

PHONOLOGICAL PROCESSES IN CONTEMPORARY  
SPOKEN BULGARIAN

by

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Presented to the Faculty of the Graduate School of  
The University of Texas at Arlington in Partial Fulfillment  
of the Requirements  
for the Degree of

DOCTOR OF PHILOSOPHY

THE UNIVERSITY OF TEXAS AT ARLINGTON

May 2009

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## ACKNOWLEDGEMENTS

I would like to thank so many people who have encouraged me during the writing of this dissertation. First and foremost I would like to thank my husband – Joseph Pilov, who has provided me with all kinds of support – emotional, financial and technical - and has kept his faith in me even when I was ready to give up. Without his support, this study would have been impossible.

This dissertation is a family affair. Not one person starting with my mom and finishing with my mother and father-in-law was excluded from the process. I would like to thank all of them: my mom who in the final weeks, before this dissertation was due, came to stay with us and relieved me from all house chores so I can focus on my work and finish on time. Thank you mom for making me feel like a little school girl again. Thank you to my mother and father-in-law - Lora and Geri - for making a number of trips to the library in Sofia to find articles and books I ordered. And finally thank you to my sister who has kept asking me every single day about my progress with this project and reminded me that it is time to finish.

Thank you to all my research participants who readily provided me with their speech for analysis in this study and have shown a genuine interest in the results.

Finally thank you to Dr. David Silva, my dissertation advisor, whose patience with my extremely slow writing process and guidance with the design of this study made this project manageable. Thank you also especially for your help with the statistical Varbrul analysis of the data.

November 24, 2008

## ABSTRACT

### PHONOLOGICAL PROCESSES IN CONTEMPORARY SPOKEN BULGARIAN

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The University of Texas at Arlington, 2009

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This study investigates a number of phonological processes observed in the speech of 24 educated Bulgarian speakers. The speech of all subjects was recorded during 30 minute interviews conducted in 2004. Three speech styles were elicited - reading passage, interview and phone conversation - and later transcribed for analysis. Statistical Variable rule analysis was used to investigate the observed patterns of variation in speech.

Different internal and external linguistic variables were found to impact the processes of vowel and consonant deletion in speech. Overall, what this study has established is that although certain socio-linguistic factors such as speaker's sex, regional variety and social relation do affect segment deletion in Bulgarian, the process is more strongly determined by internal linguistic factors such as the voicing of the

preceding consonant, stress, linguistic environment and word frequency. A number of other phonological processes such as vowel devoicing and reduction, and consonant lenition and palatalization were also observed in speech and discussed in the study.

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## CHAPTER 1

### INTRODUCTION

A number of lenition processes are frequently cited in the literature as common characteristics of speech: these include syllable reduction, vowel and consonant deletion, cluster simplification, final or initial consonant loss, and liquid or lateral gliding. These phonetic reductions in speech often lead to the formation of lexical variants, which mark social group membership or stylistic shifts in speakers' communication. As shown by numerous sociolinguistic studies, such variation is rarely random; its systematic character can be influenced by both the internal linguistic structure of the language system and external stylistic and socio-linguistic factors.

Several recent studies on different Bulgarian city vernaculars have noted the existence of "conversational phonetic forms and models" which differ markedly from the forms in the literary language. These studies have addressed conversational speech in various areas of Bulgaria including the city of Sofia (Angelov 1999, Aleksova 2001), the city of Veliko Tŕrnovo (Alexandrov 1988, Bajchev 1999, Videnov 1988), the towns of Lovech, Trojan and Teteven (Alexandrov 1988), Smoljan (Kanevska-Nikolova 1998), and Erkec (Shishkov 2002). These conversational forms are characterized by reduced phonetic makeup resulting from vowel and consonant deletion, cluster simplification, or co-articulation. These studies only list variant forms and use them as

examples of socio-linguistic variability, without discussing the internal factors of the phonological system as reasons for their modification in speech. That is, the focus has been on the descriptive and socio-linguistic investigation of syntactic, morphological and functional aspects that condition language variation. However, limited research has been done to investigate the phonological structural conditions behind the development and usage of non-prescriptive conversational forms. Moreover, none of these studies have conducted statistical analysis calculating frequency of these forms and the extent to which phonological variation pervades the speech of educated Bulgarians in their everyday communication.

### 1.1 Research Goals

In light of this gap in the literature, a major goal of the current dissertation is to investigate the phonological processes in the speech of educated Bulgarian speakers through a detailed focus on vowel and consonant deletion and basic statistical analysis on consonant lenition, non-standard palatalization and de-palatalization and non-standard vowel reduction and devoicing. Another goal is to discover and report the statistical significance of internal and external linguistic factors contributing to deletion by conducting variable rule analysis on the data.

## 1.2 Motivation

Although the reasons for setting out on this intellectual journey are numerous, they can be summarized in three major themes: 1) to clarify this researcher's long-standing confusion about what is meant by the term "Contemporary Spoken Bulgarian"; 2) to understand what really occurs in this every-day speech from a phonological perspective; and 3) to address the fact that no systematic and quantitative research exists on phonological language variation in Bulgarian.

What exactly is "Contemporary Spoken Bulgarian"? Traditionally, in Bulgarian philological studies (Andrejchin, Stojkov, Tilkov and Bojadjev and others), the term *Literary Bulgarian* is used when describing the standard language used in literary works, official documents, lectures, and radio and television broadcasts; it is assumed that there are no differences between the written and the spoken standard language. The term *dialect* is used when describing any other variety of Bulgarian, which deviates from the standard. One can argue that this traditional terminology is too vague and imprecise.

Recently, however, Bulgarian researchers (Aleksova, Angelov, Angelova, Bojadjev, Radeva, Mladenov and others) working on sociolinguistic issues have sought to bring more clarity to the situation by defining the following four terms for describing the language situation in Bulgaria. The term *Written Literary Bulgarian* is used for describing the language of literary works, published journals, official documents and newspapers. The term *Spoken Literary Bulgarian* is used to describe the language of

formal spoken discourse as in lectures, and radio and television broadcasts. *Conversational Spoken Bulgarian*<sup>1</sup> is used to describe the language of informal everyday communication between family members, friends, or colleagues. Finally, the term *dialect* is used for describing the regional varieties of Bulgarian, typically associated with lects spoken in villages, small towns, and defined geographic areas.

It should be noted that according to some researchers (Alexander, Angelova and others) the regional varieties, as described by dialectologists in the 1950s and 1960s, are gradually disappearing as the rural population has moved from the villages to the cities during the last few decades (a result of the collectivization of the land and the industrialization of the economy during the socialist rule of the country) and as nation-wide education has become compulsory. As a result of these demographic shifts, what is observed in Bulgaria today are newly formed urban vernaculars based on the standard. However, these vernaculars also retain some features of the speakers' regional dialects. To avoid confusion, in this dissertation, the term "dialect" will be used interchangeably with "regional variety" and only used when referring to regional characteristics or features in the speech of Bulgarians. Otherwise the terms "vernacular", "variety", or "lect" will be used.

Central to the matter of examining the phonological system of Modern Bulgarian is defining the language. According to E. Scatton (1993: 189-90) "the official

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<sup>1</sup> The Bulgarian term is *разговорна реч*; translation is mine.

[Bulgarian] literary language – described in standard reference works (...) represents *no naturally occurring regional dialect*.” The process of codifying contemporary standard Bulgarian was part of the nation-building process after the liberation of the country from domination by the Ottoman Empire. Unlike most standard languages which are based on a single variety, standard Bulgarian was “built” by incorporating features from its two major regional varieties: eastern and western Bulgarian. In addition, borrowings from Turkish (a result of 500 years of language contact) and lexical items on which the dialects disagreed were systematically replaced by revived Old Church Slavonic equivalents. The following are examples of such replacements: *tamən* (Turkish) becomes *totŋno* (Bulgarian) 'exactly', *taxirat* becomes *neŋfastie* 'unhappiness', *iŋstah* becomes *ohota* 'desire/apetite', *aslə* becomes *vsəŋnost* 'essentially/actually'. As liberal as this process was in facilitating the acceptance of the standard language by all speakers of Bulgarian, the fusion of various pronunciation features in the literary language introduced phonological processes which were frequently in conflict. As Tilkov (1982:21) warns:

The orthoepy norm of the Bulgarian literary language is a synthesis of eastern-Bulgarian and western-Bulgarian pronunciation features, which make this norm above-dialectal. The synthesis of different

dialectal pronunciation types, however, unites, as much as it presents difficulties in practicing a unified literary spoken language.<sup>2</sup>

Language researchers today recognize that standard *literary* Bulgarian is not a naturally-acquired language, but rather a linguistic system taught in schools. Bethin (2000:25) writes “so much of linguistic theory today strives to understand the system of a language in its current form as a way of understanding language structure in general.” There are at least two varieties of the “languages in their current form” – standard languages as described in reference grammars, and the languages which speakers use in their day-to-day communication. In the introductory notes to the special edition of *Folia Linguistica* (1999:4) dedicated to spoken vernaculars, Werner Abraham states “...priority should be lent to the investigation of languages that are ‘more natural’ than others. Spoken vernaculars are such “more natural” linguistic varieties.”

It is clear, that in the past 10-20 years, language scholars have acknowledged the existence of naturally-occurring linguistic systems and have tried to define them, describe them and explain the processes that surround them. They see that language exists and happens naturally regardless of codification norms, imposed in the past for political or language-purity reasons. Today not only do researchers pay more attention to naturally occurring speech, but also this attention to authentic forms of language has become the main topic of linguistic interest on Bulgarian. The current dissertation is

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<sup>2</sup> Правоговорната норма на българския книжовен език е синтез от източни и западно-български произносителни черти, които я превръщат в наддиалектна. Смесването обаче на

part of this larger effort to help further the understanding of contemporary spoken Bulgarian and explain the processes that occur in the language via quantitative analysis.

It has been claimed that Contemporary Literary Bulgarian is a result of convergence of the two major regional varieties – eastern and western (Naylor 1990). After a century of building this literary norm, today it is becoming more and more "abstract" in relation to the spoken usage. Spoken phonetic models of cluster simplification, vowel and consonant drop are entering the speech of even such formal forums as TV and radio broadcasts (Mihailova and Milanov 2005: Electronic Journal of Humanities—<http://www.slav.uni-sofia.bg/liliJournal/archive/LiLi2/MihaylovaMilanov20052.htm>).

More recently, with the emergence of the Internet, the conversational phonetic forms have replaced even written literary forms in chat room exchanges (Chat IRC transcripts – Mariana Djonova <http://www.hf.uio.no/ilos/studier/studenttjenester/Nettressurser/bulg/mat/ICQ/>). These accounts show that the Bulgarian literary norm, just as in most other languages, is not static but evolves.

The current dissertation attempts to take a snapshot of the spoken language today through investigation of phonological variation and to contribute to the understanding of how the spoken norm has developed. Specifically, two answers the current study provides are first, the degree to which variation occurs in spoken Bulgarian and second whether there are any processes that have become categorical.



Also, the investigation examines how social distance, speech style/formality and sex of the subjects affect the choice of variants and the degree of variation.

As stated earlier, there has been little in the way of research on phonological language variation in Bulgarian. Specifically, very little attention has been paid to which segments get deleted in speech and why. Today there are only scattered studies on individual Bulgarian dialects where only the process of vowel elision is studied in more detail (Aleksandrov). Indeed, except for a single study on a particular Bulgarian dialect (Shishkov), no systematic research exists on the processes of vowel and consonant deletion in spoken Bulgarian. In addition, there have not been any studies on either vowel or consonant deletion that look at the speech of educated Bulgarian speakers from both major dialectal regions. One researcher observes that "generally little attention has been paid until now ... to which unstressed vowel exactly is dropped" (Žobov 2004:57).

This dissertation addresses such a research need. Again, the major topic with regard to language variation examined in the current dissertation is the process of vowel and consonant loss and the many linguistic and non-linguistic factors affecting it. As a study on the current spoken language, it also seeks to establish to what extent the phonological processes reported in reference grammars and socio-linguistic studies are characteristic of both regional varieties. That is, it addresses the question of if these processes are shared by all Bulgarian speakers, or are only characteristic of single dialects. Moreover, the analysis looks at other modestly-described topics such as

consonant lenition, non-standard consonant palatalization and de-palatalization, non-standard vowel reduction, and devoicing.

### 1.3 Research Questions

The problems raised in the previous sections can be captured by the following specific research questions that this study investigates:

- What phonological processes are observed in authentic, informal spoken Bulgarian?
- Which segments delete?
- Which forms are affected by deletion?
- What linguistic environments are conducive to deletion?
- What external socio-linguistic factors contribute to segment deletion?
- What are the linguistic ramifications of segment deletion?

### 1.4 Organization of the Study

Chapter 2 provides an overview of the previous literature on Bulgarian phonology and socio-linguistic studies relevant to this topic. It also summarizes research on vowel and consonant deletion in other languages. Chapter 3 covers the methodology employed throughout the research process. Chapter 4 makes a detailed inquiry into consonant deletion and the internal and external linguistic factors contributing to its occurrence. Chapter 5 conducts a similar detailed investigation of

vowel deletion. Chapter 6 provides a basic overview of phonological processes, other than deletion, that are observed in the corpus. Chapter 7 presents an overview of the significant findings of this study, its implications for the study of Bulgarian, and directions for future research.

## CHAPTER 2

### LITERATURE REVIEW

#### 2.1 Research in Bulgarian Phonology

Research on modern Bulgarian phonology has traditionally been divided between those researchers who investigate the structure of the standard language and dialectologists who focus on investigating the systems of the different regional varieties.

On the one hand, in literary *standard* Bulgarian, phonology research has focused on investigating morpho-phonological processes (J.S. Maslov, *Ocherk Bolgarskoj grammatiki*, 1956; St. Stojanov, *Grammatika na Bulgarskia Knizhoven Ezik*, 1964; W. John Daniels, *Bulgarian Segmental Alternations*, 1971; E. Scatton *Bulgarian Phonology*, 1975; Tilkov *Bulgarska Fonetika*, 1981). The work of Maslov, Stojanov, Daniels and Tilkov can be classified as normative grammars of Bulgarian. In these works morpho-phonological processes are explained primarily from a diachronic perspective. Scatton's work is the first synchronic generative phonology of standard Bulgarian and is examined more closely later in this section.

On the other hand, extensive research has been conducted on the phonological systems of different Bulgarian dialects with a focus on describing these linguistic systems in their preserved form (Stojko Stojkov, *Bulgarian Dialectal Atlas* - 4 volumes,

1964-81; St. Stojkov, *Bulgarian Dialectology*, 1968; edited by Ronelle Alexander and Vladimir Zhobov, *Revitalizing Bulgarian Dialectology*, 2002).

The major difference between the above research fields is the object of investigation. While dialectologists study naturally-occurring linguistic systems existing primarily in spoken form (usually the language of the oldest inhabitants of small villages), researchers who study the literary norm deal with an often internally contradicting, and prescriptively-constrained linguistic system. The Bulgarian literary standard, as defined by Scatton (1975:vii), is “the contemporary literary norm of educated inhabitants of the Bulgarian capital, Sofia, as reflected in their *formal* speech and in normative grammars.” However, provided that in general, informal speech occurs much more frequently than formal speech, the above definition of Bulgarian limits the research investigation and the generalizations about the language system to only a fraction of the speakers’ actual language production.

This dissertation focuses on the less-studied variety of Bulgarian - Informal Spoken Bulgarian - the standing of which is to be found somewhere between the two extremes of the "standard versus dialect" dichotomy. For the purposes of this paper the term "informal spoken Bulgarian," or simply "spoken Bulgarian" is defined as the linguistic system of the spoken language of educated speakers, as it is used in their daily communication within a circle of close family and friends as well as in the community as a whole.

Phonological research on informal spoken language is certainly not a novelty. As described in Chapter 1, recently more attention has been paid to different Bulgarian urban vernaculars. A number of Bulgarian linguists, inspired by western researchers such as Labov and Trudgill, have investigated the connection between language variation (often phonological) and social stratification in various urban communities around Bulgaria (Michail Videnov, 1990; Angel G. Anglelov, 1999; Bojan Bajchev, 1999). These researchers have discussed the usage of several phonological variants from a sociolinguistic perspective and have provided a sociolinguistic description of the language facts.

Videnov in his 1990 book *Bulgarian Sociolinguistics* includes discussion about the language situation in three large urban areas of Bulgaria – the current capital Sofia, the city of Pernik (both in Western Bulgaria) and the former capital - Veliko Tarnovo (Eastern Bulgaria). He identifies three types of speech realization in the urban context of these cities. The first is what he calls type-a speech formation or the spoken realization of the literary norm. The second, type-b speech formation, is inter-dialectal. The third, c-type speech formation, is the speech realization of the dialect system. The book represents one of the first attempts to describe the language situation at the time and to distinguish dialects from the norm. More importantly, for the first time among Bulgarian researchers, the author recognizes the existence of a different system of speech between the norm and the dialects which later (1999) he calls "mesolect."

Angelov (1999), in a study following the methodology of Peter Trudgill's (1974), builds upon Videnov's idea of mesolect. In his article on "immigrants in Sofia," he reports on a sociolinguistic study of the "substandard vernacular formation" in the Gevgeli Quarter in the Bulgarian capital. The researcher studies the linguistic system of immigrants from Macedonia and their offspring. Anglelov divides speakers into five groups according to their *origin*, *education* and *occupation* and examines their usage of ten phonological and morphophonemic dependent variables. He finds that certain characteristic of the linguistic system of the dialects spoken in Macedonia such as consonant de-palatalization and /v/~zero alterations in indefinite pronouns also pervade the speech of younger speakers (first and second-generation offspring) and newcomers to the region. Angelov claims that today that substandard variety is found not only within the borders of the Gevgeli Quarters of Sofia but has actually spread across the entire city and "it is socially marked as the speech of Sofia small-time dealers, auto mechanics, electricians, and other blue-collar workers."

Bajchev, in his sociolinguistic study on regional varieties, provides "a brief overview of the language situation in four central Bulgarian towns – Veliko Tarnovo, Loveč, Trojan and Teteven." The author stresses the importance of the dialects spoken in the central Bulgarian towns for the formation of the Contemporary Standard Bulgarian and sets his goals to investigate "the most typical language (phonetic and grammatical) peculiarities" of these four vernaculars. He finds that *stress* plays the most important role "within the limits of the phonetic word" in the Veliko Tarnovo

vernacular, claiming that three types of syllables are found in this particular variety – *stressed*, *weakly stressed*, and *unstressed*, which differentiates this variety from western dialects of Bulgarian, where only two types of syllables are found: *stressed* and *unstressed*. According to Bajchev, the vernaculars of Loveč and Trojan exhibit "a fluctuation between east and west Bulgarian stress patterns" leading to "weaker" reduction of unstressed vowels and palatalization of consonants before front vowels; in the vernacular of the fourth city – Teteven – Bajchev claims that "the so called 'east Bulgarian reduction' is not consecutively displayed." Bajchev also notes the most characteristic lexical items exhibiting sound syncopations (vowel or consonant loss) in each vernacular: kəf (<ka'kəf) 'what.masc', kvo (<ka'kvo) 'what.neut' (Veliko Tarnovo); 'mest̩si (<'meset̩si) 'months', kaj̩f (<kaʒe̩f) 'to tell.2sgPres' (Loveč), etc.

All three authors examine the language in specific communities and talk about phonological variation in the context of sociolinguistic theory. This sociolinguistic research takes a major step to bring the Bulgarian linguistic science on par with modern approaches. However, no follow-up research has attempted to explain the observed phonological variation from a synchronic formal perspective or to establish whether this variation has affected the structural organization of the linguistic system. The current study is an initial attempt to bridge that gap.

Although no formal approaches have been applied to the study of phonological variation in contemporary spoken Bulgarian, a number of theoretical studies have looked at the literary norm. The first major synchronic analysis morpho-phonological



phenomena in standard Bulgarian within the generative theoretical framework was done by Scatton (*Bulgarian Phonology*, 1975). In this book, attention is given to various types of segmental alternations in standard Bulgarian: the [a]~[e] alternation, vowel-zero alternations, liquid metathesis, velar palatalization and iotation.

Bulgarian phonology issues have received attention in other authors' work as well. Collumbus (1972) in his work *Phonological Rules in the Language of Sofronij Vrachanski*, presents a rule-based analysis of the phonological system in the language of Sofronij Vrachanski, as reflected in his works from the Bulgarian Renaissance period. The author discusses major morphophonemic processes such as: the [a]~[e] alternation of the so-called underlying Jat-vowel; the positional restrictions in the palatalized consonants distribution; unstressed vowel reduction; voicing assimilation and word-final devoicing; and diphthong simplification. Columbus argues that the rules operating in Sofronii's language are characteristic of the phonological system of other texts written by various authors in the same region of northeastern Bulgaria in the beginning of the 19<sup>th</sup> century. Augerot (1970) in his article "Jat and the Bulgarian Verb" presents a description and an SPE rule based explanation of the [a]~[e] alternation in verbal stems in Modern Bulgarian. Zec (1988/1994) includes a substantial discussion on syllable structure in her work *Sonority Constraints on Prosodic Structure*. In a more current article ("Constraints on Multiple Feature Occurrence", 2002), Zec examines the constraints on the distribution of the phonological feature [coronal] within the syllable and the foot. Major attention is directed towards the distribution of palatalized, palato-

alveolar consonants, and front vowels in Bulgarian. Catherine Crosswhite (*Vowel Reduction in Optimality Theory*, 1999) analyses the process of unstressed vowel reduction in Bulgarian from an OT perspective. All of these studies have focused on similar phonological issues of Bulgarian, which either prove problematic from a current theoretical perspective or shed new light to our understanding of common processes found in other languages.

The above review of recent works referencing issues of Bulgarian phonology shows that Bulgarian has provided a wealth of language data for the discussion of different theoretical issues in generative phonology. However, the majority of these data have come from the language norm as reported in the literature (and not on fieldwork conducted by the authors themselves), thereby giving an unbalanced view of how the language is spoken. This dissertation uses spoken Bulgarian as its data source and examines phonological processes within the Generative tradition. Although, traditional sociolinguistic models have been the predominant framework for language variation studies, researchers such as Labov and Guy have shown that quantitative linguistics can offer further insight into the general understanding of language variation. Therefore, this study quantifies the effect of internal and external linguistic factors on the variation patterns in Bulgarian. The next section discusses some formal approaches employed in previous research on language variation that are considered for the analysis in this dissertation.

## 2.2 Research in Language Variation

### *2.2.1 Variable Rule Theory*

The first attempt to adopt a formal theoretical approach for explaining linguistic variation was done by Labov (1969). He developed a model known as *variable rule* which he first applied to the analysis of variable copula deletion in Black Vernacular English. In developing this model, Labov extended the generative framework by allowing transformational rules to include probabilistic information and conditions drawn from sociolinguistic statistical analysis. The model later evolved into the theoretical framework for linguistic variation which included a computational component. Based on the framework, Cedergren and Sankoff (1974) developed the VARBRUL software program, which computes the probabilistic weight of multiple conditions and their effect on the variable patterns in grammar. This model has been used in the analysis of a number of variable language patterns.

One of the most fruitful and long-standing phenomena to which variable rule analysis was applied was the study of variable (t,d) deletion in English (Labov 1968, Labov 1989, Guy 1980, Guy 1991, Roberts 1995). It was revealed that social factors as well as language internal factors are responsible for this process. Guy (1991) discovered that there is a statistical correlation between final (t,d) deletion and the morphological category of the form. He also found that (t, d) deletion is sensitive to the linguistic context, particularly the type of the initial consonant in the following word (Guy 1997).

Variable rule analysis was also applied by other researchers who investigated processes of segment deletion. Silva (1991) examined variable /w/ deletion in Korean and discovered that the most important factor for the observed pattern is the place of articulation of the preceding consonant. Silva also applied the model to analysis of variable vowel deletion/lenition in two dialects of Portuguese (1997, 1998). Auger (2001) used the same analysis in combination with OT theory in her study of variable word-initial vowel epenthesis in Vimeu Picard. These researchers were able to investigate different phonological processes and make more precise conclusions based on the quantitative results of the statistical model.

By applying the Variable rule model to the analysis of vowel and consonant deletion, the current investigation aims to explain variable patterns in Bulgarian speech. This is in an attempt to quantify previously-discovered phonological rules, by computing statistical weight of the factors that affect deletion.

### *2.2.2 Studies of Vowel Lenition and Deletion*

Even though a great deal of research has been done on vowel reduction in Bulgarian, little research exists on vowel deletion. Examples of slurred or fast speech leading to vowel loss are cited in many grammar books (Stojkov 1966, Bojadžiev 1991), but no systematic examinations of the process can be found in the research literature on Bulgarian. Multiple descriptive accounts of vowel deletion can be found in dialectological studies of different regional varieties of Bulgarian (Aleksandrov 1988,

Angelova 1931, Bojadžiev 1991, Mladenov 1935, Shishkov 2002). In his article on unstressed vowel elision in Erkeč dialect (Eastern variety), Shishkov describes two environments for deletion. First, the plural ending /i/ is lost after sonorants (/l/,/r/,/n/,/m/) in a three-syllable pattern of [ʔσσσ] → [ʔσ\_σ], where the weak syllable closest to the stress is lost: /'dinite/ > [ʔ'din'\_te] 'the watermelons'. Additionally, he found that the feminine and neuter singular endings /a/ and /o/ are dropped before a definite article: /'buloto/ > [ʔ'bul\_tu] 'the veil'. Šiškov also observes that vowel loss is blocked after a voiced obstruent. The present study confirms that the above described constraints on vowel elision are also valid in the speech of educated speakers of Bulgarian from both dialectal regions but to a lesser degree.

Vowel loss has been studied in more detail by linguists in the context of other languages: Portuguese (Silva), Latvian (Karinš), Traditional New Mexico Spanish (Piñeros). These researchers found an array of linguistic factors which affect deletion in each of these languages: segmental context (Portuguese, New Mexico Spanish), vowel quality (Portuguese), prosody (Latvian).

Silva (1997) discovered that three factors affect unstressed vowel deletion in Portuguese: position within the phonological word, the stress of the following syllable, and the vowel quality. V-deletion in Portuguese, he found, is favored at the right edge of the word if no subsequent syllable exists or if it is unstressed; and that "the high vowel /u/ and the central vowel /ə/ are more prone to elision." Varbrul analysis of unstressed vowel deletion in Bulgarian confirms Silva's findings that the surface high

vowel /u/, which is in fact a realized unstressed /ɔ/, deletes most frequently. However, contrary to what is found in Portuguese, different prosodic and positional constraints govern V-deletion in Bulgarian. First, vowels immediately-following or immediately-preceding stress are most prone to deletion, the opposite being true for Portuguese. Second, word-final vowels are strongly resistant to deletion in Bulgarian unlike those in Portuguese.

Karinš (1995) observed that in Latvian variable V-deletion affects inflectional endings. His results indicate that the strongest predictors of V-deletion are the number of syllables in the word and the vowel position in reference to stress. Another factor he finds to impact vowel elision in Latvian is the speaker's educational level; the author finds that "the more education one has, the more likely one is to retain the short vowels of speech, just as they are retained in the orthography" (1995:27). The analysis of Bulgarian speech shows that although some word-final deletion does occur, in general little V-deletion takes place in this position.

Piñeros (2005) examines the deletion of stressed high vowels in the context of preceding sonorant consonant in New Mexico Spanish. He argues that in such contexts, vowels are not actually deleted. Rather, they are absorbed by the preceding consonant which in the process becomes syllabic and bears stress. According to the author, this phenomenon of vowel absorption is possible only if the syllable onset is a more sonorant consonant. He argues that such absorption is blocked in stressed syllables with onset stops because stops are universally disfavored as syllable peaks. This study finds

that very limited deletion of stressed vowels occurs in Bulgarian spoken discourse. However, all of the examples found in the data show that V-deletions in stressed syllables results in the syllabification of the preceding consonant coda, consistent with Piñeros' findings.

Vowel lenition and loss has also been attributed to the position of the vowel within the word. Jonathan Barnes (2006) in his study on positional neutralization argues that word-initial position is a strong licenser only for segments in absolute initial position. Thus according to Barnes, Positional Strength is more likely to affect initial consonantal onsets, rather than vowels in initial syllables. Barnes also states that "strength or weakness in final position is a parameter which must be set on a language-specific, inductively-determined basis." Findings of the current study are consistent with both of Barnes's observations in that word-initial syllables are a weaker environment where vowel deletion is favored compared to word-final syllables, where vowel deletion is resisted.

### *2.2.3 Studies of Consonantal Strength, Lenition and Loss*

In previous research consonant deletion is viewed by some linguists as an extreme case of lenition (Hyman 1975, Hock 1991). Hyman states that "a segment X is said to be weaker than a segment Y if Y goes through an X stage on its way to zero" (1975:165). An example of such a step-by-step change is attested in a number of

historical changes as the following change from Proto Indo-European in two modern Slavic languages (4):

(1) \*pt > d > Ø

Proto-Indo European	Bulgarian	Russian	Gloss
*septm	'sedem	s'em	'seven'

Observations of similar processes will be discussed in the lenition/deletion of sonorants, specifically the liquid [l] in Bulgarian, e.g., Standard Bulgarian *bil* > Western Varieties [biw] 'be.PastParticiple'.

Hock (1991:83) on the other hand, views deletion as a process in which a segment could either take an intermediate step (and undergo weakening before it is deleted) or could directly be deleted. His hierarchy makes predictions that any segment could potentially delete, no matter its manner of articulation (Figure 2.1).



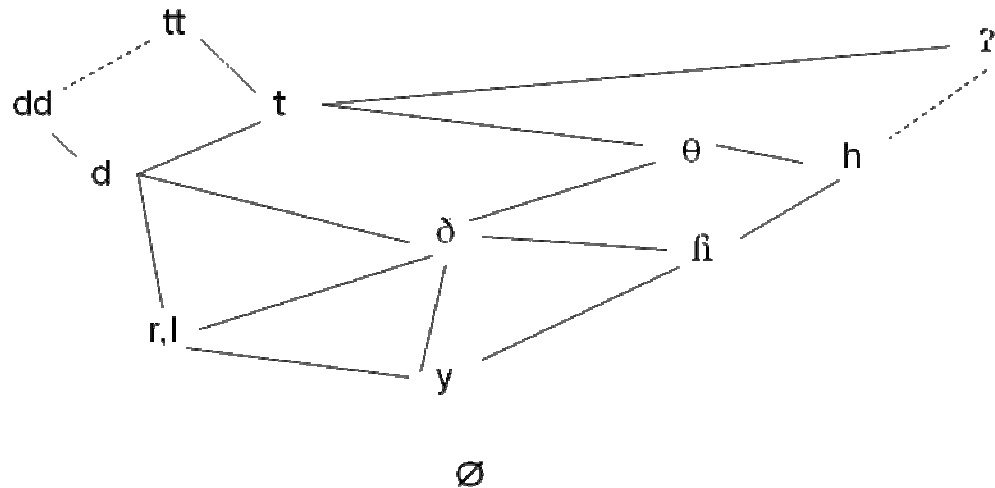


Figure 2.1 Hock's Weakening Hierarchy (Hock 1991:83)

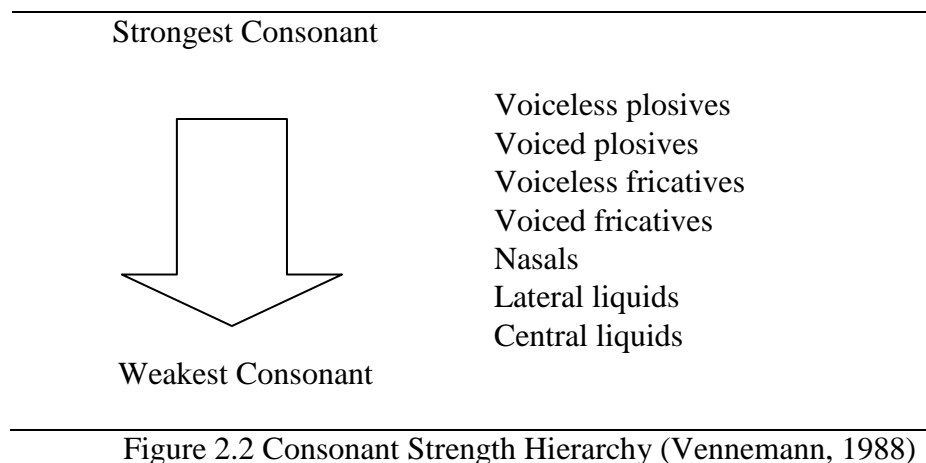
The lines represent possible paths of lenition of each consonant; no lines are drawn between the consonants and the zero indicating that no explicit paths of deletion are predicted. Based on Hock's predictions, the expectation would be that all consonants in Bulgarian would delete either after undergoing lenition, or directly. The Bulgarian data provide examples of both step-wise deletion and direct deletion. However, as this study shows later, not all consonants in Bulgarian delete and the ones that do get dropped, are not dropped at the same rate.

