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An Application

of the Menzerath-Altmann

Law to Contemporary

Spoken Chinese

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Authorial note

The official Chinese transcription called pinyin is used in this work as well as the official Czech transcription created by prof. Oldřich Švarný. In case Chinese characters are used, they appear in their simplified versions and the corresponding font for Chinese characters called SimSun.

Several special symbols are used here to differentiate phoneme, letter and syllable. Phonemes appear in slash-brackets, letters appear in compound brackets and syllables are as well in compound brackets but they are differentiated from the others by the use of italics.

The text also uses the original Czech terminology created by prof. Švarný, namely the term *kolón*. This term has no equivalent in English, therefore it is left in its original form but it is differentiated from the English text using italics.

Used sources are created by the citation standard ČSN ISO: 690 but they are translated into English due to the language this book is written in.

Introduction

Quantitative linguistics is one of the linguistic branches which combine linguistic and mathematic methods. This combination is used in order to discover new information and findings or to verify and validate the old ones. The quantitative linguistics functions as a mediator through which it is possible to execute the research on modern spoken Chinese language described in this particular book. The concrete method is called Menzerath–Altmann Law, one of the most influential linguistic laws, which clarifies and describes the relationship between the individual language units.

The research described here consists of two phases. The first phase consists of the examination of two samples characterized below and the second phase was carried out due to the need of comparison with a contrastive and completely different sample. The samples verified in the first phase originate from the Chinese music program and the third sample, the contrastive one, originates from the work of the outstanding Czech sinologist prof. Švarný. More precisely, the contrastive sample is a part of the teaching material called *Spoken Chinese in Examples* (Hovorová čínština v příkladech). The main purpose of the research was to verify the hypothesis which stated that the spoken Chinese will be subdued to the rules defined by the Menzerath–Altmann Law on all examined language levels. On the language level concerning the relationship between the statement and the stress unit another phenomenon was also tested, namely the influence of the rhythm of the musical genre on the natural speech flow and rhythm of the speaker. The hypothesis states that the artificial musical rhythm of rap is able to influence the natural rhythm of the performer. Also on the lowest language level another hypothesis was tested. This hypothesis assumed that on this particular level the Chinese language will always show an oscillation within a linear area after applying MAL.

The book is divided classically into the introduction, several chapters and the conclusion which is followed by the appendices including

the transcriptions of all samples, the list of all syllables of Chinese language, a demonstration of the segmentation and the list of all used sources as well.

The body of the book is divided into several related chapters which are concerned with all aspects of the research including the demonstration of the results. The first few chapters inform the reader about the theoretical aspects of the research. At first the quantitative linguistics is introduced and its importance in the field of linguistic research is described. What follows next is the characteristic and introduction of the quantitative linguistics' tool, Menzerath–Altmann Law, and its rules. Due to the importance of this law, both linguists who contributed to the discovery and definition of this law are mentioned in the appropriate chapter. Afterwards the law itself is described including its formulations and definitions; not only the linguistic but also the mathematical ones.

The next chapter is dedicated to the methodological description of the research namely the selection of samples, a brief description of the Chinese phonetics and finally the selection of an appropriate transcription and segmentation of the language units. The following chapter is dedicated to the individual definitions of language units which is an extremely important part of the methodological process. The definitions vary to a high degree therefore the particular chapter illustrates the variability of the linguistic definitions. At the end of the chapter the definitions are summarised and the explicit formulations of the individual definitions used in the research are presented.

The last and most extensive chapter is concerned with the presentation of the gained results with the help of tables and graphs. These are connected with the correspondent commentaries and analyses which function as an interpretation of the individual results visualized in the tables and graphs. In this chapter a presentation of the results appears as well as the discussion of the results and a conclusion is also drawn. The whole research, its results and the possible direction of the further research are described and reflected in the conclusion.

In this book various Czech and foreign literature is used and cited. The primary and secondary sources have become a stepping stone for the methodological part of this research. The knowledge about the quantitative linguistics is taken mainly from the publication of the prominent Czech authors as for

example Luděk Hřebíček, Marie Těšitelová and others. When defining language units it was necessary to collect and consult the needed information from various works of the authors connected with the Czech linguistics like Franišek Daneš, Olga Müllerová, Marie Krčmová and others. In case of Chinese it was inevitable to consult and to gain information from the prominent Czech sinologist Oldřich Švarný and from the work of Hana Trísková. Apart from Czech publication, foreign works were used too. All of them are listed in the registry at the end of the book.

From the point of view of quantitative linguistics the Chinese language is still an unexplored area therefore it is very important to be concerned with this old and more and more expanding language even from this viewpoint. One of the aims of this work is to shed more light on the case of the application of the Menzerath–Altmann Law to the contemporary spoken Chinese. On the basis of the analyzed results it is possible to determine and extend the direction of further research.

1. Mathematic Linguistics

The special branch of linguistics which is called mathematic linguistics came into being at the beginning of the 1960s. According to Černý it consists of two main streams namely quantitative linguistics and algebraic linguistics, which is concerned mostly with formal logic. To these two streams Černý adds also a third one called machine linguistics which uses the information and knowledge from both of the above mentioned disciplines. It applies gained knowledge into practise using mechanic computers and mathematical informatics.¹ Mathematic linguistics is according to Černý a so-called “boundary discipline” which uses mathematics and linguistics to the same degree. However, he admits that the best expert in quantitative linguistics Marie Těšitelová does not agree with this statement. Like many others, she also inclines to the opinion that the quantitative linguistics is only a linguistic discipline which uses mathematical methods.²

Usage of mathematical methods in linguistics was not a unique phenomenon even before mathematic linguistics came into existence in 1957. Those methods were mostly quantitative or statistical. According to Černý, one could say that out of all branches of mathematic linguistics only quantitative linguistics has a certain tradition and history.³

1.1 QUANTITATIVE LINGUISTICS

Quantitative linguistic is sometimes called in literature also statistic linguistics. Nevertheless, the Czech linguist Hřebíček reminds that it definitely does not mean that numbers will be the main part of the research and that the researcher’s focus will be restricted only to them.⁴ He claims himself that to be

1 Černý 1981: 5.

2 Ibid.: 6–7.

3 Ibid.: 7.

4 Hřebíček 2002: 52.

quantitative means to think within the mathematic terms. In the scientific reasoning, the specific number or numeric denominations should only be a substitute for the given occurrence which is satisfactory within certain given circumstances.⁵

The first serious attempts to establish a quantitative aspect into the linguistics started to rise at the end of 19th and at the beginning of 20th century. In that time mathematics started to be used within other scientific disciplines, therefore it found its way into the linguistics as well. In his work Černý acknowledges that one of the initiators of employing mathematics in linguistics was the Russian mathematician V. J. Buňakovskij. This topic was interesting also for another scientist called Herman Paul, whose specialization was above all statistics. Among others stands for example Augustine Seydler who was preoccupied with probability, or the Polish scientist Jan Baudouin de Courtenay according to whom in linguistics it is possible to use not only basic mathematics but also the more complicated aspects of it.⁶ However, all of these scientific personalities were mainly representatives of natural sciences, who were above all interested in frequency. The first linguist who was really concerned with quantitative linguistics was the American linguist W. D. Whitney. Nevertheless the object of his research was also the frequency observed in the English phonemes.⁷

Similarly to any other sciences, the quantitative linguistic is also based on stating a hypothesis and its following confirmation or negation respectively. Within this task, numbers and mathematics are merely the tools which are helping researchers or linguists to achieve a certain goal. A quantitative linguist does not necessarily have to be a gifted mathematician. The aim of mathematics is only to provide us with the tools which are needed to accomplish a confirmation or negation of the given hypothesis.

Hrbaček states that the goal of the quantitative linguistics is to provide the statements about a language with a stamp of a scientific theory. This theory

5 Hřebíček 2002: 52.

6 Černý 1996: 249.

7 Černý 1981: 8–9.

must be falsifiable and it is formulated with the risk that it is either valid and can be proven by a test, or not valid and so does not make sense. According to Hřebíček there are two goals of quantitative linguistics: the first one is to achieve a precise formulation of a hypothesis and the second aim is to enable the testing of this particular hypothesis.⁸

Quantitative linguistics is an important form of science which connects social sciences and natural sciences. Wimmer himself states that the science which does not have a hypothesis is just a proto-science and the science in which its hypotheses are not falsifiable is so-called pseudoscience.⁹

With the origin of quantitative linguistics it occurs that for the confirmation of the hypothesis which is formulated on the qualitative level it is necessary to use quantitative methods and processes. Hřebíček agrees with the statement that the increased demand to apply these methods e.g. mathematical statistics or the theory of probability, just makes the research for the linguists much more complicated.¹⁰ However, Wimmer argues that it is necessary, due to the fact that knowledge about a certain topic is mostly created by the utilization of qualitative concepts, yet for a more precise manifestation it is inevitable to shift towards the quantitative concepts. He also states that the sciences which use quantitative methods are able to evolve much faster.¹¹

It is very important to realize that within quantitative linguistics the social sciences and natural sciences are combined. Therefore it is necessary for the members of both branches to cooperate. Wimmer describes this cooperation as a six-step process. At first the linguist formulates a qualitative hypothesis and then a mathematician states a mathematical formulation of this particular hypothesis. Afterwards the data are selected, tested and the conclusion consists of a statistic and also philological interpretation.¹² One would say that through the combination and mutual cooperation of two different departments

8 Hřebíček 2002: 19.

9 Wimmer 2003: 13.

10 Hřebíček 2008.

11 Wimmer 2003: 14.

12 Ibid.: 15–16.

it is possible to achieve better and more precise results. Therefore this particular research, which is also the topic of this book, demonstrates the combination of a linguistic hypothesis verified by a quantitative method.

2. Menzerath–Almann Law

For many years language in general was considered to be a system composed of units on various language levels. These levels were questioned and examined by methods which were used and taken as a standard routine. Language levels were strictly distinguished one from the other and their units were isolated in order to provide the possibility to examine their mutual relationships within individual sentences. The problem occurred when text linguistics with its task to properly examine language structures above the sentence came into being. As Benešová stated in this seemingly vexed situation the Menzerath – Altmann Law (MAL) emerged and brought new ways and methods to deal with the above mentioned problem.¹³ MAL created an innovative approach on how to grasp language levels and their mutual relationship as a whole.

2.1 THE DEVELOPEMENT OF THE MENZERATH–ALTMANN LAW

The Menzerath–Altmann Law is one of the fundamental laws in quantitative linguistics. As it is obvious from the name of this law, it was not a creation of a sole linguist. The first one who laid the foundation of the law was the German linguist Paul Menzerath in 1928. The Czech linguist Hřebíček maintained an opinion in his works that it would not be possible to complete this law if it was not for the long-term work of the linguist and mathematician Gabriel Altmann. He elaborated Menzerath's work and therefore it is possible to use this law to such an extend as it is used in today's linguistics. Without Altmann also the results originated at that time would have been impossible to achieve.¹⁴ He broadened the original knowledge and methods of the quantitative linguistics. With the completing of Menzerath's Law he enabled

13 Benešová 2011: 23.

14 Hřebíček 2002: 11.

the change of the linguistics' researches and its application on the various texts and languages.

Linguists and mathematicians verified and are still verifying the MAL on various language levels within lots of various linguistic branches on the samples which differ in typology and stylistics. Nevertheless, the MAL has been verified and examined also within others sciences as well, for example evolutionary biology or genetics.¹⁵

Naturally, quantitative linguistics was not something new that originated only thanks to Altmann's completion of Menzerath's law. It had existed for a long time before this happened, but as Hřebíček stated, it was used only descriptively whereas Altmann understood that the basic task of this methodology was to head towards a precise *scientific explanation*.¹⁶ Due to Altmann's completion of this particular linguistic law it was now possible to enhance and connect linguistics and mathematics. This connection enabled the emergence of new possibilities and methods in linguistic researches used on vast numbers of various samples and texts which had been unthinkable in the past.

The former linguists were mostly preoccupied with the relative independence of the language subsystems. However, Paul Menzerath noticed a distinctive feature. On the lowest level is this phenomena described as follows: the shorter the phoneme, the longer the unit where it belongs. At the same time the statement states that the more phonemes the word consists of, the shorter the length of individual phonemes. This is also called the law of quantity.¹⁷ On the basis of these observations a definition was later created which still worked with the particular levels. The definition is as follows: "The more syllables in a word, the shorter the syllables."¹⁸ This was the knowledge that Gabriel Altmann linked his own findings to. In 1980¹⁹ he created the terms construct and constituent and therefore helped to generalize Menzerath's theory.

15 Kulacka 2010: 257.

16 Hřebíček 2002: 11.

17 Altmann 1980: 1.

18 Hřebíček 2002: 53.

19 Kulacka 2010: 258.

Between the chosen construct (unit on the higher language level) and the chosen constituent (unit on the nearest lower language level) the following relationship applies: “*The longer the language construct, the shorter the average length of its constituents.*”²⁰

Hřebíček continues that it is not possible to consider this type of relationship literally. It is necessary to perceive this law as a certain tendency in the language. According to the hypothesis of the MAL, there is a relationship of reciprocal proportion between the construct and its constituent. This practically means the longer a construct, the shorter its constituents. The length of a construct is measured by the number of constituents; therefore their amount is expressed by an integer. Hřebíček further explains that the length of the constituents will be different because it is expressed by the average of individual lengths of constituents. Therefore the average is formulated as a decimal number.²¹

2.2 MATHEMATICAL AND VERBAL EXPRESSION OF THE MAL

Altmann supplemented Menzerath’s hypothesis with an assumption of continual proportion which states: the longer the constituent, the greater its increment.²² This law and these two relationships are expressed by the mathematical formulation of the Menzerath–Altmann Law. This formula is as follows:

$$y = A \cdot x^{-b}$$

- ▶ x represents the length of the construct measured in its constituents
- ▶ y represents the length of the constituent measured in the units of the closest lower level (which represent its constituents)
- ▶ A, b represent real parameters²³

20 Hřebíček 2002: 53.

21 Ibid.: 54.

22 Ibid.: 54.

23 Andres – Benešová et al. 2012: 2.

This formula is used as a simple formulation of MAL, however, there also exists a complete and more complicated formulation of this law:

$$y = A \cdot x^{-b} \cdot e^{cx}$$

- ▶ x represents the length of the construct measured in its constituents
- ▶ y represents the length of the constituent measured in the units of the closest lower level (which represent its constituents)
- ▶ A, b, c represent real parameters²⁴

In 1984 Köhler noticed that the value of the coefficient A equals to a language construct with an empirically gained average length of one constituent. He also claimed that the coefficient b is responsible for the shortening tendency of the construct's constituent providing the lengthening of the construct. The denominations of both coefficients are dependent on the language level.²⁵ In her paper Kulacka compares the results and findings of the pair Hammerl and Sambor with the work of Cramer, who, like the two mentioned linguists, noticed the negative correlation between the coefficients. It can be assumed that the value of one coefficient defines the value of the other. Cramer also suggests that within the same language level there are very similar coefficient's values. Therefore she stated an assumption that in the future a whole range of values may be discovered for individual language levels.²⁶

Andres and his colleagues in their article *Optimization of Parameters in the Menzerath–Altmann Law* reported that it could be expected that the results attained by a complete algebraic formula would be more accurate and more optimal than the results obtained by a simplified algebraic formula. However, according to his own experiment, Andres states that the situation is not so unmistakable and the previous statement is highly delicate.²⁷

24 Andres – Benešová et al. 2012: 2.

25 Cramer 2005: 45.

26 Kulacka 2010: 260.

27 Andres et al. 2012: 7.

Language is a structural entity which is composed of a great amount of mutually linked levels. Hřebíček discusses certain issues, one of which is the apparent tendency in linguistics to examine and enforce only those language levels which have already been described. He argues that despite the traditional philosophy it is not reasonable to claim that the number of language levels is final. Naturally, it is inevitable to examine the known language levels first and on the ground of the obtained results to continue researching and to discover others.²⁸ Empirical verification of the validity consists of testing of this particular hypothesis on a great amount of languages. The concepts called construct and constituent can be interpreted in various ways and they can be substituted by more empirical terms such as phoneme, syllable, morpheme, word, phrase, sentence etc.²⁹

Every text as well as every language consists of plenty of levels. Therefore it is not possible to isolate only two individual levels from the others and examine them exclusively in a separate environment. This approach is not possible because of the fact that except the first and the last level, every other level functions as a superior to the lower level and subordinate to the higher level. In linguistics it means that every language entity is the constituent of the higher superior levels and at the same time it is the construct for subordinate lower levels.³⁰ Therefore the following sequence emerges in every text:

„... ↔ CONSTRUCT/CONSTITUENT ↔ CONSTRUCT/CONSTITUENT ↔ CONSTRUCT/CONSTITUENT ↔ CONSTRUCT/CONSTITUENT ↔ ...“³¹

Before this sequence was derived there was a definition which stated that the length of the component y reflects the monotonously falling function, which reflects the length of the construct x . However, a question rises as to what can be

28 Hřebíček 2002: 59.

29 Altmann 1980: 4.

30 Hřebíček 2002: 59.

31 Ibid.: 59.

considered as a constituent. On the one hand the constituent was defined as a lower unit, for example a clause is a constituent of a sentence, a syllable functions as the closest constituent of a word etc. On the other hand, other units were also considered to be constituents, for example a word was a constituent of a sentence but a phoneme was a constituent of the word etc.³² Therefore the above mentioned sequence came into existence. In this sequence every language unit with the exception of the terminal units functions as a construct of the closest lower language unit and at the same time it is a constituent of the closest higher language unit.

Within his work, Altmann states that the research should consist of the following four main tasks. The first one is testing of the hypotheses on the basis of the greatest amount of relevant data. The second task should be the examination of the MAL's range on the ground of creation of new hypotheses and their following verification. The third task is to specify the curves within the data and to make a connection between the coefficients and other phenomena with regard to a specific language. The last but not the least important task is to integrate the MAL into the system of language laws or at least to develop the principles, which were created within the MAL.³³

Except the MAL which is the tool of statistic linguistics, there are also other methodological problems which need to be addressed. Těšitelová states the definition of the language units as one of the problems. She also suggests that it is of great significance to choose a sample correctly with regard to its suitability and size.³⁴ The definition of language units is very problematic due to the fact that every linguist approaches this task from a different perspective. Therefore the definitions are not generally united and the determinations of language units differ from each other. Těšitelová states that there is a relation between the frequency of a language unit and the length of the text or speech. In general it is accepted that the more frequent the language unit is in the sample, the shorter the sample needs to be and vice versa.³⁵

32 Altmann 1980: 124.

33 Ibid.: 129.

34 Těšitelová 1987: 116.

35 Ibid.: 117.

This chapter was concerned with introducing and getting acquainted with the basic features of the Menzerath–Altmann Law. In the following chapter the main focus lies on the methodologically important definition of the examined language units.

In the following chapters the focus will be placed on the methodologically important definition of the examined language units. Attention will be drawn also to the Chinese language as a language system, mainly its phonetic and rhythmic system which is the subject of this research.

3. Segmentation of a Spoken Text

The purpose of a word text is to create to provide a receiver with an image of various kinds of information delivered in a written form. The tool for denoting and transferring the information is the language which is created by a hierarchic system. All of its elements are parts of communication which is the main task of language. Daneš, who more or less accepts Horalek's understanding of a language system, defines this particular system as an instrument or device used to create the speeches whose language units occur on different levels and these unists pursue this task only indirectly.³⁶ Through the particular processes, language creates a certain structure and on this basis it is possible to generate written texts and verbal speeches.

However, there are a few obstacles which quantitative linguistics has to deal with due to the fact that verbal speech flows in time and it is not possible to analyze it right away. Therefore there is a need to create a recording of a particular speech. In her works, the Czech quantitative linguist Müllerová recommends an older method of text analysis which is bound to the transcription of the cassette recorder recording.³⁷ In today's era linguists do not have to rely on the not entirely high-quality tapes. They have lots of possibilities where to gain high quality acoustic or visual materials for the following analysis, the transcription of which is much simpler and also more precise. According to the definition of Jaklova, verbal speeches are less transparent than the written text because the units of the written text are clearly detached from each other and the speed of perception of the text is not bound to the speed of its creation.³⁸ Even though Jaklová agrees with Müllerová regarding the possibility of generating an acoustic record, nevertheless she still claims that the verbal speech is not as transparent as the written form and it does not allow the possibility of adaptation to the perception of the text on the receiver's end.³⁹

36 Daneš 1999a: 58.

37 Müllerová 1994: 23.

38 Jaklová 1991: 104.

39 Ibid.: 104.

For an analysis of a spoken text the syntactical units which are used for the analysis of written texts are not enough. During the creation of a spoken text a problem appears that the speaker is concentrated more on the content and so as Müllerová states they do not have time for its formal and logical arrangement. Therefore it is not entirely clear where the borders between the sentences are.⁴⁰ In Müllerová's understanding a sentence is defined as a fundamental syntactic unit of a written text. Yet, before we define the language levels used in our research, it is necessary to uncover the basic characteristics and differences of spoken texts.

3.1 THE SPOKEN TEXT

Verbal speeches which can be transcribed are divided into several categories. For example the ones which are prepared in advance and those which are spontaneous, read or non read, monologue, dialogue or a special kind (dialogical monologue) or according to the level of publicity.⁴¹ In many cases these types are not exclusive but they can be mutually combined. Because of the quantitative analysis in the first stage of this research it was inevitable to select a sample which was a non read monologue, it had to be as natural as possible and had to be unprepared which means that it had to be a speech performed as an immediate response to a certain impulse.⁴² Jaklová states that an unprepared text is very different in comparison to a prepared text. The main feature of a text which is not prepared is the simpler syntactic and sentential structure. It is apparent on the moderate slackness of the sentences and there also appears a lot of self-correction and stuttering in the speech.⁴³

The texts produced under various circumstances and belonging to the different above mentioned categories shows an indisputable divergence. In Daneš's understanding these divergences cause the different choice of the language

40 Müllerová 1994: 23.

41 Daneš 1999b: 268.

42 Jaklová 1991: 105.

43 Ibid.: 105.

means and they are also expressed in the manner of speech, differences appear in the grammatical and lexical structure of the text; also the phonetic realization can vary etc. Together with the stylistics one can find apparent differences in the language devices which are literary and standard but according to the level of formality/informality slang, dialect or jargon can be also expected.⁴⁴ Müllerová agrees with him and adds that the syntactic structure of the verbal speeches is influenced by interactive factors and by various and constantly changing dispositions of the speakers in the diverse communicative situations.⁴⁵ She observes a difference between dramatic texts which are spoken but have been prepared as written texts and spontaneous dialogues. These kinds of dialogues are very different from the dramatic dialogues especially in the attributes which are subjected to conditions of text production in natural communication such as self/corrections, unneeded repetition, so called syntactic irregularities etc.⁴⁶

These attributes appear also in samples A and B, therefore it is clear that these speeches were not prepared in advance. During both speeches the speakers could not avoid certain self-corrections or hesitation sounds that are missing in sample C which was additionally chosen for a more clear distinction. Within samples A and B unfinished statements appeared due to the fact that the process of creating ideas and thoughts is very complicated and various problems which influence the speech production can occur. These unfinished sentences originate in the change of the flow of ideas, when speakers re-evaluate the thought that they started and later decided that it was necessary to change the course of their speech. However, the first part of the utterance was already spoken out therefore it stays unfinished. Unlike in the written text, in which all thoughts and ideas are prepared beforehand and are clearly and precisely stated, in the spontaneous unprepared verbal speech these problems with unfinished sentences occur rather often and repeatedly.

