The effects of three different levels of word rate on the listening comprehension of third-quarter university Spanish students

Rader, Karen Elizabeth, Ph.D.
The Ohio State University, 1990

Copyright ©1990 by Rader, Karen Elizabeth. All rights reserved.
THE EFFECTS OF THREE DIFFERENT LEVELS OF WORD RATE ON THE
LISTENING COMPREHENSION OF THIRD-QUARTER UNIVERSITY SPANISH STUDENTS

DISSERTATION

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

By

Karen E. Rader, BS.Ed., M.A.

* * * * *

The Ohio State University

1990

Dissertation Committee:
Gilbert A. Jarvis
Charles R. Hancock
Donna Reseigh Long

Approved by
Adviser
College of Education
This dissertation is dedicated to my husband, Christopher J. Ritz, who exemplifies the joy of learning through his enthusiasm for life.
ACKNOWLEDGEMENTS

It is with greatest respect and sincerest gratitude that I acknowledge the following people:

To my advisor, Gilbert Jarvis, for his instruction at an academic level, advice at a professional level, and guidance throughout this most challenging endeavor.

To Charles Hancock, for his exemplary professionalism in the field with both researchers and practitioners.

To Donna Reseigh Long, for her assistance in a supervisory capacity in the Department of Spanish and Portuguese.

To my colleagues, Mauricio Cabrera and Barb Schmidt-Rinehart, who competently assisted in scoring recall protocols.

To Todd Harvey, who contributed endless hours to digitally expanding the tapes used in my study.

To all of my colleagues in the Department of Spanish and Portuguese—Mauricio Cabrera, Luis Hermosilla, Conchita Lagunas, Cristina Bruch, Roberto Perry, and Oscar Carvallo—who contributed their time and expertise in formulating the materials for my study.

To my colleagues, Gabrielle Fry Chesneau and Donna Sandage Swanson, for their friendship and eagerness to contribute their assistance as we progressed through our program.

To my parents, Lynn and Arline Rader, whose steadfast advocacy of education helped foster my academic pursuits.

To Harry and Frances Ritz, whose interest in my research demonstrated their desire for my success.

iii
To all of the members of my family, who unconditionally supported my academic endeavors with faith and confidence.

Finally, to my husband Christopher, for his willingness to share in my experiences, his unfailing optimism and encouragement, and his wonderful sense of humor.
VITA

August 30, 1957.............. Born - Elyria, Ohio

1977......................... A.A. Lorain County Community College, Elyria, Ohio

1979......................... BS.Ed., Bowling Green State University, Bowling Green, Ohio

1979-1980.................... Teacher of Spanish, Keystone High School, LaGrange, Ohio

1980-1982.................... Graduate Teaching Assistant, Dept. of Romance Languages, Bowling Green State University

1982......................... M.A., Bowling Green State University, Bowling Green, Ohio

1982-1986.................... Teacher of Spanish, Midview High School, Grafton, Ohio

1986-1988.................... Academic Adviser, G.A., University College, The Ohio State University

1988-1990.................... Graduate Teaching Assistant, The Department of Spanish and Portuguese, The Ohio State University

1989-1990.................... Assistant Supervisor, The Department of Spanish and Portuguese, The Ohio State University

FIELDS OF STUDY

Major Field: Education

Studies in Educational Psychology, Research Design and Testing, and Educational Statistics. Professor Gilbert A. Jarvis


Materials Development. Professor Charles R. Hancock

Satellite Area: Teacher Supervision. Professor John C. Daresh
TABLE OF CONTENTS

DEDICATION ...................................................... ii
ACKNOWLEDGEMENTS ................................................iii
VITA ........................................................................ v
LIST OF TABLES .................................................. ix
LIST OF FIGURES ................................................. x

CHAPTER

I. THE PROBLEM.......................................................... 1
   Introduction to the Problem ............................ 1
   Statement of the Problem .............................. 11
   Significance of the Study ............................ 13
   Purpose of the Study ................................... 19
   Theoretical Bases ........................................ 20
   Schema Theories ......................................... 20
   Definition of the Terms ............................... 21
   Assumptions................................................ 22
   Limitations of the Study ............................. 23

II. REVIEW OF RELATED LITERATURE ......................... 25
   Introduction ............................................... 25
   Other Factors Related to Comprehension .......... 39
   Rate of Speech Research ............................. 43
   Time-Compressed Speech in L1 and L2 .......... 47
   Time-Expanded Speech ............................... 57
   Relationship Between Listening and Reading Comprehension .. 63

III. PROCEDURES ..................................................... 67
   Population and Sample ............................... 67
   Research Design ......................................... 68
   Explanation of the Variables ...................... 69
   The Texts .................................................. 69
   Background Knowledge Tests .................... 74
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate of Speech</td>
<td>76</td>
</tr>
<tr>
<td>Speech Expansion</td>
<td>83</td>
</tr>
<tr>
<td>Recall Protocol Scoring Instrument</td>
<td>84</td>
</tr>
<tr>
<td>The Johnson System</td>
<td>85</td>
</tr>
<tr>
<td>Data Collection</td>
<td>87</td>
</tr>
<tr>
<td>Scoring of Recalls</td>
<td>90</td>
</tr>
<tr>
<td>Pilot Study</td>
<td>90</td>
</tr>
<tr>
<td>Data Analysis</td>
<td>91</td>
</tr>
<tr>
<td>Summary of Null Hypotheses</td>
<td>92</td>
</tr>
</tbody>
</table>

IV. RESULTS AND DISCUSSION ........................................................................... 93

Introduction                                                              | 93   |
Data Analysis                                                            | 94   |
Descriptive Data on the Immediate-Recall Protocols                         | 98   |
El Pato Recall Protocols                                                 | 100  |
La Catedral Subterránea Recall Protocols                                  | 102  |
El Camaronero Recall Protocols                                            | 104  |
Background Knowledge                                                     | 105  |
Conclusions                                                              | 107  |

V. SUMMARY AND RECOMMENDATIONS ................................................................ 110

Summary of Findings                                                      | 110  |
Limitations of the Study                                                 | 118  |
Recommendations for Further Research                                     | 117  |
Implications of the Study                                                | 121  |
  Theoretical Implications                                               | 121  |
  Pedagogical Implications                                               | 121  |

APPENDICES

A. Experimental Listening Passages                                      | 123  |
B. Percentages of Unfamiliar Vocabulary in Experimental Passages        | 127  |
C. Background Knowledge Tests                                            | 129  |
D. Post-Listening Questionnaire                                          | 134  |
E. Instructions to Subjects                                             | 136  |
F. Passage Subunits                                                      | 138  |
G. El Pato Text's Scoring Template                                       | 143  |
LIST OF FIGURES

Figures                                      Page

1. Model of an Autonomous Comprehension System.............. 31

2. Recall Score Means for All Texts By Word Rates................................. 96

3. Recall Score Means for All Word Rates By Texts................................. 97
# LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Design Layout of the Between-Within ANOVA</td>
<td>70</td>
</tr>
<tr>
<td>2</td>
<td>Test Performance of Expert and Naive Groups</td>
<td>77</td>
</tr>
<tr>
<td></td>
<td>As Demonstrated by Mean Scores: El Pato</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Test Performance of Expert and Naive Groups</td>
<td>77</td>
</tr>
<tr>
<td></td>
<td>As Demonstrated by Mean Scores: Catedral Subterránea</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Test Performance of Expert and Naive Groups</td>
<td>77</td>
</tr>
<tr>
<td></td>
<td>As Demonstrated by Mean Scores: Camaronero</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Words Per Minute and Text Time According to Expansion Rates</td>
<td>79</td>
</tr>
<tr>
<td>6</td>
<td>Observed Group Means and Standard Deviations of Treatment Groups</td>
<td>96</td>
</tr>
<tr>
<td>7</td>
<td>Total Pausal Units Recalled by Text and Word Rate</td>
<td>99</td>
</tr>
<tr>
<td>8</td>
<td>Frequency of Recall of Pausal Units by Textual Location</td>
<td>100</td>
</tr>
<tr>
<td>9</td>
<td>Analysis of Variance for Recall by Text and Word Rate</td>
<td>158</td>
</tr>
<tr>
<td>10</td>
<td>Tukey’s Studentized Range (HSD) Test</td>
<td>160</td>
</tr>
</tbody>
</table>
CHAPTER I
THE PROBLEM

Introduction to the Problem

Listening comprehension, long recognized as the "most underestimated aspect of foreign language" (Belasco, 1965, p. 491) and the "least understood of the four language skills" (Pimsleur, 1977, p. 27), has only recently been recognized as "an end in itself" (Meyer, 1984, p. 343). Foreign language researchers (Asher, 1969; Rivers, 1966), for many years, considered the skill of listening to be active, not passive, and encouraged its development as an independent, vital skill. Rivers (1981), who considered listening a "creative skill" (p. 160), estimated that, in the communicative aspect of listening, adults spend 40-50% of their time listening versus 20-30% speaking, 11-16% reading, and 9% writing.

One fundamental component of listening comprehension that has been neglected in L2 research is that of word rate or, more specifically, the effect of word rate on the listening comprehension of L2 language learners. Rivers (1968), even in the 1960s, advocated practice and training in the area of listening comprehension and suggested that utterances for listening comprehension practice be presented at a normal rate of speed even
at the beginning of instruction. Normal rate of speed, however, referred to a slower rate, adapted for a language learner. This slower rate of presentation, nonetheless, would still appear natural in that a native language listener would not find the speech to be cumbersome or awkward. More importance would be placed on pauses and the length of speech segments than phonation rate.

The slower rate of presentation supported by Rivers is evident in listening materials that supplement language programs and textbook materials. In a random sample of major foreign language textbook publishers' classroom language tapes that included both monologues and dialogues, Rader (unpublished research) found that language listening activities, designed for use by three levels of beginning Spanish learners, varied inconsistently in the average word rate of presentation and, overall, registered at the "slow" end of standard speech rates (below 130 words per minute) as determined by Pimsleur et al (1977). This tendency indicated that speech rate, though slow in regard to standard speech rate, was not specifically controlled for on any consistent basis. Rate of speech ranged between 102 words per minute (WPM) in a dialogue at the lowest beginning level to 150 WPM in a letter at the highest beginning level; average speech rate is 160 to 190 WPM. What this indicated is that, while contrived educational listening activities do adhere to a slower rate of presentation—as condoned by Rivers—there is an absence of a systematic approach to reducing speech rate as well as a
lack of an empirical basis to justify a certain speech rate with
listening activities for pedagogical purposes.

Most research in L1 studies investigate word rate in the
realm of speech compression and its effect on listening
comprehension while its alternative, speech expansion, has not
been explored at such great length. Olsen (1984) noted the small
amount of research in speech expansion that focuses on general
educational purposes and explained that this absence of speech
expansion occurs because the predominant goal in education is to
minimize the amount of time needed to learn information. She
surmised, however, that if the material to be presented is of a
complex or highly technical nature, then decelerated speech might
allow extra processing time in which the learner could acquire the
more difficult information. She warned, though, that a slowed
rate may increase boredom and fatigue in the learner as well as
cause pitch distortion that occurs when speech is mechanically
expanded. Speech expansion equipment tends to lower speech pitch
and, although manufacturers claim that pitch distortion does not
prohibit comprehensibility or intelligibility, Olsen cautioned
that researchers must still account for any effects of distortion
on comprehension.

Speech expansion, when it is studied, generally includes
populations of disabled (Flowers, 1974; McCroskey & Thompson,
1973; Nicholas & Brookshire, 1986; Teach, 1978) or elderly
subjects (Altshuler, 1965; Schmitt, 1983; Schon, 1968) or is
employed by law enforcement officials who use it in instances
where hysterical phone calls or hard to understand foreign speech is recorded by a dispatcher (The Talk of The Town, 1978; as cited in Olson, 1984). Many researchers (Flaherty, 1975, 1979; Foulke, 1968; Friedman & Johnson, 1971a), though, speculated that speech expansion has its place in foreign language study and hypothesized that the expansion of speech (i.e., the slowing down of speech rate) would significantly affect listening comprehension. Several researchers (Flaherty, 1975; Friedman & Johnson, 1971b; Jarvis, 1972), in fact, contended that a foreign language learner listening to native speech is in a similar situation to a person listening to compressed speech in his or her L1. Ausubel (1964) is another who recommended that speech rate be slowed for beginning learners if it is incomprehensible at a normal rate of speech, and some foreign language researchers (Chastain, 1971; Collins, 1972; Jarvis, 1970; as cited in Flaherty, 1975) challenged the use of a normal rate of speech with foreign language learners. The extant data does, indeed, support such hypotheses (Flaherty, 1975; Huberman & Medish, 1974). Olsen (1984) contended that slower speech allows more processing time and may allow the learner more time to fully process information. Another advantage of slowed speech is phonological. Kelch (1985) hypothesized that a slower rate of speech, as demonstrated in foreigner talk to nonnative speakers, results in improved phonological features including "...clearer articulation, fewer vowel reductions and more easily identifiable word boundaries" (p. 88) which, in turn, increase listener perception and language
processing. Chaudron (1985) cited Dahl's (1981) research that investigated the relationship between speech rate and comprehensibility of the message; Dahl too, concluded that other factors beyond word rate (e.g., clarity, succinctness of the message) may affect subjects' perception of the speech rate. Prosodic features (e.g., intonation, stress, pausation, enunciation), on the other hand, may affect listening comprehension simultaneously with variable speech rate and confound measures of word rate.

Listening materials that are generally available today in foreign language classrooms consist of contrived narrations, dialogues, and exercises that provide listening practice for the purpose of practicing lexical and syntactical structures. Swaffar (1985) noted that materials generated for the classroom "...do not reflect communicative goals because theirs is a pseudo intent to teach language per se rather than to communicate language" (p. 17). Contrived classroom materials, consequently, are not comprised of authentic speech elements such as repetition, redundancy, discourse markers, and cultural richness. Such instructional materials have been criticized, too, because of the "equal" pacing and lack of redundancy normally found in spontaneous discourse (Flaherty, 1975; James, 1984). Flaherty (1979) concluded that, for several reasons, listening to contrived materials may be more difficult for students to comprehend than previously realized. She pointed out that Carroll (1964) found that redundancy is estimated at 50% in normal conversation and
provides time for the listener—whether native or foreign—to process the message adequately. One shortcoming, then, of contrived listening materials may be a lack of redundancy in speech. Another difficulty in the comprehension of deliberately constructed and recorded materials may stem from a lack of pauses in speech. Rivers (1972, 1981) and Pimsleur et al (1977) emphasized the necessity of pauses in speech. The latter conjectured that temporal pauses at syntactical breaks in discourse facilitate processing more effectively than a slowed rate of speech and findings by Johnson and Friedman (1971) and Friedman and Johnson (1971a) support the facilitative affect of temporal spacing in both sentences and connected discourse on the listening comprehension of L2 subjects. Rivers (1981) posited that length of segments spoken and length of pauses between the segments facilitate comprehension more than speech rate; fast and slow speakers differ more in the pauses they allow in speech than in rate of speech. Pauses allow the learner time to process incoming information; a lack of pauses may cause cognitive overload. Contrived materials tend to eliminate natural pauses—manifested in speech by repetition and hesitations—which complicates listening for the learner.

The alternative to language laboratory tapes, of course, is exposure to native discourse as found on radio broadcasts, television newscasts, or native interaction in natural settings. This type of exposure for L2 learners is criticized sometimes because of the rapid rate of speech, uncontrolled vocabulary, and
grammar and cultural information unfamiliar to the learner. One of the well-known perceptions among L2 learners and teachers is that native speech is too rapid for comprehension (Chamot, 1977; Godfrey, 1977; Pimsleur et al 1977) and, although the actual number of words per minute may not exceed the amount of words per minute in a similar aural text in the learner's native language (Hafernik & Surguine, 1979; Knorre & Dorwick, 1989), the learner may lack the necessary abilities to fully comprehend native aural discourse. Johnson and Friedman (1969) and Foulke (1968; and personal correspondence, 1989) noted that—among foreign language learners and teachers—a perception exists that a foreign language, spoken at a natural rate of speed, will be "too fast" and, consequently, incomprehensible. Harvey (1984) noted that some L2 learners experience the feeling of being "lost" when listening to natural-speed recordings in language laboratories. This experience should not necessarily be equated with real world listening exposure in which a learner experiences listening in a different context. The focus here is on language learner classroom exposure to listening. Some foreign language educators, on the other hand, denounce the deceleration of speech because the listener, in a natural setting, is not at liberty to choose the rate of speech presented. They contend that it is the learner's responsibility to adjust to native speaker rate of speech (Flaherty, 1975). Jarvis (1970), however, refuted such inflexibility on the use of a normal rate of speech because, pedagogically, simplifying tasks in the early stages of learning
is acceptable and does not "delimit[s] or vitiate[s] the terminal behavior" (p. 93). Flaherty (1975) considered such insistence to "confound end and means" (p. 13) because the desired goal and the process of reaching that goal are not distinguished from one another. Olsen (1982) pointed out that foreign language students do not control the speed of classroom or language laboratory listening tapes and this may hold back a more capable student willing to be challenged by a faster pace. She also suggested that, by utilizing a speech expander, a learner is allowed more processing time, which prevents cognitive overload.

Again, one has only to peruse the existing listening materials commonly employed in foreign language classrooms today to see that, although improved upon over the years, they still lack authenticity in regard to speech rate. If the average speech rate, as documented by Pimsleur et al (1977) and Rivers (1981), is between 160 and 190 WPM, and the majority of educational listening materials register at the slow rate of speech (below 130 WPM), then the tapes neglect a component of listening comprehension fundamental to a foreign language learner's eventual ability to understand authentic aural discourse.

Rate alteration in the past was rejected because of unnatural speech distortion caused by deceleration on the part of the speaker or by mechanical playback at a slower speech rate than originally recorded. The most successful means to manipulate word rate in recent times is through electromechanical devices that can alter rate of speech without distortion (Harvey, 1984).
Acceleration of speech is achieved through time-compression which entails the discarding of minute segments of the recording. The deceleration of speech is achieved through speech expansion by either adding a small segment of speech repeated and reinserted in a digital tape or by isolating a sample of sound and stretching that sound via the use of digital tape on a computer. (T. Harvey, personal communication, January 1990).

Foreign language educators agree that the ultimate goal for a L2 learner is comprehension of native discourse. Most of those educators agree that even beginning learners should be exposed to authentic oral texts for several reasons (Belasco, 1981; Gilman & Moody, 1984; Meyer, 1984; Rivers, 1981; Stevick, 1984). Belasco (1981), for example, admonished that one must be trained to listen at a particular level if one expects to comprehend a L2 at a particular level. Purpose for listening, too, must be taken into consideration as a variable. Rivers (1981) calls for the use of authentic materials from the very beginning of language instruction. She stated:

"Teaching students to comprehend artificial language combinations which would rarely be heard from a native speaker is a waste of time and energy, and can only confuse the student when later confronted with natural speech. Natural speech can be brought into the classroom in the form of recorded conversations of a spontaneous nature with native speakers, if native speakers themselves are not available to help" (p. 168).

James (1984), however, pointed out the lack of availability of authentic texts to the classroom teacher. Even short-wave radio broadcasts, available at a reasonable cost with the mechanics to
tape-record via a cassette player within a short-wave radio, are not always clear because of poor reception and constant fading of channels. Without exposure to authentic discourse, however, it may not be feasible to expect students to achieve the goal of comprehending extended native speech. A learner who is only exposed to contrived listening laboratory exercises or to classroom language for instructional purposes is at a disadvantage when confronted with native speaker speech. Availability of videos varies, depending on both teacher and/or school resources; some videos are contrived for the purpose of introducing specific lexicon or syntactical features. A number of "teacher talk" studies (Dahl, 1981; Hatch, 1983; Steyaert, 1977; as cited in Chaudron, 1985) document a slowed and/or simplified speech delivered to L2 learners. Chaudron determined from those studies that the average rate of speech directed to beginning learners of English as a Second Language (ESL) was approximately 100 WPM while speech delivered to intermediate or advanced learners was approximately 130 to 140 WPM. He cautioned against generalizing these findings, however, because of the few studies conducted or lack of statistical evaluation.

One may question to what extent a language student can be expected to comprehend a foreign language spoken at a normal rate of speed if he or she has been exposed only to contrived listening laboratory exercises or to classroom language for instructional purposes. Byrnes (1984) cited that oral language occurs in four modes: spontaneous free speech, deliberate free speech, oral
presentation of a written text, and oral presentation of a fixed rehearsed script. She also added that a listener must listen to a stream of speech, as it is received, at the rate delivered. More likely than not, the listener does not control the events during the situation. Weissenrieder (1987) noted that the register of classroom language is very different from the register of a newscast, which causes special comprehension difficulties for the listener. They, too, are contrived or artificial in that they are created with the purpose of time economy.

Statement of the Problem

Data-based studies investigating the effect of speech expansion on listening comprehension are primarily limited to first-language studies, most of which examine special populations such as the disabled (Flowers, 1974; McCroskey & Thompson, 1973; Nicholas & Brookshire, 1986; among others) or the elderly (Altshuler, 1965; Schmitt, 1983; among others). Flaherty (1975) is one of the few researchers who investigated the effect of time expansion on the listening comprehension of foreign language learners; she found a significant difference in favor of speech expansion at the 135% expansion level. The dearth of research findings exploring the effects of word rate via speech expansion, however, do not answer the question of whether or not listening comprehension of foreign language learners is facilitated by a slower speech rate. The principal focus of this investigation, therefore, will be the following empirical question:
What is the effect of varying levels of word rate on the recall of three aural texts by third-quarter university Spanish students?

There is also a lack of research investigating foreign language learner listening comprehension of authentic aural texts. Although there is a call for the utilization of authentic materials in instruction (Rivers, 1981; Swaffar, 1985), most research studying the effects of their use are limited to reading research. The question remains, then, of whether or not it is feasible to incorporate extended native aural discourse in the L2 classroom to facilitate development of listening comprehension. If it is feasible, how is that aural discourse best presented to maximize exposure to native speech? One little explored possibility is through speech expansion. Again, so few studies have been conducted to investigate rate of speech that one can only hypothesize its effect on the comprehension of extended native aural discourse. The study will consider:

What is the effect of exposure to authentic aural discourse on the listening comprehension of third-quarter university Spanish students?

Finally, the effect of background knowledge on the listening comprehension of foreign language learners is rarely considered empirically in L2 research. This variable, in fact, was not acknowledged in any of the previous L2 studies investigating the effect of time compression or expansion on listening comprehension. The question remains, then:

What is the effect of background knowledge on the listening comprehension of native aural texts?
Several researchers (Flaherty, 1975, 1979; Foulke, 1968; Friedman & Johnson, 1971a; Harvey, 1984) have suggested the investigation of word rate, and the effect of speech expansion in specific, on listening comprehension, but few have pursued it. The need is evident, then, within the realm of foreign language research, to investigate the effects of speech rate on L2 learners' listening comprehension. The variable of time-expanded speech will be introduced to establish base-line data in the study of listening comprehension in a foreign language.

Significance of the Study

Friedman and Johnson (1971a) suggested that speech expansion deserved empirical attention as an information medium in listening—for the purpose of comprehension—in a foreign language. They proposed that rate-controlled speech is a viable research tool to identify priorities in the selectivity of a listener's perception through investigation of the nature and timing of responses to rate-controlled speech. Sticht (1972) contended that the utilization of speech compression and expansion was in need of investigation "...to further explicate the basic perceptual and cognitive processes involved in learning by listening" (p. 309) with a greater focus on the technique's usefulness for investigating the fundamental processes involved in listening comprehension. He argued that manipulating speech rate was one means to investigate listening processes, an otherwise unobservable process due to its internal, invisible nature. By investigating how beginning L2 learners listen to authentic
speech, foreign language educators can better articulate instructional materials prepared to develop listening comprehension. If one can observe lexical, syntactical, and phonemic features that are recalled at differing rates of speech, one can potentially explain how a listener listens and what features of speech are attended to, overlooked, avoided, or not comprehended. Harvey (1984) also advocated the use of rate-alteration technology in the L2 curriculum to enhance listening performance. He proposed the utilization of a speech compressor/expander by a teacher or learner to alter the original tape.

It is hypothesized that, if an authentic aural text can be expanded (i.e., slowed down) so that comprehension is facilitated, the learner will purposively be exposed to native speech. Realistically, with training and experience, the learner will eventually be able to manage a normal rate of speech. The beginning learner should not be denied the opportunity of exposure to extended native speech simply because the word rate is too accelerated for the learner's ability level. Manipulation of speech rate is one means by which listening comprehension can be investigated. The contention here, then, is that it is more feasible to slow down an extended authentic aural text to allow the learner to develop comprehension of native speech gradually than to deny the learner of exposure to native aural discourse or expose the learner to a normal rate of speech that is too frustrating and, ultimately, incomprehensible. The effect of word
rate, via speech expansion, on the listening comprehension of beginning language learners, must be investigated because speech rate is a fundamental listening comprehension variable little explored in second language acquisition.

