USING PAUSES TO IMPROVE LISTENING COMPREHENSION FOR SECOND LANGUAGE LEARNERS

by

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ABSTRACT

This thesis investigates the effectiveness of using pauses in oral texts to improve listening comprehension for second language learners of English. The subjects in this experiment listened to three different radio news stories. One story was unmodified and two others were modified with pauses at specific junctures. After listening to each news story, the test subjects were given a written short answer test to measure their comprehension. The experiment parallels earlier work by Blau (1990), which showed that pauses placed in an oral text resulted in a significant improvement in the listening comprehension of second language learners. Blau describes the use of pausing as a means of giving the listener additional processing time without disturbing the natural features of the normal flow of speech (1990: 749). As well, Griffiths notes that pauses are assumed to increase comprehension by (a) providing processing time, and (b) grouping words into syntactic constituents (1990: 56). He also notes that slow speech is slow mainly due to the frequency and length of pauses. The design of this study parallels the Blau study, but also considers the effects of using much shorter pauses and different pause locations. The methodology and research from pausology studies was incorporated into the study design.

This study is focused on two basic questions:

(1) Does editing oral text by inserting 500 millisecond pauses at juncture points improve the comprehension test scores for second language (henceforth L2) learners of English?

(2) Does the location of an inserted pause have an influence on the comprehension test scores?

The results from this study show that editing an oral text with 500 millisecond pauses at intonational and syntactic junctures does improve comprehension test scores for second language learners of English. There are also indications that the actual location of the pauses has an influence on comprehension test scores. This study concludes that there is some evidence suggesting that pauses can be a useful tool in facilitating listening comprehension for second language learners who are working with authentic oral texts. This seems to be especially true for lower level learners.

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Chapter One – Introduction

1 1 Purpose of Study

This study investigates the effectiveness of using pauses in oral texts to improve listening comprehension for second language learners of English Specifically, this paper describes the results of an experiment in which 500 millisecond pauses were inserted into brief stories [1] The subjects in this experiment listened to three different radio news stories One was unmodified and the other two were modified with pauses at specific junctures After listening to each news story, the test subjects were given a written short answer test designed to measure their comprehension The experiment parallels earlier work by Blau (1990), which showed that pauses placed in an oral text result in a significant improvement in the listening comprehension of second language learners The experiment differs in that it uses pauses of significantly shorter duration than were used in the Blau experiment In addition, the effect of the actual pause location was a focus of my study which used pauses placed at both syntactic constituent boundaries and intonational phrase boundaries, as described in section 3 3 Griffiths (1991) notes that pausing research is of interest both to second language researchers and to teachers of second languages in their preparation of teaching materials He adds, however, that although there is a widespread assumption about the utility of pauses to facilitate listening comprehension, there is a lack of empirical evidence to support the assumption

[1] A complete account of the experiment design and the location of the pauses is given in Chapter Three

(349) According to Griffiths, much of the research into the use of pausing in a second language context suffers from failing to follow pausology methodology (348) [2]

Blau describes the use of pausing as a means of giving the listener additional processing time without disturbing the natural features of the normal flow of speech (1990 749) Griffiths (1991) notes that pauses are assumed to increase comprehension by (a) providing processing time, and (b) grouping words into syntactic constituents He also notes that slow speech is slow mainly because of the frequency and length of pauses The design of this study follows much of what was done in the Blau study and at the same time incorporates the methodology and research from pausology studies

The research hypothesis was that the comprehension test scores for the second language (henceforth L2) learners of English would be improved by editing oral texts with 500 millisecond pauses at juncture points The selection of this pause duration is described in section 3 3 I further hypothesized that pauses inserted at intonation phrase junctures would yield higher comprehension scores than pauses inserted at syntactic phrase junctures The results show that editing oral texts with 500 millisecond pauses at intonational and syntactic junctures does in fact improve comprehension test scores for second language learners of English There are also indications that the actual location of the pauses does have an influence on comprehension test scores I conclude that there is some evidence suggesting that pauses can be a useful tool in facilitating listening comprehension for second language learners who are working with authentic oral texts

[2]Pausology includes the study of speech rate, articulation rate, and silent pause phenomena (pause duration, pause distribution and pause frequency)

1 2 Defining listening comprehension

Researchers consider listening comprehension to be a complex skill that consists of several subset skills (Brown, 1990, Rost, 1990) The challenge for the listener is to reconstruct the speaker's message, there are different aspects to this task In normal speech, where there may be up to twenty-five individual sounds per second, it becomes difficult to distinguish individual sounds (Rost, 1990 34) According to Brown, speech, for second-language learners, is an acoustic blur because they cannot find sufficient structure to enable them to recognize what it is they are listening to (1990 11) The ability to make sense of the acoustic blur begins when listeners can structure sounds into lexical components "Using a lexicon requires the separation of utterances into the lexically relevant chunks of which they are made up – producing speech requires the language user to string together lexical entries to make a whole utterance, and recognizing speech requires division of an utterance into units which can be looked up in the lexicon" according to Cutler (1994 82) She also notes that words are strongly affected by the contexts in which they occur, and these contextual assimilation processes obscure word boundaries, with the result that there are few reliable cues in a continuous speech signal to identify where one word ends and the next begins (83) Processing individual words rather than utterances as indivisible wholes is an important part of comprehending spoken language according to Cutler, Dahan, and van Donselaar (1997) The reason for this, they write, is that most complete utterances have never been previously heard by the listeners (145) For the purpose of the present study, listening comprehension is defined as "recognizing the individual words, extracting their syntactic

relationships, determining the semantic structure of the utterance and its relationship to the discourse context" (Cutler, Dohan and van Donselaar, 1997 142)

1 3 Experimental design

In designing the experiment I selected authentic oral texts in the form of radio news broadcasts The news stories were modified by adding pauses and were played to the subjects of the experiment Listening comprehension was measured with WH-questions

1 3 1 Using authentic materials

The decision to use radio news broadcasts as the listening material was made because they are an accessible source of authentic oral text In my experience as an English as a second language (ESL) instructor, I have found radio broadcasts to be versatile in their instructional uses for ESL students, even lower level students Authentic materials are particularly valuable to language learners in several ways First, Morrison (1989 14) writes that authentic listening materials are useful to all students, and not just students whose level of English is advanced "It is only through exposure from the initial learning stages that the learner can fully integrate the individual micro-skills that may be isolated and presented by the teacher," he adds As well, authentic materials used in second language learning are motivating, and significantly increase learner on-task behavior according to Peacock (1997)

There are other reasons why authentic oral texts should be used with L2 learners Brown writes that teachers can help L2 learners find their way around the sounds of the foreign language by identifying the bits that will give them most information (1990 2)

Authentic materials provide the L2 learner with the natural sound patterns of English according to Brown She adds that only authentic oral text will present listeners with natural stress and intonation patterns Rather than relying on idealized phonemes, L2 learners need to comprehend English as native speakers speak it Cutler (1994) observes that in practice speech signals are not always fully clear "Background noise, distance between speaker and listener, distortion of the speaker's vocal tract, foreign accents, slips of the tongue – all these, and similar factors, conspire to make the listener's phonetic interpretation task harder," she writes (89) In addition, rhythm, which most non-native speakers find so difficult to master, needs to be a part of the L2 learner's focus Cutler notes that English speech shows a systematic relationship between rhythmic patterns and word boundary locations (1994 89) Also, the context and genre of authentic texts may be difficult to learn, but when learned can provide valuable cues to the learner Likewise, the lexicon and syntax as used in authentic text will form the schemata of L2 learners as they listen to more and more native speakers' speech In short, working with authentic texts gives learners realistic and helpful expectations of what they will hear

Yet another reason for using authentic texts is that the human mind is sensitive to frequency of occurrence and uses this information in processing Lalami (1997) notes that authentic materials provide the L2 learner with the appropriate context for the frequency with which lexical items and structural patterns occur It is because authentic oral texts in activities related to listening comprehension are so clearly valuable and important, that they have been used in this study Only authentic oral texts present the L2 listener with all the linguistic features that a listener needs to master

1 3 2 Radio news broadcasts

Although radio news broadcasts are a readily available and authentic source of target language text, they are challenging The ability to comprehend any given news broadcast seems to be related to its theme and the interest of the listener (Lutz and Wodak, 1987 208) The ability to process radio news text has a strong component of socio-cultural factors, which together with listener priorities and emotional states, form the control mechanisms of understanding the text (Lutz and Wodak, 1987 209) Despite the challenge for listeners, news broadcasts remain a useful authentic source of oral text Morrison notes that radio broadcasts are authentic material that is current and real Radio news broadcasts are also very flexible in the possibilities for exploitation (1989 15) He concludes that news broadcasts expose students to real, spoken English, integrate listening with other skills, and are flexible and widely exploitable Like Peacock (1997), Morrison notes that as a source of authentic material, radio news broadcasts are highly motivating (1989 18) He adds that although news broadcasts are produced for native speakers, they often contain international topics Morrison believes that even beginning L2 learners can benefit from news broadcasts so long as the aims and related tasks are appropriate to their situation and linguistic level

1 3 3 Modifying radio news broadcasts

Morrison notes that authentic materials often go beyond the actual linguistic level of L2 learners but are still preferable to non-authentic material (1989 14) Authentic materials are preferred because they do not contain the reduced and simplified forms that are often culturally inappropriate (Ibid) Given the benefits of using authentic materials

in the L2 context, but recognizing the difficulty they present to L2 learners, one would wish to simplify the oral texts somehow without destroying their authentic features Blau's (1990) study showed the use of pauses inserted at selected sentence, clause, and phrase boundaries[3] to be one method that was effective in making authentic texts more comprehensible for L2 learners As previously noted, appropriately placed pauses do not disturb the natural features of the normal flow of speech

This study assesses the placement of pauses within radio news stories For each of the three news stories used in the study, two modified versions were produced Pauses of 500 milliseconds duration were placed between syntactic constituents in one version and between intonation phrases in the other version The rationale for this length of pause and the selection of the pause locations are discussed in Chapter Three

1 3 4 Subjects and proceedure

The subjects for this study were all university students who were either native speakers of English (henceforth NS) or non-native speakers of English (henceforth NNS) The NS subjects were the control group The comprehension test scores of the NSs were the standard against which the comprehension test scores of the NNS were compared All the NNS subjects were native speakers of Japanese The decision to use only a homogeneous group of NNS subjects was made in order to limit the number of variables in the study

[3] In Blau's (1990) study pauses were of 3 seconds duration and were placed at an average of every 23 words

1.3.5 Testing with WH-questions

The testing of listening comprehension in this study was done by means of WH-questions (see Appendix D). These were presented in written form to the subjects immediately after they had heard the oral text. Blau (1990) also used WH-questions to assess listening comprehension, and also presented them to the subjects of her study immediately after they heard the oral text. Buck (1992) found that the use of WH-questions to test listening comprehension provided a reliable and valid measure of listening comprehension.

1.4 Outline of Thesis

Chapter Two is a review of the literature on the phenomenon of pauses in speech. It also details how pauses have been used to modify oral texts for second language learners for the purpose of improving listening comprehension. Chapter Three is a description of the experiment that is the focus of this study. It describes (i) the placement of pauses in three radio news broadcast items, (ii) the non-native speakers who were the test subjects and the native speakers who were the control subjects, (iii) the listening procedure, and (iv) the tests used to measure the subjects' comprehension of the of the individual news items. Chapter Four presents the results from the experiment and discusses the results in relation to current theories of listening comprehension. The concluding chapter offers directions for future research and possible applications for the preparation of L2 listening materials.

Chapter Two – Language Organization in Time

2.1 Introduction

This chapter reviews the research that has been done on the organization of language in time and the significant role that pauses have in that organization. Though the scope of the studies is varied the following review shows a common theme: pauses play an integral role in both the production and perception of spoken language.

The research presented in this chapter shows that pauses serve a variety of functions and argues that pauses organize the structure of spoken language production. O'Connell describes temporal organization as part of a deliberate and purposeful use of means to optimize communication in social settings and pauses are an essential part of language use (1988: 190). Speech pauses are manipulated in performance arts to create nuance and enhance emotional impact (O'Connell, 1988: 244). Among other things, researchers have shown that pauses mark syntactic phrases (Cooper, 1980), and intonation phrases (Gussenhoven and Jacobs, 1998: 244). Grosjean shows that it is actually the duration and frequency of pauses in speech that determine the rate of speech (1980a). As well, when pauses occur at juncture breaks they contribute to speech fluency, whereas when pauses occur at non-juncture points, they are considered interruptions (Butcher, 1981: 78). Blau observes that when pauses are located at constituent boundaries they significantly enhance the comprehensibility of aural input for second language learners (1990: 752). Furthermore, Griffiths notes that non-grammatical pauses in teacher-talk are potential sources of confusion for the non-native learner (1991

347) All of the above research show that pauses are important components of spoken language and that their uses and effects are varied

Even though pausing is the absence of speech sounds, it does have a significant role in the assigning of meaning to utterances The speech pause, just like other elements of language, has certain communicative functions, according to Butcher (1981 40) The structure that pauses impose on speech serves a communicative purpose for the listener As is shown in this chapter, pause patterns of frequency and duration, as well as their related temporal variables, are associated with specific genres of speaking Within a genre of speaking, such as dramatic readings, there are more fluent speakers and less fluent speakers One of the distinguishing factors is the use of pauses The more fluent speakers can be characterized by a use of pauses that has an organization different from that of less fluent speakers (O'Connell, 1988 228) Fluent speakers used more pauses of longer (one to two seconds) duration (Ibid) In the same way that pauses can enhance fluency in speech production, speech pauses have been shown to enhance speech perception The research by Blau (1990) on the use of inserted pauses in oral texts for L2 learners suggests that there is a pattern to the organization of pauses that facilitates listening comprehension

This chapter reviews the various roles of pauses, particularly their organizing patterns It defines terms that are used in the research on pauses in speech and discusses the concept of pauses as a measure of processing activity An overview of the various uses that are made of pauses in speech is given I also review the cross-linguistic aspects of pauses that show pauses as important and universal features of spoken language The distribution of pauses in speech is discussed and the characterization of various genres of

speech by pauses is examined. I examine how the organization of pauses may hold insights and applications that could be useful for second language learning and teaching. One potential application might be the production of oral texts that are more readily comprehensible by second language learners. As Butcher (1981: 54) notes, members of speech communities are both encoders and decoders and learning to use pauses in one role may be carried to the other. Learning the code may thus provide insights to improved listening comprehension, particularly for the second language learner.

2.2 Definitions and terminology

The literature that examines the research on pauses contains many terms that have been specifically defined within the context of pausology research. A review of the terminology is helpful to clarify the issues that are under consideration in this chapter.

