

A Preliminary Study on Silent Pauses in L1 and L2 Speakers of English and German

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Abstract

Pause is one of the phonic features that, together with pause and melody, affect the semantic aspect of communication. Pause is a suprasegmental feature responsible for segmenting an utterance into shorter stretches and drawing hearers' attention to important bits of information. Thus, it is an important universal means in perception and production of an utterance. The aim of the present paper is to provide the comparative analysis of the above-mentioned prosodic feature through exploration of the similarities and differences in semantically identical utterances in micro-textual units in colloquial style produced by L1 and L2 speakers of English and German.

1. Introduction

One of the suprasegmentals that fulfills the phonological and delimitative function (at the level of sentence elements and constituents) is *pause*. Silent pause phenomena (comprising pause duration, distribution and frequency) are included among the three temporal variables of speech together with the *speech rate* (SR measured by total number of syllables/total time) and *articulation rate* (AR measured by total number of syllables / total articulation time, i.e. total time minus pause time). Temporal dimensions of speech are studied within the branch of psycholinguistics called *pausology*. Apart from silent pause phenomena, hesitation phenomena have also been classified as temporal variables and are thus part of pausological research. In addition to filled pauses (e.g. *er, um*) they include false starts, repetitions and, in some studies, also pauses of extended duration (Griffith, 1991).

Since the pioneer research on pausology conducted by Goldman – Eisler in the fifties and sixties the conventions of pausological measurements have been established. Measurements are achieved through detailed analysis of spectrographic printouts supplemented by perceptual checks. Since the measurements of extremely short pauses have been regarded as problematic, the researchers have designated *cut-off points* (i.e. the lower limit of silent pause below which the measurement is unreliable). In order to achieve comparability of results, they have also set *threshold levels* (i.e. points when speaking is declared to have ceased rather than to be merely paused), (Griffith, 1991). Some more recent research studies, however, have persuasively argued for the importance of extreme duration values (both very brief or very long). Campione and Véronis thus conclude that disregarding these extreme values by using cut-offs and thresholds can have “malicious effects in the study of pauses”.¹

From a descriptive aspect, two classifications of pauses are used – the former one being physical and linguistic and the latter one being psychological and psycholinguistic. Within the former classification some authorities differentiate intra-segmental pauses (e.g. VOT for plosives) and inter-lexical pauses (Zellner, 1994: 42). The latter classification deals with pauses in terms of their origin (individual physiological constraints, e.g. low muscular tone, or temporal constraints) and function (pauses as reflection of cognitive activity, situational constraints). Pauses have a strong impact on perceiving the speaker as fluent (“speaking easily, with smooth onsets and transitions and at a relatively rapid clip”) or

¹ Campione, E. – Véronis, J.: A Large-Scale Multilingual Study of Silent Pause Duration. In: Speech Prosody 2002, Aix-en-Provence, France. April 11 – 13, 2002. <http://www.isca-speech.org./archive>

disfluent (“speaking with hesitations, producing pauses at inappropriate spots”) (Zellner, 1994: 44 – 48).

2. Experiment

2.1 Hypothesis

Some earlier investigations of L1 speakers’ perception of Slovak learners of second language productions have indicated that Slovak learners tend to use inappropriate phrasing and pausing, which eventually affects communication. Therefore, it is hypothesized that acoustic measurements may support this observation and show differences in pausing between L1 speakers of English and German on the one hand and Slovak learners of English and German (teacher trainees) on the other hand.

2.2 Method and material

The material included simple and semantically equivalent dialogues in English and German consisting of identical number of sentences. The dialogues were read aloud in the two L2 versions (i.e. English and German) by six subjects (English language and literature and German language and literature teacher trainees), four L1 speakers of English and four L1 speakers of German. The subjects were asked to read a part of the dialogue and to apply and intonation as natural as possible. The dialogues were recorded in the recording studio under the supervision of an expert in digital recording. Software Steinberg was used, specifically program Wave Lab 6. The whole recording was further processed (dynamics, frequency, mastering) and burnt on a CD.

2.3 Results

The intra-sentence pauses were used for analysis due to the fact that only individual sentences were investigated.

