant. On va dîner ....
   a dans six heures
   b plus tard
   c tous les jours
   d tout de suite

23. Les jeunes filles ne sont pas encore arrivées. Je les attends depuis ....
   a demain matin
   b une heure
   c leur arrivée
   d mon départ

24. Mon père va à l'école. Il veut ....
   a avoir un accident
   b chercher la femme
   c écrire une lettre
   d voir mon professeur

25. Tout est cher dans ce magasin, mais j'ai ....
   a assez d'argent
   b du papier
   c nos amis
   d la télévision

26. Oui, Marie travaille vite, mais elle travaille ....
   a à droite
   b lentement
   c peut-être
   d très bien

27. Regardez. Là-bas il y a un homme ou ....
   a un garçon
   b un lycée
   c une montagne
   d une semaine
28. Paul apprend à parler ....
   a anglais
   b billet
   c Française
   d musique

29. Je commence à avoir faim. Cherchons ....
   a un agent de police
   b un autobus
   c une équipe
   d un restaurant

30. J'aime votre robe. Vous êtes ....
   a belle
   b bonne
   c nouvelle
   d rouge

Now look at part two on your test sheet and listen to the instructions. In part two you will hear the French speaker say something which is not printed on your test sheet. You are to choose an appropriate response to what the speaker has said. Look at the sample which is numbered zero. On your test sheet there are four English sentences given as possible responses to what the French person has said. Only one of these is an appropriate response. You are to decide which one makes the most sense as an answer to what you have heard and then circle the corresponding letter. Let's listen to the sample. You hear:

Vous avez seize ans, n'est-ce pas?

On your test sheet you see:

   a At two o'clock.
   b I'm getting cold.
   c I have a headache.
   d I'll be sixteen.

Since the fourth one is the correct response to the French question about your age, the letter d is circled. Now get ready for item one. Each item will be read only once. The speaker will pause briefly so that you can mark your answer. Mark it very clearly. We will begin now.

1. Maman, est-ce qu'il y a du lait?

2. Est-ce que tu es libre ce soir? J'ai deux billets pour un concert.

4. Où est-ce que les autres attendent? Je ne les vois pas.

5. Mon frère Jacques marche déjà, mais il ne parle pas beaucoup. Il peut dire quelques mots seulement.

6. Qu'est-ce que vous voulez? Il y a du thé et du café.

7. Regarde ces manteaux. Préfères-tu le vert ou le bleu?

8. Tu sais, il est déjà une heure. N'as-tu pas faim?

9. Nous allons passer le mois de juillet au bord de la mer.

10. C'est votre cousine là-bas au café, n'est-ce pas?

11. Comment allez-vous aujourd'hui?

12. Moi, j'ai minuit moins le quart.

13. Qui est-ce que vous demandez?

14. Qu'est-ce que vous voulez voir?

15. Et maintenant, qu'est-ce que vous prenez comme dessert?

16. Christine n'est pas venue parce qu'elle ne va pas bien.

17. Où faut-il aller pour le match?

18. Oui, tu peux sortir, mais rentre avant le déjeuner.

19. Ton père a une nouvelle voiture jaune, n'est-ce pas?

20. Vous cherchez Pauline? Elle n'est pas ici ce matin.


22. Mais vous habitez loin d'ici, et il fait froid. Pourquoi êtes-vous à pied?

23. Non, je ne suis pas sorti ce soir. J'ai écrit une longue lettre à Marie.

25. Tu veux rester au salon ou tu veux aller dans le jardin?

26. Qu'est-ce que vous allez faire cet été? Vous allez travailler?

27. J'aime beaucoup votre ville. Elle est belle. Quel temps fait-il en hiver?

28. Ils sont allés au cinéma? Qu'est-ce qu'ils ont vu?

29. Je ne comprends pas. Jean travaille tous les jours, mais il n'a jamais d'argent.

FRENCH AURAL COMPREHENSION TEST

NAME ________________________________________________
SEX F__ M__  GRADE 9__ 10__ 11__ 12__
AVERAGE MARK IN FRENCH  A__ B__ C__ D__ F__