Naturally, the speaker is conscious of this problem and he uses his knowledge of grammar and syntax, however as Müllerová states, the main goal of the speaker is to express the content of one's thoughts with the help of these

44 Daneš 1999b: 268.

45 Müllerová 1994: 24.

46 Ibid.: 28.

structures. Therefore from the point of syntactic and grammatical structure the sentence is not that important for the speaker.⁴⁷ This topic will be discussed more in the chapter about the interpretation of the results. However, at this moment it is very important to deal with various approaches to the language unit and their definitions within the verbal speech.

3.2 CHARACTERIZATION OF THE LANGUAGE UNITS

3.2.1 Phoneme

Phoneme is usually defined in literature as an elementary acoustic segment of a speech or as a basic unit of a phonetic description of a language. This definition contains a certain level of generalization of the extremely variable acoustic reality of human speech.⁴⁸ According to Hála phonemes are smooth lines of sounds, which represent the elementary and indivisible units of the speech. However Krčmová disagrees with this statement. For her the minimal articulatory unit is a syllable. As she claims, the phoneme can function as an individual unit in case it is created by the vowel and its sentential function is that of a conjunction. In Czech and Slovak languages these are the conjunctions *a* and *i*. Krčmová continues that an individual consonant cannot be considered a syllable, because when any consonant is pronounced for example during the spelling of a word it is supplemented with an unstressed central vowel.⁴⁹ This means that by adding another phoneme a syllable is created. Therefore it is not possible for a consonant to stay individually with the exception of the above mentioned vowels.

3.2.2 Syllable

In the publication *Úvod do studia jazyka* Černý says that questions of the nature of syllables have not been resolved yet and there are even arguments whether

47 Müllerová 1994: 23.

48 Karlík 2002: 169.

49 Krčmová 2007.

a syllable or a phoneme are the basic unit of speech. Krčmová says that the syllable is the easiest and closest possible articulatory unit of functional elements of speech that is used in communication. She also mentions that linguistics still fails to clearly describe the phonetic essence of a syllable: there always remain a certain number of phoneme combinations that are assessed by users as syllables, but which do not correspond to the theoretical definition. No definition of the principles described in older literature alone is sufficient for understanding the nature of syllable because during the articulation and perception the principles are applied together. In different types of syllables some of the principles come to the fore. The syllable is the smallest real existing articulatory-acoustic unit of the speech.⁵⁰ From the above mentioned definitions it is evident that linguists are divided because of this dual view on this question. The phoneme is the smallest phonetic unit for some of them, for the rest it is a syllable.

Krčmová as well as Daneš agree on the fact that the definition of a syllable as such is a kind of instinctive phenomenon, due to the fact, that children from the earliest childhood can realize it. Moreover it is amplified in them due to the nursery rhymes and various chants. It is obvious that every syllable is not pronounced by an equally strong voice. In Czech language the stress is placed usually on the first syllable, but in other languages this stress can vary. Daneš distinguishes two types of syllables, namely stressed and unstressed syllables.⁵¹ In the Chinese language the distribution of stress is subdued to a strongly sophisticated hierarchy which consists of seven levels. However the Chinese syllable is described later in this chapter.

3.2.3 Stress Unit

According to Krčmová a stress unit is a group of syllables belonging to one verbal accent. It is the same unit as a word, but it can be even greater. To one single stressed syllable several unstressed syllables are attached.⁵² Černý defines a stress unit as follows: “... in terms of stress units the sentence can be (therefore)

50 Karlík 2002: 404.

51 Daneš et al. 1954: 87.

52 Krčmová 2007.

divided into the speech units, these are rhythmic units, that contain one or several words and that are characterized by one main stress.”

About the stress units border Krčmová further claims that the boundary of a stress unit is identical to the boundary of a word, which presents the stress unit ... moreover the stress unit boundary is signaled by a potential pause, except that in some languages no sound changes are made at the stress unit borders within the neutral and careful pronunciation that are usually made inside the stress unit (mutual adaptation of consonants and vowels, assimilation changes).

According to Krčmová a stress unit also sometimes refers to the phonetic word, because it is the basic sound unit of a naturally spoken language. It is clear that between the stress unit and the word of lexical and morphological meaning may be some agreement. A plain language word can always be separated as a single stress unit (auxiliary words have this ability only potentially, if they are pronounced separately, or if they are the core of the message, otherwise they are not accented). The word is a minimal length stress unit. Krčmová further states that the length of a stress unit is determined by language usage and it is connected with the usual word length. Generally speaking, stress units are never too long. In the Czech language they often consist of two to three syllables.

The above definitions of a stress unit are specified mainly for the Czech language. Švarný in his way of segmentation of Chinese text does not use the term stress unit, but uses the term segment instead. He says that segments in the Chinese language correspond, in their length and in a specific semantic integrity, to stress units in our languages. In a fluent speech, however, the stress units are divided from each other almost imperceptibly, and even long sequences of syllables are pronounced “continuously” with no spaces (in the Czech or Slovak languages. According to Švarný the average length of the segments is variable and dependent on the pace of speech; generally it varies between 2.5–4.5 syllables on average. Švarný also points out that in a slower speech the length of stress units, or segments becomes shorter. In the faster speech the length of the segment is longer.⁵³

53 Švarný et al. 1993: 23–25.

For the purposes of this research a group of syllables with at least one accent that is separated from the rest by a pause is considered to be a stress unit. Regarding the two previous language units namely syllables and phonemes, their boundaries do not present a problem. However, linguists constantly argue over the fact which of them is the lowest basic unit of speech.

3.2.4 Statement

The next higher level is in general called a statement. Krčmová characterizes it as follows. She claims that a statement is shorter than an utterance, however, it can also function as the minimal utterance. From the phonetic point of view within the speech it is distinguished by the sentential intonation and by relative pauses. It is therefore the carrier of the intonation devices of the speech modulation.⁵⁴

This definition enables one to use the label *statement* for a verbal text unit even though Alexová considers statement to be a unit of written text and compares it to Müllerová's unit called a content-pragmatic unit.⁵⁵ Alexová supports her proposition with the definition by Hrbáček, in which a statement is characterized as a basic language unit which carries a certain content and meaning and has a discourse function.⁵⁶ Whereas Krčmová's definition is focused mostly at the phonetic side of the statement, other definitions concentrate on its syntactic and semantic structure.

In all of the above mentioned cases a statement is considered to be a fundamental unit of verbal speech yet theories differ sometimes because understanding and precise definitions of a statement vary extensively in literature. Representatives of one of the main stream e.g. Daneš or Mathesius regard a statement and a sentence as equals. Daneš differentiates the two mentioned units in a way that he defines a sentence in wording “a sentence as a unit of a language system” and a statement in his consideration is “a sentence as a part of a language system”.⁵⁷ Mathesius claims that a statement is a sentence which carries an expression of the speaker's immediate

54 Hrbáček 2003.

55 *Linguistics* 2004: 239.

56 *Ibid.*: 239.

57 Daneš 1985: 8.

or current attitude.⁵⁸ Naturally, Daneš adds that within a spoken verbal text, there also appear non sentential statements which do not have a grammatical structure of a sentence, because spontaneous speech is subjected to a variety of outer and inner influences. Nevertheless, these non-sentences are still considered statements because of their expressive value and semantic content.⁵⁹

Daneš characterizes the language as a hierarchical system, which is based on elements systematically ordered on various levels. According to him, the lowest units bear the basic function of a language only partially, because the basic function of a language is communication and this is fulfilled on the level of sentential units. At this point the sentence becomes a real statement and therefore it fulfills the function of the language.⁶⁰ It is obvious that as an equivalent to the term sentence, Daneš also uses terms statement or utterance. Jaklová in her work also considers statement and utterance as equals because during a communication statements follow one another in a certain succession and she calls these statements sentences which supervene in the specific order.⁶¹

However, another linguist named Barthes in his article about the structural analysis of a story comments that linguistics is mostly focused on a sentence as the last unit which can be examined. This is because all other higher units are created by it. Therefore a sentence is considered to be the original unit and a statement is characterized as a higher unit composed by sentences (hence from several lower units).⁶² Barthes works mainly with written texts and as mentioned above, within a written text the definition of a sentence and statement often intersect. Generally a sentence is considered to be a unit of a written text and a statement is its equivalent within a verbal spoken text.

Eventhough it seems that a statement can be distinguished in text only with the help of the phonetic rules described by Krčmová, Daneš mentions the undeniable relationship between the acoustic (or intonation) realization and content

58 Daneš 1985: 8.

59 Ibid.: 8.

60 Daneš et al. 1954: 90.

61 Jaklová 1991: 95.

62 Barthes 2002: 12.

or meaning of the statement. According to him it is possible to distinguish stressed and unstressed parts that are connected to intonation cadency. Unlike the emphatic (or stressed) part, the unemphatic part can be omitted.⁶³ Müllerová is concerned with this question as well and she mentions the differences between written and spoken texts. The number of unfinished statements is much higher in spoken texts, therefore it is not possible to reliably follow the intonation signalization when making the decision as to whether a certain part is or is not the final part of this particular segment of speech.⁶⁴ During the speech the speaker sometimes continues in the interlocking the idea or changes it during the process without a clear intonation indication of the change and therefore there a problem arises with the segmentation of the given speech. In this particular case it is not possible to rely only on the phonetic aspect, but it is necessary to also include the syntactic and semantic parts of linguistics in order to divide two separate independent statements which were phonetically mingled into one.

On this issue Müllerová suggests that even the relatively long parts of a text (especially a monologue) are sometimes divided into statements with an unfinished intonation cadency, even though their syntactic and semantic structure enables the speaker to use a final intonation and so to divide the text into clear individual units – statements.⁶⁵ This procedure was applied within the segmentation of the text necessary for the research described in the main part of this book. The decision taken on this matter is: the phonetic aspect is the superior criterion for the segmentation of a text however on this particular level it is complemented by syntactic and semantic aspects as well. This means that longer chunks of text were divided into lower units, which are called statements, with respect to the content of the given statement.

3.2.5 Utterance

The last language unit which is examined in the research is called utterance. This unit is characterized mainly by the compact content, where the individual

63 Daneš 1954: 67.

64 Müllerová 1994: 41.

65 Ibid.: 41–42.

statements interlock with each other and they are parts of a higher unit. An utterance is characterized in literature as a speech unit which is separated from another utterance by two absolute pauses. It is also connected by the individual speaker and content integrity.⁶⁶ The term utterance (in Czech it is *promluva*) was first used and defined in the 1930s by V. Skalička⁶⁷. In his contribution to a collective-volume, Hrbáček introduces a brief summary of the various definitions of an utterance. He says that none of them is complete, because every one of them focuses only on a specific part of the complex definition. He summarizes this information and he himself defines an utterance to be a language unit which is created by the unity of the author, content and the dominant function.⁶⁸

Within the research described in this book the utterances were defined as single entries between the interrupted video clips, because in every individual entry the speaker focused on an individual thematically compact speech. Considering that the statement as such does not exceed the form of a sentence, thematically linked statements created an individual whole which can be labeled as an utterance.

The characteristic feature of every utterance is the thematic coherence and interlocking of one statement with another which complement each other and therefore create a compact whole unit. In this case the process of segmentation was simplified by dividing the individual utterances within the music program using video clips. Therefore the speech of each performer was divided into several content integrated parts.

The following chapter deals with the characteristics of the individual language units within the Chinese language. It is necessary to apply the above stated definition on the Chinese language and to describe the obvious differences of the structure and textual units which differ from the concepts of the European linguistics. Therefore in the following chapter the focus will be on the divergence between the above stated definitions and the ones which can be applied

66 Krčmová 2007.

67 Hrbáček 2003.

68 Ibid.

to the Chinese language and on the inevitable conclusive selection of the definition according to which this research was conducted.

3.3 LANGUAGE LEVELS WITHIN CHINESE LANGUAGE

Despite the fact that the above mentioned definitions are used in linguistics mostly with the connection to the European languages, there is an assumption that these definitions can also be applied to the Asian languages, the Chinese language in particular. In this language it is usually necessary to divide the language system into several smaller units. The main problem is, however, the variability and ambiguity of these units, because the concept of a word is very questionable in Chinese.

One of the very influential linguists in the Czech Republic who was concerned with the Chinese language, its phonetics and structure was Professor Švarný. As a result of his experiments and researches on the Chinese language, he divided compound and simple *sentences* to smaller units the so-called *kolóns* (the Singular form being *kolón*). *Kolóns*, if they are not monosyllabic or very short, are divided into smaller groups of syllables according to their lexical composition and grammatical structures. These sequences may remain as separated units, *segments*⁶⁹, or they mutually combine and unite more closely, producing/forming more complex segments.⁷⁰ The next lower unit is a *syllable* which consists of the lowest unit *phoneme*.

3.3.1 Kolón

Švarný characterizes *kolóns* as comprehensive semantic units with a complete rhythmic structure ended by a pause lasting for a fraction of up to $\frac{3}{4}$ of sec. or more and characterized by the unfinished raising modification of the last tonic syllable. The pauses that function as *kolón* borders mostly appear in the compound sentences at the beginning and end of the individual clauses (though not

69 The term *binára* appears in the literature and stands for the two-syllable-segment. (Švarný et al. 1993)

70 Švarný et al. 1993: 23–25.

always). They also often appear after preverbal nominal sentence members (such as subject, adverbial of time) and after linking prepositional verbs with the subject. They also appear between the individual nominal members of the multiple sentence members. Less often they occur between predicate (or predicative complex) and post verbal nominal members (occasionally when one or both complexes are rather long).⁷¹ According to Švarný, the pace of speech does not influence the length of the *kolón*, however, he claims that within the sentences they are generally longer.⁷²

3.3.2 Segment

The lower language level which Švarný uses is called a segment. It consists of a group of syllables where at least one has to carry a rhythmical stress, in Švarný's terminology it is *iktus*. The rhythm of the speech is dependent on the linking and pronouncing of the segments which are variable and their length changes in accordance with the pace of the speech.⁷³ Due to the fact that the Chinese language is a tonic language, which means that the meaning is distinguished by the tone, this tendency is obvious in the speech itself. However, unlike the individually pronounced syllable, in a sentence or during the speech it is not possible to realize tones within every syllable. Švarný developed a hierarchical system which consists of several levels of prominence for example syllables with the emphasized prominence, full tonic syllables, reduced weakened tonic syllables and atonic syllables.⁷⁴

3.3.3 Syllable

A Chinese syllable is considered to be the essential phonetic unit of the Chinese language. It consists of three parts, namely the initial, the final and the tone.⁷⁵ The Chinese language creates syllables by the combination of 21 initials and 36

71 Švarný et al. 1993: 24.

72 Ibid.: 24.

73 Ibid.: 24.

74 Ibid.: 25.

75 Trísková 1999: 8.

finals. As Třísková states, Chinese does not distinguish voiced and voiceless consonants, it divides the consonants as aspirated and unaspirated. The final functions as the rest of the syllable and is created either by the individual vowel or by a combination of several vowels or there is the last possibility by a combination of a vowel and a nasal.⁷⁶ In general linguistics a syllable is considered to be the simplest and closest articulatory unit of the functional aspects of the speech which corresponds to the communication.⁷⁷ As Krčmová states, syllables are divided into open syllables, which end with a vowel, and closed syllables, which end with a consonant. In Chinese open syllables dominate, what means that the only closed syllables are those which end with the nasals {n} and {ng}. Chinese tolerates only the two mentioned consonants in the final position, others can appear only in the position of the initial syllable.

3.3.4 Differences in the Terminology

Syllables and phonemes are usually not as disputable and questionable as other language units. When it comes to the higher units the definitions and terminology varies distinctively. Jiangfen Cao states in his work that in Chinese the higher units are a prosodic word and a prosodic phrase. Like Švarný he also claims that Chinese syllables have a tendency to form groups of two or three-syllable units. These units are called segments according to Švarný and according to Cao they are parts of a prosodic word and they form the stepping stone of the sentential structure. The prosodic word mostly consists of two or three syllables and rarely a monosyllabic prosodic word may also appear.⁷⁸ In case more of two-or-three-syllable units cluster together, they create a prosodic phrase.⁷⁹ A prosodic phrase is sometimes referred to as a phonemic clause or a phonological phrase. It is very difficult to define, even though it is considered to be the most often and the most important rhythmical unit of speech in Chinese.⁸⁰

76 Třísková 1999: 9–11.

77 Krčmová 2007.

78 Cao 2000: 9.

79 Cao 2001: 24.

80 Cao 2000: 10.

3.4 RHYTHM OF THE SPEECH

Spoken Chinese is deeply influenced by the rhythm which participates on the general structure of the sentence and speech itself. Rhythmical segmentation is very important due to the fact that the stress and the rhythm are mutually bound and cooperate in order to create an individual speech. In Chinese the rhythm is very variable and it can depend on several factors. As Cao claims, the way, how the duration of some rhythmical units manifests, is extremely dependent on the content and context of the speech. Besides it is also influenced by the changes in the paralinguistic information, for example by an emphasis of a certain aspect or by the addition of the emphasis in the particular sentence by the speaker.⁸¹ The rhythm and the pace of the speech influence the realization of the specific speech to a great extent. Švarný also states that the average length of the segment is variable and it is massively influenced by the pace of the speech. The speech and its rhythm are created by the compact pronouncing and linking of the segments into the kolóns which are consequently linked into whole sentences.

The length of the segment might oscillate on the basis of the speed at which the speaker is speaking. Despite the term stress, Švarný uses the term *iktus* which means that the syllable with an *iktus* is the one which is stressed, it is more prominent and the tone within this syllable is realized. The syllable without an *iktus* is weakened which means that also its tone is either not realized at all or it is weakened as well. During his research Švarný came to the conclusion that in a slower speech the segments with one syllable with an *iktus* prevailed. In a faster speech the segments are linked closer together on the base of particular grammar rules. This means that they create a rhythmical unit in which several syllables with an *iktus* are present.⁸² The length of the segment is dependent on the pace of the speech, therefore it is possible to talk about a linear dependency in which the faster the pace of the speech is, the longer the individual segments are. Švarný estimated the average length of the syllable to be between 2,5–4,5 phonemes. Unlike him Cao claims that the most important

81 Cao 2001: 24.

82 Švarný et al. 1993: 24.

structural unit which influences the production and perception of the speech is a prosodic phrase. Its length varies as well as the length of the segment in accordance with the tempo of the speech. However, this variety seems to be limited to the average of 7 syllables plus minus two syllables.⁸³ Regardless of the differences of Švarný's and Cao's use of terminology and the average length of the basic structural unit in Chinese, they both agree that the speed of the speech as well as its style have the ability to influence the length of the individual units within the speech. Rhythm mirrors a temporary distribution of the linguistic information and the strength of the relationship between the speech units. In general it is said that the closer the relationship is, the more connected the two or more units are. They also belong to the same rhythmical category. And the other way round, the looser the relationship between the units is, the more divided into the several rhythmical categories these units are.⁸⁴

3.5 THE FINAL DEFINITION OF THE LANGUAGE UNITS

At the beginning of this research the stress unit which would meet Cao's definition was selected as the middle and the basic unit. Eventhough Švarný compares his segment to the stress unit these two units do not entirely correspond. The stress unit was defined as a unit which stands between the two units by Professor Švarný, namely the segment and *kolón*. It is defined as a rhythmical unit which is influenced by the pace of the speech and is built up by the syllables grouped together into smaller groups. Moreover the stress unit also consists of at least one lexical stress whereas the syllable group with the lexical stress is separated from another group by relative pauses.

The next higher language level is called a statement, which is measured as a number of its stress units, which are measured in an average number of the syllables. For this research a statement was defined according to the above mentioned definitions which are based on the Czech linguistics but are applicable to the Chinese language as well. Eventhough the research was concerned

83 Cao 2001: 25.

84 Cao 2000: 10.

with the language from a phonetic point of view on this level it was not possible to detach the individual units (statements) from one another without the usage of syntactic and semantic criteria. The statement was therefore defined as a language unit which is built up by one or more stress units, is separated by pauses in the speech, has a compact syntactic structure and its parts are semantically bound together.

An utterance was defined as a speech unit which stands between two absolute pauses. It is unified by the content cohesion, coherence and figure of the one speaker. The length of the utterance is potentially unrestricted.⁸⁵ Within the segmentation of samples A and B the absolute pauses were created by musical videos which separated the individual speeches of both speakers. This level on which the relationship between the utterance and the statement was examined, was tested only on samples A and B because the sample C was added later in order to provide contrastive material for the lower levels. The next chapter presents all the results of this particular research alongside with the graphs, tables and also the commentary and interpretation of the achieved outcomes.

4. Variety in Transcriptions

It is general knowledge that the written form of the Chinese language is based on a system of characters. In its spoken form there is a certain syllabic pronunciation assigned to every Chinese character. Therefore, unlike European languages which use only a limited number of phonemes to create an unlimited number of syllables, the spoken Chinese is limited by both the phonemes and the restricted number of syllables. The Chinese language disposes of 405 syllables which can be combined⁸⁶, but a new syllable can not be added to the existing set of syllables. In order to analyze the spoken Chinese, it is impossible to do so without some kind of transcription. In this case there are more options available. In the next section these options will be introduced, compared and the most suitable one will be chosen. In the next section we will introduce and compare these option and also discuss which we decided would be the best.