(1) Pause

Butcher defines a pause as "a point at which at least a certain proportion of listeners perceive a silent interval in the speech signal" (1981: 61). This definition depends on the listener's perception and not on a measurement of the speech signal with an instrument. Even though a listener has not heard a pause, it does not mean that the pause was not there. As occurrences and durations of pauses are often overestimated and underestimated, O'Connell (1988: 214) believes that perceptual reporting of pause occurrence and duration needs to be compared to an instrumental measurement.

(ii) Temporal variables

Grosjean (1980b 310) considers articulation rate and the number and length of pauses to be the component variables that speakers use when they alter their rate of speech. An additional component is segmental lengthening, which Cooper believes is a consistent indicator of major syntactic constituent boundaries in speech production (1980 306). Cooper notes that segmental lengthening, like pausing, is influenced by the speaker's internal syntactic representation (1980 324). A syntactic representation describes the relationships between syntactic constituents and is usually illustrated by a syntactic tree. Figure 3 4 on page 43 shows examples of syntactic trees and how they can be used to show which syntactic constituents are directly related to each other.

(iii) Hesitation phenomena

This term has created some controversy among researchers doing work related to pauses. Pauses described by the term "hesitation phenomena" suggest disruption and disfluency (O'Connell, 1988 186). Another perspective, held by Grosjean, is that pauses are hesitations in the production of spontaneous speech, and are a reflection of the cognitive and linguistic effort required to produce speech (1980c 43). However, O'Connell notes that it is only the pauses that call attention to themselves which are actually disruptive, whereas, pauses that provide emphasis, transition, structure or nuance do not call attention to themselves (1988 187). Even the length of a pause is not a good indication of whether or not the pause is a hesitation or intentional (1988 185). O'Connell suggests that besides planning for what to say next, a speaker may pause for a variety of other reasons: pausing for rhetorical effect, or after being distracted by

something nearby or in the speaker's own mind, or thinking of the reaction the message has just elicited from the hearer (1988 185) Deese argues for a definition of pauses that makes a distinction between pauses that interrupt the fluent stream of speech and those that appear to serve grammatical and rhetorical purposes (1980 71) According to Deese, some long pauses are not hesitations in the flow of speech, but breaks that serve intentional and communicative functions (1980 72) Deese believes that the only way to separate linguistically intentional pauses from pauses that interrupt the fluent stream of speech is to examine the complete context of the utterance in which the pause occurred (1980 72) Of the total context of speech Deese writes

> Grammatically and rhetorically relevant pauses are often signaled by other prosodic features which reveal that the speaker has anticipated them and assimilated them to the flow of speech But it is only possible to tell which is which from the total context of speech Our determination of functional pauses is based upon three criteria (1) Does the pause have an interpretation? (2) Does it serve a grammatical function, such as marking the end of a sentence or phrase? (3) Does it make for ease of interpretation? (1980 72)

(iv) Breathing and non-breathing pauses

Grosjean categorized pauses as 'breathing pauses' or 'non-breathing pauses' (1978 73) He notes that breathing pauses are systematically longer than non-breathing pauses Butcher notes that the need for the speaker to inhale (10 to 20 times per minute) is the most important constraint operating on pause behavior (1981 55) Interestingly, Butcher's studies showed that a breath will normally only be taken where a sufficiently long pause is linguistically permissible at a syntactic or intonational juncture (1981 114)

(v) Filled and unfilled pauses

Pauses are described throughout the literature as filled and unfilled. Beattie notes that filled pauses consist of repetitions which are false starts, incomplete and self-interrupted utterances, and parenthetical remarks such as "you know" (1980: 86). Unfilled pauses are the silent intervals in speech which Goldman-Eisler describes as the "intermittent silences between chunks of speech" (1980: 143).

(vi) Pause duration

The durations of pauses are usually measured in milliseconds, according to Griffiths (1991: 346). Butcher groups pauses in three categories according to their duration: pauses with duration of 100 - 200 milliseconds he describes as "largely unheard," those at around 500 milliseconds as "short," and those around 1000 milliseconds as "long" (1981: 84). According to Goldman-Eisler, in natural, unprepared and spontaneous speech there is a quantitative definition of each of the clause types (coordinate, subordinate and relative) reflected in the length or absence of pauses: the length of pauses between coordinate clauses is greater than between an independent clause and a subordinate clause (1972: 107). She notes that in discussions and conversations, 78% of the pauses that divide sentences from each other are longer than 500 milliseconds (105). However, O'Connell makes the point that a pause's duration can not determine whether or not a pause is a genuine hesitation, or a pause for emphasis, or a major transition signal to a new train of thought (1988: 186). It seems then that even the length of a pause cannot assign different meanings to utterances.

Some pause research has been done to assess the influence of syntactic complexity and its effect on pause duration (Cooper, 1980). The concept according to Butterworth is that we can infer the nature of the internal representation employed by the cognitive system from the pattern of pauses (1980: 157). Grosjean writes that in speech there is a hierarchy of pause frequency and duration that corresponds to a hierarchy of constituents: for example, pauses are shorter between a subject and a verb than between two sentences (1980b: 49). This pattern is also true for American Sign Language in that the durations of pauses in American Sign Language within and between major constituents in simple sentences are shorter than between simple sentences (Ibid.).

(vii) Junctures

Junctures, both syntactic and prosodic, figure prominently in the studies of pauses in speech. Junctures at the phonological level are a set of prosodic features marking the end of a tone group (Butcher, 1981: 61). There seems to be a relationship between the type of juncture and the pause duration associated with it. "A different length of pause indicates different amounts of juncture, i.e. different degrees of physical separation of the words and of functional separation of the messages they carry," writes Pennington (1996: 140). Pennington also notes that a pause of 2-3 seconds between two words indicates a functional separation of a message, whereas a short pause of 0.3-0.5 seconds, which is the smallest readily detectable pause in speech, indicates a relationship between the two words (1996: 141).

(viii) Speaking rate

Speaking rate is measured in words or syllables per minute and is obtained by dividing the total number of words or syllables in an utterance by the total speaking time and multiplying the product by sixty (Grosjean, 1980). Speech rate can be influenced by a number of factors, including the stage of a child's cognitive development. Up to adulthood, speech rate increases and the frequency and length of silent pauses decrease accordingly as age or educational level increase (Kowal and O'Connell 1980: 63). Genre is another factor that influences speaking rate. Individual speakers vary their speaking rate according to their purpose and the situation in which they are speaking. The influence of genre is discussed in detail in section 2.7.

(ix) Articulation rate

Griffiths (1991: 346) notes that slow speech is slow mainly because of the frequency and length of pauses and for this reason, researchers often measure articulation rate (the speaking rate minus the pause time). Again, the rate is given in syllables per second.

(x) Length of run

Another measure of pauses that is of interest to researchers is the length of 'runs,' which is described as the number of syllables between pauses (Grosjean, 1980). For example, when the sentence "The man in the black coat fell into the pond," is spoken, the subject would normally be separated from the predicate by a pause. The subject has a 'run' of six syllables and the predicate a 'run' of five syllables.

2 3 Pauses as a measure of processing activity

In describing pauses as hesitation phenomena, researchers assume that a speech pause is a reflection of cognitive processing underlying speech production (Chafe, 1980, Cooper, 1980, Goldman-Eisler, 1972, Grosjean, 1980b) Chafe has observed that spontaneously created language constitutes the primary data, and hesitations are welcomed as overt, measurable indications of processing activity (1980 170) The fundamental reason for hesitating is that speech production is creative (Ibid) O'Connell expands on the creative aspect of speech in his description of speaking as the process of working out our thoughts gradually in real time with one another (1988 196) Not only do we plan during speaking, according to O'Connell, but we also listen to ourselves and to others in an ongoing, shifting contextual circumstance (1988 195)

Grosjean reports on an experiment that compared speaking rates for subjects who described cartoon pictures with those of subjects who were interviewed on topics which were familiar to them (1980b) The average speaking rate for the subjects who were interviewed was 264 syllables/minute, compared to 153 syllables/minute for the subjects giving descriptions of cartoons (Grosjean, 1980b 43) Grosjean notes that further analysis showed that the interviewed subjects spent 85% of the total interview time articulating, while the subjects giving descriptions spent only 59% talking (1980b 43) He concludes (1980b 43)

> This need to pause in the description of cartoons (speakers spent almost half of their speaking time being silent) is a good reflection of the cognitive and linguistic effort required, this involves, among other things, the visual decoding and comprehension of the pictures and the linguistic encoding or the oral description

Goldman-Eisler refers to pause measurement as a tool that is useful for describing the degree of integration and independence among various constituent structures, words, and clauses (1972 103) Pauses between syntactic units function as demarcation and hesitation, in spontaneous speech both functions occur together (1972 111)

2 4 The roles and uses of pauses

"Pauses may serve not only to make time available for the speaker's cognitive processes, but also to assist the listener in his [sic] task of understanding the speaker," according to Butterworth (1980 157) In section 2 2, above, the connection between pauses and syntactic structure was noted Researchers have reported on the sensitivity of pause occurrence and duration to syntactic structure (Butcher, 1981, Cooper, 1980, Pennington, 1996) A listener trying to decode speech is presented with a complex task speaker pauses may help define the various constituents of speech output Cutler, Dahan and van Donselaar (1997 142) write

> The task of the listener is to reconstruct the speaker's message, and there are different aspects to this task recognizing the individual words, extracting syntactic relationships, determining the semantic structure of the utterance and its relationship to the discourse context

According to Cutler *et al* (1997), the comprehension of spoken language involves the processing of discrete words rather than utterances as indivisible wholes, and for this reason the listener must locate the boundaries between the words and other lexically represented units of which the utterance is composed (145) Prosodic structure, which includes pauses, plays an organizing role in speech recognition (143)

Cooper notes that pauses may be produced for a variety of reasons in speech, he concluded that it is important to distinguish their underlying determinants (1980 300) Pauses may reflect word-finding difficulty, general hesitation, drastic changes in the planning of the semantic content of an utterance or its syntactic structure, and he also notes that syntactic pauses appear at the ends of major syntactic constituents, whereas hesitation pauses often occur within major constituents (Cooper, 1980 300)

Butcher categorizes pauses as having semantic, syntactic, stylistic or articulatory functions (1981 42) He writes, "There is the possibility that pausing increases in duration and frequency as a function of the overall difficulty of the utterance, and there is also the possibility that pausing will increase before difficult individual lexical choices" (1981 42) "As far as the syntactic level is concerned, it seems there is a strong possibility of a connection between pause time distribution and syntactic structure that the duration of a pause is likely to increase in proportion to the rank of the constituents between which it occurs" (Ibid) The stylistic function of pause is to provide emphasis or silent stress (1981 43) and the articulatory function of a pause is the silent interval associated with complete closure of the articulators (44) These articulatory pauses may range in duration from 50 milliseconds to more than 250 milliseconds and longer articulatory pauses could be heard as interruptions to the speech flow (Ibid) Hieke, Kowal and O'Connell showed that short pauses of 130 – 250 milliseconds duration are psychologically functional and not just articulatory pauses (1983 212) They found that the occurrence of these short pauses varies from 10% in political speeches to 26% in poetry readings (209) and that often the short pauses are clearly related to constituent boundaries (211)

O'Connell (1988 188) states that any given pause may serve a number of functions simultaneously, many of these functions can be served by other means He notes that a pause at a major syntactic segment may serve for breathing and rhetorical emphasis or for a semantic nuance, but stress, intonation, and change of articulation rate can also serve the same functions (1988 188) Deese feels that grammatically and rhetorically relevant pauses are often signaled by other prosodic features which reveal that the speaker has anticipated the pauses and assimilated them to the flow of speech (1980 72) Sentence boundaries marked by a falling contour also have a readily detectable pause, though not all pauses are preceded by a change in intonation (73)

2 5 Pause phenomena viewed cross-linguistically

Pause phenomena occur in all spoken languages, although as this section will show the particular patterns of organization may vary For example, Grosjean, in comparing the temporal variables during interviews in English and French, found that the overall amount of silence in both languages was almost identical 15 5% in French and 16 8% in English (Grosjean, 1980a 307) The difference between the two languages is that there are fewer but longer pauses in French, whereas in English pauses are more numerous but shorter (307) Comparing the two languages, he writes (1980b 45)

> The speaking rates were very similar in the two languages (118 and 111 words/minute in French and English respectively) and so were the pause time ratios (59% and 56% respectively) In addition, the articulation rates were identical (3 4 and 3 5 words/second) Although the pause time was the same in English and French, its organization differed in the two languages runs were longer in French (6 22 words/pause as compared to 4 67 words/pause in English) and pauses were shorter in English (0 86 seconds as opposed to 1 12 seconds in French)

The cross-linguistic studies of Kowal and O'Connell (1980) have shown similarities in temporal variables in German, English, and Spanish. Kowal and O'Connell also note that their review of the literature on temporal studies for Dutch, Hindi, and Japanese has suggested the possibility that speech rate within a certain range may be another language universal (1980: 63).