Because the end goal of listening comprehension of a L2 learner is to comprehend authentic extended aural discourse, one must examine the processes involved in that listening comprehension behavior and the extent to which beginning L2 learners can benefit from exposure to native aural discourse. Again, very few empirical studies investigate L2 listening comprehension or support the utilization of particular listening materials in the foreign language classroom/language laboratory. Fewer yet investigate the feasibility of employing authentic aural discourse at the beginning level, which is surprising given the thrust of the current communicative language teaching emphasis and the focus on authentic materials in the classroom.

The recent trend toward comprehension-based approaches (Asher, 1982; Nord, 1981; Postovsky, 1981; Terrell, 1982; Winitz & Reeds, 1975) lends support to the emphasis on listening comprehension; a lack of empirical data supporting listening comprehension approaches in the foreign language classroom or the dubious nature of existing research methodologies, however, leads one to question the viability of purported methods employed by foreign language educators. Despite the recent interest in listening comprehension and the prevalence of methodologies, instructional techniques, and proposed hierarchies of listening
comprehension, there is a considerable lack of empirical research in both L1 and L2 that investigates listening comprehension.

Long (1989), in a review of literature from 1970-1987, found that only approximately 20% of the 302 journal articles published reported L2 listening research; the vast majority described instructional techniques. She also reported that, in L1 listening research during that same period of time, the majority (53%) of 681 articles published were listening research articles. Fewer instructional articles existed. This is not to say that L1 listening research is substantial. Anderson (1966) noted the paucity of listening research compared to reading research in L1 at that time and attributed this deficiency to the multitude of unanswered questions pertaining to the teaching of listening. Pisoni and Luce (1987), more recently, acknowledged that little evidence exists even today that explains "...how the human listener converts the continuously varying speech waveform into discrete linguistic units and how these units are employed to extract the linguistic message intended by the talker" (p. 23).

Much of what is acknowledged about listening has been extrapolated from the knowledge base on reading. Research purely examining the processes involved in listening comprehension are few in both L1 and L2; most listening comprehension research piggybacks reading research under the assumption that reading and listening processes are identical. Rubin (1980) pointed out that one view of the receptive skills is that the process of language comprehension via these two modalities is essentially the same. Those espousing
this view basically posit that "reading comprehension = oral comprehension + decoding" (p. 411). An alternative view, continued Rubin, is that the processes share some important subparts but still differ in significant ways. He categorized the differences between reading and listening into medium- and message-related dimensions. His main criticism of existing research is that it is limited in scope; most research examines the effects of a change in modality on comprehension. This dearth of empirical evidence reflects the status of listening comprehension in the foreign language classroom. Most instruction, because of a lack of scientific knowledge in the field, is based on assumptions or craft knowledge rather than scientifically grounded evidence (Friedman, 1986; Jarvis, 1983). This is not to say that foreign language educators are failing in their attempt to incorporate listening comprehension in the curriculum, but it does indicate that a knowledge base from which instructional decisions are generated is deficient.

**Purpose of the Study**

The purpose of this base-line empirical study is to investigate:

1. The extent to which third-quarter Spanish learners are able to comprehend authentic aural discourse.

2. The effect of time expansion by 135% and 150% on the listening comprehension of third-quarter Spanish students to authentic aural discourse. These rates
were chosen because they differ substantially from the original word rate and from each other.

Theoretical Bases

Schema Theories

One of the most recent areas of interest in L2 listening comprehension is the role of background knowledge in L2 aural comprehension. Comprehension, according to Anderson and Pearson's (1984) well-known definition, is the process of relating new or incoming information to information already stored in memory. Spiro (1980) emphasizes the importance of what one already knows in determining what one will come to know—or prior knowledge—and its impact on comprehension and recall. Omaggio (1986) explains that one of the basic premises of the Schema Theory is that a text is not meaningful by itself but only provides direction; the listener will derive meaning from his/her prior knowledge. Three kinds of this background knowledge, according to Omaggio, are "potentially activated" (p. 97) in the L2 comprehension process: linguistic knowledge, discourse structure knowledge, and knowledge of the world. She groups listeners with readers in claiming that L2 learners are disadvantaged when faced with a L2 text because the learner is confronted with textual cues that are poorly known or unknown all together and will not be able to retain that information as long as if it were in the L1. Comprehension, as a result, may be hampered. A number of L1 studies now document the
effect of background knowledge on prose comprehension (Anderson et al., 1978; Steffenson et al., 1979) while a similar line of research in L2 supports the importance of prior knowledge in reading (Bernhardt, 1983, 1986, 1987; Johnson, 1981, 1982). The research investigating the influence of prior knowledge in the comprehension of aural passages is less prolific in both L1 and L2 but is increasingly the subject of investigation in L2. Long (1989) noted that L1 schema-theoretic studies are limited in scope; areas of investigation include: recall and learning of visual and aural organizers, background knowledge, story schemata, and imagery training. She cited the paucity of empirical data in L2 listening comprehension and found evidence of only three investigations (Mueller, 1980; Voss, 1984; Weissenrieder, 1987) that examined, although indirectly, the effects of prior knowledge on listening comprehension. Her own study (1990), which investigated the effect of background knowledge on listening comprehension, found that schemata play an important role in L2 listening comprehension; they can facilitate or debilitate comprehension. She also concluded that both background knowledge and linguistic knowledge are involved in the comprehension process, but to different extents. Data from her study reveal that linguistic knowledge does not play as great a role in comprehension if a learner possesses relevant background knowledge. It is when schemata are not available to the learner that he or she must depend on existing linguistic knowledge. Most successful listeners, finally, are those who possess relevant
schemata and linguistic knowledge.

Byrnes (1984) cited some general observations concerning listening comprehension and L2 learning. She, first of all, discussed the learner's introduction to a new form/meaning system. In terms of meaning, one assumption that is made is that the first language impacts on the role of listening comprehension in the L2. Another factor influencing the role of L2 listening comprehension—and one that Byrnes' advocates capitalizing on—is the learner's prior knowledge. Byrnes, in terms of form, lists sources of interference encountered by a L2 learner:

- New phonemes and allophonic realizations;
- Different prosodic features (intonation contours, stress, pitch, boundary markers for words, suprasegmental identifying features for the syllable);
- Different canonical forms for the syllable and different patterns of expectancy for lexicon;
- Different morphological markings and complex morpho-syntactic and lexico-syntactic co-occurrence restrictions (p. 323, 324).

Listening comprehension is viewed as a dynamic interactive process by both L1 (Marslen-Wilson & Tyler, 1980) and L2 (Byrnes, 1984; Joiner, 1986) researchers. Byrnes (1984) stated that language processing is not hierarchically arranged but that it involves "...an interplay between all types of knowledge—phonological, lexical, structural and semantic—where each knowledge source continuously has two-way access to every other source in the task of analyzing sensory input" (p. 322).
Definition of Terms

Native Aural Narrative Text: Three native narrative texts written by native Spanish speakers and edited by a professional, native Spanish-speaking radio broadcast editor will be used in the experiment. The texts were constructed and edited with the intention that they be heard by native Spanish speakers on a radio broadcast. The texts will be presented orally by a native Spanish-speaking individual and recorded. The tapes are 77, 82, and 85 seconds in length and include 208, 219, and 229 words respectively.

Immediate Recall Protocol: The written recollection by the subject of information from the authentic aural passage as completely and accurately as possible.

Level of Instruction: The level of instruction will be third-quarter Spanish 103.01 college students at The Ohio State University.

Listening Comprehension: Listening comprehension will be measured by a quantitative analysis of an immediate recall protocol written in English by the subjects. Protocols written by non-native English speakers will not be included in the final analysis.

Normal Rate of Speed: The overall speed of speech originally delivered on the authentic aural passage by the native speaker. The texts are 160, 153, and 155 words per minute in rate of presentation.
**Time-Expanded Speech:** Speech decelerated from the normal rate of speed. Technologically, the tapes were systematically and uniformly expanded with a PCM Beta Recorder and the Alchemy 2.0 program on a McIntosh II computer.

**Words Per Minute (WPM):** A unit of measure of speech rate or the number of isolated Spanish words spoken in a passage within a 60 second period of time. The experimental tapes are delivered at 160, 153, and 155 WPM.

**Word Rate:** Overall speed of speech utilized in the delivery of the passages. The original Spanish texts are recorded at approximately 156 WPM, the 135% expansion is approximately 118 WPM, and the 150% expansion is approximately 105 WPM.

**Assumptions**

It is assumed in this study that:

1. The college level Spanish students are familiar with standard language laboratory equipment and procedures. They are required, at the beginning levels, to utilize the language laboratory to fulfill a course requirement and therefore have experience in listening to tape-recorded materials with the use of headsets.

2. No subject has had prior exposure or training with time-expanded speech.
The passages are potentially meaningful to the subjects in that they are recorded in Spanish, the foreign language of study by the subjects, and determined through a pilot study to contain information potentially meaningful to the subjects.

Any distortion created by the tape expansion will not influence the results of the study.

The subjects' ability to write an immediate recall protocol for the aural passages is a valid measure of their comprehension of those passages.

No subject has a serious hearing impairment.

The Spanish spoken by the native Spanish speaker from Chile will be comprehensible to the subjects. The speaker maintained as neutral an accent as possible and replicated the type of speech common to a radio broadcaster.

Limitations of the Study

The researcher, in quantitatively scoring the recall protocols with the Johnson System, must analyze the passage according to what she believes the author intended to say (Meyer, 1984, p. 321).

The original passages, for the purpose of scoring with the Johnson System, will have to be interpreted in English because the recall protocols are written in English (Meyer, 1984, p. 321).
3 Subjects may be unfamiliar with writing recall protocols if they have never been tested in that manner. It may be unclear as far as how much should be written, the details to include, or the point of view to take.

4 The tapes are not authentic radio broadcasts, but simulated tapes designed for use in this particular study.

5 The conclusions of this study will be limited because of the base-line nature of the research. Generalizability of findings regarding third-quarter university Spanish learners will be limited as will be the generalizability of the texts. One must assume that aural passages differing in content may elicit different findings. The findings generated in this base-line study will give reason for future investigation of speech-related factors not specifically investigated here but which may contribute to the aural comprehension of native speech.
CHAPTER II
REVIEW OF RELATED LITERATURE

Introduction

Listening comprehension lacks a significant data base in L2 research; 65 reports over a seventeen-year period (Long, 1989) disappointingly reflect the exiguous status of L2 aural comprehension knowledge. The vast majority of those articles published are either instructional or hypothetical in nature, indicating that what occurs in the foreign language classroom is based on subjective opinion, conjecture, or assumptions. Foreign language research is not alone in this regard. Carroll, in 1972, chastised L1 education because the field lacked a consensus in defining the concept of listening comprehension, a phrase often found in educational literature while Pisoni and Luce (1987), more recently, noted a dearth of evidence that explains the actual process of listening comprehension.

A divergence in listening comprehension views—as exemplified in the numerous instructional approaches to listening comprehension—exists. Byrnes (1984) noted that these divergencies are grounded in varying theoretical premises of how one extracts meaning from a string of aural language signs. She categorized the divergencies into three approaches:
linguistic, conceptual, and communicative. The linguistic approach supports a linguistic structural description based on the lexical, phonological, semantic, and syntactic elements of language, and is a primary step in arriving at a conceptual structure. The conceptual approach, in contrast, concentrates on the manner in which the listener assigns a conceptual structure, or non-linguistic, to a linguistic structure. The communicative approach, finally, designates comprehension as the product of the interaction between speaker and hearer.

The divergencies that exist in views of listening comprehension are not unique to the field of foreign language inquiry. Differences of opinion also exist in L1 studies and should be recognized by L2 researchers in an effort to understand the concept of listening comprehension. Devine (1978), in a compilation of existing listening research from the past fifty years, acknowledged a lack of consensus for a listening definition and that definitions that do exist are not always the result of research. Hirsch, as recently as 1986, reported that a multitude of listening definitions exist in the area of L1 listening research. He categorized the numerous definitions into three orientations: process, sequential, and generalist. Using Lundsteen's (1971) definition of listening as an example of process orientation—"listening is...the process by which spoken language is converted to meaning in the mind" (p. 9)—Hirsch cited that a fundamental problem of any process orientation is that it lacks concreteness. Sequentialists, in contrast, view listening
as a sequence of events with one element dependent upon a preceding element; In other words, they view it as a linear process. Hirsch (1983) defined listening in more concrete terms as

"...the process whereby the human ear receives sound stimuli from other people and through a series of steps (assigning importance to the stimuli or symbols, relating the symbols to past experiences, evaluating the symbols, interpreting the symbols, expanding the meaning of the symbols) interprets the sound stimuli in the brain and remembers them" (pp. 1 & 8).

The generalist orientation, as exemplified in the Brooks and Heath (1985) definition, defined listening as "...a combination of what we hear, what we understand, and what we remember" (p. 86).

Hirsch concluded that the generalist definition does not imply that listening is either sequential or a process. He criticized the tendency in L1 listening research to simplify the components of listening comprehension and, in recognizing its notoriety as a complex activity, concluded from existing definitions that listening is comprised of ten conceptual components. They include: a neurological aspect (hearing); an interpretation of sound stimuli; an understanding of the sound stimuli; the assigning of meaning to the sound stimuli; the acting or reacting to the sound stimuli; the selectivity in receiving or ignoring of sound stimuli; the remembering of input; the attending to sound stimuli purposefully; the analysis of information presented; and, the utilization of past experiences.

Pearson and Fielding (1982) criticized the tendency to use listening comprehension as an outcome measure in psycholinguistic,
or cognitively based studies, rather than as a process by itself. Auditory messages, according to them, are incomprehensible unless the listener has a command over phonology, syntax, semantics, and text structure. The key to listening comprehension, they posited, is coordinating those components simultaneously. Pisoni and Luce, even as recently as 1987, acknowledged that researchers, still, are at a loss in explaining the processes involved in listening, including both the perception of speech in linguistic units and the manner in which "...the sensory and perceptual analysis of the speech waveform makes contact with representations of words in the lexicon or how these representations are used to support language understanding" (p. 23). They supported Studdert-Kennedy's (1974) conceptual framework for analyzing speech perception but added a fifth component to his four conceptual stages of analysis. Studdert-Kennedy's stages are auditory, phonetic, phonological, and lexical, syntactic, and semantic. Pisoni and Luce added peripheral auditory analysis as a fifth processing stage. They also admonished that investigation into L1 speech perception must include the study of word recognition. L1 word recognition research, historically, was based on an interest in visual, rather than aural, perception. Speech perception research, too, had its limitations because investigation focused on the perception of nonsense syllables in isolated environments.

Sticht (1974), in yet another perspective, differentiated the term auding from listening. Auding, he explained, is a specialized listening activity or "...listening to speech in order
to language" (p.11). He further refined the distinction between the two, adding that listening is "...the process of attending to information in the auditory SIS (sensory information store) to process it for immediate use or for storage in long-term memory for later use" (p. 54). Auding, consequently, is "...the process of extracting (attending to) the structural information in SIS, which in turn represents the structured information in speech sounds displayed in the environment" (p. 54). Listening factors, including the memory system and attention, affect how well speech information is processed. Sticht considered these listening factors a part of a learning process that vary in individuals and affect an individual's ability to aud. "Auding," according to him, "is a special type of listening" (p. 55).

Friedman (1986) described hearing as only the first step—the physiological ability—to listening. Once past that first stage, the brain employs the processes of selection, organization, comprehension, interpretation, and evaluation to decode the aural message (Friedman, 1986). He conceptualized the processes of listening along a bipolar continuum. The principle component at the one end of the continuum is attentiveness. Attentiveness is a mental state in which the listener pays exclusive attention to the speaker and message. Understanding, the next component, is found in the center of the bipolar continuum. Friedman chose this element to characterize the listener's selectivity and organization of the message. The last component at the other end of the continuum is evaluation, or the
listener's idiosyncratic interpretation of the content, as it relates to beliefs and values of the listener as well as the listener's interpretation of the speaker's motives and qualities of the message. He perceived these states as sequential, cumulative, interactive, and occurring instantaneously at any particular moment when necessary.

Cairns, in 1984, pointed out that a major "...theoretical issue in language comprehension which has surfaced for the 1980s is the question of the autonomy, or modularity, of the language comprehension system" (p. 212). She developed a theory of language comprehension that took into account two different autonomous suprocessors. One processor is limited in that it only responds to linguistic information while the other set is not limited in the types of information to which it can respond. This latter processor responds to real world information and is assumed to draw upon both linguistic and nonlinguistic information to reconcile meaning. The model of an autonomous comprehension system visually delineates sources of input to the comprehension process. (See Figure 1.) One can see that the autonomous interpretation of the comprehension system posits that one of the subprocessors is modular, or autonomous, and does not respond to real world information. It is not until the input reaches the interpretative process that real world knowledge contributes to comprehension. The autonomous processing model is comprised of several subprocessors: lexical, structural, and interpretative. While it is assumed by advocates of the autonomous model that the
subprocessors operate independently of one another, it is unknown whether they operate serially in any manner. The lexical processing component appears to be comprised of three stages: retrieval, post-access decision, and integration. Both the retrieval stage and post-access decision stage only operate within the constraint of the lexical processor; the integration stage is thought to be associated in some respects with the interpretative processors. Once a lexical item is retrieved from the hearer's internalized lexicon, information about its structural properties can be accessed by the structural processor. The autonomous model

![Diagram of an Autonomous Comprehension System](Cairns, 1984, p. 213)
claims that this processor only assesses syntactic information of a formal nature. The structural processor has five operations. Again, as with the lexical processor stages, the operations may or may not be independent. The operations include: "...the segmentation of input into processing units, computation of the internal organization of the processing units, matching of fillers and gaps, identification of missing constituents, and marking of items that may or may not be coreferential on structural grounds" (p. 224). The major theoretical issue in need of investigation in the structural processor is whether, or to what extent, this processor functions independently of real world information. The one processor, in the autonomous model, that operates with real world knowledge is the interpretative processor. Its basic task, according to Cairns, is in formulating a semantic interpretation of the input. Its operations include integrating real world knowledge with lexical and structural information as well as semantically interpreting extended discourse in both linguistic and nonlinguistic contexts.

Cairns theory varies from global processing theories—such as those proposed by Marslen-Wilson and Tyler (1980), Marslen-Wilson and Welsh (1978), or Riesbeck and Schank (1978)—in that global processing systems either claim that most interpretation is based on real world knowledge or that lexical or structural processing interacts with real world knowledge (Cairns, 1984). Supporters of an autonomous system of language comprehension argue that a separate linguistic processing system exists from cognitive
processes in general. They also claim that, since higher order human biological systems are organized in autonomous, complex subsystems, then it is likely that a comprehension system will be comprised of autonomous components. They argue, finally, for the necessity to provide evidence for—or even discredit—an autonomous model when so little exists that supports either global processing or autonomous theories of language comprehension. Autonomous subprocessors, according to Cairns, cannot be identified unless they are investigated.

Listening processes, also, have been compared to reading processes. Sticht (1974), for example, acknowledged their similarities on the grounds that both require the use of language and result in a mutual internal conceptualization. Common factors include the sequential processing of information and redundancy of information in the message. Differences arise in the nature of presentation: Speech is a temporally linear, transient message delivered at a rate dictated by the speaker while the printed message in reading is an existing, more permanent form that is processed at a rate and sequence dictated by the receiver (Sticht, 1974). Rubin (1980), in a theoretical taxonomy, pointed out that one view of the receptive skills is that the process of language comprehension via the modes of listening and reading is essentially the same. Those espousing this view basically posit that "reading comprehension = oral comprehension skills + decoding" (p. 411). An alternative view, according to Rubin, is that the processes share some important subparts but still differ
in significant ways. Rubin categorized the differences between reading and listening into two groups: medium- and message-related dimensions. These dimensions are interactive depending on the communicative event or situation:

Medium-Related Dimensions

Modality

- Messages are either written or spoken.
  - Spoken language utilizes prosodic features (stress, intonation) and temporal features (pauses, speed variability, hesitations).
  - Written language prosodic features include punctuation and textual organization (demarcation of words, sentences, paragraphs).
- Written texts demonstrate permanency.

Interaction

- Speech may be participatory, as in conversations, and tailored to the participants. Written language is static.

Involvement

- Communication, whether written or spoken, can vary in its involvement between writer-speaker and reader-listener.

Spatial Commonality

- Whether the writer-speaker and reader-listener share a spatial context affects comprehension.
- Nonverbal communication (gestures, facial expressions) plays a role in spoken language communication. The use of deixis in written and spoken language is also affected by spatial commonality.

Temporal Commonality

- Whether the writer-speaker and reader-listener share a temporal context affects comprehension. Deixis comes into play.

Concreteness of Referents

- Concreteness or abstractness of referents affects reading and listening comprehension.

Separability of Characters

- Ease of distinction between characters' points of view and statements differ in written and spoken mediums. Conversational distinctions are obvious to participants but written discourse may be
more ambiguous depending on concreteness and abstraction of context.

Message-Related Dimensions

<table>
<thead>
<tr>
<th>Topic</th>
<th>Familiarity with topic varies in both written and spoken communication. Background knowledge of the listener-reader affects comprehension of topic.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structure</td>
<td>Syntactic, lexical, and semantic knowledge affects comprehension in both written and spoken modalities. Speech, a non-permanent form, is based more on clausal units and is generally repetitious and redundant. Written discourse is based on a sentential unit and generally provides fewer clues for the reader than is provided for the speaker in aural discourse.</td>
</tr>
<tr>
<td>Function</td>
<td>Functions differ between written and aural texts. Functions in conversation tend to parallel the participant's goals (persuade, obtain information or an object, express emotion, interact) while the functions of written texts (description, entertainment, evocation) generally differ from the reader's goals (Rubin, 1980, pp. 414-424).</td>
</tr>
</tbody>
</table>

Richards (1983) also considered both message and medium factors in his interpretation of listening comprehension. After reviewing the L1 research related to message factors (psycholinguistics, semantics, pragmatics, discourse analysis, and cognitive science) he arrived at a model of the processes involved in comprehension. They include:

1. The type of interactional act or speech event in which the listener is involved is determined (i.e., conversation, lecture, discussion, debate).

2. Scripts that are relevant to the situation are recalled.
3. Goals of the speaker are inferred through reference to the situation, the script and the sequence position of the utterance.

4. The propositional meaning of the utterance is determined.

5. An illocutionary meaning is assigned to the message.

6. This information is retained and acted upon while the form in which it was originally received is deleted (Richards, 1983; p. 223).

Medium factors, according to Richards, vary depending on the: type of discourse at hand, speaker's attitude toward the listener or message, and situation where the communication occurs. Below is a summary of his medium factors and their characteristics: (1) The unit of organization of speech is clausal whereas the sentence is the organizing unit in written discourse; (2) Speakers tend to reduce forms in meaning and pronunciation for the sake of verbal efficiency; (3) In terms of ungrammatical forms, correct syntax is often secondary to ideational coherence; (4) Pauses and hesitations, within the factor of pausation and speech errors, account for 30% to 50% of speaking time; (5) Delivery rate varies according to the amount of pauses produced by a speaker. Faster speech, then, contains less intraclausal pausing; (6) Rhythm and stress is determined by whether a language is stress-timed or not. Listeners have to recognize speech according to the rhythmic structure of the language; (7) Cohesive devices may function differently in speech than in written discourse; anaphoric expressions may be less easily identified in speech; (8) In regard to information content, conversational speech is jointly constructed and unplanned. Topics evolve gradually and topic
shift is likely to occur in spontaneous speech and, finally, (9) Both verbal and nonverbal interaction occurs in all types of spoken discourse but in varying amounts.

Coakley and Wolvin (1986) cited that a number of listening scholars have long debated whether listening is one skill or a group of subskills. Ridge (1984, as cited in Coakley & Wolvin) attempted to explain the divergency: "...the process of listening remains the same in the cortex but the purposes to which we put our listening behavior differ" (p. 4). Joiner (1986), after taking into account both L1 and L2 theories of listening, defined it as an active, interactional process:

"...in which a listener attempts to interpret correctly the intended message of a speaker or oral text. Misunderstanding or partial understanding may result from those physical, affective and cognitive factors that make up the listener's perceptual filter or from certain features of the text, among them rate of delivery and reduced or ungrammatical forms. In the interaction between listener and text or listener and speaker, the listener must not only receive but also attend to, or concentrate on, the sounds and extralinguistic cues that embody the message, must further assign meaning to this input and then finally respond to the message either overtly or by retention in long-term memory or both" (p. 52).

Early L2 listening comprehension research generated from the questioning of the audio-lingual approach and a search for a more effective foreign language teaching methodology. The comparative nature of much of the research conducted, however, was dubious in that the research methodologies were flawed. Research was comparative in nature. Stern (1984) cited studies by Scherer and Wertheimer (1964), Chastain and Woerdehoff (1968), the
Pennsylvania Project (Smith, 1970), and the GUME Project (Levin, 1972) among sixteen other such investigations in the 1960s as inquiries meant to determine superiority of either the audiolingual or traditional methodology.