Regarding the selection of an appropriate transcription, there are four possibilities which need to be subdued to examination. Among these options are Wade-Giles transcription created in England, the phonetic alphabet IPA (The International Phonetic Alphabet), the Chinese transcription Hanyu Pinyin Fang'an 汉语拼音方案⁸⁷ and a Czech transcription created by prof. Oldřich Švarný. Due to the fact that the subject matter of the linguistic research was concerned with the number of phonemes and it was necessary to work with the quantity and not the quality of the phonemes, the IPA proved to be inadequate. The IPA is a standardized international phonetic alphabet which is concerned with the denotation of speech sounds. Its precise form and specific symbols used in it can be found in Martin Dokoupil's handbook.⁸⁸

The next available transcription of the spoken Chinese is known as Wade-Giles transcription. After a more precise examination we found it to be ineffective as well. Within the research there was a necessity to count single

86 Kane 2006: 139.

87 Tříšková 1999: 4.

88 Dokoupil 2012: 135.

pronounced phonemes as precisely as possible, however this transcription failed to achieve the required precision. Due to this fact Wade-Giles transcription as well as the IPA would cause a slowdown of the process of transcription and its following quantification. According to this transcription the number of letters used in the written form of a syllable does not correspond to the number of realized phonemes in the spoken form of a syllable. This attribute would complicate the process of quantifying and processing the data and could eventually result in an increased number of mistakes.

The last two options that remained are the Czech transcription created by prof. Oldřich Švarný and the official standard Chinese transcription *pinyin*. Due to the fact that both transcriptions seem to be valid to be used for purposes of quantification, it became necessary to examine both transcriptions in detail. The purpose of this examination was to prove the efficiency of both transcriptions and to select the more suitable one. In the next section we describe the comparison in detail.

4.1 THE CONTRAST BETWEEN ZHE {ČĚ}, SHE {ŠĚ} VS. ZHI {Č' }, SHI {Š' }⁸⁹

The Chinese language uses mostly open syllables (ones which end with a vowel not a consonant). However, not every syllable is presented in the way it is transcribed with the Latin letters. If we combine pinyin letters {zh}, {sh} and {che} with vowels either {i} or {e}, a problem arises. These two vowels are not produced one as a high front and other as a middle front vowel, both are central vowels yet the letter {e} is pronounced as an unstressed central vowel and {i} is pronounced as a central stressed vowel. Nevertheless in oral presentation for example within the syllables {zhe} or {zhi}, there are only two phonemes produced in both cases. Whereas the pinyin transcription captures these two-phoneme syllables using three letters, the Czech transcription uses only two letters or a letter and an apostrophe which is for the purposes of quantification more accurate and more

89 We decided to indicate the contrast between the official Chinese transcription called pinyin and the Czech transcription, which is in brackets, and to justify the choice of the Czech transcription in a clear and quantitative way.

suitable when processing the samples. Regarding the apostrophe, the decision was made to consider it as an individual sign with the equal significance as a letter has, which means that the Chinese syllables $\{zhe\}$ and $\{zhi\}$ are in the Czech transcription transcribed as $\{č'\}$ and $\{čé\}$. These syllables differ in the quality of the vowel realization. This is also the case of a group of other syllables namely $\{chi\}$, $\{che\}$, $\{she\}$, $\{shi\}$. Since this issue does not obstruct the main objective of this study, we decided to count all of these syllables as having two phonemes.

4.2 INITIAL RETROFLEX CONSONANTS

The Chinese language has four retroflex initials namely $\{sh\}$, $\{zh\}$, $\{ch\}$ and $\{r\}$. There is a problem with the pinyin transcription of the two first retroflex initial $\{sh\}$ and $\{zh\}$. These are both written with two letters, although they reflect only one phoneme. This phenomenon is more clearly visible within the Czech transcription, which uses only one letter $\{š\}$, $\{č\}$ to transcribe the sound. For a better demonstration it can be shown on the two contrastive syllables. In pinyin syllables $\{she\}$ and $\{shi\}$ both are pronounced only by two phonemes, but consist of three letters. In the Czech transcription these particular syllables are transcribed as $\{še\}$ and $\{š'$ which expresses exactly the number of phonemes realized during pronouncing. As stated before, the apostrophe is counted as a grapheme representing one phoneme. It is, therefore, apparent that in this case the Czech transcription is more suitable as well.

4.3 INITIAL STOP CONSONANTS AND ASPIRATION

Unlike the Czech or English languages, Chinese does not distinguish voiced or voiceless consonants. But it does use aspirated and unaspirated consonants, which are transcribed using contrastive letters expressing voiced and voiceless consonants. Therefore the pinyin uses voiced consonants $\{b\}$, $\{d\}$, $\{g\}$ for transcribing voiceless phonemes $/p/$, $/t/$, $/k/$ and voiceless consonants $\{p\}$, $\{t\}$, $\{k\}$ are used for depicting aspirated voiceless phonemes $/pch/$, $/tch/$, $/kch/$. The Czech transcription, however, uses voiceless consonants to depict voiceless

phonemes and adds the letter {ch} in order to indicate aspiration, e.g. unaspirated {ban}={pan} vs. aspirated {pan}={pchan}. The letter *ch* is in this quantification regarded as one letter based on the general discourse of the Czech language. It is because the letter {ch} is called a digraph and counts as one single letter for the purposes of this research, due to the fact that the research was concerned with the spoken representation and this letter represents only one phoneme.

4.4 INITIAL PALATAL CONSONANT Q

In Chinese there are three palatal consonants represented in the pinyin by the letters {j}, {q} and {y}. However, the problematic letter appears to be only the letter {q}. This initial consonant is the only exception where the pinyin transcription is more suitable than the Czech transcription. In the Czech language the letter {q} stands for the sound /kw/ which is by no means the case also in Chinese. In the pinyin the letter {q} stands for a single palatal phoneme, which does not exist in Czech. Therefore, in this case it is more suitable to use the pinyin because the Czech transcription uses two letters {č} and {ch} to transcribe this phoneme. Because this phoneme represented in the pinyin by the letter {q} does not exist in the Czech language, there was a need to transcribe it in the way that responds as closely as possible to the original Chinese phoneme. Prof. Švarný decided to use the letters {č} and {ch} known in Czech to transcribe this unusual Chinese sound. However, this causes a problem when dealing with the quantitative research, because in a pinyin syllable e.g. {qu} two letters are used to stand for two phonemes. In Czech, however, the same syllable is transcribed as {čchü} that means three letters stand for the two phonemes. In this case the Czech transcription proved to be not as suitable as the pinyin.

4.5 TRIPHTONGS /IOU/, /UEI/

The last problem concerning the transcription emerged in the case of the phonetic triphthongs transcribed in the pinyin as {ui} and {iu}, which are used

in the final position of a syllable. This means that at the end of a certain syllable there are only two letters used to depict the sounds in the pinyin, whereas there are three sounds pronounced. In the case of {ui} an additional phoneme /e/ is inserted between the two phonemes therefore the realization is /uei/. Practically, as the example shows, the pinyin syllable {*dui*} transcribed into Czech as {*tuej*} is in fact pronounced as /tuei/. In the case of {iu} the additional sound /o/ is inserted therefore here the realization is /iou/. An applicable example can be the pinyin syllable {*liu*} transcribed into the Czech transcription as {*liou*} which is pronounced as /liou/. As manifested on the two syllables, the Czech transcription uses three letters to depict particular three sounds unlike the Chinese pinyin which uses only two letters, therefore also in this case it was proved that the Czech transcription is more suitable.

TABLE 1

The visual summary of the phonetic problems:

Problematic Aspect	Pinyin (number of letters/ number of phonemes)	Czech Transcription (number of letters/ number of phonemes)
Final position of {i} vs. {e}	zhi (3/2) zhe (3/2)	č' (2/2) če (2/2)
Initial aspirated consonants	ban (3/3) pan (3/4)	pan (3/3) pchan (4/4)
Initial affricate consonants	zhe (3/2)	če (2/2)
Initial consonant {q}	qu (2/2)	čchü (3/2)
Triphthongs /iou/, / uei/	liu (3/4) dui (3/4)	liou (4/4) tuej (4/4)

As it is apparent from the arguments above, cf. Table 1, out of the five transcription differences there are four in favor of the Czech transcription, whereas only one is in favor of the pinyin. For the purposes of quantification it was therefore agreed to use the Czech transcription because of its higher suitability in quantifying the samples for the following analysis.

5. Demonstration of Results and the Following Discussion

The following chapter is dedicated to the analysis of the results, and to the presentation of tables and graphs with a relevant commentary. Another task of this chapter is to consider possible causes and explanations of the results.

First, we are going to present the results obtained in the initial stage of the research and continue with the results from the second stage. These are the results that have been obtained by applying the rules of MAL on the audio tracks in *The Grammar of Spoken Chinese in Examples*. Within each language level, at first tables are presented followed by figures created in the R program and in Microsoft Excel. Below the charts our results are analyzed and commented. The last part of this chapter belongs to a discussion about the obtained results.

The results are presented gradually from the highest language level consisting of an utterance (construct, its length is measured in the number of statements) and a statement (constituent, its length is measured in the average number of stress units), followed by the language level consisting of a statement (construct, its length is measured in the number of stress units) and a stress unit (constituent, its length is measured in the average number of syllables) to the lowest language level consisting of a stress unit (construct, its length is measured in the number of syllables) and a syllable (constituent, its length is measured in the average number of phonemes).

There are three different samples which were segmented in order to provide some useful material and on which these relationships were examined. The list of samples is as follows: sample A is a recording produced by a female pop singer, sample B is a recording produced by a male rapper and sample C is a recording extracted from the teaching material created by prof. Oldřich Švarný. Within samples B and C we needed to work with the two versions of segmentation, due to the facts mentioned below. Each sample is marked by capital letter and in case of several versions of segmentation this fact is specified by a corresponding number.

The segmentation of sample A was processed without any difficulties therefore there was no need to approach to the two different segmentations. However, the situation within samples B and C was not so clear. This resulted in two diverse ways of segmentation, the results of which will subsequently be subdued to an analysis and a mutual comparison. The rapper who is the main speaker in sample B sometimes uses English words during his speech. This could have resulted in a certain divergence within level L3 (you can find more about the divergence in the corresponding section). Besides that the speaker sometimes becomes very emotional and the pace of his speech is promptly quickened. Moreover he inserts a lot of spontaneous vulgar words, expressions or phrases into his speech. These vulgarisms and other semantically empty words or phrases are used as a kind of insertion in order to provide the speaker with more time to think about his next sentences. Another reason for using a relatively great amount of vulgarisms might be that it undeniably belongs to the style of the rapper social group. If this is the case and not the emotionality and personality of the speaker, not a lot of attention should be paid to this speech variation, due to the fact that it is only a natural speech manifestation of this particular speaker.

The two versions were processed because there is a need to discover, if the exclusion of the vulgarisms and semantically empty words and phrases influences the agreement with the MAL. If the outcome is positive, then another question arises – to what extent will the agreement be influenced by the different segmentation. The original hypothesis states that within this particular level, the agreement with the MAL will be demonstrated. However, in the process of segmentation of this sample another hypothesis arose, which would be worth testing. It was the proposition that the rhythmically aggressive music style, which rap undoubtedly is, can influence and what is more can also interfere with the natural flow and rhythm of speech. In this case the research is concerned with the rhythm of the Chinese language.

In sample B version 1, the vulgar and semantically empty expressions and phrases were attached to the previous statement during the process of segmentation and were considered one unit. Within version 2 of the same sample

we performed an experiment. This means that during the second segmentation of sample B vulgar and semantically empty expressions and phrases were set apart and every one of them stood as a single independent unit, in this case an individual statement. The truth is, however, that this kind of segmentation is applied only in the case when a particular vulgarism does not function as a complement or an adjunct to the previous or following sentence member. From the graphs below it is apparent that the differences within the segmentation have an expressive influence on the agreement with the MAL. Nevertheless this topic will be discussed more profoundly later in the text.

Concerning sample C it was also necessary to implement two different ways of segmentation that led to two different versions. However the reason for this action was dissimilar to those regarding sample B. Within sample C version 1 the segmentation was achieved in exactly the same way as it was during the segmenting of samples A and B. This means that on level L2 in sample C the same units as within samples A and B were used. These units namely are a statement measured in the number of its stress units, which are measured in an average number of their syllables.

Professor Švarný, part of whose text is used in sample C, applied a different segmentation and terminology. Therefore we decided to make another segmentation using his terminology and rules. This means that within sample C version 2 the construct is called *kolón* which is measured as a number of its segments, which are measured as the average number of their syllables. Even though prof. Švarný accepts a certain similarity between his segment and the generally used term stress unit⁹⁰ which means that a statement should be equal to Švarný's term *kolón* in the first phase of the research, the numerical value of stress units stands between the numerical expressions of the segment and *kolón*.

Sample A and B both contain a relatively fast speech therefore the stress unit is lengthened. This results in a diminution of the difference between a stress unit and a *kolón*, due to the particular places, where these two language units

90 Švarný et al. 1993: 57.

(within samples A and B) overlap. However, sample C originates from the set of sentences created for the teaching and learning purposes, therefore the pace of the speech is adjusted to this aim. On this basis we can claim that the segmentation by prof. Švarný is influenced by these circumstances. Nevertheless the comparison of both segmentations of the same sample C might be viewed as an interesting experiment. As it was mentioned before, the original hypothesis states that the agreement with the MAL will be manifested on the spoken Chinese on all language levels.

5.1 LANGUAGE LEVEL L1: UTTERANCE MEASURED AS A NUMBER OF ITS STATEMENTS WHICH ARE MEASURED AS AN AVERAGE NUMBER OF THEIR STRESS UNITS

The relationship between construct – utterance, and constituent – statement, was studied at the highest language level. Whereas at the higher level a statement functions as a constituent, on the next lower language level a statement at the same time functions as a construct to its constituent – a stress unit. The distinctive feature of the highest language level was the low number of constructs, which might have probably affected the final results. However, this issue is discussed to a greater extent below in the discussion of our results.

TABLE 2

L1, sample A: construct x_1 – the length of the utterance (as a number of its statements), z_1 – frequency of constructs, constituents y_1 – the average lengths of the statements (as a number of their stress units)

Sample A		
x_1	z_1	y_1
2	2	3.0000
4	1	6.0000

Sample A		
x_1	z_1	y_1
7	1	5.2857
10	1	2.3000
12	1	4.3333
15	1	5.3333
19	1	4.3158
20	1	2.9000
21	1	3.7143
39	1	2.8462

TABLE 3

L1, sample B, version 1: construct x_1 – the length of the utterance (as a number of its statements), z_1 – frequency of constructs, constituents y_1 – the average lengths of the statements (as a number of their stress units)

Sample B, version 1		
x_1	z_1	y_1
1	3	3
2	1	4.5
3	4	3
4	1	5.25
5	1	5.4
7	1	6
8	1	4.625
12	2	4125
13	1	5.1539

TABLE 4

L1, sample B, version 2: construct x_1 – the length of the utterance (as a number of its statements), z_1 – frequency of constructs, constituents y_1 – the average lengths of the statements (as a number of their stress units)

Sample B, version 2		
x_1	z_1	y_1
1	1	5.0000
2	3	2.1667
3	1	3.3333
4	3	2.1667
5	2	4.8000
8	1	5.2500
11	1	3.3636
15	1	3.2667
27	1	1.8889
29	1	5.0000

On this particular level within samples A and B the number of statements in the construct represented by the utterance varies from 1–29. This variety is relatively broad nevertheless there appears another distinct problem, which complicates obtaining of precise and valid results.

In Tables 2, 3 and 4 we can observe a certain feature which is characteristic for each one of the samples on this particular level. The frequency of constructs is extremely low. Due to the fact that this is the highest level, it is very common that gaining sufficient number of constructs on the highest level is very difficult. From Tables 2, 3 and 4 it is also obvious that the number of constructs in each sample does not exceed number 15. Therefore the results on this level cannot be considered to be fully valid. However this problem is analyzed later in the discussion of the results. The visual representations of these calculations

are presented in the graphs below. The graphs were created with the use of software R program. We used this program to generate a relevant curve out of our measured data and to make a visualization of them. This curve is used for a better interpretation of particular graphs and data within their relationship with the MAL.

From Figure 1.Ar, 1.B1r, and 1.B2r it can be observed that on the highest language level consisting of an utterance (construct, its length is measured in the number of statements) and a statement (constituent, its length is measured in the average number of stress units) only a slight downward tendency is visible in cases 1.Ar and 1.B2r in the case of 1.B1r a downward tendency is not present at all, on the contrary, only an increasing tendency appeared.

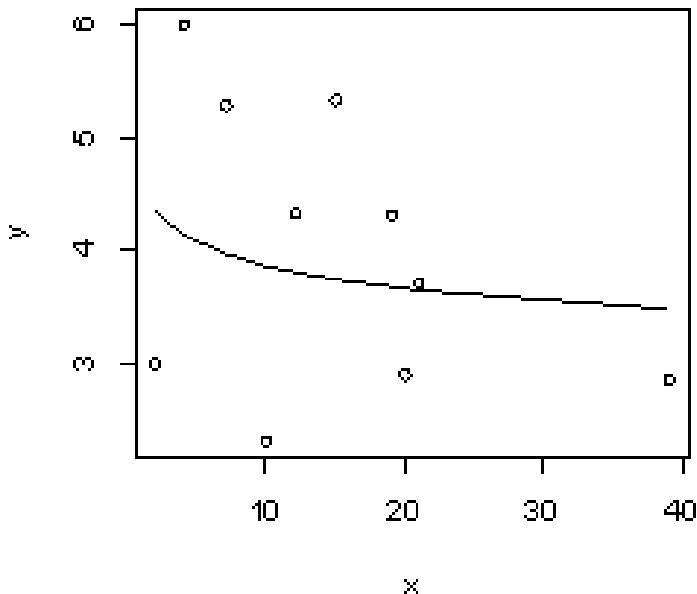


FIGURE 1.AR
L1 utterance vs. statement – sample A: visualization of the data set presented in Table 2, using the R program ⁹¹

91 Schusterová – Ščigulinská et al. 2013: 8.

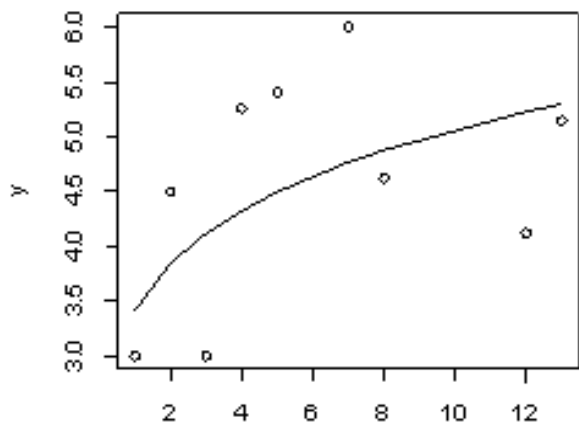


FIGURE 1.B1R L1 utterance vs. statement – sample B, version 1: visualization of the data set presented in Table 3 using the R program ⁹²

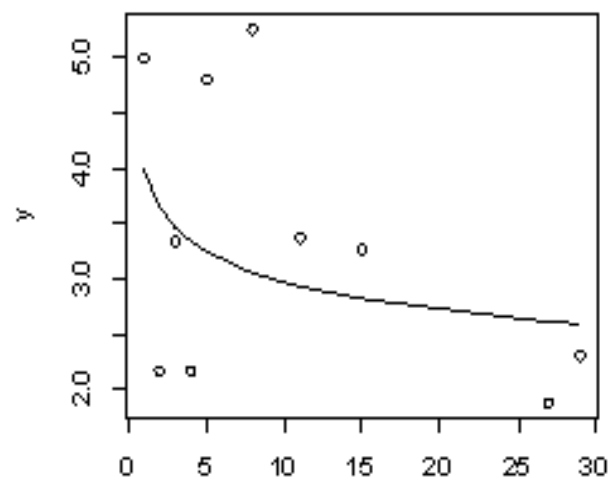


FIGURE 1.B2R L1 utterance vs. statement – sample B, version 2 visualization of the data set presented in Table 4 using the R program ⁹³

⁹² Schusterová – Ščigulinská et al. 2013: 9.

⁹³ Ibid.: 9.

The table below presents all the numeral values concerning the coefficients of determination and parameter ^b as well.

TABLE 5
 Sample A, Sample B – Version 1, 2: Parameters ^b and the coefficients of determination R² for the mathematical model related to the observations presented in Table 2, 3, 4⁹⁴

		Parameter ^b	Coefficient of determination R ² (%)
Sample A		0.0748	4.16
Sample B	Version 1	-0.1717	34.1
	Version 2	0.1279	13.97

For sample B version 1 the negative value of parameter ^b occurred. From the data and figures above, it is obvious that on the highest language level an agreement the MAL did not occur. There might be several reasons for such results.

One of them is the low frequency of constructs at this level. None of the samples disposes/consists of more than 20 constructs. Sample A includes 11 constructs, sample B1 includes 15 constructs and sample B2 also includes 15 constructs. However, a problem of a similar nature would occur at the highest language level in most of the experiments due to the difficulty to find a text that would consist of a high number of utterances. It is extremely rare in the spoken text. In this case, it is especially difficult to find a text that would only be produced by one speaker. Providing such a text is found, another problem emerges. Such a speech is usually not performed spontaneously or at least it is prepared in advance or learned by heart. For the research as such, however, it is inevitable for the spoken text to be spontaneous.

As it was suggested above, the samples that were chosen met the criteria for the other lower language levels sufficiently. This means that for the highest

94 Schusterová – Ščigulinská et al. 2013: 10.

language level these samples were not quite adequately chosen, on the other hand, they were the most suitable samples from those that were available; and for a lower language level they were sufficient. Another possible reason could lie in the possibly slightly inaccurate determination of the linguistic units on this language level, or rather in the omission of one of the units. As it was already mentioned there are many different definitions regarding the concepts of a statement and an utterance in linguistics. According to some definitions the boundaries between a statement and an utterance might overlap. One statement may even be an individual utterance. It is therefore quite possible that if a level is added between a statement and an utterance, the results could be entirely different. During this research it emerged that in a future research it is necessary to provide more language units both at higher and at lower language levels.

Another reason, which seems to be likely and which is important to mention, is the merger of syntactic and phonetic criteria while determining the borders and also the lack of precisely formed definitions of a statement and an utterance. There is yet another reason for the very low agreement with the MAL that is of a different kind than the previous ones. As it was discussed in the description of samples, the music program, where the chosen samples originated in, chops and edits the samples to meet the needs of its creators. These artificial interventions might certainly have affected the final results of our calculations applied right to the samples such as samples A and B.

