THE EFFECT OF ADDRESSEE FAMILIARITY ON WORD DURATION

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ABSTRACT

This paper describes an experiment which was designed to test the hypothesis that speakers alter the forms of words in response to the degree of familiarity of their interlocutor; specifically, that words addressed to a hearer whom the speaker knows well are shorter than the same words addressed to a hearer whom the speaker has not previously met. Six of the eight speakers examined exhibited the predicted effect in both read and spontaneous speech modes.

1. INTRODUCTION

Many factors affect the durations of spoken words. While some of these relate to the word's position in the immediate context of the utterance in which it occurs (for example, its proximity to syntactic boundaries or pauses [1]), others relate to the speaker's usage in his/her linguistic and paralinguistic context, and in particular with the extent to which speaker and hearer share knowledge and assumptions: for example, a word's duration is inversely related to its predictability [2,3]. words are longer when produced by speakers who have never previously met, because words are produced in a discourse that is more predictable [4,5,6]. In such studies, the spontaneous speech samples have generally elicited by having the subjects record conversations of interest to the experimenter. When the duration of a word is measured, the length of time the speaker actually pronounced it is used, rather than the time from the beginning of the word to the end of a silent pause that follows it [7].

Indirect evidence for support of the hypothesis comes from other work. One type of evidence in the literature on the processing of spontaneous speech (see, for example, [5,6,9,10]). In such studies, the spontaneous speech samples have been elicited by having the subjects record conversations of interest to the experimenter. When the duration of a word is measured, the length of time the speaker actually pronounced it is used, rather than the time from the beginning of the word to the end of a silent pause that follows it [7].

It has indeed frequently been claimed that speakers alter their speech and language in response to their degree of familiarity with the hearer (e.g. [7]). Indirect experimental support for the hypothesis comes from work on the word duration in spontaneous speech; for example, in the work of Sotillo and Bond [11]. In such studies, the spontaneous speech samples have generally elicited by having the subjects record conversations of interest to the experimenter. When the duration of a word is measured, the length of time the speaker actually pronounced it is used, rather than the time from the beginning of the word to the end of a silent pause that follows it [7].

The spontaneous speech samples which were used in the current study were collected as part of a so-called map task [12,13], which involves pairs of speakers, each of whom has a map. One speaker, the Questioner, asks a question, and the other, the Instruction Follower, answers it. The Questioner asks the Questioner to take part in the experiment. These recordings gave rise to a set of read materials. From the transcripts, twenty different word types were selected for each speaker. The words which were selected were all content words, and each word had been uttered by the speaker in question when addressing both the familiar and the unfamiliar addressee. As far as possible the items were chosen from the transcripts in which the subject was acting as Instruction Follower.

The location of the first occurrence of each of the four pairs of words was identified on each of the four maps (Spontaneous, Familiar, Unfamiliar, Read). The items were sampled at 16kHz and their durations measured using the ILS system, which assumed the two maps and differentated by means of the time it took to identify word onsets and offsets [11]. The results of the experiment were then based on the analysis of 640 word tokens: 8 speakers X 20 word tokens X 2 addresses (familiar, unfamiliar) X 2 versions (read, spontaneous).

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3. RESULTS
Table 1 shows the mean duration of the words in the four conditions, for all eight speakers.

A three-way analysis of variance (Version X Addressee X Speaker) was conducted. Not surprisingly, differences between speakers were highly significant (F[1,152] = 3.21, p = .0034), partly because of differences in the speech habits of particular speakers and partly because no attempt was made to match word types across speakers, resulting in a different number of one, two and three syllable words in each sub-sample. Similarly, a version effect was observed which was similar to that previously reported in the literature [5]: spontaneous tokens were longer overall than read tokens (F[1,152] = 28.08, p < .0001).

Table 1: Durations of words (msec)

<table>
<thead>
<tr>
<th></th>
<th>Fam Spont</th>
<th>Fam Read</th>
<th>Unfam Spont</th>
<th>Unfam Read</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spkr</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>393</td>
<td>319</td>
<td>322</td>
<td>323</td>
</tr>
<tr>
<td>2</td>
<td>451</td>
<td>362</td>
<td>414</td>
<td>355</td>
</tr>
<tr>
<td>3</td>
<td>279</td>
<td>281</td>
<td>278</td>
<td>269</td>
</tr>
<tr>
<td>4</td>
<td>383</td>
<td>330</td>
<td>364</td>
<td>354</td>
</tr>
<tr>
<td>5</td>
<td>370</td>
<td>362</td>
<td>444</td>
<td>452</td>
</tr>
<tr>
<td>6</td>
<td>467</td>
<td>411</td>
<td>480</td>
<td>426</td>
</tr>
<tr>
<td>7</td>
<td>421</td>
<td>365</td>
<td>466</td>
<td>391</td>
</tr>
<tr>
<td>8</td>
<td>338</td>
<td>343</td>
<td>390</td>
<td>360</td>
</tr>
<tr>
<td>Mean</td>
<td>388</td>
<td>347</td>
<td>395</td>
<td>366</td>
</tr>
</tbody>
</table>

Addressee was not significant as a main effect (F[1,152] = 2.89, p = .0912), but it interacted with the Speaker variable (F[7,152] = 2.80, p = .0991); further analysis by Scheffé test revealed that all but two speakers (1 and 2) exhibited the predicted Addressee effect for both read and spontaneous speech; that is, words were shorter when addressed to a familiar addressee than to an unfamiliar addressee. In a subsequent analysis of variance of the durations of word tokens spoken by these six speakers, Addressee proved significant as a main effect (p = .0033), and did not interact with either of the other variables.²

4. CONCLUSION
The experiment described here offers some support for the hypothesis that speakers shorten words when conversing with people whom they know well. The majority of the speakers here exhibited the predicted effect. Further work is now in progress to examine a number of related issues. First, more data needs to be examined. It is possible that generalisable these preliminary results are to a larger number of speakers. Second, a wide variety of factors is known to affect word duration, but given the nature of the elicitation task it was impossible to control for all of these. Pause location, speech rate and syntactic structure are among the variables we plan to examine; however, analyses we have already conducted show that the Addressee Familiarity effect remains even when word frequency and word length in syllables are taken into account.

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NOTES
(1) The design of the maps being used in a large-scale study of Scottish English is described in [14].

(2) It is interesting to note that the two speakers who failed to exhibit the Addressee effect were the first pair, other speakers (1 and 2) exhibited the predicted effect to take part in the experiment, and that their performance differed from that of the other speakers in other respects; in particular, their conversations were over twice as long as those of other participants in this and other studies using the maps task. It may be that their unusual attention to detail in the task led them to adopt unrepresentative linguistic behaviours.

(3) See also Bard and Anderson (this volume).

REFERENCES