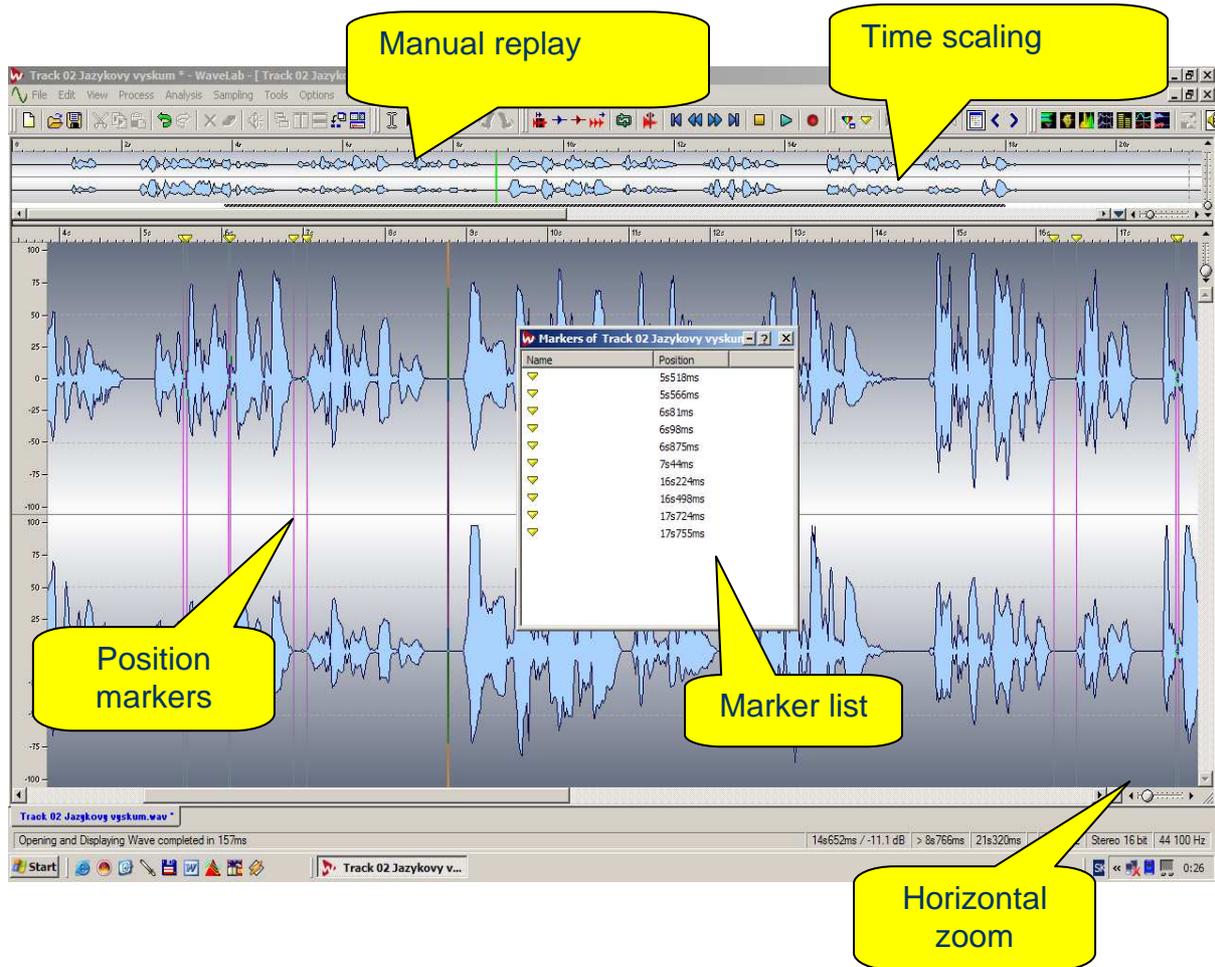
The measurements and subsequent evaluations have been based on two typologies of pauses. The former one was introduced by Sabol and Zimmermann (1984, pp. 227 – 228):

1. Zero pause or extremely short pause (≤ 50 ms)
2. Very short pause (50 ms – ≤ 100 ms)
3. Short pause (100 ms – ≤ 300 ms)
4. Normal/optimal (300 ms – ≤ 1350 ms)
5. Long pause (1 350 ms – $\leq 2 200$ ms)
6. Very long pause (2 200 ms – $\leq 2 800$ ms)
7. Extremely long pause (≥ 2800 ms).