Given the results of the highest language level, it is obvious that this level deserves a further independent research. The agreement with the MAL did not occur on this particular language level on any of the samples. One can only suppose what caused such results. However, we believe that it is necessary to continue with a further research on this level. Looking at Figures 1.Ar, 1.B1r and 1.B2r, it is apparent that the values of individual observations are chaotically distributed and hardly any particular tendency can be observed. In the future research, it is necessary to choose new, completely different samples and to increase the number of examined language units and levels.

5.2 LANGUAGE LEVEL L2: STATEMENT MEASURED IN THE NUMBER OF STRESS UNITS, WHICH ARE MEASURED AS AN AVERAGE NUMBER OF THEIR SYLLABLES

This level is concerned with the mutual relationship of the construct, in this case a statement, and the constituent, in this case a stress unit which also bears the function of a construct towards its constituent – syllable. The stress unit is measured as an average number of its syllables.

For a better orientation all charts and graphs below are formally structured according to a predetermined structure. The first position is occupied by tables with the numeral attributes of the research, which are specified by a corresponding label so that it is clear which numeral attributes belongs to which particular sample and which particular version. The charts are followed by a sequence of graphs beginning with sample A followed by two versions of sample B. The sequence is ended with two versions of sample C. The graphs are organized into pairs. The first graph of the pair is created by the Windows Office Excel program and this is followed by the corresponding second graph created by the R program.

TABLE 6
L2: constructs x_2 – the length of the statement (as a number of its stress units), z_2 – the frequency of constructs, constituents y_2 – the average length of the stress unit (as a number of the syllables), sample A.

Sample A		
x_2	z_2	y_2
1	20	9.3000
2	39	6.7308
3	26	5.7949
4	21	6.5238
5	14	5.2571
6	13	4.7051

Sample A		
x_2	z_2	y_2
7	7	4.8980
8	4	4.8125
9	2	5.7778
10	1	3.5000
11	2	3.6364
13	2	4.9231

TABLE 7

L2: constructs x_2 – the length of the statement (as a number of its stress units), z_2 – the frequency of constructs, constituents y_2 – the average length of the stress unit (as a number of the syllables) sample B, version 1 a 2.

x_2	Sample B, version 1		Sample B, version 2	
	z_2	y_2	z_2	y_2
1	2	4.5000	37	4.2162
2	15	4.8667	30	4.3833
3	15	4.5556	18	4.4259
4	17	4.2059	17	4.5735
5	5	4.6400	5	4.6400
6	10	4.0500	4	4.0000
7	3	4.1905	4	3.8929
8	1	4.6250	–	–
9	6	3.9815	3	4.3704
10	–	–	1	3.7000
11	1	3.5455	–	–
12	1	5.3333	–	–
15	1	3.2667	1	3.3333

TABLE 8

L2: constructs x_2 – the length of the statement (as a number of its stress units), z_2 – the frequency of constructs, constituents y_2 – the average length of the stress unit (as a number of the syllables), sample C, version 1.

Sample C, version 1		
x_2	z_2	y_2
1	48	5.6667
2	120	5.3875
3	86	5.1395
4	18	4.5278
5	4	4.8500

TABLE 9

L2: constructs x_2 – the length of the *kolón* (as a number of its segments), z_2 – the frequency of constructs, constituents y_2 – the average length of the segment (as a number of the syllables), sample C, version 2.

Sample C, version 2		
x_2	z_2	y_2
1	171	3.4221
2	290	2.8638
3	105	2.7302
4	23	2.5870
5	1	2.6000

On this particular level concerning samples A and B the length of the construct (namely statement) shows a variety within the interval of 1–15 stress units

in one statement. In the case of sample C, in both versions the interval states maximum of 5 stress units or segments within the particular construct. This slight difference is caused by the fact, that samples A and B resulted from a spontaneous speech, whereas for the contrastive purposes, sample C originates from a set of sentences which are fairly simple and do not interlock. Therefore it is logical that within the shorter construct there will also appear a lower number of constituents.

From the tables above a certain phenomenon is apparent: the longer the construct, the lower its frequency. This is the case of samples A, B and it appears also within the contrastive sample C. The lower occurrence might have an influence on the particular result, therefore there is a need to further examine these outcomes and the hypothesis they are concerned with. Next part deals with the particular graphic representation of the numeral attributes from tables 6–9. These graphs were created using two different programs.

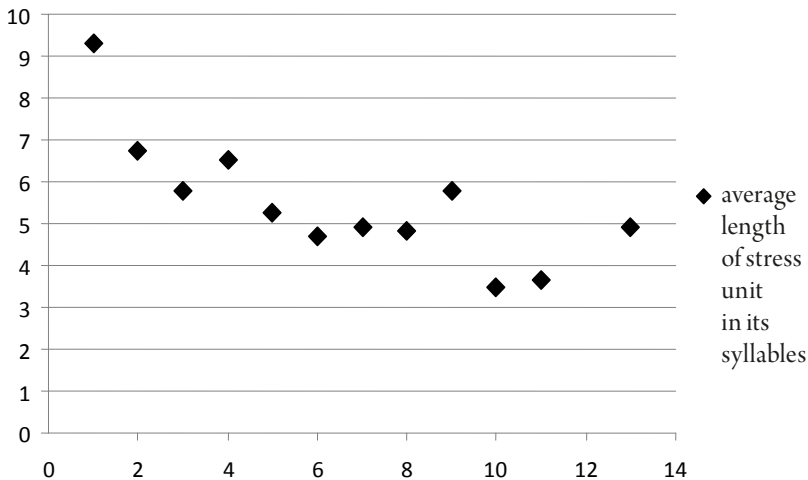
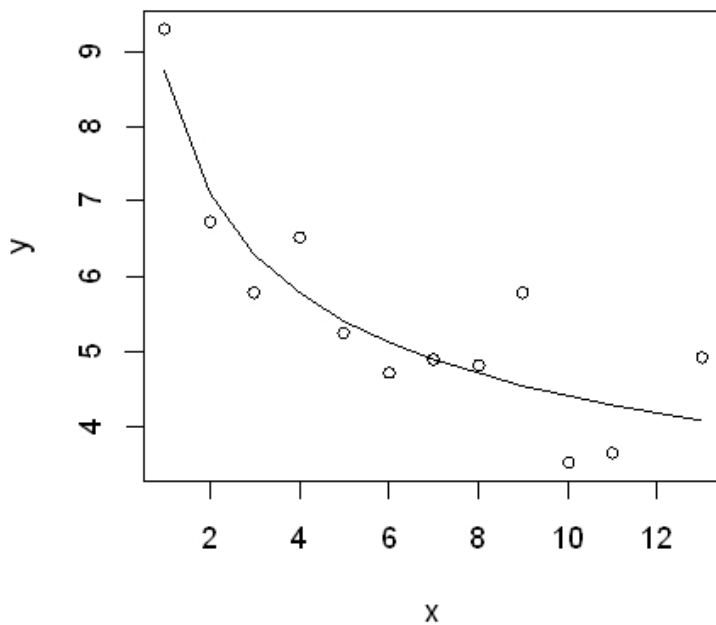


FIGURE 2.A.

L2 (statement vs. stress unit) – sample A: visualization of the data set presented in Table 6, using Microsoft Office Excel.



■ **FIGURE 2.AR.**
 L2 (statement vs. stress unit)⁹⁵ – sample A: visualization of the data set presented in Table 6 using the R.program

In the case of the sample A there is an apparent falling tendency in both graphs. This means that the relationship between the construct and the constituent is indirectly proportional, which corresponds with the former assumption expressed by the MAL. The curve resembles an ideal curve. A percentual agreement with the mathematically calculated model states $R^2 = 73.11\%$, which is not ideal, but this numeral value is relatively high. If the observations with the low frequency were deleted, which is in linguistics considered to be a usual practice, the percentual agreement would rise to more than 90%. However, for the results to be as accurate as possible, the decision was made not to delete any observations in this stage of the research. Yet, in the following chapter there are results

of simultaneous experiments in the second stage of the research. Within these experiments the same hypotheses were tested, but with the omission of the observations with a low frequency, or an experiment was performed with the omission of a certain language unit. More on this can be found in the particular chapter.

Based on graphs 2.A and 2.Ar as well as on the percentual agreement it can be claimed that the naturally spoken Chinese follows the rules and definitions of the MAL within this level and sample. The speaker of this sample was a female pop singer, the speaker of the following two versions of sample B is a male rapper. One of the questions regarding the next sample is whether this music genre can influence the natural speech and to what extent.

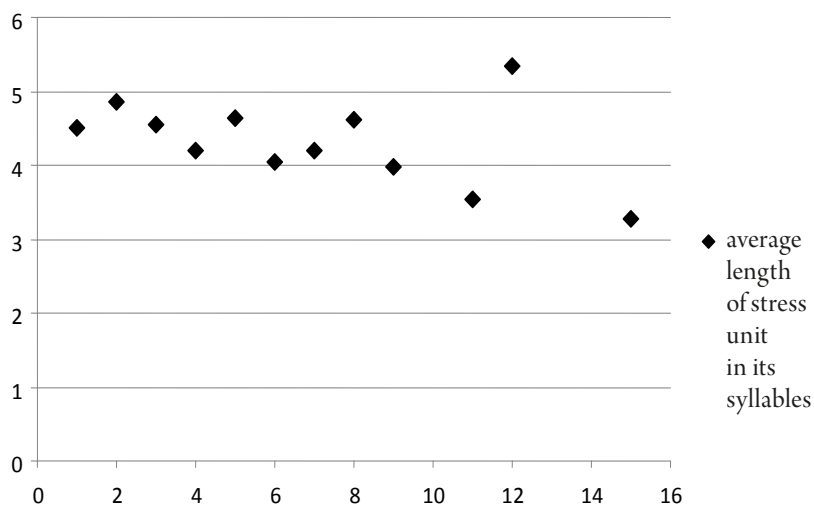


FIGURE 2.B1

L2 (statement vs. stress unit) – sample B (Version 1): visualization of the data set presented in Table 7, using Microsoft Office Excel

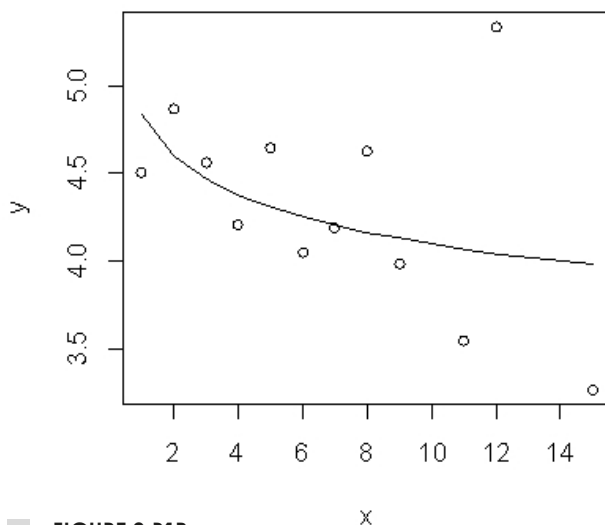


FIGURE 2.B1R. L2 (statement vs. stress unit)⁹⁶ – sample B (Version 1): visualization of the data set presented in Table 7, using the R program.

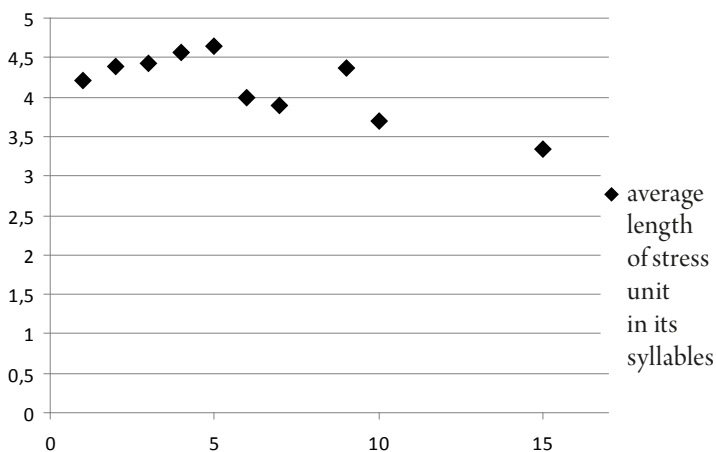
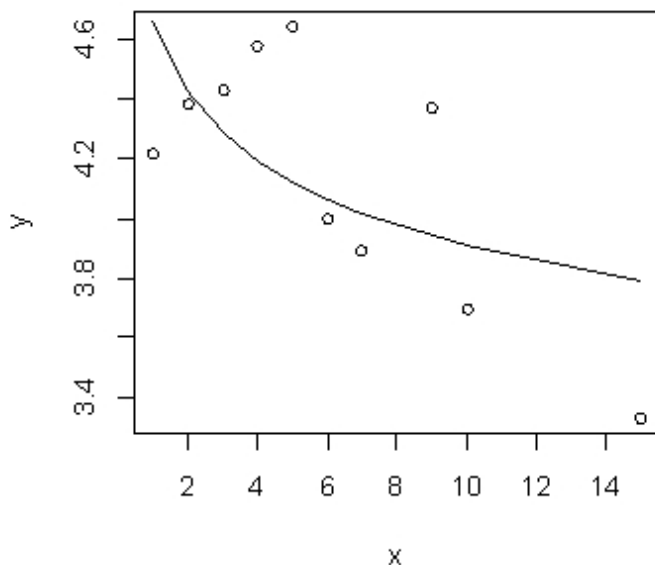


FIGURE 2.B2 L2 (statement vs. stress unit) – sample B (Version 2): visualization of the data set presented in Table 7, using Microsoft Office Excel



■ **FIGURE 2.B2R.**

L2 (statement vs. stress unit)⁹⁷ – sample B (Version 2): visualization of the data set presented in Table 7, using the R program.

From graphs 2.B1 and 2.B2 it is apparent that the falling tendency is more striking and visible within version 1. Eventhough the individual observations oscillate and do not lie on one descending line, a certain decrease is evident. In graph 2.B2 a slight increase appears in the beginning but later the curve starts to decrease in a very moderate way. This phenomenon leads to an assumption that the observations in which the constructs have shorter lengths created a certain set that could deviate from the MAL. However, what is noticeable is that the longer constructs sustain the decreasing tendency. In both cases the dots representing individual observations are rather diffused.

Concerning the curves in graphs 2.B1r and 2.B2r, both curves have a falling tendency. At the first sight this could be considered as a slight match

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with the MAL. The problem is that individual observations are greatly diffused therefore the curve shows only the ideal trace within all observations. Unlike in graph 2.Ar, where it is possible to find a very small diffusion and distance of the individual observations from the curve, in graphs 2.B1r and 2.B2r these distances are significantly longer. Also the percentual agreement with the MAL does not even reach half of the agreement which was reached in sample A. In sample B version 1 there is a 22.38 % agreement with the mathematical model, in sample B version 2 is this agreement slightly higher which states $R^2 = 34.78 \%$. Nevertheless both numeral attributes only prove that on this level within sample B there is not a sufficient agreement to claim that within this sample the MAL was verified.

The following graphs belong to the contrastive sample C which originates from the material called *The Grammar of the Spoken Chinese* compiled by prof. Švarný. The denomination contrastive is used due to the violation of the original condition used for the selection of samples A and B. Sample C is not entirely spontaneous, even though it is reproduced by a native Chinese speaker who does not read the text. However, the sentences are artificially produced by prof. Švarný, and the speaker tries to reproduce the text as naturally as possible for Chinese teaching and learning purposes. This sample was chosen mainly because of the slower rate of speech and because of the different segmentation and units used by prof. Švarný. For a better opposition the first version copies the language units employed within samples A and B and in the second version Švarný's units and segmentation are sustained. The main reason for using this sample was to compare the samples consisting of a natural flow of speech (samples A and B) and a partially artificial speech for learning needs of foreigners (sample C). Another reason was to find out the differences within the segmentations used.

In graphs 2.C1 and 2.C2 a slightly falling tendency is apparent. This could lead to the assumption that the agreement with the MAL would not be extremely expressive. There is a certain decrease; but the abstract flowline of the individual values does not seem to descend rapidly.

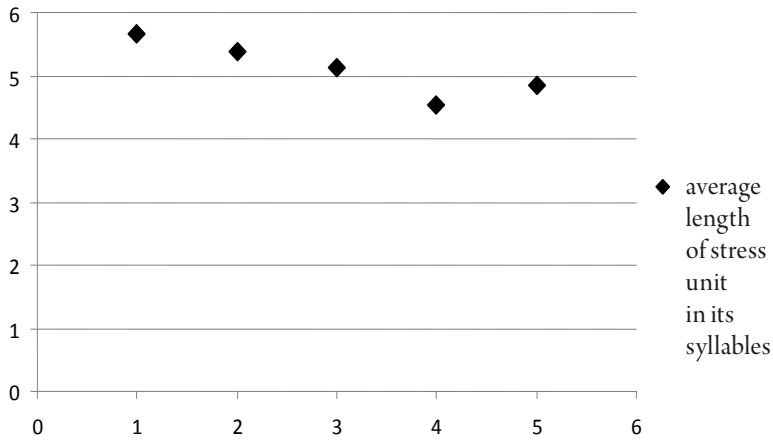


FIGURE 2.C1
 L2 (statement vs. stress unit) – sample C (Version 1): visualization of the data set presented in Table 8, using Microsoft Office Excel

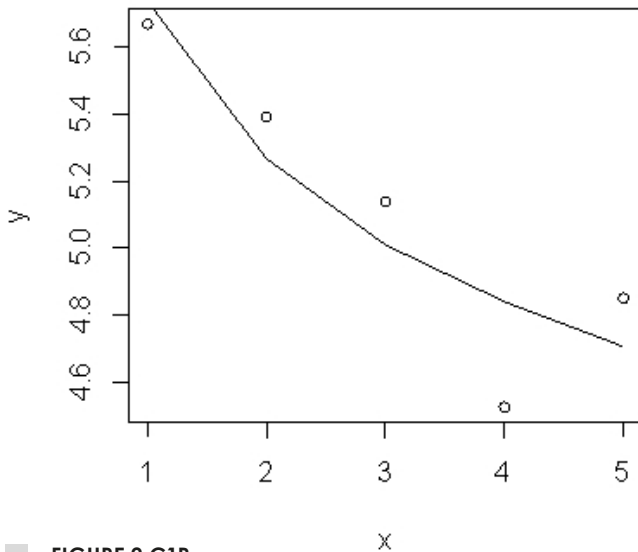


FIGURE 2.C1R
 L2 (statement vs. stress unit) – sample C (Version 1): visualization of the data set presented in Table 8, using the R program.

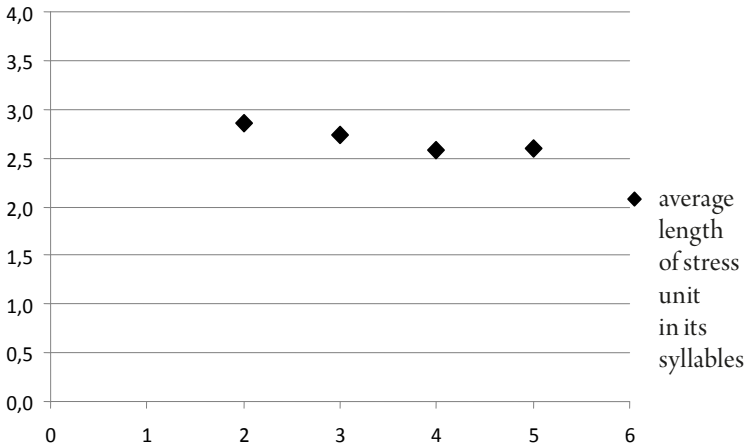


FIGURE 2.C2
 L2 (*kolón* vs. segment) – sample C (Version 2): visualization of the data set presented in Table 9, using Microsoft Office Excel

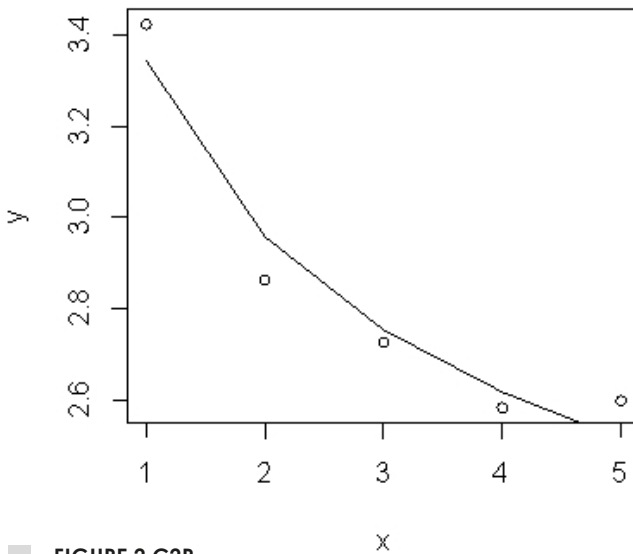


FIGURE 2.C2R
 L2 (*kolón* vs. segment) – sample C (Version 2): visualization of the data set presented in Table 9, using the R program.

Yet a closer look at graphs 2.C1r and 2.C2r clearly uproots this assumption. According to the observations, the Rprogram, using the corresponding data, created a curve which represents the MAL and in graphs 2.C1r and 2.C2r a decreasing tendency of this exponential curve is evident. The mathematical percentual formulation which states $R^2 = 78.72\%$ only proves a high agreement with the MAL. Among linguists the agreement above 75% is considered to be sufficient enough to prove a certain tendency in a language. What is more, the agreement with the MAL within the second version of this sample is much higher and it reaches to $R^2 = 94.57\%$. This means that the relationship between the construct and the constituent in this particular sample on this particular level seems to follow the rules and regularities of the MAL. For a better summary the following table provides the numeral attributes of parameter ^b as well as the percentual agreement with the MAL of the individual samples.

TABLE 10

(Sample A, Sample B – Version 1, 2, Sample C – Version 1, 2):
Parameters ^b and the coefficients of determination R^2 for
the mathematical model related to the observations presented
in Tables 6, 7, 8, 9.

		Parameter ^b	Coefficient of determination R^2 (%)
Sample A		0.2982	73.11
Sample B	Version 1	0.2737	22.38
	Version 2	0.0761	34.78
Sample C	Version 1	0.1226	78.72
	Version 2	0.1755	94.57

During the research it was proven that in case of sample C the segmentation by prof. Švarný is more accurate. The speech in the sample is slower and therefore the definition of the stress unit defined at the beginning of this experiment stands between Švarný's segment and *kolón*. Nevertheless, both

versions of sample C show a high agreement with the MAL. This applies also to sample A which on this level achieved a high agreement as well. What is more, if the observations with a low frequency were deleted the agreement would rise even higher. The fact is, that these circumstances could lead to the conclusion that the relationship between a construct (in this case it is a statement) and its constituent (a stress unit measured in syllables) does follow the rules of the MAL on this particular level. However, this is not the case with sample B. Both versions of this sample reached only an average and lower agreement with the MAL which is not sufficient enough to prove the original hypothesis.