The 1970s witnessed an advent of comprehension approaches to language learning that were theoretically based on how a child acquires a first language. These methods, according to Winitz (1981), were based on child L1 acquisition: "...children learn languages by learning how to comprehend the meaning of language" (p. xiv). He surmised that, if a child can successfully acquire his native language in this manner, why not an adult? The role of listening comprehension came to the forefront in the classroom on the grounds that listening should precede speaking in the classroom. Theoreticians, including Asher (1972), Krashen (1978), and Winitz and Reeds (1975), among others, designated comprehension as the crux of language learning or "...the basic performance skills through which language is learned" (Winitz 1981, p. 130). Approaches based on this premise (Asher's Total Physical Response, 1969, 1972; Krashen & Terrell's Natural Approach, 1983; Winitz & Reeds, 1975) adhere to an initial silent period in language study coupled with natural input in an anxiety-reduced classroom setting and followed by spontaneous production by the student. Of utmost importance to eventual speaking proficiency by language learners is the initial development of aural comprehension proficiency (Belasco, 1981). Dunkel (1986) concluded that the comprehension-based approach finally placed
listening and speaking in their proper sequence: listening comprehension before oral production.

Other Factors Related to Comprehension

Other factors related to comprehension include affective, cognitive, and physical factors. Joiner (1986) suggested that these factors are crucial to the listening process. She considered age and sex to be among the most important for language learners. In terms of age, the peak of auditory proficiency is reached between the ages of ten and fourteen years with a gradual "declension" until a person reaches his or her 50s. After the age of 50 there is a sudden increase in hearing loss. Littel (1976) found that gender played a role in the perceived difficulty of linguistic concepts; males in her study demonstrated more sensitivity to repetitive learning conditions. The interest in affective factors has centered around the issue of anxiety and its effect on language learning. Meyer (1984) noted that language learner anxiety hinders successful comprehension. Many of the comprehension-based approaches (Asher, 1982; Krashen, 1981; Terrell, 1982; Winitz & Reeds, 1975) are well known for their attempt to reduce anxiety in the foreign language learner and, subsequently, increase motivation.

Attention, concentration, memory storage capacity, and cognitive style are cognitive factors affecting listening comprehension. Attention, according to Rumelhart (1977), is one's ability to "...focus on certain aspects of the world impinging
upon him in order to increase the detail with which it is perceived" (p. 95). He explained that the receiver of information cannot effectively process all stimuli simultaneously. An exchange is made between breadth and depth of processing. If processing demands become too great, and the information receiver is forced to attend to an unmanageable amount of stimuli, the receiver's attentional priorities focus on perceived critical features of the message.

One aspect of cognitive style that has been investigated is field dependence/independence. Field independent subjects, according to existing research, process auditory information more efficiently at variable speech rates than field dependent subjects (Carver et al, 1971-1972; Olsen, 1984; Olsen & Berry, 1983). Memory storage capacity is another cognitive factor and, according to Byrnes (1984), an essential component for many researchers in describing listening comprehension. Norman (1973) described three kinds of memory: sensory information store, primary memory, and secondary memory. It is believed that there is a sensory information storage system for all sensory modalities, including auditory, which has the ability to retain an accurate facsimile of auditory input for a very brief period of time. Kintsch (1982), after reviewing the memory-related research, concluded that the retention of information in this stage—the sensory information store—prolongs the life of the stimulus so that it is available for processing. At this point, according to him, retention is neither random nor as limited in capacity as in primary memory.
He posited that short-term, or primary memory, is transient memory of current events while secondary memory accounts for long-term storage of past information and occurrences. Miller (1956) was the first to measure the capacity of short-term memory in L1 and found that it is limited to seven units, plus or minus two. This means that native English speakers, if exposed to randomly presented letters, can recall approximately seven of those letters, give or take two. Lado (1965) found that memory span is shorter in a foreign language than a native language. Units that are defined syntactically, however, can be stored much more efficiently. Call (1985) cited that a listener will chunk incoming linguistic data that is then stored in short-term memory, and Sachs (1974) reported findings demonstrating that exact wording of sentences is not stored in long-term memory. Meaning is stored; exact words are forgotten. Kintsch (1982) noted that memory for meaning is much longer than memory for surface form, and that it is the short-term memory that has a major role in extracting meaning from speech that potentially can be stored in long-term memory. Glisan (1988) noted that a listener's inability to store information efficiently hinders processing time and this constrains the time needed to anticipate or interpret subsequent information. Lowe (1984) presumed that if a listener hesitates over a word or phrase for an excessive amount of time, then the meaning of the utterance may be misunderstood or even irretrievable.
Carroll and Freedle (1972) maintained an interactive approach to language comprehension and acquisition, and considered the roles of linguistic and semantic features, information processing, and attentional processes in comprehension. McLaughlin et al (1983) took an information-processing perspective toward second language learning. They concluded:

"In short, humans are limited-capacity information processors, both in terms of what they can attend to at a given point in time and in terms of what they can handle on the basis of knowledge and expectations. Attention focus--what the individual can attend to at a given point in time--can be focal or peripheral. Information-processing ability--how the individual deals with incoming information--is a function of past experience and the characteristics of the input" (p. 137).

One area of current research on information processing investigates the effects of practice, rehearsal, and familiarity. An important aspect of this research, according to McLaughlin et al, is that of attention; attentional monitoring is disencumbered with more practice, rehearsal, or familiarity of material. Automatic processing and controlled processing are two modes of information processing in which nodes--of which memory is comprised (Schneider & Shiffrin in McLaughlin et al, 1983)--are consciously or unconsciously activated. Automatic processing, Shiffrin and Schneider posited (1977), is a learned response and takes training to develop but occurs spontaneously once it is learned. Controlled processing, in contrast, is a temporary activation of nodes under the attentional control of the individual. These processes are capacity-limited; that is, only one comparable task can be processed at a time. Controlled
processes, in effect, set the groundwork for automatic processes.

McLaughlin et al believed that language learning is a process of integrating lower-level skills. These skills are gradually accumulated as automatic processes in long-term storage. The transition from controlled to automatic processing occurs as automaticity increasingly develops and controlled processes can be utilized in other capacities. Attentional limitations, then, decrease as controlled processes are redirected to other capacities as language learning progresses. Rapidity and reallocation of attention are the byproducts of automatic processes; information processing is facilitated with an increase in automatic processes (McLaughlin et al, 1983).

Rate of Speech Research

Rate of speech research generally includes studies that manipulate speech rate through time-compression or expansion. Before examining actual time-compression and expansion studies, however, one must acknowledge methodologies used to investigate word rate.

There are several ways to measure rate of speech in an aural text. Time-compressed and time-expanded speech can be calculated in terms of syllables per minute, words per minute, or by the percentage of speech compressed or expanded from the original text. Carroll (1967) noted that merely counting words per minute may give misleading results when speech is expanded or compressed. One, he added, must take into account whether the text at hand is
spontaneously spoken or orally read; the researcher should be careful to specify this variable of the text. Carroll criticized the utilization of words per minute because word length can vary in length; he used the words a and antidisestablishmentarianism as an example. He noted that different text types yield different word lengths. A Hemingway passage, for example, averaged 1.20 syllables per word while a James' passage averaged 1.73 syllables per word. Pimsleur et al (1977), in an investigation of radio news scripts, found that this text type differed from literary texts in that they maintain a constant word length. They observed that both English and French broadcasts maintained a 1.7 syllables per word rate with little variation between radio news scripts. They chose, as a result, to report findings of their study in words per minute (WPM). Pimsleur et al, in the same study, also documented the rate of speech of 15 French and 15 American male radio news announcers and found that there was no significant difference in words per minute spoken between the two groups; the average rate was approximately 180 WPM. French announcers, however, accounted for much greater variability (32.4 WPM) in delivery rate than their American counterparts (7.5 WPM).

Previous studies estimated that spontaneous American speech is approximately 165-175 WPM. From their investigations of word rate, combined with the findings of other studies, Pimsleur et al proposed a set of standard speech rates (p. 31):
Fast Above 220 WPM
Moderately Fast 190 to 220 WPM
Average 160 to 190 WPM
Moderately Slow 130 to 160 WPM
Slow Below 130 WPM

Word-rate preference is another facet of speech rate studied in L1. Nelson (1948, cited in Olsen, 1982), in a seminal study, found that subjects preferred 175 WPM after exposure to a range between 125 and 250 WPM. Leeper and Thomas (1978) reported that children least prefer listening at 100 WPM and most prefer 200 WPM. It was also reported that college students prefer speech compression, even up to 300 WPM, especially after regular exposure (Primrose, 1975; Rippy, 1975; as cited in Olsen, 1982). Sullivan (1982) cited other studies investigating word-rate preference. Cain and Lass (1974), for example, found that adults preferred listening at 175 WPM while Orr (1968), in a study in which subjects varied the rate of speech, found that, on the average, most preferred listening at 1.5 times the normal word rate. Foulke and Sticht (1966), while investigating college students, found that they preferred 207 WPM, and Nath (1978) noted that pharmacists in his study accepted up to 50% compression.

The capacity to control rate of speech has opened up an area of L1 listening research that investigates the measurement of aural comprehension as a function of speech rate. Foulke and Sticht (1969) surmised that the investigation of word rate in listening comprehension is instrumental in determining temporal
requirements of a listener while processing aural speech. They particularly focused on speech compression and its consequent effects on word intelligibility, connected discourse comprehensibility, and both stimulus variables (e.g., signal distortion) and organismic variables (e.g., age, sex, intelligence). After reviewing the current literature, they concluded that the relationship between word rate and listening comprehension that emerged was one in which listening comprehension declined at a slow rate as word rate was simultaneously increased to 275 WPM, and declined at a more rapid rate after 275 WPM. Word intelligibility was not significantly distorted until a very accelerated word rate was reached. Carver (1973) reexamined existing time-compression data to substantiate the previously claimed threshold duration of speech rate for speech comprehension and concluded that the measurement method employed confounded the functional relationship between compression and comprehension. Carver, consequently, questioned the use of multiple-choice tests to measure listening comprehension and concluded that there is evidence supporting a threshold rate of speech but that threshold may differ among subjects according to their ability and experience. He cautioned against the use of accelerated speech in educational settings where ability levels may vary unless individual students can control the rate of presentation themselves.
Time-Compressed Speech in L1 and L2

Speech-compression studies greatly outnumber speech-expansion studies; the instructional value of speech expansion has never been justified outside of special populations. Olsen (1982) summed up the most well-known pedagogical implementations of compressed speech and included the areas of the visually impaired or blind (Bishoff, 1979; Del'Aune et al, 1977), the training of personnel (The Reviews are In, 1979; Watts, 1970), the dissemination of knowledge (Smith, 1979), its utilization as a pacing device to facilitate reading instruction (Thames & Rossiter, 1972), and its use in broadcast media (MacLachlan & LaBarbera, 1978; MacLachlan, 1979; MacLachlan & Siegel, 1980). Time-compressed speech, predominantly investigated in L1 English studies, was investigated in a L1 context that included English, Spanish, and Navajo speakers (Goldhaber, 1974). The results supported the hypotheses of the study and demonstrated that the ability of the native speakers of the three languages to recall compressed speech at 328 WPM was significantly improved after a two-hour training period; over-all listening comprehension significantly increased following the two-hour training session; and the ability level of three groups of native speakers did not differ significantly in either ability to recall the speech-compressed text or in overall listening comprehension after training. Meyerson (1974) investigated comprehension differences in five different levels of time-compressed speech among Japanese, Chinese, Hindi, and English speakers at the university level. The
text was extended discourse. Again, just as in the Goldhaber study, no significant differences were found among the four language groups.

Time-compressed speech was used in an effort to observe aural processing strategy differences in L2 English learners and native English speakers in a study by Conrad (1989). L2 subjects were divided into high- and medium-level skill groups. All subjects were exposed to five different rates of time-compressed recordings, ranging from 40% to 90% of the original speech. Each recording consisted of 16 simple English sentences. Recall of time-compressed sentences decreased concurrently with subjects' language proficiency level. It was also observed that nonnative listeners depended highly on signal dependency and recalled more words heard at the beginning or end of sentences. Native listeners, in contrast, focused on key content words in the sentence. Conrad also reported that proficiency group differences were maintained in the results, but neither nonnative learner group employed the same strategy as the native speaker group. She concluded that a crucial element in increasing the amount of linguistic material remembered in short-term memory is knowledge of target-language syntax. The results suggest, according to Conrad, that one means of improving foreign language listening comprehension at the sentence level is with aural listening practice.

These findings by Conrad lend support to Wingfield and Nolan's (1980) L1 findings that memory span for connected
discourse is strongly influenced by its syntactic structure. They hypothesized that upper- and lower-bound limits must exist on the size of normal processing segments in speech perception of discourse and reject a word-by-word analysis on the sentence level, the viability of a serial, cumulative processing, and the passive retention of complete sentences prior to analysis or processing. Their study, during which subjects were free to stop speech input at their discretion in order to report on what they had heard on normal and time-compressed rates, indicated that subjects tended to segment speech by syntactic structure rather than temporal duration or number of words per segment. They perceived the listener as an hypothesizer and called for more research to determine the complete spectrum of elements that affect the listener's segmentation hypotheses.

Syntactic memory was also found to be of great importance by Call (1979), who examined the relationship between auditory short-term memory and listening comprehension of advanced university EFL students. She noted that a main problem for a L2 learner is in retaining words in memory long enough to understand what the sentence that they form means; in other words, memory for foreign language input is not as efficient as it is for native language input. She concluded from the results of the study that syntactic memory is extremely important to effective listening comprehension and suggested that L2 learners be instructed in syntactically based listening strategies. She reinforced those conclusions in 1985 when she found that memory for syntax was the most important
factor in subjects' ability to comprehend single sentences. Call concluded that most of the intake stored in short-term memory cannot be retained for longer storage if the student does not have the ability to syntactically group the linguistic input of a message.

Glisan (1985) examined another aspect of syntax: the effect of word order on both listening comprehension and pattern retention of college-level Spanish learners. She found that this aspect of surface structure did significantly affect the listening comprehension of contextualized sentences and noted that both final position—in either an initial, medial, or final context—and longer length sentences—determined by object modification or nonmodification—were the most comprehensible.

There are two seminal investigations that examined the role of memory on listening comprehension. Both Lado (1965) and Glicksberg (1963) empirically demonstrated that L2 learners' memory span is shorter than L1 memory span, but as ability increased, the gap in memory span decreased. Miller (1965) estimated that native speakers can manage approximately seven items of speech and, if the information is chunked in an organized manner—syntactically, for example—more information can be processed.

Another L1 study that established base-line data concerning the roles of both short- and long-term memory in listening comprehension was conducted by Sachs (1974), who investigated the effects of modality on short-term memory by presenting subjects
with either aural or written passages and then requiring subjects to recognize whether sentences that followed exposure to the original text were semantically different or whether exposure to the original text was syntactically and lexically different. The amount of time allowed between the original presentation and the subsequent exposure to sentences or paraphrases differed between one and 23 seconds. She determined that verbatim storage of sentences does not occur in long-term memory because the paraphrases of the passage were not recalled accurately even after a brief period of time. Another conclusion drawn was that acoustic-phonetic memory played a role in the retention of the aural passage.

Marslen-Wilson and Tyler (1980) investigated, in two experiments, the comprehension of the word-by-word time-course of spoken language in LI. They claimed that the listener tries to interpret speech completely as it is aurally received. The contextual environment of each word directly impacts on how the listener interprets a word. Interest, then, lies in both word-recognition processes and global processes. The results of the experiments lend support to an on-line interactive language theory. This means, according to the researchers, that lexical, syntactic, and sources of interpretative knowledge interact efficiently and accurately during information processing. One of their most interesting findings was that "...semantic dimensions of processing are dominant throughout a sentence, and that they have a significant effect on monitoring responses even at the very
beginning of the test-sentence, where the syntactic dimension has only a marginal effect" (p. 41). Marslen-Wilson (1987) later added, within their view of functional parallelism in spoken word-recognition, that the process involved could be divided into three functions: access, selection, and integration. Access, according to him, is the mapping of verbal input onto lexical representations; selection mediates between the access and integration functions and accesses and discriminates between lexical units from the sensory input; and integration maps both semantic and syntactic information at the "word-form" level onto higher levels of processing. Marslen-Wilson and Tyler's (1980) findings complement Bransford and Johnson's (1972) earlier conclusion that "...relevant contextual knowledge is a prerequisite for the comprehension of aural and written passages" (p. 717). In a study now well known as "The Balloon Serenade," subjects were exposed to a pictorial cue prior to listening to a passage. Those who were denied the pictorial cue found the passage to be ambiguous and, consequently, difficult to understand. Subjects who viewed the pictorial cue prior to listening to the passage had a higher level of comprehension. Bransford and Johnson posited, from the results of their studies, that semantic contexts or prior knowledge play a significant role in the comprehension of aural and written texts.

Godfrey (1977) recognized the need to examine factors related to discourse processing in the context of communicative language learning and the importance of listening comprehension.
Rivers (1971, 1972), according to him, noted that even advanced students cannot retain what they recognize in speech even if they know the main features in a passage. She surmised that processing time for the overall comprehension of the message was hindered by an undue amount of time required by the initial process of recognition. Godfrey, subsequently, complained that psycholinguistic data, which isolate discourse elements attended to or ignored by L2 learners, are not available.

The effects of rate-controlled speech on prosodic features of language have also been investigated. Intonation was investigated by Wingfield (1975) for the purpose of observing the effects of time-compression of sentences spoken with normal intonation and anomalous intonation. Sentences with normal intonation were significantly better understood than anomalously intonated sentences as increasing time compression affected intelligibility. These L1 results indicate that intonation contributes additional cues for determining syntactic structure in perceiving aural speech. Wingfield et al (1979), in a L2 context, investigated the effect of time-compressed speech on English and French intonation and intelligibility. The study investigated whether the compression of French speech affected intelligibility in a parallel manner to compression of English speech. The results indicated similarities in the effects of time compression on English and French speech and provided evidence that prosodic features (i.e., intonation, contour, stress, and timing patterns) in perceptual processing play a parallel role in French comparable
to their function in English. Pratt and Krane (1981) simultaneously investigated the role of intonation in oral speech and italics in written speech on the interpretation of ambiguous L1 discourse. These factors were examined, mainly, to observe their role in the triggering of schemata by the listeners and readers. Pratt and Krane contended that speakers and writers use intonation and italics as a technique for influencing and facilitating the message receiver's task of interpretation. More consistent effects were reported for italic cues than intonation. They posited that intonation and italics might increase memorability and must be observed while in interaction within the broad framework of a text, not just in isolation. They reminded researchers, finally, that these paralinguistic cues are but one of several ways in which schematic triggering is achieved.

Bruns (1978) studied another aspect of rate-controlled speech: the effects of practice in time-compressed speech on the listening comprehension levels of L2 learners. The learners were enrolled in an intensive English course and divided into upper- or lower-proficiency levels according to text scores earned by the subjects. The criterion passage, whose normal rate of speed was 130 WPM, was accelerated to 145 WPM and 165 WPM. Even though there seemed to be an advantage to listening at the higher compressed level, it was not statistically significant. Bruns concluded that the higher speech rates were not deleterious to text scores but, rather, produced evidence of learning efficiency worthy of further study. It is important to note that the initial
word rate of the passage—130 WPM—registers at the low end (130-
160 WPM) of the moderately slow speech category determined by
Pimsleur et al (1977) and the 10% increase in speech rate (145
WPM) still fell in the moderately slow category; the 25% increase
(165 WPM) placed at the lower end of average word rate.

A cognitive factor investigated at some length in time-
compression studies is field dependence/independence. Research
exploring this aspect of cognitive style indicates, in general,
that field-independent subjects process auditory information more
efficiently at varying rates of speed because of their ability to
impose structure on aural information (Olsen, 1984). Carver et al
(1971-1972), in an investigation of accelerated speech on measures
of field dependency, hypothesized that ability to comprehend
accelerated speech depends on the person's field independency.
Friedman and Johnson (1968) did not find a correlation between
listening comprehension at normal and high rates of speech, but
did conclude that individual variations can be demonstrated in the
ability to infer semantic relations and compare how concepts
relate in aural discourse. Flaherty (1979) interpreted this
finding to mean that aptitude is less important at high rates of
speed in the L1. She reminded those in the L2 profession that no
empirical evidence existed that draws a correlation between ease
of processing speeded speech in the L1 and the processing of
foreign speech perceived as being at a rapid pace. She, in 1979,
observed that field independent learners concentrate more on
content than speech rate, a factor that allowed them to utilize
compressed speech more efficiently than their field dependent classmates. Field dependent individuals cannot disregard less important aspects of speech in order to organize unfamiliar content. Olsen (1984) found conflicting results, though, in two separate studies (Olsen & Berry, 1983; Olsen, 1984) in which the former did demonstrate significant differences in favor of field independent subjects. She called for more research to clarify this cognitive style variable.

Olsen (1984) arrived at the conclusion that conceptual density of an aural text may be a more relevant variable to examine than speech rate. She cited studies by Spicker (1963) and Reid (1968) that recorded a decrease in material understood as difficulty of material and grammatical complexity increased, respectively. Adelson (1975) also recognized the need to control for conceptual density and cited negligence in a failure to account for concept density, information retained or not retained, or even length of material used in listening materials utilized in experiments. Tarpinian (1982), more recently, investigated the effects of three speech rates—normal, 33% compression, and 50% compression—on the listening comprehension of materials of low-, medium-, and high- difficulty levels. He hypothesized that comprehension of highly difficult material declines more rapidly at rapid speech rates than listening comprehension of either low- or medium- difficulty materials. The subjects, university students, listened to one high-, medium-, and low- difficulty passage at each speech rate and then responded to a cloze test.
There was no significant effect of speech rate on the comprehension of highly difficult materials, but there was a significant decrease in comprehension of low- and medium-difficulty passages. Tarpinian concluded that high rates of speech, over 400 WPM, may be used with low- and medium-difficulty materials with little detriment to comprehension.

Bullard (1985) investigated highly proficient French and English speakers' abilities to identify isolated aurally presented words. Subjects, surprisingly, were not only more successful in their L2 than in their L1 but more successful than the L1 subjects in the native language. Bullard speculated that this phenomenon occurred because of the way that the subject learned the second language; in other words, the learner's acquisition of the L2 may be more word-based than in the L1. He went on to hypothesize that information in the L1 is so voluminous that individuals must employ a global approach to process information while the approach that prevails in L2 acquisition is word-oriented. He further explained that L2 learners perceive language learning as a word by word acquisition or "building-block strategy" (p. 31). Teachers, consequently, should promote development of a global approach as the language learner proceeds in the language study because a global approach will facilitate comprehension of discourse.

Time-Expanded Speech

Flaherty (1975) is one of the few L2 researchers who investigated the effect of time expansion on the listening
comprehension of foreign language learners. She examined listening comprehension performance of subjects who listened to the French Aural Comprehension Test (FACT) at either a normal rate of speech, 135% expansion, or 170% expansion and found significant differences in favor of speech expansion between the three groups. There was not, however, a significant difference between those who responded to 135% and 170% expansion rates, a result that led the researcher to hypothesize that an expansion rate somewhere between 135% and 170% would be most effective for L2 listening comprehension. Female students, overall, achieved statistically significant scores over the male subjects at both 135% and 170% expansion.

Friedman and Johnson (1971a) used rate-controlled speech to train listening in L2 with Russian and Vietnamese language students. The students were gradually exposed to increased rates of speech over an eight-week period in an attempt to facilitate comprehension of normal speech rate in these languages. There were no significant differences between a control group who only listened to normal speech rates and the experimental group that received listening training, but subjective feedback by most subjects indicated that exposure to the compressed speech was effective. The researchers deduced that significant differences did not result because the training period of eight weeks was not long enough and the measures of performance were too broad to indicate more subtle listening effects. In another study (1971b) of L2 Russian students' comprehension of Russian sentences that were
either grammatically meaningful or meaningless, they found that comprehension decreased with both speech compression and anomalous sentences. They concluded that an anomalous condition will complicate syntactic recognition and compressed-time will not allow ample processing time for syntactic recognition. They also found, in yet a third study, that initial segments of a sentence are recalled more than latter sentence segments, temporal spacing at structural junctures significantly increased comprehension while spacing at nonstructural junctures interfered, although not significantly, with comprehension. Nouns, finally, were recalled more than adjectives in the sentences. The researchers, overall, concluded that temporal variables are of critical importance to the aural comprehension of L2 learners.

Littel (1976) examined listening comprehension through speech deceleration and repetition. Three groups of L2 German students listened to either slowed speech once, speech that was progressively increased in speed three times until normal speech was attained the third time, or speech listened to only once at the normal rate of speech. Differences by sex and ability level were examined and high-, medium-, and low- ability language subjects achieved accordingly in the experiment. Differences according to gender arose throughout the study. Males benefited more than females from the three repeated exposures to the tape. Females acquired the more difficult concept, definite article, most easily at normal speeds and the less difficult concept, verbs, most easily at slow speeds. Littel concluded from these
findings that gender plays a role in the perceived difficulty of linguistic concepts and that males are more sensitive to repetitive learning conditions.

