

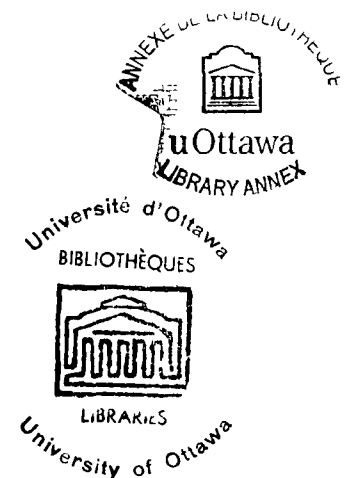
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LISTENING COMPREHENSION: ITS COMPONENTS
AND A MODEL FOR TESTING

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DESCRIPTION OF THE PROBLEM

Listening comprehension is a necessary skill for the foreign language learner. In the classroom, the syntax, morphology and basic vocabulary of the language are taught. Nevertheless, students who have become proficient in the latter areas, frequently have trouble understanding the spoken stream. Thus, there must be more to listening comprehension than mastering these areas.

In this paper it is my intention to reassess the skill of listening comprehension to try to isolate the factors involved. Having arrived at the components of the listening comprehension process, I will propose a model for testing this skill with samples in English of the various techniques.

A survey of the testing of listening comprehension during the late 1950's and 1960's reveals the predominance of the work of Lado and Pimsleur. The basic technique for testing listening comprehension was to make a list of potential problems based on some sort of contrastive analysis of the two languages involved. Only phonemic and not phonetic features were used. The test designer would select minimal pairs in words or phrases and then prepare the items. The designer was to work from particular problems and then write items to test interference problems revealed by contrastive analysis of the two languages involved. He might even write passages around the problems. Testing techniques used were objective: multiple choice, true/false and variations

thereof. The danger with the above type of test is that they are frequently used as exercises to test isolated skills rather than instruments for determining how well a subject can understand spoken utterances in the target language. Furthermore, as Spolsky (1968) and George (1961) pointed out, there is more to understanding spoken language than the mastery of a list of problems or even the ability to discriminate the isolated sounds of the language. In fact, it is the very isolation of sounds, the lack of context for testing purposes which is the great drawback of discrete point testing. The removal of context presents the student with an unnatural stimulus and deprives him of the usual clues of some context which even the native speaker uses to ensure comprehension.

Nevertheless, even to this day, testing is influenced by Lado's approach, as evidenced by the sound discrimination and context-free techniques of Valette (1967) and Harris (1969) although both included, in addition, passage testing. One exception is the work of Spolsky and his team at Indiana University with reduced acoustic cues, produced by the addition of white noise.

Tests so far have neglected some relevant areas which should be explored. Redundancy is an important characteristic of natural languages and plays an important part in listening

comprehension. Redundancy and context provide the listener with important clues as to what the speaker has said if the sounds are not clear, and aid the listener in dividing up or analysing the sound stream. They also help him to anticipate what will follow in the sound stream and thus facilitate the processing of the signal. Auditory memory is another important factor, for it enables the listener to store sections of the signal for analysis. It is my intention to attempt to isolate and define these and any other factors and finally to suggest a model for testing them with samples in English of the suggested techniques.

CHAPTER I

REVIEW OF THE LITERATURE

It is generally recognized that listening comprehension involves the perception and analysis of acoustic cues. The stimulus is auditory. In order to interpret the stimulus, the listener must perform at least a preliminary analysis of the sound signal. He must discriminate between some sounds and consider others as the same. A person's knowledge of the language affects his interpretation of that auditory stimulus. The native speaker has so mastered his own language that the process of analysis of the speech sounds and their interpretation seems simultaneous, automatic and can usually be carried out in spite of adverse conditions such as interference or distortion of the sounds. In order to make communication possible in spite of adverse conditions, all natural languages must be redundant. Furthermore, the auditory stimulus takes place in a certain situation or within a certain contextual framework. The linguistic context and on a larger scale, the situational context lead the listener to make certain hypotheses concerning the message the speaker intends to convey. On the basis of his hypothesis he will expect to hear certain sound sequences based on his knowledge of the language. In order to test his hypothesis, he will have to store enough of the message in his auditory memory to see if his hypothesis matches it. In addition to

these components of the listening comprehension process, there is the operation of decoding, whereby the listener obtains the message from the signal or associates a certain meaning with the speech signal.

After the components of the listening comprehension process have been examined, it still remains to determine what variety of language or how many varieties the foreign language learner is to be expected to handle competently. Finally, attention must be given to means of testing these components of the process and the chosen varieties of the language.

Thus, the literature will be reviewed under each of the following categories:

1. Perception of Acoustic Cues
2. Definition of Expectancy
 - 2.1 Redundancy
 - 2.2 Context
 - 2.2.1 Linguistic
 - 2.2.2 Situational
 - 2.3 Discussion of Expectancy
3. Memory
4. Variety of Language
5. Decoding
6. Testing

1. PERCEPTION OF ACOUSTIC CUES

Acoustic cues are certainly important in the listening comprehension process, since the medium of communication is sound. "Understanding speech is a process of obtaining information from an auditory stimulus. It involves discriminating between some sounds and considering others as similar." (Ladefoged 1967:143) There is more involved in speech perception, however, than the ability to recognize the phonemes of a language. Schatz (1954) showed that changing the context of a sound can cause errors in its perception. Ladefoged, in his experiment with vowels, (1967) had a similar result. Thus, phonological context is an important factor in the perception of phonemes.

Acoustic cues are perhaps less important, however, than first seems apparent. Spolsky (1968) showed that native speakers can tolerate more interference competing with the message than non-native speakers. Their success can be attributed partly to the redundant nature of the language and partly to their larger store of acceptable possibilities from the language to enable them to replace missing or ambiguous elements in the signal or to predict successive elements.

Redundancy as evidenced by the internal dependencies of sentences can overrule the importance of acoustic cues in

speech perception. Ladefoged (1967) experimented with clicks and the sound [s] superimposed on sentences and on number lists. He found that listeners had difficulty in determining the physical order of individual speech sounds and concluded that the immediate perception of speech is in terms of longer units. Because subjects were less accurate in judging the location of clicks within sentences than within a series of numbers, Ladefoged decided that in decoding sentences, subjects did not pay as close attention to words as to the numbers because the internal dependencies of sentences caused them not to carry information at as great a rate as the number lists.

Redundancy is related to context. Grammatical and semantic context play a great role in speech perception. Lieberman (1963) experimented with utterances recorded at a fast speed, which contained redundant and non-redundant words. He found in most cases that non-redundant words were identified more often although they were not necessarily produced with more stress. Speakers apparently produced non-redundant words with more stress to call attention to words they thought were non-redundant. They pronounced redundant words with less care and stress knowing that listeners could rely on the context. Thus, words excised from redundant contexts which had to be identified by acoustic cues alone, were less

intelligible.

Context and predictability play an important role in the speech recognition process. Intelligibility improves with increasing predictability. Prior set improves intelligibility (Fry 1950, Bruce 1958), whereas misinformation can even hinder it (Bruce 1958). The importance of context is further demonstrated in the experiments by Pollack and Pickett (1963) which showed that word intelligibility improves with duration of the utterance.

The perception of the speech signal seems to be made more in terms of general patterns of the language than by an objective observation of the physically present acoustic signal. Even a careful transcription by trained linguists using the Trager and Smith notation often proved to have no distinct physical basis (Lieberman 1963). Thus, in 1967, Lieberman said that intonation plays a central role in the transformation recognition processes that the listener must use for syntactic analysis. It provides acoustic cues that segment the speech signal into linguistic units suitable for syntactic analysis. The underlying phrase marker is derived from the acoustic signal and the listener's knowledge of grammar.

Acoustic cues are important for listening comprehension. Experiments show, however, that even native speakers

process speech in fairly large units, relying on context and on the knowledge of the syntax of the language for their interpretation. Acoustic cues can be ambiguous and elimination of many cues does not seem to hinder intelligibility. (Denes and Pinson 1967). Because of its redundant nature, speech can be understood in spite of interference competing with the signal.

2. DEFINITION OF EXPECTANCY

Oller (1971 b) maintained that expectancy for successive elements is the central feature of language processing. Expectancy is a special skill made possible by two characteristics of speech: its redundancy and the contextual constraints both linguistic and extra-linguistic imposed upon it. A discussion of these two topics will follow before the skill of expectancy itself is considered.

2.1 Redundancy

Redundancy is the use of non-essential elements, that is, elements which do not carry information. Natural language is so structured that it is redundant. It often provides multiple clues to the same bits of information (Goodman 1968). An example is the use of both the personal pronoun and the s on the present tense of verbs in English to show the third person singular. Once the listener has

heard two, he can predict the /z/ on cars. Furthermore, not all possible sequences of linguistic elements can occur in a language. In a given language context, the possible language elements that can fit are very limited (Goodman 1968). This is true not only on the syntactic level, but also on the phonological and semantic levels. Certain phonological combinations would not occur initially in English. On the semantic level such an expression as "a red tennis match" would be unacceptable. Thus, as Oller (1971 b) pointed out, what follows in a sequence of sounds, syllables, words etc. is always partly predictable. Rivers (1966) agreed that conventional patterning limits the possible sequences of sounds and determines their frequency of occurrence. She went on to point out that redundancy helps us piece together the information we hear because we can disregard irrelevant factors. Oller (1971 b) agreed that redundancy speeds up language processing.