There might be several reasons for this difference. Based on the realized research it seems that the rhythm of the music genre is able to influence the natural rhythm of speech. In the case of sample A (a pop singer) and the musically unmarked sample C the agreement with the MAL is significantly high. However sample B which was produced by a male pop singer does not correspond with the regulations of the MAL to a great extent. Based on the results gained till now it could be claimed that the artificial rhythm of rap can and does influence the natural rhythm of speech. However, to confirm this statement it is necessary to conduct a further research with more rap samples and also more rap interpreters.

Another reason for the above mentioned differences could be the striking emotionality of the performer. Contrary to the performers from samples A and C the musician who produced sample B expresses his emotionality which is very vivid and excessive at times. Also in his speech a certain anger and excitement are apparent. These circumstances could also cause the disturbance of the neutral natural speech flow and rhythm. During the emotionally strained moments the speech of the subject stumbles, does not flow naturally or the musician irregularly accelerates and decelerates the pace of his speech. This causes a disturbance of neutrality, regularity and compactness of the musician's verbal communication.

During this research it was partially proved that the relationship between the construct and the constituent on this level (statement measured

as a number of its stress units measured as an average length of their syllables) follows the rules and regulations of the MAL. It is also possible to claim that the rhythm of the musical genre can influence the natural rhythm of speech. Regardless of these results it would be appropriate and eligible to analyze parts of this research in more detail.

5.3 LANGUAGE LEVEL L3: STRESS UNIT MEASURED AS A NUMBER OF ITS SYLLABLES WHICH ARE MEASURED AS AN AVERAGE NUMBER OF THEIR PHONEMES

The relationship between construct – stress unit and constituent – syllable, which is also a construct to its constituent – phoneme, has been studied at the lowest language level. At this language level an interesting phenomenon occurred. The original hypothesis of our research was that the agreement with the MAL would occur on all the examined language levels of the contemporary spoken Chinese. However, results of the first stage of the research showed that the lowest language level stress unit vs. syllable does not entirely follow the rules of the MAL. It turned out that on this particular language level a linear tendency appears, or that the values of the two samples A and B oscillate in the linear area on the lowest language level.

TABLE 11

L3: sample A: constructs x_a – the length of the stress unit (as a number of its syllables), z_a – the frequency of constructs, constituents y_a – the average length of the syllables (as a number of the phonemes)

Sample A		
x_a	z_a	y_a
1	19	2.2105
2	76	2.5658
3	73	2.6073
4	69	2.6522

Sample A		
x_a	z_a	z_a
5	84	2.6452
6	65	2.6462
7	48	2.6667
8	36	2.6840
9	33	2.5926
10	24	2.6792
11	9	2.5859
12	8	2.5938
13	9	2.6239
14	7	2.5918
15	3	2.6444
16	2	2.7500
17	2	2.6471
18	1	2.7222

TABLE 12

L3, sample B: constructs x_a – the length of the stress unit (as the number of its syllables), z_a – the frequency of constructs, constituents, y_a – the average length of the syllables (as the number of the phonemes)

Sample B		
x_a	z_a	y_a
1	10	3.6000
2	82	2.7500
3	47	2.7163

Sample B		
x_a	z_a	y_a
4	63	2.6032
5	48	2.7250
6	37	2.6036
7	25	2.6400
8	20	2.6313
9	8	2.6528
10	3	2.7000
11	2	2.3182
13	2	2.7308

From Table 11 it is apparent that the length of some stress units occasionally reached 18 syllables. The number of constructs in sample A equals 568, which is much higher than it was at the highest language level consisting of an utterance (construct, its length is measured as the number of statements) and statement (constituent, its length is measured as the average number of stress units). The length of a syllable measured in phonemes varies from 2.21 to 2.75.

Within sample B the length of a stress unit reached 13 syllables in some cases, the number of constructs equals 347. The length of syllables measured as the average number of phonemes varies from 2.31–3.6.

At this level, two figures are presented. From Figure 3.A it can be observed that the tendency is rising. From Figure 3.Ar the mentioned oscillation in the linear area is more apparent, with the exception of the first point which is clearly distant from the trend. This divergence is probably caused by the huge amount of hesitant sounds that are specific for the speech in sample A.

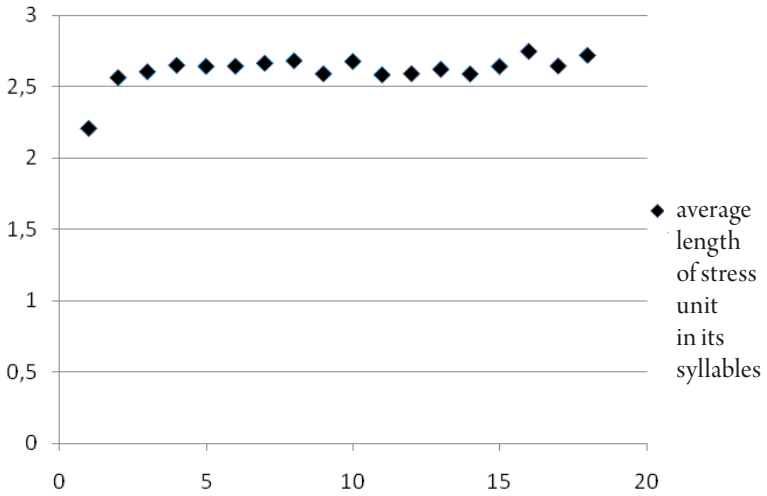


FIGURE 3.A
 L3 stress unit vs. syllable – sample A: visualization of the data set presented in Table 11, using Microsoft Excel.

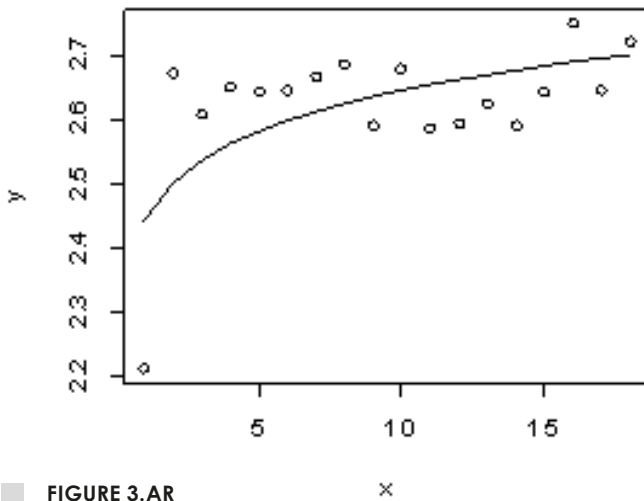
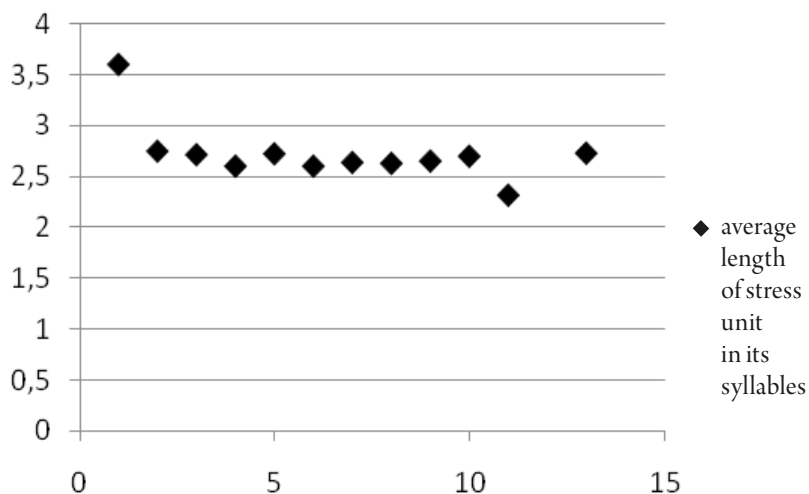


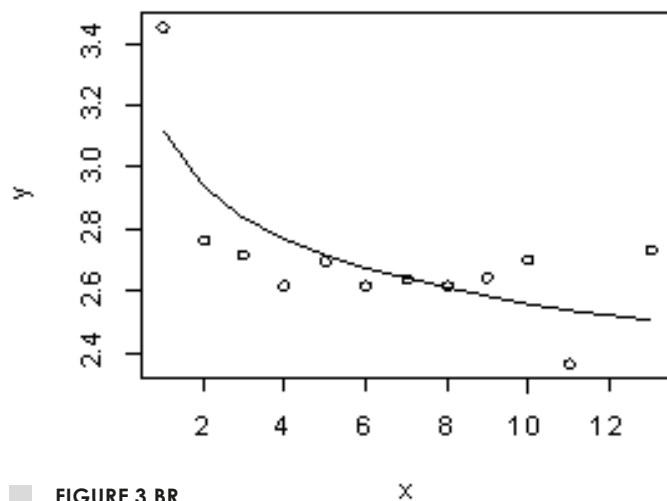
FIGURE 3.AR
 L3 stress unit vs. syllable – sample A: visualization of the data set presented in Table 11, using the R program.⁹⁸

⁹⁸ Schusterová – Ščigulinská et al. 2013: 13.



■ **FIGURE 3.B**

L3 stress unit vs. syllable – sample B: visualization of the data set presented in Table 12, using Microsoft Excel.



■ **FIGURE 3.BR**

L3 stress unit vs. syllable – sample B: visualization of the data set presented in Table 12, using the R program.⁹⁹

99 Schusterová – Ščigulinská et al. 2013: 13.

In this case two figures are presented as well. The first graph (Figure 3.B) shows a slight downward tendency, but when we look at the second graph (Figure 3.Br), we will notice the oscillation in the linear area, where again the first value is significantly different from the others. In the case of sample B this irregularity is probably caused by foreign words, which the speaker uses during his speech.

TABLE 13
 (Sample A, Sample B): Parameters ^b and the coefficients of determination R² for the mathematical model related to the observations presented in Tables 11, 12.

	Parameter ^b	Coefficient of determination R ² (%)
Sample A	-0.0349	37.53
Sample B	0.0855	56.65

As it can be seen from Figures 3.A, 3.Ar, 3.B, 3.Br, both results contain a similar, constant tendency, with the exceptions of the above mentioned points $x_2 = 1$. We believe that the explanation for this outcome lies in the syllabic structure of the Chinese language. As it was stated above, the Chinese language has only a limited set of syllables, apart from which no new syllables emerge.

Therefore, in both cases, in sample A and in sample B, the oscillation occurs in the linear area. As it can be seen from Table 11 the value of observations y_3 of sample A varies from 2.56 to 2.72. In the case of sample B, as it can be seen from Table 10, it ranges from 2.60 to 2.75 with the exception of the point $x_3 = 1$ for both samples and $x_3 = 11$ in sample B. These exceptions may be caused by external factors. Within sample A there are a few cases, when the speaker uses hesitant sounds or grammatical particles that are in these particular cases created by one phoneme. Within sample B, a certain deflection can be observed which is probably caused by a considerable number of foreign (English) words, which the speaker uses to enrich his speech.

He uses them primarily to express his affiliation to the rap community, to make clear that he identifies himself within the community. Since English words are not part of the vocabulary of the Chinese language this phenomenon is considered to be a violation of the the singer's talk from the linguistic point of view.

English, unlike Chinese is not a syllabic language; therefore the structure of English words is different from the structure of the Chinese language. The frequent usage of English words disrupts the linear tendency. The deflection within the observation $x_3 = 11$ is caused by a low, but still present frequency of 11 syllables' stress units. A comparison of Figures 3.A, 3.Ar, 3.B and 3.Br implies that on the lowest language level, which is created by stress unit (construct, its length is measured in syllables) and syllable (constituents, its length is measured as the average number of phonemes), agreement with the MAL did not appear possibly because Chinese is a syllabic language.

5.3.1 Language Level L3^Š¹⁰⁰: Segment (Stress Unit) Measured as a Numbers of its Syllables Which are Measured as an Average Number of Their Phonemes

At this language level the relationship between construct – segment, and constituent – syllable, which also functions as a construct to its constituent – the phoneme has been studied. As it was mentioned above, the hypothesis at the very beginning of the research was that the agreement with the MAL would occur at the lowest language level. However, after the first part of the research, the hypothesis has not been confirmed. According to the calculations carried out on samples A and B, it was proved that on the lowest language level consisting of stress unit (construct, its length measured as the number of syllables) and syllable (constituent, its length is measured as the average number of phonemes), the oscillation in the linear area occurred. The hypothesis for the second stage of the research stated that on the lowest language level the oscillation in the linear area would always appear.

100 The letter Š denotes the language level which uses the terminology by prof. Švarný.

The calculations made in the second stage of the research on the sample C, however, brought interesting results. The curve shows a downward tendency.

TABLE 14

L3Š, sample C: construct x_a – the length of the segment (as the number of syllables), z_a – the frequency of constructs, constituents y_a – the average length of the syllables (as the number of the phonemes)

Sample C		
x_a	z_a	x_a
1	51	3.0392
2	430	2.8674
3	351	2.7407
4	222	2.6937
5	69	2.6667
6	19	2.6140
7	2	2.8571

From Table 14 it can be seen that the length of the segment reached in some cases up to seven syllables. The number of constructs at this level equals 1144. From all of the samples, sample C has the highest number of language constructs at the lowest language level. The average length of syllables in phonemes varies from 2.61 to 3.03, which is slightly higher range than it is in the case of samples A and B.

In the presentation of the results at the lowest language level of samples A and B, the oscillation in the linear area was emphasized. After the first stage of the research, we were convinced that regardless of what text or what speaker were examined, the results would almost always be identical. Subsequent calculations carried on the transcript of the speech from *The Grammar of Spoken Chinese in Examples* however, did not confirm this hypothesis.

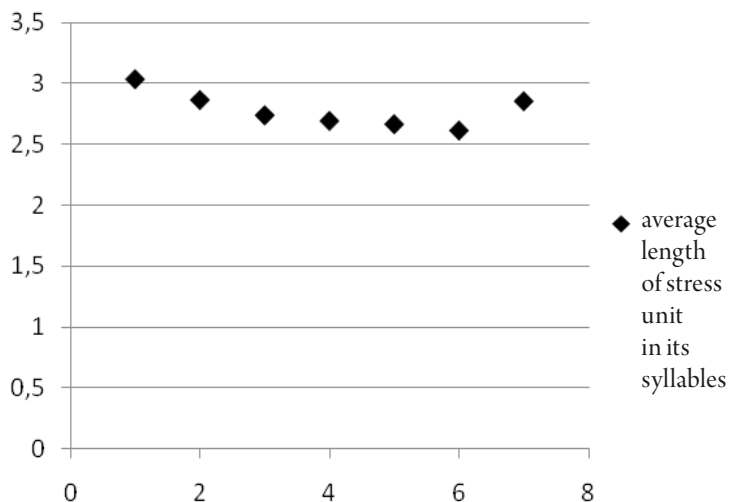


FIGURE 3.C
 L3Š segment vs. syllable – sample C: visualization of the data set presented in Table 14, using Microsoft Excel

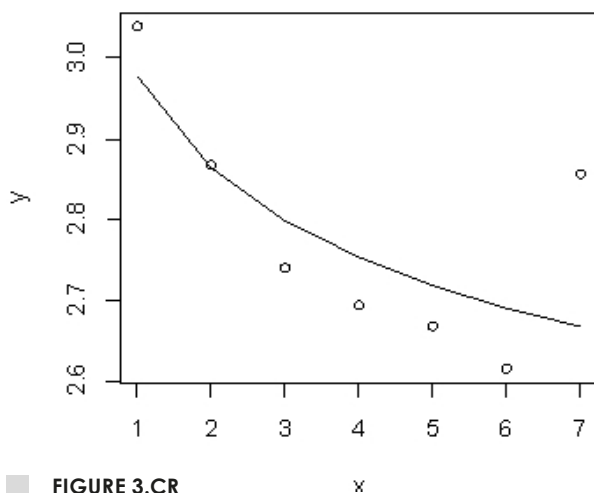


FIGURE 3.CR
 L3Š segment vs. syllable – sample C: visualization of the data set presented in Table 14, using the R program¹⁰¹

101 Schusterová – Ščigulinská et al. 2013: 13.

From figures 3.C and 3.Cr a downward tendency is apparent which confirms an agreement with the MAL.

TABLE 15

Sample C: Parameters b and the coefficients of determination R^2 for the mathematical model related to the observations presented in Table 14

	Parameter b	Coefficient of determination R^2 (%)
Sample C	0,0569	55.6

The curve in Figure 3.Cr follows the tendency of the MAL's rules. However, it is necessary to point out the percentage agreement with the MAL, which can be seen from Table 15: $R = 55.6\%$. Looking at Figure 3.Cr, we can see a tendency which is disturbed only by the last observation $x_3 = 7$, which is clearly diverged. At this point, the seven-syllabic segments are exceptions in the whole sample, which is evident from the very low frequency of their occurrence, which equals 2. Looking at Figure 3.C, we can also see a downward tendency, although in this graph it is not as clear as it is in Figure 3.Cr.

Within samples A and B the lowest language level is formed by stress unit (construct, its length is measured as the number of syllables) and syllable (constituent, its length is measured as the average number of phonemes). Especially on this language level the oscillations in the linear area were proven. Within sample C the lowest language level was formed by segment (construct, its length measured as the number of syllables) and syllable (constituent, its length measured as the average number of phonemes). On this level, however, the agreement with the MAL occurred.

Thus the assumptions that the lowest language level does not reflect the agreement with the MAL because of the syllabic structure of Chinese was disturbed by the results from sample C, which confirmed the obvious tendency of the MAL's rules. At this point, however, it is necessary to recall the fundamental differences of the samples. Especially sample C is not entirely a standard

sample. The fact that spoken words are not natural can have an enormous impact on the variety of the results.

Also the particular sections, namely audio tracks from *The Grammar of Spoken Chinese in the Examples* or their non-integrity may have a considerable influence on the final results. Individual sections are always linked with a certain Chinese grammatical feature that is demonstrated by the sentences. The description of sample C implies that it is not a thematically coherent text. This will unquestionably affect the results. The application of the MAL at the lowest language level consisting of stress unit, or segment (construct, its length is measured as the number of syllables) and syllable (constituent, its length is measured as the average number of phonemes) produced an extremely interesting result. Linear tendencies occurred in two samples there. One sample shows a downward tendency. From the syllabic structure of Chinese it is most probable that within the mentioned lowest language level the linear tendency would appear very often. However, further research is needed to determine why one of the samples demonstrated an agreement. It is also necessary to determine if this was just a coincidence and if the downward tendency is due to the artificiality of the sample on which the agreement occurred.

When we contrast samples A and B with sample C, we must also consider the way the segmentation of the samples was carried out. Concerning the fact that on the mentioned lowest language level the constructs are presented by stress units and segments, which are the subjective linguistic units, we must also take into consideration their different segmentation structures. These language units are strictly phonetic; therefore there occasionally occurs a problem with the determination of their borders or with the fact that everyone would determine the boundaries differently based on empiricism.

6. Experiment Within the Research

In this chapter we present a certain experiment which resulted from the research described in this book. The point of this particular experiment is to show how the results will change, if some of the inconvenient observation or those with the low frequency are removed. Also we tried and removed one level and carried out the results, in order to uncover how significant the change will be.

6.1 LANGUAGE LEVEL L3/L3Š: STRESS UNIT / SEGMENT MEASURED AS A NUMBER OF ITS SYLLABLES, WHICH ARE MEASURED AS AN AVERAGE NUMBER OF PHONEMES

The figures after the removal of some observations are presented below. It is a common practice in statistics that some observations, especially those observations that are highly different from the remaining ones are omitted. This step was carried out especially because the removed observations were exactly those that represented hesitant sounds, vulgarisms and poly-syllabic segments. All the mentioned items are not a usual part of speech. It is believed that these are specific phenomena, and therefore they do not need to be included in the calculations. Another reason for this decision is the fact that the frequency of the mentioned observations is very low.

Within samples A and B, observations $x = 1$ were dropped out. Within sample C the observation $x = 7$ was removed.

After removing some observations in samples A, B or C no dramatic change occurred in the graphs. Within sample C however, the percentage coefficient of determination highly increased. The percentage agreement with the MAL thus increased from 55.6 % to 99.1 %. This means that if the seven-syllable segments, which occurred in the whole sample only twice, are omitted, the curve shows an almost perfect agreement with the MAL. It is necessary to bear in mind again

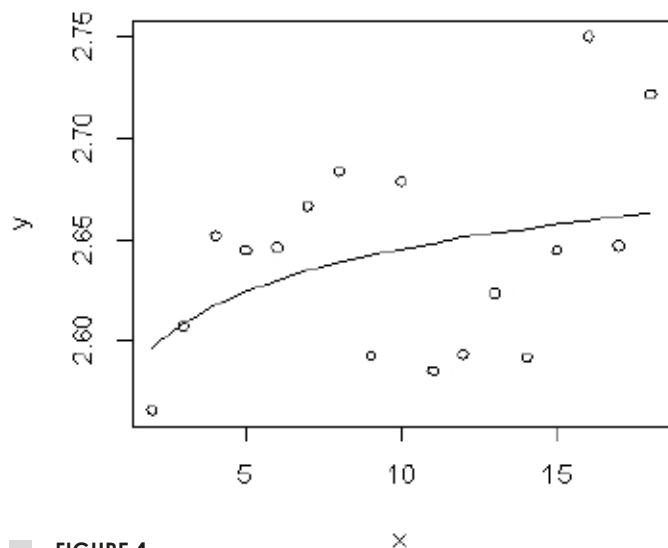


FIGURE 4 L3 stress unit vs. syllable – sample A: visualization of the data set presented in Table 11, after the removal of $x = 1$, using the R program.