Pause time or temporal spacing is another variable employed to manipulate speech rate. Huberman and Medish (1974) defined temporal spacing as "...the selective insertion of very brief pauses at major syntactic junctures within sentences" (p. 675). Lass (1970) investigated the significance of intra- and intersentence pause times in perceptual judgments of oral reading rate and, although he concluded that pause time significantly affects perceptual judgments of oral reading rates, he could not draw any definitive conclusions of their relative importance individually. Aaronson et al (1971) varied the ratio of speech-to-pause time in three experiments in order to investigate the relationship between rate of presentation and accuracy of immediate recall in short-term memory. The researchers maintained the presentation rate of seven-digit sequences and manipulated the ratio of stimulus duration to pause time between words. They found that recall accuracy and monitoring reaction times were improved by mechanically removing 33% of the speech and inserting pause time in its place.

Grosjean and Lane (1976) broadened the investigation of L1 speaking even further by examining three variables involved in rate of speaking: articulation rate, number of pauses, and duration of pauses. The researchers manipulated each of the three variables independently to examine how a listener integrates the
three into a "global impression" (p. 538) of rate of speech. They concluded that articulation rate influences perception of speech rate to a greater degree than number and duration of pauses.

Grosjean and Deschamps (1975) also investigated the similarities and differences between English and French via radio interviews in the two languages. They attributed the similarities found between the two languages (e.g., speaking rates, phonation time ratios, articulation rates, number and duration of pauses) to their membership in the same Indo-European language group as well as the similar demands required--cognitively and linguistically--in the interview. Two differences in pauses, however, arose. Phonation-time ratio was organized differently, and filled pauses and drawls were of varying importance in the languages. A further study by Grosjean and Lass (1977) not only examined the similarities and differences between English and French listeners' perception of reading rate in their L1, but did so by altering reading rates by both natural and mechanical means. The researchers found that listeners who were presented exclusively with natural or mechanically manipulated speech responded in much the same way as listeners in previous studies; that is, articulation rate was more important than pause rate. Differences arose, however, when either mechanically or naturally presented speech was followed by the other type of altered speech. In other words, when a listener was presented with mechanically altered speech before listening to naturally altered speech the importance of articulation rate to speech perception dropped while importance of
pause rate increased slightly. The same effects resulted from
subject exposure to naturally altered speech rate prior to
mechanically altered speech, but to a lesser degree. These
results must be kept in mind when manipulating texts; the
researcher should clearly state the means of speech
manipulation—either natural or mechanical—to control for those
effects demonstrated above when type of speech alteration was
varied.

In a L2 study, Neff (1978) investigated the effects of
temporal spacing in listening comprehension practice of beginning
university Spanish students. Students were randomly assigned to
pause and non-pause groups and practiced listening to identical
narrative passages—with the exception of pauses inserted between
major constituents within sentences and between sentences—every
other day for one quarter. There was no significant difference,
however, between the pause and non-pause groups as determined by
The Recorded Listening Comprehension Test constructed for the
experiment. An attitude questionnaire did reveal, however, that a
critical factor that may have affected subject comprehension was
speech rate of the listening passages. Johnson and Friedman
(1969) also investigated the effect of temporal spacing on
listening comprehension to find that such spacing within sentences
at major phrase boundaries significantly facilitated comprehension
of compressed speech in the native language. Further studies of
compressed speech also demonstrated significant results with
connected discourse when temporal spaces were inserted within
sentences at phrase boundaries rather than at clause boundaries or merely between sentences. They observed, in both normal and compressed speech, that temporal spacing at phrase boundaries always resulted in more accurate comprehension than spacing at clause boundaries, but spacing at clause boundaries facilitated comprehension more than no temporal spacing at all.

Heilenman (1978), finally, investigated the effects of both expansion and temporal spacing on the listening comprehension of university third-semester French students. A 24-sentence dictation test was expanded to 150% the original rate for one variable and two one-second pauses were spliced into each sentence at major constituent boundaries presented at the normal rate of speech as another variable. Both the expanded and pause conditions were 150% longer in presentation rate than the original passage. Although results were not significant, the researcher hypothesized that the lack of an effect is the result of the subjects' productive ability; that is, perhaps the elicitation of data via a dictation test confounded the results.

Relationship Between Listening and Reading Comprehension

Another strand of listening research attempts to correlate listening and reading comprehension. Rubin (1980) criticized research that examined the relationship between listening and reading comprehension on the grounds that most investigation is primarily limited to the effects of changes in modality. He categorized the types of investigations conducted, which examine
the reading-listening relationship, into six groups:

- Research that compares comprehension of an identical passage presented as both text and speech or text and speech produced differently but with the same modality;
- Research exploring whether practice in listening facilitates reading comprehension;
- Research that examines the transfer of trained listening skills to reading;
- Research comparing the listening comprehension of "poor" versus "good" readers;
- Research exploring what disrupts reading for "poor" versus "good" readers;
- Research that examines the relationship of listening and reading language comprehension to independent measures (pp. 428-430).

Among his criticisms of existing research within the above six categories, he cited instrumentation and methodological flaws. His major complaint voices the common frustration of researchers attempting to examine reading or listening comprehension processes: Assessing processes by examining the output is very difficult; identical results do not necessarily demonstrate identical comprehension processes by the two modalities. Their internal, invisible nature preclude existing means of observation.

A study conducted by Berger and Perfetti (1977) investigated language comprehension through the relationship between reading and listening comprehension of skilled and less-skilled adolescent readers. Two memory tasks were required after exposure to both oral and written passages. Significant differences between the skilled and less-skilled readers resulted in both the reading and listening passages which supports the contention that reading comprehension and listening comprehension are interrelated with language comprehension. They concluded that deficiencies in reading comprehension, hence, are related to difficulties in
general language processing.

Nipper (1976) investigated the effects of presentation rate of audiotapes on the listening comprehension of fast and slow readers at the university level. A listening passage (165 WPM) compressed at 20% and 40% was presented to the subjects at 165, 208, and 266 WPM. There were no significant differences between the groups at the varying rates of presentation, nor was there a significant difference between rate of presentation and reading ability. Mignerey (1975) hypothesized that, since listening and reading comprehension demonstrate positive correlations under normal circumstances, there may also be a correlation between listening comprehension of time-compressed speech and reading comprehension during speed reading. The findings do indicate a correlation between subjects' initial comprehension of time-compressed speech and that subject's capacity to progress sufficiently in a speed reading program. The researcher concluded that this relationship is significant enough to employ it to instruct speeded listening before speed reading and as a predictor of success in speed reading instruction. Neville and Pugh (1975) examined the application of rate-controlled speech in the development of reading by L2 English students and found that the expanded speech of recorded text material, utilized in conjunction with a silent reading pacer, facilitated comprehension of the subjects. They cautioned against drawing hasty conclusions from the results. First of all, this was a pilot study of only seven subjects. Secondly, improvement was not only demonstrated by the
silent reading comprehension scores but in overall language improvement experienced by living in an English-speaking environment and attending other university English courses. Bakkan (1985), in a similar study, investigated the effects of listening while reading versus reading alone by university L2 German students. His study, however, did not report any significant differences between the two groups. Fulmer (1976) cautioned that investigation of reading or listening rates—or the maximal rates at which a learner can effectively comprehend written or aural material—must clearly delineate population, purpose, materials, and elicitation instruments; generalizability of existing research results is limited. After reviewing the existing L1 research on reading and listening rates, he concluded that average listening rate ranges between 125–200 WPM approximately, while average reading rate ranges, approximately, between 185 to 300 WPM. Rate of reading, of course, is controlled by the reader while listening rate is controlled by the speaker or the tape being manipulated. Maximal rate in both reading and listening, of course, is more difficult to estimate, but he surmised that listening rate may maximally range between 350 to 450 WPM. He refrained from estimating a maximal reading rate based on existing conflicting data. Fulmer concluded from his review of reading/listening rate literature that further research—which clearly and carefully delineates populations, materials, instrumentation, and overall methodologies employed—is necessary before more decisive conclusions can be drawn.
CHAPTER III
PROCEDURES

Population and Sample

Subjects were third-quarter university Spanish 103.01 students at The Ohio State University. The Ohio State University is a state-supported institution with a two-year high school foreign language entrance requirement. Students not meeting the requirement must enroll in Spanish 101.01 and proceed to Spanish 102.01 to fulfill the conditional admission deficiency. Students pursuing a Bachelor's degree in the Colleges of Arts and Sciences must meet a four-quarter requirement beginning with 101.01 and ending with 104.01. A foreign language placement test is required, upon admission to The Ohio State University, of all students who studied a foreign language at the high school level. Students, subsequently, place at differing levels of Spanish according to their performance on the placement test.

This population was selected for several reasons. Primarily, the study is meant to provide base-line data for the listening comprehension of beginning Spanish students; because so little research has been conducted, one can only hypothesize about how beginning students might benefit from variation in speech rate while listening to native Hispanic Spanish texts. The 103.01
level students, although beginners, had exposure to aural texts during their 101.01, 102.01, or 103.01 classes for both practice and evaluative purposes and were familiar, therefore, with listening to extended discourse. The 103.01 level students had been exposed not only to aural texts during previous beginning classes but also had exposure to, and knowledge of, most major grammatical features. The results of the study, then, are attributable more to the experimental condition of word rate rather than to any confounding effects due to unfamiliarity with vocabulary, grammatical features, or structures. Finally, the Spanish 103.01 population was large enough to provide an adequate number of subjects. There are approximately 15 classes offered each academic quarter—except for the Summer Quarter—and an average of 20 students is enrolled in each section. The sample, then, for the study consisted of students enrolled in Spanish 103.01 during the Spring Quarter 1990. The nine intact classes were randomly selected, from morning and afternoon classes, to participate in listening to three passages at one of three rates of speech. The average number of students per class was 16; the initial sample size was 140. The researcher, finally, randomly selected 10 subjects from each of the nine classes for data analysis. The final sample, then, was 90 subjects.

Research Design

A two-factor between-within analysis of variance design was chosen for this study because it can account for both main effects
among independent variables and interaction effects between independent variables. Factors in the analysis of variance were: Text (El Pato, La Catedral Subterránea, El Camaronero) and Speech Rate (Normal, 135% Expansion, 150% Expansion). The design layout can be found in Table 1.

The first independent variable, text type, consisted of three aural passages:
1. El Pato
2. La Catedral Subterránea
3. El Camaronero.

The second independent variable, Speech Rate, included:
1. Original Rate of Speech (160, 153, 155 WPM)
2. 135% Expansion (122, 113, 119 WPM)

The dependent variable was the percentage of text material recalled as demonstrated in the immediate recall protocol.

Explanation of the Variables

The Texts

The texts chosen were native Spanish radio broadcast narratives recorded orally by a native Spanish-speaking person from Chile. (See Appendix A for the three Spanish passages.) Although there are those who contend that native speech may be too difficult for beginning learners and should be reserved for higher-level language learners (Ur, 1984), there are others who advocate the use of native texts by all learners (James, 1984;
Table 1
Design Layout of the Between-Within ANOVA Design

Variables and Treatment Conditions

The Independent Variables of the Study:

TEXT (A) El Pato (1), La Catedral Subterránea (2), El Camaronero (3)

SPEECH RATE 0% Expansion (1), 135% Expansion (2), 150% Expansion (3)

<table>
<thead>
<tr>
<th>WORD RATE (FACTOR B)</th>
<th>El Pato (a₁)</th>
<th>Catedral (a₂)</th>
<th>Camaronero (a₃)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0% Expansion (b₁)</td>
<td>a₁ a₂ a₃</td>
<td>a₁ a₂ a₃</td>
<td>a₁ a₂ a₃</td>
</tr>
<tr>
<td>S 1-10</td>
<td>S 11-20</td>
<td>S 21-30</td>
<td></td>
</tr>
<tr>
<td>135% Expansion (b₂)</td>
<td>S 31-40</td>
<td>S 41-50</td>
<td>S 51-60</td>
</tr>
<tr>
<td>150% Expansion (b₃)</td>
<td>S 61-70</td>
<td>S 71-80</td>
<td>S 81-90</td>
</tr>
</tbody>
</table>
Rivers, 1981; Swaffar, 1985). Swaffar defined a native aural text as one, for the purposes of a foreign language class, whose principal purpose is to communicate meaning. Different narrative texts representative of radio broadcasts were chosen for several reasons. First of all, radio broadcasts are the most readily available and lowest cost means of obtaining authentic Spanish speech by both teachers and learners. Because of its accessibility, learners are most likely to be exposed to this genre than any other authentic speech unless they live in an Hispanic community or receive Spanish-speaking television networks. Weissenrieder (1987), however, cautioned against some of the inherent difficulties encountered by a nonnative speaker when listening to a news broadcast on either television or radio. Time constraints require verbal economy; newscasters present as much material as possible in limited amounts of time. Time limitations affect the message delivered on news broadcasts in three ways: rapidity, concentration of propositions at the discourse level, and reductions of forms at the structural level. Rapidity, according to Weissenrieder, is reflected in the lack of normal pausation commonly found in spontaneous speech. A lack of pauses, again, may cause cognitive overload for the listener (Olsen, 1982). Katz (1975), as pointed out by Weissenrieder, noted a forgetting rate of 80% by native English-speaking listeners on a 20-minute, 15-item television news broadcast. She cited a dual manifestation of economy in newscast discourse, the absence of various discourse propositions, and the concentration of
information across categories. Repetition of information may facilitate comprehension even when discourse economy is impeding it. Structure, finally, is manipulated in radio and television newscasts. To a native listener, a predictable speech pattern eases information processing but, to a nonnative listener who does not recognize or does not expect such a pattern, it presents yet one more information processing challenge. For the L2 listener, the combined unique characteristics of broadcasts present yet another register of speech that is not usually presented on laboratory tape exercises.

Because of the base-line nature of this study and the undocumented empirical effects of exposing listeners to native materials, the researcher decided to use three distinct narrative passages to control for any unusual advantages or problems that subjects may encounter with any solitary text topic or the content of a text. Texts were read orally from a prepared script, and recorded, rather than presented spontaneously. This decision was made based on the documented difference between prepared speech and spontaneous speech (Abercrombie, 1963; Voss, 1984). Carroll (1967) emphasized that one must take into account whether the text at hand is spontaneously spoken (i.e., speech composed as it is presented) or speech presented by the oral reading of a prepared text because, according to Voss (1984), the listener is faced with different types of problems depending on the type of speech presentation. Research in both L1 and L2 reveals that spontaneous speech, in both French and English, is more "fragmented and
discontinuous" (Flaherty, 1975, p. 19) than prepared speech that is orally read from a script. Texts that are read orally are also presented at a faster pace than spontaneous speech and lack redundancy and pauses. Abercrombie (1963, cited in Voss, 1984) was one of the first to distinguish between "conversation" and "spoken prose" (p. 45), and Sullivan (1984), who compared the two, pointed out that a speaker in a lecture or conversation is "deliberately formulating the expression of his ideas" (p. 5) and speaks at a typically slower rate of speech. Sullivan, however, did not state a specific speech rate but cited Latz's (1977) conclusion that spontaneous speech varies according to the individual, his or her state of mind, and the situation.

A native, college-educated Chilean male was asked to participate as the native Spanish speaker. This person was chosen for several reasons. A male was chosen over a female based on sociolinguistic research demonstrating that males and females are not evaluated equally; listeners pay closer attention to male speakers and consider males more credible in terms of expertness (Markham, 1988). This native speaker was also chosen because of the neutral quality of his voice (T. Wells, personal communication, January 1990). The nature of the initial taping and subsequent speech expansion of the tape called for a voice with a constant pitch; that is, a neutral voice that did not vary greatly in range of pitch. The speaker indicated that he was experienced in making professional recordings for taping or radio broadcast. The clarity of his voice and clear enunciation while
speaking also enhanced the quality of the tapes produced and expanded. The native speaker, finally, was chosen because of the quality of his speech; his Chilean speech was representative of most Spanish spoken by college-educated Hispanics that one might hear in Latin America.

The native Spanish speaker practiced reading the texts aloud to achieve a consistent and natural rate of speech. He, of course, read a copy of the original text verbatim. For the purpose of this study, the original text was read orally rather than spoken spontaneously.

The texts simulate radio newscasts in the form of narratives that are typically read by the presenter. Again, a listener may be familiar with radio commentaries of this genre but may be disadvantaged for reasons listed by Weissenrieder above. Even though the listener may be familiar with the radio genre—which is narrative—the text topic plays a crucial role in comprehension. Texts were chosen according to perceived levels of homogeneity of background knowledge of topic; it was determined that students shared a common level of knowledge—no background knowledge—about the text topics.

**Background Knowledge Tests**

The selection of the topics of the texts was crucial to homogeneity of background knowledge. In order to attribute the results of the study to the effects of word rate rather than any confounding effects attributable to background knowledge, the
researcher ensured that text topics chosen were unfamiliar to the learners. The three topics were chosen after the researcher verified a homogeneous level of background knowledge by administering a background knowledge test during a preliminary pilot study of materials to another sample within the same population to ascertain familiarity with the content of the texts. A sample other than the experimental sample was chosen so that background knowledge and subsequent comprehension of the experimental sample would not be affected by prior exposure to information pertaining to passage topics. The researcher was prepared to select different texts, which would also be tested for student background knowledge, if students in the population demonstrated a differential amount of background knowledge about any of the texts. Subjects, during the actual experiment, were asked to complete a questionnaire that asked whether the subjects were familiar with the topics prior to participation in the study. (See Appendix D.) No subjects indicated prior familiarity; if they had, they would have been excluded from the study.

The proportion of unfamiliar vocabulary in the three texts was also calculated to see whether the authentic texts might contain a disproportionate amount of unfamiliar vocabulary, another factor that could potentially affect comprehension. The percentages of words in each text not previously encountered by the population can be found in Appendix B; these figures represent vocabulary not found in the subjects' Spanish language textbook, *Puntos de Partida* (Knorre et al, 1989).
The researcher designed a background knowledge test for each of the three passages to assess familiarity of the passage topics. (See Appendix C.) Encyclopedic references (Arlott, 1975), cultural text references (Castells & Lionetti, 1978), and native expertise were solicited to design corresponding tests. The accuracy of the 30 items—10 items for each passage—was acknowledged by native college-educated Spanish speakers from the respective regions pertinent to the cultural topics.

The three tests (each on a scale of 0-10) were administered to four intact Spanish 103.01 classes during the Autumn Quarter 1989 and to college-educated, native Spanish speaking participants—from Argentina, Colombia, and Chile—who volunteered to participate by completing the background knowledge test pertinent to their country. There were 92 uninformed subjects and 16 experts (7 Argentineans, 8 Colombians, 1 Chilean) who responded; the results are illustrated in Tables 2, 3, and 4. The results indicate that, in general, Spanish 103.01 university students have a homogeneous level of background knowledge—no prior familiarity or knowledge—of all of the text topics. Subjects, during the actual study responded to a questionnaire that confirmed their unfamiliarity with the three text topics.

**Rate of Speech**

The second independent variable was word rate. The experimental values for the variation of speech rate in this study were determined by first and second language studies. The effects
| Table 2 | Test Performance of Expert and Naive Groups as Demonstrated by Mean Scores on a Scale of 0-10: El Pato Text |
| EL PATO |                                                                                                             |
| Naive   | 2.35                                                            |
| Expert  | 7.60                                                            |

| Table 3 | Test Performance of Expert and Naive Groups as Demonstrated by Mean Scores on a Scale of 0-10: La Catedral Subterránea Text |
| LA CATEDRAL SUBTERRANEA |                                                                 |
| Naive   | 1.51                                                            |
| Expert  | 7.88                                                            |

| Table 4 | Test Performance of Expert and Naive Groups as Demonstrated by Mean Scores on a Scale of 0-10: El Camaronero Text |
| EL CAMARONERO |                                                                 |
| Naive   | 2.59                                                            |
| Expert  | 8.00                                                            |
of specific word rates on listening comprehension in English are well documented in use with various text types and comprehension measures (Adelson, 1975; Diehl et al, 1961; Foulke, 1968; Friedman et al, 1966; Harwood, 1955; Nelson, 1948), and less well documented in second language studies, particularly in the area of speech expansion. Flaherty (1975), for example, arbitrarily chose two rates (135% and 170%) for her study of listening comprehension by secondary school French students because no precedent existed in terms of selecting rate of speech. She rationalized that both expanded rates differed adequately from the original, normal word rate, and from each other. The differential effects that might result, she hypothesized, would be evident.

There are several ways to measure rate of speech in an aural text. Time-compressed and time-expanded speech can be calculated in terms of syllables per minute, words per minute, or by the percentage of speech compressed, or expanded, from the original text. Carroll (1967) noted that merely counting words per minute can give misleading results when speech is expanded or compressed, but Pimsleur et al (1977) found that radio newscripts maintain a constant word length and accepted the words per minute (WPM) measure of speech rate in their research.

For the purpose of this study, speech rate of the original recordings was determined by the number of words per minute of the original aural texts; expansion percentages are 135% and 150%. (See Table 5 for corresponding words per minute for each text by expansion rate.) Flaherty documented a significant effect on
Table 5

Words Per Minute and Text Time According to Expansion Rates

<table>
<thead>
<tr>
<th>Expansion Rate</th>
<th>EL PATO</th>
<th>LA CATEDRAL</th>
<th>EL CAMARONERO</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>160 WPM</td>
<td>153 WPM</td>
<td>155 WPM</td>
</tr>
<tr>
<td></td>
<td>77 SECONDS</td>
<td>82 SECONDS</td>
<td>85 SECONDS</td>
</tr>
<tr>
<td>135%</td>
<td>122 WPM</td>
<td>113 WPM</td>
<td>119 WPM</td>
</tr>
<tr>
<td></td>
<td>104 SECONDS</td>
<td>117 SECONDS</td>
<td>114 SECONDS</td>
</tr>
<tr>
<td>150%</td>
<td>108 WPM</td>
<td>98 WPM</td>
<td>108 WPM</td>
</tr>
<tr>
<td></td>
<td>115 SECONDS</td>
<td>130 SECONDS</td>
<td>127 SECONDS</td>
</tr>
</tbody>
</table>

comprehension at 135% in her study with L2 learners of French, but did not find such an effect at 170%. A lower expansion rate (150%) was chosen for this study, then, in expectation that significant effects would be documented at both decelerated rates. Heilenman (1978) employed a 150% expansion rate in her research; results, however, were not significant.

The texts chosen were prepared by native college-educated Spanish speakers (from Uruguay, Colombia, and Chile) who were asked to write a text concerning a unique cultural topic, event, custom, or social feature indigenous of their homeland, and one most likely to be unknown by Spanish speakers in another Spanish-speaking country. They were not told that the texts would be listened to by Spanish learners. The researcher made several suggestions for topics to the native speakers, based on her knowledge of different cultural concepts; they pertained to El
Pato and to La Catedral Subterránea. The researcher, in part, based her knowledge of these concepts on the cultural sections from La Lengua Española (1978). The native speakers, of course, based their text on their personal knowledge of the concept. The writer of the El Pato text referred to a reference text of sports for more detailed information concerning the sport (Arlott, 1975). The text writers were also asked to write the texts as though they were meant to be broadcast on a radio program; in other words, they were asked to prepare a text meant for aural presentation.

The passage constructors were asked to prepare the passages as if they were to be presented on Hispanic radio to native Spanish speakers for two reasons. The first reason was to discourage the constructors from writing the text for language learners and to encourage them to write to native Spanish speakers; hence, a native, more natural text rather than a pedagogically-geared text. The second reason was to encourage the constructor to write a text that, most likely, would be heard orally by a group of native speakers and to encourage speech intended for aural rather than visual reception. To further authenticate the experimental texts, the researcher employed a native Spanish-speaking editor (from Chile), of an international radio broadcasting station, to edit and revise the prepared texts so that they would be suitable for presentation on an Hispanic radio program. The editor was not told that the texts would be presented to Spanish learners; he prepared the texts for a native Spanish-speaking audience. The purpose, of course, was to prepare native aural materials rather
than contrived, pedagogically motivated texts. Considerable stylistic changes were made by the editor to make the texts suitable for radio broadcast.