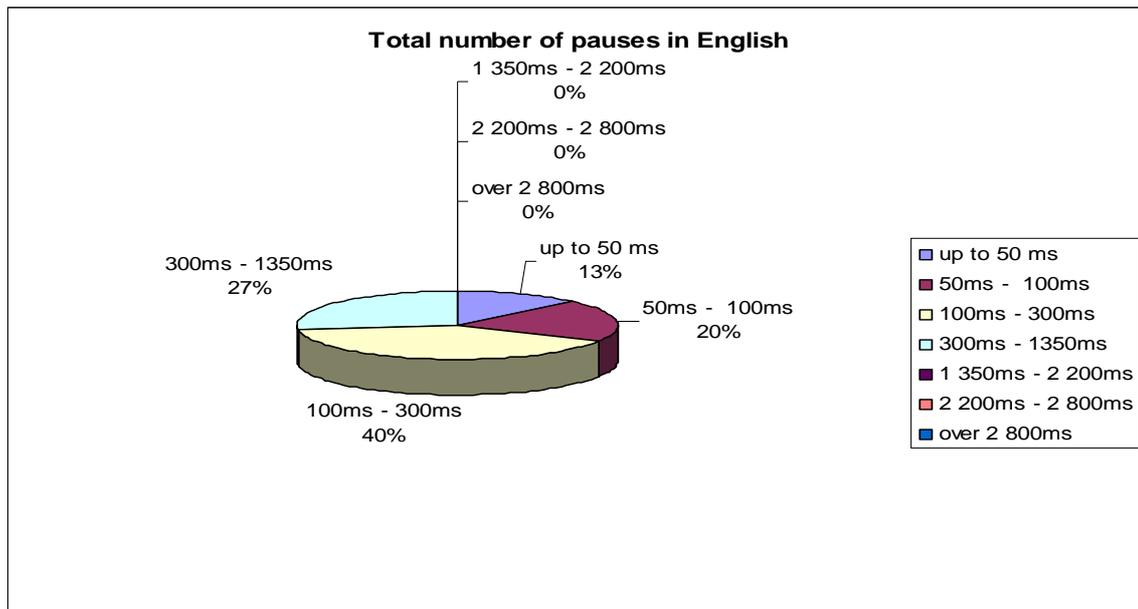
The latter typology by Campione and Véronis (2002) is based on their large-scale multilingual study of silent pauses. The researchers conclude that distribution of pauses is trimodal, suggesting that the observed distributions result from the combination of three categories of pauses, namely brief (< 200 ms), medium (200 – 1 000ms) and long ($> 1 000$ ms).²

The following print screen illustrates the measurement procedure:

² In addition, Campione and Véronis (2002) have found that the distribution of pauses is far from normal, therefore statistical tests that rely on normality assumptions should not be used.

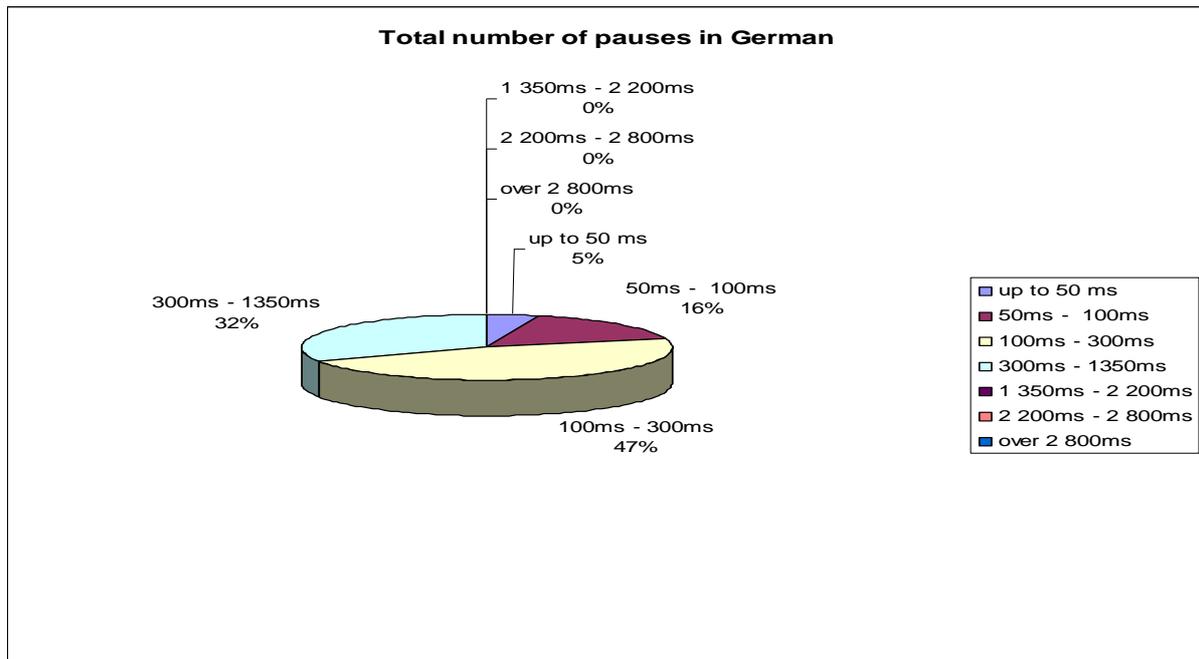


Analysis based on typology by Sabol and Zimmermann:



The given graph shows that in the English dialogues the short pause was dominant (representing 40%), the normal/ optimal pause was also fairly frequent (27%); the very short

pause had 20% occurrence and the zero pause or extremely short pause represented 13%. Other temporal pauses were not represented.

