

Prosody as a Community Code (Russian, British and American women in radio talk)

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ABSTRACT

The paper addresses the issue of sociocultural constraints on prosodic modulation in pitch, loudness and tempo in a community. Three areas of research into conventional prosody are identified: cross-language (English–Russian), cross-dialect (British-American) and social (two sociocultural groups within each major division). Recordings of 10 Russian, 10 British and 10 American women radio interviews and talks were normalized, processed and compared. The results are: Russian women speak faster, louder, with higher pitch but less resonance. British women's speech is less loud, slower, more resonant. Dialect-specific features are more gradient than contrastive: higher pitch, lower accentual duration contrast in American women's speech. Sociocultural trends have a lot in common: a higher sociocultural level is associated with increase in intensity and resonance, with slower tempo, higher contrast between accented and non-accented syllables.

1. INTRODUCTION

Who speaks faster, louder, and with more resonance? Will these differences be linguistic, social or ethnic, for that matter? Do we have to concentrate on the differences only when there is need for empathy, for understanding in intercultural paralinguistic communication? At which sociocultural level do we find more common features, i.e. a community code we can share?

Among the questions we have asked the major one in work on prosodic cultural characteristics is to what extent distinctive cultural features are due to linguistic structure and to what extent they are due to social convention. The present research has been designed as an attempt to separate these aspects by looking first at cross-linguistic distinctions, then cross-dialect features, with special reference to sociocultural group differentiation at each stage of analysis.

In a cross-cultural study of 10 Russian, 10 British and 10 American women who were engaged in radio talks and interviews a number of prosodic parameters of F_0 , intensity and duration as well as their combinability for such complex phenomena as accent, for instance, have been attested and compared. The recorded texts of authentic speech were normalized at 60 sec, then processed with the

help of IBM-Speech Viewer and WinCecil-2.1. Each group of speakers was further subdivided into two sociocultural strata (5 women in a subgroup) by native speakers of a language (Russian) or a variety of a language (British or American). Auditory impressions of native judges were correlated with occupational background of speakers which gave us grounds to regard the two subgroups as two strata in the middle class: Group I - 'middle middle class' and Group II - 'lower middle class'.

2. PREVIOUS WORK

2.1 Cross-Language Studies

Cross-language research in prosody has so far been focused on the structural aspect of pitch patterns which are capable of distinguishing speech communities. Starting with G.P. Torsuyev whose paper was published as early as in 1939, there have been plenty of cross-language experiments, based on laboratory speech mainly, in which Russian-English contrastive analysis was involved [1]. The basic findings are concerned with very fine structural and, partly, functional differences relevant for teaching English as a second language. They can be summed up as follows: in contrast with English, Russian is reported to have a lower starting -point and a higher ending- point in a tone-group, a steeper rise and a more smoothly going falling tone. However, most of the interference on the prosodic level is caused by 'misbehavior' of unaccented syllables (enclitics) which tend to leave the preceding nucleus and either go up or down, as the case may be in the rising tone of a general question. Functionally, though, pitch patterns in statements, questions, exclamations and commands are similar, the only exception being the falling tone in requests.

We know very little, however, about long-term prosodic characteristics, such as specific pitch-settings, including the width of the linguistic range and its placement within the organic range, a typical average loudness range and an average duration of syllables which represents tempo of speech [2]. There are claims based on auditory impressions that Russian speakers tend to employ loudness for emphasis where English resorts to pitch, that RP voice is husky, while Russian speech is more resonant, that British English speakers talk very fast [3]. We know for a fact, because it has been supported by experimental evidence, that in emotional speech both languages, English and Russian,

employ similar means of intensity, duration and pitch change but the English language increases the contrast between accented and unaccented syllables to a greater degree [4].

2.2 Cross-Dialect and Social

In cross-dialect research on North American and British English it was the width of the pitch range, the rhythm and tempo of speech which have been proven decisive. American spoken English, especially men's talk, has been consistently reported to possess a narrow pitch range, a level wavy head in the pitch contour with a rise-falling terminal tone, monotonous rhythm and slow tempo [5]. According to D. Bolinger, social convention accounts for the particular shape of American pitch patterns, like a rising tone in statements, for example [6]. Much evidence has been accumulated to support this view.

When differentiated socially and regionally, both major varieties of English have displayed common trends: they either follow oral folk tradition or comply with higher sociocultural tradition of formal public speech [7]. Prosodically the key points of difference between the two were the width of pitch range and the configurations of pitch patterns. Further research into loudness, tempo and voice quality has been called for.

We have also considered previous results achieved by other methods of analysis in the Russian prosody. In an extensive study carried out at St. Petersburg University it has been found that out of 19 prosodic characteristics there are only seven which correlate significantly with the sociocultural level of Russian speakers [8]. By looking carefully at these parameters we find that most of them are based on pitch variation, one on intensity and one on voice quality. Among the pitch parameters pitch range comes first.