Cross-linguistic studies of temporal variables have even been made between oral language and the manual-visual language of sign (Grosjean, 1980b). According to Grosjean, there is a hierarchy of pause frequency and duration in sign, as in speech, that corresponds to a hierarchy of constituents (1980c: 49). The durations of pauses in American Sign Language indicate not only the breaks between simple sentences but also the boundaries between and within major constituents (1980c: 49). He also reports a comparison of temporal variables between English and American Sign Language (ASL) that shows that signers spend more time articulating than do speakers (about 88% in sign and about 78% in speech) (1980b: 309). He explains that signers and speakers alter their production rate differently: signers modify their articulation rate and change their pause time much less, whereas speakers primarily change the pause time and barely alter the articulation rate. He offers one explanation of this difference based on the interaction between breathing and speech:

> At slow rate, speakers only have enough air to articulate a few words, when this is used up, they must stop articulating and inhale in order to continue articulating. This interaction between breathing and speech also explains why it is that speakers increase and decrease their pause time by altering the number of pauses and leaving the pause durations relatively constant. Inhalation can only take place during the pauses and must be of a minimum duration. As pause durations cannot be compressed beyond

> a certain point, a speaker will compensate for this by pausing less often but keeping the duration of pauses relatively constant A signer is not faced with the same constraints and can therefore increase or decrease his pause time, however little he does so, by altering the number and the length of the pauses equally Were breathing not linked to speech in such a way, we would expect speakers to follow the same strategy as signers when altering their production rate (1980b 311)

As Grosjean notes, cross-linguistic studies on this topic need to be done with more languages and languages from different language groups (1980c 51) He postulates that spoken utterances of equal length in various oral languages will probably have identical pause time ratios when such variables as age, sex, linguistic task, situation etc , are controlled However, it is the syntactic and morphological structure of each language that will account for the distribution of the pause time (1980c 46)

2 6 Distribution of pauses

Research on pauses suggests that pauses in speech are organized in patterns (Butcher, 1981, Cooper, 1980, Goldman-Eisler, 1972, Grosjean, 1980c) Various patterns of organization have been observed

Cooper notes that for syntactic pauses there is the probability of occurrence at precise locations in an utterance and for this reason the pause distribution pattern provides useful clues about the form of a speaker's syntactic code (1980 300) However, Butcher (1980 85) writes, "it might be the position in the prosodic structure rather than in the syntactic structure which is relevant and the former might take precedence over the latter on the rare occasions when the two are not coterminous "

There has also been some research related to predicting the location and duration of pauses in speech production (Cooper, 1980, Goldman-Eisler, 1972, Grosjean, 1980a) Pauses occur in organized patterns in normal speech and in different speech genres In controlled situations where test subjects read passages, Grosjean was able to predict pause location and duration with about 85% accuracy (1980a) Predicting the pattern of pauses in an utterance is subject to considerations beyond the syntactic structure Grosjean writes "Performance pause structures can therefore be characterized as the product of two (sometimes conflicting) demands on the speaker the need to respect the linguistic structure of the sentence and the need to balance the length of the constituents in the output" (1980a 99) Referring to the same research, O'Connell (1988 190) notes that only in controlled situations is this prediction possible As section 2 4 outlined, pauses are used for a variety of functions If the function changes, pause distribution and duration will also change This variation is particularly true when speech is compared across genres, even with the same speakers This notion is discussed in the following section

2 7 Pause phenomena and genre

Studies of pause phenomena have been done using several different sources of spoken utterance press conference statements which are read aloud, spontaneous accounts of holiday experiences (Butcher, 1980), graduate student seminars (Deese, 1980), readings of ambiguous sentences (Cooper and Paccia-Cooper, 1980), radio news broadcasts and radio sermons (Kowal and O'Connell, 1986), readings of dramatic passages (O'Connell, 1988), descriptions of movies (Chafe, 1980) and the reading of

fairy tales (Grosjean, 1981) The varied sources of speech data mentioned above provide valuable insights into the patterns of pauses in speech Length of pauses, their frequency of occurrence, and their locations have a pattern of organization that varies according to genre

One study (Kowal, Bassett, and O'Connell, 1985) in which the radio broadcasts of professional news broadcasters are compared to the radio broadcasts of clergy showed that there was a greater percentage of pause time in the total time in the speech of the clergy O'Connell reports that the ratio of pause time to total time for the news broadcasters was always less than 20%, whereas for the clergymen it was never less than 21% (O'Connell, 1988 230) According to O'Connell the reason that the clergy used more pause time can be attributed to their purpose convincing, persuading, and eliciting emotional response (1988 230)

In another study (Kowal and O'Connell, 1983) there is a similar pattern of variation in the percentage of pause time to total time, but in this study the media speeches of politicians are compared to interviews of them The study included both German and American politicians O'Connell reports that in this study the media speeches contained less than 20% pause time and were within the limits for news broadcasters as noted in the study above (O'Connell, 1988 233) In the interviews however, the percentage of pause time exceeds 20% (O'Connell, 1988 233)

Yet another study (Clemmer, O'Connell, and Loui, 1979) illustrates the differences between ordinary adult fluency and professional, skilled speech This experiment involved the reading of a dramatic passage from the First Epistle of St Paul to the Corinthians (1 Cor 13 1-13) by three different groups of adults and professional

dramatic artists Adults and professional dramatic readers made assessments of the readings They rated the readings not on basic reading mechanics but on the emotional portrayal and apparent grasp of the intended sense of the passage (O'Connell, 1988 228) O'Connell (1988 228) describes the results

> The untrained group spoke with a slower articulation rate (4 46<4 80 syl/sec) and used shorter phrases (7 6<8 8 syl/pause) than the other two groups, but used the same percentage of pause time/total time (41%) The group with the most dramatic training and experience used many more pauses of longer duration (>1 2 sec) than either of the other groups This usage can quite plausibly be interpreted as an effective rhetorical use of longer pauses to interpret a dramatic passage

In conclusion, O'Connell notes that it is the professionals, the broadcasters and dramatic artists who are capable of clearly differentiating between genres in their delivery, whereas ordinary fluent adults do not (244) When speech is temporally well organized, as is the case with professionals, it takes the name "performing art" (245) From the above, it appears that genre has an influence on the organization of pauses and that depending on the genre, pause occurrence and duration may be altered to maximize the communicative intent of the speaker

2 8 Use of pauses in the L2 context

Research on pauses has not been widely applied to the acquisition of second languages, according to some researchers (Griffiths, 1991 and O'Connell, 1988) Griffiths notes that the findings of pausology research should be of interest to second language researchers and that the issues are of direct relevance to language teaching methodology and materials preparation (1991 347) O'Connell notes that the analyses of

temporal variables in second language learning have been neglected (1988: 207). There is some research that examines the relationship between pause phenomena and second language learning and it clearly shows the potential for this line of research. For example, Blau (1990) shows that there is improvement in listening comprehension for L2 learners who hear oral texts that have been edited with pauses at syntactic junctures. Johnson and Moore (1997) show a relationship between the reading proficiency of L2 learners and their ability to use native-like use of pausing in reading aloud. When non-native speakers do not use the breathing patterns that native speakers use, it results in a jerky and uneven rhythm, according to Taylor (1981).[4] Scanlan (1987) notes that the ability to pause properly has also been associated with authentic-sounding speech. Anderson-Hsieh and Venkatagiri (1994) found that in comparison to less proficient Chinese speakers of English, high-proficiency Chinese speakers of English had acquired near-native proficiency in temporal variables such as pausing. To Anderson-Hsieh and Venkatagiri, this result suggested that appropriate use of pausing is learnable (1994: 810). Thus, there does seem to be significance for mastering and understanding pause phenomena by L2 learners and their teachers.

There are parallels in the L2 learning levels and developmental levels with respect to fluency, according to O'Connell (1988: 208). He says that there are appreciable decreases in pause duration and frequency and a corresponding increase in speech rate from non-native to native speech (209). There are also parallels between L2 learners and children learning their first language. Kowal and O'Connell observe that adults at various stages in their learning of a foreign language manifest a certain analogy with the speech

[4] Butcher's studies with native speakers showed that a breath will normally only be taken where a sufficiently long pause is linguistically permissible (1981: 114).

production of younger children (1980 63) With increasing proficiency there is a decline in both the number and length of silent pauses in reading

The importance of prosodic cues, which include pauses, has been noted in second language research (Anderson-Hsieh, Johnson, and Koehler, 1992, Anderson-Hsieh and Venkatagiri, 1994, Harley, Howard, and Hart, 1995) The Harley, Howard, and Hart study of native Cantonese speakers found that prosodic cues were of prime importance to second language processing, even after long exposure to the target language, and the use of these cues is not strongly related to student age (1995 63) It seems that these Cantonese speakers were much more attentive to prosodic cues than they were to syntax in the processing of sentence structure Harley *et al* suggest (1995 63) "The ability to override prosodic cues and focus on the syntax of the sentence may be a sophisticated metalinguistic skill, generally available only to native speakers of a language and not readily manifested without prompting "

Pausing as a component of prosody plays an important role in the production of speech by second language learners In their study of native speaker judgments of non-native speaker pronunciation, Anderson-Hsieh, Johnson, and Koehler write that "whereas deviance in segmentals, prosody, and syllable structure all showed a significant influence on the pronunciation ratings, the prosodic variable proved to have the strongest effect" (1992 530) They studied the prosodic criteria of stress, rhythm, intonation and pausing (1992 541) and believe that prosody provides the framework for utterances and directs the listener's attention to information the speaker regards as important (531)

Research has also indicated a link between reading proficiency of non-native speakers and their use of pausing while speaking Johnson and Moore (1997 27) write

"The ability to recognize such constituent groups could play a part in the ability of the second-language learner (SLL) to read and speak in thought/breath groups because constituent groups can comprise thought/breathe groups and constituent groups of words are not to be interrupted within the group " Putting words into constituent groups, or chunking, packages information in a suitable size for short-term memory to realize a cyclical comprehension process, according to these researchers (1997 28) As was noted in section 2 6 above, pauses characteristically mark the boundaries of syntactic and intonation phrases (Cooper, 1980, Butcher, 1981, Grosjean, 1980) Breathing happens at the pause locations, which in turn correspond to the syntactic and intonation boundaries, notes Butcher (1981) Johnson and Moore note that the point where the less proficient non-native speaker of English takes a breath may not always coincide with what makes sense semantically to the native speaker (1997 29) In a study of ESL students that compared the relationship between reading ability and the ability to use native-like pausing, they found that there was a moderate but significant correlation (1997 33) They conclude that by emphasizing the one-to-one link between reading in thought groups and speaking in breath groups, non-native speakers would acquire the ability to pause correctly and this in turn would transfer to both their reading and speaking skills (1997 39)

Another way in which pauses are of value in second language research is that pauses are the essential components in the actual rate of speech The duration and frequency of pauses have a direct effect on the rate of speech (Griffiths, 1991 346) Placing pauses into oral texts for second language learners can facilitate listening comprehension by reducing the rate of speech (Blau, 1990, Pimsleur, Hancock, and

Furey, 1977). Blau investigated the use of pausing to allow for additional processing time without disturbing the natural features of the normal flow of speech (1990). The assumption, as Griffiths describes it, is that the extra processing time created by the pauses gives the listeners extra time to group the words they hear into sentence constituents (1991: 349). In her (1990) study of Puerto Rican students who were studying English as a second language, Blau divided the students into three groups. Each group listened to one of three versions of the same oral text. The first version of the text was played without pauses or any alteration to the speed of delivery. The second version was mechanically slowed by about 10%, and the third version was played at the same rate as the first version but with three-second pauses inserted at clause and phrase boundaries. After listening to one of the versions, the students were asked to complete a WH-questionnaire to test their listening comprehension. Blau notes that the results showed a significantly higher rate of comprehension for the students who listened to the version with pauses (1990: 749). The students who listened to the mechanically slowed version had lower comprehension scores than the students who listened to the first version without pauses or alteration of the delivery speed. Blau compares these results with those from an earlier study of Polish students (1990). She comments that the Polish students, who were specializing in English, were highly proficient in their use of English compared to the Puerto Rican students (1990: 750). In the earlier study the use of pausing in the oral text did not have as much of an effect on listening comprehension, which as Blau suggests, "would indicate that beyond a certain level, one can comprehend normal input better" (1990: 752). These studies by Blau were the basis for my own study on the use of pauses to improve listening comprehension for second language learners.

Both the production and the perception of speech pauses are important components of speech. Second language learners who use pausing correctly are viewed as more proficient speakers (Anderson-Hsieh and Venkatagiri, 1994, Johnson and Moore, 1997), for less proficient speakers, pauses seem to enhance listening comprehension (Blau, 1990, Pimsleur, Hancock, and Furey, 1977).

As the above studies indicate, the effect of pauses in second language learning deserves further research such as I have undertaken in this study. In Blau's study three second pauses were used. This length of pause is long enough to cause a functional separation in the oral text (Pennington, 1996: 40). It may provide improved listening comprehension, but it does so at the expense of naturally sounding speech. My study investigates the use of much shorter pauses (500 milliseconds) which are the most commonly occurring length of pause in speech (Butcher, 1981: 114). Pause locations also need to be considered for their effect, which is why I created two edited versions of the oral texts. One version has pauses at syntactic phrase junctures, and the other version has pauses at intonational phrase junctures. Pauses naturally occur at intonational phrase junctures as I describe in section 3.3. The intent of my study is to investigate the use of pauses to improve listening comprehension while at the same time maintaining, as much as possible, the normal patterns of speech.

2.9 Summary

The literature reviewed in this chapter indicates the integral role that pauses play in both the production and perception of spoken language. O'Connell has shown that pausing is an organized and essential aspect of language production (1988: 190).

Furthermore, according to Kowal and O'Connell (1980), there are strong indications that pauses and hesitation phenomena are likely language universals. Grosjean notes that pauses mark constituent boundaries, both syntactic and intonational (1980b: 311). Earlier he had demonstrated that there is a hierarchy of pause frequency and duration that corresponds to a hierarchy of constituents observed (1980a: 309). Butcher contends that constituent boundaries for the syntactic and the prosodic structures are often coterminous, but where they are not, the prosodic structure takes precedence over syntactic structure (1981). He further notes that breathing normally occurs where a sufficiently long pause is provided by the constituent boundary (1981: 114). Other researchers have used pauses as a measure of the cognitive processing time underlying speech (Chafe, 1980, Cooper, 1980, Goldman-Eisler, 1972, Grosjean, 1980b). The frequency and length of such pauses may reflect language development in both first and second language acquisition. Rhetorical emphasis or semantic nuance can also be conveyed by patterns of pause frequency and duration (O'Connell, 1988: 188).

According to Griffiths (1991: 346) and O'Connell (1988: 207), research on pauses has not been much applied to the acquisition of second languages. There are indications, however, that pause research related to second language acquisition has important applications. Griffiths notes that irregular and non-grammatical pausing by teachers can be detrimental to the ability of lower level learners to comprehend what the teachers are saying (1990: 58). Natural pausing by L2 speakers is perceived by L1 listeners as more comprehensible (Anderson-Hsieh, Johnson & Koehler, 1992: 531) although non-native speakers pause frequently and at inappropriate points (Adams, 1979: 14), the ability to pause properly is actually a mark of authentic-sounding speech (Scanlan, 1987: 347).

Speech rate is a major variable affecting both native speaker and non-native speaker listening comprehension and hence optimizing speech rate can enhance comprehensibility of aural input (Blau, 1990, Griffiths, 1990, Ko, 1992). As Grosjean's research indicates, speech rate is primarily a function of the frequency and duration of pauses (1980). Blau's study on the use of pauses to alter speech rate shows a significantly higher rate of comprehension for the students who listened to oral texts with inserted pauses (1990).

