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INTONATION AND CONVERGENCE:
EVIDENCE FROM BULGARIAN JUDEO-SPANISH

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Abstract: We address the intonation of Bulgarian Judeo-Spanish (*Djudezmo*), a diaspora variety of Spanish brought to the former Ottoman Empire by the Sephardic Jews after their expulsion from the Iberian Peninsula in the late 15th century and still spoken by their descendants in the respective communities. Based on readings of *The North Wind and the Sun*, recorded by four *Djudezmo*-Bulgarian bilinguals and four Bulgarian monolinguals (age: 79–88, sex: fem., data collection: Sofia 2011/2016) we show that the bilingual speakers use the same inventory of pitch accents and boundary tones in both of their languages and that they differ from the Bulgarian monolinguals only in the frequencies of pre-nuclear H* and L+H* on penultimate stress words. This speaks in favor of convergence of *Djudezmo* with the speakers' dominant language, Bulgarian, at the level of intonation.

Key words: intonation, convergence, bilingualism, Bulgarian, Judeo-Spanish

1. Introduction and research questions

Judeo-Spanish is a collective term referring to the varieties of Spanish spoken by the Sephardic Jews after their expulsion from Spain (1492). The language had evolved isolated from its country of origin from the 15th century onwards in the Sephardic communities in North-Africa and in the former Ottoman Empire, where it also entered in contact with the dominant local languages, among them Greek, Turkish and Bulgarian. By the 17th century, it already differed remarkably from

Peninsular Spanish at several linguistic levels (Romero 2016: 662). From the 17th century on, it progressively became a pluricentric language, developing differing norms according to the place where it is spoken (Clyne 1992). Due to the political and economic supremacy of the respective cities, the main cultural and linguistic centers werelocated in Thessaloniki and Constantinople/İstanbul (Quintana 2010: 42). With its approximately 60,000 speakers, none of them monolingual, the language counts today as endangered (Romero 2016: 666). During World War II, the communities suffered irrecoverable losses; many of the surviving speakers emigrated to Israel in the subsequent years. Those who stayed assimilated to the dominant local culture, the use of *Djudezmo* being restricted to familial settings. The *Autoridad Nasionala del Ladino*, created in Israel in 1997, and the Internet forum *Ladinokomunita* aim to promote and revitalize the Judeo-Spanish language and culture worldwide (Romero 2016: 667).

In Bulgaria, the independence and reunification of the country (1878–1885) led to aheyday in Jewish life, which became manifest in the inauguration of the synagogue in Sofia (1909)and in a wide spectrum of Sephardic press (Israel 2012). After the emigration of 90% of the Jewish population to Israel (1946–1956), only about 2,500 Sephardic Jews remained in the country, among themonly 250–300 native *Djudezmo* speakers. All of them are bilinguals with Bulgarian as their dominant language (Studemund-Halévy &Fischer 2013); their age ranges between 50 and 90. The most important scene of interactions in Judeo-Spanish today is the *Club Ladino* in Sofia, founded in 1998, where the speakers, most of them living in the capital, meet on a regular basis to practice their language.

Linguistic research on Judeo-Spanish phonology is still scarce and has mainly focused on the variety spoken in İstanbul (Romero 2013, Hualde 2013), which also holds true for intonation (Hualde & Şaul (2011). The authors state that “[i]n general, the main intonational contours of Istanbul Judeo-Spanish do not differ significantly from those of Peninsular Spanish” and that they considerably differ from the ones of the surrounding language, Turkish. However, they pointed out that transfer of F0contours from Judeo-Spanish to Turkish is typical of bilingual speakers.

In what follows we concentrate on the intonational properties of both of the languages spoken by *Djudezmo*-Bulgarian bilinguals. Our aim is to examinew hether Judeo-Spanish (JUSPA) and Bulgarian (BULG) have convergedat the intonational levelto the same extent as has been shown by Fischer et al. (2014) and Gabriel & Kireva (2014) with respect to vowel raising and global speech rhythm.