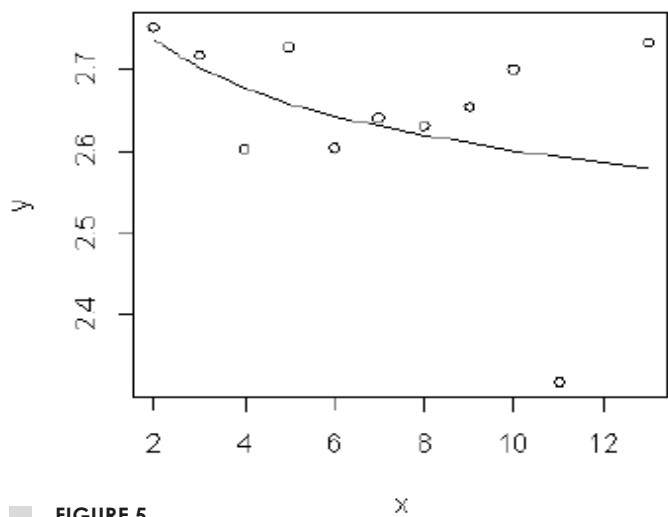
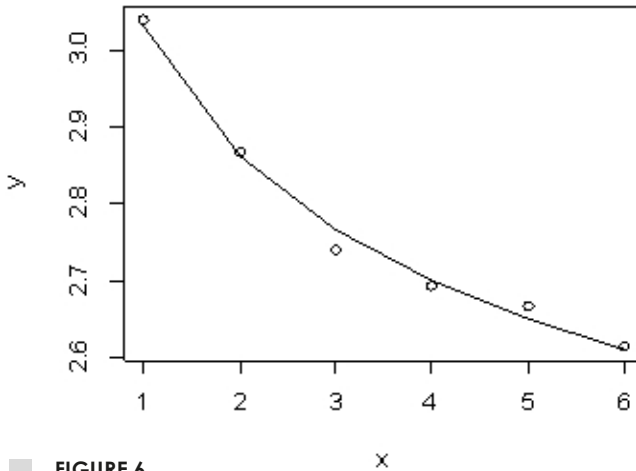


FIGURE 5 L3 stress unit vs. syllable – sample B: visualization of the data set presented in Table 12, after the removal of $x = 1$, using the R program.



■ **FIGURE 6**

L3Š segment vs. syllable – sample C: visualization of the data set presented in Table 14, after the removal of $x = 7$, using the R program.

that sample C is a sample that presents a speech which is not spontaneous, but instead it is prepared in advance. It is interesting that the highest agreement with the MAL occurred especially on the sample of an unnatural origin. In the future research it is necessary to apply the MAL to samples of various types, which means not only to spontaneous speeches, but also to samples that present a prepared speech. This further research is necessary in order to prove whether these results were a coincidence or not. During our research, the MAL was applied only to the three samples. It is not possible to draw precise conclusions from such a small amount of observations.

6.2 LANGUAGE LEVEL L2Š–L1Š: KOLÓN MEASURED AS THE NUMBER OF ITS SYLLABLES WHICH ARE MEASURED AS THE AVERAGE NUMBER OF THEIR PHONEMES (SEGMENT OMITTED)

To complete this experimental chapter, in Tables 16 and Figure 7 we present the results that emerged from the calculations applied again to sample C as well.

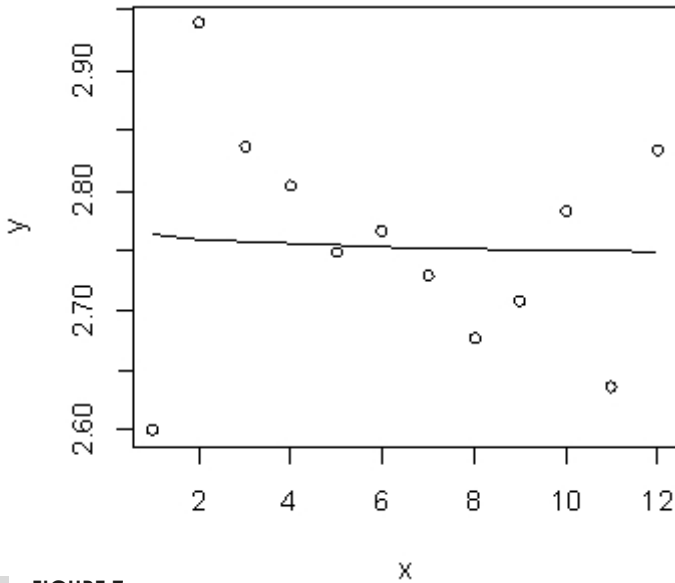
It is, however, a language level consisting of *kolón* (construct, its length is measured as the number of syllables) and syllable (constituent, its length is measured as the average number of phonemes). As noted in the description of this language level, one language unit namely segment, was omitted (Švarný divided a text into these language levels: phoneme, syllable, segment, *kolón* and sentence). However, at this point the language unit segment was omitted on purpose. The reason was to find out how this step would affect the final results.

TABLE 16

L2Š–L1Š, sample C: constructs x_a – the length of *kolón* (as the number of its segments), z_a – frequency of constructs, constituents y_a – the average length of the syllable (as the number of their phonemes)

Sample C		
x_a	z_a	y_a
1	5	2.6000
2	33	2.9394
3	84	2.8373
4	135	2.8037
5	142	2.7493
6	88	2.7670
7	64	2.7299
8	51	2.6765
9	29	2.7088
10	6	2.7833
11	2	2.6364
12	1	2.8333

In Table 16 we see that in some cases the *kolón* in this sample consist of 12 syllables. The number of constructs at this level is 640. The average length of syllables measured as the number of phonemes oscillates between 2.6 to 2.93.



■ **FIGURE 7**

L2Š–L1Š *kolón* vs. syllable – sample C: visualization of the data set presented in Table 16, using the R program.

From Figure 7 the linearity which was probably caused due to the omission of one of the language units is apparent. The experiment with the omitted language unit was carried out because we would like to demonstrate the importance of the determination of language units at the beginning of the research.

When analyzing the language level consisting of an utterance and statement within samples A and B, it is possible that one of the reasons why the above-mentioned level did not show an agreement with the MAL may be an insufficient number of language units. Right from Figure 7 we can see that due to the omission of the language unit *segment*, an absolute linear tendency occurred. Therefore in the future research in its early stage it is necessary to spend enough time defining language units and language levels as well. It is very important not to underestimate this step. The omission of any language unit may have a tremendous impact on the final results.

7. Conclusion

The aim of our experiment was to verify the validity of the MAL applied to the temporary spoken Chinese language. Another task was to find out whether a musical genre may have an influence on the natural speech flow. The last aim of the research was to properly choose the language levels for the samples' analysis.

The segmentation and the subsequent application of the MAL were realized on three samples of the temporary spoken Chinese language. These were two audio tracks of a musical program and one extract from the teaching-learning material compiled by prof. Švarný.

In the first stage of the research the MAL was applied to two samples – sample A and B (pop and rap singer). The research brought the following results. On the highest language level a slight falling tendency can be observed. The reason for such an outcome may originate from an insufficient frequency of the constructs on this particular level. Another reason may be the merger of the syntactic and phonetic criteria and the potential insufficient definitions of the utterance and the statement as well. The artificial interference into the samples for the purposes of the creators of the musical program may present an extra linguistic cause which might have influenced the results. For the future research we therefore suggest to increase the number of the constructs on the highest language level. We would also like to emphasize the importance of stating the precise definitions of the language units. Concerning the fact that within samples A and B on the highest language level the MAL did not appear and all the observations are chaotically distributed, we think that this language level deserves its own research.

Within sample A on the language level formed by the statement and the stress unit a falling tendency of the MAL occurred. Within sample B1 only a minor tendency occurred, within sample B2 no tendency occurred at all. We believe that the reason why the tendency of the MAL occurred within sample A, whereas within sample B no tendency occurred, is that the speaker

of sample B is a rap singer whose speech may be influenced by the mentioned music genre. It seems that the rhythm of rap music is so influential that it also may affect the natural flow of speech.

On the lowest language level that is formed by the stress unit and the syllable the tendency of the MAL did not appear. However, an oscillation within the linear area, that was disturbed only by points $x=1$, appeared. We believe that this deviation is in the case of sample A caused by hesitation sounds and grammatical parts that are formed only by one phoneme. In the case of sample B the deviation was most probably caused by words belonging to the English vocabulary system which the speaker often uses in his speech.

When analyzing the results obtained within the first stage of the research it occurred to us that on this lowest language level the oscillation within the linear area would appear in every case. The logical argument for such a postulate was the syllabic structure of the Chinese language.

In the second stage of the research the MAL was applied to the third sample – sample C – that was presented by the audio tracks from *The Grammar of the Spoken Chinese*. As mentioned above sample C differs from samples A and B because it does not represent a spontaneous speech and the content is not cohesive, as it is within samples A and B. However, within sample C the MAL was applied only to two lowest language levels. The examined language levels were in the second stage of the research different from those examined in the first stage.

On the language level formed by the statement/*kolón* and the stress unit / segment the tendency of the MAL occurred massively within both versions. The question that arises is whether the occurrence of the MAL on sample C is or is not influenced by the artificiality of the sample C. However, it is necessary to examine this assumption more profoundly.

Surprisingly on the language level formed by the stress unit and the syllable a tendency of the MAL appeared. Such a result disproved the hypothesis that on the lowest language level the tendency of the MAL would not occur due to the syllabicity of the Chinese language. However, it is probable that the result might have been influenced by the character of the chosen sample.

Over the course of the future research it will be therefore necessary to discover what the reason for the differences between the results is. It is necessary to find out why the tendency of the MAL occurred within sample C, whereas it did not within samples A and B and if the artificiality of sample C was relevant to the final form of results.

Concerning the fact that in the past the MAL was not applied to the Chinese language, we are only in the initial stage of the research. Throughout the experiment the MAL was applied to three samples of spoken Chinese. It is impossible to draw definite conclusions from such an early stage of the research and rather a low number of the examined samples.

Appendix 1

	Types of transcription		
	pinyin	Czech	English (WG)
a	a	a	a
	ai	aj	ai
	an	an	an
	ang	ang	ang
	ao	ao	ao
b	ba	pa	pa
	bai	paj	pai
	ban	pan	pan
	bang	pang	pang
	bao	pao	pao
	bei	pej	pei
	ben	pen	pen
	beng	peng	peng
	bi	pi	pi
	bian	pien	pien
	biao	piao	piao
	bie	pie	pieh
	bin	pin	pin
	bing	ping	ping
	bo	po	po
	bu	pu	pu
	c	ca	ccha
cai		cchaj	ts'ai

	Types of transcription		
	pinyin	Czech	English (WG)
	can	cchan	ts'an
	cang	cchang	ts'ang
	cao	cchao	ts'ao
	ce	cche	ts'e
	cen	cchen	ts'en
	ceng	ccheng	ts'eng
	cha	čcha	ch'a
	chai	čchaj	ch'ai
	chan	čchan	ch'an
	chang	čchang	ch'ang
	chao	čchao	ch'ao
	che	čche	ch'e
	chen	čchen	ch'en
	cheng	čcheng	ch'eng
	chi	čch'	ch'ih
	chong	čchung	ch'ung
	chou	čchou	ch'ou
	chu	čchu	ch'u
	chua	čchua	ch'ua
	chuai	čchuaj	ch'uai
	chuan	čchuan	ch'uan
	chuang	čchuang	ch'uang
	chui	čchuej	ch'ui
	chun	čchun	ch'un
	chuo	čchuo	ch'o

	Types of transcription		
	pinyin	Czech	English (WG)
	ci	cch'	tz'u
	cong	cchung	ts'ung
	cou	cchou	ts'ou
	cu	cchu	ts'u
	cuan	cchuan	ts'uan
	cui	cchuej	ts'ui
	cun	cchun	ts'un
	cuo	cchuo	ts'o
d	da	ta	ta
	dai	taj	tai
	dan	tan	tan
	dang	tang	tang
	dao	tao	tao
	de	te	te
	dei	tej	tei
	deng	teng	teng
	di	ti	ti
	dian	tien	tien
	diao	tiao	tiao
	die	tie	tieh
	ding	ting	ting
	diu	tiou	tiu
	dong	tung	tung
dou	tou	tou	
du	tu	tu	

	Types of transcription		
	pinyin	Czech	English (WG)
	duan	tuan	tuan
	dui	tuej	tui
	dun	tun	tun
	duo	tuo	to
e	e	e	e
	en	en	en
	er	er	erh
f	fa	fa	fa
	fan	fan	fan
	fang	fang	fang
	fei	fej	fei
	fen	fen	fen
	feng	feng	feng
	fo	fo	fo
	fou	fou	fou
	fu	fu	fu
g	ga	ka	ka
	gai	kaj	kai
	gan	kan	kan
	gang	kang	kang
	gao	kao	kao
	ge	ke	ke
	gei	kej	kei
	gen	ken	ken
	geng	keng	keng

	Types of transcription		
	pinyin	Czech	English (WG)
	gong	kung	kung
	gou	kou	kou
	gu	ku	ku
	gua	kua	kua
	guai	kuaj	kuai
	guan	kuan	kuan
	guang	kuang	kuang
	gui	kuej	kuei
	gun	kun	kun
	guo	kuo	kuo
h	ha	cha	ha
	hai	chaj	hai
	han	chan	han
	hang	chang	hang
	hao	chao	hao
	he	che	he
	hei	chej	hei
	hen	chen	hen
	heng	cheng	heng
	hong	chung	hung
	hou	chou	hou
	hu	chu	hu
	hua	chua	hua
	huai	chuaj	huai
huan	chuan	huan	

	Types of transcription		
	pinyin	Czech	English (WG)
	huang	chuang	huang
	hui	chuej	hui
	hun	chun	hun
	huo	chuo	huo
j	ji	fi	chi
	jia	fia	chia
	jian	fien	chien
	jiang	fiang	chiang
	jiao	fiao	chiao
	jie	fie	chieh
	jin	fin	chin
	jing	fing	ching
	jiong	fiung	chiung
	jiu	fiou	chiu
	ju	fü	chü
	juan	füan	chüan
	jue	füe	chüeh
	jun	fün	chün
k	ka	kcha	k'a
	kai	kchaj	k'ai
	kan	kchan	k'an
	kang	kchang	k'ang
	kao	kchao	k'ao
	ke	kche	k'e
	ken	kchen	k'en

	Types of transcription		
	pinyin	Czech	English (WG)
	keng	kcheng	k'eng
	kong	kchung	k'ung
	kou	kchou	k'ou
	ku	kchu	k'u
	kua	kchua	k'ua
	kuai	kchuaj	k'uai
	kuan	kchuan	k'uan
	kuang	kchuang	k'uang
	kui	kchuej	k'uei
	kun	kchun	k'un
	kuo	kchuo	k'uo
	I	la	la
lai		laj	lai
lan		lan	lan
lang		lang	lang
lao		lao	lao
le		le	le
lei		lej	lei
leng		leng	leng
li		li	li
lia		lia	lia
lian		lien	lien
liang		liang	liang
liao		liao	liao
lie		lie	lieh

	Types of transcription		
	pinyin	Czech	English (WG)
	lin	lin	lin
	ling	líng	ling
	liu	liou	liu
	long	lung	lung
	lou	lou	lou
	lu	lu	lu
	lü	lü	lü
	luan	luan	luan
	lüan	lüan	lüan
	lüe	lüe	lüeh
	lun	lun	lun
	luo	luo	lo
	m	ma	ma
mai		maj	mai
man		man	man
mang		mang	mang
mao		mao	mao
mei		mej	mei
men		men	men
meng		meng	meng
mi		mi	mi
mian		mien	mien
miao		miao	miao
mie		mie	mieh
min	min	min	

	Types of transcription		
	pinyin	Czech	English (WG)
	ming	ming	ming
	miu	miou	miu
	mo	mo	mo
	mou	mou	mou
	mu	mu	mu
n	na	na	na
	nai	naj	nai
	nan	nan	nan
	nang	nang	nang
	nao	nao	nao
	ne	ne	ne
	nei	nej	nei
	nen	nen	nen
	neng	neng	neng
	ni	ni	ni
	nian	nien	nien
	niang	niang	niang
	niao	niao	niao
	nie	nie	nieh
	nin	nin	nin
	ning	ning	ning
	niu	niou	niu
	nong	nung	nung
	nou	nou	nou
	nu	nu	nu

	Types of transcription		
	pinyin	Czech	English (WG)
	nū	nū	nū
	nuan	nuan	nuan
	nüe	nüe	nüeh
	nuo	nuo	no
o	ou	ou	ou
p	pa	pcha	p'a
	pai	pchaj	p'ai
	pan	pchan	p'an
	pang	pchang	p'ang
	pao	pchao	p'ao
	pei	pchej	p'ei
	pen	pchen	p'en
	peng	pcheng	p'eng
	pi	pchi	p'i
	pian	pchien	p'ien
	piao	pchiao	p'iao
	pie	pchie	p'ieh
	pin	pchin	p'in
	ping	pching	p'ing
	po	pcho	p'o
	pou	pchou	p'ou
	pu	pchu	p'u
	q	qi	čchi
qia		čchia	ch'ia
qian		čchien	ch'ien

	Types of transcription		
	pinyin	Czech	English (WG)
	qiang	čchiang	ch'iang
	qiao	čchiao	ch'iao
	qie	čchie	ch'ieh
	qin	čchin	ch'in
	qing	čching	ch'ing
	qiong	čchiung	ch'iong
	qiu	čchiou	ch'iu
	qu	čchü	ch'ü
	quan	čchüan	ch'üan
	que	čchüe	ch'üeh
	qun	čchün	ch'ün
	r	ran	žan
rang		žang	jang
rao		žao	jao
re		že	je
ren		žen	jen
reng		ženg	jeng
ri		ž'	jih
rong		žung	jung
rou		žou	jou
ru		žu	ju
ruan		žuan	juan
ruì		žuej	jui
run		žun	jun
ruo	žuo	juo	

	Types of transcription		
	pinyin	Czech	English (WG)
s	sa	sa	sa
	sai	saj	sai
	san	san	san
	sang	sang	sang
	sao	sao	sao
	se	se	se
	sen	sen	sen
	seng	seng	seng
	sha	ša	sha
	shai	šaj	shai
	shan	šan	shan
	shang	šang	shang
	shao	šao	shao
	she	še	she
	shei	šej	shei
	shen	šen	shen
	sheng	šeng	sheng
	shi	š'	shih
	shou	šou	shou
	shu	šu	shu
shua	šua	shua	
shuai	šuj	shuai	
shuan	šuan	shuan	
shuang	šuang	shuang	
shui	šuej	shui	

	Types of transcription		
	pinyin	Czech	English (WG)
	shun	šun	shun
	shuo	šuo	shuo
	si	s'	szu
	song	sung	sung
	sou	sou	sou
	su	su	su
	suan	suan	suan
	sui	suej	sui
	sun	sun	sun
	suo	suo	so
	t	ta	tcha
tai		tchaj	t'ai
tan		tchan	t'an
tang		tchang	t'ang
tao		tchao	t'ao
te		tche	t'e
teng		tcheng	t'eng
ti		tchi	t'i
tian		tchien	t'ien
tiao		tchiao	t'iao
tie		tchie	t'ieh
ting		tching	t'ing
tong		tchung	t'ung
tou		tchou	t'ou
tu	tchu	t'u	

	Types of transcription		
	pinyin	Czech	English (WG)
	tuan	tchuan	t'uan
	tui	tchuej	t'ui
	tun	tchun	t'un
	tuo	tchuo	t'o
w	wa	wa	wa
	wai	waj	wai
	wan	wan	wan
	wang	wang	wang
	wei	wej	wei
	wen	wen	wen
	weng	weng	weng
	wo	wo	wo
	wu	wu	wu
x	xi	si	hsi
	xia	sia	hsia
	xian	sien	hsien
	xiang	siang	hsiang
	xiao	siao	hsiao
	xie	sie	hsieh
	xin	sin	hsin
	xing	sing	hsing
	xiong	siung	hsiung
	xiu	siou	hsiu
	xu	sü	hsü
	xuan	süan	hsüan

	Types of transcription		
	pinyin	Czech	English (WG)
	xue	süe	hsüeh
	xun	sün	hsün
y	ya	ja	ya
	yai	jaj	yai
	yan	jen	yen
	yang	jang	yang
	yao	jao	yao
	ye	jie	yeh
	yi	i	i
	yin	jin	yin
	ying	jing	ying
	yong	jung	yung
	you	jou	yu
	yu	jü	yü
	yuan	jüan	yüan
	yue	jüe	yüeh
	yun	jün	yün
	z	za	ca
zai		caj	tsai
zan		can	tsan
zang		cang	tsang
zao		cao	tsao
ze		ce	tse
zei		cej	tsei
zen		cen	tsen

	Types of transcription		
	pinyin	Czech	English (WG)
	zeng	ceng	tseng
	zha	ča	cha
	zhai	čaj	chai
	zhan	čan	chan
	zhang	čang	chang
	zhao	čao	chao
	zhe	če	che
	zhen	čen	chen
	zheng	čeng	cheng
	zhi	č'	chih
	zhong	čung	chung
	zhou	čou	chou
	zhu	ču	chu
	zhua	čua	chua
	zhuai	čuaj	chuai
	zhuan	čuan	chuan
	zhuang	čuang	chuang
	zhui	čuej	chui
	zhun	čun	chun
	zhuo	čuo	cho
	zi	c'	tzu
	zong	cung	tsung
	zou	cou	tsou
	zu	cu	tsu
	zuan	cuan	tsuan

	Types of transcription		
	pinyin	Czech	English (WG)
	zui	cuej	tsui
	zun	cun	tsun
	zuo	cuo	tso