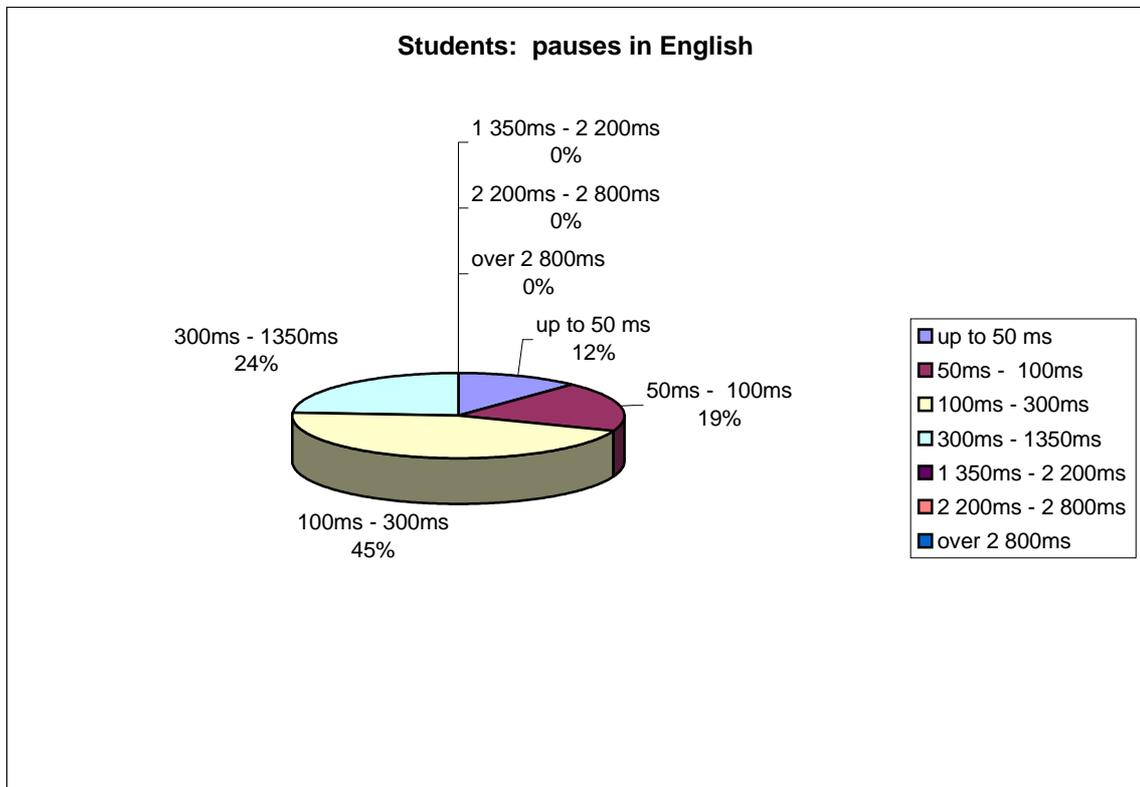
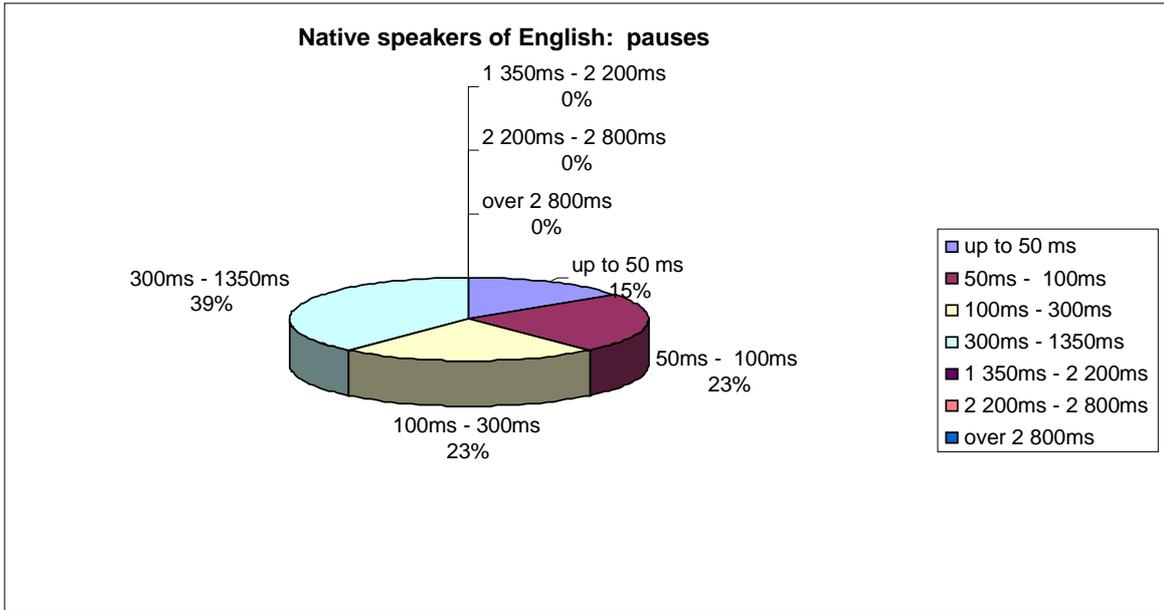


