Prosody of contrastive adjectives in mono- and bilingual speakers of English and Russian: a corpus study

Sabine Zerbian¹, Marlene Böttcher², Yulia Zuban¹

¹University of Stuttgart, Germany
²University of Kiel, Germany

{sabine.zerbian,yulia.zuban}@ifla.uni-stuttgart.de, mboettcher@isfas.uni-kiel.de

Abstract

The study reports on the frequency of occurrence and prosodic realization of adjective-noun phrases in which the adjective is contrastively focused. The productions of bilingual speakers are investigated in both their languages, Heritage Russian and majority English. The data are extracted from a corpus of semi spontaneous speech which was collected in a comparable way from mono- and bilingual speakers in the U.S. and Russia.

Results of the analysis show that there is a language-specific difference in that Russian speakers use ADJ+C+N combinations less frequently than English speakers despite a reported parallel between the languages in terms of semantics and prosody. Moreover, English and Russian seem to differ in their accentuation pattern in ADJ+C+N. Speakers of Russian as a Heritage Language frequently use double accents in ADJ+C+N. Across English and Russian, double accents in ADJ+C+N occur more frequently in formal than in informal situation, and more frequently in bilingual than in monolingual speakers.

The results are discussed in light of the often reported tendency in heritage language grammars to avoid ambiguity.

Index Terms: prosody, English, Russian, adjective, contrast, monolingual, bilingual

1. Introduction

The use of prosody for the expression of information structure can be seen to represent an external interface which has been claimed to be particularly open for change in bilingual speakers (Interface Hypothesis, [1]). The change might affect one or both of bilingual speakers’ languages.

The prosodic expression of focus and contrast within a noun phrase is a particularly interesting domain to investigate because languages differ in their prosodic marking of information structure not only at the sentence level but also at the level of noun phrases (e.g. [2]).

Experimental studies on the prosodic realization of contrastive adjectives have shown that cross-linguistic influence can be found in bilingual speakers’ languages ([3] for English in English-Zulu contact, [4] for Spanish in Spanish Quechua contact, [5] for Dutch in Dutch-Turkish contact; for both languages in L2 learning e.g. [6] for Dutch-French, [7] for Dutch-Spanish). In these language pairings, the prosodic realization of contrastive adjectives differed in the languages involved, e.g. through pitch accent in English but without prosodic marking in Zulu (see [3]).

The current research investigates possible bidirectional influence in the prosodic expression of contrastive adjectives in the English and heritage Russian of bilingual speakers in the U.S. In contrast to the language pairings mentioned above, English and Russian share the option of prosodically marking contrastive adjectives through pitch accents (see section 2). They differ in the availability of additional syntactic means to indicate contrast. Should prosodic differences emerge in the prosodic marking of contrastive adjectives in bilingual speakers despite the similarity of available means, this would provide further evidence for the Interface Hypothesis.

In contrast to the methodology in previous research on this topic, the current research will draw on corpus data which contain contrastive adjectives.

The paper is organized as follows: Section 2 provides relevant background on the prosodic expression of contrast in noun phrases in English and Russian (2.1), on heritage languages (2.2) and on previous research on their prosody (2.3). Section 3 presents the corpus, search methodology for selecting target structures and the annotations. Section 4 presents the results of the analysis, which are discussed in section 5.

2. Background

2.1. Prosody in noun phrases in English and Russian

In a modified NP, such as a blue car, a pitch accent on the noun (indicated by capital letters), as in (1a), can indicate a focus only on the noun or on the entire NP. A pitch accent on both adjective and noun, as in (1b), can indicate focus on the noun and on the adjective, focus on the entire NP or only on the noun (with a prenuclear accent on the adjective in both cases) [2: 8]. However, an accent on the adjective (and co-occurring deaccentuation of the noun), as in (1c), can only indicate narrow focus on the adjective. For Russian, the parallel has been reported [8: 57, 9: 4-5].

(1) Prosody and interpretation in modified NPs in English

a. a white CAR = [a white car]RF OR a white [car]RF
b. a WHITE CAR = [a white]RF [car]RF OR (1a)
c. a WHITE car = [a white]RF car

Both English and Russian thus seem to use comparable prosodic means for the expression of contrast on the adjective in an NP. Russian also has syntactic options to express the contrast (see 2b). One particular option is the split construction, as in (2c).