In investigating the concept of consonant weakness and strength, two competing explanations are offered by researchers: strength is affected by the consonant's position (Lavoie) vs. strength is based on sonority (Vennemann).

Lavoie summarizes the common definition of weakening as a "shift towards deletion" (2001). She argues that strong articulations occur in strong positions while

weak articulations occur in weak positions. Several other studies, including hers, identify weak positions for consonants as intervocalic and word final positions, and strong positions as word-initial, syllable-initial, and pre-stress positions (Ito 1989, Beckman 1998, Hock 1992, Lavoie 2001).

Vennemann (1988), presents the Consonant Strength Hierarchy as an inverted sonority hierarchy as in Figure 2.2. He argues that less sonorant consonants are stronger than more sonorant consonants.



The expectation based on Vennemann's hierarchy would be that consonant deletion in Bulgarian will be most favored for the weakest consonants and least favored for the strongest consonants. On the other hand the expectations based on Lavoie's argument is that in Bulgarian consonants in weak position will tend to delete at a

relatively higher rate, while consonants in strong positions will tend to be faithful and resist deletion.

What does the current study find with regard to these opposing views? The analysis shows that sonority does affect consonant deletion as predicted by the hierarchy. Specifically the voiceless obstruents delete at a lower rate than voiced ones. However, sonorants delete less frequently than voiced obstruents and in one case even less frequently than one particular voiceless stop /t/, which is in contradiction to the sonority predictions. With respect to the alternative view, the study finds that the consonant's position is also a strong predictor of deletion, with weak positions being conducive to deletions while strong ones being less prone to deletion. Specifically, in Bulgarian speech, consonant loss is most common in word-medial intervocalic position (a universally weak position) and in consonant clusters. Conversely, consonants resist deletion in word beginning and in stressed syllables (universally strong positions). These results are in agreement with positional definition of strength. However, contrary to positional strength predictions, word ends (universally weak positions) are strongly resistant to C-deletion in Bulgarian.

Hence, as we shall see, an investigation of Contemporary Spoken Bulgarian has much to contribute to our understanding of phonological variation, confirming certain previously observed patterns while apparently refuting others. In this respect, Bulgarian adds to the body of language data based on which theoretical assumptions can be tested.

## CHAPTER 3

### METHODOLOGY

#### 3.1 Introduction

In order to investigate the questions regarding the nature of phonological variation raised in chapter 1, a study including data collection, transcription and coding for a quantitatively-oriented linguistic analysis was conducted. The data collection was completed during the fall of 2004. The speech of 24 native Bulgarian speakers was recorded during 30 minute-interviews. A selected sample of the speech was then transcribed and coded for statistical analysis. The coded corpus of data consisting of two separate files – one for vowel elision and one for consonant deletion – was later analyzed using variable rule modeling originally developed by Cedergren and Sankoff (1974) and Sankoff and Labov (1979).

The current chapter describes the methods of data collection and statistical analysis used in this study. Section 3.2 describes the criteria for subject selection and gives an overview of subjects' grouping and distribution. Section 3.3 explains how the data were collected. Section 3.4 describes the procedures for data transcription and coding for statistical analysis.

### 3.2 Subjects

For this study a total of twenty four native Bulgarian speakers were interviewed. The subjects were contacted directly by the researcher and all of them came from the Bulgarian immigrant community in the Dallas-Fort Worth metroplex. One of the reasons for recruiting subjects from this particular community is that this is where the researcher currently resides and where she has established social ties and personal connections within the Bulgarian community.

The decision to focus on the speech of university-educated speakers from both major dialectal regions was made because one of the goals of this study is to test the claims that modern literary Bulgarian is a result of convergence between the two major regional varieties. In this researcher's observations and experience having lived in Bulgaria for more than 20 years, the speech of educated Bulgarians is usually closer to the literary norm as these speakers have more exposure to this norm through education. The more educated a person is, the fewer dialect markers are observed in his/her speech. However, although the speech of these speakers approximates the literary norm, it still exhibits reduction processes common for informal speech. These stylistic reductions in the speech of educated speakers are what this study is interested in investigating. It can also be argued that the speech of educated people in Bulgaria carries prestige in the community because education is highly valued and people with education are respected. Thus their speech sets a standard and becomes the constantly-evolving spoken norm in modern Bulgarian.

The major dialect division of Bulgarian is based on the different reflexes of the Old Church Slavonic *yat* vowel (Figure 3.1). In the western dialects, the *yat* vowel is pronounced as [e] in all positions while in the eastern dialects, the pronunciation of the *yat* vowel alternates between [’a] (in stressed syllables or when the next syllable contains a non-front vowel) and [e] in all other environments (Mladenov 1979). In order to examine the differences in the rate of segment deletion between the speakers from the two major dialectal areas of Bulgaria, subjects from both parts of the country were recruited. Half of the speakers for this study come from towns east of the Jat-isogloss line and the other half from towns in western Bulgaria.

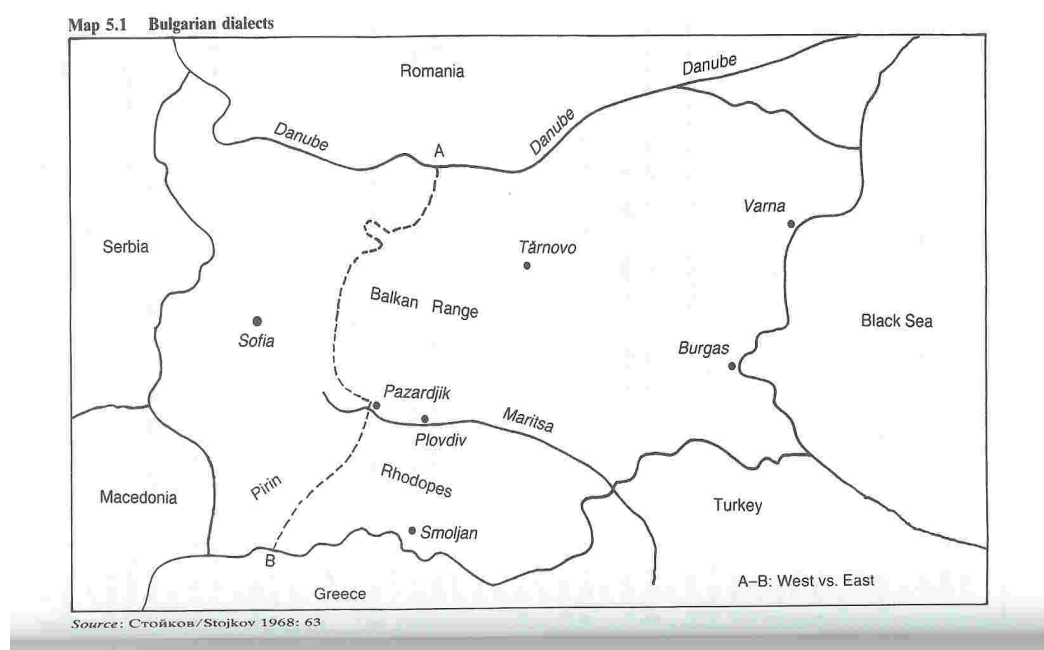


Figure 3.1 Map of Bulgaria: Jat isogloss – *dashed line* (Stojkov 1968)

A second socio-linguistic variable considered in the current study is speaker's sex. In order to obtain a balanced data set for both groups – males and females – half of the subjects interviewed for the study were women and the other half were men.

Another variable for which the choice of subjects was controlled was their social relation to the interviewer. Twelve of the subjects were close acquaintances of the researchers, while the other twelve the researcher met for the first time at the time of the interview.

Lastly, since the focus of this study is restricted to only the contemporary spoken language of educated (university graduates) Bulgarian speakers, as observed in their formal as well as in their informal speech, only subjects who have completed their higher (university) education in Bulgaria were interviewed. Table 3.1 gives a summary of the subjects' distribution according to the above described socio-linguistic variables.

Table 3.1 Distribution of subjects

Dialect Region					
	Eastern Bulgarian		Western Bulgarian		Total
Sex	Social Relationship with Researcher				
	Close	Distant	Close	Distant	
Male	3	3	3	3	12
Female	3	3	3	3	12
Total	6	6	6	6	<b>24</b>

### 3.3 Procedures

#### *3.3.1 Data Collection*

The data for this study consist of digitally recorded speech samples of educated Bulgarian speakers. The speech of all subjects was recorded using Panasonic RR-US361 digital IC recorder and a lapel microphone during 30 minute interview sessions conducted in a quiet place at each subject's home.

During the first part of the interview, the subjects were asked to read a passage of connected prose developed by the researcher (Appendix A), as a means for eliciting a more formal speech sample<sup>3</sup>. The assumption is that subjects' pronunciation will be influenced by the orthography (in the case of Bulgarian, Cyrillic), thereby reducing the possibility of segment deletion or reduction.

The Reading Passage was crafted with the idea of creating a sample of written text close to the spoken language. The target words in the passage are selected on the bases on their documentation and citation in reference grammars (Tilkov and Bojadžiev) or spoken Bulgarian electronic corpora (Aleksova 1994) as frequently and commonly [mis]spoken or in some way "reduced" forms in speech. In the choice of words, attention was also paid to their frequency rank in speech as summarized in the *Frequency Dictionary of Spoken Bulgarian* (Nikolova 1987). This decision was driven by the researcher's intent to include more frequently-occurring lexical items since these

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<sup>3</sup> In the current study Reading Passage is the most formal speech style elicited from the speakers.



forms are usually cited as undergoing the most deletion and reduction in speech. The overall goal of this part of the interview is to obtain a formal speech sample; not necessarily a sample of formal, lecture speech style, but rather a speech sample in which speakers exercise a higher degree of control over their pronunciation of commonly used conversational lexical items. The objective is to compare the frequency of segmental deletion in these forms in a more formal speech setting to the frequency of deletion in unprepared natural speech.

The second part of the interview included an interview-style, free conversation (Labov 1966) which starts with questions about the subject's background (Appendix B) and continues with a conversation on topics introduced by the researcher (Appendix C). The goal of this part of the interview is to obtain a sample of somewhat controlled (topically) but still unprepared speech. The assumption is that the focus during this part of the interview would be shifted more towards communication of content and away from the language form, thus the subjects would pay less attention to their pronunciation and produce more natural speech where higher frequency of phonological variation will be observed.

Finally, each subject was given a prepaid phone card for a 15 minute phone call to Bulgaria and asked to call a friend or a relative at home. During the phone call only the speech of the person being interviewed was recorded. At this point of the interview, the researcher was not present in the room where the subject carried out the conversation. The goal of this part of the interview was to obtain the least formal speech

sample in the study. It was theorized that despite the presence of the recording equipment, with the researcher's absence from the room and the subject's familiarity with the interlocutor on the other side of the phone line, the speech would be as close as it could get to the "natural" state in which all of us wish to examine it.

### *3.3.2 Transcription of the Data*

Despite the fact that 30-minute long interviews were recorded from each of the 24 speakers, only a limited number of words from each interview were transcribed for this study. For each of the three elicited speech styles, 150 words were transcribed from each interview, which makes for a total of 450 transcribed words from every individual speaker. The Reading Passage was transcribed in its entirety for all speakers. A stretch of connected speech (150 words) starting at the five minute mark from the beginning of each interview and each phone conversation was transcribed. In order to obtain a more natural speech sample, the speech from the interview and phone conversation was not transcribed from the very beginning of the recording. It is assumed that as subjects settle into the conversation, their speech becomes less monitored as they become more involved in the discussion and less aware of the microphone. The complete corpus of data analyzed in this study consists of 10,800 words taken from the interviews of all 24 speakers.

The data were initially transcribed on the bases of aural perception and perceived deletion of vowels and consonants were noted in the transcription. A repeat

transcription of the data was completed using the Praat software designed and developed for phonetic analysis by Paul Boersma and David Weenink from the Institute of Phonetic Sciences, University of Amsterdam. During this second transcription, spectrograms and waveforms were used as support of the phonetic transcription. Deletion of a vowel was defined as either an absence of consonant release in the case of vowel deletion in CV syllables or absence of formant structure in the speech signal where a vowel was expected. Deletion of a consonant was defined as absence of a release burst (stops) or extended noise (fricatives) in the spectrogram. Stress was marked in the transcription impressionistically.

This study focuses on investigating consonant and vowel deletion in Bulgarian speech; thus, the data transcription was concentrated primarily on marking consonant and vowel loss. Close attention was also paid to processes of non-standard consonant palatalization before front vowels in the speech of eastern speakers and consonant depalatalization of some verbal endings mostly by western speakers. Both of these processes were marked in the transcription. Observed instances of vowel devoicing, a process completely ignored by studies of Bulgarian, were also marked in the corpus.

Vowel reduction was generally not marked in the transcription since this process in Bulgarian is well defined and documented in reference grammars and numerous articles. The exception was that reduction of the front vowel /ɛ/ towards /i/ was marked in the corpus as this type of reduction marks dialectal variation in the speech of Eastern Bulgarian speakers. Other characteristic phonetic processes of

Bulgarian, such as word-final devoicing and regressive voicing assimilation in consonant clusters were also not marked in the transcription and consequently were not coded for analysis.

### *3.3.3 Statistical Varbrul Analysis*

In order to analyze the variable processes of vowel and consonant deletion in Bulgarian, a number of statistical Varbrul tests were conducted using the latest version of GoldVarb X for Windows, developed by Sankoff et al. (2005).

#### *3.3.3.1 Coding for Statistical Analysis*

The transcribed data were coded for statistical analysis in two separate files. One of the files was used for coding deletion and non-standard palatalization/depalatalization of consonants. Deletion and non-standard reduction of vowels was coded and examined separately. To speed up the coding, in some cases automation was used. The data was imported into a SQL Server database and a database application was written to process predictable properties/factors of both vowels and consonants. Those include factors such as the preceding segment, linguistic environment (beginning, middle and end of words), the segment realization, speaker's sex and regional variety, and speech style. However, for many of the factor groups such as stress, syllable onset and coda, and phonological word boundary, automation was not possible and the coding was done by hand.

### 3.3.3.2 Language-Internal Variables

The effect of four language-internal variables/factor groups (in Varbrul terms) was examined in the Varbrul analysis of vowel deletion. These include the Vowel Quality, the Vowel Position in Relation to Stress, the Preceding Consonant, and the vowel marking a grammatical relation. The Vowel Quality factor group consists of six factors as each of the six phonemic vowels /a ə ɔ u ε i/ is considered a separate factor. The Vowel Position in Relation to Stress variable includes seven possible linguistic environments for the vowel within the phonological word in regards to stress:

Table 3.2 Vowel Position in Relation to Stress Factors

Environment		Example
Word-Initial, followed by Stressed Syllable	#Vσ'	<i>t[ɔ]'va</i> 'this'
Word-Initial, followed by Unstressed Syllable	#Vσ	<i>kr[a]so'ta</i> 'beauty'
Word-Medial, followed by Stressed Syll., preceded by Unstressed Syll.	σVσ'	<i>kras[ɔ]'ta</i> 'beauty'
Word-Medial, followed by Unstressed Syll., preceded by Stressed Syll.	σ'Vσ	<i>'kutf[e]to</i> 'the dog'
Word-Medial, followed and preceded by Unstressed Syllables	σVσ	<i>vāzm[ɔ]ʒno'sta</i> 'the possibility'
Word-Final, preceded by Stressed Syllable	σ'V#	<i>'n'am[a]</i> 'there is not'
Word-Final, preceded by Unstressed Syllable	σV#	<i>'n'akoga[a]</i> 'sometimes'

The Preceding Consonant variable codes the character of the syllable onset. This variable classifies onset consonants into four factors: voiceless obstruents (*ta'ka* 'such'), voiced obstruents (*ʒivot* 'life'), sonorants (*lofo* 'badly') and no preceding consonant (*pee* 'sing.3sg').

The Grammatical Marker factor group consists of two factors: one designating the vowel as a grammatical marker (e.g. *de't[e]* 'child.neut.'), and the other designating the vowel as a non-marker (*d[e]'te* 'child.neut').

The Word-Frequency factor group codes the frequency of occurrence of each lexical item in the corpora. This group consists of 3 factors - <20 occurrences, 21 to 94 occurrences, and  $\geq 95$  occurrences.

In coding for consonant deletion, the effect of five internal linguistic variables was examined. These include:

- 1) Voicing of the consonant with three factors:

Table 3.3 Voicing Factor Group – Examples

Factor	Examples	Gloss
Voiced	<i>[ʒ]e[g]a</i>	'heat'
Voiceless	<i>'[k]a[k]</i>	'how'
Sonorant	<i>[m]o'[r]e</i>	'sea'

- 2) Palatalization of the consonant with two factors – palatalized (*[b<sup>j</sup>]al* 'white') vs. velarized (*kogato* 'when.Rel')

- 3) Stress – consonants belonging to a stressed syllable (*'tr<sup>j</sup>ab.va* 'must') and consonants belonging to an unstressed syllable (*'tr<sup>j</sup>ab.va* 'must').

4) Linguistic environment variable consisting of eight factors in regard to the consonant's position within the word/syllable:

Table 3.4 Linguistic Environment/Unique Consonant Position –Examples

<b>Factors</b>	<b>Examples</b>	<b>Gloss</b>
Word-Initial, Single Onset	'[t]uka	'here'
Word-Medial, Single Onset	re'[k]a	'river'
Word-Initial, Cluster Onset	'[zdr]ave	'health'
Word-Medial, Cluster Onset	'mo[kr]o	'wet'
Word-Final, Single Coda	bo'ga[t]	'rich.Masc'
Word-Medial, Single Coda	'tr'a[b]va	'must'
Word-Final, Cluster Coda	'rado[st]	'joy'
Word-Medial, Cluster Coda	ve[st]nik	'newspaper'

5) Word Frequency factor group codes the frequency of occurrence of each lexical item in the corpora. This group consists of 3 factors: <20 occurrences, 21 to 94 occurrences, and  $\geq 95$  occurrences.

### 3.3.3.3 Language-External Variables

The effect of four socio-linguistic variables was examined for both vowel and consonant deletion. These variables include: 1) Sex – male and female; 2) Regional Variety – eastern and western; 3) Social distance pertaining to the relationship between the subjects and the interviewer: close and distant; and 4) Speech task with three different factors concerning the formality of the speech situation: a) reading passage – the most formal; b) interview – less formal than reading passage; and c) phone conversation with a friend or a relative at home – the least formal speech style in the corpus.

With regard to the speech task group, it is important to note that although data from three speech tasks were collected and analyzed, the reading passage was eventually excluded from final Varbrul results. Because of the strong interaction between the reading passage factor and multiple factors in the rest of the groups, the results were skewed i.e. specific words exerted disproportional influence. Interaction occurred because every speaker was asked to read the same passage leading to a repetition of each word exactly 24 times. Such a repetition artificially increased the frequency of these words and rendered inaccurate results. Therefore the speech sample from the most formal task was excluded from the Varbrul analysis.



## CHAPTER 4

### VARIABLE CONSONANT DELETION IN SPOKEN BULGARIAN

#### 4.1 Introduction

Chapter 4 discusses the process of consonant deletion in Bulgarian and the internal and external linguistic variables affecting consonantal loss. Overall, the most important factors for obstruents deletion in Bulgarian are voicing and word frequency. Other factors such as stress, speaker's sex, regional variety, and the formality of the situation are also found to affect the process of consonant deletion in certain contexts. The linguistic variable palatalization was established as a non-significant factor while the external linguistic variable social distance between the subject and the interviewer is not significant for consonant deletion in most cases.

Section 4.2 introduces the consonant inventory and discusses the phonological system of the Bulgarian consonants. Section 4.3 presents the consonants affected by deletion and the basic distribution analysis of obstruent and sonorant deletion in the corpus. Section 4.4 introduces all factor groups considered in the Variable rule analysis of consonant deletion and the partitioning of the data. Section 4.5 presents an overview of the linguistic variables that affect consonant deletion in each linguistic environment. A discussion of the linguistic and non-linguistic variables that affect consonant deletion

is presented in Section 4.6 and 4.7 respectively. The last Section 4.8 concludes this chapter.

#### 4.2 Consonantal Inventory of Bulgarian

With slight variations the consonant inventory of literary Bulgarian is given as consisting of either 38 or 39 phonemes. Table 4.1 summarizes the categorization of the consonantal phonemes as given in the grammar published by the Bulgarian Academy of Science (*Gramatika na Săvremennia Bulgarski Knižoven Ezik: Fonetika*, p. 104). It should be noted that while some authors categorize the palatalized pair members of the velars /k g x/ as palatalized velars as in Table 4.1, others categorize them as true palatals /c ʝ ç/ (Ra Hauge, Žobov). Settling this classification dilemma is not the focus of this study; this issue is only relevant to the transcription of these segments in the corpus. Since this is not so important for the discussion of consonant deletion, the transcription of the forms in this study follows the Academic grammar classification adopting the view that as with all other consonants, the palatalization of the velars is only a secondary articulation.

Table 4.1 Consonant Inventory of Bulgarian

		Labial				Alveolar						Velar	
		Bi-labial		Labio-dental		Alveo-dental		Alveolar		Post-Alveolar			
		+vc	-vc	+vc	-vc	+vc	-vc	+vc	-vc	+vc	-vc	+vc	-vc
Stops	hard	b	p			d	t					g	k
	soft	b'	p'			d'	t'					g'	k'
Fricatives	hard			v	f	z	s			ʒ	ʃ		x
	soft			v'	f'	z'	s'						x'
Affricates	hard					dz̥	ts̥						
	soft					dz̥'	ts̥'			dʒ̥	tʃ̥		
Lateral	hard					ɬ							
	soft					ɭ							
Vibrants	hard							r					
	soft							r'					
Nasal	hard	m						n					
	soft	m'						n'					
Approximants										j			

Most of the consonants are paired in two major phonemic oppositions: voiced ~ voiceless and palatalized ~ non-palatalized. All 39 consonants are found only before the back vowels /a ǎ o u/. Before the front vowels /e i/, the palatalized – non-palatalized opposition is neutralized and only "hard" or velarized consonants are found before these vowels. It should be noted that this type of neutralization is observed only in the Standard and the western varieties, while in the eastern varieties, consonants before front vowels are always palatalized (1).

- (1) /'beli/ → ['beli] 'white' Literary language  
 /'beli/ → ['bʲelʲi] 'white' Eastern dialects

In word-final position and in consonantal clusters, where the last constant of the cluster is voiceless, the opposition voiced – voiceless is neutralized and only voiceless consonants surface in these positions (2).

- (2)
- |            |   |           |                |
|------------|---|-----------|----------------|
| /nɔʒ/      | → | ['nɔʃ]    | 'knife'        |
| / 'nɔʒtʃe/ | → | ['nɔʃtʃe] | 'knife.demin.' |
| /nɔ'ʒɔve/  | → | [no'ʒɔve] | 'knife.pl'     |

Regressive assimilation in clusters also leads to voiceless consonants surfacing as voiced as in (3).

- (3)
- |                |   |                |         |
|----------------|---|----------------|---------|
| /ɔtʒi'velitsa/ | → | [ɔdʒi'velitsə] | 'relic' |
|----------------|---|----------------|---------|

A large part of this chapter focuses first on the consonants that undergo deletion in Bulgarian speech, and on how the two main phonemic oppositions affect consonant loss, and second on the effect of the linguistic environment on deletion.

#### 4.3 Consonants Affected by C-Deletion

For the purposes of examining consonant deletion, a total of 25,887 consonants were coded for Varbrul analysis. The data file consists of a sample of speech produced by twenty four native Bulgarian speakers. One hundred and fifty words were transcribed from each of the three speech tasks, in which the speakers participated: reading passage, interview, and phone conversation. The final data file consists of a total of 10,800 words, which were phonetically transcribed with the assistance of the Praat software.

#### 4.3.1 Obstruent Deletion

Varbrul analysis shows that variable consonant deletion affects a very small proportion of the total number of consonants in speech: about five percent of all consonants in the entire speech sample or about 1165 consonants out of 25,887 are deleted. Obstruents are deleted even less frequently; 3.4 percent of 17730 of all obstruents, or 602 deletions. Certain consonants such as the affricates  $\overline{[ts]}$   $\overline{[tʃ]}$  and  $\overline{[dʒ]}$  are never dropped by Bulgarian speakers; the voiceless stop [p] and the voiceless fricatives [f] and [s] are also never dropped in speech. One of the reasons for these results may be the fact that segments like  $\overline{[dʒ]}$  are found only in borrowed words and are extremely rare in speech as can be seen from the total number in the corpus (Table 4.2).

Table 4.2 Obstruents Never Deleted in Speech

Consonant	Total Number of Occurrences (n)
p	1017
f	69
s	2017
$\overline{[ts]}$	183
$\overline{[tʃ]}$	626
$\overline{[dʒ]}$	8

The fricative [f] also appears relatively infrequently in the data (n=69). It could also be observed that in Contemporary Bulgarian as a whole, voiceless fricative deletion is not favored even for those voiceless fricatives which exhibit deletion in the data: as can be seen in Table 4.3, only 1% of [x] and [ʃ] are deleted in speech. The deletion of

voiceless stops shows somewhat mixed results as the bilabial voiceless stop [p] is never deleted (Table 4.2) and the velar voiceless stop [k] is deleted in only one percent of the cases (Table 4.3), which is consistent with the general tendency for voiceless obstruents to resist deletion. However, five percent of the coronal voiceless stop, [t], delete in speech, exceeding even the rate of deletion of the voiced sibilant [z], which is deleted in only three percent of the cases (Table 4.3). The reason for this discrepancy will become apparent when t-deletion is examined in the context of word final clusters.

Table 4.3 Obstruent Deletion in Bulgarian

Consonant	% Deleted	n
v	14	2192
b	12	828
g	11	788
d	9	1964
ʒ	9	242
t	5	3688
z	3	1157
x	1	415
k	1	1743
ʃ	1	793

#### 4.3.2 Sonorant Deletion

All four sonorant consonants and the glide [j] can be dropped in Bulgarian speech. Table 4.4 shows the distribution and percent of deletion of sonorants in the data set. The glide [j] is deleted with the highest rate (10%), followed by liquid [l] (5%), nasals [m] and [n] (4%), and [r] (2%).

Table 4.4 Sonorant Deletion in Bulgarian

Consonant	% Deleted	n
j	10	468
l	5	1342
m and n	4	4612
r	2	1753

#### 4.4 Varbrul Factor Groups and Data Partitioning

A summary of all the factor groups and factors considered in the Variable rule analysis of consonant deletion are listed in Table 4.5. Five of the factor groups are linguistic variables – Voicing, Palatalization, Stress, Linguistic Environment and Word Frequency – and four of the factors are sociolinguistic variables – Speaker's Sex, Regional Variety, Social distance between the speaker and interviewer, and Speech Style.

A brief explanation of the Word Frequency factor group is necessary. A total word count was conducted of all unique lexical items in the corpus collected for this study. The resulting counts were initially grouped into six arbitrary categories: words occurring between 1-5 times, 6-10 times, 11-20 times, 21-49 times, 50-94 times, and greater than or equal to 95 times. Based on log likelihood comparisons, these were collapsed into 3 groups because no significant difference existed between some of the break-downs. The resulting groups are summarized in Table 4.5.

Table 4.5 Factor Groups and Factors Affecting C-Deletion

<b>Factor Group</b>	<b>Factors</b>
Voicing of the Consonant	Voiced, Voiceless, Sonorant
Palatalization of the Consonant	Palatalized, Velarized
Stress	Stressed, Unstressed Syllable
Linguistic Environment/Unique Consonant Position	Word-Initial, Single Onset Word-Medial, Single Onset Word-Initial, Cluster Onset Word-Medial, Cluster Onset Word-Final, Single Coda Word-Medial, Single Coda Word-Final, Cluster Coda Word-Medial, Cluster Coda
Word Frequency	< 20 occurrences 21-94 occurrences ≥ 95 occurrences
Sex	Male, Female
Regional Variety	Western, Eastern
Social Distance	Close, Distant
Speech Task	Interview, Phone Conversation

In the process of evaluating a variety of models, it became apparent that a partitioning based on the consonant position was the most appropriate choice. Consonant position or Unique Consonant Position is defined in the rest of this chapter as the collection of eight factors based on syllable structure: single coda, single onset, cluster coda, cluster onset as well as on internal word structure: word-initial, word-medial, and word-final positions. The intersection consists of unique consonant position factors listed in Table 4.5.



The primary reason for selecting the Unique Consonant Position factor group as a partition criterion was interaction between the factors leading to statistically invalid model as explained below (Total Chi-square= 1444.05 and Chi-square/cell = 2.49). In the remaining part of this section a detailed examination of unique consonant position is conducted.

#### 4.5 Varbrul Analysis of Consonant Deletion in Each Linguistic Environment: Overview

Unique Consonant Position was initially coded as a language-internal variable as it was expected to affect consonant deletion. However, in the process of analysis, this factor group was found to interact with the voicing and palatalization factor groups. Such an interaction is to be expected as it is the nature of language that not all consonants are found in all word/syllable positions. As discussed later in this chapter, for example, palatalized consonants in Bulgarian are restricted to onset positions before back vowels. Cluster structure also imposes restrictions regarding which consonants can combine and the consonant order in which combinations are possible. For instance, in a CCC onset cluster, liquids cannot be present in the C1 position. Therefore, to avoid interactions between the type of consonant and its position, the data were partitioned by the linguistic environment factor and the effect of the rest of the variables was examined in each environment separately. Consequently, Unique Consonant Position does not appear as a variable in the reported results. Instead, basic distribution statistics for the

linguistic environment are presented to show trends in the data, and the effects of the other variables are reported in each position.

In Bulgarian consonant deletion seems to be primarily a process of consonant coda cluster simplification and single intervocalic consonant deletion as shown in the following discussion.

#### 4.5.1 Single Onset Position

As a number of historical linguistic changes attest, one of the weakest positions for consonants is between two vowels (Verner's Law). Based on the data, Bulgarian is no exception (Table 4.6)

Table 4.6 Single Onset Distribution Analysis

Factor	% deleted	n
Word-Medial Intervocalic Single Onset	12	3060
Word-Medial Non-intervocalic Single Onset	6	628
Word-Initial Intervocalic Single Onset	3	2558
Word-Initial Non-intervocalic Single Onset	2	847

The most common deletion of consonants in an onset position (12%) occurs in the middle of the word between vowels (4):

(4) /'n<sup>j</sup>ama/ → ['n<sup>j</sup>a\_ə] 'there is.Neg'

The second most frequent C-deletion in onset position (6 %) affects consonants that fall between a vowel and a consonant in the middle of the word as in (5):

(5) /e'dna/ → [e'\_na] 'one.fem'

/'kazvam/ → ['kaəm]

Consonants in the beginning of the word in onset position undergo considerably less deletion (3% and 2% respectively) in both intervocalic and non-intervocalic positions (6):

(6) /'n<sup>j</sup>ama da 'dojda/ → [[ 'n<sup>j</sup>ama]<sub>φw</sub> [\_a 'dojda]<sub>φw</sub>] 'Fut.Neg.to.come'

But again, even in word-initial position intervocalic consonants are deleted more often: 3% of 2558 is 77 deletions, while 2% of 847 constitute only 16 deletions.