The given graph indicates that in the German dialogues dialogs the short pause was dominant (representing 47%), the normal/ optimal pause was also fairly frequent (32%); the very short pause had 16% occurrence and the zero pause or extremely short pause represented merely 5%. Other temporal pauses were not represented at all.

The following tables indicate the frequencies of individual pauses in all groups of subjects.

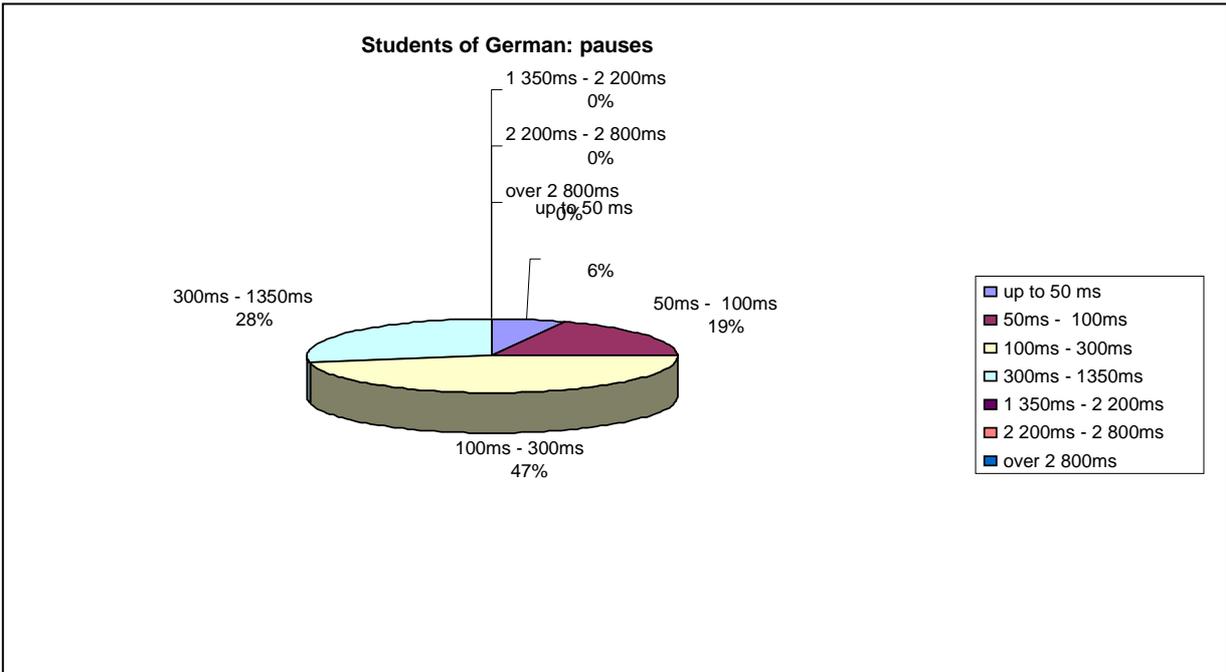
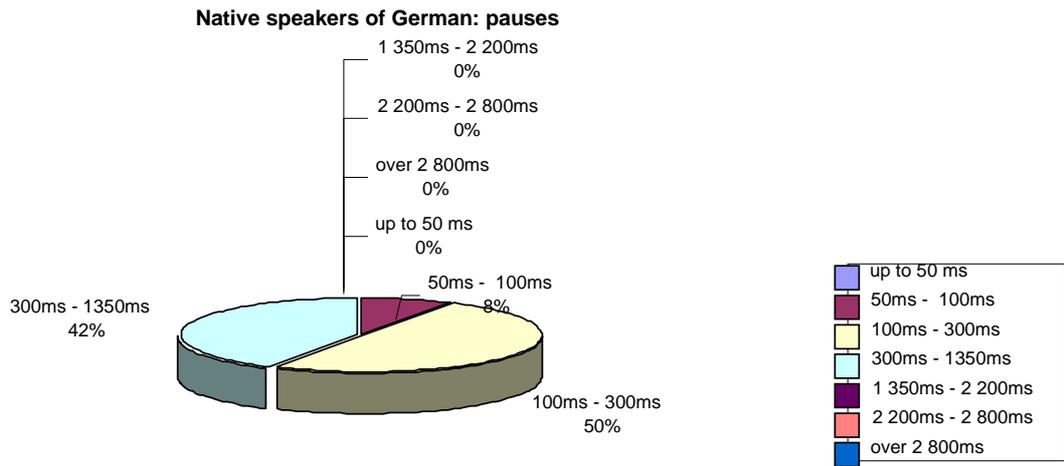
| L1 speakers of English | | | | | | |
|-------------------------------|---------------|----------------|-----------------|------------------|------------------|---------|
| < 50ms | 50ms - <100ms | 100ms - <300ms | 300ms - <1350ms | 1350ms - <2200ms | 2200ms - <2800ms | >2800ms |
| 2 | 3 | 3 | 5 | | | |