A further contribution that redundancy makes to facilitating the communication process is to allow for comprehension in spite of noise or distortion of the sound (Rivers 1966; Spolsky 1968). Spolsky found that native speakers could tolerate more interference on the channel than foreign speakers. This results from native speakers' mastery of their language. Under normal conditions they can do other things simultaneously. Non-native speakers must concentrate on the

code itself in order to comprehend the message. Spolsky was able to construct a test with a "threshold of proficiency" to separate the very proficient from the less proficient foreign **language** speaker by adding white noise to the channel. Spolsky claimed to be reducing redundancy in this way. He was however, reducing the acoustic cues indiscriminately and not just the redundant features. Nevertheless, I would agree with Spolsky that the factor of redundancy rules out the discrete point approach for aural testing. It is not possible to demonstrate that any given language item is essential to successful communication.

Lieberman's experiment (1963) showed how redundancy enables speech to operate efficiently for the speaker and for the listener as well. He found that speakers pronounced redundant words with less care and less stress because they knew listeners would be able to compensate for lack of acoustic information by making use of the contextual, semantic and grammatical information of the entire sentence. He believed that acoustic cues for word identification may occur at two levels: a) necessary and sufficient to identify a word in absence of other information and b) necessary but not sufficient. The effect of redundant context is to reduce the acoustic cues from the primary to the secondary level. Thus, redundancy is an essential and important characteristic of natural languages. The second characteristic of speech, linguis-

tic and extra-linguistic contextual constraints will now be considered.

2.2 Context

There are many ways of looking at context. Oller, Jakobovits, Ladefoged, Bruce and James seemed to agree over the existence of two basic types of contextual constraints, although their terminology differed. There are linguistic constraints, phonological, syntactic and semantic, conditioned by the structure of the language itself and there are extra-linguistic or situational (Firth 1964) constraints composed of the totality of conditions excluding linguistic influencing a speech event. Oller (1971 b) referred to the former as verbal, but divided the latter into "extra-linguistic object context" which would not allow us to say "This is a book." when referring to a pen and "relationship context" which would mean that when meeting someone on the street, we would not recite the Pythagorean theorem. Bruce (1958) divided linguistic context into "syntactic" which describes redundant features required by the structure of the language, and "verbal association constraints" those determined by established verbal habits. Ladefoged (1967) divided linguistic context into "acoustic", that of preceding words comprising as much as seven and a half seconds of the spoken chain, and "linguistic" or syntactic" constraints. Implicit in Jakobovits' dis-

cussion of three levels of meaning (1968) is a distinction between linguistic and situational context. Jakobovits referred to linguistic meaning and implicit meaning which is inferred on the basis of the situation to which the sentence as a whole refers, a function of the "situational context", potentially infinite, but not randomly variable because of the restrictions of the dictionary meaning. For Jakobovits, there is a third type of meaning, "implicative", which involves aspects of the speaker. James (1970) proposed a dichotomy comprised of: a) linguistic context which includes not only syntactic dependencies within the sentence, but also intersentential dependencies and b) psycholinguistic context conditioned by the totality of conditions influencing a behavioural event.

Thus, although there are many ways of looking at context, there is a basic distinction between linguistic context and extra-linguistic or situational context. The linguistic context imposes certain phonological, grammatical and semantic constraints which enable the listener to anticipate at least partially what will follow in an utterance. Situational context includes all the non-linguistic events and information which lead up to a given speech event and hence aid in the anticipatory process. Both types of constraints facilitate expectancy.

2.2.1 Linguistic Context

Black (1961) states that for natural languages, the order of phonemes is biased and amenable to a certain degree of prediction. On a higher level, "assemblages of speech sounds have been learned as words and presumably the native speaker has learned many of the probabilities of his own language, although perhaps not consciously" (Black 1961:347). The experiments by Miller, Heise and Lichten (1951) and by O'Neill (1957) with words in isolation and words in sentences showed that intelligibility improves progressively with increasing predictability. The experiments by Miller and Selfridge (1950) and by Coleman (1963, cited in Oller 1971 a) showed that context aids in the recall of material.

Context makes language processing easier in that less effort is needed by the listener to decode sentences than to decode a series of digits. The receiver does not need to pay so much attention to words in sentences as to a series of digits. This was demonstrated by Ladefoged's experiment (1967). Listeners had more difficulty in determining the physical order of clicks or sounds superimposed on sentences than on series of digits.

As a result of their experiment, Pollack and Pickett (1964) found that a certain amount of context is required by the listener in order to test his hypothesis about the probable phonetic content of the message. The message remains

unintelligible until the hypothesis can be tested. It then abruptly becomes intelligible. In their experiment, the rate of utterance had little effect on intelligibility because fast utterances provided more context in the same length of time than slower ones. Thus, word intelligibility seems to increase with the number of words in a sample and/or the duration of the sample.

In Lieberman's model of speech perception (1963) the author concluded that the listener probably performs a preliminary acoustic analysis of the speech signal and identifies whatever phonetic features possible. He then apparently forms a hypothesis about the phonetic character of unidentified segments and applies the rules of phonological and syntactic components of the grammar to arrive at a hypothetical underlying phrase marker. If the hypothesis fits, it is then acceptable and the listener "hears" this. Therefore, for Lieberman, the role of grammatical and semantic context relates to the formation of a hypothesis about the acoustic material and the testing of that hypothesis.

Thus, linguistic constraints seem to affect the relative probability of certain elements occurring in speech. In the same way they facilitate speech processing, for the listener can pay less attention to details, predict what follows in the speech chain, compensate for interference on

the channel and even recall more easily what he has heard.

2.2.2 Situational Context

Situational context can include the identity of the speaker, that of the listener, the time and place of the speech event and all preceding events including relevant speech events which enable the listener to "identify sounds not simply as a result of considering them as sounds but also as the result of expecting them to be some of the particular set of noises likely to make sense in that particular context" (Ladefoged 1967:144).

Bruce's experiment (1958) showed the effect of sentence topic awareness. He found that prior specification of context seemed to increase accuracy and incorrect specification to lessen it. The effect of context is even more apparent in Frv's experiment (1955). In this case, subjects were exposed to a recording of two men conversing with artificial distortion superimposed on it. After an unsuccessful attempt at understanding the conversation, listeners could understand it when the topic was known.

According to Lieberman's model of speech perception (1963), the listener forms a hypothesis about the signal based on a preliminary analysis of the signal and in accordance with the rules of the phonological and syntactic components of the grammar. This hypothesis must be consistent with the conver-

sation, the social context and must have a reasonable semantic interpretation in order to be acceptable.

According to Gumperz (1965), every society has a finite number of social relationships or interaction types between two or more statuses. There are also closely defined behavioural routines. Thus, according to Gumperz, the behavioural norms applying to any particular speech event should be predictable from knowledge of the social occasion and the social relationships involved. In Western societies these norms are coexistent with grammar and evidence only slight differences. Linguists have found that such is not the case for diverse speech communities like New Delhi. And yet, the registers of any language must correspond to these behavioural norms.

Both Jakobovits (1970) and Cooper (1969) spoke of communicative competence as opposed to linguistic competence. Cooper defined this competence as "knowing what to say, with whom, in what language, manner and when". In his experiment, Cooper (1969) found that comprehension and interpretation differed by conversation and that both linguistic and sociolinguistic abilities were necessary before one could fully understand the meaning of a conversation. In conclusion, Cooper maintained that testing a narrow range of contexts apparently leads to inadequate appraisals of subjects' abilities.

In summary, situational context prepares the listener to expect a certain class of message before the transmission has begun. It is thus important in the process of anticipation. Furthermore, it affects the choice of language variety and thus the correct interpretation of any given conversation or speech event.

2.3 Discussion of Expectancy

Expectancy for successive elements is a skill made possible because of the nature of language itself: its redundancy and its contextual constraints. The greater our mastery of a language, the greater our ability to anticipate succeeding elements in a speech chain or to make valid guesses concerning a certain percentage of omitted elements (Spolsky 1968). Oller (1971 b) suggested that the more elements we can anticipate, the less we have to attend to in verbal processing. Fitchener's law of prior entry (1909) stated this long ago. Bruce's experiment (1958) showed the positive facilitating effect of correct expectations as to what will follow and an actual negative effect of false expectations. Rivers (1966) agreed that a "sneaker develops a frame of expectations through practice and familiarity with conventional patterning in a language" (Rivers 1966:196). She concluded that "we hear what we expect to hear".

Thus, expectancy for successive elements is indeed

an important component of listening comprehension ability, if not the central factor in language processing as Oller (1971 b) suggested.