Varbrul analysis of obstruent deletion in Single Onset position selects voicing, stress, word frequency and the speaker's sex as statistically significant factor groups (p=0.00). Goldvarb 2001 User Manual states that the range values indicate "the relative strength of each statistically significant effect..." As the range values show in this case, voicing is the strongest predictor of obstruent deletion in single onset position (range=70). Stress and word frequency have a similar effect on deletion (range = 38 and 35 respectively). Although the speaker's sex is a statistically significant factor for obstruent deletion, its effect is the weakest (range =16).

The speech task, regional variety, consonant palatalization, and social distance between interviewer and interviewee were found not to be statistically significant for C-deletion (Table 4.7). The first section in Table 4.7 presents the summary statistics and significant factors and the second section summarizes the non-significant factors with factor weights listed in square brackets.

Table 4.7 Obstruent Deletion in Single Onset Position

Corrected Mean			0.02
Total Chi-square			17.73
Chi-square/cell			0.48
Log likelihood			-1297.31
p			0.000
Factor	Weight	%	n
Significant Factors			
<b>Voicing</b>			
Voiced	0.85	16	2931
Voiceless	0.15	1	4162
<i>Range</i>	<i>70</i>		
<b>Stress</b>			
Unstressed	0.69	9	4809
Stressed	0.31	3	2284
<i>Range</i>	<i>38</i>		
<b>Word Frequency</b>			
21-94	0.69	9	2495
1-20	0.47	5	3708
>=95	0.34	6	890
<i>Range</i>	<i>35</i>		
<b>Speaker's Sex</b>			
Male	0.58	9	3594
Female	0.42	5	3499
<i>Range</i>	<i>16</i>		
Non-Significant Factors			
<b>Speech Task</b>			
Interview	[0.50]	7	3596
Conversation	[0.50]	7	3517
<b>Regional Variety</b>			
West	[0.50]	7	3576
East	[0.50]	7	3517
<b>Palatalization</b>			
Palatalized	[0.45]	5	110
Velarized	[0.55]	7	6983

Table 4.7 - Continued

<b>Social Distance</b>			
Distant	[0.50]	7	3121
Close	[0.50]	7	3972

Table 4.8 introduces the Varbrul summary of sonorant deletion in Single onset position. Stress and the type of sonorant, word frequency, speech task and sex are the statistically significant factors for the deletion of sonorants ( $p=0.04$ ). Social distance and regional variety are not significant. The highest range values indicate that Stress and the type of sonorant are the strongest predictors of sonorant deletion in this position (range = 55 and 43 respectively). The next most impacting variable is Word frequency (range = 21). Although, the social variables Speech Task and Speaker's Sex have statistically significant effect on sonorant deletion, they are the weakest predictors of such deletion (range = 18 and 8 respectively). Again it is apparent that deletion is primarily affected by internal language factors, rather than external-social factors.

A clarification on word frequency factor group is necessary. On multiple occasions the factors in this group were collapsed even further from their original setup because results from comparing different models revealed that no significant difference in the rate of deletion between two of the factors. The obtained p-value from the model comparison ( $p=0.96$ ) is "much greater than the desired level of significance ( $p=0.05$ ), which reveals that the difference between the two models is not significant" (Silva 2000). Thus the more "economical model" is selected. For example in Table 4.8 one can observe two factors: frequency of words occurring more than 95 times and those

occurring less than 95 times, rather than the three original factors. Such factor-merging is observed in multiple tables throughout this chapter for the reasons just explained.

Table 4.8 Sonorant Deletion in Single Onset Position

Factor	Weight	%	n
Corrected Mean			0.01
Total Chi-square			68.93
Chi-square/cell			1.40
Log likelihood			-566.88
p			0.042
Significant Factors			
<b>Stress</b>			
Unstressed	0.77	7	2292
Stressed	0.23	1	888
<i>Range</i>	55		
<b>Sonorants</b>			
j	0.74	15	212
m	0.54	5	757
n	0.47	5	1342
l	0.44	3	453
r	0.31	3	416
<i>Range</i>	43		
<b>Word Frequency</b>			
1-94	0.61	5	2859
>=95	0.39	3	321
<i>Range</i>	21		
<b>Speech Task</b>			
Interview	0.59	6	1727
Conversation	0.41	3	1453
<i>Range</i>	18		
<b>Speaker's Sex</b>			
Male	0.54	6	1612
Female	0.46	4	1568
<i>Range</i>	8		

Table 4.8 - Continued

Non-Significant Factors			
<b>Social Distance</b>			
Distant	[0.52]	6	1336
Close	[0.48]	5	1844
<b>Regional Variety</b>			
West	[0.52]	5	1601
East	[0.48]	5	1579

A different type of comparison and a more thorough discussion of the results can be found in Sections 4.5 and 4.6. In those sections individual factor groups (such as Stress, for example.) are presented in all linguistic environments and discussed in more detail.

#### *4.5.2 Cluster Onset Position*

Table 4.9 presents a summary of C-deletion for each consonant member in an Onset cluster (C1, C2, C3, and C4). As the result indicates, the forth consonant of a cluster deletes 25% of the time. However, given the extremely small sample of four-consonant cluster words, accepting such a generalization as a firm conclusion would be far-reaching. Although four-consonant clusters are possible in Bulgarian, not surprisingly such words occur rather infrequently in every-day speech. If future research is to be conducted on such complex syllable structures, targeted data would have to be collected and the processes examined more closely.

Table 4.9 Onset Clusters Distribution Analysis

Factor	% deleted	Total (n)
Onset Cluster (C4)	25	4
Onset Cluster (C3)	7	109
Onset Cluster (C2)	7	2192
Onset Cluster (C1)	4	2192

Despite the fact that Bulgarian speakers prefer to delete the second or the third consonant more often than the first consonant of the cluster (7% deletions vs. 4%), all cluster members are possible deletion targets. One can therefore infer that there exists a tendency for complex structures to simplify. Such simplification tendency is observed for both onset clusters and coda clusters as discussed further in this chapter.

The future tense marker *fte* accounts for 27% all deletions in onset cluster position. Other clusters that are simplified include examples like *vstv\_*, *vs\_*, and *zn\_* (7). In most cluster onsets, only a single consonant is lost but in a few instances the entire cluster is dropped (8).

(7)

/ʃte/	→	[ʃ_e]	'Fut.'
/tʃu.vstvo/	→	[tʃu._stvo]	'feeling'
/do.'bre/	→	[do.'_re]	'OK/fine'
/e.'dna/	→	[e.'na]	'one.Fem'
/mno.go/	→	['_no.go]	'much/many'
/ne.ʃto/	→	[ne.ʃ_o]	'something'
/za'.ʃtoto/	→	[za'.ʃ_oto]	'because'
/vze.me/	→	['_ze.me]	'take.1 <sup>st</sup> .Sg.Pres'



/vsi.tʃko/	→	['_si.tʃko]	'all.Neut'
/zna.tʃi/	→	['_na.tʃi]	'meaning/therefore'
/znaeʃ/	→	['_naeʃ]	'know.2 <sup>nd</sup> .Sg.Pres'
(8)			
/'ka.zvam/	→	['ka:m]	'say.1 <sup>st</sup> .Sg.Pres'

Varbrul analysis was performed on obstruent deletion in word-initial (Table 4.10) and word-medial (Table 4.11) positions separately because the consonant drop rate in these two positions is quite different and different sets of factors were found to determine it. While in word-initial position 2% of consonants are deleted (Corrected Mean = 0.02), in word-medial 6% of clusters are simplified (Corrected Mean = 0.06).

Table 4.10 Obstruent Deletion in Word Initial Cluster Onset Position

Corrected Mean	0.02		
Total Chi-square	1.66		
Chi-square/cell	0.27		
Log likelihood	-307.011		
p	0.003		
Factor	Weight	%	n
Significant Factors			
<b>Word Frequency</b>			
>=95	0.82	27	265
21-94	0.46	7	356
1-20	0.20	2	723
<i>Range</i>	62		
<b>Speech Task</b>			
Conversation	0.59	11	680
Interview	0.41	5	664
<i>Range</i>	18		

Table 4.10 - Continued

Non-Significant Factors			
<b>Stress</b>			
Unstressed	[0.62]	13	512
Stressed	[0.38]	5	832
<b>Consonant Group</b>			
Voiceless	[0.52]	9	829
Voiced	[0.48]	7	515
<b>Palatalization</b>			
Palatalized	0	0	15
Velarized	0	8	1329
<b>Speaker's Sex</b>			
Male	[0.52]	9	690
Female	[0.48]	8	654
<b>Social Distance</b>			
Distant	[0.50]	8	602
Close	[0.50]	8	742
<b>Regional Variety</b>			
West	[0.50]	8	646
East	[0.50]	8	698

Only word frequency, which was selected first, and the formality of the situation are found to significantly impact deletion in word-initial position ( $p=0.003$ , Table 4.10), whereas word frequency, voicing, regional variety and social distance impact deletion in word-medial position ( $p=0.045$ , Table 4.11).

Table 4.11 Obstruent Deletion in Word Medial Cluster Onset Position

Corrected Mean			0.061
Total Chi-square			19.12
Chi-square/cell			1.20
Log likelihood			-351.895
p			0.045
Factor	Weight	%	n
<b>Significant Factors</b>			
<b>Word Frequency</b>			
>20	0.69	12	498
1-20	0.31	3	1434
<i>Range</i>	38		
<b>Voicing</b>			
Voiced	0.64	9	657
Voiceless	0.36	3	1275
<i>Range</i>	28		
<b>Regional Variety</b>			
West	0.60	7	985
East	0.40	4	947
<i>Range</i>	20		
<b>Social Distance</b>			
Distant	0.55	6	895
Close	0.45	4	1037
<i>Range</i>	10		
<b>Non-Significant Factors</b>			
<b>Stress</b>			
Unstressed	[0.48]	5	1153
Stressed	[0.52]	6	779
<b>Palatalization</b>			
Palatalized	0	0	8
Velarized	0	5	1924
<b>Speaker's Sex</b>			
Male	[0.53]	6	981
Female	[0.47]	4	951
<b>Speech Task</b>			
Conversation	[0.51]	6	836
Interview	[0.49]	5	1096

Again, further detail in comparative format is offered in sections 4.5 and 4.6.

Varbrul results in Table 4.12 show that 4% of sonorants delete in Cluster Onsets. The significant factors ( $p=0.02$ ) include the sonorant type itself and the social distance between researcher and subject. The remaining factors do not significantly affect sonorant drop in onset clusters.

Table 4.12 Sonorants Deletion in Cluster Onset Position

Corrected Mean	0.04		
Total Chi-square	21.51		
Chi-square/cell	0.67		
Log likelihood	-186.239		
p	0.02		
Factor	Weight	%	n
Significant Factors			
Sonorant type			
m	0.68	9	134
l	0.68	9	212
r	0.32	2	561
n	0.31	2	299
Range	37		
Social Distance			
Distant	0.58	6	895
Close	0.41	4	1037
Range	7		
Non-Significant Factors			
Stress			
Unstressed	[0.50]	4	412
Stressed	[0.50]	4	794
Word Frequency			
1-20	[0.52]	4	835
21-94	[0.48]	4	371

Table 4.12 - Continued

<b>Palatalization</b>			
Palatalized	0	0	59
Velarized	0	4	1147
<b>Speech Task</b>			
Interview	[0.56]	5	623
Conversation	[0.44]	3	583
<b>Speaker's Sex</b>			
Male	[0.52]	4	653
Female	[0.48]	4	553
<b>Regional Variety</b>			
West	[0.50]	4	604
East	[0.50]	4	602

For cluster simplification, the data show that word frequency and the sonorant factor groups have the strongest impact on C-deletion of obstruents and sonorants, respectively (the highest range values of 38 for Word Frequency and 37 for Sonorant type).

#### 4.5.3 Single Coda Position

Single coda consonants undergo 7% deletion in the middle of the word. However, it should be pointed out that a closer look at the raw data reveals more than one half of all deletions observed in word-medial single coda position (46/84) occur in the same word: [tr<sup>h</sup>abva] 'must'.

(9) /tr<sup>h</sup>abva/ → [tr<sup>h</sup>a:] 'must.Mod'

Therefore, even though word-medial non-intervocalic single coda deletion is slightly higher than deletion of intervocalic onsets (12%), the result is based mostly on a single very frequently-occurring word (Table 4.13).

Table 4.13 Single Coda Distribution Analysis

Factor	% deleted	Total n
Word-Medial Single Coda	7	865
Word-Final Single Coda	1	1220

Single-coda consonants at the end of the word are quite resistant to deletion. Only 1% of these consonant undergo deletion, a finding not consistent with the expectation of a weak word-final position. However, it should be noted that in Bulgarian the voiced-voiceless opposition is neutralized word-finally and all surface consonants become voiceless. According to Vennemann's consonantal strength hierarchy, voiceless consonants are the strongest in terms of quality. Therefore, even though a position at word's end is traditionally considered weak, the high retention of strong consonants in this position should not be surprising. Perhaps what is observed here is an example of consonant sonority ranking above consonant position leading strong (i.e. less sonorous) consonants to be retained in weak positions.

A summary assessment, comparing word edge position to word-medial position for all consonants in all positions, shows that in general word edges in Bulgarian are strongly resistant to C-deletion (Table 4.14).

Table 4.14 C-Deletion in Word-Medial and Word-Edge Position

Factor	%	n
Word-Medial Position	7	14914
Word-Edge Position	2	10972

It is apparent that consonant deletion in word-medial position occurs over 3 times more frequently than at the beginning or end of the word (7 % vs. 2%).

Obstruent deletion of single codas was examined only in word-medial syllables (Table 4.15). Voicing and word frequency are the two factors significantly affecting obstruent deletion of word-medial codas ( $p=0.000$ ).

Table 4.15 Obstruent Deletion in Word Medial Single Coda Position

Corrected Mean			0.062
Total Chi-square			4.17
Chi-square/cell			1.04
Log likelihood			-65.097
p			0.000
Factor	Weight	%	n
Significant Factors			
<b>Voicing</b>			
Voiced	0.92	28	142
Voiceless	0.08	1	192
<i>Range</i>	84		
<b>Word Frequency</b>			
21-94	0.83	42	60
1-20	0.17	6	274
$\geq 95$	0	0	0
<i>Range</i>	66		
Non-Significant Factors			
<b>Stress</b>			
Unstressed	[0.51]	12	137
Stressed	[0.49]	12	197
<b>Speech Task</b>			
Conversation	[0.50]	12	156
Interview	[0.50]	12	178
<b>Social Distance</b>			
Distant	[0.54]	14	129
Close	[0.46]	11	205

Table 4.15 - Continued

<b>Speaker's Sex</b>			
Male	[0.50]	12	176
Female	[0.50]	12	158
<b>Regional Variety</b>			
West	[0.49]	12	182
East	[0.51]	13	152

Single codas in word-final position are deleted very rarely (<1%). Only 8 such deletions are observed in the corpus and thus no separate Varbrul analysis for word-final single codas was performed. Examples include the word *moʒɛʃ* 'can.ability.2<sup>nd</sup>.sg' which account for 2 out of all 8 utterances and the rest of the examples in (10).

(10)	/moʒɛʃ/	→	[mo:]	'can.ability.2 <sup>nd</sup> .sg'
	/dvajset/	→	[dvajs_]	'twenty'
	/idvax/	→	[idva:]	'come.1 <sup>st</sup> .sg.Imp.'
	/kak/	→	[ka:]	'how'
	/misliʃ/	→	[misli]	'think.2 <sup>nd</sup> .sg.Pres'
	/poʈʃnat/	→	[poʈʃ]	'begin.3 <sup>rd</sup> .pl.Perspective.Pres'
	/spomn <sup>j</sup> aʃ/	→	[spoõ]	'remember.2 <sup>nd</sup> .sg.Pres.'

Table 4.16 summarizes the Varbrul results for all factor groups considered in the analysis of sonorant deletion in single codas. Only 2% of sonorants are deleted in this position, with stress, social distance and speech tasks acting as the significant factors affecting such deletion ( $p=0.048$ ). Again stress appears to be the strongest predictor of sonorant deletion (range value = 30). The language-external factors – social distance and speech task – also affect sonorant deletion in single codas; however their



effect is not as strong (range values of 24 and 22 respectively). The sonorant type, word frequency, speaker's sex, and regional variety do not affect significantly sonorant deletion in single coda position.

Table 4.16 Sonorant Deletion in Single Coda Position

Corrected Mean			0.02
Total Chi-square			28.91
Chi-square/cell			0.72
Log likelihood			-92.37
P			0.048
Factor	Weight	%	n
<b>Significant Factors</b>			
<b>Stress</b>			
Unstressed	0.65	4	409
Stressed	0.35	1	384
<i>Range</i>	<i>30</i>		
<b>Social Distance</b>			
Distant	0.62	4	375
Close	0.38	2	418
<i>Range</i>	<i>24</i>		
<b>Speech Task</b>			
Interview	0.61	4	432
Conversation	0.39	2	361
<i>Range</i>	<i>22</i>		
<b>Non-Significant Factors</b>			
<b>Sonorant Type</b>			
M	[0.34]	1	152
L	[0.67]	5	159
R	[0.45]	2	193
N	[0.61]	4	181
J	[0.42]	2	108
<b>Word Frequency</b>			
1-94	[0.50]	3	758
>=95	[0.50]	3	35

Table 4.16 - Continued

<b>Speaker's Sex</b>			
Male	[0.57]	4	413
Female	[0.43]	2	380
<b>Regional Variety</b>			
West	[0.54]	3	421
East	[0.46]	2	372

#### 4.5.4 Coda Cluster Position

Coda cluster simplification in Bulgarian is accomplished exclusively by dropping the second member of the cluster. Examination of coda clusters reveals that the first consonant (C1) of coda clusters is never deleted (Table 4.17).

Table 4.17 Coda Cluster Distribution Analysis

Factor	% deleted	n
Coda Cluster (C1)	0	63
Word Medial Coda Cluster (C2)	50	16
Word Final Coda Cluster (C2)	34	47

Contrary to the zero-deletion of the first cluster member, the second consonant in coda clusters is deleted 34 percent in word-final coda clusters and 50 percent in all word-medial coda clusters – a noteworthy rate. It should be mentioned, however, that deletion in coda cluster position affects primarily the same two clusters ( $\_st/\_ʃt \rightarrow \_s\emptyset$ ) and one consonant – the dental stop [t] (see examples (11) and (12)):

- (11) /spe.<sup>tsi</sup>al.nost/ → [spe.<sup>ts</sup>al.nos\_] 'specialty'  
 /'o.blast/ → ['o.bləs\_] 'region'  
 /'ʃest/ → ['ʃes\_] 'six'

	/tʃast/	→ [tʃas_]	'part'
	/dej.nost/	→ [dej.nos_]	'activity'
	/re.sto.'rant/	→ [re.sto.'ran_]	'restaurant'
(12)	/'vest.nik/	→ ['ves_.nik]	'newspaper'
	/'vsəʃt.nost/	→ ['vsəʃ_.nost]	'in fact'
	/i'zvest.ni/	→ [i'zves_.ni]	'famous.pl'
	/di'rekt.no/	→ [di'rek_.no]	'directly'

Overall, even though a relatively high number of tokens exhibit deletion in this group, only 63 distinct words and a small number of clusters are affected. Also the voiceless dental stop /t/ is the only consonant deleted in all forms. Despite the fact that complex coda clusters are grammatical in Bulgarian, it is evident that in the course of their speech, Bulgarian speakers simplify almost 50 % of these clusters; thus, in effect these speakers show a preference for prototypically less marked structures.

In performing Varbrul analysis of obstruent deletion in coda clusters, no statistically significant factor groups are selected. No deletion of sonorants is observed in this position either.

In summary, the distribution statistics and Varbrul analysis on factor groups in each linguistic environment show that consonants tend to delete most frequently in word-medial intervocalic position and word-medial clusters. As a corollary, word edges in Bulgarian are strongly resistant to C-deletion.

## 4.6 Linguistic Factors Affecting C-Deletion

### *4.6.1 Consonant Type*

Two separate Varbrul analyses were performed when examining the impact of consonant type on deletion: analysis of obstruents and analysis of sonorants. The reason for the distinction is that these two groups of consonants are not only different in properties, but also exhibit dissimilar behavior with regard to deletion. The analysis reveals that obstruent deletion is impacted primarily by voicing and word frequency, while sonorant loss is affected mostly by stress. The discussion of vowels in Chapter 5 shows that stress is the primary contributor to vowel deletion. Since sonorants by nature exhibit vocalic properties (they have formant structure and can be syllabic), it comes as no surprise that stress - the primary factor that contributes to vowel deletion - is the primary contributor to sonorant loss as well.

#### 4.6.1.1 Obstruent Deletion: Voiced/Voiceless Opposition

When considering the voiced/voiceless phonemic opposition, Varbrul analysis shows that the factor group Voicing has a statistically significant effect on deletion in single onset position ( $p=0.00$ , Table 4.7), word-medial cluster onset position ( $p=0.045$ , Table 4.11), and word-medial single coda position ( $p=0.000$ , Table 4.15). The comparative effect of voicing on deletion in these positions is extracted and summarized in Table 4.18.

Table 4.18 Effect of Obstruent Voicing on Obstruent Deletion

Factor	Weight	%	n
<b>Single Onset Position</b>			
Voiced	0.85	16	2931
Voiceless	0.15	1	4162
<i>Range</i>	<i>70</i>		
<b>Cluster Onset Position (Word Medial)</b>			
Voiced	0.64	9	657
Voiceless	0.36	3	1275
<i>Range</i>	<i>28</i>		
<b>Single Coda Position (Word Medial)</b>			
Voiced	0.74	12	316
Voiceless	0.26	1	766
<i>Range</i>	<i>48</i>		

It is apparent that voiced obstruents are more likely to delete than voiceless obstruents in all positions included in Table 4.18. However, deletion of voiced obstruents in single onset and single medial coda positions is favored more strongly (Factor weight 0.85 and 0.74 respectively) than deletion of voiced obstruents in cluster onset position which is only slightly favored (factor weight 0.57). This result for C-deletion in Bulgarian speech corroborates Vennemann's prediction that voiced consonants are weaker than voiceless. Also, the observation that voiced obstruent deletion in Bulgarian is favored in all word-medial environments reinforces the widely-held view that word-medial is a weak position for consonants (Lavoie 2001, Hock 1996).

Varbrul analysis of obstruent deletion in cluster coda position reveals that voiced obstruents are never deleted in this position. In addition, the dental voiceless

stop /t/ is the only voiceless obstruents deleted in this position. A statistical Varbrul test requires at least two members in each variable group for a successful run. Therefore, obstruent voicing had to be excluded from the Varbrul analysis in coda cluster position.

#### 4.6.1.2 Obstruent Deletion: Palatalized/Unpalatalized Opposition

Before discussing the results from Varbrul analysis, it should be noted again that palatalized consonants in modern Bulgarian are restricted to only syllable onset positions before the back vowels [a], [ɔ], [o] and [u] as in:

- |      |                      |                               |
|------|----------------------|-------------------------------|
| (13) | /vada/               | 'ditch'                       |
|      | /vad <sup>j</sup> a/ | 'to draw.1 <sup>st</sup> .sg' |
| (14) | /dal/                | 'give.PastPart.masc'          |
|      | /d <sup>j</sup> al/  | 'part'                        |

That is, palatalized consonants cannot occupy coda positions or onset positions before front vowels [e] and [i]. Therefore, testing for palatalized/unpalatalized opposition is not relevant in most environments. Where the opposition is relevant (onsets before back vowels), it is not statistically significant for deletion (Table 4.19, p=0.316).

In word-initial onset clusters and word-medial onset clusters, palatalized consonants are never dropped; hence this factor group is excluded from Varbrul analysis in these environments.

Table 4.19 Palatalized/Unpalatalized Obstruent Deletion in Bulgarian

<b>Consonant</b>	<b>Weight</b>	<b>%</b>	<b>N</b>
<b>Single Onset</b>			
Palatalized	[0.45]	5	110
Velarized	[0.55]	7	6983
<b>Cluster Onset (Word Initial)</b>			
Palatalized	0	0	15
Velarized	0	8	1329
<b>Cluster Onset (Word Medial)</b>			
Palatalized	0	0	8
Velarized	0	5	1924

As these analyses indicate, the deletion of obstruents in Bulgarian is governed by effects correlated with the state of the glottis (i.e., voicing) and not by factors associated with secondary articulations related to the position of the tongue in the oral cavity (i.e., palatalization). Such findings are generally consistent with previous accounts of lenition (e.g., those of Hock and Hyman) in which sonority – here associated with voicing – plays a key role in the process of deletion.

#### 4.6.1.3 Sonorant Deletion

Based on Vennemann's Consonantal Strength Hierarchy, sonorant consonants are considered the weakest consonants in the inventory. Therefore one would expect that these consonants would tend to be dropped more often. However, based on quantitative analysis, such expectation is not fully supported for Bulgarian as seen in Table 4.20.

Table 4.20 Overall C-Deletion in Bulgarian

Consonant	% Deleted	n
v	14	2192
b	12	828
g	11	788
d	9	1964
ʒ	9	242
j	7	468
t	5	3688
m	3	1742
l	3	1324
z	3	1157
n	3	2870
r	2	1753
x	1	415
k	1	1743
ʃ	1	793

The rate of sonorant deletion is not the highest among all consonants in the corpus: the glide [j] is deleted in 7% of the utterances, the nasals [m], [n], and the liquid [l] are deleted in 3% of the cases, and [r] is deleted in only 2% of the cases. As a whole, the data show that sonorants are dropped less frequently than the voiceless stop [t], which is ranked highest in strength in Vennemann's hierarchy. All voiced stops ([b] – 12%, [d] – 9%, [g] – 11%) and two of the voiced fricatives ([v] – 14%, [ʒ] – 9%) are also deleted at a higher rate than the sonorants which is seemingly another contradiction to the Consonant Strength Hierarchy. With regard to C-deletion, it might appear that Bulgarian ranks consonant strength somewhat differently from the expected ranking. However, sonorants deletion exhibits a lot more similarities to vowel deletion than to



consonant deletion. For example, stress plays a major role for sonorant deletion - it is the strongest factor in predicting single onset and single coda sonorant deletion – the same way it does for vowel deletion. However, stress plays a minimal role for obstruent deletion: it is a significant factor only for obstruent deletion in single onset position. Thus, it is not clear whether sonorants should be included in a ranking with the rest of the obstruents or whether they should be part of a separate group of segments governed by different deletion rules and placed somewhere between obstruents and vowels.

Partitioning the data according to the position of the consonant inside the word/syllable yields a more detailed view of how sonorants delete (Table 4.21). The sonorant quality is a statistically significant factor for deletion only in two linguistic environments: in single ( $p = 0.04$ , Table 4.8) and cluster onset position ( $p = 0.02$ , Table 4.12). Deletion of the glide [j] is favored most strongly in single onset position (factor weight 0.74). However, in Bulgarian the glide cannot be a part of a cluster because sequences like [pj] for example are considered single segments in the inventory [p'], i.e. palatalized consonants; thus the glide is excluded from the group of consonants when onset clusters are examined. Deletion of the bilabial nasal [m] is favored in both single onset and cluster onset positions (factor weights 0.54 and 0.68 respectively). Deletion of the coronal nasal [n] is disfavored in both single onset and cluster onset positions. While deletion of [l] is favored in cluster onset position (factor weight = 0.68), it is disfavored in single onset position (factor weight = 0.44).

Table 4.21 Effect of Sonorant Quality on Sonorant Deletion

Factor	Weight	%	n
<b>Single Onset Position</b>			
j	0.74	15	212
m	0.54	5	757
n	0.47	5	1342
l	0.44	3	453
r	0.31	3	416
<i>Range</i>	<i>43</i>		
<b>Cluster Onset Position</b>			
l	0.68	9	212
m	0.68	9	134
r	0.33	2	561
n	0.31	2	299
j	[0.00]	0	0
<i>Range</i>	<i>37</i>		
<b>Single Coda Position</b>			
l	[0.67]	5	159
n	[0.61]	4	181
r	[0.45]	2	193
j	[0.42]	2	108
m	[0.34]	1	152

Varbrul results show that the sonorant consonant factor group is not significant ( $p=0.26$ ) for the rate of deletion in single coda position (Table 4.21).

In cluster coda position sonorants are never dropped. One possible reason: a very small number of forms are found in the sample where sonorants occupy this position (16 out of 25,887). A likely explanation for this "shortage" is that all sixteen words are borrowings from Western-European languages. Some of the forms have been adopted in the distant past and other more recently.

(15) Borrowed forms with /r/ in cluster coda position:

/tran.'sport/	'transport'
/'kurs/	'course'
/kon.'kurs/	'competition'
/'mart/	'March'

(16) Borrowed forms with /l/ in cluster coda position

/'Palm/ 'palm' (> Palm PDA)

(17) Borrowed forms with /n/ in cluster coda position:

/re.sto.'rant/	'restaurant'
/a.si.'stent/	'assistant'
/'ui.kend/	'weekend'
/kon.ku.'rent.no.spo.sob.no.'stta/	'ability to compete'
/e.kvi.va.'lent/	'equivalent'

Upon close inspection the forms it is apparent that these sonorants occupy only C1 position in the coda cluster. As observed earlier, obstruents occupying the same position are also never dropped in speech (Table 4.17). Based on this evidence, C1 in coda clusters appears to be a solid structure-preserving position in Bulgarian.

#### 4.6.2 *Stress*

Based on general agreement by researchers (Lavoie), stressed or strong syllables retain more of their phonological segments than unstressed syllables; the same holds true for Bulgarian, at least to a limited extent. The Varbrul results indicate that

consonant deletion is favored in unstressed syllables and disfavored in stressed syllables but only in single onset position (Table 4.22).

Table 4.22 Effect of Stress on Obstruent Deletion

Factor	Weight	%	n
<b>Single Onset Position</b>			
Unstressed	0.69	9	4809
Stressed	0.31	3	2284
<i>Range</i>	38		
<b>Cluster Onset (Word Initial)</b>			
Unstressed	[0.62]	13	512
Stressed	[0.38]	5	832
<b>Cluster Onset (Word Medial)</b>			
Unstressed	[0.48]	5	1153
Stressed	[0.52]	6	779
<b>Single Coda (Word Medial)</b>			
Unstressed	[0.51]	12	137
Stressed	[0.49]	12	197

As illustrated in Table 4.22 stress is a significant factor for consonant deletion in only one linguistic environment – single onset ( $p = 0.042$ , Table 4.8). Stress does not significantly impact the deletion of consonants in cluster onset word-initial ( $p=0.90$ ), word-medial ( $p=0.440$ ) and single coda word-medial ( $p=0.848$ ) positions. Deletion of consonants in stressed syllables is disfavored in single onsets (factor weight = 0.31).

Stress plays a bigger role in sonorant deletion than in obstruent deletion. In both single onset ( $p=0.042$ , Table 4.8) and single coda ( $p=0.048$ , Table 4.16) positions Varbrul selects stress as the most important factor group for sonorant deletion.

Table 4.23 Effect of Stress on Sonorant Deletion

Factor	Weight	%	n
<b>Single Onset Position</b>			
Unstressed	0.77	7	2292
Stressed	0.23	1	888
<i>Range</i>	55		
<b>Single Coda Position</b>			
Unstressed	0.65	4	409
Stressed	0.35	1	384
<i>Range</i>			
<b>Cluster Onset Position</b>			
Unstressed	[0.50]	4	412
Stressed	[0.50]	4	794

Consistently, deletion of sonorants is favored in unstressed syllables and not favored in stressed ones (Table 4.23). Again, such a finding corroborates Lavoie's contention that "strong articulations occur in strong positions and weak articulations occur in weak the weak positions" (2001:10).