Appendix 2 – Sample A, Czech Transcription

MO-KO te pcheng-jou-men, ta-tia chao, wo š' sa ting ting, chen kao-sing caj
 če-li che ni-men tien-mien, wo č'-tao laj MO-KO te žen i-ting tou š' cuej čchien-
 wej cuej š'-šang te, ti-i čang wan-wu šeng cuej-čung a caj wu š' tuo ke kuo-tia
 fa-sing, žan-chou jie čchü te le i-ting te čcheng-ti, na-me ti-er čang čchang-
 pchien er jüe i chao ti-tiang caj čchüan čchiou čchi-š' ke kuo-tia cuo-jou chuej
 tchung-pu fa-sing, suo-i če čej cch' jie š' ti-i ke chua-žen, neng-kou cuo-tao caj
 i tchán caj ke-ke kuo tia tchung-š' kchan-tao tchien-ti che čej čang čchang-
 pchien. Ti i čang čchang-pchien wan-wu šeng čchi š' tang-š' te wo siang-tao te
 keng tuo te š' aj-žen-men kche pu kche-i caj chen süan-nao chen cchao-ca te
 šeng-chuo li, neng-kou jou i pchien chen an-ting chen nin-ting te i pchien sin-
 tchien, na sin li-mien neng-kou te-tao i sie an-wej, žan-chou na kche pu
 kche-i jung jün-jung i sie žen che c'-žan che cung-tiao te kuan-si, čchü čchüan š'
 i ke i čang čchang-pchien te ču-tchi, suo-i wo süan ce le si-cang te pej-ting, žan-
 chou na-me ti-i čang čchang-pchien š' čej jang, tan-š' tao-le ti-er čang cuo wan
 tchien-ti che te š'-chou, jin-wej suej-če ti-i čang čchang-pchien, wo čchü le chen
 tuo ou-čou kuo-tia tin-sing le sün-jen, na-me jou er š' er ke kuo-tia che ti-čchü
 tin-sing te čuan čuan tiou š' čuan-čchang te jin-jüe chuej, suo-i wo tie-čchu le
 chen tuo mo-šeng te pcheng-jou, pao-kchuo pu-tchung čung-cu, pu-tchung
 kuo-tia, pu-tchung ling-jü te žen. Suo-i caj če kuo čcheng-čung, wo tchu-žan
 kan-tüe-tao čchi-š' jü-čchi žang ta-tia keng tuo te čchü š'-kchao, chaj pu-žu žang
 ta-tia caj čej i kche si-jüe čchi-laj, neng-kou žang ta-tia neng-kou wang-ti chen
 tuo te fan-nao, si-jüe chen čung-jao, suo-i ti-er čang čchang-pchien ne wo tiou
 cuo te čeng-ke caj čchi-fen che ti-tiao-šang, tin-žu le i ke si-jüe te ccheng-mien,
 si-wang ta-tia neng-kou te-tao chen tuo te čej ke ning-ting, nej-sin te-tao chen
 tuo tchien-mi-kan. Čchi-š' cuej čung-jao te, pu š' cung-tiao te li-liang, er-š' žang
 žen-men čen-š' te žen-š'-tao žen jü c'-žan, žen jü šen-pien wan-wu te che-sie,
 kche-neng caj chuej neng čen-čeng te-tao i ke siang-tuej jung-cheng i-tien te
 ning-ting. Ti-er čang čchang-pchien wo süan ce le i ke ču-tchi, tiou-š' wo-men

kuo čung-kuo te si-nan šao-šu min-cu ti-čchü, jie tiou-s' si-nan jün-nan šeng te i-sie jüan-su, i-sie nej-žung. Caj wo te jin-jüe li, wo i-č' i-laj i-laj čchung-šang te i ke li nien tiou-s' čchuang-cao, suo-i šuo č' č' kche-i čchü jung tcha-men te kan-tüe, č' kche-i čchü pu-čuo tcha-men te kan-tüe, chuo-če šuo, č' kche-i jung-tao tcha-men te i-sie tien-sing te jüe-čchi, tan-s' pu kche-i čchü jung tcha jüan-s' te nej-žung, suo-i šuo caj wo te sin te čchang-pchien li-mien, ta-fia chuej tching-tao laj-c' čung-kuo te šeng-jin, tan-s' tien-c' chua, če-jang te i ke i ke čchang-s', jou chen tuo te jin-se š' chen š' -jen sing-te. Wo te ti-er čang tchien-ti-che čchang-pchien te č' -cuo-žen ne jie-s' wo i-čchi lien-che č' -cuo, tcha š' tien-c' jin-jüe pu-fen te č' -cuo-žen, tcha fiao Marius Di Vris, žu-kuo š' jüe-mi pcheng-jou kchen-ting tuej tcha fej-čchang šou-si, tcha š' caj čen-čeng tchou-žu tao jin-jüe li, š' tcha te sing-čchü, che tcha čen te š' tcha te sing-čchü. Tcha i-ting s' s' tuo suej le, tan-s' tcha tao-le chuan-čchiu čchang-pchien tcha chuej čchuan-i šuang wa-c', jin-wej i ke lu-jin-pcheng chen že, tcha tiou čchuan te i šuang wa-c' cou-laj cou chü cou-laj cou-čchü, tiou-s' pu čchuan sie. Žan-chou caj waj-mien, wo caj li-mien lu-jin, tcha waj-mien i- č' tchiao-wu, i-č' caj ken-če tie-cou tchiao-wu, žan-chou wo lu-jin i pien tcha tchiao i pien, žan-chou wo tiou tüe-te wo čchang te chaj mej-jou tcha tchiao te lej, žan-chou tcha chuej ao i wan-šang wej-le i ke jin-se, wo šuo, a čej-ke jin-se kche-neng pu tchaj chao, tcha šuo, chao, wo i-ting č' -tao cuej chao te. Wo tiou chuej-čchü le, žan-chou ti-er tchien cao-šang laj, tcha šuo, a, ni laj le, wo i kchan cen-me čej-ke žen pien-čcheng nej-jang, tou-fa tiou. I kchan tiou-s' pu-č'-tao cen-me kuo-le če-i -jie. Žan-chou tcha šuo, wo i-ting čao-tao cuej pang-te, ni laj tching i-sia, wo i tching, tcha jung-le i wan-šang te š' -tien ting-žan fou-ting le čchien-mien te pien-čchü, čchung-sin jou pien-le ke sin te, suo-i wo čen te chen kan-khaj, wo tiou tüe-te če-jang če-me če-jang te i ke wu c' Gremy te tchi-ming che te-ťiang te. Čej ke wu c' čej ke žen, če-me ta te i ke č' -cuo-žen, tcha chuej jin-wej jin-jüe chaj ti-sü tiou-ti caj li-mien, ti-sü te ao-jie, ti-sü te wej-č' er fen-tou, c' -cchung che tcha che-cuo tchien-ti-che če čang i-chou, wo tuej c' -ti te čej-ke jin-jüe č' lu jie keng-ťia te, keng-ťia te cen-me řiang jou sin-sin le, jin-wej wo tüe-te žen cuej čung-jao š' -jao fang-ti, pa c' -ti fang-te chen ti, žan-chou cuej čung-jao š' kchao-jen c' -ti wo tiou-ting wej če tien š' -čching tchou-žu le tuo-šao, tuo-šao š' -tien, tuo-šao čching-kan. Tiou-ting ni

tuo-šao ni jüan-i čchü cuo, tcha kao-su wo šuo, čej ke kaj-tiao, wo šuo, chao. Caj jak, chao, caj jak, tang tcha šuo ti-s' cch' te š' -chou, i-pan žen tou chuej fan-nu, ni tiou-ting jao šen-me, tan-š', wo chou-laj tiou mej-jou, jin-wej tcha kao-su wo, kaj te ti-s' pien, tcha šuo, o, wo tüe-te ti-i pien te cuej-chao, na wo-men jou ting-ti tiou-ting cen-me mien-tuej c' -ti te jin-jüe cuo-pchin ne, wo-men tiou-ting jou neng cuo ti cch' ne, wo-men tiou-ting jou jou tuo-šao te ti-sien neng-kou žen-šou pie-žen tuej wo-men te č' -ce, che pie-žen tuej kej wo-men te tien-ji ne, wo-men jou tuo-šao te žen-naj neng-kou tie-šou ne. Caj ti-i čang te š'-chou, i-pan tou š' sien jao čchü cuo süan-lü, na süan-lu čchu-laj te š'-chou caj čchü tchien-cch', če-jang, suo-i tang wo čchü čchang süan-lü te š'-chou, wo cuej tchung-chen te tiou-š' la-la-la i-i-i če-jang te čchü čchü čchü čchang taj mou le, jin-wej ni če-jang čchü čchang taj mou che chao-siang i tien kan-tüe tou mej-jou, suo-i wo tiou chuej c' -fa te čchü tchou-žu kan-čching, i-tan tchou-žu kan-čching te-chua, tcha tiou chuej cchung i-i-i a-a-a la-la-la pien-čcheng le i ke čchi-kuaj te i sie c', žan-chou č'-chou ne, wo tiou caj čchü tchien-c' te š'-chou, jou-sie jin-jüe čen te š' wu-kche-naj-che, ni čchü tchien žen-che te cch' ni tao tin-pchang te š'-chou, ni tu chuej tüe-te, wa, wan-čchüan mej-jou wo te nej-ke c' -jü chao-tching, er-čchie, siang, siang-tuej tcha chaj chuej pcho-chuaj tiao chen tuo jin-jüe-sing, suo-i žu-kuo wo-men čchü cun-čung jin-jüe čen-š' kej wo te na i ke kan-šou te-chua, wo tiou chuej č' -neng čchü pa c' -jü čcheng-sien kej ta-tia. Jü-jen, chaj jou tiao-liou kou-tchung, čchi-š' ken-pen pu sü-jao čej sie fu-chao, keng-tuo te sü-jao si-jü sing te čej-ke tuej-jin, čchi-š', wo tüe-te c' -jü č'-chou, wo caj ž'-pen a, ou-čou a, jou-te š'-chou jou chen tuo te mej-tchi chuo-če kuan-čung, tcha-men chuej kao-su wo, pao-kchuo caj kuo-nej, tcha-men chuej šuo ej wo caj čej-ke jin-jüe li wo tching-tao le i sie ku-siang, tching-tao le s' nien tching-tao i sie kan-čching jin-su, na wo tiou tüe-te kou le. Čchi-š' i šou jin-jüe tcha cuej čung-jao taj-kej ta-tia te š' i ke čching-sü te tiao-tung, š' i ke neng-kou jin-jüe te mej-li, tiou caj-jü tcha neng-kou caj i ke š'-tien pa ni cchung čej-ke chuan-ting li čchou li čchu-čchü, chuo-če caj i ke š'-tien žang ni nej-sin jou-sie pien-chua, čej-ke jin-jüe tiou-š' chao te jin-jüe, suo-i wo tiou tüe-te, caj tang-taj te jin-jüe li-mien, wo chen tuo tching-tao te jou wang-wang š' tie-cou, ke cch', čen te tching-pu-tao, i ke jin-jüe te i ke čeng-ke jin-jüe te i ke sien-tchiao le čej-ke sien-tchiao jüe laj jüe pej

chu-lüe jüe laj jüe pej tan-chua. Tuej-jü cang-wen jie chao, fan-wen jie chao, tiou
 lien-pchu-pa-tia kchan-tao wo tou šuo ken wo šuo cang-jü, šuo o šuo le i tuej, wo
 šuo, a ni jao kan-ma? Tcha šuo, ej, ni pu š' cang-cu-žen ma? Wo šuo wo pu š'
 cang-cu-žen, tcha šuo, tan-š' ni nej-ke šen-siang ne tiou-š' wo cang-cu-žen a, wo
 šuo ni ni tching nej-ke cang-jü tüe-te š' cang-cu-žen čchang te ma? Tcha šuo,
 tuej. Suo-i wo tiou tüe-te, čchi-š' wo pu š' cang-zu-žen, er-čchie wo jie pu š' fan-
 wen kao-šou, keng pu š' cang-wen kao-šou, tan-š' cuej čung-jao te š' wo fa-sien
 le, chen tuo te wen-c' li-mien jün-chan le süen-lü, wo kan-jü pa čej-sie süen-lü
 jung tcha jüan-pen te jü-jen piao-ta čchu-laj, žan-chou jung čej-čung kan-tüe
 žang jen-šen čchu-čchü, žang keng-tuo te žen neng-kou tchi-chuej tao čej-čung
 ting-šen š'-tie te čuan-chua. T'iou-š', šuo ni kche kche-neng wo cuo-caj če-li wo
 š' sa ting ting, tan-š' čchi-š' wo ting-šen š'-tie li wo š' i ke chen cchang-lao jie-sü
 pa š' suej te žen, chuo-če jou-sie žen šuo wo š' žen, tan-š' čchi-š' wo te ting-šen
 š'-tie li wo š' i ke wo š' i ke i č' siao wen-c', wo chuej kchan-tao wen-c' te š'-chou,
 o, če š' wo te tchung-cu. Čen te sien-caj čej-ke š'-tie čen te mej i ke žen tou pu-
 tchung, suo-i wo tiou tüe-te kuan-jü i šu che ting-šen š'-tie te kua-kou, jou chen
 tuo š'-chou š' š' ming-ming-čung, chuo-če šuo-š' chen mej jou mu-ti-te. Š' chen
 mo-ming tiou tie-che caj i-čchi te. Jou-te chen tuo š'-chou žen-men šuo wo i-č'
 caj kuo-waj i piao-jen na kche-neng caj si-fang te š'-jie li tiou-š' šuo tcha š' laj-c'
 tung-fang te i ke taj-piao-sing te žen-wu š' i ke sin š'-taj te jin-jüe te i ke i ke čch-
 ing-nien š' te čej-ke li čcheng-pej š' te žen suo-jou te čej-čung ta-chua la žan-
 chou čchi-š' caj wo kchan-laj če sie tou che wo wu-kuan če sie tou š' pie-žen te
 kchan-fa che siang-fa šen-č' jü wo c'-ti tou caj siang wo č'-neng taj-piao wo c'-ti te
 i ke š'-tiao cchung wo te jen-ting li kchan-tao te jin-jüe tching kchan-tao te nej-
 žung žan-chou pa tcha čuan-chua čcheng i ke jin-jüe chen che ta-tia tiao-liou
 tiou-š' če š' i ke cuej tien-tan te i ke fang-š' č'-jü wo š'-pu-š' wen-chua ta-š' la
 chuo-če š' wo š' i ke šen-me jang te žen-wu la čchi-š' wo cchung-laj jie mej-jou
 š'-kchao-kuo er-čchie wo tüe-te čej-ke tüe-se cuej čung-jao te š' jou-te š'-chou š'
 ni mej-jou pan-fa jin-wej ni caj si-fang te wu-tchaj-šang chen šao čchu-sien
 čung-kuo te jin-jüe žen na kche-neng čung-kuo te jin-jüe žen te-tiang jie š' chen
 šao chen šao te suo-i kche-neng ta-tia chuej tchou-kuo ni kchan-tao tang-taj
 čung-kuo čching-nien te i ke mien-mao tchou-kuo ni kchan-tao tang-taj

čung-kuo jin-jüe i-šu te i ke nej-žung suo-i tcha kche-neng t'iou chuej pa ni che
 chen tuo te ta te ming-cch' ta te čej-ke tchou-sien lien-si caj i-čchi tan-s' t'uej cuo
 wej wo laj šuo wo fej-čchang čching-sing ti žen-s' tao čchi-s' wo t'iou-s' i ke cuo
 jin-jüe te wo-men mej i ke žen tou mej jou pan-fa čchü šuo tang-taj tching-čung
 t'iou-ting sü-jao šen-me jou chen tuo jie t'iou-s' i sie lao-s' tcha-men jün-jung
 ting-jen na jün-jung tcha-men c'-ti te fen-si t'in-t'in neng taj-piao tcha-men c'-ti
 ke žen te kuan-tien suo-i i-šu čej-ke čej-ke tung-si wo tüe-te mej jou žen neng-
 kou čang kchung pie-žen te nej-sin te tang wo-men čchü cuo i-šu te s'-chou wo-
 men čchien-wan pu-jao čchü jou mu-ti sing-ti čchü cuo jin-wej jou mu-ti sing-ti
 čchü cuo te s'-chou tcha chuej jou liang ke pi-tuan i ke t'iou-s' ni žu-kuo s'-paj le
 s'-čchang mej jou žen-kche čchi-s' čej-ke jie pu s' ni jin-wej ni s' taj-če mu-ti čchü
 cuo te jie pu s' ni čen-s' te šuej-čun na-me ti-er t'iou-s' žu-kuo ni ni cuo le i ke
 tung-si žan-chou ta-tia žen-kche i-tan žen-kche čej-ke tung-si ni caj siang cuo
 chuej ni c'-ti te s'-chou jou s' chen kchun-nan te i ke kuo-čcheng ni šuo ej čej-ke
 čchi-s' pu s' wo wo wo sien-caj jou-čchien le chao na wo jao cuo wo čej-ke
 čuan-sing jou s' chen kchun-nan te suo-i chaj pu žu ni s' šen-me-jang t'iou cuo
 šen-me-jang te nej-žung če-jang te-čua čcheng-kung čcheng jie-s' tcha paj jie-s'
 tcha ni jie pu chuej chou-chuej chuo-če jie pu chuej jie pu chuej jou čej-ke chu-
 chu kao chu ti te čej-čung s'-luo te nej-sin nej-sin le wo t'iou chen pching-ting
 chen tan ting ti čchü mien-tuej jou-te s'-chou ni c'-ti čchen-t'in caj i-šu te s'-tie li
 Ni c'-ti čchuang-cao i-šu čej-ke s' i ke c'-ku i-laj cuo i šu te i ke cuej tien-kchang
 te fang-fa t'iou-s' i-šu-tia c'-ti čchen-t'in t'in-čchü ni siang-jao cuo šen-me cuo le
 i ke na-čchu-laj če s' cuej tien-kchang te er- s' žang wo-men sien-taj-žen kej kao
 te pu tien-kchang le kao-čcheng ej wo sien-caj sü-jao i ke šen-me ni kej wo cuo
 i ke wo tüe-te čchi-s' čej-ke s' siang-fan s'-pu tien-kchang te kuan-čung pcheng-
 jou-men ta-tia chao wo s' sa ting ting e caj MO-KO kchan-tao wo te kuan-čung
 jou chen tuo jie-s' si-chuan wo na-me caj če-li ting ting šuo si-wang wo te cuo-
 pchin neng-kou žang ni i-č' si-chuan wo t'i-sü si-chuan wo na-me jie jou i sie pu
 si-chuan wo te kuan-čung na-me jie mej jou kuan-si wo tüe-te čchi-s' si-chuan
 pu si-chuan č'-s' i ke nien-tchou ma suo-i šuo jie-sü caj wej-laj te mou i tchán ni
 jie kche-neng chuej si-chuan wo jie kche-neng chuej keng chen wo pu-kuo wo
 si-wang wo pu-jao jing-siang ni te čen-čchang šeng-chuo sie-sie

Appendix 3 – Sample B, Czech Transcription

Da-tia chao, wo-men s' sin-tie-kchou cu-che, ni sien-caj sou-kchan te s' MO-GO. Yeah.

Wo-men sin-čchu le tiao san čang čuan-ti, čchao-ti saj-ja-žen, wo s' em-ci chan.

Yeah nju strít sin-tie-kchou ti-san čang laj le.

Wo-men jing-kaj s' cuo te pi čchien-liang čang tuo-jao ting č' le chen tuo, č'-čung-le ni jou wo-men ta-jüe s' tu-li šang i čang jou i nien-te s'-tien, wo-men sie le s'-s' sou ke ta-jüe, cuej-chou tchiao-čchu-laj ti-sou cuej-chou, jin-wej čchi-s' kche-i suan-s' i čang ting-süen ti-le čej-čuang čuan-ti, žan-chou jie-jou chen tuo te pien-chua, pao wo šuo cchung pien-čchü-šang, čaj-jou ke-cch' šang, wo-men-tou sia-le fej-čchang ta-te kung-fu, jao cuo-čchu i čang, tiou-šuo, pu č' jü wo-men č'-čien feng-ke čaj-jou čeng-ke te čung-kuo šuo-čchang feng-ke tou-pu-tčaj i jang-te čej-jang i tang si-di. Wo-men čchi-s' tiou-s' si-wang c'-ti neng-kou jou i čung i čung li-liang, čchü ken, liou-sing jin-jüe čchü tuej kchang, jin-wej nej pang liou-sing tčaj ša-pi le, žan-chou tcha-men sien-caj i-ting, i-ting žang wo pu kao-sing le, tcha žang wo pu kao-sing wo tiou pi-sü žang tcha pu kao-sing, tuej.

Žang-chou, wo-men sien-caj, čchi-s' ni-kchan nej-ke wo-men-te čuan-ti feng-mien, ni kche-ji kchan nej-ke feng-mien, žang šang-bien jao-šej?

Čej s' sun wu-kchung, pej-ti-tcha, žan-chou cuan-če nej-ke pchan wej-po, žan-chou čaj-jou če tiao-ti cčaj-če Li jü-čchun, čaj-jou nej-ke cuan-če jang-čchan-nien, žang-chou čaj-jou tang-žan čaj-jou čaj-jou tchou-če.

Wo-men tiour, ken i-pang liou-sing ša-pi-men, žan-chou wo-men tiou-jao kan-tiao tcha-men, wo-men pi-sü kan-tiao tcha-men.

Piao-ta wo-men tiou-s' jao pien-šen čchao-ti saj-ja-žen, žan-chou, i čung li-siang, žan-chou jao kan-dao jin-jüe, čeng sou-ge-te sie-te, tiou-s', ma tch šuo tcha-men ja, nej-sie pu neng tien tčaj-jang-kuang te šeng, šeng-le čaj-le tcha ma pu kan čchu-laj čcheng-žen, žan-chou, ma le ke pi te, i tuej čchien kuej-ce, ken pie-žen šang-čchuang, s' pa, cchao, šang-čchuang jie čchu-laj s' pa, čaj jou

ni ma cuo nej ti pen lan lan jin-jüe, wo cchao, pa čung-kuo te jin-jüe cuo-čchu šen-me cchao-sing le, ni cchao le wo, ni i-tching tiou ta kchou-šuej ke wo cchao, man ta-tie te chu-tie š' pa, cchao, pu-č' liang č' le, wo kchan i čchün le pa jing-kaj, suo-i, wo tüe-te, čej-ke ni-men ja-pa jin-jüe ni-men ja-cuo lan le, suo-i wo, ni jou ni jou čchin-fan tao wo chip-chop šang le, wo tang-žan jao ma ni le, wo tang-žan jao šuo ni le, suo-i čej š' wo-men jao cuo nej šou čchao-ti saj-ja-žen, ling-waj, i ke tiou š' lao sung cuo č'-me tuo nien le, wo tüe-te wo cchao, žan-chou i-č' si-wang neng kej tcha cuo je i ke dan-čchüe, suo-i č'-c' wo pa ču-ta-ke kej tcha cuo le, ni kan-sie wo i-sia le, wo cchao.

Wo si-wang tiou-š' šuo, wo-men neng i-kchuaj, pa pa čej-ke chip-chop can-men kej cuo niou pi le, can-men tou tej čang-čchi-laj,

Zan tej can tej cuo jin-jüe a, wo cchao, can tej can tej kan ja te, wo cchao, tchan-pu tchan-pu le cchao wo-men pu š' tcha-men te liou-sing cchao šuo šang ma, wo-men sien-caj wen tcha-men le wo fang-cchao liou-sing, wo žang ja čchi-ang-tien pu-sing fan pej-cchao, wo šang-čou ne ni tiou wo te cchao le čaj, wo te cchao le nej-ke i tuo tchien kuang le, žang-chou nej-ke pa tcha nej-ke aj-čching cuej-fan kej kaj le, wo mej sia pi kaj, wo kaj te wo kaj te tching niou-pi te chen, wo cchao, tie-kuo, tan-š' nej čung fa-šou i jing-ti, jü ke tchien-kuang ne tchie-pa nej pang žen pao le wo cchao, pa wo le pa žen pa wo tchie-pa kej šua le, žan-chou, žan-chou wo cchao man ta tie te ma wo, wo čcheng čchen-te fan le, wo pu pcha ni-men ja ma wo, tan-š' wo tej čan-čchu-laj, wo š' liou-wa wo š' tchu-fej, tan ni ma pi wo š' liou-mang, ni jie pu neng čchi-fu wo a, ni jie pu neng nung wo a, wo mej fan cchuo-wu, wo mej čchi-fu ni a, cchao.