Thus we can hypothesize that in every culture under consideration pitch range comes to the fore, that pitch variability is also positively assessed, and that rhythm, accent and voice quality are the least investigated objectively in the cultural aspect.

3. THE RESULTS OF THE PROSODIC ANALYSIS

3.1 Russian-British English

Long-term prosodic characteristics were obtained on the basis of 20 min recordings, 10 Russian and 10 British women, 5 for each sociocultural group, 6 tokens at 4.24' or 11.84' for an individual speaker. The measurements were averaged over 6 tokens, then group means were tabulated and compared across two cultures and two subculture groups. We used IBM-Speech Viewer (SV) program to register long-term frequency data (Fo mean and modulation), intensity (Int mean and modulation) and resonance (mean and modulation). Win Cecil 2.1 was used for Fo range (Fo min and Fo max), Int range, syllable

duration measurements.

Subjects: a number of sociolinguistic variables were kept constant in speaker selection, such as regional background (metropolis, Moscow or London area), age (around 40), gender (female), channel (radio or TV), topic (about herself, job routine or family life). The major stratifying factor is occupation. The four referential groups areas follows. Russian: Group I: 2 actresses, TV journalist, manager, doctor. Group II: engineer, student, librarian, retired actress, teacher. English: Group I: MP, actress, lawyer, singer, teacher. Group II: secretary, 3 housewives, musician. The correlation analysis based on objective data was supported by subjective impressions of native speakers of the language about the presence/absence of regional accent, fluency of speech, possible voice training, etc.

We have considered each parameter first indiscriminately as regards the sociocultural division, then had a closer look at each social group data. The first observations in the overall prosodic analysis concern Fo mean: both language groups are characterized by similar values (193 Hz and 197 Hz). Average intensity levels suggest that the Russian women sound louder (9.2 vs. 5.2). Resonance is higher in the British group (30 vs.18). To this we can add that syllable duration values are lower in the Russian group (around 170 ms) which is a sign of rather fast tempo, compared to the average tempo of the British English speakers (220 ms).

Sociocultural group affiliation reveals more detail on the two modes speakers of both languages employ intensity and its modulation. As evidenced by intensity levels and intensity modulation data, in Russian and British groups speakers who have a higher sociocultural level tend to have a higher level of intensity and a higher value of its modulation. Resonance which may serve as voice quality characteristics also appears to be sensitive to sociocultural distinctions: in the Russian group there is a marked contrast of 25.6 vs. 10.9, whereas in the British group it is 32.6 vs. 27.5 (Cf. Table 1).

Group	Int mean	Int modul.	Reson.	Fo mean	Fo modul.
Russian I	11.4	8.6	25.6	194 Hz	34
II	7.0	4.7	10.9	192 Hz	28
English I	6.5	7.9	32.6	187 Hz	37
II	3.8	5.1	27.5	206 Hz	37

Table 1: Intensity, resonance and fundamental frequency in four sociocultural groups.

Another prosodic parameter to characterize the overall impression of the speaker's voice is Fo mean. Here we can find more evidence to support our previous finding: in the British English community women of higher social status have lower, deeper voices. Russian women in both sociocultural groups speak in comparatively high-pitched voices. Russian lower-status group is also marked by a drop

in Fo variation. This indicates that inherently the Russian language does not utilize pitch variation to the same degree as English (Cf. Table 1).

Temporal characteristics reveal themselves in average syllable duration data. These confirm a well-established fact that higher sociocultural status is associated with careful, distinct manner of articulation and, therefore, slower rate of speech in both languages, Russian and English. (Cf. Table 2).

Language	Social group	Syllable duration
Russian	Group I	176 ms
	Group II	163 ms
English	Group I	227 ms
	Group II	211 ms

Table 2: Average syllable duration in four groups.

Our next point of interest will be the accentual means of creating rhythm. As is well known, in both Russian and English the contrast between accented and unaccented syllables is provided by all the prosodic means of intensity, fundamental frequency and duration plus spectrum which takes care of vowel quality. These operate simultaneously and may have trading (compensatory) relations. Which component is more important for either language? A lot of controversial arguments have been put forward to this effect. We will not consider them until after the present study results have been exposed. Let us look at accented/unaccented syllable duration first and the contrast in length it creates. The data show that in Russian the contrast is 53-55 ms, while in English it is considerably greater: 120-134 ms, which makes an English accented syllable 1.7-1.8 longer than an unaccented one (Cf. Table 5). The duration contrast is higher in upper sociocultural groups.

Group	Accent	Unacc.	Contrast	Ratio
Russian I	224 ms	169 ms	55 ms	1.32:1
	194 ms	141 ms	53 ms	1.37:1
English I	304 ms	169 ms	135 ms	1.79:1
	296 ms	176 ms	120 ms	1.68:1

Table 3: Duration in accented/unaccented syllables in Russian and British English.