PART I

Sample

0 a  □  c d

1  a  b  c  d
2  a  b  c  d
3  a  b  c  d
4  a  b  c  d
5  a  b  c  d
6  a  b  c  d
7  a  b  c  d
8  a  b  c  d
9  a  b  c  d
10 a  b  c  d
11  a  b  c  d
12  a  b  c  d
13  a  b  c  d
14  a  b  c  d
15  a  b  c  d
16  a  b  c  d
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18  a  b  c  d
19  a  b  c  d
20  a  b  c  d
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24  a  b  c  d
25  a  b  c  d
26  a  b  c  d
27  a  b  c  d
28  a  b  c  d
29  a  b  c  d
30  a  b  c  d

SCORE I _____
PART II

Sample

0 a At two o'clock.
   b I'm getting cold.
   c I have a headache.
   d I'll be sixteen.

1 a I've already had enough.
   b Be patient. He'll get here.
   c Did you look in the refrigerator?
   d Why? Are you sleepy?

2 a Buy one for yourself.
   b Thanks, but I have a date.
   c Yes, it's a new novel.
   d The steak and fries are good.

3 a Yes, he's all alone.
   b It started about 9:30.
   c Three isn't enough.
   d OK, I'll finish tomorrow.

4 a At the café around the corner.
   b Isn't he rather late today?
   c It's a new record I just got.
   d Of course they're coming.

5 a Does he like the Army?
   b He must be almost a year old now.
   c Was he always so shy?
   d We'll ask him when he gets here.

6 a I really don't care for either.
   b It's closed until ten o'clock.
   c The one on the corner is nice.
   d You should make up your mind.

7 a I like summer better.
   b They're both ready.
   c Aren't there any black ones?
   d I don't like red and yellow.

8 a I thought it would take longer.
   b Let's wait until noon.
   c She's waiting at home.
   d Yes, I guess I am.
9  a  I hope you have a lot of fun.
b  My mother doesn't know Julie.
c  No, thank you, I've had enough.
d  We've never been to Germany.

10  a  The dining room is smaller.
b  She's with some friends.
c  I'd rather have something cold.
d  Yes, she's getting breakfast.

11  a  I'm going to the park.
b  I have a headache.
c  Tomorrow, not today!
d  The bus leaves at nine.

12  a  You can use mine.
b  I thought you had five.
c  You could hitchhike.
d  Your watch must be slow.

13  a  I don't have an appointment.
b  I'll ask my Dad about it.
c  Could I speak to Eric?
d  I'll have a ham sandwich.

14  a  I always have homework.
b  I'd like a Coke.
c  Is your mother at home?
d  Let's watch the late show.

15  a  Do you have any pie?
b  I'm taking French.
c  It was delicious.
d  We were so thirsty.

16  a  Her name is Catherine.
b  Doesn't she wear glasses?
c  Introduce me please.
d  That's really too bad.

17  a  By a computer.
b  At a tobacco store.
c  To the new stadium.
d  With Jack and Jerry.

18  a  I'll be back at 11:30.
b  How about this evening?
c  Be ready at 1:45.
d  Yes, at four o'clock.
19  a  I'm taking the bus.
    b  Isn't it gorgeous?
    c  My mother is younger.
    d  We went to see my sister.

20  a  I knew we'd find her.
    b  Is she here every morning?
    c  May I talk to her now?
    d  When do you expect her?

21  a  Did you call a repairman?
    b  Isn't it a dinner flight?
    c  It's about 4:30, I think.
    d  Sure, what can I do?

22  a  He's coming to my house.
    b  I don't have a car.
    c  I don't like to walk.
    d  I'm almost home.

23  a  Did you answer?
    b  Did she hear you?
    c  What did you tell her?
    d  Will he be away long?

24  a  I live near them.
    b  It's too crowded at night.
    c  They're not very friendly.
    d  We always go on Wednesday.

25  a  No, I like flowers.
    b  Oh, let's go out.
    c  We could take the bus.
    d  Hers is too long.

26  a  It's for my mother.
    b  No, we want seven more.
    c  To France and Spain.
    d  Yes, I need the money.

27  a  I don't have a watch.
    b  It rains quite a bit.
    c  It takes about ten minutes.
    d  She's really not so old.