3. MEMORY

Since speech is always extended over time, some kind of transient memory must preserve it long enough for the processes of speech perception to operate. It must first be preserved in some unsegmented form by some sort of storage mechanism before being grouped for decoding. I will borrow Miller's term, echoic memory (Chomsky and Miller 1963), for the latter storage mechanism. As the decoding process continues, the regrouped auditory input may be stored in the short term or active verbal memory for some time. This material will fade away in time unless it undergoes some rehearsal process in order to be stored away in the long term memory.

Echoic memory is the mechanism which stores the stream of speech in unsegmented form. Neisser (1967) likens it to the tape recorder in that it does not group the input. Echoic memory fades very quickly. Guttman and Julesz (1963) measured auditory memory via the repetition of segments and found it to be of one second's duration. Eriksen and Johnson (1964), however, found that the echo may contain useful information for as long as 10 seconds depending on the difficulty of the task. Their experiment involved only the

perception of a beep. Fraisse's experiments on the perception of rhythm which requires echoic memory (1956, 1963) showed that rhythm disappears after 2 seconds. The existence of auditory memory is proved in Cherry's experiment (1958) where subjects noticed two messages were identical even if one was delayed. Here auditory echoic memory must have been involved because the earlier message must have been stored at least temporarily.

There is a different kind of memory for storing recoded material. Neisser (1967) referred to it as active verbal memory. His term corresponds to Miller's immediate memory (Miller 1956). Others have referred to it as short term memory. The existence of this different kind of auditory memory is supported by Treisman's experiment (1964) to determine critical time intervals for the recognition of identical messages. There was a discrepancy in the interval lag for noticing identity depending on whether the shadowed message occurred before or after the original. The average lag for noticing identity when the shadowed message occurred ahead was 4.5 seconds while it was 1.4 seconds if the shadowed message was delayed. Thus, Treisman concluded that echoic memory for unsegmented and unattended material lasts only 1 or 2 seconds while segmented memory for shadowed texts lasts much longer. The existence of two types of auditory memory is further substantiated by the contradictory results

of studies of memory span as a function of rate and by the fact that errors in recall have a U-shaped curve as the first and last units are recalled best (experiments by Conrad and Hille 1958, Posner 1964, Mackworth 1965). Echoic memory fades with time whereas recoding requires time. Hence the existence of active verbal memory must be postulated.

Active verbal memory is auditory; Conrad's work (1964) showed that substitution errors involved units that sounded alike even for visually presented letters. The span of immediate memory might be defined as the number of items that can be repeated successfully. Miller (1962) said that immediate memory is limited by the number of items regardless of the information content of the items. Memory span could be increased by a recoding process, chunking, whereby one builds larger and larger chunks as the result of translating items from one code to another. However, the translations must be almost automatic or the subject will lose part of the next group while trying to remember translations of the last group. In fact, Miller states that the span of immediate memory is seven units plus or minus two. An experiment by Miller and Isard (1964) showed that the memorization of sentences with 3 or 4 self-embedded relative clauses was most difficult for all subjects even though all sentences were of equal length.

Some studies show that we apparently quickly unravel

the meaning of an utterance and forget the syntax. Blumenthal (1967) showed that sentences are remembered more in terms of their deep than their surface structures. Sachs (1967) pointed out that form not relevant to the meaning is normally not retained.

In his factorial analysis of listening comprehension Spearritt (1962) identified the factor of span memory. His span memory corresponds to active verbal memory. He tested it by asking subjects to reproduce a sequence of letters presented either visually or orally and found a positive correlation between span memory and listening comprehension. Spearritt also identified another type of auditory memory which he called rote or associative memory tested by asking subjects to recall one half of number-word pairs. He found a correlation although not as high as for span memory, between this type of memory and listening comprehension. It seems to me that this is another sub-type of active verbal memory, as some organization of the material is involved.

Short term active verbal memory can be distinguished from long term memory by the fact that the latter seems to involve some recirculation or rehearsal of the material before it is ready to enter the storage system. Brown (1958-9) and L. and M. Peterson (1959) would agree with this view. Waugh and Norman (1969) found that familiar material was retained with a minimum of conscious effort, but that unfamiliar

material must be deliberately rehearsed. They also discovered that the likelihood of an item's recall increased with the amount of time available for its rehearsal. Long term memory is not really involved in the listening comprehension process. Furthermore, I suspect that proficiency in long term recall with native language material can easily be transferred to tasks in a second language. Thus, I will not treat long term memory in my test.

Not much research has been done yet on second language memory span. Experiments have been done by Glicksberg (1963), Loe (1964) and Lado (1965) on memory span, the length of a series of verbal forms that can be reproduced immediately after a single exposure. It is, therefore, active verbal memory which is involved. Glicksberg and Lado both found native language memory span to be approximately 7 digits. Glicksberg found that foreign language students could increase their length of memory span very rapidly as mastery of the foreign language improved. In fact, there was a considerable increase after 5 weeks of instruction. The limiting factor on foreign language memory span seems to be the length of span for the same material in the native language. It is interesting to note that Loe found that complexity of the material made no significant difference in memory span in the native language, whereas there was quite a difference in the foreign language. Glicksberg found a correlation of .60

between memory span for material in context and a test of auditory comprehension. The correlation was lower for longer utterances and lowest for digits. Thus, the relation of memory span to foreign language learning is greater for contextual material than for digits.

In conclusion, because auditory input is always extended over time, some kind of memory must preserve it long enough for the processes of speech perception to operate. Two types of auditory memory can be distinguished: echoic memory which is fleeting and passive; and active verbal memory which involves some segmentation or reorganization of the material. Echoic memory persists long enough to enable intonation perception, but remembering a whole sentence requires more than echoic memory. Thus, the type of memory required for proficiency in listening comprehension is a combination of the two.

4. VARIETY OF LANGUAGE

A language is a system of languages including different dialects and registers.

4.1 Dialect

The term dialect usually refers to variety of language distinguished according to place and social level, that is, the total range of patterns used by a section of the

language community.

4.2 Register

The term register is commonly used to describe variety of language distinguished according to use (Halliday, McIntosh and Strevens 1964). The concept is widely accepted because most linguists would agree that the language we speak changes in order to fit the situation we are in. Register distinctions, however, are less clear-cut than dialect distinctions because styles may not be highly distinctive. Registers are not marginal, but cover the whole range of our language activity (Halliday, McIntosh and Strevens 1964).

The mixing of register can be effective. In fact, if we always followed conventional usage, conversations would be very dull. Quick changes of register are often used for humour. On the other hand, however, mixing of registers can account for many of the errors made by non-native speakers of a language.

According to Halliday, McIntosh and Strevens (1964), registers are defined by their formal properties, that is, differences in grammar or lexis. For example Philp (1969) listed the following sixteen characteristics of spontaneous spoken conversation in his analysis of two texts:

1. Gaps
2. Hesitations
3. Stabilisers
4. Listener Code Markers

5. Initial Markers
6. Repetitions
7. Renewals
8. Anacoluthon (mixed construction)
9. Omissions from Normal Structure
10. Insertions
- 11a. Ellipsis
- 11b. Moodless Clauses (no finite verb)
- 12a. Direct Speech Not Introduced
- 12b. Indirect Speech Not Introduced
13. Interruptions
14. Takeovers
15. Repetition with Answer
16. Grammatical Constructions Typical of Spontaneous Spoken English

Studies of register so far have been analyses of samples, attempts to find groupings of sets of linguistic features which can be shown to correlate with features personal and impersonal of the situational context (Corder 1966). Various taxonomic classifications of register have been suggested according to certain dimensions. Hill (1958) suggested classification according to style, genre and mode. Joos (1962) concentrated on style according to the relationship between participants in a social situation. Halliday, McIntosh and Stevens (1964) suggested that the dimensions are field, mode and style or formality. Fishman (1965), although discussing multilingualism suggested four sources of linguistic variance:

- 1) media variance--reading, writing and speaking;
- 2) role variance--inner speech, comprehension, production;
- 3) situational variance--more formal, less formal, intimate;

- 4) domain variance
 - a) role relations
 - b) topic.

Fishman suggested that domain variance is a distinction on a fairly high level of analysis where one considers the major spheres of activity in the society. Schmidt-Rohr (1933) suggested nine spheres of activity or domains of language activity: family, playground and street, school, church, literature, the press, military, courts and governmental administration. Others have added to the list or deleted domains from it. In addition to domain we could consider role relations such as buyer-seller, mother-child, teacher-student, etc. and topic. Fishman did not consider the latter a convenient analytical variable because of the multiplicity of topics (Fishman 1965).

Halliday, McIntosh and Strevens (1964) pointed out that the complete study of register requires a great deal of linguistic analysis of large samples of textual material. This has not yet been done. The authors said, however, that enough evidence had been gathered to recognize the major situation types.

5. DECODING

Decoding is the actual process of obtaining the meaning from the signal. It is a question of attaching meaning to the sounds and patterns that strike one's ear.

