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Phonetic cues to diatopic variation in Campania Italian intonation[1]

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This study explores the phonetics and phonology of statements in two neighboring varieties of Italian, i.e., Salerno (SI) and upper Cilento (CI) Italian. SI and CI are geographically close to each other but belonging to two different sub-areas of the Southern Italo-Romance dialects. Accordingly, we investigate the encoding and realization of broad focus and corrective-contrastive focus statements across the bundle of isoglosses known as Eboli-Lucera line. Based on Discourse Completion Task data we show that CI and SI encode the two focus conditions in a similar way, with phonetic differences in the implementation of H+L* and L+H* nuclear accents. Such differences are quantitatively investigated through a production experiment based on a Reading Task. Results confirm inter-variety differences in the distribution and phonetic realization of declarative tunes with CI showing the presence of a prenuclear peak in both focus conditions. Results are discussed in terms of different phonetic realizations between the two varieties as regards both the nuclear and prenuclear region of declaratives. Intra-variety individual variability is ascribed to diatopic variation since it appears to indicate gradual tonal transition between the two neighboring varieties across the Eboli-Lucera line.

KEYWORDS: Salerno Italian, Cilento Italian, contrastive focus statements, broad focus statements, diatopic variation, prenuclear peak.

1. Introduction

A large body of research has focused on the intonation of spoken Italian in the last thirty years, providing detailed descriptions of several regional varieties, e.g., Neapolitan (D'Imperio 2002), Pisa (Gili Fivela 2008), Palermo (Grice 1995), Bari (Savino 1997) Italian among many others. The

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picture emerging from cross-variety studies points out high levels of variation in the intonational inventory both across and within the investigated varieties. Robust commonalities, for instance, have been observed as for tune selection of broad focus statements, that show great consistency across the country (Grice *et al.* 2005; Gili Fivela *et al.* 2015). The opposite pole is represented by interrogatives, and especially polar questions, that are subjected to the highest degree of categorical variation, as they are produced selecting several different tunes both within and across varieties (Savino 2012; Crocco 2013). Between these two poles, research has identified few elements of convergence in the inventory and in the form-function mapping across varieties. Moreover, when similar features emerge, these appear scattered throughout space, rather than being referable to well-defined geo-linguistic areas (Savino 2009; Gili Fivela *et al.* 2015). This fragmented scenario raises questions about how the transition between a prosodic variety and those nearby can look like. Up to now, little attention has been paid within the Italian framework to the study of convergence and divergence at the intonational level among geographically neighboring varieties. However, the study of small-range geographic variation is necessary to cast light on the spatial organization of the Italian intonational continuum. One of the few studies on Italian intonation from a small-range perspective is Gili Fivela & Nicora (2018), who investigated five geographically close varieties spoken across the La Spezia-Rimini line. Such line bundles several segmental and morpho-syntactic isoglosses identified by dialectological studies (Grassi *et al.* 1997), separating Tuscan from Liguria Italo-Romance vernaculars. Since intonational variation in regional Italian can be at least partly attributed to the prolonged contact between Italian and the Italo-Romance vernaculars especially from the unification of Italy on (Telmon 1993; Berruto 2012 [1987]; Crocco *et al.* 2022, 2023; Barone *forthcoming*), dialectal areas can in principle be relevant for the characterization of intonational variation in Italian, as well as for the study of the transition between varieties. Gili Fivela & Nicora's goal was that of verifying if the segmental and morpho-syntactic border featured by the La Spezia-Rimini line is mirrored in intonation. Although the Italian varieties on the two sides of the La Spezia-Rimini line can indeed select different tunes at the phonological level, the study reveals differences in the frequency of occurrence of such tunes across the line, as well as realization commonalities across the tunes. This suggests that the intonational transition between Tuscany and Liguria involves divergence as well as convergence, the latter being detectable especially at the realizational level.

Within the Romance framework, more extensive evidence is provided for prosodic variation between geographically close varieties of different languages. Although the main goal of these studies is not that of explor-

ing fine-grained variation in space, their results suggest that divergence is present in closely related Romance varieties along different possible dimensions. At the phonetic level, varieties have been shown to differ based on the realization of tonal inventory. Tonal alignment of targets of nuclear pitch accents represents one of the most striking inter-variety phonetic differences, e.g., across Portuguese (Vigario & Frota 2003) and Spanish (Elordieta & Calleja 2005) varieties. Variation can also concern phonological inventory and the frequency of selection of tonal events as well as the tonal structure of the entire nuclear configuration. Differences of this type have been observed in European Portuguese, as for the nuclear accent selection in declarative and question intonation (Vigario & Frota 2003; Cruz 2013; Frota *et al.* 2015), Peninsular Spanish, as for the choice of pitch accents in prenuclear and nuclear position (Hualde & Prieto 2015), and Catalan, as for the tune selection for both yes-no and wh- questions (Prieto *et al.* 2015).

Romance closely related varieties can also differ in the way they realize the prenuclear region. Several of these varieties present early prenuclear high/rising f_0 movements on the first, unstressed, syllable of quadrisyllables or trisyllables, typically occurring in contrastive focus statements (Frota & Prieto 2015).[2] In many cases, for instance in Logudorese and Campidanese Sardinian, such early prenuclear f_0 movement realizes an additional pitch accent expressing emphasis (Vanrell *et al.* 2015). This type of additional emphatic prominence is also observed in Lengadocian (Sichel-Bazin *et al.* 2015) and Catalan (Prieto *et al.* 2015). In the Italian framework, Silva Neto *et al.* (2020) report the presence of double pitch accents on nuclear words in Lecce Italian requests. However, Romance also provides evidence of prenuclear peaks that are phonetic in nature. These are observed e.g. in Caribbean Spanish, where a peak occurs on the pretonic syllable of both nuclear and prenuclear words in broad focus statements (Hualde & Prieto 2015). No clear function can be attributed to this additional peak; yet, it is typical for a given geographic variety and therefore has the potential of being a feature with socio-phonetic value.

1.1. Campania Italian varieties

The present study is part of a research project (Cataldo *et al.* 2021; Cataldo 2023; Cataldo & Crocco 2023) aimed at investigating the prosodic transition across neighboring varieties of Campania Italian, namely Neapolitan, Salerno and Cilento Italian (henceforth **NI**, **SI** and **CI**, respectively). In the area where these varieties are spoken, the dialectological literature identifies a series of phonetic, morphosyntactic and lexical isoglosses forming the Eboli-Lucera line (Avolio 1989, 2000). Naples and Salerno, and upper Cilento are respectively north and south of the Eboli-Lucera line

(Figure 1). Accordingly, the regional Italian varieties under investigation are spoken in two different sub-parts of the Southern dialectal area.

Figure 1. Map of Campania and position of the three locales of Neapolitan, Salerno and Cilento Italian. The blue dotted line indicates the Eboli-Lucera line running south of Salerno.

Similarly to Gili Fivela & Nicora (2018), Cataldo (2023) and Cataldo & Crocco (2023) conducted a cross-variety investigation focused on question intonation, showing that, despite high levels of intra- and inter-variety variability, NI, SI and CI largely converge in their phonological inventory, as far as tonal events, i.e. pitch accents and boundary tones, and tunes, i.e. nuclear configurations, are concerned. In this regard, the investigated Campania Italian varieties appear to be mostly distinguished by the frequency of occurrence of specific tonal events and tunes, which allowed to notice variety-specific tendencies, such as in boundary tone selection. The variation features a geographic cline from NI, the northernmost variety, to the southern variety of SI and then CI in the tone and tune choice, e.g. for wh-questions the use of H + L* pitch accent and L% boundary tone registered in NI decreases in favor of L* + H and H% in CI.

Campania Italian varieties also seem to differ according to the phonetic implementation of phonological contrasts. Cataldo *et al.* 2021 replicated on SI

and CI the design employed for NI by D'Imperio & Cangemi (2011), aimed at comparing a sentence-initial noun phrase in three pragmatic conditions, i.e., regular topic, partial topic, contrastive focus. Results indicated that both CI and SI encode the contrasts in a similar way – and similarly to NI – yet with phonetic differences. Notably, topic and focus accentual peaks showed a significant temporal anticipation in CI compared to SI, resulting in the f_0 peaking on the first syllable of the target word in the former variety. Accordingly, the first, unstressed syllable of the trisyllabic target word *Milena* presented in CI a prenuclear, auditorily prominent peak which was absent in SI, pointing to intonational variation in statements along the realizational dimension between Italian varieties spoken north (SI) and south (CI) of the Eboli-Lucera line.