#### 4.6.3 Word Frequency

Word frequency was coded on the basis of the occurrence of each lexical item in the corpora. Words were assigned to one of three groups: the first group consists of words with less than 20 occurrences in the corpus; the second with words which occur in the corpus between 21 and 94 times; and finally, words which appear more than 95 times in the corpus. This particular division was chosen because it was determined that words which appear more than 95 times in the corpus consist primarily of function

words – prepositions, conjunctions, the future tense marker *ſie* 'will' and the copula *səm* 'be'. The second group (21 to 94 occurrences ) includes forms of very frequent verbs like '*moga* 'can', '*iskam* 'want', *znaja* 'know' and different pronominal forms – personal, demonstrative, relative and other pronouns. The lowest frequency group consists of adjectives, nouns and less frequent verbs like: *skəp* 'expensive', *davam* 'give', *spetsialnost* 'specialty', etc.

Table 4.24 summarizes the effect of word frequency on obstruent deletion. This linguistic variable was found to significantly affect deletion in four linguistic environments: single onset ( $p=0.000$ , Table 4.7), cluster onset word-initial ( $p=0.003$ , Table 4.10) and word-medial ( $p=0.045$ , Table 4.11) positions as well as single codas in word-medial position ( $p=0.000$ , Table 4.15). This factor was selected as most important for deletion in cluster onsets (both word-initially and medially), second most important in word-medial single codas, and third most important in single onsets: a fact that suggests that word frequency is strongly correlated with C-deletion. Such finding might be expected because, in my view, frequently used lexical items and collocations are anticipated by listeners in the string of speech and thus no full pronunciation is required for the recognition of these items. Such view is supported by Bybee who argues that "repetition leads to reduction of form" (2001:9).

Table 4.24 Effect of Word Frequency on Obstruent Deletion

Factor	Weight	%	n
<b>Single Onset</b>			
21-94	0.69	9	2495
1-20	0.47	5	3708
>=95	0.34	6	890
<i>Range</i>	35		
<b>Cluster Onset (Word Initial)</b>			
>=95	0.82	27	265
21-94	0.46	7	356
1-20	0.20	2	723
<i>Range</i>	62		
<b>Cluster Onset (Word Medial)</b>			
>20	0.69	12	498
1-20	0.31	3	1434
<i>Range</i>	38		
<b>Single Coda (Word Medial)</b>			
21-94	0.83	42	60
1-20	0.17	6	274
>=95	0	0	0
<i>Range</i>	66		

The deletion of consonants in single onset position is disfavored in words that belong to the highest frequency group (factor weight 0.34). This result could be attributed to the fact that this group consists of function words which are usually very short (*da* 'yes', *za* 'for', *v* 'in') and the deletion of their consonants may result in the complete non-pronunciation of these words. In addition, as will become clear in the discussion in Chapter 5, vowel deletion in these clitical forms is quite common and in some cases consonants are the only "surviving" segments of the clitics. Thus deletion of

consonants in these forms may be blocked in order to preserve the clitic in its minimal form.

Cluster simplification in onset position are disfavored in the less frequently occurring lexical items (factor weight 0.20 and 0.31 for word initial and word medial respectively).

While single onsets in the highest frequency factor strongly disfavor deletion (factor weight 0.34), word-initial coda clusters in the same frequency factor strongly favor cluster simplification (factor weight 0.82). This stark difference is attributed to the onset cluster simplification of the future tense marker *ʃiɛ*, which alone undergoes deletion in 78 % of the utterances: 73/94 utterances of *ʃiɛ* in the corpus are pronounced as *ʃe*.

Two separate Varbrul tests were conducted on single coda position: first for single coda in the middle of the word and then for single coda at the end of the word. Varbrul results reveal that word frequency is not a statistically significant factor in determining the rate of deletion of word-final single codas ( $p=0.591$ ); however it is one of the two factors that influence deletion of word-medial single codas ( $p=0.000$ ). Only 6% of codas are deleted in words which appear between 1 and 20 times and 42% of word-medial single codas are deleted in items which appear between 21 and 94 times in the data set. It should be noted, however, that all deletions in word-medial single codas are found in the same word and its forms, the modal *tr'abva* 'must' (18). The two voiced



consonants in this form behave the same way a single onset consonant would behave inter-vocally in many verb forms, similar to the example in (19).

- (18) /tr<sup>j</sup>abva/ → [tr<sup>j</sup>aa] 'must.Pres'  
       /tr<sup>j</sup>abvaʃe/ → [tr<sup>j</sup>aaʃe] 'must.Imp'
- (19) /'moga/ → ['moə] 'can.1<sup>st</sup>.sg.Pres'

A comparison of the effect of word frequency on sonorant deletion in different linguistic environments is presented in Table 4.25. One can observe that word frequency is significant only in single onsets (p=0.000) and that factor was selected as the third most important. Further, deletion is only favored in words occurring between 1 and 94 times.

Table 4.25 Effect of Word Frequency on Sonorant Deletion

Factor	Weight	%	n
<b>Single Onset Position</b>			
1-94	0.61	5	2859
>=95	0.39	3	321
<i>Range</i>	<i>21</i>		
<b>Cluster Onset Position</b>			
1-20	[0.52]	4	835
21-94	[0.48]	4	371
<b>Single Coda Position</b>			
1-94	[0.50]	3	758
>=95	[0.50]	3	35

Some examples of deletion in single onset word-medial sonorants are listed in (20). It can be observed that the impact of deletion in these forms leads to simply

shortening of the words. In the case of nasal deletion, the nasalization feature is preserved in the surrounding vowels.

- (20) /'n<sup>j</sup>ama/ → ['n<sup>j</sup>aə] 'there isn't /will not'  
/i'grajat/ → [i'gra:t] 'play.3<sup>rd</sup>.Pl.Pres'  
/toja/ → [toə] 'that.masc'  
/godina/ → [godiǝ] 'year'  
/ilustrirat/ → [ilustriət] 'illustrate.3<sup>rd</sup>.pl.Pres'

#### 4.7 Non-linguistic factors affecting C-deletion

##### *4.7.1 Speakers' Sex*

The difference in the deletion rate between men and women is statistically significant in single onset position for both obstruent (p=0.000) and sonorant (p=0.042). The Varbrul results of the statistical significance of Speakers' Sex are summarized in Tables 4.26 and 4.27 for obstruents and sonorants, respectively.

Table 4.26 Effect of Speakers' Sex on Obstruent Deletion

Factor	Weight	%	n
<b>Single Onset Position</b>			
Male	0.58	9	3594
Female	0.42	5	3499
<i>Range</i>	<i>16</i>		
<b>Cluster Onset (Word Initial)</b>			
Male	[0.52]	9	690
Female	[0.48]	8	654
<b>Cluster Onset (Word Medial)</b>			
Male	[0.53]	6	981
Female	[0.47]	4	951
<b>Single Coda (Word Medial)</b>			
Male	[0.50]	12	176
Female	[0.50]	12	158

Table 4.27 Effect of Speakers' Sex on Sonorant Deletion

Factor	Weight	%	n
<b>Single Onset</b>			
Male	0.54	6	1612
Female	0.46	4	1568
<i>Range</i>	<i>8</i>		
<b>Cluster Onset</b>			
Male	[0.52]	4	653
Female	[0.48]	4	553
<b>Single Coda</b>			
Male	[0.57]	4	413
Female	[0.43]	2	380

Consonant deletion of single onsets is slightly disfavored in the speech of females, whose speech is closer to the norm and slightly favored in the speech of males (factor weight = 0.46 and 0.54 respectively). However, the sex of the speaker is not a

statistically significant factor for consonant deletion in single coda and cluster onset position. It seems that overall sex is not a strong predictor for consonant deletion; although this variable is selected as significant in one linguistic environment, it is the last variable selected by Varbrul and thus it is the weakest predictor of deletion.

#### *4.7.2 Regional Variety*

As stated earlier, modern standard Bulgarian is a language based on features from both major regional varieties – Western and Eastern Bulgarian varieties. However, initially the language was based on the dialects of Northeastern Bulgaria, and only later features of the Western dialects entered the norm, as the capital was established in Sofia (located in Western Bulgaria). Still today, the standard is slightly more representative of the speech of eastern speakers, thus it is expected that Eastern speakers may produce a speech sample closer to the norm, while western speakers will utter more non-standard forms.

Speaker's regional variety is chosen as a statistically significant factor by Varbrul in only one linguistic environment: cluster onset position ( $p=0.045$ , Table 4.11). Here C-deletion is favored in the Western variety (factor weight =0.60) and disfavored in Eastern variety (factor weight 0.40). In the other linguistic environments there is no a statistically significant difference in the rate of consonant deletion in the speech of subjects from the two major dialect regions in Bulgaria (single coda word-medial  $p=0.790$ , single onset  $p=0.652$ , cluster onset word-initial  $p=0.983$ ).

Table 4.28 Effect of Speakers' Dialect on Obstruent Deletion

Factor	Weight	%	n
<b>Cluster Onset (Word Medial)</b>			
West	0.60	7	985
East	0.40	4	947
<i>Range</i>	<i>20</i>		
<b>Single Coda (Word Medial)</b>			
West	[0.49]	12	182
East	[0.51]	13	152
<b>Single Onset Position</b>			
W – East	[0.50]	7	3576
E – West	[0.50]	7	3517
<b>Cluster Onset (Word Initial)</b>			
West	[0.50]	8	646
East	[0.50]	8	698

In the deletion of sonorants, no position was found to be statistically significant as presented in Table 4.29. The significance for each environment is much greater than  $p=0.05$ : single onset  $p=0.344$ , cluster onset  $p=0.993$ , single coda  $p=0.459$ .

Table 4.29 Effect of Speakers' Dialect on Sonorant Deletion

Factor	Weight	%	n
<b>Single Onset</b>			
West	[0.52]	5	1601
East	[0.48]	5	1579
<b>Cluster Onset</b>			
West	[0.50]	4	604
East	[0.50]	4	602
<b>Single Coda</b>			
West	[0.54]	3	421
East	[0.46]	2	372

A number of authors have argued that modern Standard Bulgarian is an integrated linguistic system, which is a result of “dialect convergence” (Videnov, 1999; Naylor, 2000). Also, one has to remember that the standard has been in use for almost a century since it was initially codified and throughout the last few decades this standard is what has been taught in schools and heard in TV and radio broadcasts throughout the entire territory of today's Bulgaria. Thus the result showing almost no difference in the process of consonant deletion for the two groups of speakers should not be surprising.

#### *4.7.3 Speech Style*

Overall, C-deletion is favored in free speech, which includes the subjects' interview and a phone conversation with a close relative or friend (factor weight = 0.69 and 0.59 respectively). Consonant loss is disfavored when the speakers are reading a passage (3 percent deletion in reading passage and factor weight = 0.30). The latter result is quite expected in this most formal of speech styles collected for this study and can be explained by several different factors. First, the subjects tend to be faithful to the orthography when asked to read a text out loud. "The reading of connected prose is ...highly monitored – so much so that most people are well aware of sounding different when they read..." (Chambers, 1995:6). Life experience subconsciously directs the reader's mind to situations where out-load reading of text takes place: newscasts, formal speeches, presentations, and even reading to a little child at bedtime, all of which require careful and clear pronunciation. Therefore when asked to read a text out loud,

the subject tends to approach the situation with a formality more suitable for such occasions.

Secondly, the "microphone effect" is still very dominant because subjects are invited to read the passage at the very beginning of the interview, which enhances the feeling of a formality and boosts their attempt to "say it right" for the recording.

Table 4.30 C-deletion in Free speech vs. Reading passage

Factor	Weight	%	n
Interview	0.62	7	7348
Conversation	0.59	7	6872
Reading Passage	0.30	3	7632
<i>Range</i>	32		

The result showing that deletion is favored in the interview and conversation speech tasks is not surprising either. Free speech rate is generally faster; it is unplanned, casual, and could be choppy and interrupted. It commonly involves more than one person and occurs much more frequently than formal readings or debates, for example. All these factors indicate a great deal of informality in the situation and lead to a higher rate of deletion. In addition, the subjects in this study often tend to become oblivious to being recorded after a minute or two of interaction with the interviewer or friend/relative they are talking to. Finally, the phone conversation was specifically designed to induce familiar and comfortable setting for conversation which helped the

informality and allowed the subject to utter text in close to "normal" daily circumstances.

When the data is partitioned by linguistic environment, Varbrul analysis reveals a significant difference ( $p=0.003$ ) between Conversation and Interview tasks only in word-initial cluster onset position (Table 4.31). It seems that the speech in the phone conversations is marked by more obstruent cluster simplification than the speech in the interview.

Table 4.31 Effect of Speech Style on Obstruent Deletion

Factor	Weight	%	n
<b>Cluster Onset (Word Initial)</b>			
Conversation	0.59	11	680
Interview	0.41	5	664
<i>Range</i>	<i>18</i>		

Deletion of sonorants was favored in the Interview task for single onset and single coda environments ( $p=0.042$  and  $p=0.048$  respectively) and disfavored in the conversation task (Table 4.32).



Table 4.32 Effect of Speech Style on Sonorant Deletion

Factor	Weight	%	n
<b>Single Onset</b>			
Interview	0.59	6	1727
Conversation	0.41	3	1453
<i>Range</i>	<i>18</i>		
<b>Single Coda</b>			
Interview	0.61	4	432
Conversation	0.39	2	361
<i>Range</i>	<i>22</i>		

Although speech style is selected as a significant factor for sonorant deletion in these two environments, it is not the strongest predictor of consonant loss. In single onset position, this factor, together with the only other external linguistic factor chosen as significant - speaker's sex - are the last two factors selected by Varbrul. Therefore, these factors have the weakest effect on deletion (range values = 18 and 8). In a similar fashion, speech style has the weakest effect on sonorant deletion in single coda position (range = 22).

#### *4.7.4 Social Distance between Researcher and Subject*

Another non-linguistic factor considered in this study is the social distance between the interviewer and the informants. The inclusion of this factor group is intended to test whether people who are more familiar with the researcher exhibit a different pattern of language use than those who are not socially close to the researcher.

Varbrul analysis indicates that in certain linguistic environments the social distance is a significant factor for deletion: obstruents in word-medial cluster onset position ( $p=0.0045$ ) as summarized in Table 4.33 and sonorants in cluster onset ( $p=0.02$ ) and single coda ( $p=0.048$ ) summarized in Table 4.34. However, it should be pointed out that Varbrul did not select this factor group as the most important factor for C-deletion in any of these environments as can be confirmed by looking at the small range values in Table 4.33 and Table 4.34.

Table 4.33 Effect of Social Distance on Obstruent Deletion

Factor	Weight	%	n
<b>Cluster Onset (Word Medial)</b>			
Distant	0.55	6	895
Close	0.45	4	1037
<i>Range</i>	<i>10</i>		

Table 4.34 Effect of Social Distance on Sonorant Deletion

Factor	Weight	%	n
<b>Cluster Onset</b>			
Distant	0.58	6	895
Close	0.41	4	1037
<i>Range</i>	<i>10</i>		
<b>Single Coda</b>			
Distant	0.62	4	375
Close	0.38	2	418
<i>Range</i>	<i>24</i>		

Contrary to expectations, in all positions where social distance is a significant factor, deletion is favored in the speech of people whom the interviewer met for the first time and disfavored in the speech of close acquaintances. This result was quite

surprising and difficult to account for. One possible explanation might lie in the fact that age was not controlled for as a factor in subject selection. A close look at the groups reveals that members in the distant category are on the average 5 years younger than members in the close category. The reason for this is that people close to the researcher are close to her in age as well, while the subjects in the distant group happen to be of younger age. The age could be a factor because younger generation may be more inclined to use informal speech regardless of their relationship with the interviewer. Further sociolinguistic research is necessary not only to test the validity of this result, but also to manage this variable more effectively.

#### 4.8 Conclusions

All things considered, what new insight has been gained about consonant deletion in Bulgarian? First, this study has confirmed that only a small number of consonants are lost in speech (5%). It was also discovered that although any word could potentially lose a consonant, the majority of consonant deletions happen in a small number of very frequent words. Varbrul analysis of the process also revealed that the context of deletion is predictable – word medial intervocalic consonants and word final clusters are the environments where deletion rates are the highest. Such a result is certainly not surprising, since processes of intervocalic consonant loss or cluster simplification have been systematically observed in historical language change of numerous other languages. It was also established that there is a high correlation

between the voicing of obstruents and their deletion probability: voiced consonants are more likely to delete than voiceless consonants in almost all environments where consonant deletion is favored.

Overall, what this study has established is that although certain socio-linguistic factors such as speaker's sex, regional variety and social relation do affect consonant deletion in Bulgarian, the process is more strongly determined by internal linguistic factors such as the consonant voicing and word frequency.

## CHAPTER 5

### VARIABLE VOWEL DELETION IN SPOKEN BULGARIAN

#### 5.1 Introduction

This chapter discusses the process of vowel deletion in Bulgarian and the linguistic and non-linguistic factors that influence this process. Overall, with regards to vowel deletion in Bulgarian, stress is consistently the most important factor. Other factors such as the nature of the syllable onset, the formality of the situation, and the speakers' sex also play a role in some cases. The linguistic variable marking grammatical relation and the social distance between subject and interviewer were established as not significant.

Section 5.2 introduces the phonology of Bulgarian vowels including the vowel inventory and syllable structure, stress, and vowel reduction. Section 5.3 presents the vowels affected by deletion in Bulgarian. Section 5.4 delves into a detailed discussion of the linguistic and non-linguistic factors contributing to the deletion of each vowel. Section 5.5 concludes the chapter.

## 5.2 The Bulgarian Vowel System and Syllable Structure

### *5.2.1 Vowel Inventory*

The vowel inventory of Bulgarian consists of six vowel phonemes with two front vowels /e/ and /i/, two mid /a/ and /ǎ/, and two back vowels /o/ and /u/. This inventory is presented in Figure 5.1.

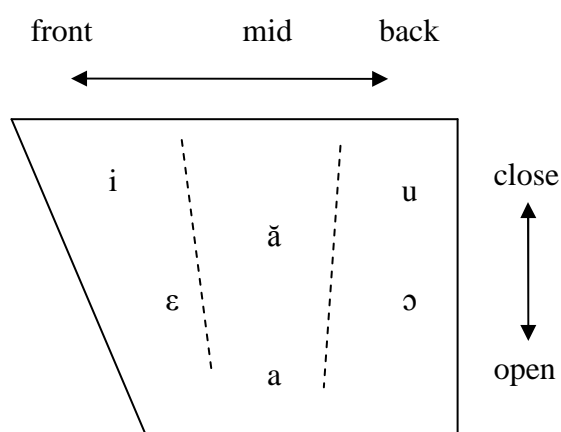


Figure 5.1 Vowel phonemes in Bulgarian (after Ra Houge, 1999)

Traditional grammars state that the full inventory of vowels can be found only in stressed syllables (*Gramatika na Sǎvremennia Bulgarski Knižoven Ezik: Fonetika*, 1998), while in unstressed syllables, the inventory is much smaller: the six underlying vowel forms are realized as three vowels on the surface (Figure 5.2). This is a simplified view of the reduction process in Bulgarian. A more detailed discussion of that process is provided in section 5.2.3.

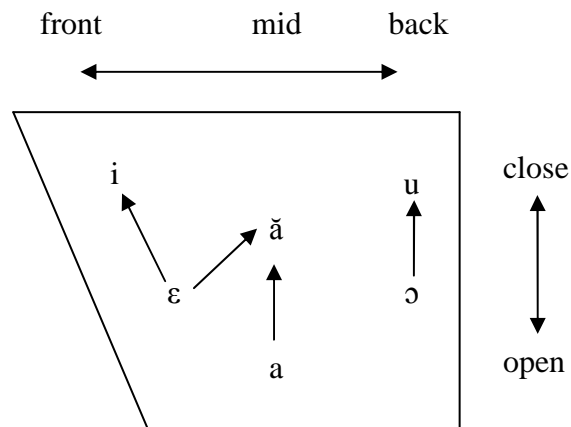


Figure 5.2 Vowel Inventory in Unstressed Syllables in Standard Bulgarian

### 5.2.2 Stress

Phoneticians agree that stress in Bulgarian is dynamic and free. That is, stressed syllables are louder and longer than unstressed ones and the location of the stress cannot be predicted (Tilkov, Boyadžiev 1998). Stress can also move to a different syllable within a word when that word is inflected as in (1).

- |   |   |                             |
|---|---|-----------------------------|
| (1) /'prɔlet/<br>'spring'                     | → | /prɔle'tta/<br>'the spring' |
| /'mislia/<br>'think.1 <sup>st</sup> Sg.Pres.' | → | /mi'sli/<br>'think.Imp.Sg.' |
| /'stado/<br>'flock'                           | → | /sta'da/<br>'flock.Pl.'     |

In addition, stress in Bulgarian is distinctive: pairs like 'vǎlna 'wool', vǎl'na 'wave' are set apart only by stress (Contemporary Bulgarian Language 1999). More examples of this process are presented in (2).

(2) /'para/ 'steam'	→	/pa'ra/ 'coin/money.Sg'
/ɔ'bitʃai/ 'love.Imp.Sg'	→	/ɔbi'tʃai/ 'custom/tradition'
/tʃe'te/ 'read.3 <sup>rd</sup> .Sg.Pres.'	→	/'tʃete/ 'read.3 <sup>rd</sup> .Sg.Aorist'

Finally, stress is what triggers vowel reduction in Bulgarian (Tilkov, Boyadžiev, Petterson and Wood 1987). Also, as it will become apparent later in this discussion, stress plays a primary role in vowel deletion. The analysis shows that vowels under stress are deleted extremely rarely, while the deletion of unstressed vowels is determined by the vowel position in relation to the stressed syllables.

### 5.2.3 Vowel Reduction

The most prominent phonological process that has been discussed in the literature regarding Bulgarian vowels is vowel reduction. In Standard Bulgarian, as well as in the western varieties of the language, the back vowels /a ɔ/ are reduced towards their “closed<sup>4</sup>” counterparts /ǎ u/. However, reduction does not result in a full merger of the open and closed vowels, which means that they are realized with an intermediate variant /ʌ, o/, only approximating the "closed" pair member (Tilkov). In addition, in the

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<sup>4</sup> The terms “close-open” are used in traditional reference grammars of Bulgarian (Tilkov, Bojadžiev) and in Wood (1979) as referring to the position of the jaw in vowel production.



Standard language and western varieties, the front vowel /ε/ is never reduced towards its closed counterpart /i/ - see (3).

(3) Standard and Western Varieties

/ta'kava/ →	[tʌ'kavə]	‘such.fem’
/'kojtə/ →	['kojtə]	‘car’
/dε'tε/ →	[dε'tε]	‘child’

Although vowel reduction is common for both western and eastern varieties of Bulgarian, the degree of reduction varies between the two groups, according to both, Bulgarian (Stojkov, Popov, Tilkov and Bojadziev) and western researchers (Wood and Pettersson). In the east, the process has affected all three vowel pairs and the unstressed “open” vowels merge completely with their “closed” counterparts:

(4) Eastern Speakers

/ta'kava/ →	[tǎ'kavǎ]	‘such.fem’
/kəla/ →	[ku'la]	‘car’
/dε'tε/ →	[d'i't'ε]	‘child’

Another process noted in the literature is that of reverse reduction. This is a process where closed-vowels in unstressed position are pronounced towards their open counterparts. Reverse reduction is much less pronounced a phenomenon than open-vowel reduction.

(5) /kul'tura/	→	[kɒl'turə]	'culture'
/pǎ'teka/	→	[pʌ'tekə]	'path'

What is the relationship between reduction and deletion, then? When looking at deletion in relation to lenition, two conditions should be considered: the vowel position (strong vs. weak) and the vowel quality.

Weak positions for vowels are marked by stress. As the current chapter will show, weak positions are also the environments where the processes of lenition and deletion occur. It is conceivable then to consider deletion as the final stage of vowel reduction, in a process parallel to Hock's view for consonant loss (Figure 5.3).

(6) Unstressed V → Reduced V → Ø

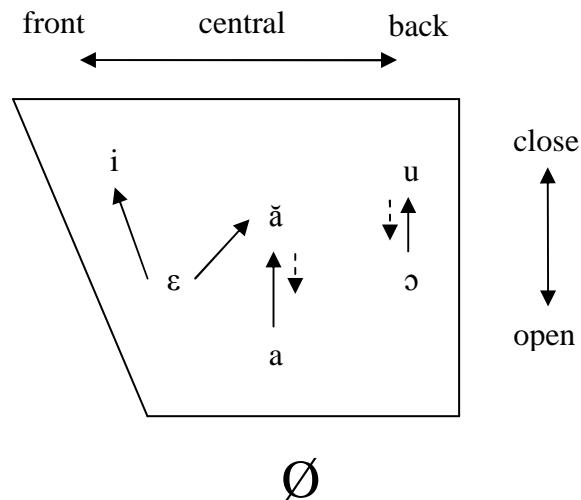


Figure 5.3 Vowel Reduction, Reverse Reduction and Deletion in Bulgarian:  
After Hock's weakening hierarchy

Such a hierarchy would predict that each vowel is a potential candidate for deletion. One would therefore expect to find that reduced/unstressed vowels tend to be

elided more frequently than stressed vowels. Statistical analysis will demonstrate later that this expectation is met in Bulgarian.

In regard to segmental strength, a universal vowel ranking based on sonority ranks the "high vowels" /i/ and /u/ as less sonorant, or weaker than the "non-high vowels" /a/ and /o/ (Selkirk 1984, Vennemann 1988). On the basis of this universal ranking and the process of vowel lenition the following vowel strength ranking is hypothesized for Bulgarian:

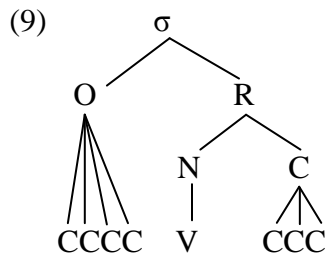
$$(7) \quad i, u < \check{a} < \varepsilon, \text{ɔ} < a$$

According to such ranking, the expectation for V-deletion in Bulgarian would be that weaker vowels are dropped at a higher rate than stronger ones. Considering the language-specific facts of vowel reduction and reverse reduction in Bulgarian, such ranking is supported by the process of vowel deletion as well.

#### *5.2.4 Syllable Structure*

In Standard Bulgarian, vowels are the only segments allowed in syllable peak and according to the *Gramatika na Săvremennia Bulgarski Knížoven Ezik: Fonetika, 1998*, the maximum possible number of consonants in an onset and coda clusters is three. However, within the phonological word, which would include pro-clitics and enclitics, Bulgarian allows up to four consonants in onset clusters and up to three in coda clusters (8).

- (8) ['v **stro**go] [oprede'len] ['red]  
 'In strictly defined order'  
 ['s **vk**l<sup>h</sup>utʃvaneto] [na Bul'garia] [v ES]  
 'with the inclusion of Bulgaria in the EU'



Although peaks in standard Bulgarian can only be vocalic elements, this study shows that vowel deletion in speech often leads some sonorant segments such as nasals, liquids, and even some fricatives, to occupy the syllable peak.

### 5.3 Vowels Affected by Deletion

In order to study the deletion of vowels in Bulgarian, a set of 21006 vowels were coded for Varbrul analysis, all taken from the corpus used for the consonant analysis (10,800 words). The analysis reveals that all in all, variable vowel deletion affects only 4% of all vowels in the data (870 deleted out of 21006). The fact that deletion affects such a small number of segments may indicate that in Bulgarian a profound language transformation is not taking place at the moment. However, an investigation of such a process is important because, as language history shows, it may ultimately lead to language change.

### 5.3.1 Vowel Deletion Rates

Examination of the Bulgarian speech corpus collected for this study shows that all six phonemic vowels /a ǎ ɔ u ε i/ undergo elision in speech. However, the rate of deletion is quite different for the underlying form of each vowel and is broken down as follows: the back vowel /ɔ/ undergoes the highest rate of deletion (7%), followed by the front vowel /ε/ at 5% deletion, /i/ at 4% deletion, and /a/ at 3% deletion of all the cases. Finally /u/ and /ǎ/ are deleted at a rate of only 1% each (Table 5.1).

Table 5.1 Deletion of Underlying Vowels

Vowel	% Deleted	Total
ɔ	7	3848
ε	5	4213
i	4	3919
a	3	7768
ǎ	1	641
u	1	617

One should remember that unstressed /ɔ/ in Bulgarian is realized as a variant close to /u/ and therefore it is weak. On the other hand, unstressed /u/ and /ǎ/ are strengthened towards the non-high vowels /ɔ/ and /a/ in the process of reverse reduction. Hence, referring to the universal ranking of vowel strength, the expectations that the weaker high vowels /u/ and /i/ delete at higher rates than /a/ and /o/ is met.

### 5.3.2 Stressed Vowel Deletion

Stressed vowels are deleted extremely rarely: merely 7 vowels, out of 7035 stressed vowels, are deleted in the entire transcribed corpus of data. The data analysis reveals that the open vowels /a/, /ɔ/, and /ɛ/ are never deleted under stress, which is consistent with the vowel strength ranking and the position ranking posited earlier. The front vowel /i/ is deleted 5 times, while /u/ and /ǎ/ are deleted only 1 time each. Close inspection of the lexical items reveals that in all but two cases of deletion under stress, vowels are lost in syllables with a nasal onset. More importantly, in each of these cases the vowel elision results in nasals acquiring syllable peak status, as shown in (10). These few examples of stressed vowel deletion in Bulgarian present a case comparable to Piñeros' findings that stressed vowel deletion is in fact a process of vowel absorption by a more sonorant onset. Another case of a consonant acquiring a peak status is the single example in the data where the mid vowel /ǎ/ is deleted in a syllable with a fricative onset (11). Finally, the front vowel /i/ is deleted in a syllable with a voiceless stop onset, resulting in the cliticization of the personal pronoun *ti* 'you' and the pronunciation of a prescriptively ungrammatical consonant cluster \*tn\_ (12).

- (10) /ma.ga.'zi.ni.te/ → [ma.ga.'z\_.n\_.te] → [ma.ga.'z\_.n\_.te] 'the stores'  
 /xrə.'ni.tel.ni/ → [xrə.n'\_.tel.ni] 'grocery.Adj.'  
 /'mi.na.la.ta/ → ['m\_.na.la.ta] 'the last'  
 /mi.nu.ti/ → [mi.'n\_.ti] 'minutes'
- (11) /'sǎ.ʃti.te/ → ['s\_.ʃti.te] 'the same'
- (12) /'ti#na'li/ → [t\_#na'li] → ['tna.'li] 'you.QuestionPart'

Since the scope of vowels deleted under stress is so limited, the discussion in the rest of this chapter focuses solely on unstressed vowel loss. Performing Variable rule analysis of the data, the effects of linguistic and non-linguistic factors on deletion are examined.

#### 5.4 Factors Affecting Unstressed Vowel Deletion

##### *5.4.1 Data Partitioning and Factors*

After multiple iterations in finding the most appropriate model, a partitioning based on the vowel quality was selected. When considering the deletion of all vowels together, it became apparent that the model built by Varbrul was not a good fit (Total Chi-square = 1562 when the expected Chi-square criterion = 29 at  $p < 0.05$ ). "A larger value [of chi-square] means a larger difference and hence a poorer fit between the data and the model" (Paolillo 2002:108). As Varbrul experts have suggested from their experience, the most common reason for a "poor-fit" model is an interaction between the factor groups under analysis (Paolillo 2002, Tagliamonte 2006). When such correlations were discovered in this study, duplicate factors were either recoded or excluded. Further, in analyzing variation in Bulgarian, it was discovered that even though the deletion of each vowel was affected by a similar set of factor groups, each vowel ranked factors within the group differently. Thus, in order to sort out these finer distinctions within the factor groups, the data was partitioned by vowel type.