The three texts are 208 (El Pato), 219 (La Catedral Subterránea), and 229 (El Camaronero) words in length; the native Chilean Spanish speaker, employed to read the texts orally for taping, practiced reading each text carefully in order that his original word rates and presentation times were similar (160, 153, and 155 WPM, respectively). The texts, consequently, are 77, 82, and 85 seconds in length. There were several reasons for selecting this particular speech rate. First of all, Pimsleur et al (1977) found, in their investigation of French and American radio broadcasters, that average word rate was 180 WPM. Standard speech rate was estimated to be between 160 and 190 WPM. For the purpose of this study, the average word rate was 156 WPM, a rate that falls at the lower end of Pimsleur et al's parameter of average word rate. A second reason was to maintain intelligibility of the speaker's speech so that learners would not be disadvantaged by distractive prosodic features. Furthermore, this speech rate was necessary to maintain the intelligibility of speech meant to be expanded. To keep distortion through expansion to a minimum, the quality of the original tape had to be maximized. Passage length was also controlled for several reasons. Listeners were to be presented with extended discourse, but of a limited amount, to prohibit an overload of information received. Although the effects of text length on listening
comprehension have not been investigated, Bernhardt and James (1987) suggest that an aural text should be approximately 200 words long and one to two minutes in presentation length. Texts were also kept to a minimum length (77, 82, and 85 seconds) because of taping limitations. The technology used to expand speech in this experiment called for the expansion of a single one-minute tape over a considerable period of time because of the amount of memory required by the computer to expand the tapes. The technician employed an Alchemy 2.0 program (Rosen, 1989) on a McIntosh computer. The quality of tapes expanded in this manner is significantly better than expansion via mechanical means but is much more time consuming because of its highly sophisticated technology. Finally, the expansion of tapes by 135% and 150% increased the length of each tape approximately another 30 and 43 seconds, respectively. In order that each treatment group be able to complete the entire experiment in one 48-minute session, a limit had to be placed on the length of the passages. Because some subjects listened to three passages expanded at 150% (versus others who listened to three passages at original speed or at 135% expansion), they had less time, potentially, to respond to a total of three recall protocols than the subjects in the other treatment groups. The treatment group that listened to three passages at 135% expansion listened to 5:35 minutes/seconds of text, two times, while the treatment group that listened to the three passages recorded at 150% expansion listened to 6:12 minutes/seconds of tape, two times. The group that listened to
the three passages recorded at the original speed listened to 4:04 minutes/seconds of text, two times. Table 5 illustrates text times and words per minute. The researcher allowed 10 minutes of response-time for each recall protocol; allowing this much time to write a recall protocol did not disadvantage any of the treatment groups by allowing less time to respond. The treatment group that received the 150% expansion condition, in other words, had the same amount of response time to write a recall protocol as did subjects in the Normal (0 expansion) or 135% expansion treatment groups. Overall, a limitation of passage length was imposed to control for overall experiment time and fatigue, or boredom, of subjects.

Speech Expansion

The technology used to expand speech for this experiment was made available through the Sound Synthesis Studio of The Ohio State University. To the researcher's knowledge, this technology has not been incorporated in foreign language research; it is primarily a means to experiment with, and compose, music. The equipment used included: a PCM Beta recorder that initially recorded the three texts and the Alchemy 2.0 program (Rosen, 1989) designed for use on a Macintosh computer. "Alchemy is an advanced sound design and storage environment"...that..."lets you create, edit and play back sampled 16-bit stereo sounds, and save them in a central library" (pp. 1-6). The most important characteristic of Alchemy 2.0, for this experiment, was that its "digital
resampling capabilities make it possible to change the sample rate of any sound, so you can adjust any waveform to any sampler format without altering its playback pitch" (pp. 1-7). In other words, the program allows for speech expansion without pitch distortion; the fidelity of the tapes is very high.

Recall Protocol Scoring Instrument

The recall protocol was employed to elicit measurement of listening comprehension by the subjects. This method of assessing comprehension has been used more extensively in reading comprehension research in L1 (Bransford & Johnson, 1972) and L2 (Allen et al. 1987; Bernhardt 1983, 1984, 1986; Connor, 1984) and has been employed on a limited basis in listening comprehension research in L1 (Bransford & Johnson, 1972) and L2 (Bernhardt & James, 1987; James, 1984; Long, 1990). Johnston (1983) refers to the recall protocol as "...the most straightforward assessment of the result of the text-reader interaction" (p. 54). Most L1 listening research studies implemented multiple-choice formats for measuring comprehension, but this assessment technique was criticized by some (Behnke & Beatty, 1977; Birkmaier, 1973; Carver, 1973) who maintained that standard multiple-choice question techniques are not an adequate means to measure comprehension. Bernhardt (1987), for one, contended that questioning, in any form, may influence the subject's decisions. Contamination of the data can be avoided by utilizing a subject-
generated recall protocol written in the subject's native language upon completion of the aural text. Recall protocols are written in the native language, according to some (Bernhardt and James, 1987; Carrell, 1984; Lee, 1986), in order that the subject's productive skills do not interfere with the subsequent analysis of their comprehension abilities.

The Johnson System of Scoring

The subjects' immediate recall protocols were analyzed quantitatively using the Johnson System (1970). The researcher and two trained raters scored subjects' recall protocols. The Johnson (1970) System was chosen to score the results of the recall protocols because it has been applied successfully to different kinds of prose passages in L1 and L2. Johnson developed the system as an objective methodology for determining the structural importance of isolated verbal units in narrative prose passages. It has a .90 correlation (Bernhardt, in press) with the Meyer System (1985), another well-known scoring instrument used in reading research in both L1 and L2. The Johnson System was chosen over the Meyer System because of its relative ease in scoring compared to the latter form of analysis. While the Meyer System demands between 30 to 60 minutes of time for scoring per recall protocol, scoring with the Johnson System requires approximately 10 minutes. The Johnson System is a weighted propositional analysis based on pausal, breath, or meaningful units from a
passage. To develop the propositional system for each of the three passages, one native reader of Spanish and the researcher individually divided the passages into "pause acceptable" units. According to Johnson, raters are to indicate pauses where one might pause "...to catch a breath, give emphasis to a story or enhance meaning" (p. 13). Initial correlation of pausal units between raters was 80%; raters then came to a 100% agreement as to the acceptable units to be utilized in the final analysis. El Pato consists of 68 units, La Catedral Subterránea, 80 units, and El Camaronero, 84 units. (See Appendix F for individual passage propositions.)

The researcher and the same rater, then, further calibrated the three texts according to their structural importance. A final number of subunits divisible by four is required so that subunits of equal semantic importance can be grouped equally. In other words, the system calls for the division of pausal units into four levels of semantic importance to the text. Johnson (1970) explained that the linguistic phrases, or pausal units, vary in their structural significance to the text and that phrases can be extracted from the text without interfering with the text's core meaning. Raters, therefore, must eliminate insignificant subunits "...until only 1/4, 1/2 or 3/4ths of the original number of words remained in the whole story" (p. 13). Each subunit within each of the four levels is then awarded a value between 1 and 4; 1 being of least value, or least semantic significance, and 4 being the highest value and of greatest semantic significance. The raters
systematically extracted subunits, thereby grouping the text into
the least significant 25% subunits (1), next most significant 25% subunits (2), second most significant 25% subunits (3) and most significant 25% subunits (4). Results of the analysis of measurement of structural importance are found in Appendices G, H, and I.

Data Collection

The researcher met with the course instructors during the sixth week of the quarter to explain in detail the procedures of the experiment. The researcher chose to speak with the instructors by the sixth week so that they had ample notification of the experiment date (during the eighth and ninth weeks of the ten-week quarter) and could include the classes' participation in the syllabus. The instructors were not exposed to the texts but were informed that the researcher was interested in obtaining base-line data on the listening comprehension of beginning Spanish students.

Intact classes were randomly selected to participate in the study. Prior permission was sought from and received by the Department of Spanish and Portuguese at The Ohio State University. Students were invited to participate voluntarily in the study. The researcher explained to the instructors and subjects that the aural listening task to which the subjects were exposed would provide practice in listening comprehension in that they would be exposed to native Spanish texts. Such exposure was beneficial for overall listening development as well as listening practice for
the listening segment of the subjects' impending midterm exam and final exam, both of which include a listening segment worth 20% of each test's grade. Subjects were not told of the different treatment conditions.

The actual experiment was conducted during the eighth and ninth weeks of the quarter, over a three-day period. The eighth and ninth weeks were chosen out of the ten-week quarter so that learners, by that time in the quarter, were most representative of their particular language level. Students had completed approximately 75% of their course requirements for their respective course level.

The intact classes were directed to meet with their instructor and the researcher at the University language laboratory. The language laboratory was chosen versus exposing subjects to the material in their respective classrooms to increase face validity. The acoustics and environmental noise normally experienced on a university campus might have confounded the validity of the study. Students, in this way, had identical exposure to the recorded material. The researcher, prior to the experiment, reserved the laboratory facilities and verified that the language laboratory equipment (headsets, listening carrels, main cassette recorder) functioned properly. Each student sat at one carrel during the listening exercise. Each subject received a packet of instructions and materials needed to respond on the recall protocol (paper, pencils). The instructions (Appendix E), presented in both written and oral form, explained the order of
events during the experiment and the requirements for the written recall protocol. Bernhardt (1987) advises that students recall in English; grammar and spelling are not taken into account during scoring.

All subjects listened to the same recording at the same time with the use of the headsets. Each subject listened to all three texts presented at the same rate of speed throughout their participation in the experiment. Each tape was played twice. The students did not respond in written form until they listened to a tape a second and final time. They were instructed to listen to the tape and not to write any information during the playing of the tape until the second recording has been completed. Any subject who did not comply with the instructions was excluded from the study. Lowe (1984) noted an ongoing debate over the number of times to repeat a passage for foreign language listeners. Bernhardt and James (1987) advocated the playing of a recording only two times: once to familiarize the student with the text and once to enable the student to establish a mental structure by which they can retain elements of the text needed to respond on a recall protocol.

Students, in total, wrote three recall protocols, one in response to each native aural tape recording. The order of presentation in which subjects listened to the three tapes was randomly varied to ensure validity by reducing the effects of fatigue or boredom that may have resulted by the third tape.

Subjects were given adequate time to respond on the
protocol; the researcher used discretion in monitoring progress to allow ample time for response and ensured that students could complete the experiment within a normal 48-minute class period. Subjects were allowed up to 10 minutes to recall information; actual response time by subjects was under 10 minutes. The researcher asked that each subject write the last four digits of his/her social security number at the top of his/her protocol for easy identification by the researcher, but with the assurance of anonymity. The researcher also asked that any non-native English speakers make a note on their protocols as to their native language; their protocols were excluded from analysis. Subjects were asked to complete a five-item questionnaire after they completed their final protocol. (See Appendix D.) The main purpose of the questionnaire was to determine prior familiarity with text topics and to determine students' perceptions of the tapes. Protocols were turned face down on the subjects' desks upon completion. All three protocols were collected simultaneously at the end of the experiment.

Scoring of Recalls

The recall protocols were scored, using the Johnson System, by the researcher and two other raters; interrater reliability was calculated after scoring and found to be .91.

Pilot Study

A pilot study, using randomly selected intact 103.01 beginning level Spanish classes, was conducted one quarter prior
to conducting the actual experiment. The procedure for the pilot study was identical to the procedure described in the data collection and data analysis. The pilot study was used to determine the interrater reliability of the researcher and two other raters who scored the protocols. Interrater reliability for the pilot study was .91. The researcher also determined whether any procedures or materials were problematic. While the researcher ascertained that both written and verbal instructions were clear and that subjects responded without complications, she decided to redo the tapes at a slower rate of speech. It was determined from the results of the recall protocols and a questionnaire completed by subjects that the original speed of speech (187 WPM) forced the speaker to speak at an uncomfortable rate, which did not allow him to enunciate as he normally would have. Speech, as a result, tended to be slurred upon expansion of the original tapes. The second set of tapes was recorded at a slower word rate (156 WPM), which allowed the speaker to enunciate the texts more clearly. Subsequent expansion of the tapes was more audible because of the clarity of speech and reduced tendency to appear slurred.

Data Analysis

Two trained raters and the researcher scored the recall protocols, using the Johnson system, for quantitative analysis. Interpretation of the units recalled by the subjects was relatively liberal because the subject recall protocols were written in a language—English—different than the original text.
Any reasonable paraphrasing of pausal units in the protocol's was acknowledged.

The recall protocol scores were analyzed statistically to determine whether there were any effects of the independent variables on the dependent measure. A between-within analysis of variance (ANOVA) was employed to test for main effects of the independent variables (text type x word rate) on the recall protocol measure. The between factor is word rate; text is the within factor. The between-within analysis of variance was utilized also to reveal if any interaction effects existed among the levels of the independent variables. The Statistical Analysis System (SAS) package was applied at the Instruction and Research Computer Center of The Ohio State University.

**Null Hypotheses**

**Ho1:** There will be no significant effect attributable to variation in speech rate on recall measures of listening comprehension in third-quarter university Spanish students.

**Ho2:** There will be no significant effect attributable to text type on recall measures of listening comprehension in third-quarter university Spanish students.

**Ho3:** There will be no significant interaction attributable among variation in speech rate, text type, and listening comprehension ability in third-quarter Spanish students.
CHAPTER IV
RESULTS AND DISCUSSION

Results

Introduction

This study investigated the effects of three different levels of word rate on the listening comprehension of third-quarter university Spanish students. Intact classes were randomly assigned to listen to three aural texts at one of three word rates. The independent variable of word rate was manipulated by speech expansion; subjects were exposed to either 0% expansion, 135% expansion, or 150% expansion.

A 3 (Text: El Pato, La Catedral Subterránea, El Camaronero) x 3 (Word Rate: 0%, 135%, 150% Expansion) between-within analysis of variance design was chosen for this study because it could account for both main effects among independent variables and interaction effects between independent variables.

The dependent variable was the percentage of text material recalled in an immediate recall protocol. Each of the three texts called for the division of pausal units into four levels of semantic importance to the text. Each subunit within each of the four levels was awarded a value between 1 and 4; 1 was of least value and 4 was of greatest value. (See Chapter III and 93
Appendices G, H, and I.) Each recall protocol was analyzed for the number of pausal units recalled from each passage. Subjects' scores were determined by summing the values awarded to each pausal unit recalled. The interrater reliability between scorers was .91 for both the pilot study and actual experiment.

A two-factor between-within analysis of variance was computed by using the Statistical Analysis System (SAS) at The Ohio State University Instructional and Research Computer Center.

**Data Analysis**

The overall means across texts for word rate were: 0% = 16.76, 135% = 21.04, and 150% = 19.83. Overall means across word rate for texts were: *El Pato* = 25.80, *La Catedral Subterránea* = 15.95, and *El Camaronero* = 15.89. Table 6 demonstrates the observed group means and standard deviations for the word rate by text treatment effect. Although the group means for all three texts are highest at the 135% expanded word rate, they are not significantly different from the other word rates. Figure 2 displays the overall group means of texts by word rates. One can see that, across texts, the lowest means were from the treatment group exposed to 0% expansion of the texts.

The results of the between-within analysis of variance (ANOVA) design are summarized in Appendix J. The main effect of the independent variable of word rate was not statistically significant at the p < .05 level, F(2, 87) = 1.60. The independent variable of text was significant, however, at the p < .0001 level, F(2, 174) = 34.48. A post-hoc comparison using a Tukey's Honest Significant Difference
(HDS) Test was applied to determine which levels of text were significantly different; a familywise error rate of .05 was established. Results demonstrated that the El Pato text, with an overall mean of 25.8, was significantly different from the Subterránea text (\(\bar{X}=15.95\)) and the El Camaronero text (\(\bar{X}=16.05\)). (See Appendix K and Figure 3.) In addition, the repeated measures ANOVA model did not indicate an interaction between word rate and text at the \(p<.05\), \(F(4, 174)=.67\).

Following are the specific results for each null hypothesis examined in this experiment:

**H\(_0\)1:** There will be no significant difference attributable to variation in speech rate on recall measures of listening comprehension in third-quarter university Spanish students. The null hypothesis of no significant difference in speech rate is retained for all three levels of speech rate. It appears that the speech expansion of the three Spanish texts did not facilitate the listening comprehension of third-quarter university Spanish students.

**H\(_0\)2:** There will be no significant difference attributable to text type on recall measures of listening comprehension in third-quarter university Spanish students. The between-within analysis of variance produced a group main effect (\(p<.05\)); a subsequent post hoc Tukey Test demonstrated that the main effect is due to the significant difference of the El Pato text (\(\bar{X}=25.8\)) from the Catedral Subterránea text (\(\bar{X}=15.95\)) and the El Camaronero text (\(\bar{X}=16.05\)). The null hypothesis of no significant
Table 6

Observed Group Means and Standard Deviations of Treatment Groups

<table>
<thead>
<tr>
<th></th>
<th>El Pato (a₁)</th>
<th>Catedral (a₂)</th>
<th>Camaronero (a₃)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean  S.D.</td>
<td>Mean  S.D.</td>
<td>Mean  S.D.</td>
</tr>
<tr>
<td>0% Expansion</td>
<td>24.26 13.94</td>
<td>14.56 9.5</td>
<td>11.47 9.6</td>
</tr>
<tr>
<td>(b₁)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>135% Expansion</td>
<td>27.53 15.01</td>
<td>16.9 11.68</td>
<td>18.7 10.54</td>
</tr>
<tr>
<td>(b₂)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>150% Expansion</td>
<td>25.6 13.88</td>
<td>16.4 8.83</td>
<td>17.5 9.45</td>
</tr>
<tr>
<td>(b₃)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 2 Recall Score Means for All Texts by Word Rate
difference is rejected.

$H_0^3$: There will be no significant interaction attributable among variation in speech rate, text type, and listening comprehension ability in third-quarter Spanish students. The null hypothesis is retained for no significant interaction between the speech rate, text type, and listening comprehension ability.

**Figure 3** Recall Score Means for All Word Rates by Text
Descriptive Data on the Immediate-Recall Protocols

Analysis of recalls of the three texts' meaningful units reveals considerable differences among subjects. Overall, across all three levels of speech expansion, subjects appeared to recall the *El Pato* text with greater comprehension than the other two texts. Table 7 demonstrates the total units recalled by speeds across texts. One can see that, across texts, subjects at the 135% expansion rate recalled 710 pausal units, at the 150% rate recalled 673 units, and at the 0% expansion rate recalled 584 units. Again, this reflects subjects' superior results at the 135% expansion.

Subjects, in completing a questionnaire after responding to the three texts, had mixed reactions to the task but, overall, consistently voiced the same complaints. (See Appendices R, S, and T.) The most outstanding source of difficulty for subjects exposed to the texts at both 135% and 150% expansion rates was the vocabulary. Just under half of the participants at each of those speeds mentioned that understanding vocabulary was problematic to comprehending the texts. Most problematic for subjects at the original rate of speed was the speed or rapidity of speech. Over half commented that the speed of speech hindered comprehension. Several students mentioned that not being allowed to write notes during the task was a hindrance and others commented that the speaker's accent was difficult to adjust to.
<table>
<thead>
<tr>
<th>Word Rate</th>
<th>EL PATO Total Units Recalled</th>
<th>CATEDRAL Total Units Recalled</th>
<th>CAMARONERO Total Units Recalled</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>291</td>
<td>160</td>
<td>133</td>
<td>584</td>
</tr>
<tr>
<td>135%</td>
<td>327</td>
<td>181</td>
<td>202</td>
<td>710</td>
</tr>
<tr>
<td>150%</td>
<td>286</td>
<td>183</td>
<td>204</td>
<td>673</td>
</tr>
<tr>
<td>Totals</td>
<td>905</td>
<td>524</td>
<td>538</td>
<td>1967</td>
</tr>
</tbody>
</table>

Recalls of the Catedral Subterránea and Camaronero texts reveal that subjects recalled varying details of the texts but without actually identifying the main focus or topic of either. (See Appendix L, M, and N for the summation of meaningful units recalled in each text, across word rate, by subjects.) In examining the means across word rates for the Camaronero text, however, one can see the difference between the 0% expansion group and the 135% expansion group; the slower speech rate appeared to facilitate comprehension, although not significantly.

The majority of meaningful units recalled by at least 50% of the subjects was found in the beginning sections of the texts—the initial 25% of each text—but information recalled, overall, did not fit any particular pattern as far as the textual location of meaningful units. (See Table 8 for the frequency of recall of
meaningful units by textual location.)

El Pato Recall Protocols

Of the initial 25% of the El Pato text, five (7, 9, 10, 11, 14) of the 17 pausal units were recalled by over 50% of the subjects and seven of the 17 units were recalled by at least one-third of the subjects. Only two units (10, 11) were recalled by over 75% of the subjects. (See Appendix L for the breakdown of pausal units recalled.) In the El Pato text across levels of speech rate, more units (545) were recalled from the initial 25% of the text than any other segment. Each of the initial 17 units was recalled to some extent but 19 units of the 68 total units in the text were not recalled by any subjects. The fewest number of

Table 8

Frequency of Recall of Pausal Units by Textual Location

<table>
<thead>
<tr>
<th>25% Segment of Text</th>
<th>EL PATO</th>
<th>CATEDRAL</th>
<th>CAMARONERO</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Units Recalled</td>
<td>Total Units Recalled</td>
<td>Total Units Recalled</td>
</tr>
<tr>
<td>1st</td>
<td>545</td>
<td>327</td>
<td>162</td>
</tr>
<tr>
<td>2nd</td>
<td>50</td>
<td>36</td>
<td>110</td>
</tr>
<tr>
<td>3rd</td>
<td>163</td>
<td>59</td>
<td>203</td>
</tr>
<tr>
<td>4th</td>
<td>147</td>
<td>102</td>
<td>63</td>
</tr>
<tr>
<td>Totals</td>
<td>905</td>
<td>524</td>
<td>538</td>
</tr>
<tr>
<td>Totals</td>
<td>1034</td>
<td>327</td>
<td>162</td>
</tr>
<tr>
<td>Totals</td>
<td>1967</td>
<td>524</td>
<td>538</td>
</tr>
</tbody>
</table>
pausal units (50) was recalled from the second 25% of the text; this section of the text accounted for the greatest number of units—nine of 17 (#22, 27, 28, 29, 30, 31, 32, 33, 34)—that were not recalled by any subjects.

The third section of the text—pausal units 31 through 51—accounted for the second largest number of units recalled (163). Only three units (#31, 42, 43), however, were recalled by at least 33% of the subjects and five units (#36, 37, 38, 39, 50) were not recalled by any of the 90 subjects.

The last section of the text, or final 17 pausal units (52 through 68), accounted for the third greatest number of units recalled (147). Only one unit (#57) was recalled by at least 33% of the subjects; five units (#22, 58, 59, 65, 68) were not recalled by any subjects.

While most of the subjects comprehended that the passage pertained to sports, some did not understand that the text dealt with one Argentinean sport in particular. Over half of the subjects identified the sport by its name *El Pato*, but none recalled that a live duck was used in the original version of the sport. In fact, the information least recalled by subjects dealt with the description of the original version of the sport. One can see, however, that the mean score of 25.8 was significantly different than the mean scores for the other two texts. (See Appendix K.)

Another system by which to analyze the texts is by calculating units recalled in terms of most to least heavily
weighted (1, 2, 3, or 4 scoring values). (See Appendix O.)

Subjects, overall, most successfully recalled units with a scoring value of 3 (388). Of the 17 three-point units, four (#9, 10, 11, 14) were recalled by over 50% of the subjects. Four (#29, 31, 39, 59) were not recalled by any subjects. Units with a scoring value of two were recalled (188) with the second greatest success. Only two units (#5, 42) were recalled by over 33% of the subjects and four (#36, 55, 58, 68) were not recalled by any subjects. Pausal units valued at one point were the third most recalled units (159). Only two units (#6, 13) were recalled by at least 33% of the subjects and four units (#32, 37, 38, 50) were not recalled by any subjects. Those units valued at four points, finally, were the units least recalled (146). Two units (#7, 57) were recalled by over 33% of the subjects and eight units (#22, 27, 28, 30, 31, 33, 34, 65) were not recalled by any subjects. Again, 27% of the meaningful units (19 of 68) were not recalled by any subjects.

La Catedral Subterránea Recall Protocols

The majority of the pause units recalled of the Catedral Subterránea text (327) came from the initial 25% of the text (units 1-20). (See Appendix M.) Of those units, only one (#3) was recalled by over 50% of the subjects while four units (#3, 10, 13, 14) were recalled by over one third of the subjects. Two units (#1, 18) were not recalled by any subjects. Most units were recalled by fewer than 20% of the subjects. The second greatest number of units recalled (102) was from the last 25% of the text.
(units #61-80). Only two units were recalled by over 33% of the subjects (#79, 80), while the rest of the units (#64, 65, 66, 68, 69, 71, 72, 73, 74, 78) were not recalled by any subjects or recalled by less than 15% of the subjects.

Very few units were recalled from the middle 50% portion of the Catedral Subterránea text; only 95 total units were recalled by subjects from units 21-60. Subjects did not recall any information from 21 of those units. These results, of course, reflect the overall mean for the Catedral Subterránea text of 15.95, which was the lowest mean of the three texts.

A descriptive analysis of the Catedral text, in terms of scoring values (1, 2, 3, or 4), demonstrated the following. (See Appendix P.) Subjects mostly recalled four-point units (185), followed by two-point units (126), three-point units (112), and one-point units (101), respectively. Only one unit—a four-point unit (#72)—was recalled by over 50% of the subjects, while one-third of the 90 subjects recalled two meaningful units from the one- (#13, 80) and three-point unit (#10, 79) groups. Of the one-point value units, 12 (#1, 24, 28, 29, 33, 36, 38, 51, 54, 72, 74, 78) were not recalled at all by any subjects and of the three-point units, nine (#18, 26, 31, 32, 37, 52, 64, 68, 71) were not recalled at all. Both the two- (#27, 45, 65, 66, 69, 73) and four-point unit (#25, 41, 48, 49, 55, 56) groups had six meaningful units that were not recalled by subjects. In other words, 41% of the 80 total units of the Catedral Subterránea text were not recalled.
El Camaronero Recall Protocols

The third section of the Camaronero text (units #44-65) had the most recalled units of this text (203) compared to 162 units recalled from the initial 25% of the text (units #1-21), 110 units from the second quarter of the text (units #22-43), and 63 units recalled from the last section of El Camaronero. (See Appendix N.) Just over one-third of the subjects, however, recalled two of the units (#46, 49) from the most recalled part of the text. Approximately 32% of the text units were not recalled by any subjects: Nine units from the first 25% of the text (#6, 8, 9, 10, 22, 12, 13, 15, 20), nine units from the second 25% of the text (#30, 31, 32, 36, 37, 38, 39, 40, 42), four units (#45, 55, 60, 61) from the third 25%, and six units (#69, 74, 75, 80, 81, 82) from the last part of the text (units #66-84) were not recalled by any subjects. The mean score, overall, for the El Camaronero text was 16.05; again, subjects recalled details of the text but did not comprehend the focus of the text.