Observations on conversational speech recently collected by the authors of this paper go in the same direction pointed out by Cataldo *et al.* (2021). The examination of a sample of two task-oriented dialogues (from Cataldo 2023) collected with the Spot-the-difference paradigm (Savy & Cutugno 2009) produced by 4 M/F speakers of CI aged 20-30 indicate that speakers can insert auditorily prominent events that might correspond to the anticipation of a phonological target or that might be analyzed as an independent event in their speech. The examination of 24 minutes of conversation, revealed the presence of 16 of such prenuclear prominent events on the first syllable in trisyllables and quadrisyllables[3], auditorily comparable to the f_0 peaks examined in Cataldo *et al.* (2021). The fact that such peaks are not massively present in dialogical speech, nor are clearly associated to a meaning nuance such as emphasis (as in the case of e.g., Logudorese), suggests that it may be a phonetic variant, similarly to what has been observed in Caribbean Spanish (Hualde & Prieto 2015). Note that preliminary studies also suggest that additional peaks in prenuclear position are typical of the Cilentan dialect (Leo *forthcoming*), where they are largely employed in statements with broad focus and contrastive-corrective focus.

1.2. Goal of the study

The present study further explores the transition between neighboring varieties, namely SI and CI, and the role played therein by distributional and phonetic differences. Accordingly, the goal of the study is twofold. First, we intend to identify the tunes used in CI statements to express sentence-final broad focus and contrastive-corrective focus (henceforth **BF** and **CF**) looking for distributional differences with respect to SI. Along the lines of Gili Fivela & Nicora (2018) and Cataldo & Crocco (2023), we hypothesize that distributional differences in declarative tunes can be involved also in the transition between SI and CI across the Eboli-Lucera line. Secondly, we aim at casting

light on the intonational transition between CI and SI by examining the phonetic realization of such tunes. To this goal, we further explore the realization of the prenuclear region, where the available observational and experimental evidence on prenuclear peaks (Cataldo *et al.* 2021; Leo *forthcoming*; cf. above) indicate possible differences between SI and CI in BF and CF statements.

The study is articulated as follows. In §2 we present our data for the description of Cilento Italian from a Discourse Completion Task, which are directly comparable to previous SI descriptions, illustrating our methodology (§2.1) and results (§2.2). Then, §3 provides the second part of the study concerning a production experiment aimed at a more specifically phonetic comparison between Cilento and Salerno Italian based on a Reading Task (methodology and results in §3.1 and §3.2, respectively). Discussion is presented in §4: we first summarize our main results and then discuss the relationship between the two varieties under investigation within a more general dialectological and cross-linguistic picture. In §5 we draw our conclusions.

2. Discourse Completion Task

2.1. Discourse Completion Task – Methodology

To identify the main tunes of BF and CF statements in CI and compare the results with SI and NI, we rely on qualitative data collected through a Discourse Completion Task (henceforth **DCT**; a.o., Vanrell *et al.* 2018). To ensure comparability between the present first-time description of CI and the already available descriptions of other Italian varieties, we adopted the same methodology used by Gili Fivela *et al.* (2015). In the latter study the elicitation of spontaneous utterances in response to the experimental prompt was complemented by the elicitation of read speech. We selected three male and three female CI speakers, who always lived in their native area (upper Cilento), aged 18, with high-school education. As several other studies on city-based varieties, Gili Fivela *et al.* (2015) relies on speech produced by university students. Since there are no universities in Cilento, however, school graduates need to move to Naples, Salerno or to other regions to access higher education. Therefore, and unlike Gili Fivela *et al.* (2015), we did not recruit university students for the present study, as they are likely to be or have been exposed to NI, SI or other Italian varieties, possibly accommodating towards their prosodic systems. To ensure the maximum of comparability between our data and those by Gili Fivela *et al.* (2015) we based our research on speakers aged 18 who completed their (classical or scientific) high school education but are not (yet) enrolled at university.

The complete DCT included 57 elicited utterances in different pragmatic contexts. The portion of the dataset used for the purposes of the present study is based on 6 pragmatic contexts and consists of 144 items: 3 BF items + 3 CF items * 6 speakers * 2 renditions * 2 speech types (spontaneous, read). 20 items were excluded, mainly spontaneous productions that were realized neither as BF nor CF statements; hence, the final dataset consists of 124 items. Speakers received the task via ppt presentation with randomized order and target sentences were interspersed with sentences of other types. They had to silently read the contexts (see examples (1-2)) and to firstly react spontaneously to the contexts and then read aloud the target sentences. BF and CF contexts are designed to elicit the nuclear accent on the rightmost word of the sentence, which is a paroxytone trisyllable or quadrisyllable.

(1) *Broad focus (BF)*
Look at the picture and tell what Maria is doing.
Maria mangia il mandarino 'Maria eats the tangerine'.

(2) *Contrastive focus (CF)*
You are in a grocer shop and you ask for lemons. The shop assistant gives you tangerines. But you don't want tangerines, so you say you want lemons:
No, vorrei dei limoni 'No, I wanted *lemons'.*

Due to the Covid-19 pandemic, data were remotely collected using Zencastr (http://zencastr.com/), a commercial software allowing high quality recordings (.wav, 44100 Hz, 16 bit; cf. Magistro 2021, 2023). The whole phase of data collection was carried out under the supervision of the first author. The intonational analysis concerned the phonetics and phonology of tonal events, i.e. pitch accents and boundary tones, and was conducted within the Autosegmental-Metrical framework (Pierrehumbert 1980; Ladd 2008; Arvaniti 2021). Annotations were performed using a ToBI-like system following Grice *et al.* (2005), Gili Fivela *et al.* (2015) and Orrico (2020).

2.2. Discourse Completion Task – Results

The phonological contrast between BF and CF is generally marked in all the Italian varieties (a.o., Gili Fivela *et al.* 2015), although differences in pitch accent selection and/or distribution can arise even in neighboring varieties. Indeed, NI (D'Imperio 2001, 2002) and SI (Orrico 2020) are both attested to employ a falling (H+L*) and a rising (L+H*) pitch accent to intonationally mark broad and narrow focus, respectively; however, the BF tune (H+L* L-L%) can also be used in both varieties in CF contexts (Gili Fivela *et al.* 2015).

The examination of the DCT data from CI shows that, in line with other Italian varieties, BF statements are realized with a falling tune, analyzed as H + L* L-L%. The movement within the pitch accent is a moderate fall, followed by a low boundary tone (Figure 2). However, the scaling of the pitch accent may vary; most often it is a modest fall within a gradually falling stretch (88% of cases), although instances of a fall from a preceding high target or high plateau have been found (13% of cases).[4]

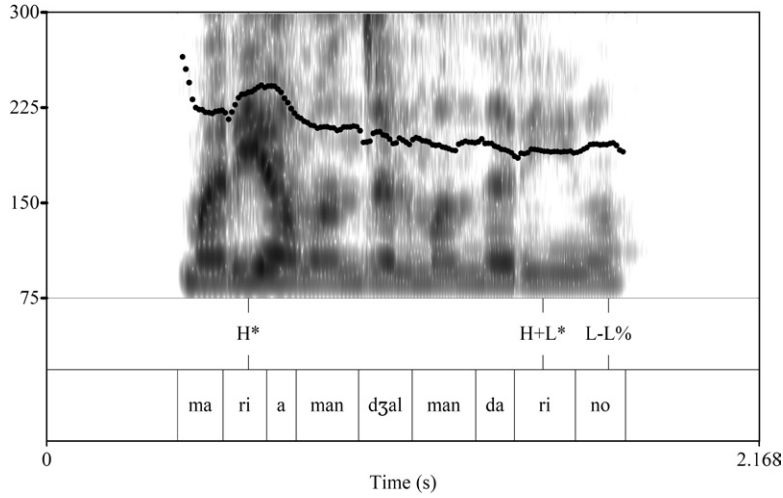

Figure 2. F_0 contour for CI BF statement: Maria mangia il mandaRIno 'Maria eats the tangerine' uttered with a H + L* L-L% tune.