The factors considered in the Varbrul analysis with regards to vowel deletion are listed in Table 5.2:

Table 5.2 Factor Groups and Factors Affecting V-Deletion

Factor Group	Factors	Special notation (if applicable)
Vowel Quality	/a/, /ǣ/, /ɔ/, /u/, /ɛ/, /i/	
Grammatical Marker	Marker, Non-marker	
Vowel Position in Relation to Stress	Word-Initial, followed by Stressed Syllable	#V <sup>σ</sup>
	Word-Initial, followed by Unstressed Syllable	#Vσ
	Word-Medial, followed by Stressed Syll., preceded by Unstressed Syll.	σV <sup>σ</sup>
	Word-Medial, followed by Unstressed Syll., preceded by Stressed Syll.	σ <sup>σ</sup> Vσ
	Word-Medial, followed and preceded by Unstressed Syllables	σVσ
	Word-Final, preceded by Stressed Syllable	σ <sup>σ</sup> V#
	Word-Final, preceded by Unstressed Syllable	σV#
Preceding Consonant	Voiceless Obstruents Voiced Obstruents Sonorants No Onset	
Word Frequency	<20 occurrences 21-94 occurrences ≥ 95 occurrences	
Sex	Male, Female	
Regional Variety	Western, Eastern	
Speech Task	Reading Passage, Interview, Phone Conversation	



The results of V-deletion in the context of these factor groups are further discussed while examining each vowel. Specific illustrations from the data are also presented to exemplify the processes and aid in its understanding.

#### 5.4.2 Deletion of Unstressed /a/

Table 5.3 presents a summary of the significant factors that contribute to the deletion of /a/ in an unstressed position. The first section of the table shows the factors that Varbrul selects as significant contributors to the deletion process with weight probability, percent of deleted vowels, and total number of vowels in each factor, respectively. The second section shows the factors that are not found to significantly impact vowel loss and weight probability is presented in square brackets.

Table 5.3 Summary of Factor Groups Affecting /a/ Deletion

Factor	Weight	%	n
Corrected Mean			0.013
Total Chi-square			84.08
Chi-square/cell			1.59
Log likelihood			-556.551
p			0.00
Significant Factors Affecting Deletion of /a/			
<b>V-Position in Relation to Stress</b>			
σ'Vσ	0.89	13	312
#Vσ'	0.84	11	630
σVσ'	0.66	4	269
#Vσ	0.61	4	863
σ'V#	0.36	1	937
σVσ	0.23	1	868
σV#	0.05	<1	772
Range	84		

Table 5.3 - Continued

<b>Preceding Consonant</b>			
Voiceless Obstruents	0.71	6	1336
Voiced Obstruents	0.61	5	1336
No Onsets	0.34	2	281
Sonorants	0.33	2	1689
<i>Range</i>	38		
<b>Word Frequency</b>			
>21	0.63	5	2673
1-20	0.37	1	1979
<i>Range</i>	25		
Non-Significant Factors for the Deletion of /a/			
<b>Grammatical Marker</b>			
Non-marker	[0.61]	4	3785
Marker	[0.39]	2	866
<b>Speech Task</b>			
Interview	[0.52]	4	2332
Phone Conversation	[0.48]	3	2319
<b>Dialect</b>			
East	[0.55]	4	2386
West	[0.45]	3	2265
<b>Sex</b>			
Male	[0.54]	4	2320
Female	[0.46]	3	2331

#### 5.4.2.1 Linguistic Environment and Stress Effect on /a/-Deletion

The Vowel Position in Relation to Stress is the first significant factor group picked by Varbrul (see Table 5.4). The computed large range of 78 when compared with range values for the rest of the significant factor groups indicates that this variable is the strongest predictor of /a/ deletion (Tagliamonte 2006:235)

Table 5.4 Effects of Linguistic Environment and Stress on /a/-Deletion

Factor	Weight	%	n
<b>V-Position in Relation to Stress</b>			
σ'Vσ	0.89	13	312
#Vσ'	0.84	11	630
σVσ'	0.66	4	269
#Vσ	0.61	4	863
σ'V#	0.36	1	937
σVσ	0.23	1	868
σV#	0.05	<1	772
<i>Range</i>	<i>84</i>		

The analysis indicates that word medial position after a stressed syllable is the environment where vowel deletion is most favored (Factor Weight = 0.86). The most common examples of such deletion observed in the corpus include different forms of the Indefinite, Negative and All-Inclusive Pronouns *n'akakǎv* 'Some.masc.sg', *nikakva* 'Nobody.fem.sg', *vs'akakvi* 'all.masc.sg'. Deletion of /a/ can result in re-syllabification of the words from tri- to bi-syllabic. The "orphaned" onset could either become a part of a geminate onset (*kk\_* or *tt\_*) if the onset of the deleted syllable is the same as the onset of the following syllable as in (13) or a coda of the preceding syllable as in (14). In one example, the deletion of /a/ does not lead to the deletion of the nasal /n/ from the onset cluster *sn\_*; instead, the nasal is found to occupy the peak position, resulting in the pronunciation of an ungrammatical syllable as (15).

(13) /n <sup>j</sup> a.ka.kǎv/	→ [n <sup>j</sup> a.k_.kǎv]	'IndefinitePronoun.masc.sg.'
/ni.ka.kva/	→ ['ni.k_.kva]	'NegativePronouns.fem.sg'
/vs <sup>j</sup> a.ka.kvi/	→ [vs <sup>j</sup> a.k_.kvi]	'Pronoun.pl'
/per.'de.ta.ta/	→ [per.'de.t_.ta]	'the curtains'
(14) /na.'mi.ra.xa/	→ [na.'mi.r_.xa]	'find.Imp.3pl'
/xo.ra.ta/	→ ['xo.r_.ta]	'the people'
/xu.ba.vo/	→ ['xu.b_.vo]	'beautiful. neuter'
(15) /ne.pre.'kǎ.sna.to/	→ [ne.pre.kǎ.sn_.to]	'constantly'

The second environment where deletion of unstressed /a/ is favored is in word-initial syllables preceding a stressed syllable (factor weight = 0.84). Again, different forms of the question pronouns *kakǎv/a/o/i* 'what kind.masc.fem.neut.pl' and the relative pronoun *za'fŭto* 'because' account for the majority of /a/-deletions in this position: 60% of all the forms (48 out of 81 words). The deletion of the unstressed /a/ in the question pronouns leads to the deletion of the first syllable and the formation of a geminate onset in the "surviving" stressed syllable as in (16). The deletion of /a/ in the relative pronoun results in the deletion of this syllable's onset as in (17). The third form that plays a role for the deletion of /a/ in this position is the word *taka(va)* 'thus (such.fem)', *takiva* 'such.pl' (it accounts for 10% of all words in this group). The loss of the vowel in this form leads to the formation of a prescriptively ungrammatical cluster \**tk\_*. It should be noted that although the standard does not allow *tk\_* onset clusters, this cluster is grammatical in some of the Bulgarian dialects as observed in words like *tkae* 'weave'.

The remaining 30% of forms in which such deletion is found include deletion of /a/ after a sonorant as in (18), or deletion of /a/ in a pro-clitic as in (19). In all examples in (18), the deletion of /a/ does not result in the deletion of the syllable; in the corpus of speech data being analyzed here, the sonorants /r/ and /n/ are allowed to occupy the peak syllable position. Unstressed /a/ is also consistently lost in the pro-clitical verbal particle *da* 'to' if the following verb starts with an onsetless beginning syllable (19b).

- |      |                     |                       |                     |
|------|---------------------|-----------------------|---------------------|
| (16) | /ka.'kǎv/           | → [k_.'kǎv]           | 'what kind.masc.sg' |
| (17) | /za.'ʃto.to/        | → [(z)_.'ʃ(t)_o.t(o)] | 'because'           |
|      | /ta.'ka/            | → [t_.'ka]            | 'thus, so'          |
| (18) | /xra.'ni.tel.ni/    | → [xr_.'ni.tel.ni]    | 'of food.Adj.pl'    |
|      | /stra.'na.ta/       | → [str_.'na.ta]       | 'the country'       |
|      | /na.'tʃa.lo.to/     | → [n_.'tʃa.lo.to]     | 'the beginning'     |
| (19) | a) /za. 'sla.ba.ta/ | → [z_ 'sla.ba.ta]     | 'for the weak'      |
|      | b) /da. 'i.ma/      | → [d_.'i.ma]          | 'to have'           |

The third environment where /a/-deletion is favored is in beginning syllables before another unstressed syllable (factor weight = 0.62). Almost 90% of all forms with such deletions are proclitics, as in (20). In both examples the deletion of /a/ results in the reduction of a proclitical group from a two-syllable proclitic group to one syllable. The onset of the first proclitic is re-syllabified into a cluster onset as in (20a) or a geminate as in (20b).

- |      |                          |                        |                               |
|------|--------------------------|------------------------|-------------------------------|
| (20) | a) [da. se. na.'ka.ʒat]  | → [d_ se. na.'ka.ʒat]  | 'to.Refl.punish.3pl'          |
|      | b) [sa. se. 'slu.tʃi.li] | → [s_ se. 'slu.tʃi.li] | 'be.Refl.happen.PastParticip' |

The last environment where /a/-deletion is favored is in word-medial syllable immediately before a stressed syllable (factor weight =0.62). Half of all forms involve the Question word *kakvo* 'what', when preceded by a proclitic as in (21).

- (21) [a.mi. ka.'kvo]            → [a.mi. k\_.'kvo]            'so what'  
       [a. ka.'kvo]             → [a. k\_.'kvo]            'and what'

Deletion of /a/ is not favored in word-final syllables, or in a word medial sequence of three unstressed syllables; in all three environments unstressed /a/ is deleted in only 1% of the cases.

In conclusion, deletion of unstressed /a/ is favored in word-initial and word-medial contexts, immediately preceding or following the stress, contrary to the multiple claims in the literature that word initial positions are typically strong environments for segment realization.

#### 5.4.2.2 Effect of Previous Consonant on /a/-Deletion

The second factor group picked by Varbrul as significant for the deletion of unstressed /a/ is the voicing of the previous consonant (Table 5.5). Vowel loss is favored most when the preceding consonant is a voiceless obstruent (factor weight = 0.71). Loss of /a/ is also favored after a voiced obstruent (factor weight = 0.61). Deletion of /a/ is disfavored in onsetless syllables (Factor Weight =0.34) and after a sonorant (factor weight = 0.33).

Table 5.5 Effect of Previous Consonant on /a/-Deletion

Factor	Weight	%	n
<b>Previous Consonant</b>			
Voiceless Obstruents	0.71	6	1336
Voiced Obstruents	0.61	5	1336
No Onsets	0.34	2	281
Sonorants	0.33	2	1689
<i>Range</i>	38		

This result points to a gradient loss of /a/ where the sonority of the preceding segment conditions the process of deletion; specifically, more sonorous preceding segments block deletion and less sonorous ones favor the process.

#### 5.4.2.3 Effect of Word Frequency on /a/-Deletion

Table 5.6 presents a summary of the effect of Word Frequency on /a/-Deletion. Word frequency is the last significant factor for the deletion of /a/ picked by Varbrul. It is observed that /a/-deletion is favored in lexical items more frequent in speech (factor weight=0.63) and disfavored in lexical items less frequent in speech (factor weight=0.37). This result certainly supports previous observations made by researchers such as Bybee who claims that "reductive sound change applies probabilistically across all frequency levels, affecting high-frequency items more quickly and radically than low-frequency items..."(2007: 11).

Table 5.6 Effect of Word Frequency on /a/-deletion

<b>Factor</b>	<b>Weight</b>	<b>%</b>	<b>n</b>
<b>Word Frequency</b>			
>21	0.63	5	2673
1-20	0.37	1	1979
<i>Range</i>	25		

## 5.4.2.4 Non-significant factors

Four factor groups are not selected by Varbrul as significant contributors to deletion of /a/: Grammatical Marker, Speech Task, Regional Variety, and Speaker's Sex. Although there is a difference between the elision rate of the /a/ vowels that mark grammatical relation and those that do not (Table 5.7), the factor group as a whole is not selected as statistically significant by Varbrul ( $p=0.326$ ).

Table 5.7 Non-Significant Factors for the Deletion of /a/

<b>Factor</b>	<b>Weight</b>	<b>%</b>	<b>n</b>
<b>Grammatical Marker</b>			
Non-marker	[0.61]	4	3785
Marker	[0.39]	2	866
<b>Speech Task</b>			
Interview	[0.52]	4	2332
Phone Conversation	[0.48]	3	2319
<b>Regional Variety</b>			
East	[0.55]	4	2386
West	[0.45]	3	2265
<b>Sex</b>			
Male	[0.54]	4	2320
Female	[0.46]	3	2331



In addition, Regional Variety, the Speech Task, and Sex do not make a significant contribution to the model, as the significance levels of the Varbrul models built with these factor groups show (significance level with these factors is higher than the acceptable 0.05:  $p=0.081$ ,  $p=0.094$ , and  $p=0.064$  respectively).

Overall, /a/-deletion is primarily governed by phonological factors: the prosodic organization, the sonority of the syllable onset, and the frequency of occurrence of the token in speech. The process is not impacted by morphological marking (grammatical marker) or sociolinguistic factors such as the formality of the situation (speech task), regional variety and the speaker's gender.

#### *5.4.3 Deletion of Unstressed /ɔ/*

Table 5.8 presents a summary of the significant factors that contribute to the deletion of unstressed /ɔ/. The first section of the table lists factors which Varbrul selects as significant contributors to the process of deletion with their respective weight probability, percent of deleted vowels, and total number of vowels in each factor. Those are Word Frequency, Preceding Consonant, Position in Relation to Stress, Sex and Grammatical Marker. The second section shows the factors that are not found to significantly impact vowel loss and their probability values are given in square brackets. Those include Speech task and Regional Variety.

Table 5.8 Factors Affecting the Deletion of /ɔ/

Factor	Weight	%	n
Corrected Mean			0.037
Total Chi-square			61.59
Chi-square/cell			1.47
Log likelihood			-503.87
p			0.008
Significant Factors Affecting Deletion of /ɔ/			
<b>Preceding Consonant</b>			
Voiceless Obstruents	0.79	16	875
Sonorants	0.71	10	401
No Onsets	0.26	2	219
Voiced Obstruents	0.23	2	421
<i>Range</i>	56		
<b>Word Frequency</b>			
21-94	0.71	25	446
1-20	0.29	6	1470
<i>Range</i>	42		
<b>V-Position in Relation to Stress</b>			
Adjacent to Stress: #Vσ, σVσ, σVσ, σV#	0.67	12	1437
Non-Adjacent to Stress: σVσ, #Vσ, σV#	0.33	4	479
<i>Range</i>	34		
<b>Grammatical Marker</b>			
Non-marker	0.58	12	1424
Marker	0.42	6	492
<i>Range</i>	16		
<b>Sex</b>			
Male	0.56	11	1027
Female	0.44	9	889
<i>Range</i>	12		
Non-Significant Factors for Deletion of /ɔ/			
<b>Speech Task</b>			
Interview	[0.53]	11	1112
Phone Conversation	[0.47]	9	804

Table 5.8 - Continued

<b>Regional Variety</b>			
East	[0.50]	11	928
West	[0.50]	10	988

## 5.4.3.1 Preceding Consonant Effect on /ɔ/-Deletion

The first factor group that is found to significantly affect /ɔ/-deletion is the character of the onset. Deletion of /ɔ/ is favored only after voiceless obstruents (factor weight = 0.79) and sonorants (factor weight = 0.71). Loss of /ɔ/ is blocked in onsetless syllables and after voiced obstruent onsets (Table 5.10).

Table 5.9 Effect of Preceding Consonant on /ɔ/ Deletion

Factor	Weight	%	n
<b>Preceding Consonant</b>			
Voiceless Obstruents	0.79	16	875
Sonorants	0.71	10	401
No Onsets	0.26	2	219
Voiced Obstruents	0.23	2	421
<i>Range</i>	<i>56</i>		

Partially, the result here is similar to the deletion of /a/ because voiceless obstruent onsets are most favored environment for deletion. However, sonority of the previous segment does not consistently predict deletion of unstressed /ɔ/ as it does in the case of unstressed /a/ deletion. Deletion of /ɔ/ before a preceding sonorant onset is also favored (factor weight = 0.71). It is not really clear, though, whether vowels are really lost after sonorant consonants, or whether they are absorbed producing a longer,

in many cases peak-occupying sonorant segments. An acoustic study of this process would shed more light to its nature.

#### 5.4.3.2 Word Frequency Effect on /ɔ/-Deletion

As Table 5.10 demonstrates, words found more frequently in speech exhibit significantly more /ɔ/-Deletion than those found less frequently in speech.

Table 5.10 Effect of Word Frequency on /ɔ/-Deletion

Factor	Weight	%	n
<b>Word Frequency</b>			
21-94	0.71	25	446
1-20	0.29	6	1470
<i>Range</i>	<i>42</i>		

The factor group of more frequent words (21-94) which favor deletion, contains a variety of forms, the most common of which is the word *tova* 'this', which is almost categorically reduced to *tva*. Another form which is frequent and undergoes high rate of reduction is the word *kato* 'like/as'; it surfaces as *kat*. The vowel /ɔ/ is also dropped in the form *zaftoto* 'because' where it reduces to *ftot*.

Interestingly, it is observed that the highest-frequency group consisting of function words does not appear in the table. Closer examination of the data forms reveals that the highest-frequency words do not contain the /ɔ/ vowel (*da* 'yes',

*səm/si/e/sme/ste/sa* 'to be forms', *i* 'and', *ne* 'neg' ). Thus no deletion of /ɔ/ is observed in this group.

#### 5.4.3.3 Linguistic Environment and Stress Effect on /ɔ/-Deletion

Two factor groups were formed by combining multiple environments: vowels immediately-adjacent to stress and vowels away from stress. The decision to combine those was based on the observation that vowels adjacent to stress behave differently from vowels away from stress in regards to deletion. When the vowel is immediately next to stressed syllable, its deletion is favored (factor weight = 0.67), as Varbrul analysis indicates. Conversely, V-deletion is not favored in the environments when the vowel is away from the stress (see Table 5.11).

Table 5.11 Effect of Linguistic Environment and Stress on /ɔ/ Deletion

Factor	Weight	%	n
<b>V-Position in Relation to Stress</b>			
Adjacent to Stress: #V́, V́V, V́V́, V́V#	0.67	12	1437
Non-Adjacent to Stress: VV́, #VV́, VV́#	0.33	4	479
<i>Range</i>	<i>34</i>		

Of all the forms, the demonstrative pronoun *to'va* 'this' is responsible for 85% of all deletions in the pre-tonic position in the beginning of the word. The resulting monosyllabic pronoun *tva* has a perfectly well-formed onset cluster and is almost pervasive in the speech of all speakers. Deletion of unstressed /ɔ/ in the same position is also observed in single examples given in (22) and (23). Deletion of the vowel from a syllable with a nasal /m/ or rhotic /r/ onset as in (22) does not result in the deletion of

that syllable; instead the sonorant becomes syllabic. And finally, deletion of /ɔ/ is observed in the preposition *po* 'in' (23), when this preposition precedes a word with a stressed first syllable, resulting in the pronunciation of a number of ungrammatical onset clusters such as \**pvs\_* or \**pts\_*.

(22)	[mom.'tʃe]	→	[m_m.'tʃe]	'boy'
	[mo.'men.ta]	→	[m_.'men.ta]	'the moment'
	[pro.gra.mi]	→	[pr_.gra.mi]	'programs'
	[pro.'mʲa.na]	→	[pr_.'mʲa.na]	'change'
(23)	[po.'vsʲa.ka.kǎv]	→	[p_.'vsʲa.ka.kǎv]	'in any possible'
	[po.'prin.tsip]	→	[p_.'prin.tsip]	'in principle'
	[po.'tsʲal den]	→	[p_.'tsʲal den]	'all day long'

Deletion is also favored where the deleted vowel is in a word-medial syllable immediately following stress. A common example in this position is the word *'tolkova* 'so much' where the vowel deletion results in syllable deletion and the "orphaned" onset is re-syllabified forming a cluster with the onset of the following syllable (24). Below are a few other examples where the same process is observed:

(24)	/'tɔl.kɔ.va/	→	['tɔl.k_.va]	'so much'
	/'lɔ.ʃɔ.tɔ/	→	['lɔ.ʃ_.tɔ]	'the bad.neut.'
	/'rɔ.zɔ.vɔ/	→	['rɔ.z_.vɔ]	'pink.neut.'

The relative pronouns *koito* 'who.pl.' and *deto* 'that/who' also play a significant role in the deletion of /ɔ/ in this position as they appear with their reduced forms quite frequently (25).

- (25) /kɔ.'i.tɔ. sa/ → [ko.'i.t\_sa] 'who.pl are'  
 /'de.tɔ sa/ → ['de.t\_sa] 'that are'

In some of the examples the deletion of /ɔ/ results in the formation of a geminate onset cluster where regressive voicing assimilation is observed:

- (26) /po'n<sup>j</sup>a.kɔ.ga/ → [po'n<sup>j</sup>a.g\_ga] 'sometimes'  
 /'ni.kɔ.ga/ → ['ni.g\_ga] 'never'

Yet another environment favoring /ɔ/ deletion is word-medially, immediately preceding the stress. An illustrative form in this case (50% of all examples) is the combination of a variety of pro-clitics with the demonstrative pronoun *tova* 'this' (27).

- (27) /na/pɔ/vuv/sus/che/i tɔ.'va/ → [na/po/vuv/sus/che/i t\_'va]  
 'to/on/in/with/that/and this'

Even though this environment is different from Word initial position before a stressed syllable, the deletion of /ɔ/ in the demonstrative pronoun follows the same pattern. This outcome highlights the fact that in Bulgarian the position within the word is not as important for deletion as is the position of the vowel in relation to stress. That is, vowel deletion is conditioned primarily by prosody, not so much by syntagmatic, sequential position.

A form that may be considered almost grammaticalized in Bulgarian speech is *polovin* 'half'. Here the deletion of /ɔ/ results in a deletion of the word-medial syllable and the incorporation of its onset as a coda of the preceding syllable.

(28) /pɔ.lɔ.'vin/ → [pol\_.'vin] 'half'

In conclusion, weak positions for /ɔ/ in Bulgarian are the pre-tonic word-initial and word-medial syllables, and the post-tonic word medial syllables – all positions immediately adjacent to stress. As noted earlier, these positions are also the same environments where unstressed /a/ is deleted. This result contradicts claims in the literature regarding word initial position, which state that syllable initial location is typically strong for segment realization. The finding, however, supports Barnes' argument that "phonetic initial strengthening targets primarily the first segment of the word or phrase..." which is usually the initial syllable onset, but not necessarily the initial syllable vowel. Another conclusion is that vowel not immediately adjacent to stress resist deletion. Overall, it is observed that word-final syllables are consistently resistant to deletion of both unstressed /a/ and /ɔ/ vowels, setting a language-specific parameter for Bulgarian.

#### 5.4.3.4 Effect of Speaker's Sex on /ɔ/-Deletion

Another significant factor selected by Varbrul is the speaker's sex.



Table 5.12 Effect of Speaker's Sex on /ɔ/-Deletion

<b>Factor</b>	<b>Weight</b>	<b>%</b>	<b>n</b>
<b>Sex</b>			
Male	0.56	11	1027
Female	0.44	9	889
<i>Range</i>	<i>12</i>		

This outcome of males deleting more than females is similar to the results for /a/ deletion. However, it should be noted that deletion by males is only slightly favored (factor weight = 0.56) while female deletion is slightly disfavored.

#### 5.4.3.5 Effect of Grammatical Marker on /ɔ/-Deletion

The last factor group significantly impacting /ɔ/-Deletion includes grammatical marker. Vowels which do not mark grammatical relations are more prone to deletion than those that mark such relations. However, it should be noted that this variable has the weakest effect on /ɔ/-Deletion (range value = 16).

Table 5.13 Effect of Grammatical Marker on /ɔ/-Deletion

<b>Factor</b>	<b>Weight</b>	<b>%</b>	<b>n</b>
<b>Grammatical Marker</b>			
Non-marker	0.58	12	1424
Marker	0.42	6	492
<i>Range</i>	<i>16</i>		

For example, /ɔ/ marks neuter nouns and adjectives in Bulgarian; its deletion would lead to loss of grammatical information. Therefore, such reduction is blocked and

forms like (29) are not allowed. However, in cases where /ɔ/ vowels redundantly mark the same relationship as in (30), one of the redundant vowels can be deleted.

- (29) /dǎr'vɔ/ →\* [dǎr'v\_] 'tree.Neut'  
 (30) /dǎr'vɔ.tɔ/ → [dǎr'vɔ.t\_] 'tree.Neut.the.Neut.'  
 /'lɔʃɔ.tɔ/ → ['lɔʃ\_.tɔ] 'bad.Neut.the.Neut'

#### 5.4.3.6 Non-significant factors

Two factor groups are not selected as significant contributors to deletion of /ɔ/ by Varbrul: Speech Task and Regional Variety. Although there is a difference between the rate of deletion of /ɔ/ in the two samples coming from the Interview and the Phone conversation, this factor group does not make a significant contribution to the model, as the significance level of the Varbrul model built with this factor group show (p=0.47). The same is the case with the regional variety factor group (p = 0.50)

Table 5.14 Non-Significant Factors for the Deletion of /ɔ/

Factor	Weight	%	n
<b>Speech Task</b>			
Interview	[0.53]	11	1112
Phone Conversation	[0.47]	9	804
<b>Regional Variety</b>			
East	[0.50]	11	928
West	[0.50]	10	988

Overall, similarly to /a/-deletion, /ɔ/-deletion is primarily governed by phonological factors: word frequency, sonority of the preceding consonant and the

position of stress. The Sex and Morphological Marking factor groups, although statistically significant, are only marginally impacting /ɔ/-deletion.

#### *5.4.4 Deletion of Unstressed /e/*

As pointed out in the vowel reduction discussion, the two major regional varieties exhibit distinct patterns in the vowel reduction process, specifically in the reduction of /ɛ/. While the western dialects and the standard reduce unstressed /ɛ/ towards /ə/ in post-tonic position and towards /i/ in pre-tonic position, researchers contend that eastern dialects reduce /ɛ/ towards /i/ in all positions (*Gramatika na Săvremennia Bulgarski Knižoven Ezik: Fonetika*, 1998). Additionally, an initial Varbrul test selects Regional Variety as a significant factor group ( $p = 0.014$ ) only for the deletion of the /ɛ/ vowel. Therefore, a relevant question arises: Is /ɛ/-deletion governed by different sets of rules within each of the two major regional varieties the same way reduction is? To answer this question, two separate partitions of the data, based on Eastern and Western speech varieties, were evaluated using Varbrul analysis.

The variable deletion of the /ɛ/ vowel by eastern speakers is governed by three significant factor groups: the position of the vowel in relation to stress, the preceding consonant, and the speech task (Table 5.15).

Table 5.15 Factors Affecting the Deletion of /ɛ/ **Eastern** Variety

Factor	Weight	%	n
Corrected Mean			0.026
Total Chi-square			5.85
Chi-square/cell			0.49
Log likelihood			-268.601
p			0.014
Significant Factors Affecting Deletion of /ɛ/			
<b>Preceding Consonant</b>			
Voiceless Obstruents	0.80	11	457
Voiced Obstruents and Sonorants	0.61	5	657
No Onsets	0.14	<1	167
<i>Range</i>	<i>66</i>		
<b>V-Position in Relation to Stress</b>			
Adjacent to Stress: #Vσ', σ'Vσ, σVσ', σ'V#	0.68	11	544
Non-Adjacent to Stress: σVσ, #Vσ, σV#	0.32	3	737
<i>Range</i>	<i>36</i>		
<b>Speech Task</b>			
Interview	0.57	8	671
Conversation	0.43	5	610
<i>Range</i>	<i>14</i>		
Non-Significant Factors for the Deletion of /ɛ/			
<b>Word Frequency</b>			
21-94	[0.56]	9	324
1-20 and > 95	[0.44]	5	957
<b>Grammatical Marker</b>			
Non-marker	[0.53]	7	1001
Marker	[0.47]	4	280
<b>Sex</b>			
Female	[0.52]	7	633
Male	[0.48]	6	648

Four significant factors govern /ε/-deletion in the western variety: position in relation to stress and the speech task, preceding consonant, and word frequency (Table 5.16).

Table 5.16 Factors Affecting the Deletion of /ε/ **Western Variety**

Factor	Weight	%	n
Corrected Mean			0.038
Total Chi-square			27.33
Chi-square/cell			1.71
Log likelihood			-216.964
p			0.036
Significant Factors Affecting Deletion of /ε/			
<b>V-Position in Relation to Stress</b>			
Adjacent to Stress: #Vσ́, σ́Vσ, σVσ́, σ́V#	0.70	10	516
Non-Adjacent to Stress: σVσ, #Vσ, σV#	0.30	2	701
Range	40		
<b>Speech Task</b>			
Interview	0.65	8	625
Phone Conversation	0.35	3	592
Range	30		
<b>Preceding Consonant</b>			
Voiceless Obstruents	0.57	7	548
Voiced Obstruents	0.43	4	669
Range	14		
<b>Word Frequency</b>			
>21	0.57	7	946
1-20	0.43	4	721
Range	14		
Non-Significant Factors for the Deletion of /ε/			
<b>Grammatical Marker</b>			
Non-marker	[0.60]	6	987
Marker	[0.40]	2	230
<b>Sex</b>			
Female	[0.48]	5	613
Male	[0.52]	6	604

#### 5.4.4.1 Linguistic Environment and Stress Effect on /ε/-Deletion

Varbrul selects linguistic environment in relation to stress as the most significant factor group in both data partitions. As observed, vowels immediately adjacent to stress are more likely to be dropped by both Eastern and Western speakers (factor weight = 0.68 and 0.70 respectively). In both varieties deletion is not favored in positions not immediately adjacent to stress (factor weight = 0.32 and 0.30 for East and West respectively).

Table 5.17 Comparison of Environment Effect on /ε/-Deletion (East vs. West)

Factor	Weight	%	n
<b>V-Position Relation to Stress (East)</b>			
Adjacent to Stress: #Vσ', σ'Vσ, σVσ', σ'V#	0.68	11	544
Non-Adjacent to Stress: σVσ, #Vσ, σV#	0.32	3	737
<i>Range</i>	36		
<b>V-Position Relation to Stress (West)</b>			
Adjacent to Stress: #Vσ', σ'Vσ, σVσ', σ'V#	0.70	10	516
Non-Adjacent to Stress: σVσ, #Vσ, σV#	0.30	2	701
<i>Range</i>	40		

Again, these results point to the fact that stress plays a larger role in deletion than the segmental position within the word.

Examining forms with deletion in pre-tonic word-medial position, one can further observe that different words appear in the two different varieties (31)-(33). Despite that, similar patterns of deletion occur. Multiple examples in both varieties exhibit loss of the syllable leading to the incorporation of the "orphaned" consonant as a coda of the preceding syllable (31). Similarly, both varieties contain examples of

deletion leading to a sonorant occupying the peak position (32). Unlike the western speakers, however, those from the east exhibit a pattern of clitic group simplification as a result of deletion (33).

(31)

a. Eastern Speakers

/ma.te.'ma.ti.ka/	→	[mat <sup>j</sup> _'ma.t <sup>j</sup> i.ka]	'mathematics'
/pri.te.'sn <sup>j</sup> a.va/	→	[pri <sup>j</sup> .t <sup>j</sup> _'sn <sup>j</sup> a._a]	'bother.3 <sup>rd</sup> .Sg.'
/o.ri.en.'ti.ra/	→	[o.r <sup>j</sup> i_n.'ti.ra]	'get.directions3sg.Pres'
/a.ma ne'dej/	→	[ama n <sup>j</sup> _d <sup>j</sup> ej]	'but don't'

b. Western Speakers

/de.se.'ti.na/	→	[des_'ti.na]	'ten.Dim'
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(32)

a. East

/o.pre.'de.l <sup>j</sup> a/	→	[o.pr'_'de.l <sup>j</sup> a]	'define'
------------------------------	---	------------------------------	----------

b. West

/pre.'gle.dal/	→	[pr_'gle.dal]	'review.3 <sup>rd</sup> .Sg.Imp'
/pre'.me.stvat/	→	[pr_'me.st.vat]	'move.3 <sup>rd</sup> .Pl.'
/kon.tsen.'tri.raʃ/	→	[kon.ts_n.'tri.raʃ]	'concentrate.2 <sup>nd</sup> .Sg'
/tʃu.ʒden.'tsi.te/	→	[tʃu.ʒd_n.'tsi.te]	'the foreigners'

(33)

a. East

/sa se 'sre.ʃtna.li/	→	[sa s <sup>j</sup> _'sre.ʃtna.li]	'be.3 <sup>rd</sup> Pl.Refl.meetPart'
/mi se 'stru.va/	→	[mi s <sup>j</sup> _'stru.va]	'to me Refl.seem.3rd'
/ʃte se 'tʃuv.stvat/	→	[ʃte s <sup>j</sup> _'tʃuv.stvat]	'Fut.Refl.feel'
/spo.red 'ne.go/	→	[spo.r_d 'n <sup>j</sup> e.go]	'according to him'

It should be pointed out that Eastern speakers palatalize onsets before the front vowels /ε/ and /i/ and when the front vowel is dropped the palatalization is preserved. The preserved palatalization of the consonant can be viewed as a trace the front vowel leaves behind. Such a pattern is observed again in all subsequent examples of eastern speech.