Chapter Three – The Research Project

3 1 Research design and statement of purpose

The purpose of this experiment was to test the use of pauses to facilitate listening comprehension among non-native speakers of English This experiment is based on the earlier research by Blau (1990) which showed that the placement of pauses within listening texts could be an effective means of improving listening comprehension for non-native speakers Two groups of test subjects were involved in this project The first group consisted of fifteen native speakers of English (NS) who were the control group The second group was comprised of fifteen non-native speakers (NNS) Recorded radio news stories were used as the oral texts that the test subjects listened to As Griffiths (1991) notes, much of the pausing research related to comprehension has used small numbers of test subjects He suggests using more than one sample, when the number of test subjects is small In order to improve the validity, test subjects in this experiment listened to three news stories

The variables considered in this study were level of English language proficiency and length of time studying in English-speaking Canada English language proficiency was a variable that Blau (1990) had found to be important She noted that the more proficient subjects in her study did not benefit as much from the artificial placement of pauses as did the less proficient subjects The NNS subjects in this study are all students in regular university programs and so are required to have a minimum level of English language proficiency, as indicated by a TOEFL score of 575 I consider the subjects in this study to have greater English language proficiency than the TOEFL 575 minimum as

they were studying university curriculum in English, unlike the subjects in Blau's study who were studying ESL

I also considered length of time studying in English-speaking Canada would be important as the study was testing listening comprehension of authentic oral texts I assumed that exposure to authentic oral texts has enhanced NNS subjects' listening comprehension skills as these skills are necessary for their studies

The ages of all the study subjects were noted but not controlled In this study, age for the NS subjects seems to be a factor with some degree of correlation to their comprehension scores and in future studies this would be a factor to control Because of the small number of study subjects, gender was another variable that was not controlled I considered that controlling the first language background of the study subjects to be more important than gender With a larger number of study subjects both gender and age could prove to be informative variables to control

Another aspect of the current study is the importance of having the pauses at particular locations In order to test the significance of pause locations, pauses were placed in the radio news stories using two different sets of criteria The three news stories that were used in this study were edited with one set of pauses inserted at intonational phrase junctures, another version of each news story was edited with pauses at syntactic phrase junctures Prosodic features define intonational phrases and seem to be readily available to listeners as cues for deciphering oral texts (Shady and Gerken, 1999), they observed that infants utilize prosodic features as cues in sentence comprehension Harley, Howard and Hart (1995) found that the English language learners in their study were much more attentive to prosodic cues than they were to

syntax in the processing of sentence structure They further note that prosodic cues are of prime importance to second language learners of all ages even after long exposure to the target language Also, the ability to override prosodic cues and focus on the syntax of the sentence may be a sophisticated metalinguistic skill, generally available only to native speakers of a target language and not readily manifested without prompting (1995 63) The importance accorded to prosody by the above researchers seems to suggest that the placement of pauses at intonation phrase junctures which observe prosodic processes would lead to a greater comprehensibility by the NNS subjects than would the placement of pauses at syntactic junctures

In this study the anticipated outcomes were as follows

(i) The NS subjects who listened to the news items with pauses would not have better listening comprehension test scores than the NSs who listened to the news stories without pauses

(ii) The NS subjects would perform better on the listening comprehension tests than would the NNS

(iii) The NNS subjects who listened to the edited news stories with the pauses inserted at either the syntactic or the intonational constituent junctures would perform better on listening comprehension tests than would those NNS subjects who listened to the unedited versions of the same news stories

(iv) The NNS subjects who listened to the edited versions of the news stories with pauses at the intonation phrase junctures would perform better on listening comprehension tests than would those NNS subjects who listened to the edited versions with pauses at syntactic phrase junctures

3 2 Description of the experiment

The experiment tested listening comprehension in fifteen native speaker subjects (NS) and fifteen non-native speaker subjects (NNS) In order to control cross-linguistic variables, the NNS subjects selected were all native speakers of Japanese Again to control variables, all the NS subjects and the NNS subjects were students in regular university programs at the University of Victoria All subjects listened to three radio news items selected by the researcher from the news service of the Canadian Broadcasting Corporation (CBC) The first news story describes a car crash, the second story is related to business, and the third story is related to criminal justice News stories were selected, in part, on the basis of their length They were similar in length 31 seconds, 41 seconds, and 29 seconds, respectively Each selected story was read throughout by the same announcer News stories that gave a general introduction by one announcer and then a more detailed account by another announcer or reporter were not selected The three news stories were recorded to a computer hard drive from archived news broadcasts that are available from the CBC Internet site [5] The editing of the news stories to insert 500 millisecond pauses was done with Cool Edit 96 by Syntrillium Software Corporation The edited news stories were then saved on the same hard drive as the unedited news stories The auditory volumes of the news stories were scaled to the same sound level using sound editing software Each of the news stories was played to the subjects using the playback function of the same sound editing software I controlled the starting and stopping The researcher orally advised the subjects when a news story was about to be played All subjects used headphones to listen to the news stories After

[5] CBC Radio http //www radio cbc/insite/LATESTNEWS_TORONTO

listening to a news item, each subject was asked to complete a written questionnaire related to that news item When the questionnaire for that news story was completed, the next news story was played for the subject All subjects listened to the three news stories under the same conditions and in the same order news item 1, then news item 2, and, finally, news item 3 There were three versions of each news item an unedited version, an edited version with pauses at the junctures of intonation phrases, and an edited version with pauses at junctures of syntactic phrases Each subject heard a given news story only once, listening to one of the three versions unedited (version A), edited with pauses at the junctures of intonational phrases (version B), or edited with pauses at the junctures of syntactic phrases (version C) Thus, every subject listened to the three possible versions (A, B, and C) although for different news stories as illustrated in figure 3 1 The possible combinations of news stories that a subject could hear were news stories 1A, 2B, and 3C, news stories 1B, 2C, and 3A, or news stories 1C, 2A, and 3B As there were fifteen NS subjects and fifteen NNS subjects, five NS subjects and five NNS subjects heard exactly the same versions of each news item. For purposes of this study, these five subjects who heard the same three versions formed a subject group Group X heard the news item versions 1A, 2B, and 3C, group Y heard news item versions 1B, 2C, and 3A, and group Z heard news item versions 1C, 2A, and 3B The three groups, the study subjects in each group, and the versions of the news stories they heard are detailed in figure 3 2 For each news story, there was only one questionnaire so that all subjects answered the same questions regardless of the versions of the news items they had heard

Figure 3 1 – Versions of the news stories used in the study

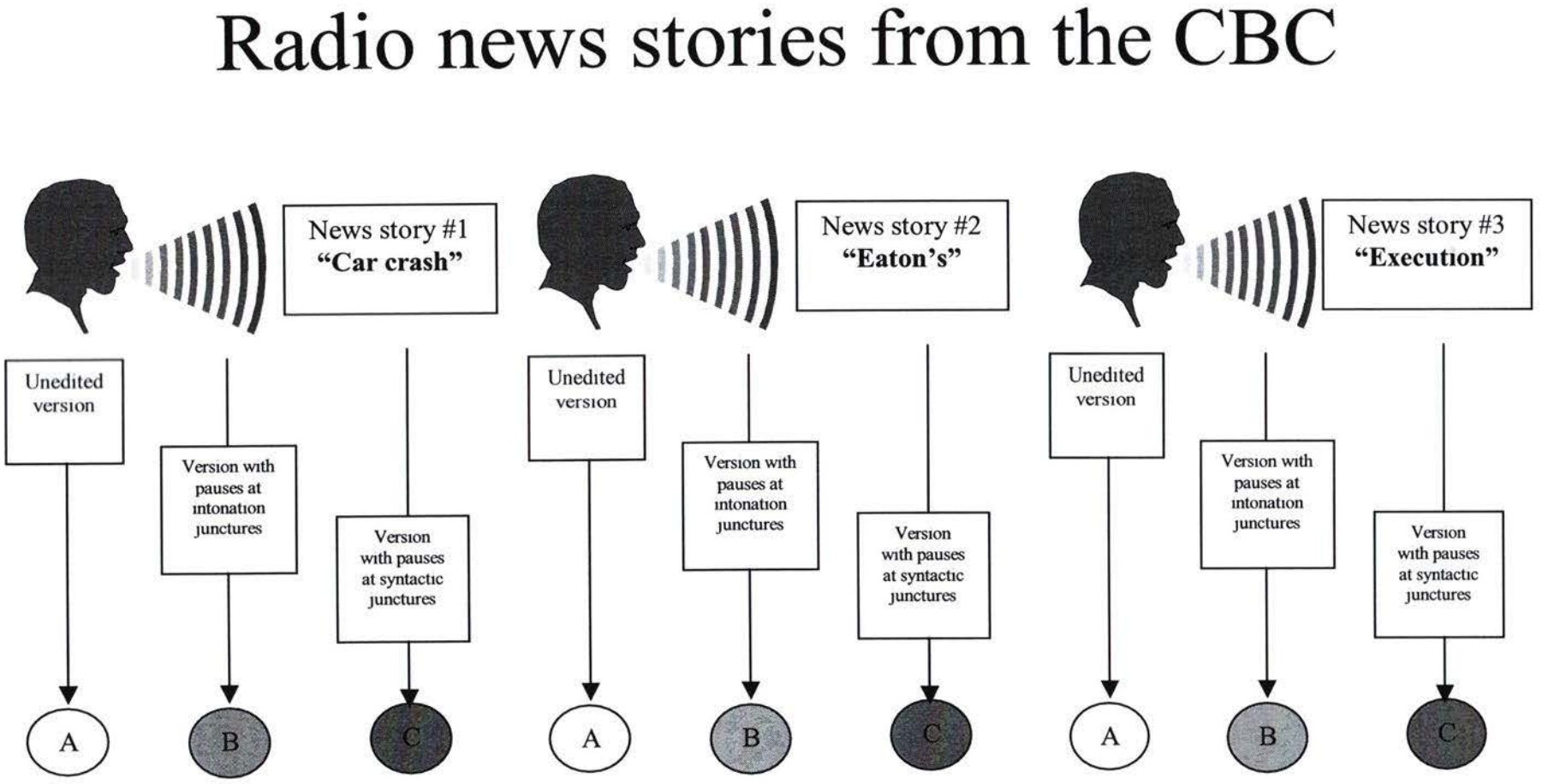
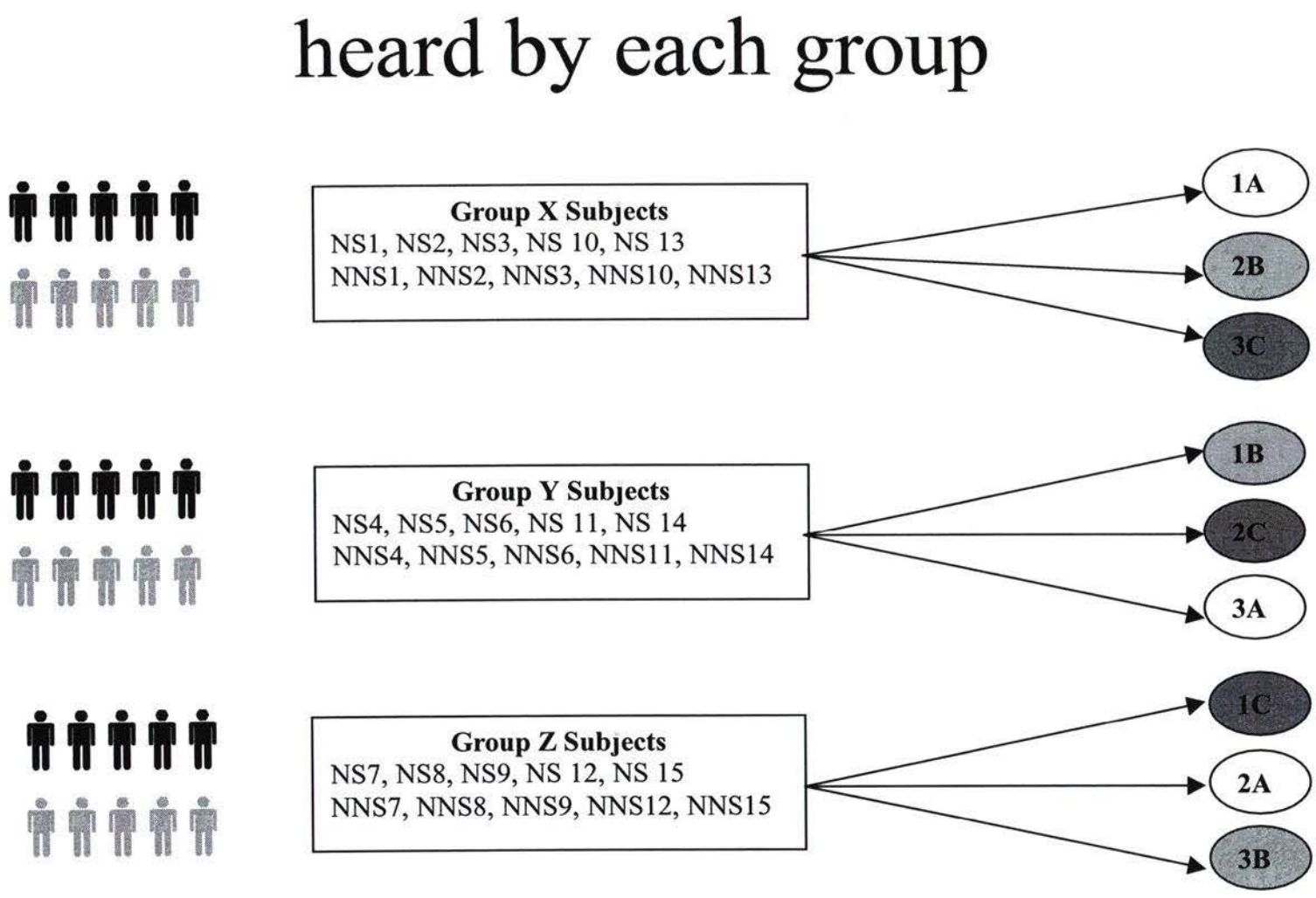


Figure 3 2 – Composition of listening groups and the versions of the news stories heard



The questionnaires consisted of seven to ten WH-questions.[6] I, myself, marked the questionnaires, and the number of correct responses was assigned a percentage to facilitate comparisons of the subjects' responses to the three different news items.

3.3 Placement and length of pauses

Pauses were placed in all three of the news stories. As noted above, the location of the pauses followed two distinct patterns: they were placed at intonation junctures or at syntactic junctures. The rationale for placing pauses at these locations is that pauses and related phonological processes occur naturally at these locations[7]. The theory according to Griffiths (1991) and Blau (1990) is that expanding the amount of pause gives the listener more time to process the preceding phrase. I was also concerned with noting any variation in comprehension that resulted from the specific location of pauses. Specifically, would there be a difference in the subjects' comprehension between the two different edited versions of each news story?