As regards CF statements, CI has two possible tunes, shown in Figures 3-4, as already observed by Gili Fivela and colleagues (2015) for other Campania varieties, namely NI and SI: (i) a falling tune (H + L* L-L%) similar to the gradually falling pattern employed in BF (55% of cases); (ii) a rising-falling tune composed of a rising pitch accent with the peak reached in the first half of the stressed syllable followed by a falling phrase accent and a low boundary tone, that can be analyzed as L + H* HL-L% (45% of cases). This last realization matches the description of CF statements for NI (D'Imperio 2001) and SI (Orrico 2020), with no relevant distributional differences. Interestingly, the choice of the tune does not seem to be affected by speech style (as in other Romance varieties, cf. a.o., Face 2003 on Castilian Spanish), as a slight majority of the falling realization is observed in both spontaneous (58%) and read (53%) renditions.

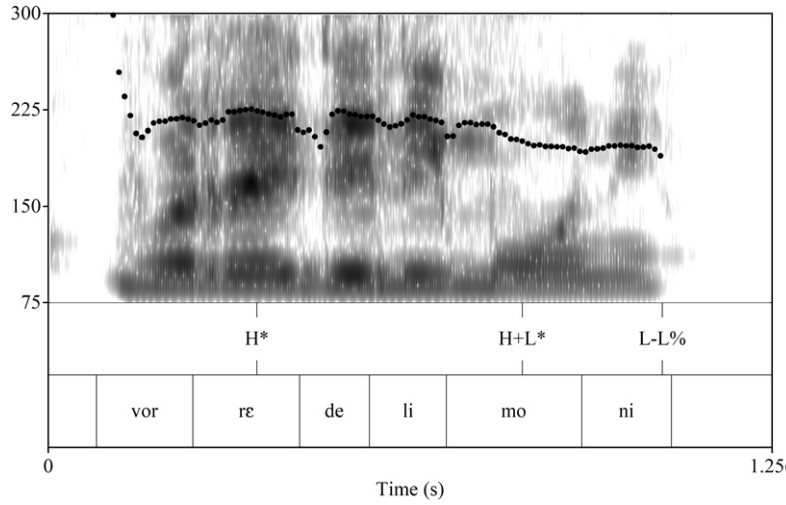

Figure 3. F_0 contour for CI CF statements: No, vorrei dei liMOni 'I wanted lemons' uttered with a H + L* L-L% tune.

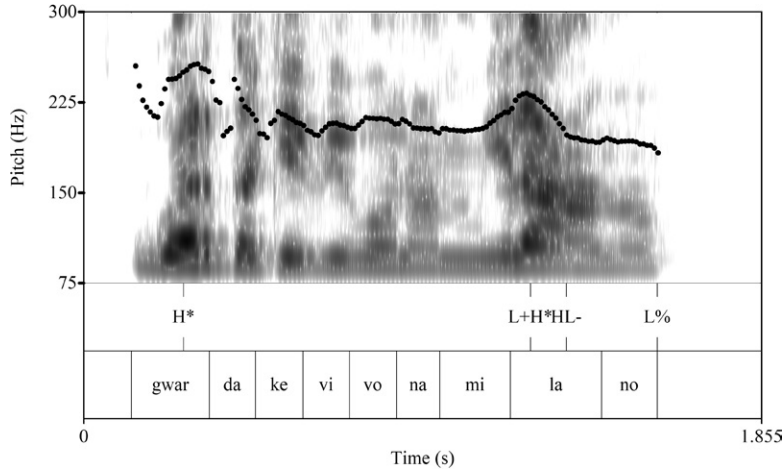

Figure 4. F_0 contour for CI CF statements: Guarda che vivono a MiLAno 'Actually they live in Milan' uttered with a L + H* HL-L% tune.

As far as the phonetic realization of BF and CF statements is concerned, the results point in the same direction as Cataldo *et al.* (2021) and Leo (*forthcoming*). Both in trisyllables and in quadrisyllables, the first unstressed syllable can present an auditorily prominent f_0 rise or peak. Note that in trisyllables such f_0 peak was interpreted as a "temporal anticipation" of a

nuclear accent target by Cataldo *et al.* (2021; see Figure 5 for an example involving the nuclear accent L+H* in a CF statement). This feature occurs in 19% of all BF and 15% of all CF statements, indicating that it does not require a contrast to emerge (cf. Leo *forthcoming*). The presence of such prenuclear peak does not entail a lexical stress shift, nor induce clear changes in the meaning or pragmatic value of the utterance.

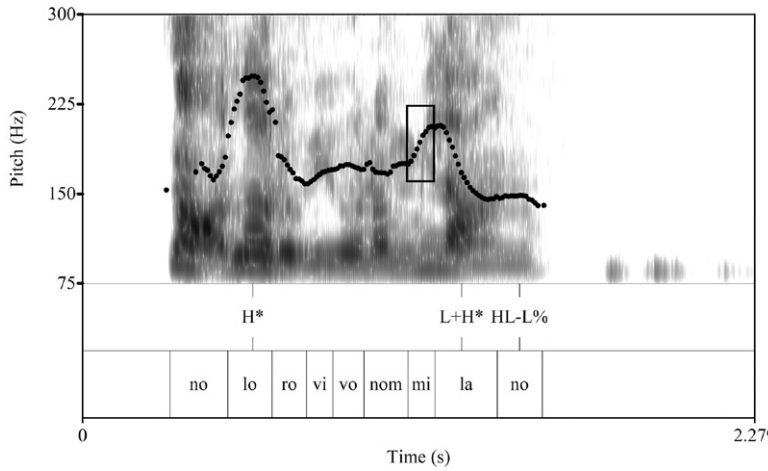

Figure 5. F_0 contour for CI statement showing an early f_0 peak: No, loro vivono a MiLAno 'No, they live in Milan' (trisyllabic word).

Figure 6 reports an example with a paroxytone quadrisyllabic word (*mandarino* 'tangerine') in a BF statement which involves the falling H+L* pitch accent. The word presents a high pitch on the first syllable 'man' which is also auditorily prominent. Also in this case, the presence of this additional prominence does not produce a stress shift. Note that in quadrisyllables, prenuclear peaks occur more frequently (28% of cases) than in trisyllables.

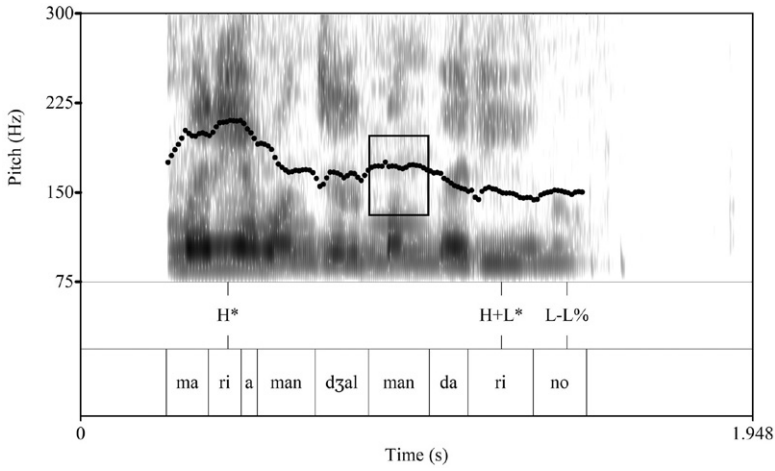

Figure 6. F_0 contour for CI statement showing an early f_0 peak: Maria mangia il mandaRIno 'Maria eats the tangerine' (quadrisyllabic word).

It is worth stressing that such tonal events, regardless of their interpretation as prenuclear peaks or "temporal anticipation" are reported in CF and BF statements for SI (Orrico 2020; cf. also Gili Fivela *et al.* 2015). Figures 7-8 (from Orrico 2020) show instances of BF and CF from DTC where the prenuclear region does not present any relevant tonal movement.

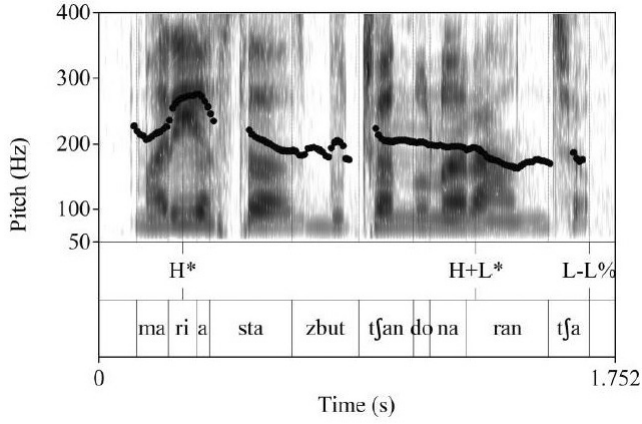

Figure 7. F_0 contour for SI statements (Orrico 2020:118): Maria sta sbucciando un'aRANcia 'Maria is peeling an orange' (BF).