2. Empirical study

2.1 Speakers and data

In order to investigate whether convergence between JUSPA and BULG is present to the same extent at the level of intonation, we created a corpus of read speech. Our data consist of readings of the Aesop fable *The North Wind and the*

Sun in its JUSPA and BULG versions, recorded in Sofia in Sept 2011 by four JUSPA-BULG bilinguals and in Sept/Oct 2016 by four BULG monolinguals as a control group. The bilinguals were born in different cities (Kyustendil, Pazardzhik, Kazanlak, Karnobat); they all are native speakers of JUSPA, who use this language on a regular basis in family situations. Bulgarian became their dominant language when they moved to Sofia for study purposes between 1947 and 1950. Two of the monolinguals have been living in Sofia throughout their lives; the other two were born in Shumen and Kyustendil, but grew up and currently live in the capital. All subjects are female, hold an academic degree and were aged 79–88 at the time of data collection. The bilinguals were recorded in JUSPA and Bulgarian (BULG_B), the monolinguals in Bulgarian only (BULG_M). Regarding their pronunciation in Bulgarian, all subjects display the features typical of the capital¹.

2.2 Methodology

We labeled the relevant F0 movements according to the ToBI labeling conventions (Silverman et al. 1992), based on the repertoires of pitch accents and boundary tones proposed in recent work on Spanish and Bulgarian intonation (see Hualde & Prieto 2015 for a cross-varietal perspective on Spanish; Andreeva 2007, 2016, Andreeva et al. 2016, Dimitrova & Jun 2015 for the Sofia variety of BULG). An example for the ToBI labeling is given in Fig. 1 (second line from top).

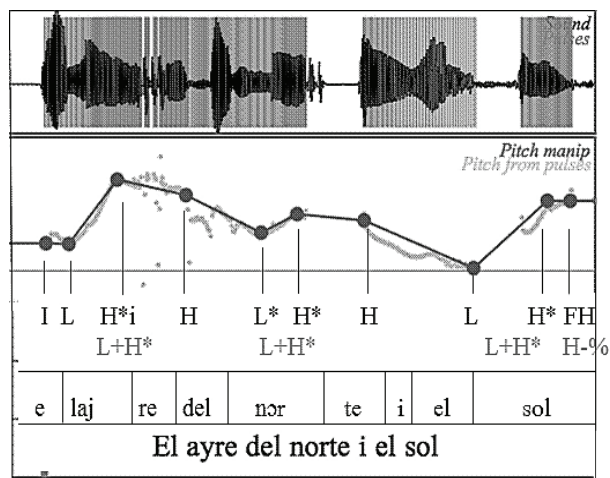


Fig. 1: ToBI labeling (second line from top).

¹An accent rating test performed by 95 raters (born and living in Sofia) showed that the bilinguals are not perceived as different from the monolinguals.

2.3 Results

For frequency counts of the different pitch accent types we used χ^2 -tests. The confidence level was set at $\alpha = 0.05$.

2.3.1 Pitch accents and boundary tones

Our analysis revealed that the same repertoire of pitch accents (H^* , L^* , $H+L^*$, L^*+H , $L+H^*$, $L+<H^*$) and boundary tones ($H\%$, $L\%$, $L-H\%$) was used in each of the three data sets (JUSPA, BULG_B, BULG_M). A schematized representation of these pitch accents is given in Fig. 2.

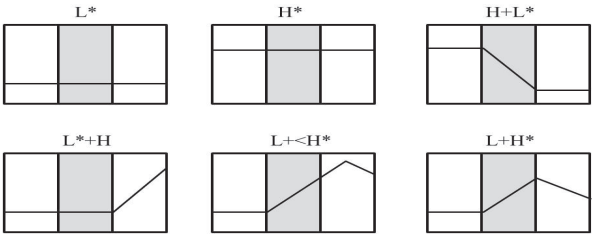


Fig. 2: Schematized representation of the pitch accents used in the three data sets.

Tab. 1 below summarizes the distribution of the nuclear and pre-nuclear pitch accents in the three data sets in absolute numbers.

	nuclear accents	pre-nuclear accents
JUSPA	151	112
BULG_B	99	158
BULG_M	103	160

Tab. 1: Absolute numbers of nuclear and pre-nuclear accents.