Valette (1967), Ladefoged (1967), Rivers (1968) and Morley (1972) supported this view.

The first stage in the decoding process is one of scanning, where a rudimentary segmentation or analysis of the speech stream is performed. Rivers (1971), Ladefoged (1967), and Lieberman (1963, 1967) expressed this view. It is echoic memory which stores the acoustic cues long enough for this preliminary analysis (Rivers 1971). Licklider (1952) stated that the first stage involves the translation of the speech signal into a form suitable for the nervous system. He compared the process to the operation of the sound spectrograph.

The second stage includes segmentation, identification and recognition of the elements of the acoustic signal. Some psychologists feel that it is a correlation process. In describing the correlation process, Neisser (1967) explained that the listener correlates the input with a detailed, stored template of every possible speech segment which he has ready in advance. Neisser objects, however, that such a mechanism would require precise temporal alignment between the two wave forms. Furthermore, such a theory would fail to account for recognition of ill-defined categories, such as the segments of the speech signal. He felt it would not account for our ability to understand foreign accents in our language.

A second approach to the explanation of the second stage in the process of decoding is the filtering theory. According to Neisser's explanation of this theory, sound passes from the ear to a bank of filters which work either in series or in parallel. The filters are selectively sensitive to certain intensity-frequency-time patterns like those recorded on the spectrograph. Linear combinations of the filters activate analysers at a deeper level which represent the syllables and words recognized by the listener. Neisser stated that the latter model is more powerful than the template model, but will fail in the face of real complexity.

Licklider (1952) divided the second stage of listening comprehension into two parts: first, the identification of discrete speech elements and then the comprehension of meaning. He felt that the first process is best explained by the filtering theory whereas the second process is more like correlation. His explanation of the two theories, however, is different from Neisser's. According to Licklider, correlation involves comparing the input with a model. Patterns are withdrawn from storage and compared against the incoming signal. In the matched filtering process the input is tested in a mold. Patterns are built into the structure of the mechanism itself. The signal passes through only the appropriate filter. It is not an active process. Licklider's matched filtering is more like the template theory.

A third theory compares the second stage of decoding to a process of analysis by synthesis. The listener considers a rather large chunk of speech stored by his active verbal memory, identifies whatever phonetic features possible, then forms a hypothesis about the phonetic character of unidentified segments. The listener then performs a grammatical and semantic analysis of the meaning of the chunk. If his analysis is successful and if the semantic interpretation is reasonable and consistent with the conversation, social context etc., then the hypothesis is acceptable and the listener 'hears' it. If not, another phonetic hypothesis is necessary or the listener may not understand at all. Pickett and Pollack's experiment (1964) supported this idea of hypothesis-testing based on long segments of speech. Lieberman (1963, 1967) and Rivers (1968, 1971) expressed ideas consistent with this view. According to the analysis by synthesis theory, listening comprehension is a process of construction rather than reception.

The factors which play a part in the second stage of listening comprehension are: identification of phonetic features, hypothesis of unidentified phonetic features, retention of a large chunk of material, awareness of extralinguistic context, knowledge of the rules of the phonological and syntactic components of the grammar, anticipatory projection of the message.

For Rivers (1968) and Morley (1972) there is a third stage in listening comprehension. It is a process of rehearsal and recoding of the message before sending it on to long term storage. Rehearsal and recoding aid retention. Spearritt (1962), however, found that long term memory was not a relevant factor for listening comprehension.

6. TESTING

Testing has always been a part of language teaching in that the teacher is always checking to see if his students have mastered what he has taught, before he goes on with new work. Nelson Brooks' Co-operative French List Comprehension Test was an early modern language test shown to adopt criteria of reliability and of validity. After Brooks' work in testing, Robert Lado and Paul Pimsleur were prominent figures in language testing. Lado's work is characteristic of views of language testing of the period. The basic technique for both auditory comprehension and auditory discrimination was to make a list of potential problems based on some sort of contrastive analysis of the two languages involved. Only phonemic and not phonetic features were used. The test designer looked for minimal pairs in words or phrases and then prepared the items. The techniques used in items were objective, including multiple choice and true/false items with variations thereof. Even

for aural comprehension, the test designer worked from particular problems and then sought situations to test the problems. He frequently had to write passages around the problems.

Lado (1961) said that pronunciation would not be tested unless it was built right into the test. He did say, however, that the examiner should choose representative problems, that is, with regard to the frequency of occurrence, range of usefulness and level of mastery. Lado recommended separate tests for each language background, and if this were not possible, separate norms for each group. The context given in each item should be restricted to only as much as is needed to avoid ambiguity, but not enough to provide a by-pass to the answer via the context.

Criticism has been made (George 1961) of Lado's choice of problems to be tested in that the logical conclusion of the argument is that learning another language equals the mastery of difficult elements and patterns. George suggested that usefulness would be a better criterion. He went on to say that Lado's practice leads students to be overly conscious of detail instead of developing a "feeling for the relative importance of word or pattern". George's final objection was that Lado's removal of the context presents the student with an unnatural stimulus and deprives him of the usual clues of a clear context which even the native

speaker uses to ensure comprehension. For example, if the following paragraph were read rapidly aloud, most native speakers would not notice the substitution of "watch" for "wash", because the context is so suggestive.

"Mr. Jones is driving his car up the driveway. I see he is getting out the hose and a pail of water. And his wife is bringing the rags and sponges and the cleanser for the white sidewalls. But it looks like he's not just going to watch his car; he's planning on waxing it too. A real spring cleanup!"
(Valette 1967:50)

Perren (1967) agreed that the understanding of patterns in context is important. He also pointed out the danger of tests which start from a contrastive analysis of two languages, namely that they may be misleading and require second language learners "to attain standards of so-called correctness not habitual to mother tongue speakers" or may easily lead to a concentration on "testing for error rather than testing for success" (Perren 1967:28).

Valette's handbook (1967) continued in the tradition of Lado. She said that the listening skill consists of competence in three areas: discrimination, retention and comprehension. For the native speaker the skill may work as one single operation, but for the foreign language learner, there are usually three areas of proficiency to be mastered. She included sound discrimination in her inventory of types of tests, but pointed out that such tests are useful for judging

progress in phonetics classes, but are not always suitable for beginning students. Like Lado, she suggested that discriminatory tests be context free. Nevertheless, for listening comprehension, she did advocate the use of familiar structures and **vocabulary** to increase comprehension ease. The author's item types follow Lado's suggestions fairly closely with perhaps some new variations. There is one important addition, however, that of passage comprehension for intermediate and advanced students. The writer suggested various types of language that could be used, ranging from formal deliberate speech to rapid conversation. The questions based on the message should be unambiguous and test the passage only.

David Harris (1969), on the other hand, recommended the use of discrimination tests for beginning and intermediate students. Tests should be constructed using minimal pairs in words in isolation and in words in context. By context he referred to linguistic context. An example: "It was a very large ship". For aural comprehension, Harris suggested tests to "measure the accuracy with which subjects are able to decode samples of speech in the target language". He said that the items for such tests could consist of anything from brief one-sentence requests to extended stretches of expository discourse. The oral stimuli should contain only high frequency lexical items. We should be concerned with

the understanding of whole utterances and sequences of utterances. For the short items, the stimuli and response items should sound like informal spoken English, that is, even using elliptical constructions. He suggested simulated lecture passages where students are allowed to take notes and then are required to answer questions--usually multiple choice--using their notes. For these items, all the utterances should have a relationship to each other within the context of the whole. Nothing would be included just to confuse the student. Thus, Harris attempted to simulate the typical lecture situation and in general tried to use normal spoken English within suitable context.

Ted Plaister (1968) has also tried to use normal English in testing listening comprehension in English. In his particular situation, he was interested in predicting how successful non-native speakers would be in understanding university lectures in their field in English. He wanted to concentrate on the whole language rather than to test points. His stimuli were spoken lecture-like bits ranging from thirteen-word sentences to paragraphs of three or more complex sentences. He used line drawings for multiple-choice answers. Plaister found a high correlation between his test and the assessment of students in oral interviews. In the work of Harris and Plaister and to some extent in

that of Valette, there was a new emphasis on natural spoken English in context rather than on somewhat contrived English written around problems.

Colin Black (1971) offered some interesting suggestions for a course in advanced listening comprehension. His suggestions would be useful in constructing tests in listening comprehension for advanced students. He suggested that there are three main areas of listening comprehension to be graded:

1. type of comprehension exercise (type of question)
2. type of material selected
3. subject matter of material

His suggestions for exercises included variations of the true/false technique, multiple-choice and classification by concept where the student, using certain abstract terms, must classify sentences relating to a passage. Such techniques may measure comprehension of content or at a more difficult level, inferences from the passage. The material may range from carefully prepared speech through speech in non-standard dialects to impromptu discussion. The subject matter could be materials relating to common experience or specialist material in any field. Black felt that progressive grading should involve simultaneous advancement in each of these three areas. If certain levels could be established

scientifically, such an approach would be useful for placement tests and standardized tests.