3.3.1 Intonation phrase boundaries

The first edited version is based on the intonational phrase. The logic for this is that the intonational phrase tends to correspond to a single noun phrase-verb phrase (NP VP)-structure without extrapositions or interruptions (Gussenhoven and Jacobs,1998 243). When the grammatical subject is longer than a single lexical word there is a tendency for an intonational phrase (IP) boundary to occur between the subject NP and

[6] The questionnaires and transcripts of the news stories are included as Appendices A, B, and C.
[7] The related processes include segmental lengthening and pitch variation (Cooper and Paccia-Cooper, 1980, Bolinger, 1989).

the VP

1) $_{IP}$*(The second Tuesday of every month)* $_{IP}$ $_{IP}$*(is a holiday)* $_{IP}$ (1998 244)

In this example the intonation phrase boundaries coincide with the syntactic phrase boundaries [Example 2 (below) illustrates a situation where the intonation boundaries do not coincide with the syntactic boundaries] Roca and Johnson (1999 476) note that the delimitation of the intonational phrase involves syntactic, semantic and phonological factors and even performance factors They refer to the sentence given in Example 3 to show that the syntactic constituency contains a series of embedded NPs,

2) *[this is the cat]*$_{IP}$ *[that ate the rat]* $_{IP}$ *[that ate the cheese]* $_{IP}$

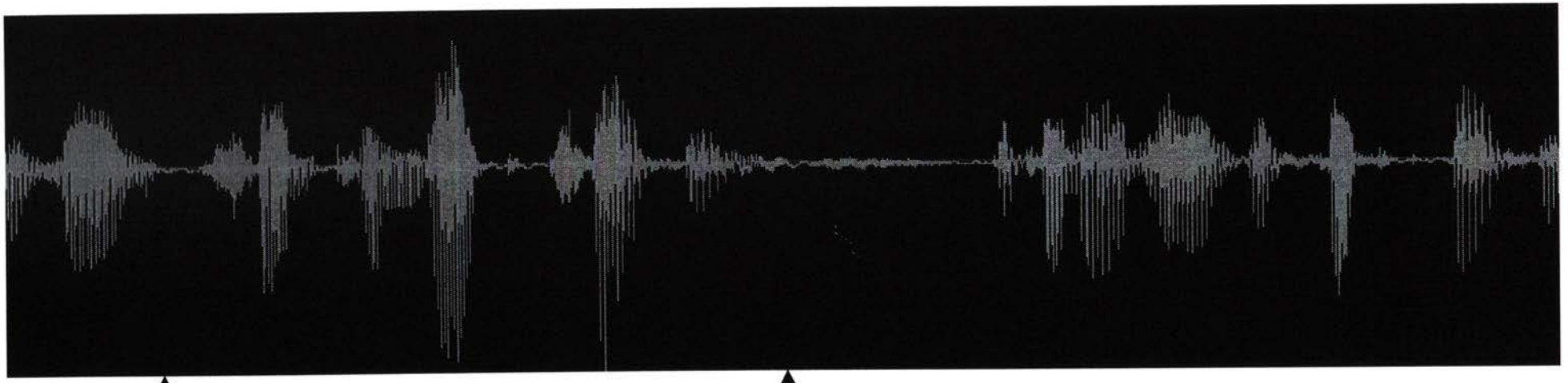
By contrast, they show the same sentence defined prosodically as a series of IPs,

3) $_{NP}$ *[the cat that caught* $_{NP}$ *[the rat that stole* $_{NP}$ *[the cheese]*$_{NP}$

Boundary tones, pitch accents and pauses separating the IPs as observed by Gussenhoven and Jacobs (1998 244) characterize each IP The guidelines suggested above were used in the placement of pauses in the three news stories used in this experiment Particularly useful were the performance factors that often dictate the location of intonational phrase boundaries In fact, an intonational phrase can be defined as that part of an intonation contour that extends between two pause points (Pennington, 1996 140) In creating the edited versions I noted that the natural pauses in the speech of the reporter which facilitated the process of locating the intonation phrase boundaries in the news stories The spectrographs of the Cool Edit 96 software also helped to define the intonation phrase junctures by giving a visual cue to their location Figure 3 3 shows a section of

Figure 3 3 – Locating pauses on a spectrograph

Locating the pauses on a spectrograph



the spectrograph for news story #1 While looking at the spectrograph and listening to the news story, I was able to locate the pauses already present in the stories

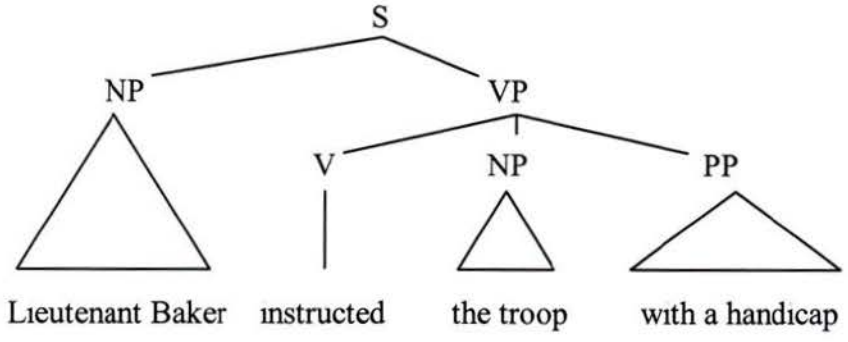
3 3 2 Syntactic phrase boundaries

Cooper and Paccia-Cooper (1980) have noted the connection between syntax and pausing Their research shows how the form of a speaker's output may be influenced by the nature of the syntactic code In their research, the authors measured observable properties of human speech, they studied and measured durations of speech segments and pauses in tests since these durations seem to be influenced by the speaker's syntactic representations (1980 5) In their tests, they observed a lengthening of speech segments and pauses where an ambiguous syntactic structure occurred But there was also a mechanism to disambiguate in so far as the interface of syntax and the qualities of speech production seem to be important for distinguishing ambiguous sentences In the example shown in figure 3 4 there are two possible interpretations and two distinct tree structures (Cooper and Paccia-Cooper, 1980 35) The duration of the key segment "with a handicap" was longer for the (a) reading and the pause between "the troop" and "with a handicap" was also longer As a result of this experiment and others, the authors conclude that the "influence of structural ambiguities on speech timing obtained in this study may be explained in terms of the notion of cumulative phrase-final lengthening" (Cooper and Paccia-Cooper, 1980 46) Cooper and Paccia-Cooper believe that the systematic nature of this phenomenon suggests that speakers are capable of computing a hierarchical representation of grammatical structure (1980 46) Incorporating this

Figure 3 4 – Syntactic trees showing ambiguity

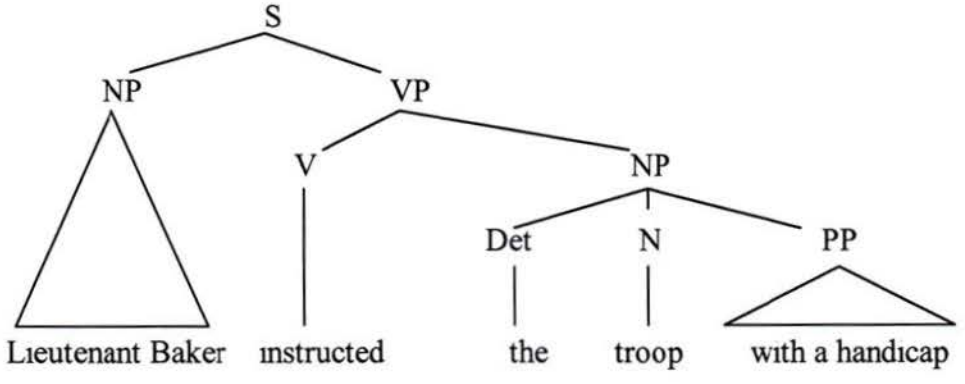
(a) Lieutenant Baker instructed the troop with a handicap

(The lieutenant was handicapped)



(b) Lieutenant Baker instructed the troop with a handicap

(The troop was handicapped)



information into the design of a parser,[8] suggests that the parser is not only capable of recognizing ambiguity, but also of disambiguating it during the production of speech Pauses and related timing phenomena seem to have a connection with syntactic structure, particularly where there is syntactic ambiguity This connection suggests that inserting pauses at syntactic junctures in oral texts might be useful in facilitating comprehension for NNS subjects

Often the boundaries of intonation phrases coincide with the boundaries of syntactic phrases and consequently a comparison of the pause locations for both edited versions of each news story shows that there are almost equal numbers of pauses in each[9] For news story #1 there were 21 pauses inserted at intonational phrases to make the B version, and 17 pauses inserted at syntactic phrases to make the C version In news story #2 there were 23 pauses inserted to make the B version, and 21 pauses to make the C version In news story #3 there were 11 pauses inserted to make the B version, and 12 pauses to make the C version

3 3 3 Length of inserted pauses

The length of all inserted pauses was set at 500 milliseconds This length was chosen because Butcher notes that a pause with a median length of about 500 milliseconds is the most common pause found in speech (1981 83) He notes further that the majority of listeners do not generally perceive pauses of less than 200 milliseconds (83) A pause of two to three seconds between two words indicates a functional

[8] Pinker defines a parser as a mental program which analyzes sentence structure during language comprehension (1994 479)
[9] The pause locations are noted in Appendices D and E

separation of a message (Pennington, 1996 140) As was discussed in the research review of pauses in Chapter Two, pauses of varying lengths are linguistic features of natural speech Lengthening an already existing pause could potentially obstruct the flow of speech As much as possible I attempted to keep the normal flow of speech in the edited versions of the news stories There were pauses inserted into the news stories, but not of the two- to three-second variety that would result in a functional separation of the message The 500-millisecond pause was selected because when it is combined with naturally occurring pauses the total length is usually less than one second Thus the edited pause does not result in a functional separation of the message, yet it is perceptible to the listeners

3 4 The news stories and their level of difficulty

News item #1 was 31 seconds in length and contained 110 words The story describes a police chase in Belleville, Ontario during which a teenage girl was killed The announcer explains why the chase started and how the pursued vehicle in which the teenage girl was a passenger crashed Further background on other police chases is referred to, as well as the fact that police guidelines for chasing vehicles are currently being reviewed by the Ontario government

News item #2 was 41 seconds in length and contained 122 words This news item describes the bankruptcy of Eaton's, a Canadian retail chain In it there is a lot of technical terminology relating to bankruptcy as well as the chronology of events leading to the bankruptcy

News item #3 was 29 seconds long and contained 69 words. This news story reports the imminent execution of a Canadian citizen who had been on death row for over twenty years in the state of Texas.

News item #1 contained 4 embedded clauses, news item #2 contained 10 embedded clauses and news item #3 contained no embedded clauses. The lexicon of the different news items also varied considerably. Several lexical items in news story #2 such as *"liquidate", "filed notice", "creditors", "bankruptcy", "insolvency", "assets",* and *"inventory"* are considered to be low-frequency by Black, Stratton, Nichols, and Chavez (1985). Lexical knowledge, as noted by Kelly, "involves knowing a word's form, whether it can be incorporated as frequent, infrequent or moderately frequent, whether it is suitable in a given context, how it behaves in relation to other words, the different semantic features the word possesses, and the various meanings that can be attributed to it" (1991: 138). He goes on to say that lexical knowledge may be particularly helpful for the advanced L2 learner, perhaps more so than other linguistic cues, for aiding them in listening comprehension. Given the syntactic complexity of news item #2 and the low-frequency lexical items found in it, it is predictable that the test subjects would have lower comprehension scores for this news item than for the other items.

3.5 The test subjects

All test subjects were students enrolled in regular university programs at the University of Victoria. The 15 native speakers ranged in age from 20 to 54 years with an average age of 32 years. The 15 non-native speakers were all native speakers of Japanese

who ranged in age from 21 to 36 years with an average age of 26 years The NNS subjects had resided in Canada for an average of almost four years prior to the experiment All NNS subjects had taken TOEFL tests before entrance to university Their TOEFL scores ranged from 350 to 637 with an average score of 553 Students who had TOEFL scores below 580 had been admitted to university programs on the basis of their university transfer courses from another college

3 6 The use of WH-questions to assess listening comprehension

In the series of tests that Buck ran to test for listening comprehension as a separate trait, he found that simple sentence decoding tasks are not effective in determining comprehension (1992 158) Typically, WH-questions, cloze testing, picture recognition, and multiple choice questions are used to test listening comprehension Of the different types of tests used, "short answer questions provided a reliable and valid measure of listening comprehension" (Buck, 1992 410) Short answer questions are preferred over multiple choice questions, which always "involve very complex cognitive processing not directly related to comprehending the text" (Buck, 1992 285) Texts used in tests "should contain fillers and other dis-fluencies typical of spoken language, and use colloquial rather than conservative language" because it is these characteristics "that may account for listening as a separate trait" (Buck, 1992 399) According to Buck, the important factors in testing listening comprehension are to make the test situation, text, and context as authentic as possible so that listeners have sufficient context of situation and the sample does not differ from those used in normal language processes (1992 125) News stories provide an authentic context for the listener and Brown notes that news

broadcasts contain examples of the various types of simplification found in normal language processes associated with informal speech (1990 13) Where there is a lack of comprehension it must be determined "whether problems with listening are language problems or thinking problems" (Buck, 1992 423) For this reason, tests of the short answer type are preferable to those that require processing not associated with linguistic decoding There was no time limit set for subjects to complete the questionnaires, but most subjects completed the questionnaires within two to three minutes The questions required very short answers, often a single word or short phrase The intent of the questions was to assess the subjects' basic comprehension of the facts of the story The news stories were not the same length, and each story had a different number of facts on which to base the WH-questions Consequently, there were a different number of questions for each story

3 7 Marking the questionnaires

I marked the questionnaires at the conclusion of the testing component of the research Spelling was not assessed The correct answers to the WH-questions on the questionnaire are italicized in the transcripts (see Appendix D) The questions were presented in the questionnaire in the same sequence as the information was presented in the news broadcast There were ten questions for news story #1, nine questions for news story #2, and seven questions for news story #3 The number of correct answers was expressed as a percentage score This was done to facilitate comparisons among the three news stories

Chapter Four – The Results and Discussion

4 1 Description of test results

This chapter presents the results of the study and discusses their significance I designed the study as a descriptive rather than a statistical study The trends and directions from this modest sample would be the basis for a larger statistical study My research focused on whether or not a pause of 500 milliseconds could yield a similar improvement in listening comprehension that Blau (1990) had achieved using a three-second pause It also focused on the location of the inserted pause Blau located pauses only at syntactic phrase junctures, but my study considered the effect of pauses at both syntactic junctures and intonational phrase junctures Even with the small sample size, it was possible to relate the results to earlier research, i e , Blau (1990), as there are indications in the results that pauses can have a positive effect on listening comprehension among ESL students More importantly, the results also prove useful in providing directions for future research, and the limitations of the study provide guidelines for future research

Section 4 2 presents the scores of the native speakers and the non-native speakers Section 4 3 compares the scores of both subject groups by the three different news stories Additionally, some of the scores of individual subjects are presented and discussed One of the focuses of the study was the pause location, this feature is discussed in section 4 4 Other variables, such as age, are considered in section 4 5 Section 4 6 relates the results of this study to earlier research, and section 4 7 discusses

the design limitations of the study and how these can serve as guidelines for further research.

4.2 Comparing the scores of native/non-native subjects, and the listening groups

This section presents the scores of native speakers and the non-native speakers. The average scores of the subjects who were organized in listening groups are also compared.