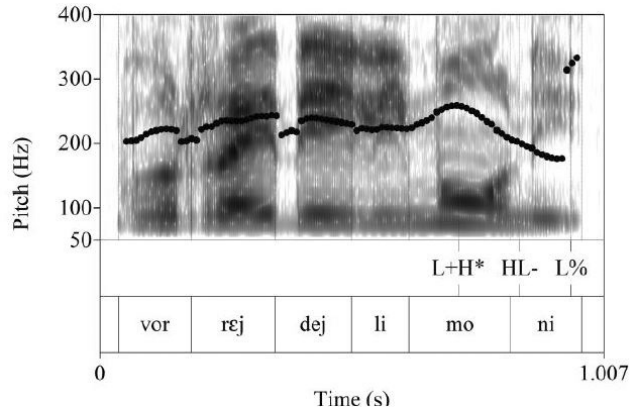

Figure 8. F_0 contour for SI statements (Orrico 2020:121): Vorrei dei liMOni '(I) would like some lemons' (CF).

Results of the study conducted by Cataldo *et al.* (2021) showed that NI, SI and CI can differ in the realization of the same tonal contrasts. The early peaks appear to work as a diatopic marker of CI compared to SI and NI, pointing to a phonetic difference between these varieties as far as declaratives with different sentence-initial topic and focus conditions are concerned. Along this line, high f_0 in the prenuclear region in CI can be considered as a phenomenon of phonetic nature, i.e. either a phonetic anticipation of the accentual peak (cf. Cataldo *et al.* 2021), or an additional, and optional phonetic prominence to be framed within the realizational dimension of inter-variety dimension (cf. Neto *et al.* 2020; Leo *forthcoming*).

To deepen the potential phonetic difference in the prenuclear region detected in the DCT between CI and SI, we carried out a controlled production experiment based on a Reading Task (Section 3 below). We focus on the realization of quadrisyllables since prenuclear peaks occur more frequently in this type of words. We aim at verifying and quantifying the occurrence of prenuclear peaks in more controlled conditions, including both BF and CF focus contexts. To compare the phonetic realization in CI and SI, the Reading Task also included data from this variety, along the lines of Cataldo *et al.* (2021).

3. Reading Task

3.1. Reading Task – Methodology

We asked SI and CI speakers to perform a Reading Task to elicit sentences with BF and CF interpretations (see examples (3-4), respectively). The dataset included 192 items: 6 target utterances * 2 focus conditions (BF, CF) * 2 renditions * 4 speakers * 2 varieties (SI, CI). 16 items were excluded due to speakers' creaky voice. As in the case of the DCT, data were remotely collected using Zencastr (cf. §2.1). Stimuli were presented via ppt; they were inserted into situational contexts to elicit the two interpretations and interspersed with fillers. Target sentences included a verb followed by a complement (NP/PP) in the rightmost position. Contexts of the Reading Task were designed to elicit the nuclear accent on such NP/PP complement; given that in DCT productions the most instances of prestressed high target were observed in CI quadrisyllabic words, we chose paroxytone quadrisyllables as target words in nuclear position.

(3) *Broad Focus (BF)*
You are at your mother's house. She asks if you want some fruit for snack. You answer:
Volevo dei mandarini 'I wanted tangerines'.

(4) *Contrastive focus (CF)*
You are at your mother's house. She asks if you want some fruit for snack. You answer you want some tangerines, but you see she is taking clementines instead. You say:
Volevo dei mandarini 'I wanted *tangerines'*.

On the basis of DCT analysis, in CI productions a prenuclear f_0 peak is expected to occur on the first syllable of quadrisyllables selected as target sentences, while no peak is expected in SI productions. Hence, the first (unstressed) syllable is hypothesized to be differently realized from the third (stressed) syllable both in CI, according to different focus conditions, and between CI and SI. Therefore, for the present experiment, measures were taken for the first (unstressed) syllable (Syl1) of target words ([man] for *mandarini*) and for the third (stressed and accented) syllable (Syl3) of target word ([ri] for *mandarini*). The sample was segmented using Webmaus (Kisler *et al.* 2017), which allows to obtain separate annotation tiers for orthographic words, syllables and segments. Time values and f_0 maxima and minima within the relevant syllables were extracted by means of a set of Praat scripts (Boersma & Weenink 2021). Both the forced alignment in syllables and

phones, and the relevant extracted f_0 points were manually checked and corrected by the first author.

Based on Vanrell *et al.* (2013), phonetic cues employed to mark the contrast between non-contrastive (BF) and contrastive (CF) accents include peak timing, pitch range and duration of accented syllables. The analysis by Cataldo *et al.* (2021) on trisyllables suggests that tonal contrasts rely on peak timing, pitch range and accentual slope also in the varieties under examination. Along these lines, we measured the following phonetic parameters in the present analysis of quadrisyllables:

(i) latency (in ms) of the f_0 maximum within the target word, calculated from the onset of the stressed syllable (Syl3), to assess the position of the f_0 maximum relative to stress and, consequently dynamism of the pretonic portion of the word;
(ii) pitch span (in ST), namely the distance between f_0 minimum and f_0 maximum ('t Hart *et al.* 1990) and the f_0 slope within the relevant syllables (span in ST/duration in seconds; Peters & Pfitzinger 2008); the latter measurement is taken to further assess the melodic dynamism of the prenuclear (Syl1) *vs* nuclear (Syl3) region;
(iii) duration of Syl1 and Syl3 (in ms), to provide a first assessment of temporal effect linked to prenuclear melodic dynamism.

Data were statistically analyzed using mixed-effect linear regression models in R (R Core Team 2019) to account for the small number of speakers included in each variety group (N = 4). Phonetic values (latency, span, slope) were set as dependent variables, variety (CI and SI) and focus condition (BF and CF) as interactive independent variables, speaker as random variable. We used the *lmer* function within the package *lme4* (Bates *et al.* 2015a) and for the procedure we followed the criteria reported in Bates *et al.* (2015b).

3.2. Reading Task – Results

Given the limited number of informants included in this study, the statistical analysis conducted on latency, slope, and span data serves primarily as a quantitative exploration of the sample characteristics, rather than a foundation for extrapolating broad generalizations. Consequently, we present comprehensive visual representations of the aggregated results, as well as individual speaker analyses, to get a better sense of how much between- and within-speaker variability there is in the data, and how much of the observed differences are due to differences between the two groups.

In general, there is a noticeable variability in the realizations of individuals (cf. Figures 14-19), with some instances of partial overlap between the productions of SI and CI speakers. While the existence of speaker vari-

ability is to be expected (Sbranna *et al.* 2022), in the present case, it can also indicate continuous tonal transition between SI and CI. At a microscopic level, this transition can be envisioned as a multitude of individual strategies, choices, and realizations, resulting in points of divergence and convergence. The transition zone between neighboring varieties can indeed be seen as an area where speakers diverge more than they converge. Studies employing the imitation paradigm have demonstrated that speakers can consciously adapt their production to converge towards a target variety they aim to imitate (cf. D'Imperio *et al.* 2014, Savino *et al.* 2022). In our case, however, individual variants arise spontaneously during speech production. It is worth noting that such variants also emerge in a controlled experimental setting, as in the approach adopted in this study, thereby highlighting the intrinsic nature of prosodic variation at the individual level.

In line with previous descriptions (Gili Fivela *et al.* 2015; Orrico 2020), BF statements in SI show an overall gradually falling tune; the accentual fall starts around the onset of the stressed vowel (median f_0 max latency: 35.72 ms). In CF condition the pitch accent is characterized by a rise-fall movement (analyzed as L+H* HL-). Latency measurements in SI only record positive values, indicating the f_0 maximum closely follows the onset of the stressed syllable, in both focus conditions. Examples of SI BF and CF are provided in Figures 9-10, respectively.