An interesting development in the field of listening comprehension is the work of Spolsky and his team at Indiana University (1968). Rather than the discrete point approach, Spolsky's team believed that learning a language involves overall proficiency. Their hypothesis was that overall proficiency in a second language can be measured by testing a subject's ability to send and receive messages under varying conditions of distortion of the conducting medium. To them this is the normal situation in language communication. The high redundancy in a natural language system makes communication possible even in the presence of distortion. For instance, natural language is understandable on the telephone even with a reduced band width and in the presence of noise. Native speakers can tolerate more interference on a channel than foreign speakers. This, according to Spolsky and his colleagues, results from the native's mastery of all aspects of his language. The purpose of the test was to determine a "threshold of proficiency" in the language. Rather than words or syllables alone, which would provide an artificial perceptual situation, the stimuli were 50 English sentences with no phonological tricks and a positive correlation between semantic acceptability and the correct answers. White noise mixed electronically in varying

proportions was introduced as interference. Students were asked to write what they heard. The test was able to separate advanced from very elementary learners. To distinguish a middle group, further tests would have to be used. The team concluded that the test was as reliable as any other and was an accurate measure of students' overall proficiency in a language. The scoring required more time than for a multiple choice test, but Spolsky pointed out that the latter type was unwise because it would give students clues to what they were hearing. Spolsky's work seems to have interesting practical possibilities.

The implications of the University of Indiana experiment are very significant for language testing in the future, for it proved that one of the tests of knowing a language is the ability to understand a message with reduced acoustic cues, that is, the ability to make valid guesses about a certain percentage of omitted elements. It further raises some doubts as to the value of assessing someone's language proficiency on the basis of his knowledge of certain discrete elements in the language.

Testing in the 1950's and early 1960's could be summarized by Cooper's model: (Cooper 1968)

SKILL	LANGUAGE ASPECT			
	Phonology or Orthography	Morphology	Syntax	Lexicon
Auditory Comprehension				
Oral Product.				
Reading				
Writing				

Testing was what might be called discrete point testing based on contrastive analyses of the surface structure of the two languages. Mastery of a language was thought to consist of the sum of specific abilities tested by the student's ability to handle problem areas predicted by the contrastive analyses of the two languages involved. In the work of Spolsky, Harris and Plaister, there is a new emphasis in language testing, namely a concern for testing natural language in context.

ISOLATION OF FEATURES

Listening comprehension is the process of understanding the message in a given speech signal by making use of acoustic cues, knowledge of redundant features of the language, cues provided by the linguistic and situational context, storage of previous cues, anticipation of future cues and association of the acoustic images with the mental concept.

1. ACOUSTIC CUES

Acoustic cues are the primary tool. If they are clear and if the listener is able to interpret them correctly, there is no problem in understanding the message. Acoustic cues must be dealt with globally. Picking out parts of the signal and trying to piece them together often leads to wrong hypotheses about the message. Experiments show that native speakers process speech in fairly large units, relying on context and their knowledge of the syntax of the language for their interpretation. Because of its redundant nature, speech can be understood in spite of considerable interference on the channel. It is when the acoustic cues are not clear, or when they seem meaningless to the listener that he turns to other factors to make comprehension possible. The second language learner, especially at the early stages of learning his second

language, will have considerable difficulty with the acoustic cues. If he could be trained to make good use of the other factors which can help in the listening comprehension process, a high level of understanding might be possible for him in spite of his difficulty with acoustic cues.

2. REDUNDANCY

Redundancy is a feature of natural languages by virtue of the fact that they are structured. What follows in a sequence of sounds is always partly predictable. Redundancy facilitates the processing of a single bit of information with the aid of multiple clues. A redundant element carries little information. It is one that the listener expects to hear, or that the speaker knows the listener can guess. Knowledge of the redundant features of a language aids in the anticipatory process. If the listener can anticipate redundant elements or supply redundant elements either missing from or distorted in the actual physical signal, comprehension will be possible.

3. CONTEXT

There are two types of contextual constraints: linguistic and situational, both of which supply the listener with many clues which aid in the anticipatory process. Linguistic context imposes certain constraints on the phonologi-

cal, morphological and syntactic levels due to the redundant features required by the structure of the language. On the phonological level, certain combinations of phonemes are more probable than others in any given language. As the intonation pattern of a sentence emerges, the listener can anticipate certain types of syntax and hence certain vocabulary items and phonological patterns. On the syntactic level, dependencies within sentences and even between sentences are a source of redundancy. Such redundancy helps the listener to anticipate certain elements within the sentence or paragraph. Redundant elements do not require his attention and he can concentrate on more heavily loaded elements.

Situational context can include the identity of the speaker, that of the listener, the time and place of the speech event and all preceding events including relevant speech events. Situational context affects the choice of language variety on the part of the speaker and hence the listener's expectations of language variety. Furthermore, the particular situation sets the listener to expect a certain class of message before the transmission has begun

(Bruce 1958, Oller 1971 b). The situation also brings to the listener's mind certain verbal associations which, if appropriate, aid in the process of anticipation in listening comprehension.

4. EXPECTANCY

Expectancy for successive elements is a special skill possessed by all native speakers of a language. Such a skill is possible because of the nature of language and linguistic communication, namely, the redundancy and structure of language itself, extra-linguistic relationship constraints, verbal association constraints and situational constraints. Such a skill is essential in listening comprehension to enable the listener to process and assimilate verbal communication and the information contained in it at a rapid speed and in spite of all kinds of distractions and noise factors. Experiments have shown that expectancy for successive elements may even be more important in listening comprehension for the second language learner than acoustic cues. This expectancy is related to one's knowledge of the language, of the use of the language in certain contexts, in certain interpersonal relationships.

5. AUDITORY MEMORY

Two kinds of auditory memory are involved in the listening comprehension process: echoic memory and active verbal memory. Echoic memory is the storage of auditory material in unanalysed unsegmented form. It is passive and lasts only a second. Active verbal memory, on the other

hand, is the storage of material in segmented, analysed form. It is active and lasts longer. It has been shown to store approximately seven units normally. It is active verbal memory which makes the storage of whole sentences possible. For successful comprehension of spoken material, the listener must be able to store previous cues long enough for him to analyse the speech stream, and form and test his hypothesis. If his first hypothesis proves wrong, it will be necessary for him to have stored the previous cues long enough to reformulate his hypothesis and test it. Thus, echoic memory is involved in the process before the analysis is performed. Echoic memory also is instrumental in intonation perception. After the analysis is performed, the immediate memory or active verbal memory must store the segmented material which may be used in the hypothesis formation. Thus, both echoic memory and active verbal memory are required for proficiency in listening comprehension.

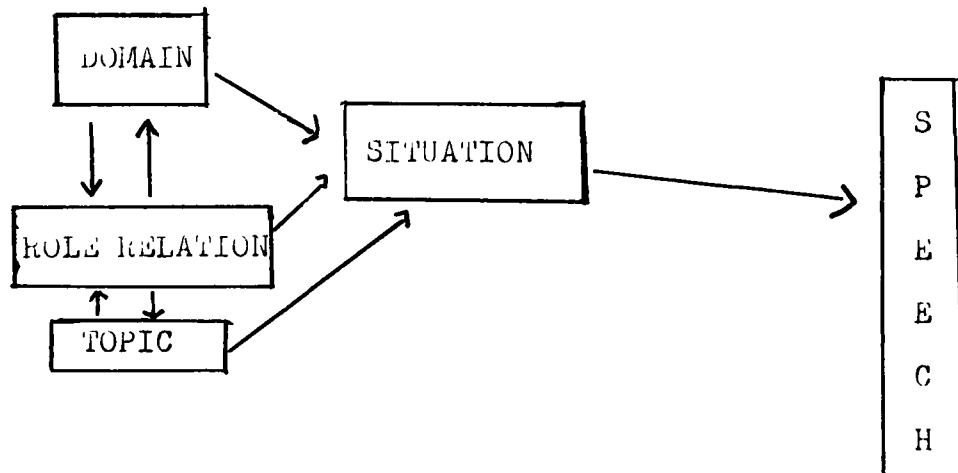
6. VARIETIES OF LANGUAGE

A language consists of a variety of dialects and of registers. Dialect is the variety of language distinguished by place and social level. The choice of dialect to be taught or tested depends on the purposes of the course or test. Usually one dialect or a standard form of the language is chosen for a course. At an advanced level, however, one

might expect the language learner to be able to understand several dialects.

Register is the variety of language distinguished according to use. Register is generally recognized to vary according to medium, situation, domain, role relation and topic. For listening comprehension, the medium, of course, will be spoken language. Much work still has to be done in defining and delimiting situations, domains, role relations and topics. Nevertheless, the major situation types can be isolated.