The same patterns of deletion in post-tonic word-medial position occur in both varieties though different words: orphaned onsets become preceding codas (34) and sonorant segments are retained and promoted to peak position (35).

(34)

a. East

/i.ko.no.'mi.tʃe.ski.ja/	→	[i.ko.n_. 'mi.tʃ_.ski.ja]	'the economic'
/'me.se.tsa/	→	[m <sup>j</sup> e.s_.tsa]	'the month'
/xi.'mi.tʃe.sko.to/	→	[x <sup>j</sup> i.'m <sup>j</sup> i.tʃ_.sko.to]	'the chemical.neut'

b. West

/na.to.'va.re.no/	→	[na.t_. 'va.r_.no]	'loaded.neut'
/tʃe.'ti.re.se/	→	[tʃ_. 'ti.r_.se]	'forty'
/o.'so.be.no/	→	[o.'so.b_.no]	'particularly'
/iz.sle.do.'va.tel.ska/	→	[iz.sle.do.'va.t_.ska]	'research.Adj.fem'
/'vis.ʃe.to/	→	['viʃ.ʃ_.to]	'the higher (education)'



(35)

a. East

/xra.'ni.tel.ni/                      [xr<sup>j</sup> a.n<sup>j</sup>i.t<sup>j</sup>\_l.n<sup>j</sup>i]                      'nutritious'

b. West

/'vǎ.tr\_e.ʃna/ →                      ['vǎ.tr\_.ʃna]                      'internal.fem'

Deletion in the same forms is observed for both Eastern and Western speakers. For instance, the word *se'ga* 'now' accounts for 55% of all /ε/ deletions in western speech and 30% of deletions in eastern speech in this environment. The vowel /e/ is deleted in many of the same forms by speakers of the two varieties, as in (36) - (39). The results of deletion again can be grouped into four categories where syllable loss leads to: the resyllabification of an orphaned onset as the onset of the following syllable (36); a formation of a more complex consonantal cluster of the next syllable (37); an onset acquisition by an onsetless subsequent syllable (39); and finally to the orphaned sonorant onset promotion to a peak position (38).

(36)

a. East

/se.'ga/                      →                      [s<sup>j</sup>\_a]                      'now'

b. West

/se'ga/                      →                      [s\_.a]                      'now'

(37)

a. East

/ʃte 'sta.ne/ → [ʃ<sup>j</sup> \_ 'sta.ne] 'become.3<sup>rd</sup>.sg'

/ʃte 'tʃa.ka.me/ → [ʃ<sup>j</sup> \_ 'tʃa.ka.me] 'waiting.1<sup>st</sup>.pl'

b. West

/ʃte 'sta.ne/ → [ʃ \_ sta.ne] 'Fut. happen'

(38)

a. East

/ne'ʃta/ → [n<sup>j</sup> \_ 'ʃta] 'things'

/ne 'săm/ → [n<sup>j</sup> \_ 'săm] 'Neg.be.1sg.Pres'

/ne 'znam/ → [n<sup>j</sup> \_ 'znam] 'Neg.know.1sg.Pres'

b. West

/ne.'ʃta.ta/ → [n\_.'ʃta.ta] 'the things'

/pred.'me.ta/ → [pr\_d.'me.ta] 'the object'

(39)

a. East

/ne 'is.kam/ → [n<sup>j</sup> \_ 'is.kam] 'Neg.want.1<sup>st</sup>.sg.'

b. West

/ne 'i.skam/ → [n\_ 'i.skam] 'Neg.want.1<sup>st</sup>.sg'

Deletion in post-tonic, word final syllables also exhibits similarities in affected words. For example, 62% of all deletions occur in the word *može* 'modal.possible' in Eastern Bulgarian and 50% of all deletion in the same word in Western Bulgarian. The results of deletion again can be grouped into three categories where syllable loss leads to: a remaining onset to become a coda of the preceding syllable (40); the orphaned

sonorant onset promotion to a peak position (41); preservation of onset and coda and their resyllabification as a complex coda of preceding syllable (42).

(40)

a. East

/mo.ʒe/	→	[mo.ʒ_]	'can3sg2sg'
/o.'ba.tʃe/	→	[o.'ba.tʃ_]	'however'
/ve.tʃe/	→	['ve.tʃ_]	'already'
/'be.ʃe/	→	['be.ʃe]	'be.2/3sgImp'

b. West

/mo.ʒe/	→	[mo.ʒ_]	'can3sg2sg'
/'dvaj.se/	→	['dvaj.s_]	'twenty'
/'be.ʃe/	→	['be.ʃ_]	'be.IMP'

(41)

a. East

/vǎz.'mo.ʒen/	→	[vǎz.'mo.ʒ'_n]	'possible'
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b. West

/vǎz.'mo.ʒen/	→	[vǎz.'mo.ʒ_n]	'possible'
/'o.sem/	→	['o.s_m]	'eight'

(42)

a. East

/'me.sets/	→	['mes_ts]	'month'
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b. West

/'de.set/	→	['de.s_t]	'ten'
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An interesting observation can be made when comparing segmental loss in the modal verb *moʒe* 'can.possibility' and the verb form *moʒe* 'can.ability.3sg', both of

which are pronounced in the same way. Deletion of /ε/ is observed mostly in the modal verb form *može* (43), while in the second form, the intervocalic consonant /з/ is deleted together with the following vowel (44). Thus vowel deletion tends to mark the modal verb, while consonant deletion, in addition to vowel deletion, marks the regular verb.

(43) /'mo.з\_ da i se obadiʃ/      'can.possibility.Sg.to.her.Refl.call.3rd'

(44) /ne 'mo.\_\_\_ da se orientira/      'neg.can.ability.3<sup>rd</sup>.Sg.to.Refl.orient.3rd'

Another curious observation in this context is that in speech /ε/ is often deleted in forms where the historical yer-vowel was originally found. In Old Bulgarian there existed two historical yer-vowels: small yer /ĭ/ and big yer /ŭ/. Although their exact pronunciation is not known, "[the] early changes which the yer-vowels underwent, point to the fact that these vowels did not even have the duration of the regular short vowels; instead, in terms of their duration, they represented strongly-reduced vowels" (Mirchev 1978:122). These "super-short" historical yer vowels undergo a number of changes over time where in weak positions they are lost, while in strong positions they are vocalized. In Bulgarian, weak positions for yers are word-final positions and positions before syllables containing full-duration vowels (Mirchev 1978:123). A strong position for a yer is considered the first one in a sequence of yer vowels (45) which is a Slavic language rhythmic rule known as Havlik's Law.

(45) Old Bulgarian /dĭnĭ/ → Modern Bulgarian /den/      'day'

Literary modern Bulgarian allows drop of historical yer-vowels in certain contexts but preserves them in others, in accordance with Havlik's Law. This is illustrated by the vowel-zero alternation in (46). In contrast, in speech, Bulgarians often drop the historical yers even in those environments where the standard variety preserves them (47). Examples of such deletion where a historical yer-vowel is dropped include: *vǎz'moʒen* 'possible', *'osem* 'eight', *'dvajse* 'twenty'.

(46) Old Bulg. [vǔzǐ.'mo.ʒǐnǐ] → Modern Bulg. [vǎ.'z'mo.ʒen] 'possible.masc.sg'

Old Bulg. [vǔzǐ.'mo.ʒǐnǐ+na] → Modern Bulg. [vǎ.'zmo.ʒØna] 'possible.fem.sg.'

(47) [vǎz'moʒen] → [vǎz'moʒ\_n]

#### 5.4.4.2 Effect of Preceding Consonant on /ɛ/-Deletion

The voicing of the preceding consonant is found to be significant for the deletion of /ɛ/ by both Eastern and Western speakers. Preceding voiceless obstruents favor deletion most (factor weight = 0.80 and 0.57 for East and West respectively) followed by voiced obstruents and sonorants in the speech of eastern speakers (factor weight = 0.61). Deletion of /ɛ/ is slightly disfavored after voiced obstruents in the speech of western speakers (factor weight = 0.43). Deletion of /ɛ/ is blocked in onsetless syllables for Western speakers (no deletion in this environment) and strongly disfavored in the speech of Eastern Bulgarians (see Table 5.18)

Table 5.18 Effect of Preceding Consonant on /ε/-Deletion (Eastern Variety)

<b>Factor</b>	<b>Weight</b>	<b>%</b>	<b>n</b>
<b>Preceding Consonant(East)</b>			
Voiceless Obstruents	0.80	11	457
Voiced Obstruents and Sonorants	0.61	5	657
No Onsets	0.14	<1	167
<i>Range</i>	<i>66</i>		
<b>Preceding Consonant(West)</b>			
Voiceless Obstruents	0.57	7	548
Voiced Obstruents	0.43	4	669
<i>Range</i>	<i>14</i>		

As with deletion of unstressed /a/, the preceding consonant has a gradient effect on the loss of /ε/ where the sonority of the preceding segment conditions the process of deletion; specifically, more sonorous preceding segments block deletion and less sonorous ones favor the process.

#### 5.4.4.3 Effect of Speech Task on /ε/-Deletion

The formality of the situation is the third significant factor group picked by Varbrul for the deletion of unstressed /ε/ by Eastern speakers, and the second significant factor group for Western speakers. This variable has the least significant effect on deletion compared to other significant factors selected by Varbrul (Table 5.19).

Table 5.19 Effect of Speech Task on /ε/-Deletion - East vs. West

<b>Factor</b>	<b>Weight</b>	<b>%</b>	<b>n</b>
<b>Speech Task(East)</b>			
Interview	0.57	8	671
Conversation	0.43	5	610
<i>Range</i>	<i>14</i>		
<b>Speech Task (West)</b>			
Interview	0.65	8	625
Phone Conversation	0.35	3	592
Range	30		

For both groups of speakers, deletion of /ε/ is favored in the face-to-face communication during the interview, and disfavored when the communication is done by phone. Apparently, the retention of /ε/ is important for Bulgarian speech recognition when the listener cannot benefit from the non-verbal cues, present when interlocutors are in a closer physical proximity. As observed later in the chapter the same is true for /i/ - deletion. However, this claim cannot be made for /a/ and /ɔ/ deletion, as Speech task is selected as insignificant by Varbrul.

#### 5.4.4.4 Word Frequency Effect on /ε/ Deletion

Word frequency is picked as a significant factor only for the Western variety. The factors groups are collapsed into two: words that appear less than 20 times and more than 20 times (Table 5.20). Again, as expected, more frequent words undergo more deletion.

Table 5.20 Word Frequency Effect on /ɛ/ Deletion

Factor	Weight	%	n
<b>Word Frequency (West)</b>			
>21	0.57	7	946
1-20	0.43	4	721
<i>Range</i>	<i>14</i>		
<b>Word Frequency(East)</b>			
21-94	[0.56]	9	324
1-20 and > 95	[0.44]	5	957

The question may arise "Why is word frequency significant for /ɛ/ deletion only in the speech of western speakers?" An examination of the data reveals that the same words undergo /ɛ/ deletion in the speech of both speaker groups. Although Varbrul analysis selects this variable as significant for the Western variety and as non-significant for the Eastern variety, one can observe that the factor weights are similar for both. Also, it should be noted that word frequency as a significant factor for /ɛ/ deletion in the speech of western speakers is the factor with the lowest range value; i.e. its effect on deletion is the weakest.

#### 5.4.5 Deletion of Unstressed /i/

Deletion of unstressed /i/ is governed by the following four factors: onset character, environment in relation to stress, word frequency, and speech task. Factors not selected as significant include grammatical marker, sex of the speaker, and regional variety (Table 5.21).



Table 5.21 Factors Affecting /i/- Deletion

Factor	Weight	%	n
Corrected Mean			0.018
Total Chi-square			34.06
Chi-square/cell			0.55
Log likelihood			-307.408
P			0.033
Significant Factors Affecting Deletion of /i/			
<b>Preceding Consonant</b>			
Voiceless Obstruents	0.74	7	499
Sonorants	0.73	7	665
Voiced Obstruents	0.37	2	274
No Onsets	0.18	<1	382
Range	55		
<b>V-Position in Relation to Stress</b>			
Word-medial, adjacent to stress $\sigma V\sigma'$ and $\sigma'V\sigma$	0.63	9	606
Word-initial $\#V\sigma'$ and $\#V\sigma$	0.58	2	431
Word-medial, away from stress $\sigma V\sigma$	0.51	5	213
Word-Final $\sigma'V\#$ and $\sigma V\#$	0.29	3	570
Range	34		
<b>Word Frequency</b>			
1-20	0.64	7	1034
>21	0.36	2	786
Range	28		
<b>Speech Task</b>			
Interview	0.57	6	1004
Phone Conversation	0.43	3	816
Range	14		
Non-Significant Factors for the Deletion of /i/			
<b>Grammatical Marker</b>			
Non-marker	[0.46]	5	1191
Marker	[0.54]	5	629
<b>Sex</b>			
Female	[0.53]	5	921
Male	[0.47]	5	899

Table 5.21 - Continued

<b>Dialect</b>			
East	[0.54]	5	926
West	[0.46]	4	894

## 5.4.5.1 Effect of Preceding Consonant on /i/-Deletion

The first factor group selected by Varbrul as significant for the deletion of unstressed /i/ is the voicing of the preceding consonant (Table 5.22). Vowel loss is favored most when the preceding consonant is a voiceless obstruent (factor weight = 0.74). Loss of /i/ is also favored after a sonorant (factor weight = 0.73) but disfavored in syllables with voiced onsets (factor weight = 0.37) or no onsets (factor weight = 0.18).

Table 5.22 Effect of Preceding Consonant on /i/-Deletion

<b>Factor</b>	<b>Weight</b>	<b>%</b>	<b>n</b>
<b>Preceding Consonant</b>			
Voiceless Obstruents	0.74	7	499
Sonorants	0.73	7	665
Voiced Obstruents	0.37	2	274
No Onsets	0.18	<1	382
<i>Range</i>	55		

This result is consistent with what is found for the rest of the Bulgarian vowels where this factor group is selected. Generally, less sonorant onsets promote the deletion of the following /i/ vowel (factor weight = 0.74), while deletion of /i/ is disfavored after voiced onsets (factor weight = 0.37). Deletion of /i/ is favored after sonorant consonants, which is a result similar to the result for /ɔ/ and /ɛ/ deletion. Again, further study would

be needed to establish if the vowels following sonorant onsets are really dropped or absorbed by the preceding sonorant.

#### 5.4.5.2 Linguistic Environment and Stress Effect on /i/-Deletion

Not surprisingly, stress also a significant predictor of /i/ deletion as it is the case with all other vowels. Environments favoring /i/ deletion are ranked according to their factor weight in Table 5.23

Table 5.23 Linguistic Environment and Stress Effect on /i/-Deletion

Factor	Weight	%	n
<b>V-Position in Relation to Stress</b>			
Word-medial, adjacent to stress $\sigma V\acute{\sigma}$ and $\acute{\sigma}V\sigma$	0.63	9	606
Word-initial $\#V\acute{\sigma}$ and $\#V\sigma$	0.58	2	431
Word-medial, away from stress $\sigma V\sigma$	0.51	5	213
Word-Final $\acute{\sigma}V\#$ and $\sigma V\#$	0.29	3	570
<i>Range</i>	<i>34</i>		

Varbrul analysis indicates that the /i/ vowel is most prone to delete in pre-tonic and post-tonic word medial position (factor weight = 0.63). In pre-tonic word medial position, the most common examples of /i/ deletion observed in the data are given in (48) through (51). The word *universi'tet* 'university' accounts for 50% of all deletions in this environment; this word is quite frequently found in the data because one of the topics presented for discussion during the interview is education.

- (48) /u.ni.ver.si.'tet/ → [u.ni.vers\_.'tet] 'university'  
 (49) /mi 'pee/ → ['m\_ pe.e] 'to sing.3<sup>rd</sup>.sg to me'  
       /mi 'beʃe/ → [m\_ 'be.ʃe] 'be.3<sup>rd</sup>.sg.imp to me'

	/pri.'bi.ral/	→	[pr_.'biral]	'to come home .3 <sup>rd</sup> .sg.imp'
	/pri.'pad.na/	→	[pr_.'pad.na]	'to faint. 3 <sup>rd</sup> .sg.aor'
(50)	/mi'navaf/	→	[m_na.'_af]	'to pass by.2 <sup>nd</sup> .sg'
	/ʒi'veef/	→	[ʒ_ve.ef]	'to live.2 <sup>nd</sup> .sg'
	/kan.di.'dat.stva/	→	[kan.'d_dat.stva]	'apply.3 <sup>rd</sup> .sg'
(51)	/pri.'e.ma.ne/	→	[pr_e.ma.ne]	'acceptance'

The results of /i/ deletion in the preceding examples can be grouped into four categories: first, vowel deletion results in the re-syllabification of the onset of the deleted syllable into a complex coda of the preceding syllable (48); second, in the examples in (49) the remaining sonorant onset is promoted to a peak position; third, the forms in (50) show the formation of a complex cluster between the remaining onset and the onset of the following syllable; and finally, in (51) the remaining onset cluster of the deleted syllable is re-syllabified as the onset to the following onsetless syllable.

In post-tonic word medial position, the forms are primarily nouns as can be observed in (52) – (55). One numeral and a few adjectives are also involved in the process. The most frequent form that exhibits deletion in this environment is the word *săftite* 'the same' (15% of all deletions).

(52)	/să.fti.te/	→	[săft_.te]	'the same.pl'
	/tʃe.ti.ri/	→	[tʃet_.ri]	'four'
	/dvi.'ʒe.ni.e.to/	→	[dvi.'ʒe.n__to]	'the movement'
	/po.lo.'ʒe.ni.e.to/	→	[po.lo.'ʒe.n__to]	'the situation'
	/lo.ʃi.te/	→	[loʃ_.te]	'the bad.pl'

- (53) /băl.'ga.ri.ja/ → [băw.'ga.r\_ja] 'Bulgaria'  
 /a.me.ri.'kan.tsi.te/ → [a.mer\_.'kan.ts\_te] 'the Americans'  
 /in.for.'ma.ci.ja/ → [in.for.'ma.ts\_ja] 'information'
- (54) /'se.dmi.tsa/ → ['se.dm\_.tsa] 'week'  
 /'bol.ni.tsa/ → ['bol.n\_.tsa] 'hospital'  
 /'pe.snitʃ.ka/ → ['pe.sn\_. tʃka] 'song'  
 /'tex.ni.te/ → ['tex.n\_.te] 'theirs'  
 /pre.'diʃ.ni.te/ → [pre.'diʃ.n\_.te] 'the previous.pl'  
 /'nej.ni.te/ → ['nejn\_.te] 'her.pl.def.'
- (55) /'ra.zli.ka/ → ['razz.\_\_ka] 'difference'

The deletion of the unstressed /i/ in (52) leads to the deletion of the entire syllable and the re-syllabification of the single consonant or cluster onset as the coda of the preceding stressed syllable. In (53), deletion of /i/ results in the re-syllabification of the remaining single onset as the onset of the following syllable, forming an ungrammatical cluster *tst\_* in at least one of the examples, *ameri'kan.tste*. In all of the examples in (54), /i/-deletion does not lead to a syllable loss; instead the nasal /n/ is allowed to occupy the peak position. It is worth mentioning that in examples like *'tex.ni.te*, *pre.'diʃ.ni.te*, and *'nej.ni.te*, the dropped /i/ vowel is a grammatical marker for plural. However, the deletion is allowed in these cases because of the second marking for plurality in the form of post-posed definite article *-te*. In (55) vowel drop leads to the deletion of the syllable and the simplification of its cluster onset. In addition, the remaining consonant is re-syllabified as the coda of the preceding syllable. Although

the consonant assumes coda position, it does not follow final devoicing rules for codas in Bulgarian. Instead, the voiced fricative /z/ is perceived as a longer, geminate segment that extends into the position of the lost segment.

The last two significant environments favor deletion at a similar rate: word-initial pre-tonic syllables and word-initial syllables preceding an unstressed syllable (factor weight = 0.57). Elision in these two environments affects primarily pro-clitics as observed in (52), and (53). Only a limited number of such deletions occur in adjectives or verbs.

(56)	/kri.stal.ni/	→	[kr_.stal.ni]	'crystal.Adj.pl'
(57)	/mi 'be. ʃe/	→	[m_ 'be. ʃe]	'be.2 <sup>nd</sup> .sg.imp to me'
	/mi.'nu.ti/	→	[m_nu.ti]	'minute.pl'
	/pri.ja.tel.ka/	→	[pr_ ja.tel.ka]	'girl friend'
(58)	/ti se 'stru.vat/	→	[t_ se 'stru.vat]	'Pro Refl.seem2sgPres'
	/taka ili inatʃe/	→	[taka ____ inatʃe]	'this(way) or another'
	/i ʃte gi na.'ka.ram/	→	[_ ʃte gi na.'ka.ram]	'andFut.pro.3pl.make'
	/si se.'dʲat/	→	[s_ se.'dʲat]	'Refl.sit3pl.'
(59)	/pri.sti.gna.xa/	→	[pr_.'sti.gna.xa]	'arrive3 <sup>rd</sup> .pl.aor'

#### 5.4.5.3 Effect of Word Frequency on /i/-Deletion

Table 5.24 summarizes the results of the word frequency effect on /i/ deletion: words found less frequently in speech (between 1 and 20 times) exhibit significantly more /i/-Deletion than those found more frequently.

Table 5.24 Effect of Word Frequency on /i/-Deletion

Factor	Weight	%	n
<b>Word Frequency</b>			
1-20	0.64	7	1034
>21	0.36	2	786
<i>Range</i>	28		

This result is not consistent with the expectation based on previous studies that more frequent words undergo more segmental loss (Bybee), or with the Varbrul results for the rest of the Bulgarian vowels. The reason for this result may be the fact that very few high-frequency words contain /i/ and thus few examples of such deletion is observed in the sample.

#### 5.4.5.4 Effect of Speech Task on /i/-Deletion

The formality of the situation is the last significant factor group selected by Varbrul for the deletion of unstressed /i/ (Table 5.25). Deletion of /i/, like deletion of /ε/, is slightly favored in the face-to-face communication during the interview (factor weight = 0.57), and slightly disfavored when the communication is done by phone (factor weight = 0.43). Again, the likely explanation is that the retention of both /ε/ and /i/ vowels is important for Bulgarian speech recognition when the interlocutors cannot see each other.

Table 5.25 Effect of Speech Task on /i/-Deletion

Factor	Weight	%	n
<b>Speech Task</b>			
Interview	0.57	6	1004
Phone Conversation	0.43	3	816
<i>Range</i>	<i>14</i>		

#### 5.4.6 Deletion of Unstressed /u/ and Unstressed /ǎ/

Deletion of unstressed /u/ and unstressed /ǎ/ is quite rare in the corpus. Only four out of all unstressed /ǎ/ vowels and two of all unstressed /u/ vowels are deleted; these forms appear in (60).

(60) Examples of /ǎ/ and /u/ deletion

/ǎ/	/spi.sǎ.tsi.te/	→	[spis._tsi.te]	'the lists'
	/pro.dǎl.'ʒa/	→	[pro.____.'ʒa]	'continue.1sgPres'
	/na.'ta.tǎ.ka/	→	[n_'tat_ka]	'in this direction'
	/sǎ.'vsem/	→	[s_'sem]	'quite'
/u/	/stu.'de.no/	→	['zd_de.no]	'cold.neut'
	/po.lu.'tʃa.vat/	→	[pol_.'tʃa.at]	'receive3plPres.'

A possible explanation for this result might come from the so called "reverse" vowel reduction in Bulgarian observed by researchers. Tilkov notes that the closed vowels /ǎ/ and /u/ lean towards their more "open" counterparts /a/ and /ɔ/ when they are unstressed. Phonetic research has established that the open vowel undergoing reduction



and the closed counterpart going through reverse reduction surface as the same middle variant (61).

- (61) a) /rǎ'ka/ → [rΛ'ka]    'hand'  
b) /ta'ka/ → [tΛ'ka]    'thus'

The results in this study that deletion of unstressed /a/ is much more frequent likely shows that the language marks this vowel as "weakened," while the less frequent deletion of unstressed /ǎ/ points to the fact that /ǎ/ has been marked as "strengthened."

In conclusion, if vowel reduction is viewed as a weakening process, and V-deletion as the final manifestation of weakening, then "reverse" reduction might be considered a strengthening process, and vowel preservation as evidence of strength. In this context, viewing "reverse" reduction as vowel strengthening gives a possible explanation of why /u/ and /ǎ/ resist deletion.

### 5.5 Conclusions

This study has found that stress, sonority of the preceding segment and word frequency are the factors that affect vowel deletion in Bulgarian. Stress is the strongest predictor of /a/ and /ɛ/ deletion in Bulgarian speech. Final syllables delete when stress immediately precedes them and initial syllables delete when stress immediately follows them. Middle syllables' deletion occurs immediately before or after stress. It is clear then that the linear order of segments is not the primary predictor of deletion, the position of the stress is. The other most important variable that conditions vowel

deletion is the sonority of the preceding consonant. The analysis indicates that overall, vowels after voiceless obstruents delete more frequently than those following voiced or sonorant obstruents. Finally, word frequency affects strongly the deletion of /o/, but only marginally the deletion of the other vowels.

Similarly to consonant deletion, social factors such as speaker's sex, regional variety, and the formality of the situation do play a minor role for the deletion of vowels. These variables do not have a strong effect on vowel deletion as shown by the small range values between most favored and least favored factors. The process of deletion in both consonant and vowel is motivated primarily by internal linguistic factors.

Finally, this study documents that vowel deletion in Bulgarian leads to the following structural changes in the word:

1. Loss of the entire syllable:
  - a. Deletion of both the vowel and the consonants belonging to the same syllable
  - b. Deletion of the vowel only, with residual consonantal segments.  
"Orphaned" consonantal segments are re-syllabified as one of the following:
    - i. Onset of the following syllable
    - ii. Coda of the preceding syllable
2. Retention of the syllable: another sonorant segment assumes the peak role.

These structural changes indicate that with regard to the syllable template in Bulgarian, the syllable nucleus can be occupied not only by vocalic segments, but also by sonorant consonants. On the other hand, as shown in Chapter 4, consonant deletion does not result in profound change of the syllable template. That is, deletion of consonants does not result in the complete loss of codas, for example, or the loss of consonants clusters. Spoken Bulgarian preserves both single and complex codas as well as onset clusters with only a small percent of these structures undergoing change.

## CHAPTER 6

### OTHER PHONOLOGICAL PROCESSES IN BULGARIAN SPEECH

#### 6.1 Introduction

During the transcription of the data collected for this study, a number of other processes such as consonant lenition, vowel reduction and devoicing, and variable non-standard pronunciation were observed. Even though these processes were coded for Varbrul analysis, the number of observations for each of them was not sufficient for running a meaningful statistical test. Thus, this chapter presents only examples of these observations and basic statistics for each phenomenon.

Section 6.2 briefly examines phonological processes, besides deletion, that affect consonants in Bulgarian including consonant lenition, consonant palatalization and consonant de-palatalization. Section 6.3 gives basic statistics for vowel reduction and devoicing in Bulgarian. Section 6.4 concludes the chapter.

#### 6.2 Phonological Processes Affecting Consonants

##### *6.2.1 Consonant lenition*

A total of 655 examples of lenited consonants are observed in the corpus. Lenition tends to affect predominantly sonorant and voiced consonants, while voiceless consonants undergo almost no lenition at all (Table 6.1). This finding is consistent with

the results in Chapter 4 where voiced obstruents as a whole are found to favor deletion more than voiceless obstruents in all linguistic environments where C-deletion is favored.

Not surprisingly, lenition of consonants is observed somewhat more frequently in unstressed syllables than in stressed ones (3% vs. 2%). Finally, single coda and single onset positions seem to be the environments where lenition is most frequent. Consonants that are part of clusters tend to resist lenition (Table 6.1).

Table 6.1 Linguistic Factors and Consonant Lenition

<b>Voicing of Consonant</b>	<b>%</b>	<b>Total (n)</b>
Sonorant	4	8157
Voiced	4	6892
Voiceless	<1	10551
<b>Stress</b>		
Unstressed	3	15959
Stressed	2	9928
<b>Unique C-Position</b>		
Single Coda	5	3355
Single Onset	3	15438
Cluster Onset	1	6494
Cluster Coda	<1	176

Of all the consonants, several are found to never lenite: the voiceless /dʒ/ and /z/ the obstruent /f/ and the sonorant /j/. On the other hand, a relatively high percentage (23%) of all lateral consonants was weakened through gliding (Table 6.2).

Table 6.2 Consonants Affected by Lenition

Consonant	% Lenition	Total (n)
l	23	1324
g	13	788
d	5	1964
v	3	2192
b	3	828
ʒ	<1	242
ts, tʃ	<1	809
s, ʃ, x	<1	3225
m, n	<1	4612
r	<1	1753

#### 6.2.1.1 Lateral Gliding

Lateral gliding is not a new process in Bulgarian speech. It involves gliding of the velarized lateral /ɫ/ both before back vowels (/a/, /ǎ/, /ɔ/, /u/) and in coda position (1). In the mid 1970s this process was reported to be characteristic of isolated dialects west of the city of Pleven and was described by Xoliolchev (1974, cited in Zhobov 2004) as "sporadic in the speech of students in Sofia." Zhobov on the other hand, without claiming statistical accuracy, argues that in 2004 "only 10 -15% of the students studying Bulgarian Philology at Sofia University pronounce a lateral consonant." The average age of the participants in this study in 2004 was 35, placing them in age somewhere between the speakers in the two reports by Xoliolchev and Zhobov. Therefore, if a change of the velar lateral /ɫ/ to /w/ is underway, 23% liquid gliding found here fits appropriately between "sporadic" gliding in 1974 and 85% gliding in 2004.

(1) /a.lo/	→	[a.wo]	'hello(phone)'
/mal.ko/	→	[maw.ko]	'little.Adv'
/o.'xla.bil/	→	[o.'xwa.biw]	'loosen.Masc.PastPart'
/loʃo/	→	[woʃo]	'bad.Adv'
/s'la.ba.ta /	→	[s'wa.ba.ta]	'weak.Fem.Def'
/nor.'mal.no/	→	[nor.'maw.no]	'normal.Adv'
/Băl.ga.ri.ja/	→	[Băw. ɣa.rja]	'Bulgaria'
/b <sup>j</sup> al/	→	[b <sup>j</sup> aw]	'white.Masc'
/ts <sup>j</sup> al/	→	[ts <sup>j</sup> aw]	'whole.Masc'
/in.te.lek.tu.'al.ni.te/	→	[in.tlek.tuaw.ni.te]	'intellectual.3 <sup>rd</sup> .Pl.Def'

The process of l-gliding or l-vocalization is certainly not unique to Bulgarian. Johnson and Britain (2007:294) claim that "this language change is both natural and to be expected" especially in languages where a distinction between clear and dark /l/ exists. This process is quite common in child language acquisition: "[i]t has been observed that many children operate a process of 'gliding' of liquids which sees [r] being produced as [w], clear-l as [j] and dark-l also as [w]" Johnson and Britain (2007:303) The process is also found in other Slavic languages such as Serbo-Croatian where /l/ in coda position is vocalized as /o/ (/bel/ → [beo] 'white') and Polish where all historical velar laterals /ɫ/ are glided as in /słowo/ → [swowo] 'word'. This process is also characteristic of other non-Slavic languages such as Brazilian Portuguese, where /l/ in syllable coda position is realized as a back rounded glide /w/: /mál/ → [máw] 'bad' (Cristófar-Silva and Antônio de Oliveira 2001).