The two groups of speakers use almost the same number of nuclear and pre-nuclear pitch accents when they read the text in BULG. When reading the JUSPA version, the bilinguals use more nuclear accents, because they produce shorter intonation phrases (IPs). This might be due to a slower speech rate, probably caused by certain insecurity when reading the JUSPA text in Latin script. In the BULG_M and BULG_B data sets, there were 76 IPs (mean duration:

1672.51 ms) and 108 IPs (mean duration: 1669.10 ms), respectively, where as the JUSPA data set displayed 161 IPs (mean duration: 1203.61 ms). Regarding average syllable duration, we found a significant effect of DATA SET ($t = -3.30$, $p < 0.01$), with JUSPA having significantly longer average syllable durations (227.44 ms) than BULG (BULG_M: 184.65 ms; BULG_B: 179.63 ms).

As far as the number of IP boundary tones is concerned, significant differences were found in the relative frequency of different boundary tones between JUSPA and BULG_B [$\chi^2(2, N = 243) = 5.8002$, $p < 0.01$] and between JUSPA and BULG_M [$\chi^2(2, N = 242) = 4.2803$, $p < 0.05$] (Tab. 2). The fact that in the JUSPA data set there were significantly more boundary tones than in the BULG_M and BULG_B data sets is conform with the results described above.

surface realization	JUSPA	BULG_B	BULG_M
H-%	90	36	40
L- H%	3	8	8
L-%	60	46	41

Tab. 2: Distribution of boundary tones (absolute numbers).

Concerning the pitch accents, significant differences were found again between JUSPA and BULG in the relative frequencies of pre-nuclear accents (BULG_B and JUSPA [$\chi^2(5, N = 300) = 37.348$, $p < 0.001$] and BULG_M and JUSPA [$\chi^2(5, N = 304) = 22.457$, $p < 0.001$]). No significant differences were found for the nuclear accents (Tab. 3). However, in JUSPA, in pre-nuclear position, we found a large number of bitonal rising accents of the L+H* type, with the F0 peak located in the stressed syllable, while the number of the bitonal rises of the type L+<H* (delayed peak in the post-tonic syllable), amounted to only 4. These findings differ considerably from the distribution of the respective pitch accents in our BULG data.

	H*	H+L*	L*	L*+H	L+H*	L+<H*
	repertoire of nuclear pitch accents (in %):					
JUSPA	25	6	29	5	32	3
BULG_B	22	4	35	4	27	7
BULG_M	31	12	24	1	27	5
	repertoire of pre-nuclear pitch accents (in %):					
JUSPA	42	1	4	3	47	4
BULG_B	47	3	11	4	18	17
BULG_M	44	2	4	8	28	14

Tab. 3: Distribution of pitch accents (in %).

Since the differences between JUSPA on the one hand and BULG_B/M on the other apply to the *use* of the same tonal categories and not to different repertoires, they might be explained with respect to the different metrical structures of the languages.

2.3.2. Distribution of pitch accents according to stress patterns

Tab. 4 summarizes the stress patterns in our *North Wind* readings according to the language (based on prosodic word division). As can be seen, the most frequent pattern in both languages is penultimate stress. The second most frequent pattern is ultimate stress in JUSPA and antepenultimate stress in BULG. While in JUSPA there are no words with stress on the 4th and 5th-to-last syllables and only a few words exhibit antepenultimate stress, the third most frequent pattern in BULG is stress on the ultimate or 4th-to-last syllable, and there are few occurrences of stress on the 5th-to-last syllable.

	ultimate	penultimate	antepenul- timate	4 th -to-last	5 th -to-last
JUSPA	98	159	6	-	-
BULG_B	29	124	79	21	4
BULG_M	27	128	79	25	4

Tab. 4: Distribution of stress patterns (based on prosodic word division).

Our analysis reveals only one statistically significant difference between JUSPA and BULG, namely the use of different *pre-nuclear* pitch accents in word swith *penultimate* stress [χ^2 (5, N = 139) = 21.620, p < 0.001]. While in JUSPA the predominant accent type in this position is L+H* (53%), it is H* in BULG (BULG_B: 40%; BULG_M: 42%). Fig. 3 illustrates this difference. The question then arises as to whether this pattern is a relic of a once different JUSPA intonation or a (rather unconscious) desire to show that another language is spoken.