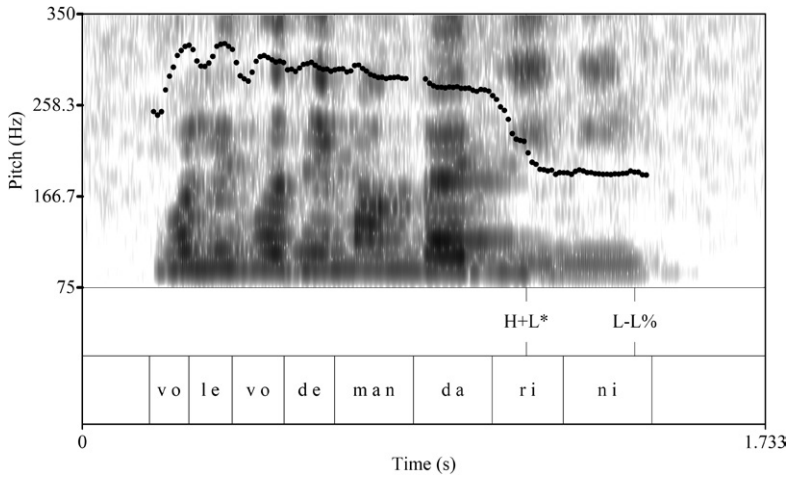

Figure 9. F_0 contour for SI statements: Volevo dei mandaRIni 'I wanted tangerines' uttered as a BF statement.

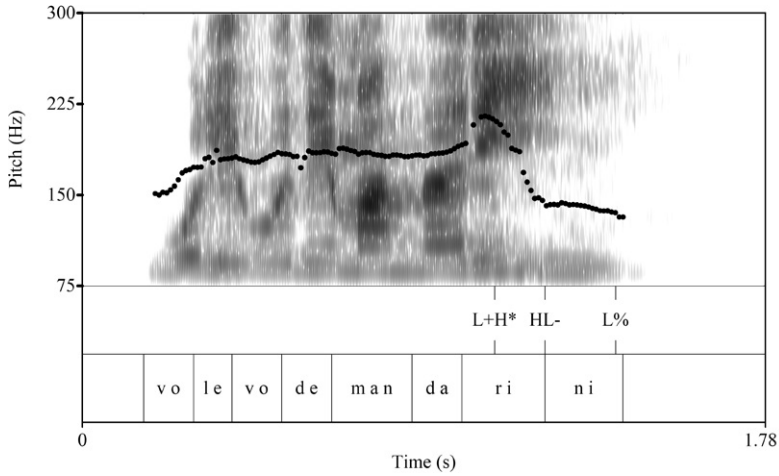

Figure 10. F_0 contour for SI statements: Volevo dei mandaRIni 'I wanted tangerines' uttered as a CF statement.

In contrast, latency measurements in CI show the f_0 maximum is reached on the first, unstressed syllable (Syl1) (median f_0 max latency: -97.85 ms), as shown in Figures 11-12. The measurements therefore confirm the trend detected for quadrisyllables in the varietal description from DCT data (Section 2.2).

On the whole, in CI the pitch accent region (Syl3) is phonetically realized as a slightly falling stretch in both conditions and the whole nuclear region is falling as well (H+L* L-L%). The CF tune alternation between falls (H+L* L-L%) and rise-falls (L+H* HL-L%) observed in DCT data, and in common with NI and SI Italian, does not occur in read speech. CI productions consistently select H+L* as nuclear accent, whereas the f_0 maximum is reached occurs two syllable earlier, as shown in Figures 11-12, with slight latency difference between CF (median CF: -144.90 ms) and BF (median BF: -155.74 ms).

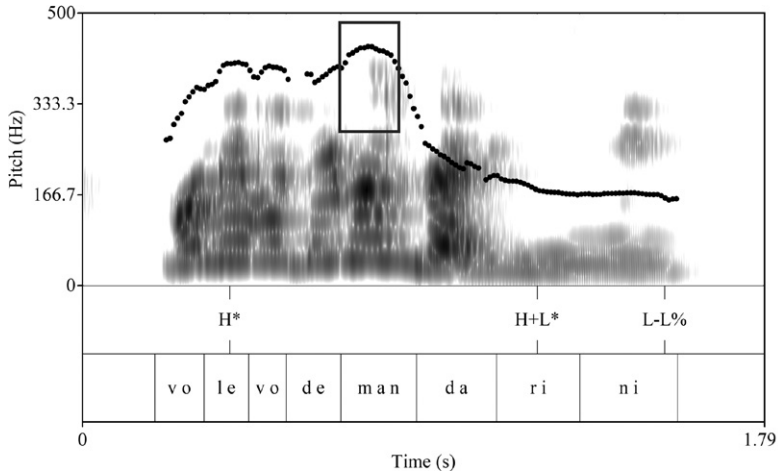

Figure 11. F_0 contours for CI statements: Volevo dei mandaRIni 'I wanted tangerines' uttered as BF statement.

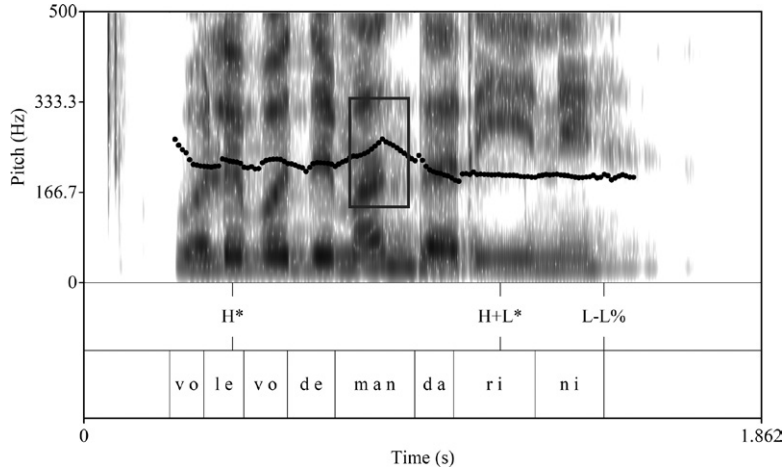

Figure 12. F_0 contours for CI statements: Volevo dei mandaRIni 'I wanted tangerines' uttered as CF statement.

The different realization of statements based on the presence of a pre-nuclear f_0 peak in CI emerges by the visual comparison presented in Figure 13 where f_0 contours were smoothed, synthesized, normalized in height and duration using the onset of the quadrisyllabic word as temporal anchor point, and plotted together using *mausmooth* (Cangemi 2015).

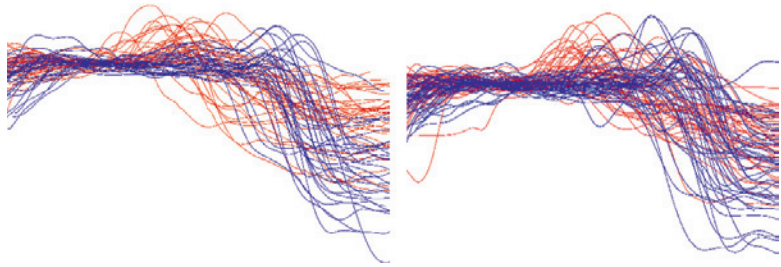

Figure 13. F_0 contours for BF (left) and CF (right) statements in CI (red line) and SI (blue line).

We statistically tested the cross-variety difference of f_0 max latency from Syl3 onset. Results, shown in Figure 14, indicate the presence of both a variety and a condition effect on the peak latency. As already qualitatively observed, f_0 max shows negative latency in CI, whereas this is not the case in SI (Estimate: 154.12; Std. Error: 21.03; t value: 7.328). Additionally, in both varieties, f_0 max is aligned earlier in BF compared to CF (Estimate: 57.45; Std. Error: 14.01; t value: 4.099).