4.2.1 Native speakers

The test results for the native speakers are summarized in table 4.1. All the results are expressed as percentages which are derived from the number of correct answers to the WH-questions listed in Appendices A, B, and C. The 15 native speakers who were the control subjects had a mean average score across all three news stories of 62% (the median score was 64%). Average comprehension scores for the NSs ranged from 26% to 85%. There was considerable variation from one subject to the next, the extent of the variation in scores was not anticipated in the study design. A number of variables may account for this diversity. Certainly the version of the news story that the subjects heard was one variable, but other variables are also involved and these are discussed in section 4.5 below. Some subjects may have heard some information relating to one or more of the news stories before their participation in the study. Since the WH-questions used in the study required the subjects to answer with specific words from the text of the news stories they heard in the study, a general understanding of a news story

Table 4 1 – Study results for native speakers

Subjects are listed in the order of individual average scores

News Item Subject	1A	1B	1C	2A	2B	2C	3A	3B	3C	Average individual score	Range	Age
NS 2	90				66				100	85	66-100	50
NS 9			90	66				100		85	66-100	39
NS11		60				77	100			79	60-100	35
NS 1	80				66				85	77	66-85	22
NS 8			90	33				100		74	33-100	24
NS15			70	44				85		66	44-85	54
NS 6		60				55	85			66	55-85	44
NS 3	60				33				100	64	33-100	22
NS 5		70				33	71			58	33-71	27
NS 4		50				55	71			58	50-71	26
NS 7			60	44				71		58	44-71	22
NS13	60				44				57	53	44-60	20
NS10	50				22				71	47	22-71	43
NS12			30	22				57		36	22-57	23
NS14		10				11	57			26	10-57	25
Average	**68**	**50**	**68**	**41**	**46**	**46**	**76**	**82**	**82**	**62 Mean average**		

would not have been an advantage For example, a subject might have been familiar with story #2, Eaton's, and known that Eaton's was in bankruptcy To correctly answer question #1, which asked what kind of sales Eaton's will be having, a subject had to answer with the words from the text that they heard in the study The correct answer was 'going out of business sales' and not 'bankruptcy sales'

4 2 2 Non-native speakers

Table 4 2 shows the percentage scores for the non-native speakers For the 15 non-native speakers (NNSs) the mean average was 38% (the median score was also 38%) and ranged from 3% to 66% Again, as with the native speakers, these percentages reflect the scores from the different versions of the three news story The extent of the variation for the non-native speakers was an anticipated outcome of the study, but the variation is not fully accounted for by either the variation in TOEFL scores, which contain a listening comprehension component, or the time studying in Canada Section 4 5 below gives an account of these variables The anticipated variation based on the version of the news story that the subjects heard did not generally follow a specific pattern for the 15 non-native speakers as a group The clustering of increased comprehension with the edited versions (B and C) had been an anticipated outcome of the study, which was not fulfilled However, there was a very strong pattern to the distribution of scores for the C version by itself, based on the relative difficulty of each of the three news stories for both the native and non-native speaker subjects This pattern is discussed in section 4 3

Table 4 2 – Study results for non-native speakers

Subjects are listed in the order of individual average scores.

News Item Subject	1A	1B	1C	2A	2B	2C	3A	3B	3C	Average individual score	Range	Age
NNS10	50				77				71	66	50-77	24
NNS13	70				33				85	62	33-85	28
NNS 2	80				22				85	62	22-85	30
NNS14		60				22	71			51	22-71	23
NNS 5		50				22	57			43	22-57	23
NNS15			40	22				57		39	22-57	27
NNS 1	50				22				42	38	22-50	26
NNS 4		40				33	42			38	33-42	21
NNS 6		30				11	71			37	11-71	29
NNS 8			40	22				42		34	22-42	31
NNS 3	50				11				28	29	11-50	22
NNS 7			30	11				28		23	11-30	26
NNS 9			30	11				14		18	11-30	36
NNS11		30				22	0			17	0-30	22
NNS12			10	0				0		3	0-10	27
Average	**60**	**42**	**30**	**13**	**33**	**22**	**48**	**28**	**62**	**38 Mean Average**		

4 2 3 Listening groups

All subjects were randomly assigned to listening groups X, Y or Z. The groups were created to categorize the subjects who heard the same versions of the different news stories. Among the native speakers, the average group scores were very similar. These scores were calculated from table 4.3 below. Native speaker, group X subjects, who heard news story versions 1A, 2B and 3C had average score of 65%. The group Y subjects who heard news story versions 1B, 2C and 3A had an average score of 57%. The group Z subjects who heard news story versions 1C, 2A and 3B had an average score of 64%. Among the non-native speakers, group X had an average score of 52%, group Y had an average score of 37%, and group Z had an average score of 24%. Only with a larger sample of subjects in the study would it be possible to ascribe any significance to the effect of the news version pattern on the results. All groups heard the same news stories in the same order, the only difference was the addition of pauses in two of the versions that the groups heard.

4 3 Comparing the scores by the news stories

All subjects heard the same three news stories in the same order, news story #1, followed by news story #2, and finally news story #3. No subject took longer than 15 minutes to listen to the stories and to complete the questionnaires. Table 4.3 compares the results for both the native speakers and the non-native speakers by news story. A comparison of the scores for the three stories showed that both the NSs and the NNSs received their lowest scores for news story #2. The average score for news story #2 was 44% for the NSs and 23% for the NNS. For news story #3, both the NSs and the NNSs

Table 4 3 - Average scores in % by news story

	News story #1 "Car crash"			News story #2 "Eaton's"			News story #3 "Execution"		
News Story Version	1A	1B	1C	2A	2B	2C	3A	3B	3C
Native Speakers' Average score	68	50	68	41	46	46	76	82	82
	62			44			80		
Non-native Speakers' Average score	60	42	30	13	33	22	48	28	62
	44			23			46		

achieved their highest scores, 80% and 46%, respectively. The NSs received an average score of 62% for news story #1 and the NNSs received an average score of 44% for the same story. These results indicate the relative difficulty of news story #2 compared to news stories #1 and #3. The possible reasons, as discussed in section 3.4, are related to the technical and less frequently occurring lexical items used in this story about the bankruptcy of Eaton's. There was also a greater number of embedded clauses compared to the other two stories. As well, news story #2 was the longest in duration: 41 seconds in the unedited version as compared to 31 seconds for news story #1 and 29 seconds for news story #3.

An unanticipated outcome of the study was that the ranking of subjects relative to each other varied greatly from news story to news story. Rank positions of individual subjects based on their scores showed considerable variation from news story to news story. Table 4.4 shows the rank of test subjects according to his or her overall score for all three news stories and the rank position for each of the individual news stories. For example (see shaded areas on table 4.4), among the native speakers NS11 had a rank position of 7 for news story #1, a rank position of 1 for news story #2, and a rank position of 3 for news #3. Subject NS8 had rank positions of 3, 10, and 4, respectively for the same news stories. Among the non-native speakers NNS4 had rank positions of 9, 3, and 9, and NNS6 had rank positions of 11, 11, and 5. These four subjects are examples of extreme variability, but almost every subject had a different rank position from news story to news story. Because of the small number of subjects in the study, it was not possible to ascribe any significance to the changing rank positions based on the pattern of the versions (A, B, or C) of the news stories the subjects heard. It is, nevertheless, worth

Table 4 4 – Rank position of subjects by news stories

Rank position	News story #1 "Crash"		News story #2 "Eaton's"		News story #3 "Execution"		Average rank for the three stories	
	NS	%	NS	%	NS	%	NS	%
1	NS2	90	NS11	77	NS2	100	NS2	85
2	NS9	90	NS2	66	NS9	100	NS9	85
3	NS8	90	NS9	66	NS11	100	NS11	79
4	NS1	80	NS1	66	NS8	100	NS1	77
5	NS15	70	NS6	55	NS3	100	NS8	74
6	NS5	70	NS4	55	NS1	85	NS15	66
7	NS11	60	NS15	44	NS15	85	NS6	66
8	NS6	60	NS7	44	NS6	85	NS3	64
9	NS3	60	NS13	44	NS5	71	NS5	58
10	NS7	60	NS8	33	NS4	71	NS4	58
11	NS13	60	NS3	33	NS7	71	NS7	58
12	NS4	50	NS5	33	NS10	71	NS13	53
13	NS10	50	NS10	22	NS13	57	NS10	47
14	NS12	30	NS12	22	NS12	57	NS12	36
15	NS14	10	NS14	11	NS14	57	NS14	26
	NNS	%	NNS	%	NNS	%	NNS	%
1	NNS2	80	NNS10	77	NNS13	85	NNS10	66
2	NNS13	70	NNS13	33	NNS2	85	NNS13	62
3	NNS14	60	NNS4	33	NNS10	71	NNS2	62
4	NNS10	50	NNS2	22	NNS14	71	NNS14	51
5	NNS5	50	NNS14	22	NNS6	71	NNS5	43
6	NNS1	50	NNS5	22	NNS5	57	NNS15	39
7	NNS3	50	NNS15	22	NNS15	57	NNS1	38
8	NNS15	40	NNS1	22	NNS1	42	NNS4	38
9	NNS4	40	NNS8	22	NNS4	42	NNS6	37
10	NNS8	40	NNS11	22	NNS8	42	NNS8	34
11	NNS6	30	NNS6	11	NNS3	28	NNS3	29
12	NNS7	30	NNS3	11	NNS7	28	NNS7	23
13	NNS9	30	NNS7	11	NNS9	14	NNS9	18
14	NNS11	30	NNS9	11	NNS11	0	NNS11	17
15	NNS12	10	NNS12	0	NNS12	0	NNS12	3

NNS4	40

Shaded cells highlight an individual subject's score variability by news story

NNS6	30

noting that there was a lot of variation in comprehension scores. An individual subject's comprehension score from a single news story may not truly reflect his or her overall comprehension ability.

Because the three news stories differed in their level of difficulty, the test subjects had on average, their best comprehension scores for news story #3, the easiest, their second best comprehension scores for news story #1, the next easiest, and their worst comprehension scores for news story #2. As I discuss in section 3.4, level of difficulty is based on the length, number of embedded clauses, and the lexicon. Table 4.5 shows individual scores by news story where the news stories are ordered by the least difficult to the most difficult. Among the native speakers there were three subjects who had slightly higher scores for the most difficult news story #2 than for the less difficult news story #1. Subjects NS11, NS4, and NS14 all heard the C version of news story #2 with pauses at syntactic phrase junctures. For the non-native speakers one subject, NNS10, also had a higher score for news story #2 than for news story #1 but heard the B version of news story #2 with pauses at intonation phrase junctures. There were also six non-native speakers (NNS1, NNS3, NNS7, NNS9, NNS11, and NNS12) who had higher scores for the more difficult news story #1 than for the less difficult news story #3. Subjects NNS1 and NNS3 heard the A version news story #1 without the addition of pauses. The four subjects with the lowest overall comprehension scores (NNS7, NNS9, NNS11, and NNS12) appear to have benefited from the pauses in the C version of news story #1. Unlike all the other subjects who also heard C versions, these least proficient subjects received higher scores for the more difficult news story #1 than for the less difficult news story #3. The variation in comprehension scores based on the

Table 4 5 – Stories by level of difficulty and scores

Least difficult ⟶ Most difficult

Subject	Score for news story #3 "Execution"	Score for news story #1 "Crash"	Score for news story #2 "Eaton's"	Version of news story out of sequence for level of difficulty
NS2	100	90	66	
NS9	100	90	66	
NS11	100	60	**77**	C
NS1	85	80	66	
NS8	100	90	33	
NS15	85	70	44	
NS6	85	60	55	
NS3	100	60	33	
NS5	71	70	33	
NS4	71	50	**55**	C
NS7	71	60	44	
NS13	57	60	44	
NS10	71	50	22	
NS12	57	30	22	
NS14	57	10	**11**	C
NNS10	71	50	**77**	B
NNS13	85	70	33	
NNS2	85	80	22	
NNS14	71	60	22	
NNS5	57	50	22	
NNS15	57	40	22	
NNS1	42	**50**	22	A
NNS4	42	40	33	
NNS6	71	30	11	
NNS8	42	40	22	
NNS3	28	**50**	11	A
NNS7	28	**30**	11	C
NNS9	14	**30**	11	C
NNS11	0	**30**	22	C
NNS12	0	**10**	0	C

28	**50**

Shaded cells highlight news stories that are out of sequence for level of difficulty
Bold type indicates the out of sequence higher score

version (A, B, or C) of the news stories that the subjects heard is discussed in the following section

4 4 The location of pauses

As was described in chapter three, version A of each news story was unedited, version B was edited with pauses at intonation phrase junctures, and version C was edited with pauses at syntactic phrase junctures From the results on table 4 5, the C version of the news stories with pauses at syntactic phrase junctures was the version most likely to result in higher than expected scores for the relative level of difficulty As discussed in section 3 4, I determined the level of difficulty, according to the story length, the number of embedded clauses, and the lexical items Both the native speakers and the non-native speakers were most likely to receive higher than expected scores for the C version For one non-native speaker (NNS10) the B version resulted in a score that was higher for the most difficult news story #2 than for either of the other two less difficult news stories Two non-native speakers (NNS1 and NNS3) had higher scores for the more difficult news story #1 than for the less difficult news story #3 when they listened to the A version without any inserted pauses The four non-native subjects (NNS7, NNS9, NNS11, and NNS12) with the lowest overall comprehension scores all had higher than expected scores for the C version of news story #2 This result is consistent with the results of Blau's 1990 study, it is discussed below in section 4 6 Of a total of thirty subjects (fifteen native speakers and fifteen non-native speakers), three of the NS subjects and seven of the NNS subjects had higher than expected scores for the relative level of difficulty of the news stories, as shown in table 4 5 Of those ten subjects, seven received

the higher than expected score for the C version with pauses at syntactic phrase junctures From the results of this study the C version with 500-millisecond pauses at syntactic phrase junctures was the one most likely to improve listening comprehension scores Further research with a much larger number of subjects is necessary to confirm this finding Other variables needing to be considered for their effect on listening comprehension, will be discussed in the following section

4 5 Other variables

4 5 1 Variation among the native speakers

The amount of variation among the comprehension scores of the native speakers was an unanticipated result of the study The average comprehension scores for eight of the native speakers were lower than the highest average score of the non-native speakers

The age of the native speaking subjects appears to be a factor with some degree of correlation to their comprehension scores The ages of the native speakers ranged from 20 years to 54 years For the native speakers there was a mean average age of 31 years and the median age was 26 years The native speakers younger than the median age of 26 years had an average comprehension score of 55% and those older than the median age of 26 had an average score of 69% The older subjects may have more interest and awareness in daily news than their younger counterparts that made them more attentive to what they heard during the study A similar correlation of age to comprehension score did not exist for the non-native speaker subjects for whom both the mean and median average age was 26 years