| Students of English | | | | | | |
|----------------------------|---------------|----------------|-----------------|------------------|------------------|---------|
| < 50ms | 50ms - <100ms | 100ms - <300ms | 300ms - <1350ms | 1350ms - <2200ms | 2200ms - <2800ms | >2800ms |
| 5 | 8 | 19 | 10 | | | |



| L1 speakers of German | | | | | | |
|-----------------------|---------------|----------------|-----------------|------------------|------------------|---------|
| < 50ms | 50ms - <100ms | 100ms - <300ms | 300ms - <1350ms | 1350ms - <2200ms | 2200ms - <2800ms | >2800ms |
| 0 | 1 | 6 | 5 | | | |

| Students of German | | | | | | |
|--------------------|---------------|----------------|-----------------|------------------|------------------|---------|
| < 50ms | 50ms - <100ms | 100ms - <300ms | 300ms - <1350ms | 1350ms - <2200ms | 2200ms - <2800ms | >2800ms |
| 2 | 6 | 15 | 9 | | | |



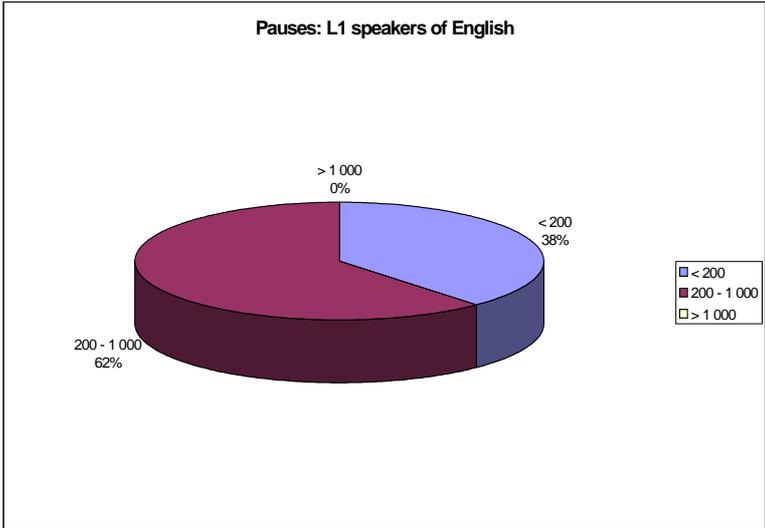
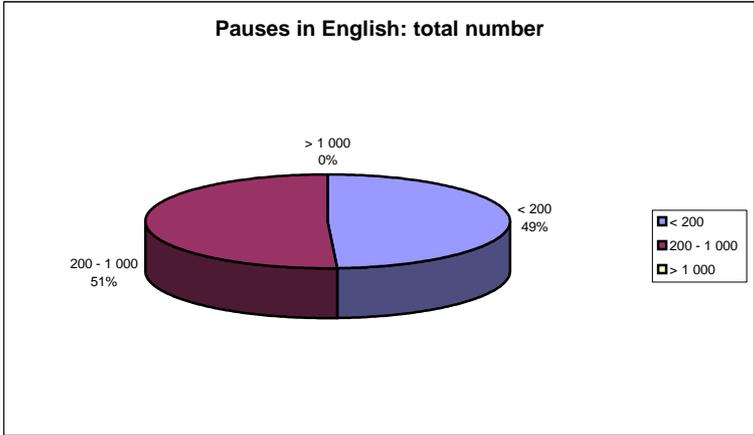
Analysis based on typology by Campione and Véronis (2002):