I would propose beginning with Fishman's concept of domain and using Schmidt-Rohr's nine domains of language behaviour to choose domains, and within them, role relations and topics relevant for the purposes of the course or test. The factors which affect register could be represented diagrammatically as follows:



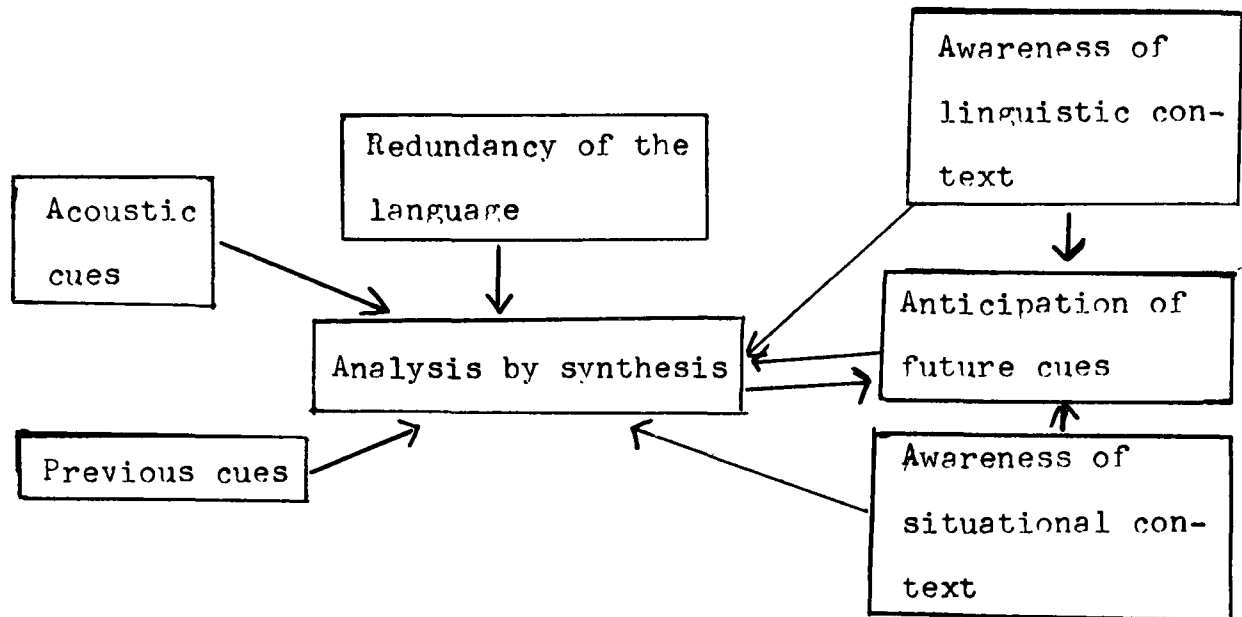
At a beginning level, perhaps only one register would be taught or tested. At an advanced level, however, the second language learner would be expected to handle several registers.

A concept used in the description of register is McIntosh's suitability which includes adequacy and appropriacy (1962). A given linguistic activity may be appropriate for a given speaker, but not necessarily adequate in the situation. The notion of adequacy should be tested in connection with subjects' mastery of the registers of the language. This is part of the skill of expectancy for successive elements.

7. DECODING

Decoding is the actual process of obtaining the message from the signal. It involves all of the previously mentioned factors: processing acoustic cues, awareness of context and the redundancy of the language, prediction of future cues and storage of past cues plus attaching meaning to the sounds and patterns. This study indicates that there is first a scanning process where sensory information is examined and a rudimentary segmentation is performed. This process depends on echoic memory. Then, the material is segmented, grouped and identified. Here active verbal memory is involved because larger chunks are being stored. On the basis of re-

cognizable acoustic cues and knowledge of context, especially when the acoustic cues are not recognizable, the listener forms a hypothesis about the message of the speaker. The listener will then expect to hear certain sounds based on his hypothesis and his knowledge of the syntax, semantics, morphology, phonology and prosody of the language. He will try to match what he hears with what he expects to hear. The process goes along smoothly with the listener recording the speech chain via his auditory memory as he processes what he has heard. If there is some problem, the listener may be distracted and pause too long for matching and thus either lose what he has recorded in his auditory memory or become so distracted that he ceases to record the speech chain. He may have to reject his hypothesis and begin the matching process again with a new hypothesis. If his difficulty is great and his memory fails him, he may become completely lost and have to forget what has been said already and begin the whole process again with successive utterances. The process can be shown diagrammatically as follows:



TEST

I propose to suggest some techniques for testing the factors involved in listening comprehension. There will be an explanation or an example of each technique. In general, subjects should be exposed to the natural spoken stream of the language being tested. In most cases the acoustic cues should be clear with no interfering noise present. In some cases, however, either background or interrupting noise is required specifically for special purposes. The material for testing should always be presented in segments at least as long as the word and in most cases at least in sentences. Experiments (Spolsky 1968, Ladefoged 1967) have shown that no one element is necessary for communication. Thus, the discrete point approach of Lado, Brooks and Valette can no longer be considered valid. It is possible to test more than one element at a time.

The manner of presentation of the material in the test depends on the level and goals of the test. If the aim is to test a student's ability to understand the sound track of movies, he should be presented with material of that nature within the frequency covered by that medium. If the criterion is to develop the ability to understand face-to-face conversation, then the material will have to be presented personally by the administrator of the test. Certain

techniques will have to be prepared and administered on tape to ensure accuracy and consistency. This will be specified.

The order of presentation reflects the order of discussion of the factors involved in listening comprehension rather than the suggested arrangement of sections of the test.

1. ACOUSTIC CUES

In assessing the ability to handle the acoustic cues, the test should measure the subject's mastery of the basic sounds and intonation patterns of the language. Thus, in this section of the test, the acoustic cues should be clear, that is, with no background or interrupting noise present. Because phonemes differ in different phonological contexts (Schatz 1954, Ladefoged 1967), the sounds should be presented in some context, at least the context of the word.

1.1 Auditory Discrimination

Auditory discrimination is a useful technique for testing knowledge of the phonemes of the language. The phonemes should be presented in context and the material used should be natural, acceptable sentences or phrases.

An example:

Listen to the following pairs of sentences. Write 'S' if the sentences are the same. Write 'D' if the sentences are different. (The subjects would hear the following sentences. Care should be taken to keep intonation the same for each sentence in the pair.)

1. They are going to sleep. / They are going to slip.
2. I see a ship. / I see a sheep.
3. I was surprised by his fist. /
I was surprised by his fist.
4. I like to heat my apple sauce. /
I like to heat my apple sauce.
5. That is a jeep! / That is a gvn!

1.2 Intonation

A similar technique is useful in testing subjects' ability to recognize intonation patterns. An example:

Listen to the following pairs of phrases. Write 'S' if the intonation patterns are the same. Write 'D' if they are different. (The subjects would hear the following pairs of phrases.)

1. a bag of candies / a lump of sugar
2. walking down the street / running down the road
3. a six year old boy / a two month old baby
4. a dog and a cat / a pen and a pencil
5. Work quickly. / Read carefully.

1.3 Stress

The technique employed above could also be used to test subjects' ability to recognize the position of stress, which is important in a language such as English. For example:

You will hear pairs of sentences. Listen for the stress. Write 'S' if the stress occurs at the same place in both sentences. Write 'D' if it does not. (The following pairs of sentences would be presented orally. The underlining indicates the position of the stress. Such a test would have to be recorded on tape beforehand or else carefully rehearsed by the administrator of the test so as to ensure clear differences and consistency.)

1. I didn't receive it yet. /

I didn't receive it yet.

2. He's coming. / He's coming.

3. Jane doesn't have it. /

Jane doesn't have it.

4. Do you like the red car? /

Do you like the red car?

Pauline adores mushrooms. /

Pauline adores mushrooms.

1.4 Global Comprehension

Global comprehension should also be tested. This should be done using pictures where feasible or paraphrase to check comprehension of sentences. An example where students

would see four pictures on their test paper for each oral stimulus:

- 1.4.1 Choose the picture which best represents the sentence you hear.

Stimulus: She's getting off the bus.

Responses: (pictures showing a lady

- a) getting on a bus
- b) getting off a bus
- c) sitting on a bus
- d) waiting for a bus with the bus approaching).

1.4.2 For sentences which are more difficult to test graphically, paraphrase or inference can be used. For example:

You will hear a sentence. Choose the sentence on your paper which best represents the situation.

1. Stimulus: Let's not stand on ceremony,

- Responses:
- a) I don't want to attend the event.
 - b) I prefer to sit.
 - c) I am asking you not to be formal.

2. Stimulus: If I had known it was your sandwich,
I wouldn't have eaten it.

- Responses: a) I ate the sandwich.
b) I don't want to eat the sandwich.
c) I knew it was your sandwich.
d) It wasn't your sandwich.

1.4.3 When students have learned to write, dictation can be used to test global comprehension. Oller (1970) showed that dictation is a good predictor of total score in foreign language proficiency.

2. EXPECTANCY

2.1 Redundancy

To test subjects' ability to handle the redundancy of a language, the material presented should contain reduced redundancy. This can be done by scrambling the acoustic cues.