28  a  They met Pierre.
    b  On Friday night.
    c  French Connection.
    d  You saw them both.
29  a He's driving to Canada.
b He takes it easy.
c He wastes his money.
d There's a policeman.

30  a I don't either.
b I'll look on the map.
c It doesn't seem hot to me.
d Where did you meet her?

SCORE I
SCORE II
SCORE T
APPENDIX C: PRELIMINARY CORRESPONDENCE
LETTER TO PRINCIPALS

Indian Springs Drive
Columbus, Ohio 43214
January 20, 1975

......... Principal
......... High School
......... Street
......... Ohio

Dear ........:

I am a Benedictine Sister from St. Joseph, Minnesota, and a PH.D. candidate in foreign-language education at The Ohio State University. For three years, from 1971 to 1974, I was a part-time French teacher at Bishop Watter-son High School. Presently, I am planning a testing project in French as a part of my doctoral research.

Sister de Chantal Lorenz of the Diocesan Department of Education thought you might agree to let me contact the French Two teacher at your school about participation in this testing program.

I would furnish all testing materials and would come to ........ High School myself to administer the taped test to students at a time or times convenient to the French teacher and the rest of your staff.

It will be a matter of testing the test rather than testing the students as individuals or as members of a particular student body or language class. I will be comparing the effectiveness of different methods of recording listening comprehension tests. I would, however, be happy to make her (his) students' scores on this test available to your teacher if she (he) would be interested in having them.

I will call your office early next week for your reply. You could leave a message with your secretary for me.
or

For your convenience I am enclosing a stamped self-addressed envelope for your reply.

Thank you for considering my request and for whatever assistance you can give me. Although I would like to involve as many French Two students from diocesan schools as possible, I realize it is not always convenient for a school to welcome a researcher.

Sincerely yours,

Sister Etienne Flaherty, O.S.B.
LETTER TO TEACHERS

Indian Springs Drive
Columbus, Ohio 43214
January .., 1975

............
............ High School
............ Street
............, Ohio

Dear ............:

I am a Benedictine Sister and a Ph.D. candidate in foreign-language education at The Ohio State University. Presently I am preparing a listening comprehension test for French Two students as a part of my doctoral research. Sister de Chantal Lorenz of the Diocesan Office of Education and (principal) have given me permission to ask for your cooperation in this project.

It is a question of testing the test rather than testing the students as individuals or as members of a particular student body or language class. I am comparing the effectiveness of different methods of recording materials for listening comprehension. I would be happy, however, to send your students' scores to you if you were interested in having them.

I would furnish all testing materials—the tapes and the answer sheets—for this multiple-choice test, and I would come to ........ High School to administer the test myself. At each participating school, students will be randomly assigned to listen to three different taped versions of the test; hence, all will not listen to the same tape. It will, therefore, not be possible to test all simultaneously, but each student will be asked to listen to only one tape.

Although the testing will not be done for several weeks, I am writing now to ask you for a tentative agreement to let me test your French Two students at a time convenient to you. I would also like to know which textbooks were used with the students and what unit, lesson, or chapter they have completed most recently. Insofar as possible, I wish to eliminate from the test all content which is unfamiliar to the students.
For your convenience I am enclosing a stamped, self-addressed envelope and a reply form. If you wish further information before coming to a decision, feel free to write me or to call me at (614) 268-7902. If you are willing to help me, we will work out details of date, time, and manner of testing together at a later date.

I would certainly be pleased to have you and your students participate in this project and look forward to hearing from you within a few days.

Sincerely yours,

Sister Etienne Flaherty, O.S.B.
REPLY FORM FOR TEACHERS

Form to be completed and returned to the researcher in the enclosed envelope.

SCHOOL  __________________________________________________________

TEACHER  _________________________________________________________

My French Two students will be (able) (unable) to take the French listening comprehension test.

If your students will be participating in the testing program, please supply the information requested below.

Number of students who will take the test: ______

Textbook used in French One: ________________________

Textbook used in French Two: ________________________

Sections of textbook already completed: ____________

Time(s) French Two is taught: ______________________


APPENDIX D: EXPERIMENTAL DATA

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