An analysis was also made according to the point values of the pausal units. (See Appendix Q.) The majority of units recalled (170) were from the three-point group. Half of the subjects recalled one (#3) unit while at least 20% of subjects recalled three (#19, 28, 46) three-point units. Three units (#36, 69, 81) were not recalled by any subjects.

In terms of four-point units, 144 units were recalled by the 90 subjects. Half of the subjects recalled one (#1) meaningful unit; two other units (#54, 79) were recalled by at least 20% of
the subjects. Seven four-point units (#10, 12, 13, 37, 40, 55, 74) were not recalled by any subjects.

Subjects recalled 132 two-point units. Three units (#18, 49, 24) were recalled by at least 25% of the subjects; five units (#9, 20, 32, 61, 82) were not recalled by any subjects. 15 of the 21 two-point units, in fact, were recalled by less than 5% of the subjects.

Subjects, finally, recalled 92 one-point units. Only three units (#33, 34, 48) were recalled by over 20% of the subjects; 13 units were not recalled at all by any subjects.

**Background Knowledge**

As stated earlier, there was a significant difference between texts in this experiment. The *El Pato* text, across levels of word rate, had an overall mean of 25.8; *La Catedral Subterránea* had a 15.95 mean, and *El Camaronero* had a 16.05 mean. The reason why subjects more successfully understood the *El Pato* text may be attributable to their greater familiarity with—or interest in—the text topic, sports, more than with either of the two other topics of subterranean cathedrals or shrimpers.

Even though the results of a background knowledge test (See Tables 2, 3, and 4 of Chapter III) administered to a sample group of Spanish 103.01 students did not demonstrate a differential level of background knowledge in favor of the *El Pato* text, the superior recall of the text over the other two texts may be due to
a general topic familiarity with sports.

The following subject's recalls demonstrate the overall trend among subjects to recall more complete information pertaining to the *El Pato* text than either of the other two texts. This subject's recalls were chosen because his or her scores were closest to the group means for all three texts:

**El Pato**

Many sports actually have primitive origins. *El Pato* is similar to basquetball (sic) and polo. It consists of four players. People began to play it in the fifteenth century.

**La Catedral Subterránea**

The passage discusses a city in Colombia. It has an extensive metro system. The city has cathedrals. They mention something about the trunks. It (the city) is five minutes by car from somewhere. The city is one of a kind.

**El Camaronero**

In Chile it rains a lot in the month of April. The speaker talks about various aspects of the city and the country. He mentions busses and cafes in the city and talks about the schools in the country.

The scores of the above recall protocols are 27, 19, and 18, respectively. They are actually a little higher than the texts' means of 25.8, 15.95, and 16.05. The recalls demonstrate how the subject recalled details of each text but only correctly identified the topic of one text, *El Pato*, as being a sport. The *Catedral Subterránea* text is less accurately recalled; the subject
placed greatest emphasis on a city in Colombia, rather than the actual topic of the text, that of the unique salt cathedral. In the last recall, the subject again mentions details but fails to mention the main focus of the text, which is the shrimper.

Another possibility as to why the El Pato text was significantly different than the Catedral Subterránea and El Camaronero texts may be due to vocabulary differences. As noted in Appendix B, the percentage of unfamiliar vocabulary in El Pato (4%) was lower than in the other texts (Catedral Subterránea 12% and El Camaronero 11%) which may account for increased comprehension. Another possibility is that the lesser amount of unfamiliar vocabulary, coupled with a greater familiarity of the topic of sports versus cathedrals or shrimpers, resulted in a superior performance on the El Pato text.

CONCLUSIONS

The effect of word rate on the listening comprehension of third-quarter Spanish students was not significant in terms of facilitating—or debilitating—subject comprehension of native aural texts. In terms of mean scores, students exposed to the 135% expansion rate recalled more information than those exposed to 0% expansion or 150% expansion; but, again, the difference was not significant. Overall recall of the El Pato text was significantly higher than for the Catedral Subterránea and the Camaronero texts.
One hypothesis as to why there was no significant effect from variation in speech rate on recall measures of listening comprehension may be attributable to background knowledge. Because background knowledge was controlled for and minimized—no prior familiarity with the three text topics—perhaps the effect of an absence of background knowledge precluded word rate from having a facilitative effect on listening comprehension.

Another reason why there were no differential effects of word rate on listening comprehension may be attributable to the difficulty level of the texts in general. Although the Spanish 103.01 curriculum includes a listening component and is evaluated through testing, students, overall, may not have had sufficient experience with authentic extended aural discourse—such as that in the experiment—which rendered the texts to be of minimal comprehensibility. In a more qualitative analysis of the texts, one observes that few subjects actually understood more than unrelated details from the texts.

Vocabulary recognition may be another reason why results were not significant. The El Pato text contained the least amount of unfamiliar vocabulary (4%) whereas La Catedral Subterránea and El Camaronero contained, respectively, 12% and 11% unfamiliar vocabulary. As was mentioned earlier, overall comprehension was greatest for the El Pato text. This greater familiarity with vocabulary may have rendered the El Pato text most comprehensible, albeit not significantly different than the other texts. Overall difficulty in comprehending vocabulary may have prohibited any
effects of word rate on comprehension.

A final reason may be attributable to the recall protocol procedures employed. Subjects may have had difficulty recalling textual information after extended exposure to the texts without being permitted to take notes or write a recall after each of the two exposures to a text; again, if students were unfamiliar with this type of recall procedure it may have confounded any effects of word rate on their listening comprehension. Because research employing this type of procedure to elicit recall of aural materials is lacking, one can see that further research is needed to maximize the recall of aural information and investigate the listening comprehension of L2 learners.
CHAPTER V
SUMMARY AND RECOMMENDATIONS

Summary and Findings

A review of the study's findings reveals no significant differences between treatment group means (at the .05 level) for the three word rates and a significant difference between the treatment group means for the *El Pato* text and the other two texts, *La Catedral Subterránea* and *El Camaronero*, at the .05 level. The mean recall score for the *El Pato* text (25.8) was significantly higher than the means for either the *Catedral Subterránea* text (15.95) and *El Camaronero* text (16.06).

The first research question addressed is the following.

**Question 1** What is the effect of three different levels of word rate, on the recall of three aural texts, by third-quarter university Spanish students?

The data in the between-within analysis of variance demonstrated that the word rates chosen for the study did not facilitate the listening comprehension of the three texts by subjects, though the overall mean score (21.04) for subjects who listened to the texts at 135% was higher than for those exposed to the texts at 150% (19.83) or at 0% expansion (16.93). These results are in contrast with Flaherty's (1975) findings with 135% and 170% expansion using
the French Aural Comprehension Test (FACT) as the listening text heard by high school French Two students. Flaherty found that time-expansion by 135X significantly affected the listening comprehension performance of high school French Two students. Although the treatment group mean was higher for those who were exposed to the FACT at 170X, it was not significantly different from the 135X treatment group mean. One might hypothesize a difference in results due to text genre; Flaherty's study employed a multiple-choice listening comprehension text while this study utilized native extended aural discourse. In terms of the descriptive data, one can see that most pausal units (710) were recalled across texts at the 135X expansion rate, compared to 673 at 150X and 584 recalled at 0X expansion. (See Table 7 in Chapter IV.) Rate of speech did not appear to facilitate recall of any pausal units in particular; subjects, across speed rates, seemed to recall the same pausal units as well as not recall other pausal units. Rate of speech did not differentially facilitate recall of some pausal units over others.

**Question 2** What is the effect of exposure to authentic aural discourse on the listening comprehension of third-quarter Spanish students?

Subjects demonstrated varying abilities of recall of the authentic texts; as mentioned earlier, this may be due to several reasons. One reason, which will be discussed later, could be background knowledge—or the lack of background knowledge—of the text topics. Subjects, across levels of speech rate, most successfully
recalled information from the *El Pato* text. Of the three texts, subjects seemed to grasp the main idea of this text—an Argentinean sport—the best while not one subject accurately recalled the text topics of a subterranean salt cathedral or a shrimper. One reason may be the relative inexperience of third-quarter Spanish students with extended aural discourse typically heard on Hispanic radio programs. Their lack of exposure to authentic aural texts may have precluded their comprehension of the text topics, despite the effect of word rate. In a questionnaire (See Appendix D.) completed by subjects after listening to the tapes, subjects commented on why they found the texts difficult to understand. Several complained that they had no control over stopping or starting the tapes, while others expressed a desire to write down notes while listening. Again, if subjects were not experienced in listening to extended aural discourse, then listening to these tapes may have caused cognitive overload, which precluded them from understanding or recalling the content. Another reaction to listening to the three tapes was that subjects did not understand some of the vocabulary. Appendix B lists the percentages of unfamiliar vocabulary in the experimental passages—as determined by vocabulary presented in the subjects' Spanish text *Puntos de Partida* (Knorre & Dorwick, 1989)—and one can see that *El Pato* had the least unfamiliar vocabulary (4%) compared to *La Catedral Subterránea* (12%) and *El Camaronero* (11%). This vocabulary difference, potentially, could have been another reason why subjects were significantly more
successful with the *El Pato* text. Vocabulary, or lack of vocabulary, was the major complaint by subjects at the 135% and 150% expansion rates. A number of subjects attributed their lack of comprehension to their unfamiliarity with the vocabulary. One subject who responded at the 150% expansion rate claimed that "If you don't know the meaning of 90% of the words you really can't understand these things."

While subjects in the 0% expansion group commented to some extent about difficulties with vocabulary, over half of this treatment group commented more about the speed of the speaker's speech. Even though the 0% expansion group expressed many more complaints about the speaker's rate of speech, it did not significantly affect their comprehension. Another comment by subjects pertained to their tendency to grasp on to a word that they understood at the expense of tuning out other words, or, as one subject stated, to comprehend certain familiar words "but not be able to put them in context." This subject's astute observation may be explained by Bullard's (1985) findings. Bullard found that his L2 subjects were highly capable of identifying isolated aurally presented words. He attributed this phenomenon to L2 learners' language acquisition being more word-based rather than global. He recommended that educators promote development of a global approach as it would facilitate comprehension of discourse. A more global approach to language learning might also assist a student faced with unfamiliar topics and/or lack of prior knowledge. Several subjects commented that
they were unfamiliar with the topics which, consequently, "made it
difficult to concentrate and comprehend."

The final research question was:

**Question 3** What is the effect of background knowledge
on the listening comprehension of native aural texts?

The effect of background knowledge on comprehension is a powerful
variable that must be acknowledged in listening comprehension
research. The selection of text topics for the study was crucial
to subjects' homogeneity of background knowledge and, in order to
attribute the results of the study to the effects of word rate
rather than any confounding effects attributable to background
knowledge, the researcher ensured that text topics were unfamiliar
to the subjects. In other words, the researcher controlled for an
absence of background knowledge.

One conclusion of the effect of an absence of background
knowledge—after examining the descriptive data—is that it had an
effect on listening comprehension despite an attempt to control
for its absence. This premise is based on the overall
comprehension of the texts which, after close inspection, revealed
that subjects only successfully identified the main focus of one
text, *El Pato*. Perhaps subjects were most successful with this
text because it dealt with sports, a topic with which they are
either more familiar—or interested in—than either of the other
two topics of a subterranean salt cathedral or a shrimper.

Descriptive data revealed that subjects, in recalling information
from the *Catedral Subterránea* text or *El Camaronero* text, called
upon background knowledge based on whatever information they could extract from the texts. It was not uncommon with the *El Camaronero* text, for example, that subjects focused on the differences between the country and the city as the main topic after hearing the Spanish words *campo* and *ciudad*. One might surmise that subjects focused on this perception because they were introduced to the schema of the city versus the country in a vocabulary section of their Spanish 103.01 textbook. Upon hearing the words in the aural text, they may have attached their existing schema to their interpretation of the text even though it was not accurate. In this case, background knowledge hindered comprehension. Perhaps the fact that the researcher controlled for an absence of background knowledge precluded any significant differences in comprehension. These observations are interesting in light of findings by Long (1990) which indicated that a learner will depend on linguistic knowledge when background knowledge is lacking. She also found that background knowledge took precedence in the comprehension process over linguistic knowledge if the learner had germane schemata.

Limitations of the Study

The following limitations must be acknowledged when examining the results of the study:

1 Subjects: Subjects were randomly assigned to one rate of speech within the intact classes in which they had enrolled. Intact classes were randomly chosen for the study. After each
intact class had completed the treatment, ten subjects' protocols from each class were randomly selected for data analysis. The possibility exists that differences could have existed between treatment groups despite random selection. Generalizability of findings regarding third-quarter university Spanish subjects is limited.

2 Word Rate: Word rate of texts was manipulated by the digital expansion of the original tapes with an Alchemy 2.0 program. Although the technology employed is the most sophisticated means of expansion available in 1990, it is not flawless. Intelligibility of speech was maximized by using digital expansion but, nonetheless, is of a different quality than the original tape. Examination of the tape by native Spanish speakers verified its high quality and intelligibility but the unavoidable differences between text rates of speech must be acknowledged.

Subjects were only exposed to one word rate across all three texts. The possibility exists, despite randomization of subjects by class and selection for analysis, that subjects may have performed differently at different rates of speech.

3 Texts: The study utilized three expository texts with different topics. Texts were written by native, college-educated, Hispanics for the purpose of being presented in aural form on an Hispanic radio program. They were then edited by a native Hispanic radio broadcast editor to further authenticate their format for presentation. The texts, however, were constructed for
research purposes and are not actual radio broadcasts. Texts were also controlled for an absence of background knowledge but one cannot claim that such a control precludes an effect of prior knowledge. Findings of the study, subsequently, should be generalized only to similar texts. One must assume that aural passages differing in content and by topic may elicit different findings.

4 Recall: Subjects may have been unfamiliar with writing recall protocols and may not have known how much to write, which details to include, or the point of view to take. The immediate recall protocol was written after subjects listened to a text two times. Subjects, therefore, depended on short-term memory to recall information; one cannot generalize the results of the study to effects of long-term memory on recall of aural material.

Recommendations for Further Research

The question of effect of word rate on listening comprehension still remains after this study. This study was intended to contribute base-line data toward this little researched question in second-language acquisition and was limited in scope to only three word rates and three texts of the same genre. Replication of this study, in numerous ways, is called for to further investigate word rate. The same study could be replicated with a different population of learners--either more or less advanced--for example. The population of this study was limited to third-quarter university students; not only could level be considered but age of learner as well. The study, in other
words, should be replicated with high school learners of Spanish. Another area of research should involve differential temporal manipulation of texts; that is, rather than uniform and consistent expansion of texts at one speed, texts should also be manipulated by pausal expansion. Investigation could involve comparison of results with one text evenly expanded at 135%, for example, and the same text expanded by pauses after clausal and sentential breaks in the texts. Both texts would be of equal temporal length but with different expansion variables within the text. Heilenmann (1978), for example, investigated the effects of both expansion and temporal spacing on the listening comprehension of university third-semester French students but did not find significant results. Her elicitation of data with a dictation test may have confounded the results. Further research in a similar realm of research—that of speech compression—is also called for. If there were no differential effects in this study with an average, fastest, speech rate of 156 WPM, then perhaps research should be conducted in terms of a ceiling effect to see at which word rate comprehension is debilitated by speed of speech.

Research should also be conducted in the area of training students to listen to faster rates of speech. This runs parallel to student exposure to extended aural texts; if students have little experience with actual native aural discourse, then they may not be able to succeed with a text despite the word rate employed. Further research employing authentic aural material, in
general, is called for. Research by several researchers (Bruns, 1978; Friedman & Johnson 1971a) indicates that training in listening to increased rates of speech facilitates comprehension.

Different scoring systems should also be investigated to find the optimal means by which to analyze recall of aural texts. The same study could be replicated but with the variable of scoring system included, to investigate which system might best demonstrate recall. One might include the Meyer System (1985), for example. The development of a scoring system that accounts for both literal pausal unit recall and synthesis of textual information and recall of overall textual meaning is also necessary. The Johnson System does sum one's recall of pausal units determined by varying structural importance but does not differentiate between subjects who actually synthesized the focus of a text from those who only recalled isolated details. Another possibility, too, exists in allowing students to write two recalls per exposure to texts—one after each exposure. This may maximize their short-term memory as might allowing subjects to take notes while listening. One can see that there are countless ways that recall can be tapped; one might also consider verbal recall of material or long-term recall of aural material. Previous research by Heilenmann (1978) who elicited data with a dictation test and Flaherty (1975), whose subjects responded to the FACT, had differential results to their studies. An optimal scoring system that best taps subject recall of aural information must be developed. Another system of analysis could be qualitative. Just
as Bernhardt (1986) developed the constructivist model of text reconstruction for L2 reading research, one might develop a comparable model of descriptive analysis for L2 listening research. One, then, might more accurately account for and describe subject recall of information and differentiate between those who solely recall discrete elements from the text and those who understand the text at a more complete level.

The variable of background knowledge in listening comprehension must continue to be investigated. This study controlled for an absence of background knowledge but further research should control for differential amounts of background knowledge and how word rate effect might be maximized if background knowledge is controlled for in quantifiable amounts. The variable of background knowledge should be included in the design. Text genre might also be included. Flaherty (1975) found significant results with the FACT aural comprehension test; perhaps student familiarity with testing had a facilitative effect on the results while student unfamiliarity with Hispanic radio broadcasts in the current study, likewise, affected comprehension.

Needless to say, the study also needs to be replicated across languages. This study was limited to university Spanish students and, although similar research has been conducted across other languages (Bullard, 1985; Heilenmann, 1978; Littel, 1976; among others) the dearth of research necessitates continued investigation of numerous research questions.
Implications of the Study

Theoretical Implications

It is apparent, within the realm of second-language acquisition, that an adequate theory of listening comprehension is far from realization. Great discrepancy exists in the field in terms of understanding the listening process; furthermore, the extant data that has been generated is far from sufficient. Many hypotheses were generated to account for the nonsignificant effect of word rate on listening comprehension in this study, but the effects of word rate remain tenuous because existing, empirically-based information in second-language listening research is minimal. The field of foreign language research must be cautious in extrapolating what is known of existing empirical findings to listening comprehension issues. More research in foreign language listening comprehension is crucial to formulating a consummate theory of comprehension.

Pedagogical Implications

One cannot presume to make pedagogical recommendations from the results of this study. One can say, however, that the need is evident for learner exposure to extended native aural discourse; learners, across speech rates, had difficulty comprehending the texts. It is also interesting to note that subjects who listened to the original speech rate voiced the most complaints about rapidity of speech but did not comprehend significantly less than other subjects. One cannot assume that a slower speech rate
automatically improves comprehension; other factors must come into play. One, in fact, might recommend from these results that foreign language educators not consciously slow their speech but continue to speak at a normal rate of speech for their learners.
APPENDIX A

EXPERIMENTAL LISTENING PASSAGES
EL PATO

Muchos de los deportes que se practican en la actualidad tuvieron un origen muy primitivo. Uno de ellos es el pato, el cual tiene características similares al polo y al básquetbol y se comenzó a practicar en la Argentina por allá por el siglo XV, siendo ahora virtualmente desconocido en casi todo el mundo.

Solía jugarse en las extensas pampas del sur argentino entre los pobladores de estancias vecinas. Dos equipos de gauchos diestros en la montura se disputaban el honor de llevar a su estancia un saco de cuero con dos asas, dentro del cual había un pato vivo. Debido a la brutalidad de los jinetes y a que—para lograr ese objetivo cualquier medio era legítimo—en el siglo XIX la iglesia católica y el gobierno prohibieron el juego del pato.

Pero, en 1937, la Federación Argentina de Pato autorizó la práctica de este deporte...claro está que con reglas que redujeron su brutalidad. Hoy en día, los jinetes lucen vistosos trajes, cada equipo tiene sólo cuatro jugadores, se ha sustituido el extenso potrero por una cancha aproximadamente tres veces más grande que una de fútbol y el saco que llevaba el pobre pato vivo es sólo una pelota de cuero con cuatro asas.
LA CATEDRAL SUBTERRÁNEA

Aunque usted no lo crea, cuando viaje a Colombia encontrará en ese país una ciudad con una catedral subterránea única. Estando allí, parta desde Bogotá hacia el noreste. A unos 45 minutos de viaje en automóvil encontrará la pequeña ciudad industrial de Zipaquirá. Original del muisca, lengua de sus primeros pobladores, este nombre significa "Ciudad de Nuestro Rey". Desde tiempos precolombinos y hasta hoy, las minas de sal han abastecido a gran parte de lo que hoy se llama Colombia.

Los muiscas explotaban las salinas de Zipaquirá con troncos de árboles con los cuales perforaban la veta. Sin saberlo, con su trabajo los indígenas dieron comienzo a la construcción de un monumento religioso singular: la famosa catedral de sal de Zipaquirá.

Después de un descenso no muy abrupto por un túnel de unos 180 metros, se encontrará con una nave de proporciones gigantescas—entre 20 y 25 metros de fondo. Ese es el cuerpo principal de la única catedral subterránea del mundo. Sus paredes ofrecen la purísima sal que durante años ha sazonado la mesa de los colombianos. El piso de baldosas de cerámica y toscos acabados pero de soledad inquebrantable recibe a los creyentes que por centenares llegan a oír la misa dominical en esta catedral de sal... la única en el mundo.
EL CAMARONERO

En el sur de Chile, las lluvias se intensifican durante el mes de abril. Junto con ellas, aparece el camarón. Hasta ese mes, este singular personaje había permanecido oculto en sus diversas tareas de cargador de camiones, vendedor ambulante, ayudante en tareas menores...un sin fin de actividades que le permiten disponer de algún dinero para comer o para su cuota diaria de vino pipeño.

En las mañanas estos personajes son los primeros en abordar los buses que los llevan a los campos a recoger el camarón, convertido en esa época en un apetecido manjar de la gente de la ciudad.

Simpático y dicharachero, su presencia, sin embargo, constituye una gran incomodidad para los demás pasajeros, los cuales pertenecen a una clase social levemente superior; entre ellos los profesores que van a enseñar a las escuelas del campo.

Es que el desayuno del camarónero consiste principalmente de pan con ají y cebolla con un agua de té o un sucedáneo del café si es que sus medios se lo permiten. Y como el pan de la mañana sólo se vende a pocos minutos de que suba al bus, nuestro personaje no puede resistir la tentación de desayunar durante el viaje.

El vehículo adquiere, por lo tanto, un inconfundible olor a cebollas, acompañado del "aroma" de sus ropas que además del trajín diario en muchas ocasiones son usadas como pijamas.
APPENDIX B

PERCENTAGES OF UNFAMILIAR VOCABULARY IN EXPERIMENTAL PASSAGES
PASSAGE TOPIC

EL PATO 4%

LA CATEDRAL DE SAL 12%

EL CAMARONERO 11%
APPENDIX C

BACKGROUND KNOWLEDGE TESTS
Foreign Language Education Background Knowledge Test

Attached are three separate background knowledge tests in multiple-choice format. Choose the answer that best completes each statement and circle its corresponding letter. Please answer all 10 items per test. Do not write your name on the test. Turn the complete test face down on your desk when you are finished.
1. El Pato is a game played in...

2. The sport has been compared to the American sport of...
   a. Baseball
   b. Basketball
   c. Football
   d. Tennis

3. The difference between El Pato and the American sport to which it is similar is that...
   a. It is played on horseback
   b. The players wear protective pads
   c. The ball may bounce more than once
   d. There are more players on a team

4. El Pato has been played for approximately ________ years.
   a. 60  b. 150  c. 250  d. 400

5. El Pato was declared a national sport ________ years ago.
   a. 35  b. 125  c. 200  d. 375

6. The ball used in the sport is...
   a. heavy, with laces on either side
   b. round, like a softball
   c. round, with handles
   d. oblong, like a football

7. The number of players on a team is...
   a. 4  b. 6  c. 8  d. 10

8. Points are scored in El Pato by the ball being...
   a. Carried over a boundary
   b. Kicked into an end zone
   c. Hit over a boundary
   d. Thrown through a hoop

9. The scoring of a point is called...
   a. Ganar la tierra
   b. Marcar un tanto
   c. Pasar un punto
   d. Hacer un rón

10. The most modern version of El Pato no longer includes...
    a. Body contact
    b. Killing the losers
    c. Using a live duck
    d. Three teams competing at once
1. A famous and unusual Colombian cathedral is constructed from...
   a. silver  b. vegetation  c. salt  d. gold

2. The cathedral is located in the city of...
   a. Barranquilla
   b. Cali
   c. Manizales
   d. Zipaquira

3. The cathedral is large enough to accommodate _______ people.
   a. 200  b. 1,800  c. 5,000  d. 15,000

4. The cathedral is approximately _______ feet long.
   a. 75   b. 200   c. 400   d. 800

5. The Colombian Indians who dominated the Colombian uplands when the Spanish arrived were...
   a. Los Andinos
   b. Los Muiscas
   c. Los Incas
   d. Los Jivaros

6. The common name for that particular group of Colombian Indians is...
   a. Los Chibchas
   b. Los Araucanos
   c. Los Mayas
   d. Los Nazcas

7. The Cathedral was built around the year...
   a. 1700   b. 1850   c. 1900   d. 1950

8. The most unusual feature about the cathedral is that it is located...
   a. Inside a mine
   b. On a mountain peak
   c. In the Pacific Ocean
   d. Inside an Indian temple

9. One can reach the cathedral by...

10. The group responsible for financing the construction of the cathedral was the...
   a. Colombian Government
   b. Bank of the Republic
   c. Catholic Church
   d. Spanish Government
1. A camaronero in Chile is a...