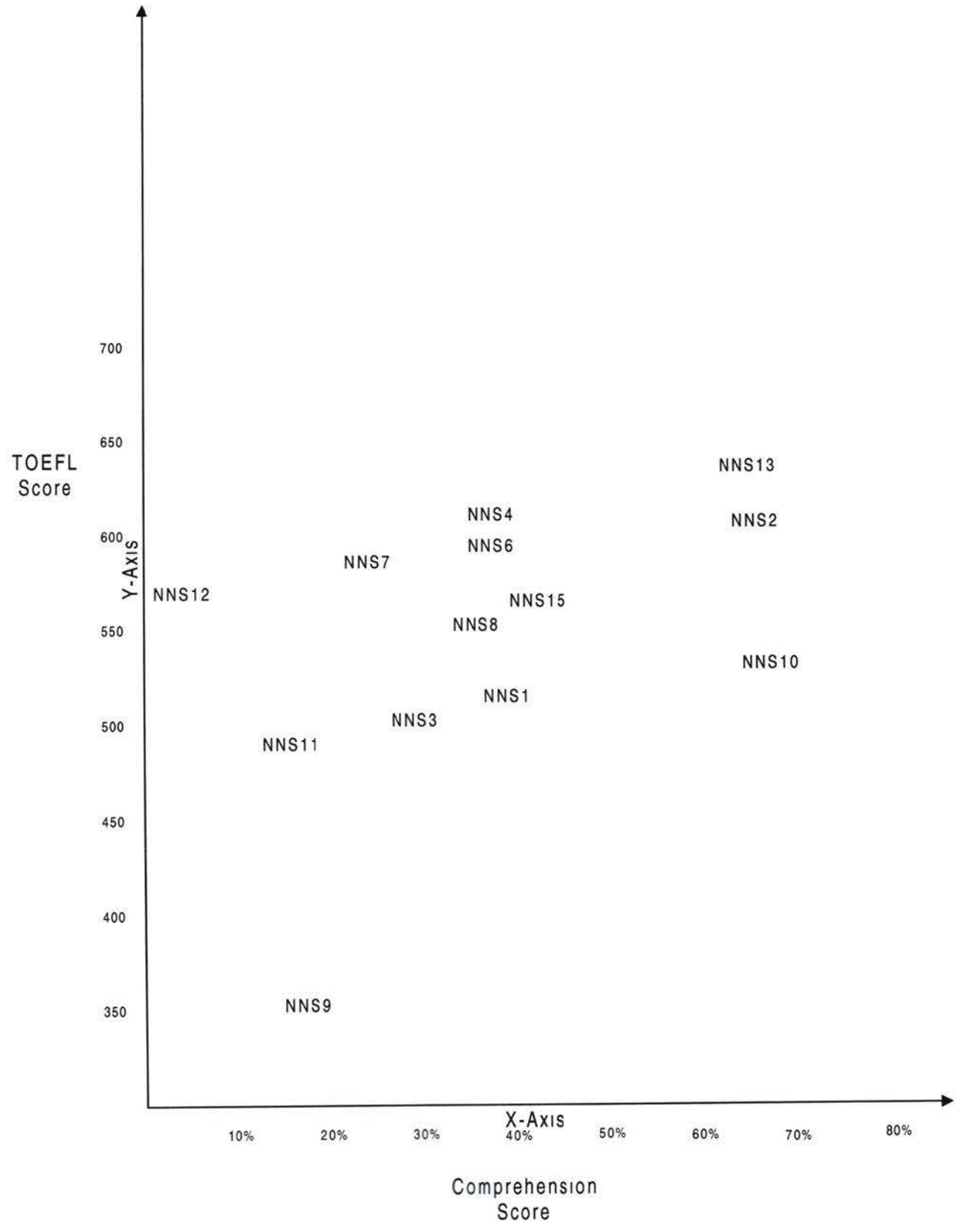
The Lutz and Wodak study (1987) on the comprehension of radio news broadcasts showed that comprehension is an interactive process between the text presentation and the active participation of the listener Factors such as interest, motivation, listening habits, prior knowledge, education and social class are all important for the understanding of news broadcasts, they say (1987 207) Of these factors, social class was particularly significant Lutz and Wodak assert that the social-cultural factors actively influence text processing in a variety of ways (1987 209) Socialization in different worlds leads to varying interests and priorities, to varying degrees of prior knowledge and to varying emotional positions, and all these combine with the linguistic text analysis to result in varying comprehension of the text (209) As this study emphasizes, comprehension of news broadcasts seems to be an interactive process between the linguistic ability and the social background of individual listeners The variation of comprehension scores among the native speakers is more likely a reflection of their social background and world awareness related to their age than of their linguistic processing skills as Lutz and Wodak suggest

4 5 2 Variables for the non-native speakers

There were two variables that I considered in the design of this study TOEFL scores and the length of time that the subjects had lived in English speaking Canada Neither of these variables seem to have accounted for the variation in the comprehension scores of the different non-native subjects

Figure 4 1 plots the TOEFL scores and the average comprehension scores of the non-native speaker subjects As the figure shows, some of the subjects had high TOEFL

Figure 4 1 – TOEFL score and study comprehension score



scores relative to the other subjects and yet did not have as high a comprehension score. For example, subject NNS12 had a TOEFL score of 575 and a comprehension score of 3%, whereas subject NNS1 had a TOEFL score of 507 and a comprehension score of 38%. The TOEFL test assesses a subject's overall proficiency in English. It is composed of separate tests for reading and writing, as well as listening. As was shown in the variation of comprehension scores from news story to news story, a single measure of a subject's listening comprehension may not be a good indicator of a subject's listening comprehension ability.

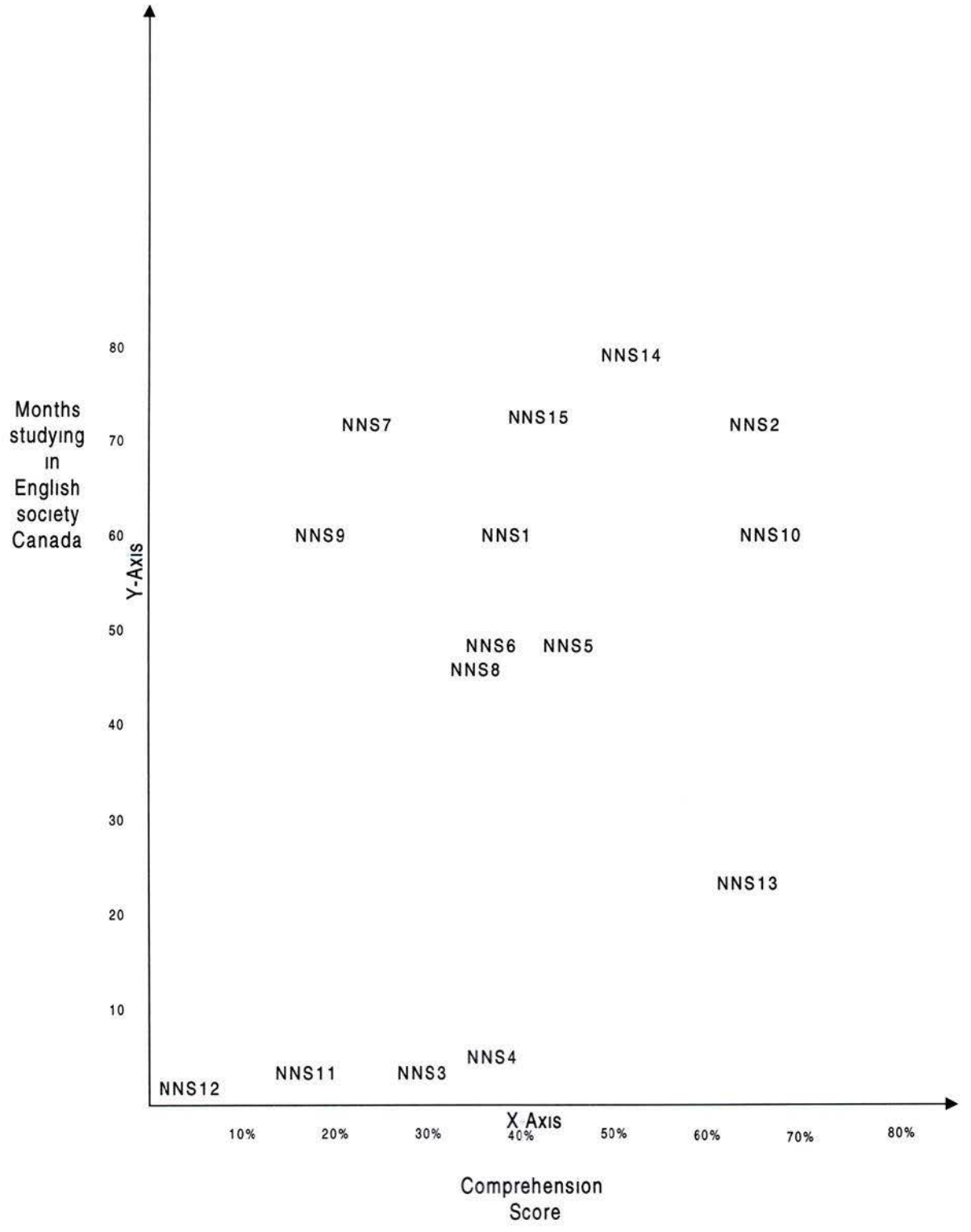
Length of time studying in English-speaking Canada was also considered as a variable that might account for the variation in comprehension scores. Figure 4.2 compares the number of months the non-native speakers had spent studying in Canada at the time of the study to their average comprehension scores. For example, NNS7 had been in Canada 72 months at the time of the study and had a comprehension score of 23%. Subject NNS13 had been in Canada 30 months and had a comprehension score of 62%. For this study, at least, the amount of time a subject had spent in Canada was not an accurate indicator of his or her ability to comprehend the news stories.

Again, as for the native speakers, factors such as interest, motivation, listening habits, prior knowledge, education and social class are all important for the understanding of news broadcasts by listeners (Lutz and Wodak, 1987: 207).

4.6 Relating the results to other research

The Blau (1990) study of Polish and Puerto Rican students found that comprehension of oral texts is generally higher when pauses were inserted than when

Figure 4 2 – Months studying in English speaking Canada and study comprehension scores



they are not. Blau writes "that a certain threshold of proficiency is necessary to be able to take advantage of the extra processing time provided by the pauses" (1990: 752). The NNS subjects with the lowest overall comprehension scores would seem to fall into this category. This is seen in figure 4.2, where the NNS subjects with the lowest comprehension scores received their best scores with the paused versions of the news. Beyond a certain level of proficiency though, the NNS subjects of her study comprehended normal input better (Blau, 1990: 752). As was the situation in the Blau study, the NNS subjects with higher comprehension proficiency in the current study also did not generally derive much benefit from the pauses. Table 4.5 shows that of the eleven NNS subjects with the highest overall scores, only one (NNS10) received a higher score for a news story with pauses. As Blau notes, input features might have different effects at different stages of language proficiency (1990: 752).

In the Blau study three-second pauses were inserted in order to improve the comprehensibility of oral input. The current study was able to show some limited and qualified improvement with 500-millisecond pauses. Further research might consider the effect of pause length in order to determine minimum and optimum durations for improving comprehensibility for second language learners.

4.7 Design limitations in the study

The small sample size of the study did not permit a statistical analysis of the results, but the study does support some guidelines for further studies. First of all, some pretest measurement of listening comprehension of all the subjects (NS and NNS) would be valuable to establish the entry levels of listening proficiency of the subjects. As both

the current study and the Blau study indicate that it is the less proficient non-native speakers who benefit from pauses inserted into oral texts, a standardized measure of what proficiency level those non-native subjects had prior to testing would be useful in determining who benefits the most from the inserted pauses. Another change for a future study would be pause location. The preferred version C, with pauses at syntactic phrase junctures, often had pauses at the same locations as the B version, where the pauses were located at intonation phrase junctures. This was a result of the inherent similarity of syntactic and intonational phrases. A future study might also consider the effect of randomly placed pauses on listening comprehension. Altering the pause duration would be another variable to manipulate in a future study. For reasons outlined in section 3.3.3, the 500-millisecond pause was used in the current study. A future study might also consider whether a shorter or longer pause has a greater effect on listening comprehension. The current study did not control for age or gender, however, for the native speakers, age seemed to be a variable that had an influence on comprehension scores. Controlling this variable in a future study would also be an improvement in the study design.

4.8 Conclusion

Although the results of this study were not statistically significant, they do indicate that pauses can improve listening comprehension scores, particularly for subjects with less proficient listening comprehension, as earlier research (Blau, 1990) had already indicated.

With respect to the anticipated outcomes as stated in Chapter Three, the results were as follows

(i) The NS subjects who listened to the news items with pauses would not have better listening comprehension test scores than the NSs who listened to the news stories without pauses

The study generally confirmed this anticipated outcome There were, however, three NS subjects who did receive higher comprehension scores after hearing the edited version C with pauses at syntactic junctures A larger number of test subjects would be necessary to determine the statistical significance for this shift

(ii) The NS subjects would perform better on the listening comprehension tests than would the NNS

As anticipated, the NS subjects' comprehension scores were on average almost twice those of the NNS subjects, 62% and 38%, respectively There was as much range in the scores of the NS subjects, 85% to 26%, as there was in the range of the NNS subjects, 66% to 3%

(iii) The NNS subjects who listened to the edited news stories with the pauses inserted at either the syntactic or the intonational constituent junctures would perform better on listening comprehension tests than would those NNS subjects who listened to the unedited versions of the same news stories

This anticipated outcome was not confirmed by the results, except in the case of the NNS subjects with the lowest comprehension scores. A larger number of subjects would be necessary to determine any statistical significance of this result.

(iv) The NNS subjects who listened to the edited versions of the news stories with pauses at the intonation phrase junctures would perform better on listening comprehension tests than would those NNS subjects who listened to the edited versions with pauses at syntactic phrase junctures.

Of the two edited versions, the C version with pauses at syntactic phrase junctures was the version that improved comprehension scores the most when level of story difficulty is considered, but this improvement was only true for the NNS subjects with the lowest comprehension scores.