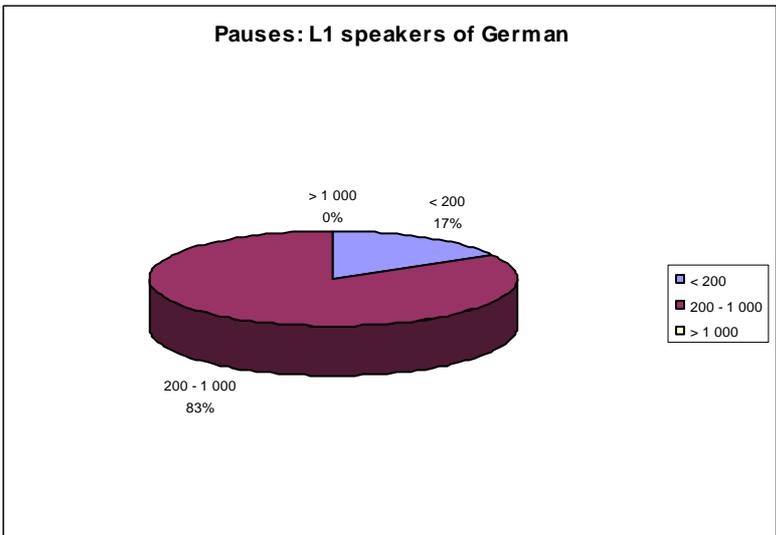
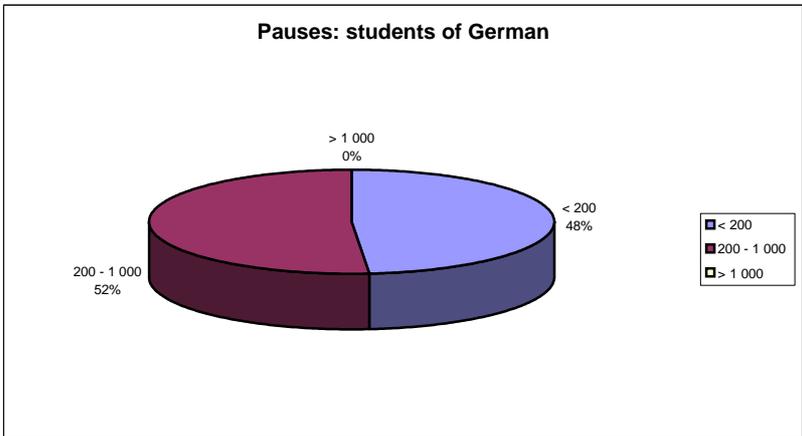
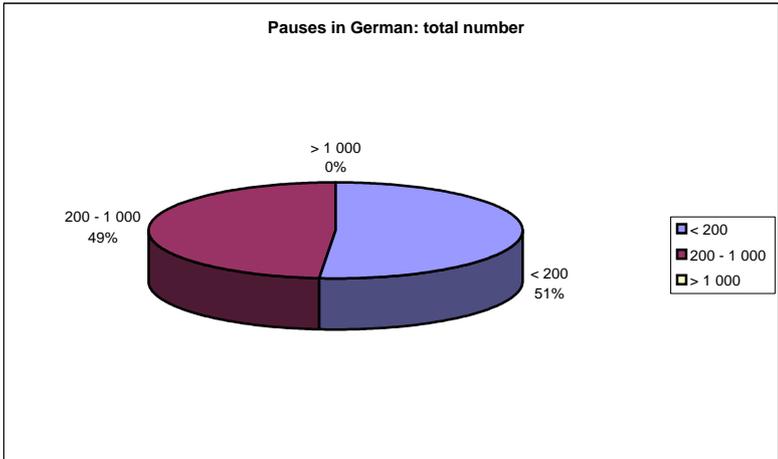
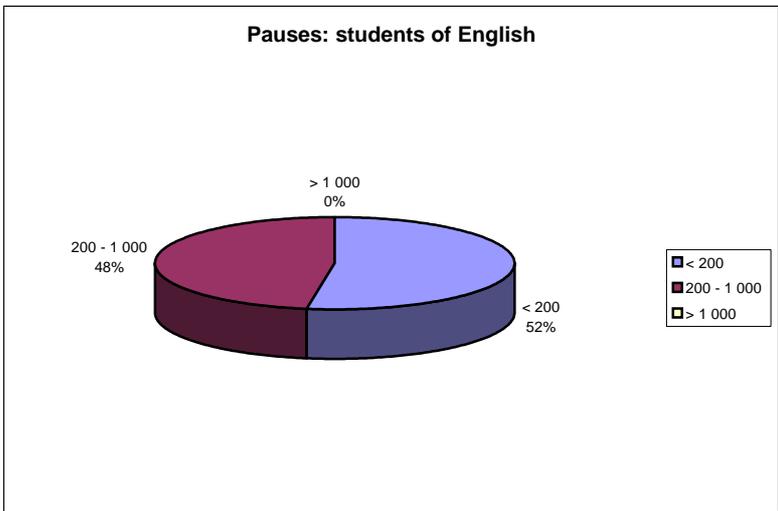
| Students of English | | |
|---------------------|-----------------|-----------|
| < 200ms | 200ms - 1 000ms | > 1 000ms |
| 21 | 19 | 0 |