It is interesting to observe how much of this syllable length contrast is due to vowels which are so different in Russian and English phonologically. As is indicated by the following data (See Table 6), vowels are responsible for about half of the contrast in Russian (21-22 ms) and about one third (35-40 ms) in English. Language-specific, or rather Moscow regional, is the prolongation of vowels in low-status group which, nevertheless, does not improve the contrast between accented and unaccented vowels.

Group	Acc. Vowel	Unacc. Vowel	Contrast
Russian I	96 ms	74 ms	22 ms
	103 ms	82 ms	21 ms
English I	123 ms	88 ms	35 ms
	120 ms	80 ms	40 ms

Table 4: Duration in accented/unaccented vowels in Russian and British English.

Intensity of vowels is invariably more contrastive in higher sociocultural groups, while Fo values are specifically low in the British English upper sociocultural level group and in the Russian lower-status group (See Table 5).

Group	Int acc.	Int unacc	Dif	Fo acc.	Fo unacc.	Diffr.
R I	33	22	11	248 Hz	195 Hz	53 Hz
R II	21	16	5	159 Hz	128 Hz	31 Hz
E I	29	20	9	194 Hz	135 Hz	59 Hz
E II	30	23	7	201 Hz	168 Hz	33 Hz

Table 5: Intensity and Fo in Vowels.

We have explored Russian – British English at both linguistic and social angles. Further British – American cross-dialect research will help differentiate which of the features observed in our analysis may count as purely linguistic and which are a product of other influences of the sociocultural nature.

3.2 American English – British English

American group of subjects consisted of 10 women speakers recorded on the radio in San Francisco and Boston. They were divided on the basis of native speakers impressions correlated with occupation data into two sociocultural groups (5 women in each subgroup). Group I: radio presenter, writer, lawyer, University professor, actress. Group II: secretary, three housewives, office worker.

Following the same methods of cross-cultural comparisons we have found that most of the tendencies discovered at the previous stage of our research hold good for the present stage as well. Starting with intensity and fundamental frequency we can state with confidence that just like British higher sociocultural level group, American Group I demonstrates higher intensity level (34db vs. 31db), lower Fo mean (211 Hz vs. 233 Hz), greater Fo modulation (29 vs. 12) and an average pitch range which is by 2 semitones wider than in the other group (6.7 st vs. 4.3 st). The absolute values may be different, of course, with social contrast sharper in the American group of a lower status where there is an exceptionally low level of Fo modulation representing leveling in pitch patterns. (Cf. Table 6). To avoid repetition we will adduce only contrastive data here.

Group	Fo mean	Modulation
American I	211 Hz	29
II	233 Hz	12
British I	187 Hz	37
II	206 Hz	37

Table 6 Fundamental frequency data in American and British groups.

We will now focus our attention on duration parameter in accented and unaccented syllables because here both temporal and rhythmic characteristics are best revealed.

Group	Acc/Unacc. Time	Contrast	Ratio
American I	232 ms /146 ms	87 ms	1.58:1
II	229 ms/151 ms	78 ms	1.52:1
British I	304 ms/170 ms	134 ms	1.79:1
II	296 ms/176 ms	120 ms	1.68:1

Table 7: Accented and unaccented syllable duration data in American and British English groups.

The first, and quite unexpected, finding is that British women speak slower than American women. The second observation, which has already been commented upon, is the greatest accentual duration contrast in British English. In the upper social groups the difference between American and British performances is that an accented syllable is longer than unaccented by 1.5 vs. 1.8. In the lower social groups, as expected, the difference drops a little: 1.5 vs. 1.7.

CONCLUSIONS

The theoretical implications of the findings are that for the Russian language intensity, together with pitch and length, is a very important means of accentuation, while for the English language duration, on a par with pitch and intensity, proves to be specifically relevant for the purpose.

The sociocultural implications are that there are a number of common features in prosody which are positively assessed in every culture involved in the analysis, and which can be a good basis for understanding and empathy in cross-cultural communication. These are higher intensity level, more resonance, higher pitch modulation, slower rate of speech and greater contrast between accented and unaccented syllables. However, the conventional norm may vary with culture: the duration contrast for accented/unaccented syllables is 1.3 for Russian, 1.5 for American English and 1.8 for British English, for example. Then there are preferences as regards the female pitch: in the Russian community a higher sociocultural level is associated with higher-pitched voices which may sound genteel, feminine and weak. For the upper British and American culture lower-pitched female voices are typical,

which may bear the connotations of authority, power and strong character.

Lower-status Russian group is characterized by a drop in all the parameters, except duration caused by prolongation of vowels, both accented and unaccented (Moscow drawl), which results in the “fading” effect. Lower-status British female voices are highly pitched and may be called ‘shrill’. Lower-status American English speech possesses an exceptionally low level of pitch modulation, a sign of leveled out pitch patterns.

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