2.1.1 A sample from English:

The following statements contain errors. In spite of the errors you should be able to understand what the speaker means. Circle the letter which corresponds to the answer which best expresses the meaning of the stimuli. (The stimuli would be presented orally. The words containing errors are underlined.)

1. a pigment of your imagination

- a) a hallucination
- b) a colour
- c) a part of the brain

2. Our minds are synchronasized.

- a) We disagree.
- b) Our minds are in tune.
- c) Our minds are different.
- d) We often argue.

3. You'd be an accessity after the fact.

- You'd be
- a) an innocent bystander.
 - b) an accomplice.
 - c) a victim.
 - d) the instigator.

2.1.2 Another technique is to omit or distort redundant elements and still expect understanding.

2.1.2.1 A sample on the level of the word: (The blanks indicate missing redundant words. Subjects would hear a noise in place of these words.)

Listen to the following passage and answer the questions which follow:

People fly (on) non-scheduled charters because (they 're) cheaper. (A) whole industry (has) grown (up) trying (to) (make) money out (of) (this) (desire). Toronto alone (has) about 180 companies matching passengers (to) planes. (And) (that) (does) not count regular (travel) agents. Last week I joined (the)

(ranks) (of) (the) cheap (trip)
 seekers. I (was) booked (on) (a)
 flight leaving Friday for London (and) (charged)
 \$130 (for) (a) one way (trip).
(That) included \$5 (for) membership (in)
(a) club (that) (I'd) never
 heard (of). (There) was (a) five
(and) (a) half hour wait (at)
 Toronto International (Airport) before our jet (took)
 off. But other (than) that, (the) flight
(to) (London) (was) uneventful. Getting
 back (was) not (so) easy.

1. Why do people like to take charter flights?
2. What did the speaker receive for his \$130?
3. What made his trip to London annoying?

2.1.2.2 An example of the same technique on the morphological level:

Listen to the following passage and answer the questions which follow it: (Subjects would hear a noise at the blank.)

On Monday I went to (an) office opposite Scot-
 land Yard and bought (a) charter flight ticket
 back to Toronto. This time nobody even mention(ed)
 a club member(ship). Instead of (a) ticket there

wa(s) a voucher and instruction(s) to report to
 (a) bus depot in north London. But on check(ing)
 in, we were told (the) flight had been cancell(ed).
 More than (a) hundred vacationer(s) and hopeful
 immigrant(s) to Canada were strand(ed). For some,
 it was their four(th) flight cancellation.

1. What did the reporter receive from the ticket agent for his money?
2. Where did the reporter go to check in?
3. Why were the travellers stranded?

2.1.2.3 An example on the phonological level:

Listen to the following passage and answer the questions which follow it.

/tu hɪ hæk - ʌksesfʊli In
 eni kʌnt_i ju - ʌst bi eɪb_ tu
 du - u - ɪz - trækt ə - enʃən
 ənd - t ʒə seɪm t - m
 - ənvɪns ʒə dr - vɪ æt ə
 glæns ʒə - j - u hɪ -
 In - end tu rɒb ɔr - ʒɪdɪ
 hɪ - tu fʊl - ɪ ʒ - ʒɪst
 rɪkwəɪ - ment ju m ʌs -
 - æv sʌm - ɔrk tu
 dɪstɪŋɡwɪ - ju æ -
 wɪk - - rɒm bl ʌʒ -

h a I _ r z 2 _ 3 r v I S m a n
 _ 3 r I n s t æ n s _ v d w e 2 r
 h i z j u n I _ 3 r m 2 s t _ d e n t
 h i z s k a r f I n _ 3 r 2 n
 _ ʌ n t r i æ n ʌ n _ I s t æ I k 2 4 1 I n _ I
 h e I S ʌ n ʌ v _ 3 r _ æ s 2 n æ l i t i w I I
 _ l s 2 v 2 r e s t _ d r 3 I _ r z 2 t e n s ʌ _ /

(To hitch-hike successfully in any country, you must be able to do two things: attract attention and at the same time convince the driver at a glance that you do not intend to rob or murder him. To fulfil the first requirement, you must have some mark to distinguish you at once from all other hikers. A serviceman, for instance, could wear his uniform, a student, his scarf. In a foreign country, an unmistakable indication of your own nationality will also arrest a driver's attention.)

1. What two things must the hitch-hiker do to be successful?
2. What should he wear?

2.2 Linguistic Context

2.2.1 One means of testing subjects' ability to expect certain utterances on the basis of a given linguistic context is a variation of the traditional question and answer technique. Subjects would hear the questions and choose the appropriate answer from those on his sheet. Each choice for the answer is grammatically correct and acceptable in itself, but only

one is appropriate in the given linguistic context. An example:

Choose the most appropriate answer to the question you will hear.

1. Where are you going?
 - a) In Toronto.
 - b) To Toronto.
 - c) From Toronto.
 - d) At Toronto.

2. Who's he taking to the game?
 - a) Mine.
 - b) His car.
 - c) His girlfriend.
 - d) A warm blanket.

3. Did you write to Tom?
 - a) I had a letter from him yesterday.
 - b) I'll write tomorrow.
 - c) Next week.
 - d) A letter.

4. What's new?
 - a) Not bad.
 - b) Same here.
 - c) Not much.
 - d) Same to you.

2.2.2 Completion is another useful technique for testing the ability to expect elements on the basis of awareness of contextual cues.

2.2.2.1 An example on the grammatical level:

Listen to the following sentences. The bell

indicates a missing element. Choose the appropriate element from those on your sheet to complete the sentence.

1. The spread in the use of the English language has been _____.

- a) remarkable
- b) remarkably
- c) remarkableness
- d) remark

2. Man has a _____ of ways of earning a living.

- a) various
- b) variety
- c) variously
- d) vary

3. Japan has a _____ climate.

- a) damp
- b) damply
- c) dampen
- d) dampness

4. Man _____ on nature.

- a) dependent
- b) dependently
- c) dependence
- d) depends

5. John has always _____ to bed early.

- a) go
- b) goes
- c) went
- d) gone

2.2.2.2 An example on the lexical level:

Listen to the following sentences. The blank indicates a missing element. Choose the appropriate element from those on your sheet to complete the sentence.

1. My husband's mother is my _____.
 - a) step-mother
 - b) adopted mother
 - c) mother-in-law
 - d) grand-mother

2. The street was _____.
 - a) tall
 - b) long
 - c) deep
 - d) thick

3. We watched a tennis match that was _____.
 - a) delicious
 - b) exciting
 - c) pretty
 - d) round

4. The book is _____.
 - a) chubby
 - b) plump
 - c) stout
 - d) fat

5. When someone has missed an error, he has _____.
 - a) looked through it
 - b) seen to it
 - c) overlooked it
 - d) foreseen it

2.2.3 Cliches and set expressions can be tested by completion. Again the stimuli would be presented orally with a bell indicating a missing element: An example:

Listen to the following expressions. A bell indicates a missing element. Write the word which is missing. (The student will only have blanks on his sheet.)

1. from day to (day)
2. talk a blue (streak)
3. the straw that (broke) the camel's back
4. (swim) like a fish
5. Where there's smoke there's (fire).

2.2.4 Completion is not a practical technique for testing expectancy on the phonological level. The following technique tests familiarity with the phonological patterns of the language, a prerequisite for successful anticipation of successive phonemes or substitution of missing phonemes. An example:

You will hear groups of nonsense words. Each group will be repeated. Choose the word which could not exist in English.

1. a) thwarp b) gdarp c) starp d) klarp
2. a) gleap b) dleap c) vleap d) fleap
3. a) tunge b) tund c) tunce d) tunve
4. a) rimpse b) rimpt c) rimpf d) rimth
5. a) spard b) slard c) skard d) sdard

2.3 Situational Context

2.3.1 A variation of the value judgement technique should be used to test skill in anticipating correctly what utterance might be made in a given situation. Knowledge of various registers of the language is required. An example:

Choose the utterance which would be most appropriate in the situation you hear:

1. A military sergeant might say to a private:
 - a) What's with you?
 - b) What deficiency is affecting you?
 - c) What's the matter with you?

2. The minister's secretary might explain to the minister that a parishioner did not keep his appointment by saying:
 - a) He didn't show.
 - b) He didn't come.
 - c) He did not grace us with his company.

3. A teenager might say to another teenager:
 - a) Don't yield to the pressures of hypertension.
 - b) Keep your cool.
 - c) Remain calm.

3. MEMORY

3.1 Echoic Memory

Shadowing is a common technique for measuring competence of echoic memory. An example:

You will hear a passage in English spoken at normal speed. Repeat it as you hear it. There will be no pause in the recording other than natural breaks. Therefore, you should begin repeating as soon as you hear the message. Listen and repeat.

"Many young people, particularly couples with young children want to own their own detached house. But an increasing number of people are deciding to rent. Some people simply can't afford a house, but many others are beginning to realize the advantages of an apartment. They are embracing apartment life for the freedom it offers them from the burdens of owning a house."