| Students of German | | |
|--------------------|-----------------|----------|
| < 200ms | 200ms - 1 000ms | > 1000ms |
| 16 | 17 | 0 |

| L1 speakers of English | | |
|------------------------|-----------------|-----------|
| < 200ms | 200ms - 1 000ms | > 1 000ms |
| 5 | 8 | 0 |

| L1 speakers of German | | |
|-----------------------|-----------------|----------|
| < 200ms | 200ms - 1 000ms | > 1000ms |
| 2 | 10 | 0 |





The above-given tables and graphs exemplify the differences between L1 speakers of English and German on the one hand and L2 speakers of English and German on the other hand. The differences are in the total number of pauses (being considerably higher in L2 speakers), in their distribution (medium pauses prevailing in L1 speakers and brief pauses prevailing in L2 speakers) and frequency (being higher in L2 speakers).

2.4 Discussion

The above-given results exemplified in tables and graphs indicate similarities in the occurrence of the types of pauses in the two languages. The distribution of pauses is multimodal/ bimodal, indicating that the observed distributions are combinations of optimal, short, very short and extremely short pauses or the combinations of brief and medium pauses (long pauses occur only in spontaneous speech).

The differences between native speakers and L2 speakers can be observed, as has been expected, in the total number of pauses, their frequency and in their distribution. In spite of the fact that the preliminary experiment has been conducted on read dialogical speech based on common core vocabulary, high predictability of lexis and adjacency pairs, a higher frequency of pauses has been observed in L2 speakers and overall longer durations of pauses. This appears to be affected by L2 speakers' insecurity, hesitations before articulatorily more difficult words, difficulty in decoding an L2 printed text, substituting linking mechanisms by pausing and apparently overall slower speech rate.

It is possible to state that the majority of pauses have been justified (e.g. before emphasis, frequently indicated by punctuation or at constituent boundaries) thus not affecting the fluency of their speech.

There are some examples, however, that manifest incongruous pausing, e.g. in the English sentence: "*Seventy-seven// Euro*" and the German equivalent "*Siebenundachtzig// Euro*", in which L2 speakers made a pause before the word *Euro/ Euro* caused ostensibly by their uncertainty regarding the pronunciation. Another inappropriate pause was observed in an L2 speaker of German (in the sentence: *Das wäre das Hotel Krone, es liegt sehr zentral, nicht weit von hier.*) who ignored the punctuation mark (comma) as a signal for pause and postponed it until later in the utterance. That pause seems to be a physiological pause made in an inapt place and therefore inappropriately segmenting the utterance.

3. Conclusion

The preliminary study on silent pause duration in read speech in L1 and L2 speakers of English and German has revealed multimodal distribution, combinations of optimal, short, very short and extremely short pauses (long pauses occur only in spontaneous speech). The differences between native speakers and L2 speakers have concerned the total number of pauses and their total durations.

Further research on this area will be based on a larger corpus of data and will also include comparison of pausing in read and spontaneous speech.

Notes

1 The research presented in this paper has been conducted within the project scheme VEGA 1/0475/08 "Comparative analysis of selected suprasegmental features (emphasis, internal sentence pause and melody) and their syntactic patterning in the English, German and Slovak languages in semantically identical microtextual units of colloquial style.

References:

CAMPIONE, E., VÉRONIS, J. 2002. A Large-Scale Multilingual Study of Silent Pause Duration. In *Speech Prosody 2002*, Aix-en-Provence, France. April 11 – 13, 2002. Available at: <<http://www.isca-speech.org./archive>>.

GRIFFITH, R. 1991. Pausological research in an L2 context: A Rationale, and Review of Selected Studies. In *Applied Linguistics*. Vol. 12, No. 4, 1991, pp. 345 – 364.

SABOL, J., ZIMMERMAN, J. 1984. Komunikačná hodnota pauzy. In *Úloha řeči a hudby v životním prostředí*. XXIII. Akustická konference, 1984, pp. 225 – 228.

ZELLNER, B. 1994. Pauses and the temporal structure of speech. In KELLNER, E. *Fundamentals of speech synthesis and speech recognition*. 1994, Chichester : John Wiley, pp. 41 – 62.

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