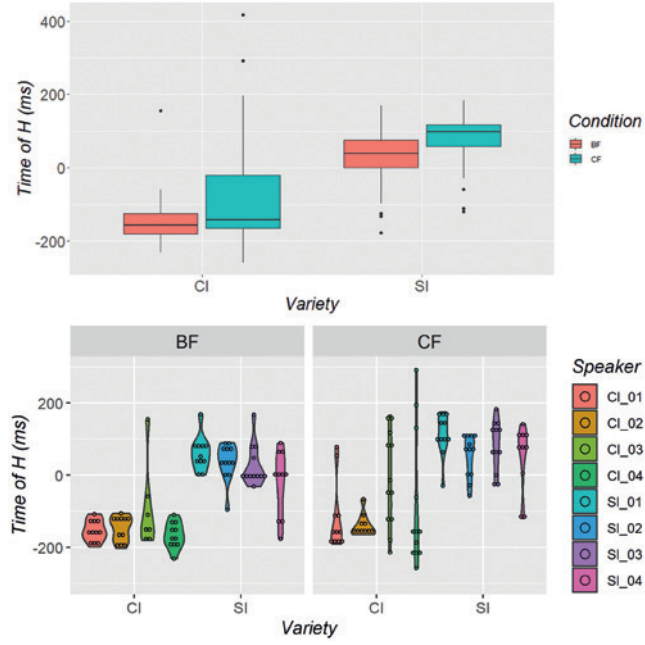

Figure 14. Latency of high target according to focus condition (BF, CF), variety (CI, SI) and speaker.

Despite the significant effect of variety on f_0 max latency, some outliers can be observed in CI, presenting positive latency values (Figure 14 lower panel; speakers CI_03, CI_04) and in SI, presenting negative latency values (speaker SI_04). In the SI sample in particular, occurrences of f_0 maximum in the prenuclear region were found. Interestingly, they were all produced by SI_04, the one SI speaker coming from Pontecagnano, which is the southernmost locale of Salerno, whilst remaining above the Eboli-Lucera line. By way of example, Figure 15 shows a production of this "southern SI" speaker, which is halfway between CI and SI productions.

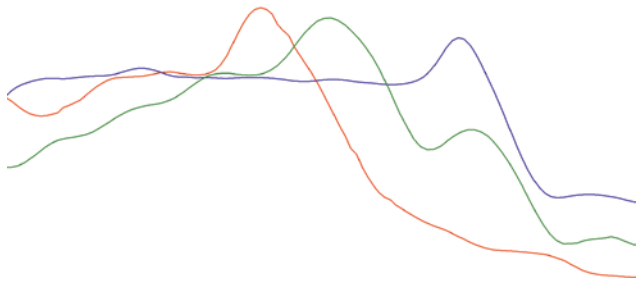

Figure 15. F_0 contours for CF statements uttered by a CI (red line), SI (blue line) and southern SI (green line) speaker.

To assess the acoustic features of Syl1 compared to Syl3 in the two varieties at stake, we also measured syllabic duration, span and slope of the f_0 movement on these syllables. The analysis of these parameters gave mixed results.

On a first inspection, neither Syl1 nor Syl3 duration shows different distributions. They have similar values according to both the varieties and the focus conditions (Syl1 avg values in ms: CI BF: 173.15; CI CF: 175.38; SI BF: 163.44; SI CF: 170.19. Syl3 avg values: CI BF: 248.79; CI CF: 271.15; SI BF: 232.29; SI CF: 249.87). Duration is the most stable correlate of lexical stress in Italian both in production and perception (Bertinetto 1981). Therefore, the lack of statistic difference in Syl1 between the speakers of CI *vs* SI indirectly supports the auditory judgement reported in §2.2, that the high f_0 peak within the prenuclear region does not entail stress shift, i.e. stress retraction from Syl3 to Syl1. On the other hand, it does not provide evidence relating to the difference between contrastive and non-contrastive accents as found in Vanrell *et al.* (2013) for Italian, i.e. a longer syllabic duration of contrastive accents, neither in CI nor in SI.

As for span and slope values within Syl1 and Syl3, despite a considerable within-speaker variability (Figures 16-19 lower panels), they resulted to be significantly different across varieties, but not across focus conditions.

Variety appears to be predictor of span within both Syl1 (Figure 16; Estimate: -0.74912; Std. Error: 0.28663; t value: -2.614) and Syl3 (Figure 17; Estimate: 3.2705; Std. Error: 0.5322; t value: 6.145). These results reveal a reversed situation: as expected, SI shows a wider pitch span within Syl3, i.e. the stressed syllable (SI median: 5.87 ST; CI median: 2.20 ST) while CI within Syl1 (CI median: 1.32 ST; SI median: 0.56 ST). In the context of SI, the data for Syl3 spans demonstrate noticeable variation within speakers, particularly in the BF condition (cf. possible phonetic realizations of nuclear accents in SI BF statements reported in Figures 7 and 9), while the degree of variation is less pronounced in the CI group. Conversely, for Syl1, the situation is reversed. In Syl1, when compared to SI speakers, CI speakers generally exhibit higher span values (except for speaker CI_03 in the BF condition), but they also show greater variation within speakers. We can interpret this larger within-speaker variation as an indication of pitch dynamism for Syl1 in the CI group and for Syl3 in the SI group, respectively (cf. the plotted contours in Figure 13).

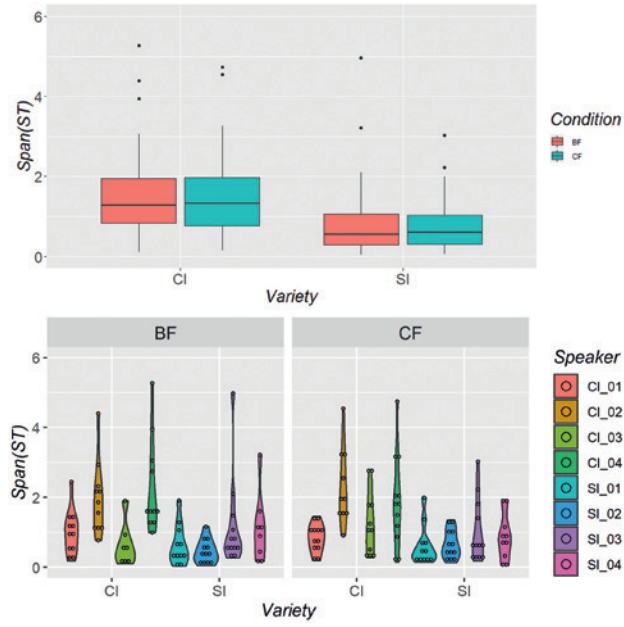

Figure 16. Pitch span (in ST) within Syl1 according to focus condition (BF, CF), variety (CI, SI) and speaker.

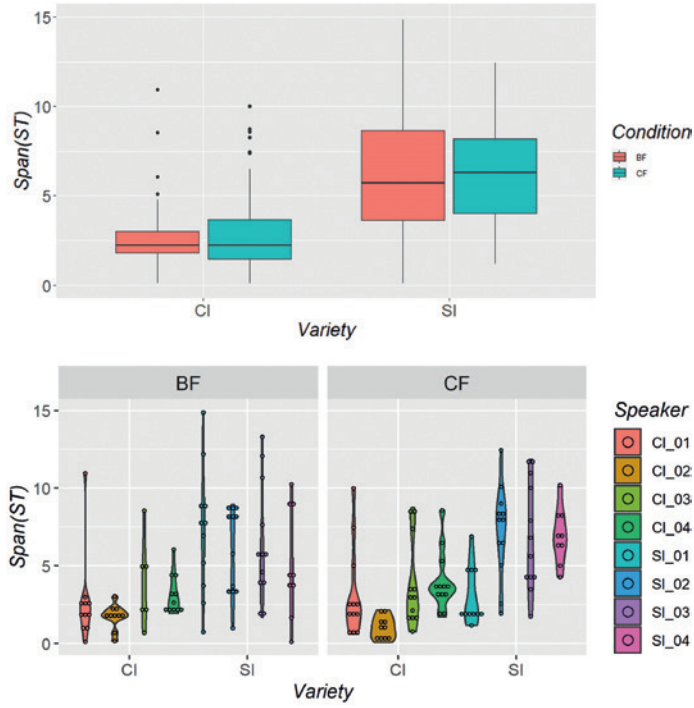

Figure 17. Pitch span (in ST) within Syl3 according to focus conditions (BF, CF), variety (CI, SI) and speaker.

In a similar fashion, slope values are not affected by the focus conditions; the significance only regards the varieties. Syl1 in CI presents a significantly steeper movement compared to SI (Figure 18; Estimate: -3.7859; Std. Error: 1.5966; t value -2.371). By contrast, Syl3 is significantly flatter in CI (Figure 19; Estimate: 14.789; Std. Error: 1.854; t value 7.980).