### 6.2.1.2 Voiced Obstruent Lenition

The voiced stops /b/, /d/, /g/ and the voiced labio-dental fricative /v/ are also frequently lenited in intervocalic position. The voiced velar stop /g/ is lenited in 13% of the cases. This is exactly the position in which the same stop could be completely dropped as discussed in Chapter 4. The environment where the velar stop /g/ is most often lenited is in two syllabic words and in the pro-clitical forms of the direct object pronouns *go* '3sg.Acc' and *gi* '3Pl.Acc' (2).

(2) /dru.gi/	→	[dru.ɣi]	'other.Pl'
/mno.go/	→	[mno.ɣo]	'much'
/se.'ga/	→	[se.'ɣa]	'now'
/da gi 'vze.me/	→	[də ɣi 'ze.me]	'to.them.take.3 <sup>rd</sup> .sg.Pres'
/na.pra.'vi gi/	→	[na.pra.'vi ɣi]	'make.Imp them'
/da gi pe.'reʃ/	→	[da ɣi pe.'reʃ]	'to them wash.2nd.sg.Pres'
/ne go vi.ʒdam/	→	[ne ɣo vi.ʒam]	'Neg.him see.1 <sup>st</sup> .Sg.Pres'
/da go e 'u.tʃil/	→	[da ɣo e 'u.tʃil]	'him teach.Masc.PastPart'
/te go sva.'li.xa/	→	[te ɣo sva.'li.xa]	'3sg.overthrow.3Pl.Aor'

The voiced dental stop /d/ is lenited in 5% of the cases. More than 30% of all lenitions of /d/ are observed in the verbal particle *da* 'to' (3). Again, the process operates in intervocalic position where the dental stop is pronounced as a tap or a flap /ɾ/ which is consistent with historical research on weakening, and also observed in other languages such as English.



(3) /tr <sup>j</sup> abva da o.'pra.viʃ/	→	[tr <sup>j</sup> a: ra o.'pra.viʃ]	'to fix.2 <sup>nd</sup> .sg.Pres'
/moga da 'pom.n <sup>j</sup> a/	→	[moga ra 'pom.n <sup>j</sup> a]	'to remember.1 <sup>st</sup> .sg.Pres'
/'da de/	→	['da re]	'yes Part'
/e.'din/	→	[e.'rin]	'one.Masc'
/'ni.kă.de/	→	['ni.kă. re]	'nowhere'
/kă.'de/	→	[kă.'re]	'where'
/o.'ba.di/	→	[o.'bari]	'call.3 <sup>rd</sup> .sg.Aor'
/ts <sup>j</sup> al den/	→	[ts <sup>j</sup> aw ren]	'all day'

Only 3% of the voiced labio-dental fricative /v/ and bilabial stop /b/ are pronounced as either a labiodentals approximant /ʋ/ or a voiced labial approximant /w/ in the corpus (4)-(5). In most of the forms where this process is observed, it affects consonants that are part of an unstressed syllable (4). However, in at least two examples, the process affects consonants which are onsets of the stressed syllable (5).

(4) /na.'pra.v <sup>j</sup> a/	→	[na.'pra.ʋ <sup>j</sup> a]	'do/make.1 <sup>st</sup> .sg'
/o.'pra.v <sup>j</sup> a/	→	[o.'pra.ʋ <sup>j</sup> a]	'fix.1 <sup>st</sup> .sg'
/po vă.'pro.sa/	→	[po wă.'prosa]	'question.Indef'
/'să.bɔ.ta/	→	['să.wo.tə]	'Saturday'
/ta.'ka.va/	→	[ta.'ka.ʋa]	'such.Fem'
(5) /go.'vo.rim/	→	[go.'ʋo.rim]	'speak.1 <sup>st</sup> .Pl.Pres'
/do.'bre/	→	[dow.'re]	'fine'

Table 6.3 presents a summary of the basic statistics for consonant lenition in the three sociolinguistic groups examined in this study: males vs. females, eastern vs. western Bulgarian speakers, and close vs. distant.

Table 6.3 Summary of Non-Linguistic Factors' Effect on Lenition

<b>Factor</b>	<b>% Lenition</b>	<b>n</b>
<b>Sex</b>		
Male	3	13084
Female	2	12803
<b>Regional Variety</b>		
Western	3	13083
Eastern	2	12804
<b>Social Distance</b>		
Distant	3	13083
Close	3	12804

Not surprisingly male speakers weaken consonants slightly more than female speakers whose speech is closer to the norm, consistent with general socio-linguistic accounts (e.g., Labov, 1972, Wolfram and Fasold, 1974). Also western Bulgarian speakers weaken consonants more than eastern, in a manner similar to the process of deletion observed earlier. Social distance between the researcher and the subject does not seem to play a differentiating role in the number of lenited consonants as both groups lenite consonants at the same rate (3%).

### *6.2.2 Consonant Palatalization before Front Vowels*

Non-standard palatalization of consonants occurs quite rarely in the corpus: only 44 cases were found. This process is observed solely in eastern Bulgarian speech where

consonants are palatalized before the front vowels /ε i/ (6). C-palatalization before front vowels is a markedly dialectal pronunciation and one of the major differences between the two main varieties of Bulgarian.

(6) /gla.'vi.te/	→	[gla.'vi.tʲe]	'head.Pl'
/in.te.lek.tu.'al.ni.te/	→	[in.tʲe.lek.tu.'al.ni.tʲe]	'intellectual.Pl'
/ma.te.'ma.ti.ka/	→	[ma.tʲe.'ma.tʲi.ka]	'mathematics'
/u.ni.ver.si.'te.ti.te/	→	[u.ni.ver.si.'tʲe.tʲi.tʲe]	'university.Pl'
/o.ri.en.'ti.ra/	→	[o.ri.en.'tʲi.ra]	'orient.3 <sup>rd</sup> .sg.Pres'
/pra.'vi.tel.stvo.to/	→	[pra.'vi.tʲel.stvo.to]	'orient.3 <sup>rd</sup> .sg.Pres'
/'dnes.ka/	→	['dnʲes.ka]	'today'
/ne/	→	[nʲe]	'not/don't'
/'sta.ne/	→	['sta.nʲe]	'become/happen'
/xra.'ni.tel.ni/	→	[xra.'nʲi.tʲel.nʲi]	'not/don't'

One reason for the small count of cases is that non-standard palatalization surfaces mostly in the phone conversations and not in other styles. The small number of observations could also be attributed to several other reasons. First the researcher herself is a speaker of the western variety of Bulgarian, potentially giving rise to interlocutor effects, whereby eastern speakers adapt their speech to that of the researcher. Second, although these speakers were born and grew up in cities and towns of Eastern Bulgaria, many of them received their university education in the Sofia or another city located in Western Bulgaria, where they are likely to have adapted to the pronunciation of the western regional variety and the norm. Finally, these speakers are also aware of the fact that their speech sounds non-standard; many have heard the

mocking phrase: 'Az sām ut də'l'eku i gu'vor'a na 'm'eku 'I am from afar and I speak softly (with soft consonants)'. Thus the formality of the interview situation as a whole may be at play as well.

### 6.2.3 Consonant de-palatalization

The process of consonant de-palatalization affects primarily first person singular and third person plural, present tense verbal endings in the corpus (7). This process is observed primarily in the speech of western speakers. There are only two eastern female speakers who de-palatalize verbal endings and both of them have lived in the western part of the country during their university education and their employment before they moved to the United States.

(7) /tʃu.dʲa se/	→	[tʃu.də se]	'wonder.1 <sup>st</sup> .Sg.PresRefl'
/pra.vʲa/	→	[pra.və]	'make.1 <sup>st</sup> .Sg.Pres '
/gɔ.'vɔ.rʲat/	→	[go.'vo.rət]	'speak.3 <sup>rd</sup> .Pl.Pres '
/pra.vʲat/	→	[pra.vət]	'do.3 <sup>rd</sup> .Pl.Pres '
/ra.'bɔ.tʲat/	→	[ra.'bo.tət]	'work.3 <sup>rd</sup> .Pl.Pres'

Only 4% of all the verbal endings where de-palatalization is possible in the corpus exhibit de-palatalization. However, it should be taken into account that the same consonants that can undergo de-palatalization are also subject to frequent deletion (20%), which results in the loss of both the consonant and its secondary articulation (8):

(8) /tʃu.dʲa se/	→	[tʃuə se]	'wonder.1 <sup>st</sup> .Sg.PresRefl'
/pra.vʲa /	→	[pra:]	'make.1 <sup>st</sup> .Sg.Pres '

An interesting observation made during the transcription of the data is that the two processes of consonant deletion and de-palatalization can operate independently of each other. For example the deletion of the consonant in the form /prav'a/ 'make.1sgPres' in the speech of eastern speakers does not necessarily lead to the deletion of its secondary articulation and the form surfaces as [praja]. On the other hand in the speech of western speakers, the form can surface as either ['praə] - if the consonant is deleted - or as ['pravə] if the consonant is only de-palatalized. These examples point to the fact that palatalization can be independent of the preceding consonantal segment. The examples support Scatton's approach of representing a palatalized consonant as a sequence of *Cj*, rather than as an independent single phoneme segment in the inventory. Scatton (1975) argues that the consonant inventory of Bulgarian includes only non-palatalized consonants and palatalization is simply a secondary articulation. Most other Bulgarian grammarians contend that palatalized consonants are phonemic. A more focused study of similar patterns in the language would help to resolve the existing dispute on the consonantal inventory.

### 6.3 Processes affecting vowels

#### *6.3.1 Vowel devoicing*

Vowel devoicing is a process that has been largely ignored in the literature on standard Bulgarian phonology; however the process has been described in a number of dialectological studies on various Bulgarian dialects. Zhobov (2004) summarizes these

studies and claims that the process of vowel devoicing in Bulgarian "has the same positional characteristics as vowel deletion" and also that "vowel deletion and devoicing can be viewed as different stages of the same process." However, similarly to vowel deletion, little attention has been paid to the issue of which vowels exactly are devoiced or what conditions affect vowel devoicing. In the corpus under examination, a total of 509 vowels were devoiced. Table 6.4 summarizes the distribution of devoiced unstressed vowels.

Table 6.4 Vowels that Undergo Devoicing

Vowel	% Devoiced	Total Unstressed
ɔ	6	2613
i	4	2732
e	3	2929
a	3	5074
u	3	183
ǎ	1	440

In a manner similar to the process of vowel deletion, vowel devoicing of /ɔ/ is the most frequent in the corpus (6%), followed by devoicing of /i/ at a rate of 4%. Unstressed /ɛ/, /a/, and /u/ undergo the same rate of devoicing (3%) and unstressed /ǎ/ is devoiced the least (1%).

As with deletion, vowel devoicing is most frequently observed after voiceless obstruents, and blocked in syllables with a voiced or sonorant onset or with no onset (Table 6.5). Word-final and word-medial syllables are the environment where vowels devoice with higher frequency (5% and 4%) than vowels in word-initial syllables (2%).

Vowels that are part of single syllable words are never found to devoice. These findings are consistent with Zhobov's claim that V-deletion and devoicing are different stages of the same process.

Table 6.5 Syllable Position and Previous Consonant Effect on Vowel Devoicing

	% Devoiced	n
<b>Syllable Position</b>		
Final Syllable	5	5015
Middle Syllable	4	4507
Beginning Syllable	2	4442
Single Syllable	0	7
<b>Voicing of Previous Consonant</b>		
Voiceless	9	4851
Voiced	1	3397
Sonorant	<1	3991
No consonant	<1	1680

Devoiced vowels are most frequently observed (5%) in word final position after voiceless obstruents (9); however they can also be found in word-medial (4%) or word-beginning (2%) syllables after voiceless obstruents (10). A very small percent of devoiced vowels (1%) occurs after voiced consonants, usually at the end of the word (11):

(9) /'pro.sto/	→	['pro.sto]	'simply'
/'pove tʃe/	→	['po.ve. tʃə]	'more'
/ni.ʃto/	→	['ni.ʃto]	'nothing'
/ko.'e.to/	→	[ko.'e.to]	'which.Neut'
/ta.'ka tʃe/	→	[ta.'ka tʃə]	'so/therefore/in such a way'

/to.'va tʃe/	→	[to.'va tʃə]	'the fact that...'
/ra.bo.ta/	→	[ra.bo.tə]	'work'
/'kol.ko/	→	['kol.kə]	'how much/many'
/'ka.to/	→	['ka.tə]	'when or like'
/pro.'duk.ti/	→	[pro.'duk.ti]	'product.Pl'
(10) /ta.'ka/	→	[tə.'ka]	'this way/so'
/sti.xɔ.tvɔ.'re.ni.ja/	→	[sti.xə.tvə.'rẽ.i.ja]	'quite'
/ɔb.stɔ.'ja.tel.stva/	→	[ɔb.stə.'ja.tə_.stfə]	'circumstance.Pl'
/pre.'dim.stvɔ/	→	[pre.'dim.stfə]	'advantage'
(11) /'ka.za/	→	['ka.zə]	'say.3sg.Aor'
/pra.'vi.tel.stvɔ/	→	[prə.'i.te.stvə]	'government'
/tex.no.'lɔ.gi.i/	→	[tex.no.'wo.gi.i]	'technology.Pl'
/iz.'le.ze/	→	[iz.'le.zə]	'go out.3sg.Aor'
/'sla.bɔ/	→	[sla.bə]	'weak.Adv'

The only common environment of vowel devoicing in Bulgarian is the *unstressed syllable* without regard to its position within the word. However, the most frequent environment for vowel devoicing in Bulgarian – word-finally after voiceless obstruents – is consistent with cross-linguistic trends observed by other authors. In a study of São Miguel Portuguese, Silva (1998) observed that only the high back vowel /u/ undergoes devoicing and the process is "favored in only one linguistic context: at the end of the word, preceded by a voiceless consonant" (1998:172). The author argues that the process of vowel devoicing in São Miguel Portuguese is a social marker, marking



the speech of "older, less well-off speakers." Gordon (1998:97) argues that in all 32 languages he surveyed (with the exception of languages in which stress is word-final), "vowel devoicing is found at least in final position." He also argues that the domain of devoicing follows an implicational hierarchy: "(vowel) devoicing in final position of a smaller domain (e.g. word) implies devoicing in larger domains (e.g. phrase or utterance)..." The current study does not investigate the process of vowel devoicing in Bulgarian beyond its statistical distribution within the domain of the word and does not look at whether it differentiates Bulgarian speakers socially. These questions are left to be answered in a future investigation.

#### *6.3.2 Non-Standard Vowel reduction*

The reduction of the unstressed front vowel /ɛ/ towards /i/ by eastern speakers is considered non-standard in Bulgarian. In the corpus, only 5% of unstressed /ɛ/ are reduced by Eastern speakers (71 out of 1407 unstressed /ɛ/ produced by eastern speakers). This process is also markedly dialectal, much like the process of consonant palatalization before front vowels. Therefore, the 5% reduction may be attributed to the same factor: educated eastern speakers try to suppress /ɛ/-reduction when they are in a more formal speech situation like the interview for this study, or when they converse with somebody who speaks the western variety, which is closer to the standard.

(12) /in.te.lek.tu.'al.ni.te/	→[in.t̪i.ɫik.tu.'al.n̪i.t̪e]	'intellectual.Def.Pl'
/ne.'de.la/	→[ni.'de.lə]	'Sunday'
/ɔ.'tvɔ.re.ni/	→[u.'tvo.ri.ni]	'open.3 <sup>rd</sup> .Pl'
/se.'d̪at/	→[si.'d̪at]	'sit.3 <sup>rd</sup> .Pl.Impv'
/'vre̪me/	→['vr̪emi]	'time'
/tʃe ʃte 'xo.d̪a/	→[tʃi_ʃti_'xo.d̪a]	'that.Fut.go.1sg'
/tʃe_ne_'mo.ga/	→[tʃi_ni_'mo.ga]	'that.Neg.can.1sg.Pres'
/ne 'znam/	→[ni 'znam]	'Neg.know.1 <sup>st</sup> .sg.pres'
/ʃte_gi_na.'ka.ram/	→[ʃti_gi_na.'ka.ram]	'Fut.them force'

#### 6.4 Conclusion

What generalizations can be drawn based on an examination of these (non-deleting) weakening processes in the speech of Bulgarian speakers? First, consonant lenition and vowel devoicing seem to be very similar to consonant and vowel deletion; these processes are found to affect the same set of segments, operate in the same linguistic positions, and in general seem to be influenced by the same variables. The Bulgarian data seems to support Hyman's (1975:165) statement: “a segment X is said to be weaker than a segment Y if Y goes through an X stage on its way to zero.” The findings confirm that lenition and deletion of both segment groups – vowels and consonants – can be considered two stages of the same process.

Non-standard consonant palatalization and vowel reduction features, which are characteristic of the pronunciation of eastern speakers, are rare in the language of educated speakers. The likely reason is that the speakers are trying to maintain a

pronunciation closer to the norm in more formal situations such as the interview and the reading passage. However, when the situation changes, with the interlocutor being a close acquaintance who speaks the same variety, palatalization and reduction do surface in the speech.

Consonant de-palatalization, which is more characteristic of western speech, seems to have been acquired even by eastern Bulgarians who have spent time studying and working in western Bulgaria. This process also appears to interact with consonant deletion in a way that could help answer the question of whether palatalized consonants should be included in the consonant inventory of Bulgarian.

Finally, lateral gliding is a process that has originated from a small regional dialect but can currently be observed in the speech of practically most Bulgarians. More than 20% of liquids produced by the speakers in this study undergo gliding. Further research would be needed to confirm Zhobov's claim that /t/ gliding in the speech of younger speakers today is much more frequent than it used to be 30 years ago.

## CHAPTER 7

### CONCLUSION

#### 7.1 Overview of the Significant Findings in the Study

In Chapter 1, this dissertation posed several questions in regards to the phonological processes observed in the speech of Bulgarian speakers. This section presents a summary of the conclusions reached in an attempt to answer these questions.

##### *7.1.1. What Phonological Processes are Observed in Bulgarian Speech?*

In the course of transcribing the speech corpus for this study, six phonological processes were observed and later analyzed using statistical Varbrul analysis: consonant and vowel deletion, consonant lenition, non-standard consonant palatalization and depalatalization, non-standard vowel reduction, and devoicing. While this study's main focus is the investigation of segment deletion, these six processes are not independent of each other; they are expressions of the same tendency for simplification in the spoken language. More specifically, vowel reduction, devoicing and deletion are arguably all different stages of weakening and are primarily governed by stress. Consonant lenition and intervocalic deletion are also two phases on the same continuum and appear to occur in the same linguistic positions in the phonological word.

### *7.1.2 What Forms are Affected by Deletion?*

Although any word can undergo segment deletion, analysis of the data indicates that frequent or commonly used lexical items are more prone to the reduction processes in speech than less frequently used words. Deletion is observed in all parts of speech – nouns, pronouns, verbs, adjectives, as well as in function words such as prepositions and particles. However, vowels are most often elided in already reduced forms of clitics, various pronouns, and definite nouns, while consonants are dropped mostly in frequently used verbal forms.

### *7.1.3 What Linguistic Environments are Conducive to Deletion?*

This study investigates segment deletion with regards to the syllable organization, stress and the surrounding segments within the boundary of the phonological word. It finds that vowels and consonants can be fully elided in the beginning, middle or end of the word, in both stressed and unstressed syllables. However, the rate of deletion in each of these positions varies. Not surprisingly, it was found that prototypically strong environments such as the stressed syllables and the beginning of the phonological word preserve more of their segmental material than weak environments such as unstressed syllables in the middle of the word and word-final syllables.

With regards to consonant deletion, this study concludes that word-medial intervocalic position and word-final clusters are the environments where deletion is

avored most strongly. In terms of positional faithfulness, consonants in Bulgarian are faithful in word-initial position but are more likely to violate faithfulness constraints intervocalically and word-finally. Such a result is consistent with cross-linguistic observations (Kager, 2004:408):

It is well known that contrasts are best realized in perceptually salient positions (Nootboom 1981, Hawkins and Cutler 1988, Ohala 1990, Ohala and Kawasaki 1984). Salient positions include word-initial consonants, prevocalic (or released) consonants, stressed vowels, and vowels in initial syllables.

With regards to vowel deletion, the syntagmatic position of the vowel within the word does not drive deletion. Rather, the strongest predictor of vowel deletion is the position of stress. In support of Kager's conclusions, stressed vowels in Bulgarian remain faithful and resist deletion, while unstressed vowels violate faithfulness constraints in a number of ways. Vowels in unstressed syllables either undergo reduction or full deletion, i.e. they never surface with their full feature specification.

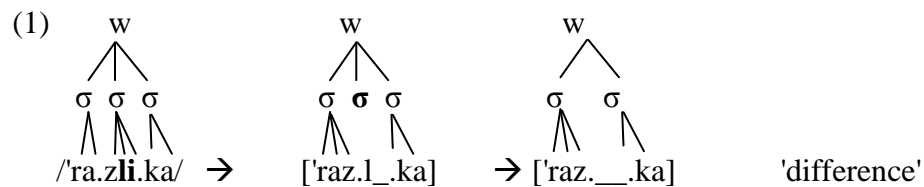
...it may be assumed that all vowels are subject to the same general forces of reduction ('minimize articulatory effort'), regardless of their position or stressing. Yet stressed vowels, by their inherent perceptual salience (tonal and durational) are best equipped to realize featural distinctions, hence to resist general reduction forces (2004:408).

The second linguistic environment factor significantly affecting vowel deletion is the sonority of the previous segment. The analysis indicates that overall, vowels after voiceless obstruents delete more frequently than those following voiced or sonorant obstruents.

#### 7.1.4 What Other Language-Internal Factors Contribute to Deletion?

This study shows that segment loss is conditioned primarily by internal phonological structure and the target segments' linguistic nature. Among the several linguistic variables examined, word frequency and voicing are found to be the most significant predictors for C-deletion. On the other hand, stress and voicing of the previous segment are revealed as the most significant predictors in V-deletion.

Although in this dissertation consonant and vowel deletion are examined separately and distinct set of factors were considered for consonants and vowels, these two processes are not always independent of each other. For example, vowel loss sometimes leads to the loss of consonants that cannot be re-syllabified (1).



This resyllabification observed in (1) is a direct result of the syllable phonotactic constraints and the operation of the Sonority Sequencing Principle (SSP) that "requires onsets to rise in sonority towards the nucleus and coda to fall in sonority from the nucleus" (Kenstowicz 1994:245). In example (1) the deletion of /i/ leaves the consonantal cluster /zl\_/ orphaned and because /l/ is more sonorant than /z/, the formation of the /\_zl/ coda clusters is not licensed by the phonology. If an attempt is made to re-syllabify the liquid as part of the following syllable onset, the resulting

cluster /lk\_/ would also violate SSP because /k/ is less sonorant than /l/. The end result is loss of /l/.

#### *7.1.5 What Language-External Factors Contribute to Deletion?*

Another finding in this study is that socio-linguistic factors are not as strong predictors of segment deletion as the internal linguistic variables. Sex, regional variety, speech task and social distance are selected as significant in certain contexts but are typically ranked lower than the language internal factors; and in most cases, the language external factors are not selected as significant at all.

In general, both eastern and western Bulgarians speakers tend to delete segments at about the same rate. That is, segment loss does not seem to be a dialectal marker, indicating that the regional varieties have evolved in the same linguistic direction. The roots of such dialect convergence can be found in the nation-building aspirations of Bulgarians after the liberation from Ottoman rule. The newly-found independence brought about the longing to rebuild a nation and to unify the people under the same cultural, religious, and national identity. This reconstruction included the merger of dialectal varieties into a single national language, which led to joint linguistic evolution of the speech varieties.

Consistent with socio-linguistic research, men tend to use fewer standard forms (delete more) than women (Labov 1972, Wolfram 1969, Wolfram and Fasold 1974); however in Bulgarian speech this difference appears to be small. Consequently deletion



is not a strong marker of the speaker's sex. A main reason for this result can also be found in the recent history. The societal structure in Bulgaria in the past half a century has led to near eradication of major role differences between men and women. During Socialist rule, women were not simply encouraged to do everything that men did, but expected to achieve "complete emancipation" as dictated by the political philosophy of the time (Marx, Engels, Lenin). As a result of such emancipation, males and females interact on equal footing which presumably leads to few differences in their linguistic behaviors. However, despite the "blurring of gender roles," this study shows that variation is indeed present, statistically significant, and supports Chambers' claim that "...male-female differences ... persist even in the absence of well-defined gender roles" (1995:401).

The results for social distance between the researcher and the subjects as a predictor for deletion are unexpected. The study indicates that speakers who are socially distant to the researcher delete more vowels and consonants in their speech, while speakers socially closer to the researcher delete fewer. One explanation offered earlier has to do with factors not taken account during subject select, for example age. On other hand, this social factor may not in fact stratify Bulgarian speakers in their everyday language use. A more targeted research in the future could help resolve these problems.

Of all the social factors examined in this study, the formality of the situation seems to be the most predictive factor for segment loss. Overall, vowel and consonant deletion is more frequent in free speech which includes the interview and phone

conversation and less frequent in the most formal style, the reading passage. This result is not surprising since, in general, the more formal the speech situation, the more attention speakers pay to their pronunciation (Labov 1966).

The examined socio-linguistic factors do not strongly differentiate groups of Bulgarian speakers in regards to their language use. However, there are other social factors not considered in this study which might prove more productive and stratify the Bulgarian speech community in a more explicit manner: these include speakers' age and education. Based on this researcher's observations, older educated Bulgarian speakers' speech is much closer to the norm than the speech of younger educated speakers. It is also observed that the speech of university educated speakers is closer to the norm than the speech of non-university educated speakers. Whether the variation in segment deletion and lenition strongly differentiate these groups is a subject of a future investigation of these processes.

#### *7.1.6 What are the Ramifications of Segment Deletion?*

This study finds that the results of vowel deletion are either syllable loss or the promotion of a more sonorous segment to peak position. When deletion leads to syllable loss one of two phenomena occur: either all segments in the syllable are dropped or the remaining consonantal segment is re-syllabified. Consonant deletion on the other hand, leads to cluster simplification when the deleted consonant is part of a cluster and to

onsetless syllables when the consonant is in a single onset position. The study finds that single codas are strongly resistant to deletion.

One major finding of this study is that consonant and vowel loss occurs at a relatively low rate in speech, 5% and 4% respectively. A possible explanation for such a pattern may lie in the original codification of the literary Bulgarian norm, which was based on language usage and pronunciation. In codifying the modern literary Bulgarian at the beginning of 20<sup>th</sup> century, features of both major dialects were integrated into the linguistic system and the founders hoped that "a transition toward a unified orthoepy can be achieved with the help of ubiquitous adoption and application of orthographic norms" (Grammar of Contemporary Bulgarian Literary Language). In addition to the initial codification, the written language reforms that periodically take place in Bulgaria introduce changes which reflect completed phonological processes in pronunciation. Therefore, the difference between the written norm and the spoken language is relatively minor and may be the reason why language changes observed in this study are not profound.

Another reason that the observed deletion is relatively rare is the fact that the process is restricted to only high-frequency words. Intervocalic consonant deletion for example, affects primarily the root consonants of frequently-used verbs, while vowel deletion affects primarily different types of pronouns and clitics. In other words, a small percentage of all words in the language are affected by segment deletion. This type of change is what historical linguists Wang (1969) and Ohala (1993) refer to as "lexical

diffusion" – a process of gradual language change, initially affecting a small group of individual lexical items and spreading or diffusing to other items over time. Ohala argues that "the domain of change is overwhelmingly the word or possibly phrases which occur so often that they could also be said to be lexicalized" (1993:264). The fact that observed variation is relatively rare in Bulgarian, could suggest that this study captures and documents the process in its initial stage. A repeat study done in a diachronic context (either real-time or apparent-time) may reveal more pervasive changes.

One exception to the early stages of lexical diffusion in Bulgarian, observed in the corpus, is the gliding of /t/ → /w/, which most current specialists in the language agree is nearly complete. As stated in Chapter 6, initially this process appeared only in one dialect (Pleven) and affected small number of words. However, it is currently documented to have spread to all applicable phonological positions and is produced by majority of young speakers, nearly completing the lexical diffusion process and introducing a new phonetic segment in the consonant inventory.

## 7.2 Limitations of the Study

Every scientific inquiry makes assumptions on the basis of which arguments or hypotheses are built. Such assumptions often result in more or less apparent limitations. The present research is no exception and two obvious limitations need mentioning.

First, even though various conclusions could be made about linguistic processes in the speech of contemporary Bulgarians, one should not lose sight of the fact that only the language of university-educated speakers was recorded. This researcher made a conscious decision to limit the pool of subjects to university-educated Bulgarian speakers because their speech is associated with prestige and is therefore considered the current spoken "norm." However, an inherent assumption made here implies that not only such a "norm" is actually present, but also that the subject group represents the entire community's speech patterns. Such limitation in the study may have led to skewed results about the phenomena that occur in Bulgarian speech today and should be kept in mind in any attempts to generalize the current findings.

A second limitation has to do with the factors that were not considered with regards to reduction processes. For example, vowels in this dissertation are examined separately from consonants. Such approach could be based on the assumption that these two segment groups are independent with respect to reduction processes affecting them. Sometimes that is indeed the case; e.g. dropping of consonants may not lead to dropping of vowels. However, as described earlier, vowel loss can lead to consonant loss, suggesting a dependence of these phenomena. Another illustration that a less-than-exhaustive list of factors was considered is the following: the study examines the voicing of the previous consonant when looking at vowel deletion, but does not consider the voicing of the following consonant as a factor for deletion. Discovering whether codas affect deletion is missing from this study and can be considered in future

research on this topic. Lastly, this study investigates all the processes within the limits of the phonological word; however, linguistic structures such as the morpheme, phrase or sentence and their impact on the processes were not considered. For instance, the C-deletion in verbs /'mo.ga/→['moa] and /'tr'ab.va/→['tr'a:] occurs at the morphological level, affecting the final syllable root consonants. However, since this study concentrates on the phonological word, this example specifically is not explained and the impact of other structural organizations of speech remains outside the scope of this investigation.

### 7.3 Implications for the Study of Bulgarian

In the past, research on Bulgarian phonology has focused either on the system of the literary norm or the language system of different regional dialects. Attention to the speech of city vernaculars in Bulgaria has increased since the 1990s as socio-linguistic methodologies were adopted alongside main stream philological investigations. However the majority of these sociolinguistic studies have focused on investigating the language external sociolinguistic factors affecting the variable usage of different phonological, morphological or syntactic patterns. This study, despite its general sociolinguistic approach, attempts to explain variation through language internal factors as well as through external ones. Such combination of extra- and intra-linguistic variables makes this investigation unique for Bulgarian. The nature of this study helps

set the stage for further in-depth phonological investigation as it sheds light on what internal linguistic factors play a significant role and deserve more targeted attention.

Multiple phonological phenomena such as consonant and vowel deletion in frequently occurring words, *l*-gliding, and consonant depalatalization have been observed in Bulgarian speech and are documented in the literature. However, the majority of these reports either mention these processes in passing without giving them due attention or solely describe what is observed without studying the underlying reasons for the variation. Therefore, even though this dissertation does not discover processes unobserved before, it attempts to explain and statistically quantify the reasons and significance of these observations.

In addition, reduction processes in speech such as segment deletion and lenition are well studied in multiple languages such as English, Spanish, Portuguese, Korean, and others. A large body of data has been generated and theoretical conclusions made as a result. The present research paper corroborates numerous observations made for other languages and discovers a factor ranking that is language-specific to Bulgarian.