2. An important characteristic associated with the camaronero is that he...
   a. Only returns home once a year
   b. Is a vagrant who skips from job to job
   c. Is Peruvian but only finds work in Chile
   d. Inherits the position through his ancestry

3. The camaronero is most visible...
   a. During the rainy season
   b. At election time
   c. At harvest time
   d. After an earthquake

4. The means of transportation typically used by the camaronero is...

5. A typical breakfast for the camaronero is...
   a. Toasted bread and coffee
   b. Tortilla and anchovies
   c. Tortilla and beans
   d. Bread with onions and chili pepper

6. The breakfast is usually eaten by the camaronero...
   a. Before dawn
   b. Inside the means of transportation
   c. Once he reaches his destination
   d. Midmorning

7. The camaronero works to...
   a. Support his family
   b. Fight for his beliefs
   c. Travel everyday
   d. Buy his food and wine

8. The camaronero is busiest...
   a. Autumn
   b. Spring
   c. On a sporadic basis
   d. Winter and Summer

9. Chileans, in general, find the camaronero to be...

10. People from the cities appreciate the camareros efforts because...
    a. The government is more accountable
    b. No one else will work such long hours
    c. The product delivered is fresh
    d. No one else will work under such conditions
POST-LISTENING QUESTIONS: Please answer the questions below after you have finished responding to the last tape. After you complete the questions below, please return the packet to the envelope, along with the pencil provided.

1. How many years of Spanish did you **complete** in high school?
   
   0  1  2  3  4  5

2. Which Spanish courses have you **completed** at OSU? Circle those that apply.
   
   101.01  102.01  None (103.01 is first Spanish class at OSU)

3. Were you familiar with any of the 3 text topics before you listened to the tapes?
   
   YES  NO

4. If you were familiar with any of the topics, which one(s) did you know about? Do you remember where/when you learned about the topic(s)?

5. What was the most difficult part about listening to the tapes?
APPENDIX E

INSTRUCTIONS TO SUBJECTS
INSTRUCTIONS TO STUDENTS:

You are going to listen to three recordings read by a native Spanish speaker. Each recording is about an entirely different topic. Listening to the recordings will give you an opportunity to listen to authentic spoken Spanish that is similar to what you might hear if you were listening to a radio program from Latin America. Try not to become frustrated if you do not understand certain words or phrases but, instead, listen as best you can to understand the general topic of the passages and any details that are mentioned. You should be able to understand the passages even if you do not know the meaning of every word or phrase.

During this class period you will be presented with the three different recordings, one at a time. Each recording is approximately one minute in length and will be played two times. Please do not write any notes while listening to the recordings. After listening to the passage the second time you will be asked to recount, in English, what you have heard. In other words, you will write down in English everything that you can remember from the passage. Please write in complete sentences and include as many details as you can remember.

Once you are satisfied with your written response, turn your paper face down on your desk and wait quietly until everyone is ready to listen to the next passage. You will have approximately ten minutes to write your response.
APPENDIX F

PASSAGE SUBUNITS
EL PATO

 Muchos de los deportes / que se practican / en la actualidad / tuvieron un origen / muy primitivo. / Uno de ellos / es el pato, / el cual / tiene características similares / al polo / y al básquetbol / y se comenzó / a practicar / en la Argentina / por allá / por el siglo XV, / siendo ahora virtualmente desconocido / en casi todo el mundo. / 

 Solía jugarse / en las extensas pampas / del sur argentino / entre los pobladores / de estancias vecinas. / Dos equipos / de gauchos / diestros en la montura / se disputaban el honor / de llevar / a su estancia / un saco / de cuero / con dos asas, / dentro del cual / había un pato vivo. / Debido a la brutalidad / de los jinetes / y a que— / para lograr ese objetivo / cualquier medio era legítimo— / en el siglo XIX / la iglesia católica / y el gobierno / prohibieron el juego del pato. / 

 Pero, / en 1937, / la Federación Argentina / de Pato / autorizó la práctica / de este deporte / ...claro está que / con reglas / que redujeron su brutalidad. / Hoy en día, / los jinetes / lucen vistosos trajes, / cada equipo / tiene sólo cuatro jugadores, / se ha sustituido / el extenso potrero/ por una cancha / aproximadamente tres veces / más grande / que una de fútbol / y el saco / que llevaba el pobre pato vivo / es sólo una pelota / de cuero / con cuatro asas. /
LA CATEDRAL SUBTERRÁNEA

Aunque usted no lo crea, / cuando viaje / a Colombia /
encontrará en ese país / una ciudad / con una catedral /
subterránea / única.

Estando allí, / parta desde Bogotá / hacia el noreste. / A unos 45 minutos / de viaje / en automóvil / encontrará la pequeña ciudad / industrial / de Zipaquirá. / Original del muisca, / lengua / de sus primeros pobladores, / este nombre significa / "Ciudad de Nuestro Rey." / Desde tiempos precolombinos / y hasta hoy, / las minas / de sal / han abastecido / a gran parte / de lo que / hoy se llama Colombia. /

Los muiscas explotaban / las salinas / de Zipaquirá / con troncos / de árboles / con los cuales / perforaban la veta. / Sin saberlo, / con su trabajo / los indígenas / dieron comienzo / a la construcción / de un monumento / religioso / singular: / la famosa catedral / de sal / de Zipaquirá. /

Después de un descenso / no muy abrupto / por un túnel / de unos 180 metros, / se encontrará / con una nave / de proporciones gigantescas / —entre 20 y 25 metros / de fondo. / Ese es el cuerpo principal / de la única catedral / subterránea / del mundo. / Sus paredes ofrecen / la purísima sal / que durante años / ha sazonado la mesa / de los colombianos. / El piso / de baldosas / de cerámica / y toscos acabados / pero de soledad inquebrantable / recibe a los creyentes que / por centenares / llegan a oír / la misa dominical / en esta catedral / de sal / ...la única / en el mundo.
EL CAMARONERO

En el sur de Chile, / las lluvias se intensifican / durante
el mes de abril. / Junto con ellas, / aparece el camaronero. /
Hasta ese mes, / este singular personaje / había permanecido
oculto / en sus diversas tareas / de cargador / de camiones, /
vendedor ambulante, / ayudante / en tareas menores/ / ...un sin
fin / de actividades / que le permiten disponer / de algún dinero
/ para comer / o para su cuota diaria / de vino pipeño./

En las mañanas / estos personajes / son los primeros / en
abordar / los buses / que los llevan / a los ríos / a recoger el
camarón, / convertido / en esa época / en un apetecido manjar / de
la gente / de la ciudad. /

Simpático / y dicherachero, / su presencia / sin embargo, /
constituye / una gran incomodidad / para los demás pasajeros, /
los cuales pertenecen / a una clase social / levemente superior; /
entre ellos / los profesores / que van a enseñar / a las escuelas
/ del campo. /

Es que el desayuno / del camaronero / consiste /
principalmente / de pan / con ají / y cebolla / con un agua de té
/ o un sucedáneo / del café / si es que / sus medios / se lo
permiten. / Y como el pan / de la mañana / sólo se vende / a
pocos minutos / de que suba / al bus, / nuestro personaje / no
puede resistir / la tentación / de desayunar / durante el viaje.
El vehículo adquiere, por lo tanto, un inconfundible olor a cebollas, acompañado del "aroma" de sus ropas que además del trajín diario en muchas ocasiones son usadas como pijamas.

84 units.
1. Muchos de los deportes
2. que se practican
3. en la actualidad
4. tuvieron un origen
5. muy primitivo.
6. Uno de ellos
7. es el pato,
8. el cual
9. tiene características similares
10. al polo
11. y al básquetbol
12. y se comenzó
13. a practicar
14. en la Argentina
15. por allá
16. por el siglo XV,
17. siendo ahora virtualmente desconocido
18. en casi todo el mundo.
19. Solía jugarse
20. en las extensas pampas
21. del sur argentino
22. entre los pobladores
23. de estancias vecinas.
24. Dos equipos
25. de gauchos
26. diestros en la montura (1)
27. se disputaban el honor (4)
28. de llevar (4)
29. a su estancia (3)
30. un saco (4)
31. de cuero (4)
32. con dos asas, (1)
33. dentro del cual (4)
34. había un pato vivo. (4)
35. Debido a la brutalidad (3)
36. de los jinetes (2)
37. y a que— (1)
38. para lograr ese objetivo (1)
39. cualquier medio era legítimo— (3)
40. en el siglo XIX (1)
41. la iglesia católica (2)
42. y el gobierno (2)
43. prohibieron el juego del pato. (3)
44. Pero, (1)
45. en 1937, (3)
46. la Federación Argentina (2)
47. de Pato (1)
48. autorizó la práctica (2)
49. de este deporte... (1)
50. claro está que (1)
51. con reglas (2)
52. que redujeron su brutalidad.  
53. Hoy en día,  
54. los jinetes  
55. lucen vistosos trajes,  
56. cada equipo  
57. tiene sólo cuatro jugadores,  
58. se ha sustituido  
59. el extenso potrero  
60. por una cancha  
61. aproximadamente tres veces  
62. más grande  
63. que una de fútbol  
64. y el saco  
65. que llevaba el pobre pato vivo  
66. es sólo una pelota  
67. de cuero  
68. con cuatro asas.
APPENDIX H

LA CATEDRAL SUBTERRANEA TEXT'S SCORING TEMPLATE
Aunque usted no lo crea, cuando viaje a Colombia, encontrará en ese país una ciudad con una catedral subterránea única. Estando allí, parte desde Bogotá, hacia el noreste. A unos 45 minutos en automóvil encontrará la pequeña ciudad industrial de Zipaquirá. Original del muisca, lengua de sus primeros pobladores, este nombre significa "Ciudad de Nuestro Rey." Desde tiempos precolombinos y hasta hoy,
25. las minas (4)
26. de sal (3)
27. han abastecido (2)
28. a gran parte (1)
29. de lo que (1)
30. hoy se llama Colombia. (2)
31. Los muiscas explotaban (3)
32. las salinas (3)
33. de Zipaquirá (1)
34. con troncos (2)
35. de árboles (2)
36. con los cuales (1)
37. perforaban la veta. (3)
38. Sin saberlo, (1)
39. con su trabajo (2)
40. los indígenas (4)
41. dieron comienzo (4)
42. a la construcción (4)
42. de un monumento religioso (4)
43. religioso (3)
44. singular: (2)
45. la famosa (3)
46. catedral (4)
47. de sal (4)
48. de Zipaquirá. (4)
49. Después de un descenso (3)
50. no muy abrupto (1)
51. por un túnel (3)
52. de unos 180 metros, (2)
53. se encontrará (1)
54. con una nave (4)
55. de proporciones gigantescas (4)
56. --entre 20 y 25 metros (3)
57. de fondo. (1)
58. Ese es el cuerpo principal (4)
59. de la única catedral (4)
60. subterránea (4)
61. del mundo. (2)
62. Sus paredes ofrecen (3)
63. la purísima sal (3)
64. que durante años (2)
65. ha sazonado la mesa (2)
66. de los colombianos. (2)
67. El piso (3)
68. de baldosas (3)
69. de cerámica (1)
70. y toscos acabados (3)
71. pero de soledad inquebrantable (1)
72. recibe a los creyentes que (2)
73. por centenares (1)
74. llegan a oír (2)
75. la misa dominical (2)
76. en esta catedral (3)
78. de sal... (1)
79. la única (3)
80. en el mundo. (1)
APPENDIX I

EL CAMARONERO TEXT'S SCORING TEMPLATE
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>En el sur de Chile,</td>
</tr>
<tr>
<td>2.</td>
<td>las lluvias se intensifican</td>
</tr>
<tr>
<td>3.</td>
<td>durante el mes de abril.</td>
</tr>
<tr>
<td>4.</td>
<td>Junto con ellas,</td>
</tr>
<tr>
<td>5.</td>
<td>aparece el camaronero.</td>
</tr>
<tr>
<td>6.</td>
<td>Hasta ese mes,</td>
</tr>
<tr>
<td>7.</td>
<td>este singular personaje</td>
</tr>
<tr>
<td>8.</td>
<td>había permanecido oculto</td>
</tr>
<tr>
<td>9.</td>
<td>en sus diversas tareas</td>
</tr>
<tr>
<td>10.</td>
<td>de cargador</td>
</tr>
<tr>
<td>11.</td>
<td>de camiones,</td>
</tr>
<tr>
<td>12.</td>
<td>vendedor ambulante,</td>
</tr>
<tr>
<td>13.</td>
<td>ayudante</td>
</tr>
<tr>
<td>14.</td>
<td>en tareas menores...</td>
</tr>
<tr>
<td>15.</td>
<td>un sin fin</td>
</tr>
<tr>
<td>16.</td>
<td>de actividades</td>
</tr>
<tr>
<td>17.</td>
<td>que le permiten disponer</td>
</tr>
<tr>
<td>18.</td>
<td>de algún dinero</td>
</tr>
<tr>
<td>19.</td>
<td>para comer</td>
</tr>
<tr>
<td>20.</td>
<td>o para su cuota diaria</td>
</tr>
<tr>
<td>21.</td>
<td>de vino pipeño.</td>
</tr>
<tr>
<td>22.</td>
<td>En las mañanas</td>
</tr>
<tr>
<td>23.</td>
<td>estos personajes</td>
</tr>
<tr>
<td>24.</td>
<td>son los primeros</td>
</tr>
<tr>
<td>25.</td>
<td>en abordar</td>
</tr>
</tbody>
</table>
26. los buses (4)
27. que los llevan (2)
28. a los campos (3)
29. a recoger el camarón (3)
30. convertido (1)
31. en esa época (1)
32. en un apetecido manjar (2)
33. de la gente (1)
34. de la ciudad. (1)
35. Simpático (3)
36. y dicharachero, (3)
37. su presencia, (4)
38. sin embargo, (1)
39. constituye (1)
40. una gran incomodidad (4)
41. para los demás pasajeros, (4)
42. los cuales pertenecen (1)
43. a una clase social (2)
44. levemente superior; (2)
45. entre ellos (1)
46. los profesores (3)
47. que van a enseñar (2)
48. a las escuelas (1)
49. del campo. (2)
50. Es que el desayuno (4)
51. del camaronero (4)
52. consiste (1)
53. principalmente (1)
54. de pan (4)
55. con ají (4)
56. y cebolla (4)
57. con un agua de té (2)
58. o un sucedáneo (1)
59. del café (2)
60. si es que (1)
61. sus medios (2)
62. se lo permiten. (2)
63. Y como el pan (3)
64. de la mañana (2)
65. sólo se vende (3)
66. a pocos minutos (3)
67. de que suba (2)
68. al bus, (3)
69. nuestro personaje (3)
70. no puede resistir (3)
71. la tentación (2)
72. de desayunar (3)
73. durante el viaje. (3)
74. El vehículo adquiere, (4)
75. por lo tanto, (1)
76. un inconfundible olor (4)
77. a cebollas, (3)
78. acompañado del "aroma"
79. de sus ropas
80. que
81. además del trajín diario
82. en muchas ocasiones
83. son usadas
84. como pijamas.
APPENDIX J

BETWEEN-WITHIN ANALYSIS OF VARIANCE
Table 9

Analysis of Variance for Recall by Text and Word Rate

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>Sum of Squares</th>
<th>Mean Square</th>
<th>F Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Between</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Word Rate</td>
<td>2</td>
<td>803.34</td>
<td>401.67</td>
<td>1.60</td>
</tr>
<tr>
<td>Subj/Word Rate</td>
<td>87</td>
<td>21777.25</td>
<td>250.31</td>
<td></td>
</tr>
<tr>
<td><strong>Within</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Text</td>
<td>2</td>
<td>5756.31</td>
<td>2878.15</td>
<td>34.48*</td>
</tr>
<tr>
<td>Word Rate x Text</td>
<td>4</td>
<td>223.03</td>
<td>55.75</td>
<td>.67</td>
</tr>
<tr>
<td>Text x Subj/Word Rate</td>
<td>174</td>
<td>14523.31</td>
<td>83.46</td>
<td></td>
</tr>
</tbody>
</table>

*p<.05
APPENDIX K

TUKEY'S STUDENTIZED RANGE (HSD) TEST

FOR TEXTS
Table 10

**Tukey's Studentized Range (HSD) Test**

Means and Groupings of Text Condition

<table>
<thead>
<tr>
<th>Text Condition</th>
<th>Mean</th>
<th>HSD* Grouping</th>
</tr>
</thead>
<tbody>
<tr>
<td>El Pato</td>
<td>25.80</td>
<td>A</td>
</tr>
<tr>
<td>El Camaronero</td>
<td>16.05</td>
<td>B</td>
</tr>
<tr>
<td>La Catedral</td>
<td>15.95</td>
<td>B</td>
</tr>
</tbody>
</table>

*Means with the same letter are not significantly different.*
APPENDIX L

PAUSAL UNITS RECALLED IN EL PATO TEXT ACROSS WORD RATES

161
<table>
<thead>
<tr>
<th>PAUSAL UNITS</th>
<th>SCORING VALUE</th>
<th>0%</th>
<th>135%</th>
<th>150%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Muchos de los deportes</td>
<td>(3)</td>
<td>5</td>
<td>9</td>
<td>5</td>
</tr>
<tr>
<td>2. que se practican</td>
<td>(2)</td>
<td>4</td>
<td>19</td>
<td>4</td>
</tr>
<tr>
<td>3. en la actualidad</td>
<td>(2)</td>
<td>1</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>4. tuvieron un origen</td>
<td>(2)</td>
<td>4</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>5. muy primitivo.</td>
<td>(2)</td>
<td>11</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>6. Uno de ellos</td>
<td>(1)</td>
<td>21</td>
<td>18</td>
<td>1</td>
</tr>
<tr>
<td>7. es el pato,</td>
<td>(4)</td>
<td>19</td>
<td>15</td>
<td>16</td>
</tr>
<tr>
<td>8. el cual</td>
<td>(1)</td>
<td>1</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>9. tiene características similares</td>
<td>(3)</td>
<td>22</td>
<td>20</td>
<td>18</td>
</tr>
<tr>
<td>10. al polo</td>
<td>(3)</td>
<td>25</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>11. y al básquetbol</td>
<td>(3)</td>
<td>20</td>
<td>26</td>
<td>26</td>
</tr>
<tr>
<td>12. y se comenzó</td>
<td>(1)</td>
<td>6</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>13. a practicar</td>
<td>(1)</td>
<td>13</td>
<td>6</td>
<td>11</td>
</tr>
<tr>
<td>14. en la Argentina</td>
<td>(3)</td>
<td>21</td>
<td>21</td>
<td>24</td>
</tr>
<tr>
<td>15. por allá</td>
<td>(1)</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>16. por el siglo XV,</td>
<td>(1)</td>
<td>2</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>17. siendo ahora virtualmente desconocido</td>
<td>(4)</td>
<td>2</td>
<td>16</td>
<td>1</td>
</tr>
<tr>
<td>18. en casi todo el mundo.</td>
<td>(1)</td>
<td>9</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>19. Solía jugarse</td>
<td>(4)</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>20. en las extensas pampas</td>
<td>(3)</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>21. del sur argentino</td>
<td>(3)</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>22. entre los pobladores</td>
<td>(4)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>23. de estancias vecinas</td>
<td>(4)</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>24. Dos equipos</td>
<td>(4)</td>
<td>7</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>
25. de gauchos (3) 2 1 1
26. diestros en la montura (1) 0 1 0
27. se disputaban el honor (4) 0 0 0
28. de llevar (4) 0 0 0
29. a su estancia (3) 0 0 0
30. un saco (4) 0 0 0
31. de cuero (4) 0 0 0
32. con dos asas, (1) 0 0 0
33. dentro del cual (4) 0 0 0
34. había un pato vivo. (4) 0 0 0
35. Debido a la brutalidad (3) 10 11 12
36. de los jinetes (2) 0 0 0
37. y a que— (1) 0 0 0
38. para lograr ese objetivo (1) 0 0 0
39. cualquier medio era legítimo-- (3) 0 0 0
40. en el siglo XIX (1) 3 4 1
41. la iglesia católica (2) 5 7 6
42. y el gobierno (2) 13 6 12
43. prohibieron el juego del pato. (3) 8 8 14
44. Pero, (1) 4 3 4
45. en 1937, (3) 2 2 6
46. la Federación Argentina (2) 0 0 1
47. de Pato (1) 0 0 1
48. autorizó la práctica (2) 4 2 8
49. de este deporte... (1) 1 5 0
50. claro está que (1) 0 0 0
<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>51.</td>
<td>con reglas</td>
<td>(2)</td>
<td>1</td>
</tr>
<tr>
<td>52.</td>
<td>que redujeron su brutalidad.</td>
<td>(2)</td>
<td>2</td>
</tr>
<tr>
<td>53.</td>
<td>Hoy en día,</td>
<td>(1)</td>
<td>0</td>
</tr>
<tr>
<td>54.</td>
<td>los jinetes</td>
<td>(2)</td>
<td>0</td>
</tr>
<tr>
<td>55.</td>
<td>lucen vistosos trajes,</td>
<td>(2)</td>
<td>0</td>
</tr>
<tr>
<td>56.</td>
<td>cada equipo</td>
<td>(4)</td>
<td>6</td>
</tr>
<tr>
<td>57.</td>
<td>tiene sólo cuatro jugadores,</td>
<td>(4)</td>
<td>11</td>
</tr>
<tr>
<td>58.</td>
<td>se ha sustituido</td>
<td>(2)</td>
<td>0</td>
</tr>
<tr>
<td>59.</td>
<td>el extenso potrero</td>
<td>(3)</td>
<td>0</td>
</tr>
<tr>
<td>60.</td>
<td>por una cancha</td>
<td>(3)</td>
<td>6</td>
</tr>
<tr>
<td>61.</td>
<td>aproximadamente tres veces</td>
<td>(2)</td>
<td>4</td>
</tr>
<tr>
<td>62.</td>
<td>más grande</td>
<td>(3)</td>
<td>6</td>
</tr>
<tr>
<td>63.</td>
<td>que una de fútbol</td>
<td>(2)</td>
<td>6</td>
</tr>
<tr>
<td>64.</td>
<td>y el saco</td>
<td>(4)</td>
<td>0</td>
</tr>
<tr>
<td>65.</td>
<td>que llevaba el pobre pato vivo</td>
<td>(4)</td>
<td>0</td>
</tr>
<tr>
<td>66.</td>
<td>es sólo una pelota</td>
<td>(4)</td>
<td>1</td>
</tr>
<tr>
<td>67.</td>
<td>de cuero</td>
<td>(3)</td>
<td>0</td>
</tr>
<tr>
<td>68.</td>
<td>con cuatro asas.</td>
<td>(2)</td>
<td>0</td>
</tr>
</tbody>
</table>
APPENDIX M

