Approaching the impact of information structure on unstressed vowel reduction: insights from Bulgarian and Judeo-Spanish

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This study focuses on the interaction between information structure and unstressed vowel reduction in Bulgarian (BG) and Bulgarian Judeo-Spanish (BJS), a severely endangered Romance diaspora variety that has been in intense contact with BG for many centuries. As recently shown, BJS presents strong convergence with BG at the prosodic level (Andreeva et al. 2021; Gabriel & Kireva 2014). Regarding unstressed vowels, there is evidence that BJS speakers largely follow BG reduction patterns, i.e., unstressed underlyingly non-high vowels raise considerably (Grünke et al. 2023). For the present study, we collected semi-spontaneous speech data from 16 BJS–BG bilinguals and 15 BG monolinguals using an elicited production task in which speakers were asked 14 questions about a picture story targeting different information-structural readings (recordings: Bulgaria 2022–2023). Since unstressed vowel reduction is strongest in this vowel, we manually segmented all /a/ tokens (n = 1810) and annotated the focus type of the constituent (levels: [information focus], [corrective focus], [background]), stress (levels: [stressed], [unstressed]), the position of the constituent within the IP (levels: [initial], [medial], [final]), the presence of a prosodic boundary following the vowel, as well as word, speaker, and variety. We then extracted F1, F2, segment duration, and intensity with a Praat script, normalized formant values using Lobanov transform and segment duration as a ratio to mean syllable duration in the IP. After the exclusion of outliers (> 1.5*IQR) within groups defined jointly by presence of a boundary, stress, and focus type, and of vowels before a boundary, we used Linear Mixed Models and post hoc t-tests to gauge the effects of stress, boundary, and focus type on F1, F2, duration, and intensity in the remaining 1325 tokens (36% of them being lexically stressed (n = 473) and 64% unstressed (n = 852). The items analyzed are summarized in Table 1.

No significant differences were found between the BJS /a/ tokens and those of the bilingual or monolingual BG regarding any of the factors examined (duration, level, intensity). Furthermore, the results show that vowel duration and F1 are significantly affected by stress, focus type and their interaction. Regarding duration, stressed vowels are longer in the two focus conditions than in the background condition (Fig. 1, left), whereas no effect of information structure was found in unstressed position (Fig. 1, right). With respect to vowel height (F1), stressed vowels in focused constituents are lower than their counterparts in background constituents (Fig. 2, left), while no effect of information structure shows up in unstressed position (Fig. 2, right). As to intensity, finally, it turned out that stressed and unstressed vowels in focused constituents are louder than their counterparts in background constituents (Fig. 3, left) and that unstressed vowels under informational focus are not significantly different from stressed vowels in background constituents (Fig. 3, panel). The effect of information structure is thus more noticeable in the quality and quantity of stressed vowels than in unstressed vowels. Furthermore, our results corroborate earlier findings in that the minority language, BJS, strongly converges with the dominant language, BG, not only with respect to prosody and unstressed vowel reduction but also regarding the phonetic correlates of information-structural categories.

Table 1. Overview of the items analyzed.

focus type	stress	BJS	BG (bilinguals)	BG (monolinguals)
background	stressed	93	124	137
	unstressed	87	273	287
informational	stressed	27	11	48
	unstressed	8	39	18
corrective	stressed	27	43	53
	unstressed	14	18	18

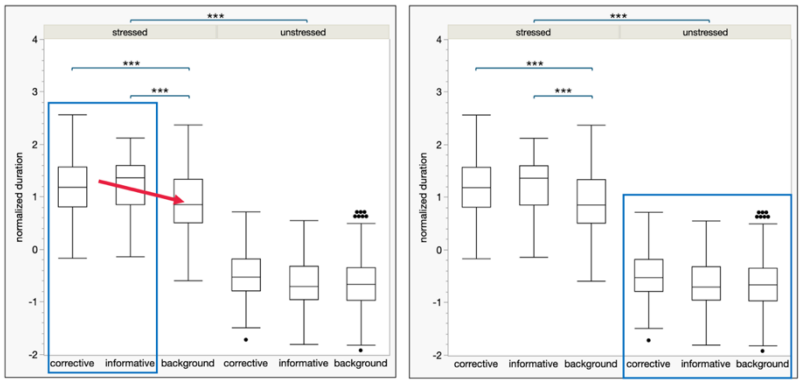

Fig. 1. The effect of focus type and stress on **vowel duration** in BJS and bi-/monolingual BG.

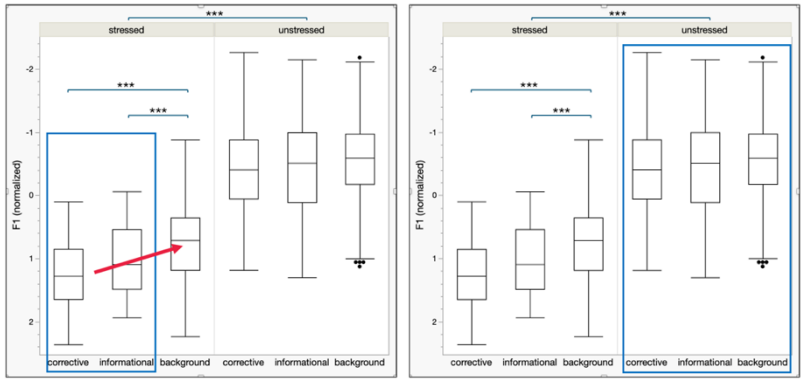

Fig. 2. The effect of focus type and stress on **vowel height (F1)** in BJS and bi-/monolingual BG.

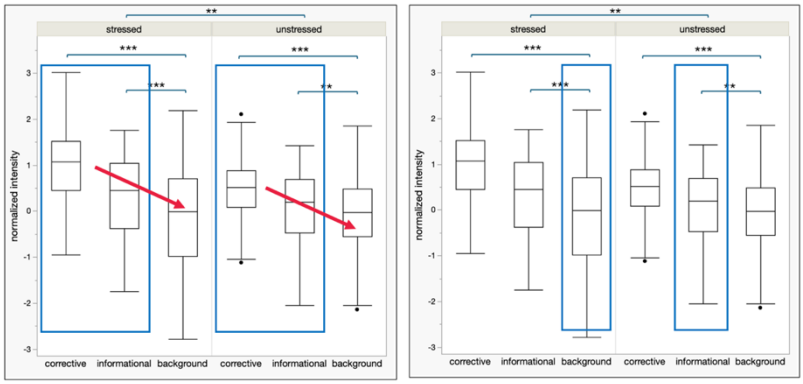

Fig. 3. The effect of focus type and stress on **intensity** in BJS and bi-/monolingual BG.

References

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