Several researchers on Bulgarian (Shishkov, Zhobov) have asserted the need for more in-depth exploration of synchronic reduction processes in speech. However, until now most of the attention has been placed on vowel reduction in the norm or historical phonological alterations (e.g. reflexes of the proto-Slavic *Jat* vowel, and *Yers*). Deletion has been examined in one study on a village dialect, but no systematic investigation of the process has been done in the spoken language of educated speakers in large urban

areas. A major reason for this study has been to address the need for a more in-depth and quantitative analysis of phonological processes in Bulgarian.

#### 7.4 Implications for Variation Theory

The main premise of Variation theory is to establish that language variability occurs under certain non-random conditions, which could be quantified and ranked. What logically stems from that premise is that Variation theory is interested in language that occurs naturally and not in laboratory conditions. Quantification is necessary precisely because "real" speech varies as it occurs; that is, for the variationist researcher, measuring the alternative - underlying invariant competence posited in Generative theory - is necessarily pointless. As Robert Bayley puts it, "the central ideas of [the quantitative approach] are that an understanding of language requires an understanding of variable as well as categorical processes and that the variation that we witness at all levels of language is not random" (2004).

As a descriptive study of observable speech behaviors (and not an investigation of putatively invariant prescriptive norms), the current research appropriately assumes a quantitative stance, pursuing an analysis of phonological variation in "real," connected, free speech. Based on research traditions established for other languages, the decision to adopt a variationist framework was a natural choice because it allowed examining the effect of multiple linguistic and social factors on variation at the same time.



Another implication of this study with regards to Variable rule theory is the study on Bulgarian itself. Varbrul analysis has been conducted on multiple languages to date. This study contributes new language data analyzed through Varbrul and is the first application of Varbrul analysis on variable phonological processes in Bulgarian.

### 7.5 Recommendations for Further Research

This dissertation takes only one snapshot of the spoken language of 24 Bulgarian speakers in 2004; a repeat study would do well to expand the scope of the current work and investigate additional theoretical approaches to language variation and change in the language. This work reveals that low frequency phonological variation is present in Bulgarian speech and it is conditioned on a set of internal and external linguistic factors. One should, however, take into account that initially, this investigation took a primarily structural and socio-linguistic approach in examining language variation by considering only factors of the language organization (the word and syllable boundaries, syllable structure, the nature of preceding sounds, etc.) and social context (sex, dialect, speech register, etc.). The results do not indicate that Bulgarian is undergoing a profound structural change. For example, the loss of segments does not produce a revolutionary modification of the sort that lead to the formation of only open syllables in Old Bulgarian. The observed simplification of consonant clusters does not eliminate all complex structures, and intervocalic consonant lenition and deletion do not apply in all possible environments. These processes operate

only on select lexical items. The results also indicate that the social factors considered in this study have only marginal impact on the observed variation. Thus after it became obvious that these factors could not fully account for the observed variation, one lexical factor – word frequency – was added to the mix. It was established that word frequency not only significantly impacts vowel and consonant deletion, but also is one of the most predictive variables. In my view, it would be worth investigating this further, expanding on the lexical diffusion approach (Wang, Baily, and Ohala) and looking, for example, at the modification rate of only high-frequency lexical items.

A repeat study in the future following similar methodology could also provide the basis for comparison of the results of this study and a provide insight into the direction of the ongoing language change. As mentioned earlier in this chapter, the segment deletion process is currently in its early stage and a repeat study can follow and document the next stages of this process.

A different set of studies may also look into expanding the pool of speakers by interviewing people from more diverse educational background and age. This would provide a wider, more representative speech sample of Bulgarian and add two more extra-linguistic variables (the role of education and age) for explaining the processes in speech. It is especially worth looking at the role of education as a social factor affecting the choice of variants in speech use today because prestige in the community, in my view, is shifting from education (which was the primary indicator of class stratification during the Socialist rule) to other indicators of class more commonly associated with

the economic situation of western societies such as income and occupation (Labov 1966). Age as a social factor would similarly provide new insights into the choice of variants. Selecting speakers of different ages will essentially provide the researcher with samples of speech from two generations - one raised and educated under Socialist rule where a certain set of rules and prestige factors were in operation and another generation of speakers growing up in a new economic and political reality where different rules of social status start developing in the society.

Considering different language internal factors would also enrich the explanatory power of future analysis on these phonological processes. Such factors might include the effect of the linguistic environments not considered in this study, or the morphological and syntactic organization of speech. These include, for example, the voicing of the following consonant as a factor for deletion in assessing whether codas affect deletion, or considering smaller or larger linguistic structures such as the morpheme, the phrase or the sentence and their impact on the phonological processes observed in speech.

As mentioned earlier, vowels in this dissertation are examined separately from consonants. However, as described earlier, vowel loss can lead to consonant loss, suggesting a dependence of these phenomena and an investigation describing and explaining such dependence would be of value.

In addition, the current study limits the investigation of vowel devoicing, consonant lenition, and non-standard consonant palatalization and de-palatalization to

statistical distribution within the domain of the word and does not look at whether these processes affect the linguistics structure or differentiate Bulgarian speakers socially. These questions are left to be answered in future research.

Because the language-external factor social distance between the subject and interviewer yielded unexpected results, further sociolinguistic research is necessary to test the validity of this result and to control this variable more accurately.

Finally, further study would also be recommended to establish if the vowels following sonorant onsets are really deleted or absorbed by the preceding sonorant producing a longer, in many cases peak-occupying sonorant segments. An acoustic study of this process would shed more light to its nature.

## APPENDIX A

### READING PASSAGE

Аз им **казах**, че **ще ходя** да **взема** сирене и **бял хляб**.  
 Az im 'kazəx, tʃe ʃte 'xod'ə də 'vzemə 'sirene i 'b'al 'xl'ap  
 I them tell.1sg.Aor, that will go.1sg.Pres. to take.1sg.Pres. cheese and white bread.

**Видях**, че **това няма** да стане, защото **днеска не работят**  
 магазините  
 Vi 'd'ax tʃe tova njamə də stane, zəʃtoto dneskə ne rəbot'ət məgəzinite  
 Saw.1sg.Aor., that this will.not to happen.3sg.Pres. because today Neg. work.3pl..Pres stores-the

или тези които са отворени, не **продават** хранителни продукти.  
 ili tezi koito sə otvoreni, ne prodavət xranitelni produkti  
 or these which be.3pl.Pres. open.PastPtcpl.Passive, Neg. sell.3plPres. nutritious products.

Казах им да не **отварят** дума за **това**, защото съм **много** ядосан,  
 Kazəx im da ne otvar'ət duma zə tova, zəʃtoto səm mnogo jədəsən  
 Say.1sg.Aor. them to Neg. open.3pl.Pres. word about this, because be.1sg.Pres. very angry

че не **мога** да си **свърша** **работата, която съм** **запланувал**.  
 tʃe ne mogə də si svərʃə rabotətə, kojato səm zəplənuvəl  
 that Neg. can.1sg.Pres. to Refl. finish.1sg.Pres.Perfv. work-the, which be.1sgPres  
 plan.1sg.PastPrtcpl

А те **мързеливците** през **деня си** **седят** в кафето.  
 A te mərzelivtsite pres den'ə si sed'ət f kəfeto.  
 And they sluggards-the during day-the Refl. sit.3pl.Pres. in café-the.

**Чудя** се как **може** по цял ден да **висят**, без да **правят** нищо.  
 tʃud'ə se kak moze po ts'al den də vis'ət, bes də pravət niʃto.  
 Wonder Refl. how can of all day to hang.out.3pl.Pres. without to do.3pl.Pres. nothing

**Трябва** да се **направи** нещо по въпроса или да **пита**ме **някой** как  
 Tr'abvə də se nəpravi neʃto po vəprosə ili də pitame n'akoj kak  
 Must.3sgPres. to Refl. do.3sg.Pres something regarding question or to ask.3pl.Pres somebody how

могат да се **накажат** тези **безделници** по **всякакъв** възможен начин.  
 mogət də se nəkazət tezi bezdelnitsi po vs'akəkəv vəzmožen natʃin  
 can.3pl.Pres to Refl. punish.3pl.Pres. these lazybones in any possible way.

Ти нали **вярваш**, че и това **ще** стане **все** един ден.  
 Ti nəli v'arvəʃ, tʃe i tova ʃte stane vse edin den.  
 You TAG believe.2sg.Pres. that and this will happen.3sg.Pres. all one day

Какво, това е много добра идея!  
 Kǎkvo, tova e mnogo dobra ideja.  
 What, this be.3sg.Pres very good idea.

Сега ли да взема да го направя?  
 Segǎ li dǎ vzeṃǎ dǎ go naprav'ǎ?  
 Now Q to take.1sgPres. to it do.1sg.Pres.?

Няма лошо, става тази идея.  
 N'ǎṃǎ loʃo, stavǎ tazi ideja.  
 There.is.Neg bad, fit.3sg.Pres. this idea.

Добре, значи купувам вестник и ще ги накарам да  
 Dobre, znatʃi kupuvǎṃ vestnik i ʃte gi nǎkarǎṃ dǎ  
 Good, so buy.1sg.Pres newspaper and will them make.1sg.Pres. to

говорят за слабата и лабилна икономика в страната.  
 Govor'ǎ zǎ slabǎtǎ i lǎbilnǎ ikonomikǎ f strǎnatǎ.  
 Speak.3pl.Pres. about weak and unstable economy in country-the.

Време е да се затворят интелектуалните бездни в главите им.  
 Vreme e dǎ se zǎtvor'ǎt intelektualnite bezdni v glǎvite im.  
 Time be.3sg.Pres to Refl. close.3sg.Pres intellectual abysses in heads-the their.

'I told them that I would go and buy some cheese and white bread. I realized that that would not work because today the stores are closed or those that are open do not sell groceries. I told them not to say anything about that because I was very angry for not being able to finish the chores I had planned. And those sluggards sit at the café all day. I wonder how they can hang out all day without doing a thing. Something must be done about this or we should ask somebody how we can punish those good-for-nothings in any possible way. You believe that this would happen some day, don't you? What, this is a great idea! Should I do this now? Not bad, this should work. OK, so I

buy a newspaper and I will make them talk about the poor and unstable economy of the country. It is time that we close the intellectual abysses in their heads.’



## APPENDIX B

### INTERVIEW TOPICS

1) Образованието в България и САЩ: Какво мислите за образователната система в САЩ, в сравнение с тази в България?

‘Bulgarian and US Education: What do you think about the system of education in the US in comparison to that in Bulgaria?’

2) Обществен транспорт: Какво мислите за обществения транспорт в Далас? Кое е по-добре да има обществен транспорт или всеки да си има кола? Защо?

‘Public Transportation: What do you think about the public transportation system in Dallas? Which is better to use public transportation or to have your own vehicle? Why?’

3) От къде си купувате българско сирене и хранителни продукти, с които сте свикнали в България?

‘Where do you buy Bulgarian cheese and groceries which you commonly found in Bulgaria?’

4) Икономическото положение в България: Какво мислите за икономическото положение в България?

‘Economic conditions in Bulgaria: What do you think about it?’

5) Професия: Какво работите? С какво се занимавате в момента? Длъжността, която в момента изпълнявате, по професията ви ли е?

‘Profession/Career: What do you do? Does your current job match your education or career goals?’

6) Здравната система в Америка: Какво мислите за системата на здравеопазване в Щатите?

‘The Healthcare System in the US: What do you think about the healthcare system in the US?’

7) Как ви харесва живота в Америка в сравнение с живота в България?

‘How do you like living in the US in comparison to living in Bulgaria?’

## APPENDIX C

### INTERVIEW AND PHONE CONVERSATION SAMPLES

### **Transcription note:**

The interview and phone conversation samples are given here in four lines. Line one gives the speech in Bulgarian, written in Cyrillic. Line two presents the phonetic transcription of the sample according to the expected pronunciation of the Bulgarian literary norm. Line three gives the phonetic transcription where loss of vowels and consonants are marked with an Underscore ( ), lenition of a consonant is marked with *w*, and devoicing of a vowel is marked with *D*. Line four gives the English translation.

### **Interview #1 Eastern Bulgarian Male Speaker**

Ние отдавна сме на тоя път да се оправяме.

'Nie ot'davna sme na 'toja 'păt da se op'ra<sup>j</sup>ame.

'Nie ot'davna sme na 'to\_a 'păt da se op'ra\_ame.

'We have been on the road to recovery for a long time'

но като че ли наближава все повече и повече момента в който нещата да стават все по-нормални.

No kato tŝe 'li nabli'žava 'vse 'povetŝe i 'povetŝe mo'menta 'v kojto ne'ŝtata da 'stavat 'vse 'po- nor'malni.

No kat\_ tŝe 'li nabli'žava '\_se 'po\_etŝe i 'po\_etŝe m\_'menta 'v kojto ne'ŝtata da 'stavat 'vse 'po- nor'malni.

'But it seems that more and more the moment in which things become more normal is nearing'

иначе всеки да може да си действа по задачите нормално.

'inatŝe 'vseki da 'može da si 'dejstva po za'datŝite nor'malno.

'inatŝe 'vseki da 'mo\_e da si 'dejstva po za'datŝiDteD nor'malnoD.

'otherwise everybody to be able to do their job normally'

(Interviewer: Би ли се върнал в България? 'Would you go back to Bulgaria?')

Да живея в България?

Da ži'veja v Bul'garija?  
Da ži've\_a v Bul'gar\_ja?  
'To live in Bulgaria?'

Ми трудно ми е да ти кажа заштото аз четири години вече не съм бил там  
Mi 'trudno mi e da ti 'kaža za'ʃtoto 'az 'tʃetiri go'dini 'vetʃe ne 'sām 'bil 'tam.  
Mi 'trudno mi e da ti 'ka\_a \_\_\_'ʃ\_oto 'az 'tʃet\_ri go'dini 'vetʃe n\_ 'sām 'bil 'tam.  
'well, it is difficult for me to say because I have not been back for the past four years'

и преди това като съм се, като съм се прибирал нали и ми беше ясно че няма да се  
върна.  
I pre'di to'va kato sām se, kato sām se pri'biral na'li i mi 'beʃe 'jasno, tʃe 'njama da se  
'vārna.  
I pre'di t\_ 'va kat\_ sām se, kato sām se pr\_'biral na'li i mi 'beʃe 'jasnoD, tʃe 'njama da se  
'vārna.  
'and before that, when I went back, it was clear to me, that I will not be going back'

сега покрай последните промени последните нешта нали така чувам различни  
нешта  
Se'ga po'kraj po'slednite pro'meni, po'slednite ne'ʃta na'li ta'ka 'tʃuvam ra'zlitʃni ne'ʃta  
'S\_\_a pokraj po'slednite pro'meni, po'slednite ne'ʃta na'li t\_ 'ka 'tʃu\_\_am ra'zlitʃni ne'ʃta  
'Now with the latest changes, the latest things, right, I hear different things'

то най-добре човек сам да се прибере и да си прецени.  
'To 'naj-do'bre tʃo'vek 'sam da se pribe're i da si pretse'ni.  
'To 'naj-\_o'bre tʃo'\_ek 'sam da se pribe're i da sD pretseD'ni.  
'It is best for one to go back and see things for himself'

Но след като си живял тука десет години тука в Щатите пък и където и да е... нали  
ние ставаме така със две така със... много е трудно да се върнеш обратно към  
нещо което е било.  
No 'sled kato si ži'vjal 'tuka 'deset go'dini 'tuka v 'ʃtatite pāk I kā'deto I da 'e... na'li 'nie  
'stavame ta'ka sās 'dve, ta'ka sās... 'mnogo e 'trudno da se 'vārneʃ o'bratno kām 'neʃto,  
ko'eto e bi'lo.

No 'sled katoD si ʒi'v<sup>j</sup>al 'tuDka 'deset go'dini 'tuka v 'ʃtatiDte pāk i kă'deto I da 'e... na'li  
'nie 'sta\_ame ta'ka sās 'dve, taD'ka sās... '\_nogo e 'trudno da se 'vărneʃ o'bratno kām  
'neʃtoD, ko'etoD e bi'lo.

'But when you have lived here in the States or anywhere else (outside Bulgaria) for ten years, right, we get with two, rally with... it is very difficult to go back to something that was (in the past)'

Така че най-вероятно ще устискаме тука нали.

Ta'ka tʃe 'naj-vero'jatno ʃte u'stiskame 'tuka na'li.

TaD'ka tʃe 'naj-ver\_\_atno ʃ\_e u'stiskame 'tuka na'li.

'So, most likely we will try to stay here, right'

Аз съм взел подобно решение отдавна още като дойдох

'Az sām 'vzel po'dobno re'ʃenie o'tdavna 'oʃte kato doj'dohox.

'Az sǎ\_ '\_zel po'dobno \_e'ʃenie o'tdavna 'oʃte katoD doj'dox.

'I made this decision long time ago when I came (to the US)'

## Interview #2 Eastern Bulgarian Female Speaker

Ами детските градини тук са... Да тука са по-различни отколкото в България

Ami 'detskite gra'dini i 'tuk sa... 'da 'tuka sa 'po-ra'zlitʃni ot'kolkoto v Bǎl'garija.

Ami 'detskite g\_a'di\_i i 'tuk sa... 'da 'tuka sa 'po-ra'zlitʃni \_t'kolkoto v Bǎw'gar\_ja.

'Well, the kindergartens here... yes here they are different from the ones in Bulgaria'

после дето непрекъснато сравнявам има си хубавите и лошите страни

'posle 'deto nepre'kǎsnato sra'vnǎvam .. 'ima si 'xubavite i 'loʃite stra'ni

'pos\_\_ 'deto nepre'kǎs\_\_toD sra'vnǎvam .. 'ima si 'xu\_\_ite i 'woʃ\_teD str\_'ni

'then, I constantly compare (US and Bulgaria) and there are good and bad sides'

не ми харесва това, че спят примерно с обувките в леглата

ne 'mi xa'resva to'va, tʃe 'spʲat 'primerno s o'buvkite v le'glata.

ne 'mi xa'resva t\_'va, tʃeD 'sp-at 'pri:\_\_no s o'buvkiDte v le'gwata.

'I don't like the fact that kids sleep with their shoes on the bed (here in the US)'

и че тоалетните са им в същите помещения където играят и където понякога даже се хранят.

I tʃe toa'letnite sa im v 'səʃtite pome'ʃtenija kă'deto i'grajat i kă'deto po'nʲakoga 'daʒe se 'xranʲat.

I tʃe toa'letniteD s\_ im v 'səʃt\_te pome'ʃtenija kă'deto i'grajat i kă'\_etoD po'nʲak\_ga 'daʒe seD 'xranʲat.

'And the fact that their toilets are in the same quarters where (the kids) play and where they sometimes even eat'

Да много са... много са различни... много са хладни стаите и пият студено мляко  
'Da, 'mnogo sa... 'mnogo sa ra'zlitʃni... 'mnogo sa 'xladni 'staite i 'pijat stu'deno 'mlʲako  
'Da, 'mno\_o sa... 'mno\_o sa ra'z\_itʃ\_iD... 'mno\_o sa 'xwadni 'staite i 'pijat zd\_'\_eno 'mlʲakoD

'Yes, they (the kindergartens in the US) are very different, the rooms are very cool and the kids drink cold milk'

и за мен това е различно и странно ама свиквам, какво да направя и така?

Za 'men to'va e ra'zlitʃno i 'stranno ama 'svikvam ka'kvo da na'pravʲa i ta'ka?

Za 'men t\_'va e ra'zlitʃno i 'stranno ama 's\_ik\_am \_\_\_'kvo \_a na'pra\_\_a i taD'ka?

'For me this is different and strange but I am getting used to it, What can I do?'

Иначе като учебен процес същите неща като в България.

'inatʃe kato u'tʃeben pro'tses 'səʃtite ne'ʃta kato v Băl'garija.

'inatʃe kato u'tʃe\_en pro'tses 'səʃ\_\_te n\_'ʃta kaDto v Băw'gariDjaD.

'Otherwise the study process includes the same things as in Bulgaria'

Рисуват, учат ги на букви на числа, нали, да развиват умения всякакви

Ri'suvat, 'utʃat gi na 'bukvi, na tʃI'sla, na'li, da ra'zvivat... u'menija 'vsʲakakvi.

Ri'suvat, 'utʃat gi na 'bukvi, na tʃI'swa, na'li, da ra'zvi\_at... u'menija 'vsʲak\_kvi.

'(Kids) paint, (teachers) teach them the letters and the numbers and to develop different skills'

нали и за броене и за рисуване и за такива за самопознаване и за самооценка

na'li i za bro'ene i za ri'suvane i za ta'kiva za samopo'znavane i za samoo'tsenka

na'li i za bro'eni i za ri'suvani i za taD'kiva za samopo'znavani i za samoo'tsenka

'And to count and to paint and such things like self awareness and self evaluation'

нали да развиват както в България но има други неща които са много различни

na'li da ra'zvivat 'kakto v Băl'garija, no 'ima 'drugi ne'ʃta, ko'ito sa 'mnogo ra'zlitʃni.



na'li da ra'zvivat 'kakto v Băw'ga\_\_ja, no 'ima 'dru\_i ne'ſta, ko'it\_ sa 'mno\_o ra'zlitſni.  
'right, to develop (skills), the same as in Bulgaria, but there are other things, which are very different'

и тука по- ги остават нали по- ги карат да... абе не ходят много след тях нали. Да!  
Сега ела тука! Аз ще ти помогна нали

I 'tuka 'po- gi o'stav<sup>j</sup>at na'li 'po- gi 'karat da ... abe ne 'xod<sup>j</sup>at 'mnogo sled 't<sup>j</sup>ah na'li. 'Da.  
Se'ga e'la 'tuka! 'Az ſte ti po'mogna, na'li.

I 'tuka 'po- gi o'sta\_\_at na'li 'po- gi 'karat da ... abe ne 'xo\_\_at 'mno\_o sled 't<sup>j</sup>ah na'li.  
'Da. 'S\_\_a e'la 'tuDka! 'Az ſ\_\_ tiD po'mogna, na'li.

'And here they leave kids (alone) more, right, they make them do more... well they are not involved with them so much. Yes (for example)! "Now come here! I will help you, right'

### Phone Conversation #1 Western Bulgarian Male Speaker

Защото ти знаеш нали че ако се опитваш да..., ако се опиташ да правиш далавери нали или се опитваш да не обслужваш клиента както трябва, ами той клиента просто няма да се върне нали.

Za'ſtoto 'ti 'znaeſ na'li tſe ako se o'pitvaſ da... ako se o'pitvaſ da 'praviſ dala'veri na'li ili se o'pitvaſ da ne o'bsluſvaſ kli'enta 'kakto 'tr<sup>j</sup>abva, ami 'toj kli'enta 'prosto 'n<sup>j</sup>ama da se 'vărne, na'li?

\_\_ſ\_\_oto 'ti 'znaeſ na'li tſe ako se o'pitvaſ da... ako s\_ o'pitvaſ da 'pra\_iſ dawa'veri na'li ili se o'pitvaſ da ne o'bsluſvaſ kli'enta 'kaktoD 'tr<sup>j</sup>a\_\_a, ami 'toj kli'entaD 'pros\_oD 'n<sup>j</sup>a\_a\_a se 'vărne, na'li?

'Because you know right, that if you try to... if you try to evade right, or if you do not proved the client with the right service, well he will not come back, right'

ще отиде някъде другаде.  
ſte o'tide 'n<sup>j</sup>akăde 'drugade  
ſ\_e o'ti\_e 'n<sup>j</sup>akă\_e 'dru\_ade  
'he will go some place else.'

Тука не можеш да си позволиш да не обслужваш клиента, докато в България това е масово и повсеместно.

'Tuka ne 'moʒeʃ da si pozvo'liʃ da ne ob'sluʒvaʃ kli'enta, dokato v Băl'garija to'va e 'masovo i povse'mestno.

'Tuka ne 'mo\_\_\_ \_a si pozvo'liʃ da ne ob'sluʒvaʃ kli'entaD, dokato v Băw'garija to'va e 'masovo i povse'mes\_no.

'Here you cannot afford not to service the client, while in Bulgaria this happens all over the place'

не може да... там нали това да те обслужват е отживелица нали.

Ne 'moʒe da... 'tam na'li to'va da te ob'sluʒvat e otʒI'velitsa, na'li

Ne 'mo\_e \_a... 'tam na'li t\_'va \_a te ob's\_uʒvat e otʒI'velitsa, na'li

'It is not possible... there for somebody to serve you is outdated, right'

Ами общо взето само за един ден отидохме до Гърция, до Бяло море.

Ami 'obʃto 'vzeto 'samo za e'din 'den o'tidohme do 'Gărtsija, do 'B'alo mo're.

Ami 'obʃ\_oD 'vzeto 'samo za e'din 'den o'ti\_ohme do 'Gărtsija, do 'B'awo mo're.

'Well, we went to Greece only for a day, to the Aegean see'

Беше много готино. А супер. До Гърция отидохме, да с кола, с приятели от ....., там на .... много добра приятелка.

'Beʃe 'mnogo 'gotino. A 'super. Do 'Gărtsija o'tidohme 'da s ko'la, s pri'jateli ot ....., 'tam na .... 'Mnogo do'bra pri'jatelka.

'Beʃe 'mno\_o 'gotino. A 'super. Do 'Gărtsija o'ti\_ohme 'dwa s ko'la, s pri'jateli ot ...., 'tam na .... 'Mno\_o \_o'bra pri'jatelka.

'It was very nice. Oh super. We went to Greece yes with a car with friends from ... with a very good friend '

Ами то от Благоевград не ами... от Благоевград до Бяло море е някъде два часа и половина, три най-много.

Ami 'to ot Bla'goevgrad 'ne ami.... ot Bla'goevgrad do 'B'alo mo're e 'n'akāde 'dva 'tʃasa i polo'vina, 'tri 'naj-'mnogo.

Ami 'to ot Bla'goevgrad 'ne ami.... ot Blwa'goevgrad do 'B'alw\_ mo're e 'n'akād\_ 'dva 'tʃasa i pol\_'vina, 'tri 'naj-'mnogoD.

'Well, it... no well.. from Blagoevgrad to the Aegean See is a two hour and a half drive, three (hours) at most'

Да бе да абсолютно. Аз това им викам.

'Da be 'da abso'lutno. 'Az to'va im 'vikam.

'Da be 'da abso'lutno. 'Az t\_ 'va im 'vikam.

'Yes, yes, absolutely. That's what I have been saying.'

Първо на първо за хората, които живеят там във тая част дори и във София които живеят, на тях им е по-близо да отидат до Бяло море, отколкото до Черно.

'Părvo na 'părvo za 'xorata, ko'ito zi'vejat 'tam vāv 'taja 'tʃast do'ri i vāv 'Sofija ko'ito zi'vejat, na 'tʃah im e 'po-'blizo da o'tidat do 'Bʲalo mo're otkolkoto do 'Tʃerno.

'Părvo na 'părvo za 'xorata, ko'it\_ zi've\_at 'tam vāv 'ta\_a 'tʃas\_ do'ri i vāv 'Sofija ko'it\_ zi've\_at, na 'tʃah im e 'po-'blizo da o'ti\_at do 'Bʲalwo mo're otkolkoto do 'Tʃerno.

'First of all, for the people who live in that part (of the country) even in Sofia, for them it is closer to go to the Aegean Sea instead of the Black Sea'

## Phone Conversation #2 Eastern Bulgarian Female Speaker

Аха да вие какво правите друго? А ние работим какво да правим?

A'xa 'da, 'vie ka'kvo 'pravite 'drugo? 'A 'nie ra'botim ka'kvo da 'pravim.

A'xa 'da, 'vie \_\_\_k\_o 'pra\_ite 'drugo? 'A 'nie ra'bot'im \_\_\_kvo \_a 'pra\_im.

'Aha yes, what else are you doing? Well, we are working, what else can we do?'

Ами ние ходихме да гласуваме и така се запознахме с тях

Ami 'nie 'xodixme da gla'suvame I ta'ka se zapo'znaxme s 'tʃax.

Ami 'nie 'xodwixme da glwa'suvwame I ta'ka s\_ zapo'znaxme s 'tʃax.

'Well we went to vote and there we met them.'

Представяш ли си ние ходихме да гласуваме.

Pred'stavʲaʃ li si 'nie 'xodixme da gla'suvame.

Pre\_'stav-aʃ \_i si 'nie 'xodwixm\_ da gla'suvam\_.

'Can you imagine, we went to vote?'

ходихте ли вие? Ходихте ли вие?

'Xodixte li 'vie? 'Xodixte li 'vie?

'Xod'ixt'e l'i 'vie? 'Xod'ixt'e l'i 'vie?

'Did you go to vote? Did you go to vote?'

Ами какво да ти кажа? Аз... гледахме тука нали накрая резултатите

Ami ka'kvo da ti 'kaʒa? 'Az... 'gledaxme 'tuka na'li na'kraja rezul'tatite.

Ami k\_ 'kvo da tiD 'kaʒa? 'Az... 'g\_edwaxme 'tuka na'li na'kra\_a rezulw'tatiDte.  
'Well, what can I tell you? I ... we watched here the results at the end'

Аз значи... То сигурно е ставало шоу по самите избори при вас ама...  
'Az, 'znatʃi... 'To 'sigurno e 'stavalo 'ʃou po sa'mite 'izbori pri 'vas ama...  
'Az, 'znatʃi... 'To 'sigu\_no e 'sta\_alwo 'ʃou p\_ sa'mit'e 'izbor'i pri 'vas ama...  
'I, you know... It sure must have been a show during the elections but.... '

Ами не, нещо там на края сега като се карат кой да вземе правителството  
Ami 'ne, 'neʃto 'tam na 'kraja se'ga kato se 'karat 'koj da 'vzeme pra'vitelstvoto...  
Ami 'ne, 'neʃto 'tam na 'kraja se'ga katoD se 'karat 'koj da ' \_ 'z'eme pra'\_it'e\_stvoDtoD...  
'Well no, something there at the end now when they bicker who will take the government... '

А да верно. Нещо друго да се похвалиш?  
A 'da 'verno. 'Neʃto 'drugo da se po'xvaliʃ?  
A 'da 'verno. 'N'eʃto 'drugwo dwa se po'xvaliʃ?  
'Ah yes true. Something else new with you?'

Кое? Ами не, майка беше питала оня ден че много валило.  
Ko'e? Ami 'ne, 'majka 'beʃe 'pitala 'on'a 'den tʃe 'mnogo va'l'alo.  
Ko'e? Ami 'ne, 'majka 'beʃeD 'pitalwa 'on'a ' \_en tʃe 'mno\_o va'l'alwo.  
'Which one? Well no, my mom had asked the other day because it had rained a lot.'

Ама аз нали бях... Сериозно? и ужас... абе да...  
Ama 'az na'li 'bjah ... Se'rjozno? I 'uʒas... abe 'da...  
Ama 'az na'li 'bjah ... Se'rjozno? I 'uʒas... abe 'da...  
'Well I was... Seriously? Oh my god... well yes... '

И защо? Абе да, ама къде е това, къде се пада?  
I za'ʃto? Abe 'da, ama kǎ'de e to'va kǎ'de se 'pada?  
I za'ʃto? Abe 'da, ama kǎ'\_e e t\_ 'va kǎ'd'e se 'padwa?  
'Why? Ah yes, but where is it, where does it fall?'

Това да. И ужас, ама това само в ... ли е или на всякъде?  
To'va 'da. I 'uʒas, ama to'va 'samo v ... li e ili na' vs'akǎde?  
T\_ 'vaD 'da. I 'uʒas, ama t\_ 'va 'samo v ..... li e ili na' \_s'akǎde?

'Yes, this. Oh my god, is this happening only in Gabrovo, or elsewhere?'

Да, тъй ли? А кофти ами да, да те оставям да гледаш (150)

'Da 'tǎj li? A 'kofti ama 'da, da te o'stav'am da 'gledaʃ.

'Da 'tǎj li? A 'kofti ama 'da, da te o'sta\_\_am da 'gl'edaʃ.

'Yes, really? Ah, this is not good, but yes, I will let you watch...'

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