PAUSAL UNITS RECALLED IN LA CATEDRAL SUBTERRANEA TEXT

ACROSS WORD RATES
### PAUSAL UNITS SCORING

<table>
<thead>
<tr>
<th>PAUSAL UNITS</th>
<th>SCORING VALUE</th>
<th>0%</th>
<th>135%</th>
<th>150%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Aunque usted no lo crea,</td>
<td>(1)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2. cuando viaje</td>
<td>(1)</td>
<td>2</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>3. a Colombia</td>
<td>(4)</td>
<td>22</td>
<td>24</td>
<td>26</td>
</tr>
<tr>
<td>4. encontrará en ese país</td>
<td>(2)</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>5. una ciudad</td>
<td>(2)</td>
<td>5</td>
<td>11</td>
<td>7</td>
</tr>
<tr>
<td>6. con una catedral</td>
<td>(4)</td>
<td>1</td>
<td>11</td>
<td>9</td>
</tr>
<tr>
<td>7. subterránea</td>
<td>(4)</td>
<td>4</td>
<td>11</td>
<td>10</td>
</tr>
<tr>
<td>8. única.</td>
<td>(3)</td>
<td>4</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>9. Estando allí,</td>
<td>(1)</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>10. parte desde Bogotá,</td>
<td>(3)</td>
<td>10</td>
<td>12</td>
<td>8</td>
</tr>
<tr>
<td>11. hacia el noreste.</td>
<td>(4)</td>
<td>4</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>12. A unos 45 minutos</td>
<td>(3)</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>13. de viaje</td>
<td>(1)</td>
<td>11</td>
<td>9</td>
<td>11</td>
</tr>
<tr>
<td>14. en automóvil</td>
<td>(2)</td>
<td>15</td>
<td>12</td>
<td>11</td>
</tr>
<tr>
<td>15. encontrará la pequeña ciudad</td>
<td>(4)</td>
<td>4</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>16. industrial</td>
<td>(2)</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>17. de Zipaquirá.</td>
<td>(4)</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>18. Original del muisca,</td>
<td>(3)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>19. lengua</td>
<td>(1)</td>
<td>3</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>20. de sus primeros pobladores,</td>
<td>(2)</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>21. este nombre significa</td>
<td>(3)</td>
<td>2</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>22. &quot;Ciudad de Nuestro Rey.&quot;</td>
<td>(4)</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>23. Desde tiempos precolombinos</td>
<td>(1)</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>24. y hasta hoy,</td>
<td>(1)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>25. las minas</td>
<td>(4)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>26.</td>
<td>de sal</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>27.</td>
<td>han abastecido</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>28.</td>
<td>a gran parte</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>29.</td>
<td>de lo que</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>30.</td>
<td>hoy se llama Colombia.</td>
<td>2</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>31.</td>
<td>Los muiscas explotaban</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>32.</td>
<td>las salinas</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>33.</td>
<td>de Zipaquirá</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>34.</td>
<td>con troncos</td>
<td>2</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>35.</td>
<td>de árboles</td>
<td>2</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>36.</td>
<td>con los cuales</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>37.</td>
<td>perforaban la veta.</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>38.</td>
<td>Sin saberlo,</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>39.</td>
<td>con su trabajo</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>40.</td>
<td>los indígenas</td>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>41.</td>
<td>dieron comienzo</td>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>42.</td>
<td>a la construcción</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>43.</td>
<td>de un monumento</td>
<td>4</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>44.</td>
<td>religioso</td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>45.</td>
<td>singular:</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>46.</td>
<td>la famosa</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>47.</td>
<td>catedral</td>
<td>4</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>48.</td>
<td>de sal</td>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>49.</td>
<td>de Zipaquirá.</td>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>50.</td>
<td>Después de un descenso</td>
<td>3</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>51.</td>
<td>no muy abrupto</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
52. por un túnel
53. de unos 180 metros,
54. se encontrará
55. con una nave
56. de proporciones gigantescas
57. --entre 20 y 25 metros
58. de fondo.
59. Ese es el cuerpo principal
60. de la única catedral subterránea
62. del mundo.
63. Sus paredes ofrecen
64. la purísima sal
65. que durante años
66. ha sazonado la mesa
67. de los colombianos.
68. El piso
69. de baldosas
70. de cerámica
71. y toscos acabados
72. pero de soledad inquebrantable
73. recibe a los creyentes que
74. por centenares
75. llegan a oír
76. la misa dominical
77. en esta catedral
78. de sal...
79. la única
80. en el mundo.
APPENDIX N

PAUSAL UNITS RECALLED IN EL CAMARONERO TEXT ACROSS WORD RATES
<table>
<thead>
<tr>
<th>PAUSAL UNITS</th>
<th>SCORING VALUE</th>
<th>0%</th>
<th>135%</th>
<th>150%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. En el sur de Chile,</td>
<td>(4)</td>
<td>11</td>
<td>19</td>
<td>16</td>
</tr>
<tr>
<td>2. las lluvias se intensifican</td>
<td>(3)</td>
<td>2</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>3. durante el mes de abril.</td>
<td>(3)</td>
<td>11</td>
<td>15</td>
<td>19</td>
</tr>
<tr>
<td>4. Junto con ellas,</td>
<td>(1)</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>5. aparece el camarónero.</td>
<td>(4)</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>6. Hasta ese mes,</td>
<td>(1)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>7. este singular personaje</td>
<td>(4)</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>8. había permanecido oculto</td>
<td>(1)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>9. en sus diversas tareas</td>
<td>(2)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10. de cargador</td>
<td>(4)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>11. de camiones,</td>
<td>(1)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>12. vendedor ambulante,</td>
<td>(4)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>13. ayudante</td>
<td>(4)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>14. en tareas menores...</td>
<td>(2)</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>15. un sin fin</td>
<td>(1)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>16. de actividades</td>
<td>(2)</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>17. que le permiten disponer</td>
<td>(2)</td>
<td>2</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>18. de algún dinero</td>
<td>(2)</td>
<td>10</td>
<td>5</td>
<td>11</td>
</tr>
<tr>
<td>19. para comer</td>
<td>(3)</td>
<td>8</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>20. o para su cuota diaria</td>
<td>(2)</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>21. de vino pipéreo.</td>
<td>(3)</td>
<td>1</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>22. En las mañanas</td>
<td>(1)</td>
<td>5</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>23. estos personajes</td>
<td>(4)</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>24. son los primeros</td>
<td>(4)</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>25. en abordar</td>
<td>(3)</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
26. los buses (4) 5 7 2
27. que los llevan (2) 1 2 0
28. a los campos (3) 6 8 6
29. a recoger el camarón (3) 0 0 2
30. convertido (1) 0 0 0
31. en esa época (1) 0 0 0
32. en un apetecido manjar (2) 0 0 0
33. de la gente (1) 2 8 10
34. de la ciudad. (1) 5 8 9
35. Simpático (3) 0 1 0
36. y dicherachero, (3) 0 0 0
37. su presencia, (4) 0 0 0
38. sin embargo, (1) 0 0 0
39. constituye (1) 0 0 0
40. una gran incomodidad (4) 0 0 0
41. para los demás pasajeros, (4) 1 4 0
42. los cuales pertenecen (1) 0 0 0
43. a una clase social (2) 4 2 3
44. levemente superior; (2) 2 1 1
45. entre ellos (1) 0 0 0
46. los profesores (3) 10 10 11
47. que van a enseñar (2) 1 4 3
48. a las escuelas (1) 8 15 5
49. del campo. (2) 9 15 13
50. Es que el desayuno (4) 2 7 8
51. del camarónero (4) 2 0 2
| 52. | consiste | (1) | 0 | 3 | 2 |
| 53. | principalmente | (1) | 0 | 1 | 2 |
| 54. | de pan | (4) | 4 | 7 | 9 |
| 55. | con ají | (4) | 0 | 0 | 0 |
| 56. | y cebolla | (4) | 0 | 1 | 0 |
| 57. | con un agua de té | (2) | 0 | 1 | 7 |
| 58. | o un sucedáneo | (1) | 0 | 0 | 1 |
| 59. | del café | (2) | 6 | 6 | 12 |
| 60. | si es que | (1) | 0 | 0 | 0 |
| 61. | sus medios | (2) | 0 | 0 | 0 |
| 62. | se lo permiten. | (2) | 0 | 0 | 2 |
| 63. | Y como el pan | (3) | 0 | 0 | 1 |
| 64. | de la mañana | (2) | 0 | 0 | 1 |
| 65. | sólo se vende | (3) | 0 | 2 | 2 |
| 66. | a pocos minutos | (3) | 1 | 0 | 0 |
| 67. | de que suba | (2) | 0 | 0 | 1 |
| 68. | al bus, | (3) | 0 | 4 | 4 |
| 69. | nuestro personaje | (3) | 0 | 0 | 0 |
| 70. | no puede resistir | (3) | 0 | 1 | 0 |
| 71. | la tentación | (2) | 0 | 0 | 1 |
| 72. | de desayunar | (3) | 1 | 3 | 2 |
| 73. | durante el viaje. | (3) | 0 | 1 | 3 |
| 74. | El vehículo adquiere, | (4) | 0 | 0 | 0 |
| 75. | por lo tanto, | (1) | 0 | 0 | 0 |
| 76. | un inconfundible olor | (4) | 0 | 2 | 1 |
| 77. | a cebollas, | (3) | 0 | 1 | 0 |
78. acompañado del "aroma" (4) 2 2 1
79. de sus ropas (4) 6 10 4
80. que (1) 0 0 0
81. además del trajín diario (3) 0 0 0
82. en muchas ocasiones (2) 0 0 0
83. son usadas (2) 0 1 0
84. como pijamas. (3) 1 4 1
APPENDIX 0

UNITS RECALLED BY SCORING VALUES IN EL PATO TEXT
ACROSS LEVELS OF WORD RATE

175
<table>
<thead>
<tr>
<th>MEANINGFUL UNIT</th>
<th>UNITS RECALLED</th>
<th>1 POINT</th>
<th>MEANINGFUL UNIT</th>
<th>UNITS RECALLED</th>
<th>2 POINTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.</td>
<td>40</td>
<td></td>
<td>2.</td>
<td>27</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>5</td>
<td></td>
<td>3.</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>13</td>
<td></td>
<td>4.</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>30</td>
<td></td>
<td>5.</td>
<td>34</td>
<td></td>
</tr>
<tr>
<td>15.</td>
<td>3</td>
<td></td>
<td>36.</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>16.</td>
<td>10</td>
<td></td>
<td>41.</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>18.</td>
<td>18</td>
<td></td>
<td>42.</td>
<td>31</td>
<td></td>
</tr>
<tr>
<td>26.</td>
<td>1</td>
<td></td>
<td>46.</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>32.</td>
<td>0</td>
<td></td>
<td>48.</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>37.</td>
<td>0</td>
<td></td>
<td>51.</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>38.</td>
<td>0</td>
<td></td>
<td>52.</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>41.</td>
<td>18</td>
<td></td>
<td>54.</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>44.</td>
<td>11</td>
<td></td>
<td>55.</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>47.</td>
<td>1</td>
<td></td>
<td>58.</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>49.</td>
<td>6</td>
<td></td>
<td>61.</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>50.</td>
<td>0</td>
<td></td>
<td>63.</td>
<td>21</td>
<td></td>
</tr>
<tr>
<td>53.</td>
<td>3</td>
<td></td>
<td>68.</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL:</strong></td>
<td><strong>159</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>188</strong></td>
</tr>
<tr>
<td>MEANINGFUL UNIT</td>
<td>3 POINTS</td>
<td>UNITS RECALLED</td>
<td>4 POINTS</td>
<td>MEANINGFUL UNIT</td>
<td>UNITS RECALLED</td>
</tr>
<tr>
<td>-----------------</td>
<td>----------</td>
<td>----------------</td>
<td>----------</td>
<td>-----------------</td>
<td>----------------</td>
</tr>
<tr>
<td>1.</td>
<td></td>
<td>19</td>
<td></td>
<td>7.</td>
<td>50</td>
</tr>
<tr>
<td>9.</td>
<td></td>
<td>60</td>
<td></td>
<td>17.</td>
<td>19</td>
</tr>
<tr>
<td>10.</td>
<td></td>
<td>75</td>
<td></td>
<td>19.</td>
<td>1</td>
</tr>
<tr>
<td>11.</td>
<td></td>
<td>72</td>
<td></td>
<td>22.</td>
<td>0</td>
</tr>
<tr>
<td>14.</td>
<td></td>
<td>66</td>
<td></td>
<td>23.</td>
<td>6</td>
</tr>
<tr>
<td>20.</td>
<td></td>
<td>4</td>
<td></td>
<td>24.</td>
<td>11</td>
</tr>
<tr>
<td>21.</td>
<td></td>
<td>3</td>
<td></td>
<td>27.</td>
<td>0</td>
</tr>
<tr>
<td>25.</td>
<td></td>
<td>4</td>
<td></td>
<td>28.</td>
<td>0</td>
</tr>
<tr>
<td>29.</td>
<td></td>
<td>0</td>
<td></td>
<td>30.</td>
<td>0</td>
</tr>
<tr>
<td>31.</td>
<td></td>
<td>0</td>
<td></td>
<td>31.</td>
<td>0</td>
</tr>
<tr>
<td>39.</td>
<td></td>
<td>0</td>
<td></td>
<td>33.</td>
<td>0</td>
</tr>
<tr>
<td>43.</td>
<td></td>
<td>30</td>
<td></td>
<td>34.</td>
<td>0</td>
</tr>
<tr>
<td>45.</td>
<td></td>
<td>10</td>
<td></td>
<td>56.</td>
<td>15</td>
</tr>
<tr>
<td>59.</td>
<td></td>
<td>0</td>
<td></td>
<td>57.</td>
<td>31</td>
</tr>
<tr>
<td>60.</td>
<td></td>
<td>22</td>
<td></td>
<td>64.</td>
<td>1</td>
</tr>
<tr>
<td>62.</td>
<td></td>
<td>20</td>
<td></td>
<td>65.</td>
<td>0</td>
</tr>
<tr>
<td>67.</td>
<td></td>
<td>3</td>
<td></td>
<td>66.</td>
<td>12</td>
</tr>
</tbody>
</table>

**TOTAL:**

388 

146
APPENDIX P

UNITS RECALLED BY SCORING VALUES IN LA CATEDRAL SUBTERRANEA TEXT
<table>
<thead>
<tr>
<th>MEANINGFUL UNIT</th>
<th>1 POINT</th>
<th>UNITS RECALLED</th>
<th>2 POINTS</th>
<th>MEANINGFUL UNITS</th>
<th>UNITS RECALLED</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>0</td>
<td></td>
<td>4.</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>8</td>
<td></td>
<td>5.</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>1</td>
<td></td>
<td>14.</td>
<td>38</td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>31</td>
<td></td>
<td>16.</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>19.</td>
<td>16</td>
<td></td>
<td>20.</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>23.</td>
<td>1</td>
<td></td>
<td>27.</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>24.</td>
<td>0</td>
<td></td>
<td>30.</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>28.</td>
<td>0</td>
<td></td>
<td>34.</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>29.</td>
<td>0</td>
<td></td>
<td>35.</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>33.</td>
<td>0</td>
<td></td>
<td>39.</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>36.</td>
<td>0</td>
<td></td>
<td>45.</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>38.</td>
<td>0</td>
<td></td>
<td>53.</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>51.</td>
<td>0</td>
<td></td>
<td>62.</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>54.</td>
<td>0</td>
<td></td>
<td>65.</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>58.</td>
<td>1</td>
<td></td>
<td>66.</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>70.</td>
<td>5</td>
<td></td>
<td>67.</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>72.</td>
<td>0</td>
<td></td>
<td>69.</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>74.</td>
<td>0</td>
<td></td>
<td>73.</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>78.</td>
<td>0</td>
<td></td>
<td>75.</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>80.</td>
<td>38</td>
<td></td>
<td>76.</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL:** 101 126
<table>
<thead>
<tr>
<th>MEANINGFUL UNIT</th>
<th>UNITS RECALLED</th>
<th>MEANINGFUL UNITS</th>
<th>UNITS RECALLED</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.</td>
<td>21</td>
<td>3.</td>
<td>72</td>
</tr>
<tr>
<td>10.</td>
<td>30</td>
<td>6.</td>
<td>21</td>
</tr>
<tr>
<td>12.</td>
<td>4</td>
<td>7.</td>
<td>25</td>
</tr>
<tr>
<td>18.</td>
<td>0</td>
<td>11.</td>
<td>8</td>
</tr>
<tr>
<td>21.</td>
<td>3</td>
<td>15.</td>
<td>11</td>
</tr>
<tr>
<td>26.</td>
<td>0</td>
<td>17.</td>
<td>1</td>
</tr>
<tr>
<td>31.</td>
<td>0</td>
<td>22.</td>
<td>1</td>
</tr>
<tr>
<td>32.</td>
<td>0</td>
<td>25.</td>
<td>0</td>
</tr>
<tr>
<td>37.</td>
<td>0</td>
<td>40.</td>
<td>3</td>
</tr>
<tr>
<td>44.</td>
<td>5</td>
<td>41.</td>
<td>0</td>
</tr>
<tr>
<td>46.</td>
<td>10</td>
<td>42.</td>
<td>10</td>
</tr>
<tr>
<td>50.</td>
<td>2</td>
<td>43.</td>
<td>8</td>
</tr>
<tr>
<td>52.</td>
<td>0</td>
<td>47.</td>
<td>9</td>
</tr>
<tr>
<td>57.</td>
<td>2</td>
<td>48.</td>
<td>0</td>
</tr>
<tr>
<td>63.</td>
<td>1</td>
<td>49.</td>
<td>0</td>
</tr>
<tr>
<td>64.</td>
<td>0</td>
<td>55.</td>
<td>0</td>
</tr>
<tr>
<td>68.</td>
<td>0</td>
<td>56.</td>
<td>0</td>
</tr>
<tr>
<td>71.</td>
<td>0</td>
<td>59.</td>
<td>1</td>
</tr>
<tr>
<td>77.</td>
<td>4</td>
<td>60.</td>
<td>8</td>
</tr>
<tr>
<td>79.</td>
<td>30</td>
<td>61.</td>
<td>7</td>
</tr>
</tbody>
</table>

**TOTAL:** 112 185
APPENDIX Q

UNITS RECALLED BY SCORING VALUES IN EL CAMARONERO TEXT
<table>
<thead>
<tr>
<th>MEANINGFUL UNIT</th>
<th>1 POINT</th>
<th>UNITS RECALLED</th>
<th>2 POINTS</th>
<th>MEANINGFUL UNITS</th>
<th>UNITS RECALLED</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.</td>
<td>1</td>
<td></td>
<td>9.</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>0</td>
<td></td>
<td>14.</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>0</td>
<td></td>
<td>16.</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>0</td>
<td></td>
<td>17.</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>15.</td>
<td>0</td>
<td></td>
<td>18.</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>22.</td>
<td>12</td>
<td></td>
<td>20.</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>30.</td>
<td>0</td>
<td></td>
<td>27.</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>31.</td>
<td>0</td>
<td></td>
<td>32.</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>33.</td>
<td>20</td>
<td></td>
<td>43.</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>34.</td>
<td>22</td>
<td></td>
<td>44.</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>38.</td>
<td>0</td>
<td></td>
<td>47.</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>39.</td>
<td>0</td>
<td></td>
<td>49.</td>
<td>37</td>
<td></td>
</tr>
<tr>
<td>42.</td>
<td>0</td>
<td></td>
<td>57.</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>45.</td>
<td>0</td>
<td></td>
<td>59.</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>48.</td>
<td>28</td>
<td></td>
<td>61.</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>52.</td>
<td>5</td>
<td></td>
<td>62.</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>53.</td>
<td>3</td>
<td></td>
<td>64.</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>58.</td>
<td>1</td>
<td></td>
<td>67.</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>60.</td>
<td>0</td>
<td></td>
<td>71.</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>75.</td>
<td>0</td>
<td></td>
<td>82.</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>80.</td>
<td>0</td>
<td></td>
<td>83.</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL:</strong></td>
<td><strong>92</strong></td>
<td></td>
<td></td>
<td><strong>132</strong></td>
<td></td>
</tr>
<tr>
<td>MEANINGFUL UNIT</td>
<td>3 POINTS UNITS RECALLED</td>
<td>4 POINTS MEANINGFUL UNITS RECALLED</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------------</td>
<td>--------------------------</td>
<td>-----------------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>9</td>
<td>1.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>45</td>
<td>5.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19.</td>
<td>18</td>
<td>7.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21.</td>
<td>6</td>
<td>10.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25.</td>
<td>6</td>
<td>12.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28.</td>
<td>20</td>
<td>13.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29.</td>
<td>2</td>
<td>23.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>35.</td>
<td>1</td>
<td>24.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>36.</td>
<td>0</td>
<td>26.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>46.</td>
<td>31</td>
<td>37.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>63.</td>
<td>1</td>
<td>40.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>65.</td>
<td>4</td>
<td>41.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>66.</td>
<td>1</td>
<td>50.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>68.</td>
<td>8</td>
<td>51.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>69.</td>
<td>0</td>
<td>54.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>70.</td>
<td>1</td>
<td>55.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>72.</td>
<td>6</td>
<td>56.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>73.</td>
<td>4</td>
<td>74.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>77.</td>
<td>1</td>
<td>76.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>81.</td>
<td>0</td>
<td>78.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>84.</td>
<td>6</td>
<td>79.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL:** 170 144
APPENDIX R

RESPONSES TO POST-LISTENING QUESTIONNAIRE: 0 EXPANSION
What was the most difficult part about listening to the tapes?

- The speech at which the person spoke. I have trouble keeping up with his pace and if he used a word I did not know I fell even further behind.

- How fast he talked. And alot (sic) of unfamiliar vocabulary.

- I'd never heard about the topics before so I couldn't use English retrieval cues to bridge over to my Spanish cues.

- You couldn't stop them and think about what they were saying, rewind it, and they spoke without pauses between the words so it sounded as if the words were together.

- The speaker spoke quite fast and I could not control the tape.

- The speed of the speaker!

- The rate at which the speaker spoke.

- The speed was a little fast but even when I was understanding him, if they said a word I didn't know then I was lost.

- The speed of the speaker was fast enough that if you didn't understand one sentence or phrase, then you didn't have time to think about it.

- The speakers talked very fast. I didn't have time to understand one sentence before the next sentence started. I would then miss sentences here and there.

- Understanding the speaker—I didn't know a lot of the words.

- Putting some of the unknown words into the context. Some of the context was also hard to understand.

- They talked too fast and the words blended together a lot. They also used a lot of vocabulary that we have not learned yet. They also talked of topics that I couldn't relate to, which made it difficult to concentrate and comprehend.

- They speak so fast that many words run together and I can't make them out. Maybe I'm just not understanding well enough.

- Understanding the Spanish speaker, the words that he said, and getting used to how fast he talked. If I concentrated on what one sentence meant and tried to translate it then I would miss out on all of the other sentences.
APPENDIX S

RESPONSES TO POST-LISTENING QUESTIONNAIRE: 135% EXPANSION
What was the most difficult part about listening to the tapes?

- The pronunciation of the person speaking. I thought the speed of the tape was just fine. Some of the vocabulary was foreign also.

- Following the main idea.

- I had trouble picking out individual words.

- Everything runs together. Its (sic) hard to get the meaning if you miss the meanings of some words.

- Understanding the vocabulary because some of the words threw the complete main idea I had off a little.

- There were a lot of words and phrases that I did not know.

- The most difficult part was remembering what I had heard. I could understand a lot of the words, but when I missed a word, the idea of the sentence was lost and sometimes the idea of the next sentences or two.

- The rapidity and accent. (Unknown vocabulary.)

- I would stop listening when I heard a word I recognized or thought was a "cognate" and miss some of the text. Most of the vocabulary seemed new to me.

- Just having something irritating over your ears to listen to the tapes instead of listening to a "real live person" speak.

- The most difficult part was trying to remember what was said while simultaneously hearing new information. It would have been much easier for me if the tape were stopped at intervals, allowing time to write the information as it was given. I understood a lot of phrases that I didn't write down, but I either forgot them or didn't understand the context that they were in.

- Trying to understand without knowing some words.

- Trying to understand the idea of the story that the speaker was trying to tell. I could understand a word every once in a while, but I loss (sic) the idea while trying to figure out the other words.

- It was difficult to understand the general topics of the tapes because there was much unfamiliar vocabulary.
APPENDIX T

RESPONSES TO POST-LISTENING QUESTIONNAIRE: 150% EXPANSION
What was the most difficult part about listening to the tapes?

- Much of the vocabulary used was unfamiliar to me. It is difficult to distinguish some words when listening to native speakers. We don't practice enough listening comprehension.

- It seemed like a lot of the words ran together. Some were familiar but by the time I thought of what they were I missed what was just said. I also couldn't remember much of what I did understand because we couldn't write notes down.

- Not being able to write down notes and it was hard to memorize/remember all the things that were said in Spanish and put it in English sentences.

- Although the tapes were done with very slow Spanish speakers, I found it hard to recall things after listening to the tape twice. I knew that I had understood more during the tape than I was able to recall later.

- The vocabulary wasn't at all familiar.

- It was hard to just listen without interacting with the speaker. So if you missed a topic or a phrase or a word and you were not familiar with that topic one could easily become lost.

- Comprehending words and hearing different speeds the speaker was talking.

- Trying to understand what the native speaker was saying. His annunciation (sic) was what made it hard to understand what he was saying.

- The most difficult part occurs after you start not understanding certain words. Once I get lost in the dialogue, the confusion increases. I had difficulty with every tape. At first I would understand, then progressively it would become a jumble of sounds in which I could only pick out solitary words.

- Thinking about the meanings, tenses...of the words while not falling behind.

- Once you miss a part, you are totally lost on the rest of the tape because you are trying to figure out the part you didn't know and in turn, end up missing the rest of the tape.

- Comprehension of vocabulary.
REFERENCES


Bakken, J. (1986). Effects of simultaneous reading and listening upon reading comprehension of reading passages of differing difficulty levels, as measured by an immediate recall protocol, with first year German students in a university program. *Dissertation Abstracts International, 47*, 108A.


The Reviews Are In--How a parametic nurse coordinator expedites education and review. Biomedical Communications. May 1979, 37-38; 42.

The Talk of the Town, Law Enforcement Communications, October 1978.