The recognition technique discussed above with reference to intonation patterns of the language also tests echoic memory.

3.2 Active Verbal Memory

Active verbal memory may be trained by having students reproduce longer and longer chunks of contextualized material. It should be possible to establish levels of competence of active verbal memory which could be used for testing foreign language competence. For instance:

Part A (Level 1)

Repeat the following sentences:

1. She adores ice cream.
2. The man is walking home.
3. John is watching TV.
4. Would you like coffee?
5. Please pass the salt.

Part B (Level 2)

1. She adores the man with brown eyes.
2. The man with red hair is walking home.
3. John watches his favourite television program on Friday nights.
4. Would you like cream and sugar in your coffee?
5. Please pass the book on the desk.

Part C (Level 3)

1. She adores the man with brown eyes standing on the corner.
2. The man with red hair carrying a brief case is walking home.
3. John watches his favourite television program with his friends on Friday nights.
4. Would you like cream and a few lumps of sugar in your coffee?
5. Please pass the book under the dictionary on the desk.

Part D (Level 4)

1. She adores the man with brown eyes standing on the corner and would like to meet him.
2. The man with red hair carrying a brief case is walking home instead of driving his car.
3. John watches his favourite television program with his friends on Friday nights whenever he can.
4. Would you like cream and a few lumps of sugar in your coffee or do you prefer it black?
5. Please pass the dish of vegetables in front of you and help yourself.

4. VARIETY OF LANGUAGE

The number of dialects or registers to be tested depends on the purposes and level of the test. At an advanced level a subject might be expected to handle and understand several dialects and registers. Samples typical

of each register should be chosen and used for testing listening comprehension. If it were found that samples of these varieties were not significantly different, some would be eliminated. For example, for a test directed at university students in the faculty of science, samples of speech would be chosen from the following:

<u>Role relations:</u> professor-student	<u>Topics:</u> biology
student-student	plans for the evening
buyer-seller	sports
	current events
<u>Domains:</u> playground and street	<u>Style:</u> formal
school	informal
press	colloquial

5. DECODING

To test the global process of decoding, the often used passage comprehension technique is appropriate. An example:

Listen to the following passage:

Pots and pans were once considered to be precious possessions. In the fourteenth century, during the reign of Edward III of England, the pieces of cookware--iron pots, griddles, spits and frying pans--were numbered among the king's jewels. They were difficult to come by and, being rare, were extremely valuable; when the monarch went on a journey or

made a visit, the pots and pans traveled along in a separate coach.

By the time Henry V, Edward's grandson, ascended the throne in the following century, the royal frying pans were made of silver, and so were the roasting spits.

The kettles at Westminster during the early sixteenth century, when Henry VIII held the throne, were "copper-gilt" and quite lavishly decorated with chasing. The handles of the cooking ladles were chased with the royal arms, and one of the two-pronged toasting forks is known to have been tipped with an ornate metal ball.

Answer the following questions: (The questions are written on a sheet which the students do not see until after the paragraph has been presented.)

1. In the fourteenth century, pots and pans were made of
 - a) iron.
 - b) silver.
 - c) precious jewels.
 - d) bronze.

2. During the reign of Edward III, cookware was valuable because it was so
 - a) delicate.
 - b) useful.
 - c) rare.
 - d) ornate.

3. Whenever Edward III traveled, his pots and pans were
 - a) locked up until his return.
 - b) taken along on the trip.
 - c) replaced with new cookware.
 - d) used in the castle.

4. Decorations on sixteenth century cookware included
 - a) metal balls.
 - b) elaborate engraved designs.
 - c) the king's coat of arms.
 - d) all of the above.

Such passages should be presented under optimum physical conditions and also in the presence of natural background noise. Tapes should be prepared with the background noise carefully regulated at three different levels or more: softer than the message; as loud as the message; and louder than the message. Three types of background noise would be used:

- a) harmonious music
- b) street-type noise (sounds of traffic or machinery)
- c) other conversations which might distract the listener's attention.

Experimentation still has to be done with the suggested techniques to see if they are workable and to establish valid levels of ability in each of the factors involved in listening comprehension.

CONCLUSIONS

1. Conclusions: Listening Comprehension

1.1 Listening comprehension is a necessary skill for the foreign language learner. There appears to be more to listening comprehension, however, than mastering the production of the syntax, morphology, phonology and basic vocabulary of a language.

1.2 Comprehension is easy if the acoustic cues are clear; it is a matter of sorting them out correctly and identifying them. If the acoustic cues are not clear, the task is more difficult.

1.3 The study of speech perception in the native speaker yields interesting information about second language comprehension. For the native speaker, listening comprehension is a smooth operation. When the message is ambiguous, however, the operation is not so smooth and we can have some idea of how the process works. It seems the native speaker attends the acoustic cues, stores previous cues and, based on context, linguistic and sometimes situational, builds up a certain hypothesis as to the content of the signal. If the acoustic cues are not clear, or if some element is unexpected, he will refer to the cues he has stored and reanalyse and rehypothese.

1.4 The second language learner often has trouble sorting out the acoustic cues, even if they are clear, and will therefore have to rely more often on his auditory memory and refer to context. If the missing element is redundant and the listener knows it, he will not be distracted by its absence.

2. Conclusions for Course Construction

2.1 The foreign language learner often has trouble in perceiving and segmenting the acoustic cues. Therefore, he should be given training and practice in global comprehension. There is a place for auditory discrimination training and testing, but it should always be in linguistic context at least on the word level.

2.2 The memory should be trained so that the second language learner has stored cues to refer to for testing hypotheses and reformulating them if necessary.

2.3 The foreign language student should be trained to anticipate succeeding elements. As part of the training in expectancy for successive elements, instruction and practice in making use of clues from the linguistic and situational context should be included. Students should learn not to be distracted by missing elements if they are redundant.

Foreign language learners should be exposed to stimuli where the acoustic cues are not clear, where there is natural noise--background noise and interrupting noise which completely blocks out parts of the signal.

2.4 Thought should be given to the choice of register and dialect to be taught when any course is being planned. One dialect, probably the local one, and one register, probably a formal one will be taught at the beginning, but students should be systematically exposed to other dialects and registers for listening comprehension. The number and kinds of other varieties will depend on the purpose and level of the course.

2.5 Consideration should also be given to the manner of presentation of listening comprehension material. The manner of presentation will depend on the purpose and level of the course, whether it be to understand telephone conversations, movie sound tracks or only face-to-face communications. If the goal is the understanding of movie sound tracks, then the students should be systematically exposed to this type of material presented within the band width frequency of normal movies. In the past, second language teaching methods have probably been too ambitious in setting the goals for listening comprehension. On the other hand, great care has been taken to produce high fidelity, almost flawless recordings

for listening comprehension tests. We rarely find perfect conditions in normal communication situations. Some listening tapes should be made with natural background noise. There should be two sets of tapes for a basic course: one set with background noise for listening training and another high fidelity set for pronunciation training.

3. Areas for Further Research

3.1 More research must be done by physiologists and psycholinguists on how the listening comprehension process works, but this does not really matter for teaching. The end result is the main goal.

3.2 Researchers might suggest other ways of helping students segment the acoustic cues. Often the second language listener is led astray by misgrouping the elements of a stream of speech and persists in his error to the point of missing the whole message of the signal.

3.3 The research to date on echoic memory is mainly theoretical. Although it is generally agreed that echoic memory lasts only one second, it must also be recognized that echoic memory must persist long enough to enable intonation perception. Thus, the basis for the distinction between active verbal memory and echoic memory has not been firmly established. Further experimentation must be con-

ducted to see how echoic memory works.

3.4 There is a need for further research on second language memory. Auditory memory is more important for the second language learner than for the native speaker of a language. Ways of training auditory memory need to be investigated and tried.

3.5 The area of register still needs much investigation in English, as well as in other languages. Those of English need to be defined. It is also necessary to define the role relations which cause significant differences of register. Thus, students can be trained systematically in the usage of different registers of the language.

3.6 Experiments should be done with natural noise as background in testing situations, so that definite levels of and types of noise could be used as criteria in assessing students' listening comprehension ability.

3.7 Experiments should be carried out to test the suggestions offered in this paper to see if such training does in fact improve listening comprehension. Tests should be constructed and validated using the suggested techniques to attempt to establish levels of ability in each of the components of listening comprehension and hence of ability in listening comprehension as a whole.

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ABSTRACT

In order to construct an adequate second language test for listening comprehension, a complete componential analysis of listening must be made. The following components of listening comprehension are proposed, based on a study of literature on speech perception in native speakers: perception of acoustic cues; expectancy for successive elements; auditory memory; variety of language; and decoding.

Two types of implications result from this study:

1) implications for course construction, and 2) implications for testing. The above features indicate what areas should be stressed in second language aural comprehension course material. Testing second language listening comprehension should consist of the combined sub-tests for each component. Test samples of each component are provided to indicate the form which a test would take for testing listening comprehension in English as a second language. The ideas, however, are applicable to second language testing in general.