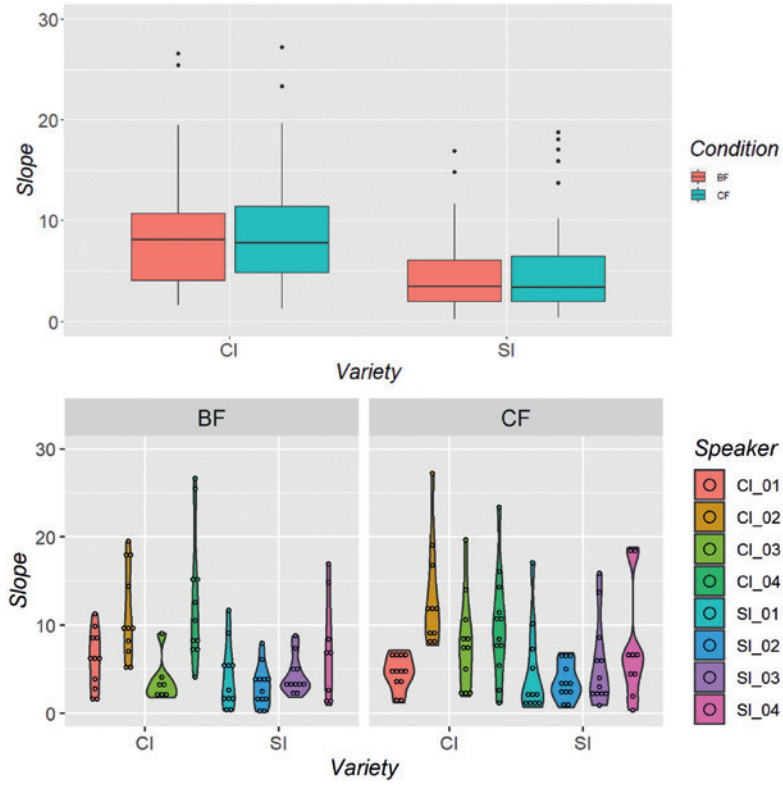

Figure 18. Slope within Syl1 according to focus condition (BF, CF), variety (CI, SI) and speaker.

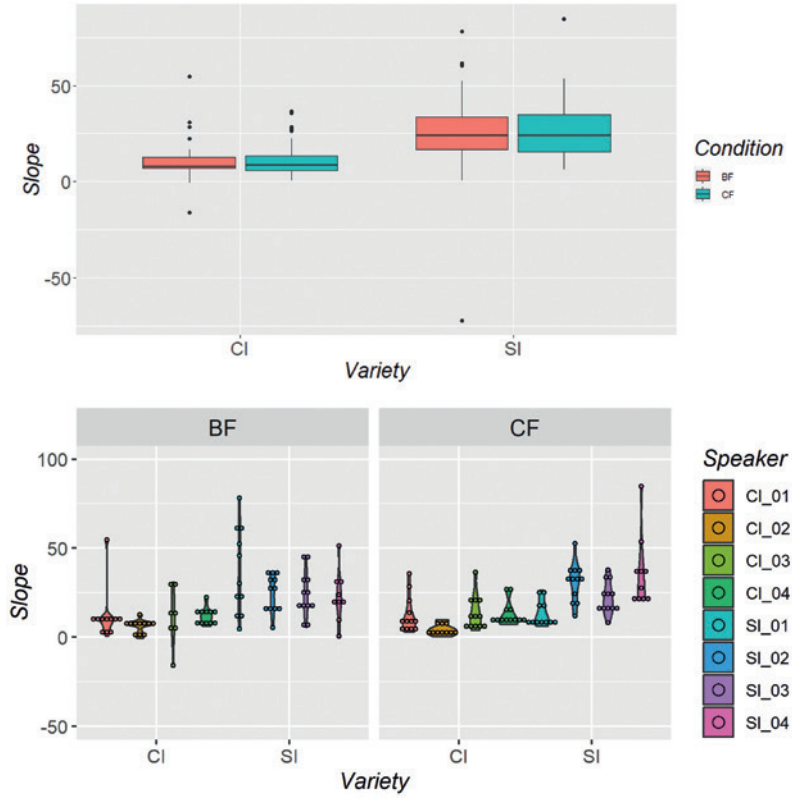

Figure 19. Slope within Syl3 according to focus condition (BF, CF), variety (CI, SI) and speaker.

Results are in line with both the qualitative observations based on Discourse Completion Task data (§2.2) and previous evidence of CI early accentual peak (Cataldo *et al.* 2021). To sum up, the examined speakers from CI and SI clearly differ according to the realization of statements in both prenuclear and nuclear region. A first observation to be made is that CI speakers systematically select the fall tune, hence nuclear accent is always realized with a falling movement throughout the stressed syllable. On the other hand, SI speakers preserve the tune contrast, namely fall *vs* rise-fall, to express broad focus and contrastive focus, respectively. Phonetically, the most striking difference between the varieties (and the only parameter to have a significant condition effect) concerns f_0 max latency, showing that the peak of f_0 is consistently reached in the prenuclear region in CI. Accordingly, in CI Syl1 is realized with a wider pitch excursion and a

steeper movement compared to Sy3. Instead, in SI the prenuclear region is basically flat, and the most salient f_0 change occurs within Syl3, hence in nuclear position, in both BF and CF. The absence of significant differences in syllabic duration across the varieties suggests that a stress shift does not occur towards Syl1 in CI.

4. Discussion

The present study investigates the role of differences in tune distribution and phonetic details in marking the intonational transition between two neighboring varieties of Campania Italian, namely Salerno and Cilento Italian. Within this context we examined variation in focus encoding in statements in these varieties by comparing broad focus and contrastive-corrective statement with sentence-final focus. We used data of semi-spontaneous and read speech from a Discourse Completion Task (§2) for a qualitative exploration of CI productions and data on quadrisyllables elicited through a Reading Task (§3) for a closer quantitative investigation of cross-varietal differences between CI and the neighboring variety of SI. Overall, while CI and SI are very close at the phonological level, other differences in the distribution and phonetic realization of the tunes mark a gradual shift between one variety and the neighboring one. Also, the results confirm that the differences between geographically close-related varieties can lie in phonetic differences involving the prenuclear region.

As for our first hypothesis regarding possible differences in the distribution of tunes between varieties across the Eboli-Lucera line, results from the DCT highlight a choice of pitch accents and boundary tones in CI which is closely comparable to that attested for other varieties, including SI. Specifically, a falling pitch accent (H + L*) is employed in BF statements, while CF statements are realized with either a falling or a rising accent (H + L* and L + H*, respectively); both pitch accent types are followed by low edge tones (L%). The alternation detected between the fall and the rise-fall tune for expressing CF was also previously attested in other Campania varieties, namely NI and SI Italian (Gili Fivela *et al.* 2015), indicating common phonological facies shared by these Italian varieties spoken in Campania. Furthermore, CI data based on DCT show no differences linked to the type of speech (read *vs* semi-spontaneous renditions).

However, Reading Task data produced results that partially diverge from those obtained with the DCT. In fact, in CF condition CI only selects H + L* as a nuclear accent. As a result, and unlike SI, the tune in both BF and CF conditions is realized with a falling nuclear configuration. Overall, CI does have the H + L* *vs* L* + H accentual opposition in its inventory, but

the frequency of occurrence of falling *vs* rising-falling tunes for CF statements is likely to be affected by speech style and be different from, e.g. SI and NI. Differences in the frequency of occurrence of tunes across these varieties have already been observed for other prosodic types, e.g. polar and partial questions (Cataldo & Crocco 2023). However, this hypothesis calls for further research based on more production data and relying on different, preferably less controlled speech styles.

As for our second hypothesis concerning realizational differences between the varieties across a dialectal line, qualitative observations on the DCT data (and the corresponding data from Reading Task) from CI showed in several cases the presence of an auditorily prominent f_0 peak in the prenuclear area of the target word, in both tune types, whereas such a peak does not occur in SI. However, in DCT data, a difference can be noticed according to the type of target word in nuclear position. While in trisyllables the peak precedes immediately the stressed syllable, in quadrisyllables it appears much earlier. Based on the analysis of trisyllables, Cataldo *et al.* (2021) propose that CI productions are characterized by a slight temporal anticipation of the nuclear accent. Although this scenario seems plausible in the case of trisyllables, it applies less straightforwardly to quadrisyllables, since in the latter case the f_0 maximum is reached two syllables before the stressed syllable, i.e., on the first syllable of the target word.