(2) Split construction in Russian [10]

a. Položite KRAŠnuju zvezdočku v Poziciju 4. put red.ACC,FEM star.ACC,FEM in position 4
b. KRAŠnuju zvezdočku položite v Poziciju 4.
c. KRAŠnuju položite zvezdočku v Poziciju 4.
“Put the RED star in the position 4.”
Against this background, the question is how bilingual speakers of Russian in the U.S. produce NPs with a contrastive adjective in both their languages, namely Russian as their Heritage language (HL) and English as the majority language (ML).

2.2. Heritage languages

The term heritage speaker (HS) refers to bilinguals of a weaker heritage language (HL) usually spoken at home that is different from the language of the surrounding community (majority language, ML) [11, 12]. Speakers of heritage languages are thus bilingual speakers using both their HL and their ML in everyday life. Individual language skills might differ across speakers and language domains (reading, writing, speaking, listening).

2.3. Prosody in Heritage and Majority Languages

Previous research has shown that although the phonology of an HL is less affected by change than other areas of grammar, such as morphology or syntax [12; 115], HL speakers are recognizable by their overall accent [13].

In terms of prosody, various studies have documented cross-linguistic influences between the two languages. [14] reports an influence of the ML onto the HL in the prosodic expression of information structure in Heritage French spoken in Frenchville French. [5] report a possible influence of Turkish on Dutch ML concerning global intonation patterns across the utterance, such as declination. [15] reports a bidirectional influence of English and Icelandic in the prosodic realization of yes/no-questions. [16] report on differences in phonetic implementation of yes/no-questions in heritage Russian in different countries.

The existing studies thus draw a picture of fine-grained influences in the prosody of ML and HL in situations of language contact. Against this background, the current study investigates the accentuation patterns in modified noun phrases which contain a focused adjective in (majority) English and (heritage) Russian.

3. Methodology

3.1. Corpus

The data analyzed for this work form a subset of the RUEG corpus, accessible as the “Subcorpus Spoken Preview”. The RUEG corpus was collected by a research group eliciting narrations of a car accident in spoken and written mode in formal and informal situation by participants of two age groups (adults, adolescents) [17, 18].

The video stimulus used in the elicitation depicted two cars of different colors driving into each other in a minor accident. This scene provided an opportunity to produce a contrastive focus in a modified NP.

Participants contributed data in their heritage language (Turkish, Greek, or Russian) and their majority language (English, German). Additionally, data from monolingual speakers in Turkey, Greece, Russia, Germany and the U.S. was collected for comparison reasons.

The subcorpus Spoken Preview on which the analyses in this work are based contains the data of the English and Russian monolingual and bilingual speakers from the spoken tasks of the elicitation session. These have been transcribed and annotated for pitch accent location and type in ToBI [19, 16].

3.2. Participants

The subcorpus Spoken Preview contains the data of English monolingual speakers and bilingual English speakers in the U.S. with Russian as a Heritage language, and Russian monolingual speakers and Heritage Russian speakers in the U.S. as given in table 1.

All bilingual Russian speakers were either born in the U.S. or moved there before the age of 4 years. Elicitations took place in the greater Washington area (Virginia, Maryland) and in St. Petersburg.

Given that no differences emerged in the frequency of occurrence and prosodic patterns according to age group, the data of both age groups are merged in the following.

Table 1: Speakers in subcorpus Spoken preview.

<table>
<thead>
<tr>
<th>Language</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>English monolingual</td>
<td>36</td>
</tr>
<tr>
<td>adolescents</td>
<td>24</td>
</tr>
<tr>
<td>adults</td>
<td>12</td>
</tr>
<tr>
<td>English bilingual (Russian HL)</td>
<td>60</td>
</tr>
<tr>
<td>adolescents</td>
<td>30</td>
</tr>
<tr>
<td>adults</td>
<td>30</td>
</tr>
<tr>
<td>Russian monolingual</td>
<td>40</td>
</tr>
<tr>
<td>adolescents</td>
<td>20</td>
</tr>
<tr>
<td>adults</td>
<td>20</td>
</tr>
<tr>
<td>HL Russian</td>
<td>53</td>
</tr>
<tr>
<td>adolescents</td>
<td>31</td>
</tr>
<tr>
<td>adults</td>
<td>22</td>
</tr>
</tbody>
</table>

3.3. Annotation

Because the car accident prompted a contrast, a lexical search was performed on the corpus for the noun “car” immediately preceded by an adjective. The resulting hits were annotated manually for contrastive focus. The guidelines in [20] were followed which distinguish four types of contrastive focus, given in table 2. The distinction will be addressed again in the discussion section.