Chapter Five – Conclusions

5 1 Research hypothesis

The research hypothesis was that the comprehension test scores for the second language learners of English would be improved by having them listen to oral texts with 500 millisecond pauses inserted The hypothesis further stated that the location of inserted pauses would have an influence on the comprehension test scores of these subjects It was hypothesized that pauses inserted at intonation phrase junctures would yield higher comprehension scores than pauses inserted at syntactic phrase junctures

From the discussion and results of the previous chapter, it is evident that pauses do improve listening comprehension for non-native speakers of English, but this was true only for subjects with the lowest comprehension scores The results further indicate that pauses inserted at intonation phrase junctures do not result in higher comprehension scores than pauses inserted at syntactic phrase junctures In fact, from this study it seems that pauses inserted at syntactic phrase junctures result in higher comprehension scores, but, primarily for those non-native speaking subjects with the lowest overall comprehension scores

As was noted in Chapter Four, there was considerable variation in the ranking of both the native and non-native speakers from one news story to the next With a larger number of subjects it might be possible to find a pattern that could be attributed to the versions of the news stories that the subjects heard It might also be possible to attribute the variation to the subject's reaction to the content of the news story, as is described in the Lutz and Wodak study (1987) of radio news Regardless of the reasons for the

variation in the rank, the results do suggest that a single test of listening comprehension may be a poor indication of a subject's listening comprehension ability

5 2 Future research

There were limitations in the design of the study that might be addressed in future research One limitation was the lack of a standardized formal assessment of listening comprehension before the subjects participated in the study Such an assessment might have been helpful in determining the listening comprehension level at which learners benefit most from inserted pauses Another limitation was the variation in the level of difficulty of the news stories By selecting stories that were more similar in their level of difficulty, it would have been possible to make more comparisons among the subjects who heard different stories One other limitation was the selection pause locations In the oral texts used for this study, the intonational phrase and the syntactic phrase were often co-terminus A random placement of pauses might provide different insights into the effect of pauses on listening comprehension

Expanding the number of subjects would permit a statistical analysis that was not possible in this study A larger number of subjects might also show other patterns in the comprehension scores that are related to the different versions, with and without pauses For example, subjects like NS11 and NNS4, who heard the pause version C of the more difficult news story #2, Eaton's, had higher rank positions relative to their scores on the other news stories [10] In addition, having more subjects with a greater range of English language proficiency would help in determining the threshold for benefit from pause

[10] Illustrated in table 4 4 that shows the relative rank position of subjects for each news story

insertion. Blau's 1990 study noted that pauses improved the listening comprehension of subjects who were less advanced in their second language acquisition. In order to take advantage of the extra processing time the pauses provided, the subjects also had to have a minimum level of second language acquisition (Blau, 1990: 752). Future research may focus on delineating these thresholds and the developmental stages of second language acquisition associated with them.

It would also be worthwhile to expand the subject pool to L1 groups other than Japanese speakers. Subjects from different first language backgrounds may benefit in different ways from the use of pauses in oral texts.

Two variables may warrant further research: the pause duration and the pause location. There may be a critical duration for a pause to result in improved listening comprehension. In this study, pauses at syntactic phrase junctures seemed to be the more effective for increasing listening comprehension. A random placement of pauses or pauses located immediately after the information locus that answers the WH-questions may also be effective locations, variable placement of pauses needs to be studied.

5.3 Application of research

The most direct application of this research is the potential of language instructors and texts using pauses to make authentic oral texts more comprehensible to second language learners. Authentic texts edited with pauses, as was noted in Chapter One, preserve the natural flow of speech and improve the comprehensibility for non-native listeners. There are benefits to using authentic oral texts. Peacock writes that authentic materials significantly increase learner on-task behavior (1997: 148). In his study, he

observed that overall class motivation significantly increased when learners used authentic materials Use of authentic materials increases the difficulty of comprehension, but also improves motivation (149) The current project has shown that inserting pauses into authentic oral texts may prove to be an effective way to make them more comprehensible for the less proficient second language learners while simultaneously motivating the learners because they are hearing authentic target language texts Pauses could be inserted into a variety of oral texts, including news broadcasts, interviews and discussions, by using computer software programs such as Cool Edit 96 in a manner similar to that used for this study

Teachers who are working with non-native speakers of English might use extra pauses of longer duration in their oral communication with their students ESL teachers may already be speaking this way unconsciously Analysis of teacher-student discourse may be another area for research to determine what use teachers make of speech pauses and how the frequency and duration of the pausing varies between teachers working with non-native speakers of English and native speaking students

Although this study was only interested in the native speakers as control subjects, other studies might focus on how pauses can, and in what circumstances they might, improve listening comprehension for native speakers Three native speakers seemed to benefit from pauses placed in news story #2, which was the most difficult Carefully placed pauses may also prove a valuable aid to native speakers when they are listening to syntactically complex texts that contain lexical items that occur less frequently in normal speech The native speakers who might benefit from pauses include children, slow learners, people with speech and hearing impairment, and those receiving instruction

There may also be applications for pause research in speech technology As was discussed in the literature review in Chapter Two, pauses are an essential part of speech The natural use of pauses in synthetic speech can make it sound more natural The frequency and duration of pauses in natural speech is based on the genre of the oral texts, so synthetic speech will sound more natural and be more comprehensible if the temporal variables of appropriate pause location and duration are included in the design algorithms

Pauses are a natural component of speech Increasing the frequency and duration of pauses is analogous to careful articulation when there has been a misunderstanding Unlike careful articulation, which modifies the quality of the acoustic stream the listener hears, pausing offers the listener silent moments in the acoustic stream When it comes to processing an acoustic blur, less sound may be the key to better comprehension

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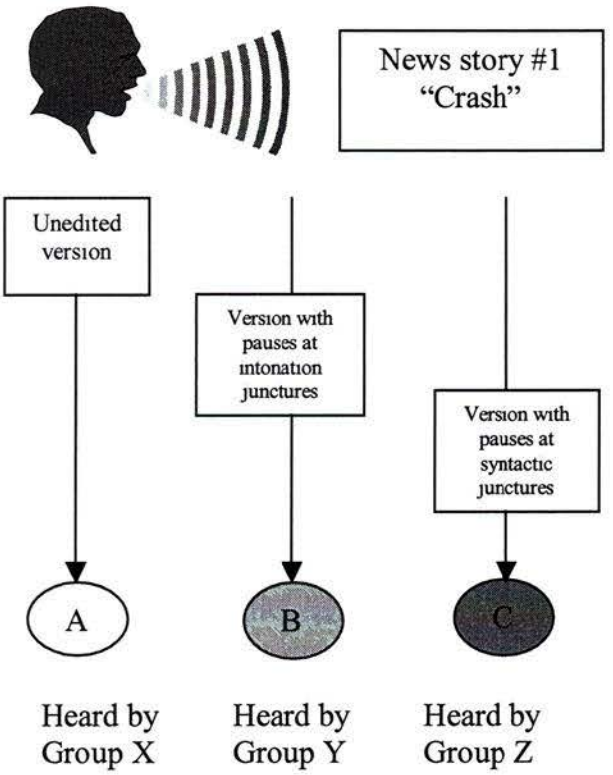
Appendix A – News story #1 WH-questions and transcript

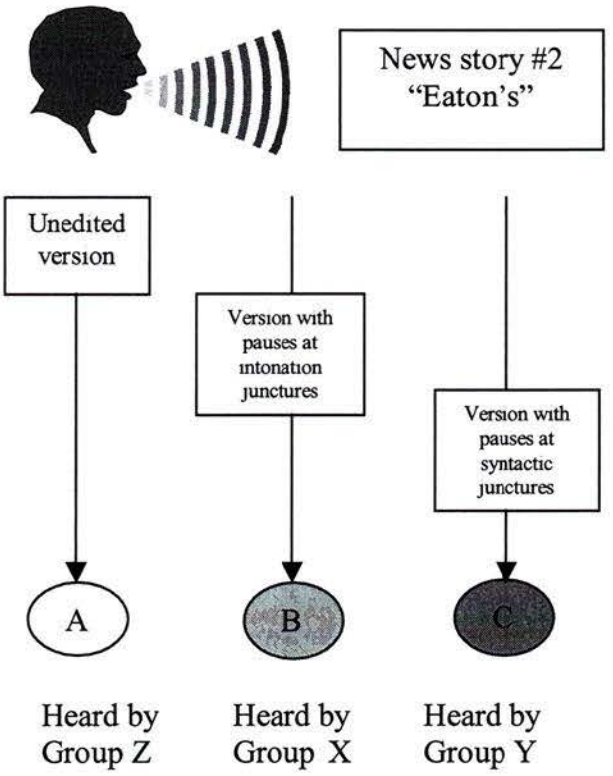


Questions for News Item #1 for all three groups

1) Who was killed?
2) Where was the person killed?
3) How old was the person?
4) Who pursued the car?
5) What did the driver do?
6) What happened to the driver?
7) Why did the chase start?
8) Where did the car crash?
9) What has the Ontario government issued?
10) How many people have been killed in police pursuits in the past year?

Transcript of News Story #1

A teenage girl has been killed during a police chase in Belleville, Ontario The 18-year-old was a passenger in a car that crashed while being pursued by police The driver of the car ran away after the crash but was arrested a short time later The chase started when a police officer saw a vehicle go through two red lights The car ran into the side of a building at an intersection Recently, the Ontario government issued a new set of rules on when and how police officers should conduct chases The teenager is the sixth person to have been killed in police pursuits in the past year

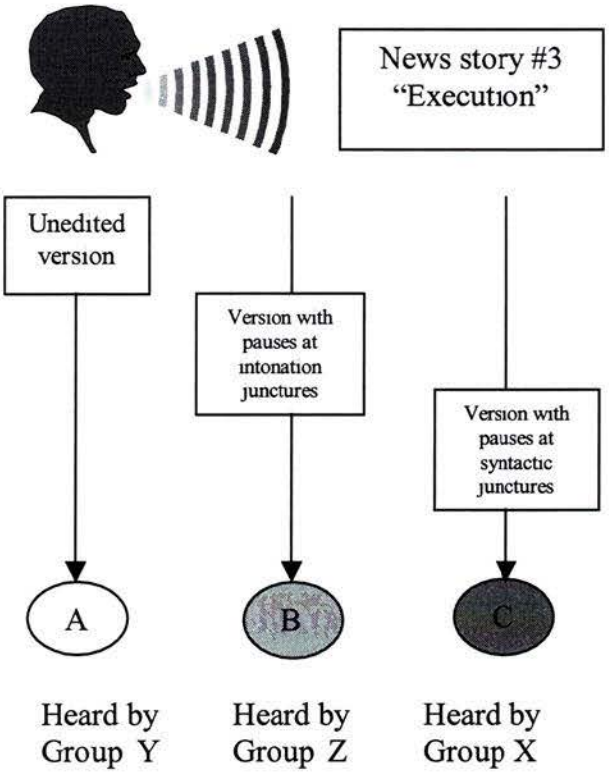


Questions for News Item #2 for all three groups

1) What kind of sales will Eaton's be having?
2) What will the department store chain be doing with its stock?
3) What happened to the talks with a potential buyer?
4) Who is Eaton's planning to make a proposal to?
5) How many days does Eaton's have to make that proposal?
6) What will happen in the meantime?
7) When will the chain begin liquidating its inventory?
8) Where were the stores closed on Friday?
9) When will the Eaton's stores be open?

Transcript of News Story #2

Eaton's will be having some going out of business sales The department store chain says it plans to wind down operations and liquidate its stock Eaton's announcement comes four days after news that talks with a potential buyer had fallen through The company says it has filed notice that it plans to make a proposal to creditors under the bankruptcy and insolvency act Eaton's has 30 days to make that proposal and in the meantime will continue talks with parties who have expressed interest in purchasing its assets or shares The chain also says it expects to begin liquidating its inventory early next week All Eaton's stores, including those in Quebec, which were closed Friday, will be open on Monday



Questions for News Item #3 for all three groups

1) Who is due to be executed?
2) How is he to die?
3) Where will the execution take place?
4) Where is he from originally?
5) How many Canadians have been executed in the United States since 1952?
6) How long has he spent on death row?
7) What was he convicted of?

Transcript of News Item #3

The execution of Stanley Falder is due to take place this evening in Huntsville, Texas He is to die by lethal injection Falder is originally from Alberta and he will be only the second Canadian to be executed in the United States since 1952 Falder has spent 22 years on death row He was convicted of killing an elderly woman during a robbery and has never denied the crime

Appendix D

Edited Versions (B) of News Items with 0 5 sec. Pauses at Intonational Phrase Junctures

News Item #1B

A teenage girl has been [redacted] police chase * in *Belleville, Ontario* * The *18-year-old* * was a passenger in a [redacted] * while being pursued by *police* * The driver of the car * *ran away* after the cra[redacted]*rested* * a short time later * The chase started * when a police officer *saw a veh*[redacted]*h two red lights* * The car ran into *the side of a building* * *at an intersection* * [redacted]ntario government issued *a new set of rules* * *on when and how police officers* * *should conduct chases* * The teenager is the *sixth person* * to have been killed in police pursuits * in the past year

News Item #2B

Eaton's * will be having some *going out of business sales* * The department store chain * says it plans to wind down operations and *liquidate its stock* * Eaton's announcement * comes four days after news * that talks with a potential buyer * *had fallen through* * The company says * it has filed notice * that it plans to make a proposal to *creditors* * under the bankruptcy and insolvency act * Eaton's has *30 days* * to make that proposal * and in the meantime * will continue *talks with parties* * *who have expressed interest* * *in purchasing its assets or shares* The chain also says * it expects to begin liquidating its inventory * *early next week* * All Eaton's stores, including those in *Quebec*, * which were closed Friday, * will be open *on Monday*

News Item #3B

The execution of *Stanley Falder* * is due to take place this evening * in *Huntsville, Texas* * He is to die by *lethal injection* * Falder is originally from *Alberta* * and he will be only the *second Canadian* * to be executed in the United States * since 1952 * Falder has spent *22 years* * on death row * He was convicted of *killing an elderly woman during a robbery* * and has never denied the crime

---

NOTES

1) * indicates the insertion site of a 0 5 second pause

2) *italics* indicates the information required for the correct answers to the WH-Questions

Appendix E

Edited Versions (C) of News Items with 0 5 sec Pauses at Syntactic Constituent Junctures

News Item #1C

A teenage girl * has been killed during a police chase in *Belleville, Ontario* * The *18-year-old* * was a passenger in a car * that crashed while being pursued by *police* * The driver of the car * *ran away* after the crash but was *arrested* a short time later * The chase * started * *when a police officer saw a vehicle go through two red lights* * The car * ran *into the side of a building at an intersection* * Recently, the Ontario government * issued *a new set of rules on* * *when and how police officers should conduct chases* * The teenager * is *the sixth person* * to have been killed in police pursuits in the past year

News Item #2C

Eaton's * will be having some *going out of business sales* * The department store chain * says * it plans to wind down operations and *liquidate its stock* * Eaton's announcement * comes four days after news * that talks with a potential buyer *had fallen through* * The company * says * it has filed notice * that it plans to make a proposal *to creditors* under the bankruptcy and insolvency act * Eaton's * has *30 days* to make that proposal and in the meantime will *continue talks with parties* * *who have expressed interest in purchasing its assets or shares* * The chain * also says * it expects * to begin liquidating its inventory *early next week* * All Eaton's stores, including those in *Quebec*, * which were closed Friday, * will be open *on Monday*

News Item #3C

The execution of *Stanley Falder* * is due to take place this evening in *Huntsville, Texas* * He * is to die by *lethal injection* * Falder * is originally from *Alberta* and * he will be only *the second Canadian* * to be executed in the United States since 1952 * Falder * has spent *22 years on death row* * He * was convicted of *killing an elderly woman during a robbery* * and has never denied the crime

---

NOTES

1) * indicates the insertion site of a 0 5 second pause

2) *italics* indicates the information required for the correct answers to the WH-Questions

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Title of Thesis

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