To explore the prenuclear region of quadrisyllables in CI *vs* SI in greater detail, an additional production experiment also based on a Reading Task was performed, focusing on BF and CF statements with paroxytone quadrisyllables in nuclear position. The results confirm the difference between CI and SI as regarding the phonetic implementation of the prenuclear region. In CI, an interplay of different phonetic cues, i.e., peak latency, pitch span and slope conspire to realize an f_0 peak on the first – unstressed – syllable of target words. In particular, the stressed syllable in SI presents a wider pitch excursion and a steeper slope. On the other hand, CI only has negative latency values, so that the prenuclear peak is aligned with the first syllable of the target word, which, accordingly, has wider and steeper f_0 movement compared to the third syllable and to SI.

As mentioned in the Introduction (§1), within the Romance framework, peaks highlighting a word-initial syllable have been observed in several varieties, but analyses do not provide a uniform consideration. Indeed, the interpretation of prenuclear f_0 movements swings from phonological accounts, i.e. secondary accent in Lecce Italian (Neto *et al.* 2020) and Sardinian varieties (Vanrell *et al.* 2015), initial (rising or high) accent in Catalan (Prieto *et al.* 2015) and Occitan (Sichel-Bazin *et al.* 2015) varieties, initial accent of the accentual phrase in French (Delais-Roussarie *et al.*

2015), to phonetic accounts, i.e. H target on pretonic syllables in Caribbean Spanish (Hualde & Prieto 2015). Crucially, those interpreted in Romance as additional phonological prominences express a pragmatically motivated meaning which is absent when the peak only represents a phonetic variant. Nevertheless, DCT data and observations on dialogic speech in CI indicate that the presence of a prenuclear peak is optional and therefore is neither a systematic feature of the variety, nor a device to mark CF *vs* BF intonation in this CI. Moreover, early peaks in CI appear not to be pragmatically motivated, as in other Romance cases in which pitch accent insertion has a stable function and interpretation across different contexts and utterances. In these Romance varieties, moreover, pitch accent insertion can be placed in a broader context of strategies aimed at enhancing emphasis not only in CF condition, but also in other sentence types such as vocatives (Vanrell *et al.* 2015). In CI, when the peak under examination is present, the prenuclear region becomes markedly dynamic and the first syllable of words such as *mandarino* 'tangerine' gains auditory prominence. However, the optionality of the prenuclear peak in CF contexts, the lack of a pragmatically motivated interpretation and the absence of links to pragmatically motivated interpretations across different contexts strengthen the interpretation of the early peak as a phonetic variant, similarly to what has been observed in Caribbean Spanish (Hualde & Prieto 2015).

At this point, we need to reconcile the data from trisyllables, where the prenuclear peak seems resulting from a slightly anticipated realization of the nuclear accent (cf. Cataldo *et al.* 2021), with those emerged from the examination of quadrisyllables, where the anticipation scenario seems unlikely, because the first target would be separated from the second one by syllables. We propose that a phonetic additional peak is inserted in both cases. However, such a peak would be easier to identify as a separate event in quadrisyllables simply because of the greater length of the prenuclear region (i.e., two unstressed syllables rather than one), whereas in trisyllables, where only a prenuclear syllable is present, the peak would appear superficially similar to an early aligned accentual target.

Preliminary data on Cilento dialect (Leo *forthcoming*), show a similar picture, in which the first, unstressed syllable of both focused trisyllables and quadrisyllables consistently presents an auditorily prominent f_0 peak. The interpretation of data presented in this paper calls thus for further investigations, and especially for a comparison between CI and the corresponding Cilento dialect. In fact, the presence of prenuclear prominences in Cilento dialect opens up to the possibility that the peaks observed in CI can be a result of contact with the dialect and that they can have a socio-phonetic value as regional and perhaps social indexes.

In the present context, the divergences between SI and CI lie not in their phonological inventories, but rather in their realized manifestations. Consequently, the case of prenuclear peak insertion discussed in this study highlights the importance of phonetic variation as a source of divergence among different varieties. Indeed, it appears to be a distinctive phonetic feature that characterizes CI intonation, setting it apart from that of SI.

The emergence of a phonetic feature of cross-varietal distinction could be taken as an indication of a parallel transition for dialects and Italian varieties in the Campania area crossed by the Eboli-Lucera line. However, at a closer scrutiny, the picture appears to be more complex. By and large, CI and SI are different from one another at least as regards the phonetic realization of nuclear and prenuclear accents; on the other hand, however, the segmental/morpho-syntactic border line does not correspond to a separation between the two intonational systems. Moreover, results highlight a marked speaker variation, also indicating that the prenuclear peak, where CI and SI diverge, is a minority variant: phonetic divergences and convergences, therefore, are intertwined. Occasional cases of prenuclear peaks found in Salerno Italian DCT productions also concur in indicating that the transition between Salerno and Cilento is smooth and continuous at the heigh of the Eboli-Lucera line. Therefore, in line with the results of Gili Fivela & Nicora (2018) for the La Spezia-Rimini line, also the boundary evoked (cf. Barbato 2022) by the Eboli-Lucera line is not mirrored in the prosodic data. Results rather point to a gradual phonetic transition, i.e., to a geographic cline (cf. Cataldo & Crocco 2023) or a transition area where divergence quantitatively prevails by and large on convergence. It is worth stressing that such line does not lead to a neat separation between the dialectal areas also at the segmental level; quite the opposite, it is not equally solid in all its isoglosses, with some features reaching further north than others (Avolio 1989, 2000). For example, within the dialectal area above the Eboli-Lucera line, which includes Pontecagnano, there are reported instances of "Lucanian" traits that are typically found in the vernaculars of Cilento below the line, such as the partial transformation of /-tts-/ to -CJ- (e.g., *vrazzə* for *braccio*, meaning 'arm'; Avolio 2000). However, while the areas bounded by these segmental isoglosses differ in their spatial extent, within their boundaries they do exhibit a certain level of homogeneity. In contrast, the prenuclear peak insertion of CI does not exhibit this homogeneous character, as its occurrence varies both within and among speakers.

5. Conclusions

This work delved into the spatial variation in Italian intonation by examining the phonetic realization of two declarative tunes. While further investigations on a larger scale, encompassing diverse phenomena, are necessary to gain a deeper understanding of the dynamics of divergence and convergence among neighboring varieties, the differences between SI and CI concerning the realization of the prenuclear region presented in this article support the critical perspective put forward in previous research (Gili Fivela & Nicora 2018). While the presence of clear-cut boundaries distinguishing different varieties at the tonal level has been noted in other contexts (Gussenhoven 2014), the close-up observation of the Campania intonational space points at divergences that gradually emerge from the alternation of variants.

Abbreviations

NI = Neapolitan Italian, SI = Salerno Italian, CI = Cilento Italian, BF = Broad Focus, CF = Contrastive Focus, DCT = Discourse Completion Task, RT = Reading Task.

Note

[1] The present study is the result of a joint work between the authors. However, for academic purposes only, §§ 1 and 2 are attributed to Violetta Cataldo, §§ 3 and 4 to Claudia Crocco, §5 to both the authors.

[2] Examples: *mandarinu* 'tangerine' in Sardinian, *taronges* 'oranges' in Catalan, *irang-es* 'oranges' in Occitan, *oranges* 'oranges' in French.

[3] Trisyllables: *diverso* 'different', *finestra* 'window', *guinzaglio* 'leash' (3 instances), *panchina* 'bench' (4 instances), *normale* 'normal', *erbetta* 'grass'. Quadrisyllables: *diag-onale* 'diagonal', *cavaliere* 'knight', *monumento* 'monument' (2 instances). One occurrence in the sequence monosyllabic preposition + disyllabic word with lexical stress on the first syllable with the f_0 peak on the preposition, i.e. (*siamo arrivati*) *a cinque* (*giusto*?) '(we arrived) at five (right?)'.

[4] Figure 2 shows the occurrence of a prenuclear accent, that in CI data was found to have different phonetic realizations, mirroring the situation attested for SI. According to Orrico (2020:117), prenuclear accents are analyzed as H* and can be phonetically realized as a rising movement from a low pre-tonic region and a late peak aligned with the right edge of the stressed vowel or even beyond (in the post-stressed syllable). However, both realizations were considered as phonetic variants of the same accent in SI (Orrico 2020) as well as in NI (Brunetti *et al.* 2010). On this basis, since CI prenuclear accents include both variants, and for the sake of inter-variety annotation consistency, H* was chosen for prenuclear accents in CI as well.

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