Fej-šou caj pej-ting wo-men tiou cuo le jie cuo le liang ke pan-pen, i ke pan-pen š' i ke šuo-čang tia a en pi te i ke pan-pen, ling-waj i ke pan-pen wo-men cuo le š' čching te š' tche niou-pi te nej-ke, pej-ting tche niou-pi te nej-ke a en pi te ke-šou wang chung-li, žan-chou čching tcha cuo le i ke a en pi pan te, tiou š' wo-men čchiang te š' šuo, chou-miar čeng-ke i ta tuan tou š' čchar, tcha sie te tung-si te tiaou tu jie che i-čchien pu i-jang, jin-wej čchuan-tchung te čej čung šuo-čchang ke-čchü tou š' caj sie wo cen-me cen-me aj ni, žan-chou wo cchao, chuo-č' wo, cchao wo jou tuo tchung-kchu, wo šou le šen-me šeng, tan-š' čej šou ke wo sie te š', i ke nan žen nej sin te čeng-ča, žan-chou čchi-š' tiou-š', e

i-pien caj ma, čej ke nü žen, tcha ti chen nej-ke žen, tan-š' tcha jie, tcha jie neng piao-ta čchu tcha tvej nej-ke žen te kan-čching, pi žu ke-c' jie šuo nej-ke, wo jong fej-chua i jang te čcheng-nuo kej kuo ni sing-fu, ni jung tao-te i-jang te chua chuan-kej wo tchung-kchu, žang-chou čej-jang te chua, kche-neng, jou jung čej-čung kan-tue, če i tü chua tiou neng piao-ta čchu, čej-ke nan-žen tcha nej-sin te čej-čung čeng-ča.

Wo sie te tung-si, čchi-š' wo jüan-i šeng-chuo, tan-š' ti-jü šeng-chuo, ma le ke pi ni kchua wo ma wo ne.

Appendix 4 – Sample C, Czech Transcription

YD 177:

Ku-wen tcha tou tung. Pu žen-š' te žen tcha tou jüan-ji pang-mang ma? Tang-žan le. Siao-chaj-c' tou tung če ke tao-li, ni cen-me pu tung? Tcha cuej chao te pcheng-jou tou li-kchaj tcha le. Tcha te šuej-pching tou neng čchü čung-kuo, cen-me pu pchaj ni čchü ne? Pchan-c' tou čcha tienr žang tcha kej čch' le, čen na-me e ma? Tcha? Tcha chao pcheng-jou tou čchu-maj le che-kchuang ni ne? I-li-ša-paj ku-wen tou tung. Če tia šang-tien šen-me tou jou, čung-kuo te tung-si tou jou. T'in-nien caj Pu-la-ke tou čem-me že, Pej-ting tiou keng peng tchi le. Caj Pej-ting tou che-te-čao pi-er-sen pchi-tiou, caj Pu-la-ke cen-me maj-pu-tao ne? Er-š' š'-ti chaj jou če čung š'-čching fa-šeng, čen kche-pcha. Tcha tan-c' chen ta, tuej chuang-šang tou kan čen-me šuo. Tcha ken tcha čchin papa tou nao-fan le. Siao Chu-c' te ker pi tcha ke-ke tou kao. Tcha kchaj kcha-čche tou kchaj-te-liao, cen-me kchaj-pu-liao siao čchi-čche ne? Tcha sie mao-pi-c' tou sie te chen chao, kang-pi-c' c'-žan mej wen-tchi le. Ni te chua šuo tou šuo-čchu-laj le, che-pi chou-chuej ne? Ni na tou kej tcha na-laj le, tiou kej tcha suan le. T'iao-c' ti-žan ni pao tou pao-chao le, na wo jie tiou pu kche-čchi le.

YD 176:

Šen-me Lao Še te cuo-pchin wo tou kchan-kuo le. Šen-me tchu-tour-ping tchu-tour-mien-tan wo tou pi-tiao si-chuan. Pej-ting te šen-me ti-fangr tcha tou čchuan-kuo. Če ke tao-li šej tou č'-tao, kche-š' tou pu šuo-čchu kchou laj. Šen-me žen tou laj le, tiou š' ni mej laj. T'ie-kche-s'-luo-fa-kche nej ke ti-fangr tou jou kung-pao. Nar tou jou chao-žen che chuaj-žen. Wo-men nej tchien čchü wanr? Čchu-le li-paj-i nej tchien tou kche-i. Če ke žen ken šej tou neng che-te-laj. Tcha pi šen-me süe-šeng te šuej-pching tou kao. Wo te če ke pcheng-jou tuej nej wej tchung-š' tou chen jou-chao. Wo šen-me cchaj tou čch', ni tien pa. Chaj-š' ni tien pa. Če jangr pa: wo tien lia, ni tien lia, ni kchan chao pu chao? Sing! Wo nej ke chaj-c' tou si-chuan, tche-pie š' nej ke siao tia-chuor. Č'-wu-jüan-li šen-me šu

tou jou. Suej-pien šej laj wo-men tou chuan-jing. Wo nej tchien čchü tcha tou jou š'r, pu neng tien wo. Wo šen-me š'-chour kche-i laj? Ni šen-me š'-chour siang laj tou kche-i laj.

YD 175:

Tcha-men tia te žen tou laj le. Wo ta-mej-mej er-mej-mej tou laj-kuo tie-kche. T'iou-jüe š'-jüe tou š' lü-jou te chao ti-tie. Fu-mu tou č'-čch' wo süe chan-jü. Li-siang si-wang tou čcheng pchao-jing le. Pu-la-ke te chaj-c'-men čcha-pu-tuo tou tao lao-lao lao-jie jie-jie naj-naj nar kuo šu-tia čchü le. Če sie kou ču-i tou š' nej ke chuaj-tan čchu te? Lao Še te cuo-pchin wo tou tu-kuo. Če liang pu tien-jingr tcha tou si-chuan. Pu-la-ke te t'iao-tchang wo tou cchan-kuan-kuo. Te-kuo te Po-lin Po-lan te Chua-ša Siong-ja-li te Pu-ta-pchej-s', Pu-la-ke te Čung-kuo liu-süe-šeng-men tou čchü-kuo le. Wang-c' lie-kung čcha-li bie-kung ni-men tou čchü-kuo le ma? Wo pa ni te šu tou chuan kej ni pa. Wo pa ni jao te tung-si tou kej ni maj-laj le. Süe-šeng-men pa jing-kaj süe-chuej te šeng-cch' tou süe-chuej le. Lin-tü te siao-t'ir pa wo-men jüan-c'-li te chuar tou kej čchien le. Lou čchien lou chou wo tou čao-kuo le. Mej jou. Su-lien Te-kuo che Nan-si-la-fu, tou jou chaj, tiou š' wo-men T'ie-kche mej jou. Šang-wu sia-wu tcha tou laj-kuo. T'in-tchien sia-wu san tien s' tien ni tou kche-i laj. Čchien-tchien ta-čchien-tchien čer tou sia-le jü. Wo pi wo tie-tie mej-mej tou chej. Tcha ken ta-tia tou che-te-laj. Če ke tia-chuo siang wo-men tia ni-men tia tou tie-le čchien, lao pu chuan.

YD 172:

Šej aj šuo šej tiou šuo, wo fan-čeng pu pcha žen šuo. Šej jüan-i laj šej tiou laj, šej laj tou chuan-jing. Wo chen čchan, šen-me chao-čch' tiou čch' šen-me. Ni-men sien-caj siang šuo šen-me, tiou šuo šen-me, wo-men kche pu sing. Žang ni kan šen-me ni tiou kan šen-me? Žang ni čchü ša žen ni jie čchü ša ma? Žen-tia šuo šen-me ni tiou šuo šen-me, ni mej jou c'-ti te kchang-far ma? Tcha kchan-tien šen-me tiou maj šen-me, lao luan chua čchien. Šen-me jangr te pa-pa šen-me jangr te er-c'. Š' šen-me žen, tiou t'iao šen-me pcheng-jou, wu i lej tü ma. Šen-me chuo, šen-me tiar. Tcha jü-tien šen-me žen tiou šuo šen-me chua. Ni siang šen-me š'-chour laj tiou šen-me š'-chour laj pa. Tcha lao pcha leng, nar jou tchaj-jang,

tcha tiou cuo caj nar. Će ke Źen cen-me Źuo tiou cen-me cuo. Wo fan-ĉeng pu tchung-i, ni jao cen-me jang tiou cen-me jang pa. Wo tŹe-tuej pu kej, tcha-men jao pa wo cen-me jang tiou cen-me jang pa. Ni neng ĉch' tuo-Źao tiou ĉch' tuo-Źao, wo pu ĉchiang-pcho ni. Tcha laj tuo-Źao cch' wo tiou tie-taj tcha tuo-Źao cch'. Ni pie jou tuo-ĉchien tiou chua tuo-Źao ĉchien, jing-kaj tie-jŹe. Tcha sŹe ti kche tiou chuej ti kche, chen jung-kung. Nej lej Źen tiou tiaoj nej lej pcheng-jou. Nej ĉung chao tiou jung nej ĉung.

YD 171:

Wo te sing-li tchaj tuo le, ni-men Źej neng sung sung wo ne? Ni te sing-li tchaj tuo, Źej jao-s' neng sung sung ni tiou chao le. Źej neng sung sung wo ne? Ni neng pu neng sung sung wo ne? Źej neng pang pang wo ne? Ni neng pu neng ne? Neng, wo neng. Ni pie ĉao-ti, wo i-ting ĉao Źej pang pang ni. Ćao Źej ne? Ni peng kuan le, fan-ĉeng chuej jou Źen laj pang-ĉu ni. Ni Źang nar ĉchŹ? Maj tung-si ĉchŹ. Maj Źen-me ĉchŹ? Maj Źeng-tan-Źu ĉchŹ. Pu cao ma? Pu cao. Ni siang maj tienr Źen-me sung kej tcha? Maj tienr Źen-me chao ne? Ni Źuo ne!? Sia-pan i-chou ni laj i siar, wo kej ni kchan tienr Źen-me. Ni siang kej wo kchan tienr Źen-me ne? Sien pu kao-su ni, laj-le, ni c'-ti kchan. Ming-tchien s' sing-ĉchi-tchien, can-men Źang nar wanr wanr ĉchŹ ne? Ming-tchien s' sing-ĉchi-tchien can-men Źang nar wanr ĉchŹ pa, pie jou caj tia-li pchao i tchien. Ni Źen-me s'-chour laj, can lia chao-chaor liao liao. Źen-me s'-chour ne? sia ke jŹe cen-me jang? Chao, tiou sia ke jŹe pa, ni ta tien-chua a? Źang-wu wo pu caj te s'-chour jou wo te tien-chua ma? Mej jou, Źen-me tien-chua tou mej jou. Tin-tchien maj tienr Źen-me cchaj ne? Suej ni pien, ni maj Źen-me, wo ĉch' Źen-me. Tcha tin-tchien wan-Źang laj, can-men kej tcha ĉun-pej Źen-me tcha si-chuan ĉch' te cchaj pa. Wo te tien-s' jou tienr maoping. Nej tchien wo ĉchŹ kej ni kchan kchan. Nej tchien ne? Nej tchien wo chaj pu ĉ'-tao, ni teng wo te tien-chua pa. Tcha Źuo le, tcha chaj kche-I tiaoj ti ke sŹe-Źeng. Tiao ti ke ne? Wo ku-ti jie tiou s' liang san ke.

YD 170:

Wo mej tchien cao-Źang wu tien pan ĉchi ĉchuang, wan-Źang s' tien pan i-chou cchaj ĉchŹ suej. Huo-ĉche tiou tien ling san fen tao-ta. Ni mej tchien Źuej ti ke

čung-tchou? Čchi ke tao čchi ke pan siao- š'. Tcha š' san tien laj te, caj čer taj-le san ke čung-tchou. I čchien wu paj kung-čchi tcha pchao-le s' fen san-š'-wu miao, čen pu cen-me jang.

YD 165:

Wo nü-er fin-tchien mej šang-pan, tcha ping le. Ming-tchien wo pu čchü, wo ma-ma laj. I nien i-nej sie-pu-wan ma? Wo siang sie-te-wan pa. Če ke li-paj i-ting cuo-pu-wan-le, tej sia ke li-paj le. Ni pu š' šang li-paj laj te ma? Nar a, cuo-tchien cchaj laj. A, š' če jangr! Ni pu š' sia ke jüe cchaj cou ma? Čhaj jou š'-tien ne! Tcha tiang kche i-lien tiang-le liang ke čung-tchou, wo tou tching te č' kchun. Wo caj tcha nar mej taj ti tchien, č' taj-le liang tchien tou chuej-laj le. Tcha tiang kche tiang-le chaj mej-tao i ke čung-tchou, tiou šuo jao čchu-čchü čchou i č' jen. Wo mej čchü i čeng tchien, č' čchü-le siao pan tchienr. Wo pu siang caj fej-ti-čchang teng wu ke čung-tchou, tiou tao čcheng-li čchü čuan-le i čchüanr. Wo kche pu siang caj tcha nar pchao ke ta pan tchien, pu kej tiou suan le, wo kche mej na-me sie š'-tien.

YD 192:

Čchi-laj čchi-laj, tou pa tien le, chaj pu čchi-laj?! Lan tung-si, chaj pu čchi-laj! Čchi-laj, ženg lao-žen cuo! Hu-š' pang-ču ping-žen cuo-čchi-laj čch' fan. Čchien-pienr te žen čan-čchi-laj, chou-pienr te žen tiou kchan-pu-tien le. Tcha kao-sing te tchiao-čchi-laj le. Caj kchun-nan mien-čchien, jao pa tchou tchaj-čchi-laj. Naj-naj čchi te kchu-čchi-laj le. Tcheng te wo tou tiao-čchi-laj le. Liang ke žen šuo-č' šuo-č' tiou chan-čchi-laj le. Tchien-čchi man-manr te chao-čchi-laj le. Liang I jou ta-čchi-laj le. Ni sia-čchü pa tcha taj-šang-laj. Pu-čang žang tcha sia-čchü tiao-čcha tiao-čcha tao-ti š' cen-me chuej š'. Ni jao jou-jung, ni tiou jou, če-me leng te tchienr wo kche pu sia-čchü. Lao te pu sia-čchü, nian-čching te tiou šang-pu-laj. Naj-naj caj lou-sia ne, žang ni pa mao-I kej tcha na-sia-čchü. Pa čch' te kchung pchan-č' na-sia-čchü. Ču-i, čer chen tou, pie tiao-sia-čchü. Pa če liang pchienr jao čch'-sia-čchü, pa če tienr pai kchaj-šuej che-sia-čchü. Tuej-pu-čchi, wo ta-tuan-le nin te chua, nin šuo-sia-čchü pa. Če jang sia-čchü, ni tiou chuej ping le. Če jang sia-čchü kche pu sing! Če jang kao-sia-čchü, kuo-tia tiou jao fen-lie le. Čchu-laj pa! Waj-mien liang-kchuaj! Wo čchu-laj te š'-chour wang-le taj

čchien-paor le. Tcha pa sin-fengr che sin-č' na-čchu-laj, jao kej ma-ma sie sin. Pa li-c' te chur kchou-čchu-laj! Wo tching-čchu-laj-le, tcha š' nan-fang-žen. Tcha-men i-ting tüe-čchu-laj-le, če š' pu tuej tchou. Wo wen-čchu-laj-le če žou jou wejr le, pie čch', ženg le pa. Če cchaj-li jou suan, wo čch'-čchu-laj le. Wo kchan-čchu-laj-le, tcha pu si-chuan.

YD 191:

Tcha pa sin-li te chua tou šuo-čchu-laj le. Wo pa sin-li te chua tou šuo-čchu-čchü le. Ke-ke pa čchien tou tie-čchu-čchü le, i-ting mej jou čchien le. Pa š' i-fu na-čchu-čchü liang-šang. Pa jao čch'-sia-čchü le ma? Čch'-sia-čchü le. Š' šen-me žen pa tcha tchaj-šang-čchü le. Tchien č'-tao. Kuej č'-tao. Jen-tiou-šeng cchung tchu-šu-kuan pa jao jung te cchan-kchao-šu tou tie-laj le. Ni pac haj-c' taj-laj pa, wo kej ni kchan-č'. Pa čchien kej tcha na-čchü, pa tung-si kej wo taj-chuej-laj. Cchung ping-siang-li na-čchu chuang-jou laj. Šu-šu cchung che-li tiao-šang i tchiao ta li-jü laj. Ni pa cuej ta cuej chung te pching-kuo kej wo čaj-sia liang ke laj. Wo tej pa süe-siao te čchi-čche kchai-chuej süe-siao čchü, i-chou cchaj neng chuej tia. Wo kchan-tien tcha-men lia cou-ťin i tiár šang-tien-li čchü le. Chuej cao kchan-wan le, ni aj-žen cao chuej tia čchü le. Tao-le Pu-la-ke ni sien chuej tia laj, i-chou caj tao nar čchü. Tcha čchu-čchaj liang ke li-paj, wo kej tcha tai-le liang penr šu čchü, mej š'r tie tie menr. Ni kche-i pu kche-i cchung Pej-ťing kej wo taj i tchaj čung-jing-wen tian-c' ta-c'-ti laj? Ni ťin čcheng ma? Š' a. Kej wo taj i ke sin-fengr laj, kche-i ma? Tcha na-čchu-le wo te i fenr Žen-min ž'-pao, sia ke li-paj cchaj chuan wo. Liou lao-s' kej tcha caj Pej-ťing te aj-žen šao-čchü-le i tchao tie-kche te po-li-pej. Chuej-šang, tcha tchi-čchu-le i siang ťien-i. Ttie-ťie jao laj ču i nien, wo ma-šang ťiou cu-sia-le i tchao fang-c'.

YD 192:

Čchi-laj, čchi-laj, tou pa ťien le, chaj pu čchi-laj?! Lan tung-si, chaj pu čchi-laj! Čchi-laj, žang lao-žen cuo! Chu-s' pang-ču ping-žen cuo-čchi-laj čch' fan. Čchien-pienr te žen čan-čch'-laj, chou-pienr te žen tiou kchan-pu-ťien le. Tcha kao-sing te tchiao-čch'-laj le. Caj kchun-nan mien-čchien, jao pa tchou tchaj-čch'-laj. Naj-naj čch' te kchu-čch'-laj le. Tcheng te wo tou ťiao-čch'-laj le. Liang ke žen šuo-č' šuo-č' tiou

chan-čch'-laj le. Tchien-čch' man-manr te chao-čch'-laj le. Liang I jou ta-čch'-laj le. Ni sia-čchü pat cha taj-šang-laj. Pu-čang žang tcha sia-čchü tiao-čcha tiao-čcha tao-ti š' cen-me chuej š'. Ni jao jou-jung, ni tiou jou, čen-me leng te tchienr wo kche bu sia-čchü. Lao te pu sia-čchü, nien-čching te tiou šang-pu-laj. Naj-naj caj lou-sia ne, žang ni pa mao-i kej tcha na-sia-čchü. Pa čch'-wan te kchung pchan-ci na-sia-čchü. Ču-i, čer chen tou, pie tiao-sia-čchü. Pa če liang pchienr jao čch'-sia-čchü, pa če tienr paj kchaj-šuej che-sia-čchü. Tuej-pu-čch', wo ta-tuan-le nin te chua, nin šuo-sia-čchü pa. Če jang kao-sia-čchü, ni tiou chuej ping le. Če jang xia-čchü kche pu sing! Če jang kao-sia-čchü, kuo-tia tiou jao fen-lie le. Čchu-laj pa! Waj-mien liang-kchuaj! Wo čchu-laj te š'-chour wang-le taj čchien-paor le. Tcha pa sin-fengr che sin-č' na-čchu-laj, jao kej ma-ma sie sin. Pa Li-č' te chur kchou-čchu-laj! Wo tching-čchu-laj le, tcha š' nan-fang-žen. Tcha-men i-ting tüe-čchu-laj-le, če š'r pu tuej-tchou. Wo wen-čchu-laj-le če žou jou wejr le, pie čch', ženg le pa. Če cchaj-li jou suan, wo čch'-čchu-laj le. Wo kchan-čchu-laj-le, tcha pu si-chuan.

YD 254:

Wu-li tchaj že le, can-men tao waj-mien lin-č'-li čchü liang-kchuaj liang-kchuaj. Nin kchuaj tin-laj Juan-chuo Juan-chuo pa. Chaj-č'men tou čang-ta le, tou čcheng tia li jie le, cudo fu-mu te tiou kche-i čching-sung čching-sung le. Čch'-wan wu-fan jin-kaj čchu-čchü liou-ta liou-ta siao-chua siao-chua š'r.

Appendix 5 – Demonstration of the Segmentation

Example 1

Utterance	MO-KO te pcheng-jou-mien ta-tia chiao wo s' sa ting ting													
Statements	MO-KO te pcheng-jou-mien ta-t'ia chiao wo s' sa ting ting													
Stress units	MO-KO te	pcheng-jou-mien	ta-t'ia chiao	wo s'	sa ting ting									
Syllables	MO	KO	te	pcheng	jou	mien	ta	t'ia	chiao	wo	s'	sa	ting	ting

Example 2

Utterance	chen kao-sing cai ce-li che ni-mien t'ien-mien wo e'-tao laj MO-KO te zen i-ting tou s' cuej c'chien-wej cuej s'-sang te																													
Statements	chen kao-sing cai ce-li che ni-mien t'ien-mien wo e'-tao laj MO-KO te zen i-ting tou s' cuej c'chien-wej cuej s'-sang te																													
Stress units	chen kao-sing cai ce-li	che ni-mien t'ien-mien	wo e'-tao	laj MO-KO te zen	i-ting tou s'	cuej c'chien-wej	cuej s'-sang te																							
Syllables	chen	kao	sing	cai	ce	li	che	ni	mien	t'ien	mien	wo	e'	tao	laj	MO	KO	te	zen	i	ting	tou	s'	cuej	c'chien	wej	cuej	s'	sang	te

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