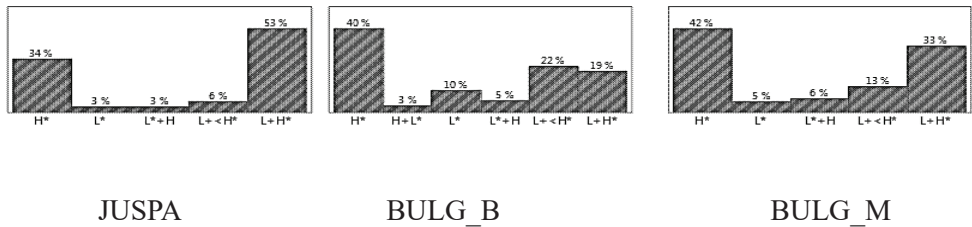


Figure 3: Distribution of prenuclear pitch accents in words with penultimate stress.

2.3.3. Stress patterns in comparative structures

Taking a closer look at specific constructions such as the Spanish comparative structure (*más* + adjective), it becomes apparent that it is likely to adopt the corresponding stress pattern from the contact language. Interestingly, all of our JUSPA speakers largely follow the BULG model in shifting stress from the adjective to the (otherwise unstressed) comparative particle, yielding productions such as *MAS fuerte* ‘stronger’ (vs. Spanish *más FUERte*), which corresponds to the BULG stress pattern in *no-цилех* (*PO-silen*) ‘stronger’. Fig. 4 depicts the extract *ama lo mas fuerte el ayre soplava* ‘but the stronger the wind blew’ from a North Wind reading from our corpus. The speaker realizes the stress on the comparative particle through a rising (L+H*) pitch accent.

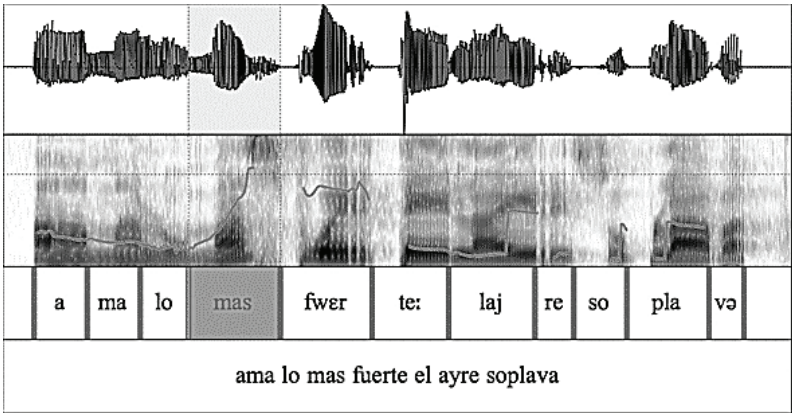


Fig. 4: Stress shift in JUSPA *MAS fuerte* ‘stronger’.

2.4. Discussion

Based on a corpus of read speech in JUSPA and BULG, respectively, we have shown that the bilingual speakers use the same inventory of pitch accents and boundary tones in both of their languages (2.3.1). They only differ from the BULG monolinguals regarding the frequencies of pre-nuclear H* and L+H* on penultimate stress words (2.3.2). This strongly suggests that the Spanish diaspora variety (JUSPA) has converged towards the surrounding language (BULG) not only with regard to durational properties (vowel raising and global speech rhythm; Gabriel & Kireva 2014). We rather conclude that *convergence* also operates at the level of intonation. This view is underpinned by the fact this phenomenon is also apparent with respect to stress assignment in Spanish comparative constructions (2.3.3).

3. Concluding remarks and outlook

We have provided a first attempt to explore the tonal properties of the variety of JUSPA spoken by the members of the respective community along with the Sofian variety of BULG as their dominant language. We have argued that Bulgarian JUSPA has largely converged with BULG not only at the rhythmic, but also at the intonational level. However, our analyses were performed exclusively on read data. Given that intonation has been shown to differ according to speech style (Face 2003) and that listeners are able to identify speech as either being read or produced spontaneously (Dellwo et al. 2015), the results obtained so far can only be considered preliminary and need to be corroborated on the basis of analyses performed on spontaneous speech. Our next step thus consists in analyzing a corpus of spontaneous data (narrative interviews) produced by the same speakers.

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