Table 2: Contrastive focus [20].

<table>
<thead>
<tr>
<th>Label</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>cf-repl</td>
<td>replacement/correction</td>
</tr>
<tr>
<td>cf-part</td>
<td>introduced together as one NP e.g. <em>the two cars</em> before contrasting the two individual referents</td>
</tr>
</tbody>
</table>

1 Russian:
https://korpling.org/annis3/#_c=UIVFRy1SVS1TUE9LRU5fUFJFVkJFVYoMDixLTA3LTA1

English:
https://korpling.org/annis3/#_c=UIVFRy1FTt1TUE9LRU5fUFJFVkJFVw
The Adj+\(\text{N}\) phrases extracted from the corpus were annotated for relative prominence by the second and third author of the study.

4. Results

This section presents the results of our corpus study, starting with the frequency of occurrence of the structure (4.1), followed by the observed accentuation patterns (4.2).

4.1. Frequency of occurrence

From a first inspection of the data, it emerged that not all speakers produced Adj+\(\text{N}\). Table 3 gives the number of speakers for each speaker group who actually produced the target structure.

Table 3: Number of speakers producing Adj+\(\text{N}\).

<table>
<thead>
<tr>
<th>Language</th>
<th>Speakers in subcorpus</th>
<th>Speakers (%) using Adj+(\text{N})</th>
<th>(\emptyset) Words/nouns per narration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mono English</td>
<td>36</td>
<td>26 (72%)</td>
<td>136/51</td>
</tr>
<tr>
<td>Bilingual English</td>
<td>60</td>
<td>47 (78%)</td>
<td>160/64</td>
</tr>
<tr>
<td>Mono Russian</td>
<td>40</td>
<td>18 (45%)</td>
<td>93/41</td>
</tr>
<tr>
<td>Russian HL</td>
<td>53</td>
<td>32 (60%)</td>
<td>120/52</td>
</tr>
</tbody>
</table>

Table 3 shows that fewer monolingual speakers of Russian use this structure than speakers of other varieties (45%). Also those who do use it, use it less frequently than speakers of other varieties, as is shown in the 3rd column of Table 4 which presents the number of occurrences across speaker and settings.

Table 4: Occurrences across speakers and situation.

<table>
<thead>
<tr>
<th>Language</th>
<th>Speakers using Adj+(\text{N})</th>
<th>Adj+(\text{N}) instances</th>
<th>Adj+(\text{N}) per speaker</th>
<th>Situation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mono English</td>
<td>26</td>
<td>88</td>
<td>3.38</td>
<td>formal: 55</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>informal: 33</td>
</tr>
<tr>
<td>Bilingual English</td>
<td>47</td>
<td>208</td>
<td>4.4</td>
<td>formal: 132</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>informal: 75</td>
</tr>
<tr>
<td>Mono Russian</td>
<td>18</td>
<td>23</td>
<td>1.28</td>
<td>formal: 14</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>informal: 9</td>
</tr>
<tr>
<td>Russian HL</td>
<td>32</td>
<td>89</td>
<td>2.78</td>
<td>formal: 55</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>informal: 34</td>
</tr>
</tbody>
</table>

The average number of words and nouns in the narrations differs across varieties and languages, which might partly explain the lower use (note that heritage speakers produce longer narrations, contrary to what is reported in [12: 48]). However, we think that there is also a syntactic reason for why it is used less frequently in Russian, which will be taken up in the discussion section.

Across speaker groups, Adj+\(\text{N}\) is more frequently used in the formal situation than in the informal. Also, bilingual speakers use Adj+\(\text{N}\) more frequently than monolingual speakers of the same language. Again, this might also have to do with longer narrations and more nouns in bilinguals’ speech as compared to monolinguals, but we do not think that length of narrations fully accounts for this, as will be addressed in the discussion section.

4.2. Accentuation pattern

Figure 1 reveals that in the English data, the expected preference of a single pitch accent on the adjective (yellow bar) prevails across situations and speaker groups. It can also be noted that bilingual speakers (on the left) have a higher percentage of double accents (dark green bar) overall. Across both speaker groups, there is a higher percentage of double accents in the formal situation (left set of bars per speaker group) as compared to the informal situation.

Figure 2 shows that in the Russian data, bilingual speakers show a preference for double accents (dark green bar) in both formal and informal situations. The expected preference of a single pitch accent in the adjective (yellow bar) only holds for monolingual speakers in the informal situation (very right diagram). Double accents also seem to prevail in monolingual speakers in the formal situation although the numbers of the monolingual speakers are really too low to formulate any strong claims. An increased use of double accents can be seen in the formal situation (only monolinguals) and overall in bilingual speakers (to the left), similar to the English data.

In general, there seems to be a language-specific difference in that speakers of Russian use the structure less frequently than speakers of English.

814
4.3. Summary

The investigation of the corpus thus reveals the following:

- Russian speakers use ADJ+CF+N combinations less frequently than English speakers despite the reported parallel in terms of semantics and prosody.
- English and Russian differ in their accentuation pattern in ADJ+CF+N.
- Speakers of Russian HL frequently use double accents in ADJ+CF+N.
- Across English and Russian, double accents in ADJ+CF+N occur more frequently in formal than in informal situation, and more frequently in bilingual than in monolingual speakers.

5. Discussion

Our first exploration of the corpus suggests that ADJ+CF+N are used less frequently in Russian than in English which seem to suggest a difference between the two languages.

First, the two languages differ in their syntax in that English has a rigid SVO word order, whereas Russian allows for word order changes for the expression of information structure, such as inversion, dislocation, split constructions (e.g. [21] for word order in Heritage Russian (U.S.)). This difference could explain the low occurrence of ADJ+CF+N in the monolingual Russian data. A search in the corpus for the occurrence of these syntactic constructions would shed more light on this.

The emergence of the accent on the adjective in the English data shows that the methodology used was suitable to elicit narrowly focused adjectives in a spontaneous narration. However, prosody seems to be differing across Russian and English, as the preferred accent on the contrastive adjective only emerges clearly for the English data. Prosody as a possibly weak cue to contrastiveness was found for Russian in the processing study by [22:296]. [22] also pointed out the need for an overt establishment of contrast for prosodic cue to have an effect. An even closer analysis of the information structural contexts would therefore be needed in future work.

The increased use of double accents in bilingual speakers of both Heritage Russian as well as English (though to a lesser extent in the latter) could be interpreted as an indicator of bilingualism. It might be based in an effort to avoid ambiguities and be more explicit, thus producing more enunciated accent patterns.

However, a listener’s interpretation of the double accents in terms of information structure is problematic, at least according to a grammar in which double accent is mapped onto double focus, N focus or NP focus, but explicitly not adjective focus. This warrants more research into the acceptability and interpretation of this utterances on the side of listeners, following the more general question whether differences observed are possibly due to processing limitations (thus slower, more enunciated and accented speech) or structural changes in the heritage grammar. The latter is particularly interesting because it would indicate that heritage speakers have a different grammar [12: 66].

Moreover, interpreting double accents as a general feature of bilingualism makes the clear prediction to find an increased use in all bilingual speaker groups. However, this has not been found in the English of heritage speakers of Greek [23].

6. Outlook

Next to the issues raised in the discussion section, there are further open questions that will be addressed in the continuation of our research.

One aspect is that contrast seems to have been encoded differently across speaker groups; selective contrast is produced more frequently by bilingual speakers. In the Russian data this category makes up more than half the cases produced by heritage speakers (n=64; 61%) compared to only one third produced by monolinguals (n=7, 30%). In the English data a similar trend can be observed with bilinguals producing selective contrast more frequently (n=43; 20%) compared to the monolingual speakers (n=9; 10%). The most frequent contrast category for the English data is an implicit contrast with comparable use across speaker groups (bilingual n=84; 40% vs mono n=34; 41%). The same holds for the Russian monolinguals (n=9; 39%). For Russian HS, cf-sel is the most frequent contrast category overall.

This relates to a second aspect regarding the lexical choice of the adjective, which differs across Russian speakers: monolingual speakers use adjectives which inherently imply a contrast (“cf-impl”, i.e. other, first, second) in nearly half the cases, HS in 1/10, who mostly used color adjectives. [23] interprets a similar distribution in her English data and the high number of double accents produced in the Cf-impl contrast category in that the contrast is already/partially expressed lexically and allows for more ambiguous prosody (but see [24, 25; cited in [2: 239] for a more likely accent on the adjective in such cases).

7. Acknowledgements

This research has been funded by the German Research Foundation, grant to the Research Group 2537 “Emerging Grammars in language contact situations”, project P8, PI S. Zerbian. Thanks to the audience at the RUEG retreat for helpful feedback.

8. References
