Language contact and prosodic interference:
Nuclear configurations in Occitan and French statements of the obvious

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Abstract

This paper examines the intonation of statements of the obvious in two varieties in narrow contact, Occitan and Southern French. They are contrasted with Northern French that has developed independently. As a consequence of intense contact, conservative Southern French speakers use the same rising-falling nuclear configuration as in Occitan, whereas Northern French speakers display a rising pattern that ends in a short high plateau. Less conservative Southern French speakers, who show a tendency towards standard French, also tend to adopt the Northern French pattern but may maintain the rising-falling accent of the Occitan/Southern French contour.

Index terms: intonation, language contact, prosodic interference, Occitan, French, obviousness

1. Occitan – French: two languages in contact

Occitan is a Gallo-Romance language that occupies a central position in the Romance family, neighboring with Ibero-Romance in the Southwest, Italo-Romance in the East and French, another Gallo-Romance language, in the North [1].

Figure 1: *Geographic location of Occitan and French within Romance.*

Occitan benefits from legal protection in the Aran Valley (Catalonia, Spain) and in a dozen of Alpine valleys in Piedmont (Italy), but it does not have any legal status in France, where the main part of its territory is located, all other languages but French having been banned from official usage in this country since 1539 (Ordonnance de Villers-Cotterêts) [2]. The resulting diglossic situation has led to the marginalization of Occitan, and generational transmission ceased during the first half of the 20th century: speaking the local language (which was labeled as a bunch of useless *patois*, and prohibited at school) was considered a lack of education impeding social advancement [3,4]. French has become the main language since, and Occitan continues to decline: Speakers of Occitan are all bilingual, they are few, belong to the older generation and are dispersed throughout a large territory. In any case, their language is highly threatened. In urban areas the process of linguistic substitution started earlier and the presence of Occitan is much lower than in rural zones.

The adoption of French by Occitan speakers has led to mutual interference on all linguistic levels, affecting Occitan and giving rise to a particular variety of French referred to as Southern or Midi French. Occitan influence is most evident in the phonology, where both segmental and prosodic properties are concerned [5,6]. At the prosodic level, it has been shown that language contact induces mutual transfer of suprasegmental features, such as pitch accent types and distribution [7,8] or rhythmic properties [9]. Our project *Intonation im Sprachkontakt: Okzitanisch und Französisch*, funded by the Deutsche Forschungsgemeinschaft, aims at investigating the prosodic consequences of the Occitan-French contact [10,11].

2. Data and methodology

The corpus collected for our project consists of spontaneous and semi-spontaneous speech, in Occitan and Southern French from Lacaune (Tarn), in Southern French from Toulouse (Haute Garonne) and in Northern French from Orléans (Loiret) and Lille (Nord). The data used for this study come from intonation questionnaires elaborated on the basis of the *Discourse Completion Test* [12,13]. Subjects are presented with different everyday-life situations, to which they are prompted to respond in the most natural way. This inductive method provides comparable recordings avoiding reading tasks, which cannot be conducted with Occitan speakers, as they have never had any schooling in their language. In this way we collected a whole set of semi-spontaneous declaratives, yes-no questions, wh-questions, imperatives and vocatives, with different controlled semantico-pragmatic meanings.

Here, we focus on statements of the obvious, which were obtained presenting the following situation to the speakers:

> *You are talking with your neighbor and you have just explained that a mutual friend is pregnant. Your neighbor asks you who the father is. You are astonished that she would ask you, since everybody knows the father is Jòrdi (Occitan) / Julien (French), your friend's husband. How do you reply to your neighbor's question?*

The expected response was of the kind:

> *It's her husband, of course!*

To investigate if language contact has affected intonation in such statements of the obvious, we analyzed a total of 40 utterances from 10 speakers in each of the four following linguistic varieties: the central Lengadocian dialect of Occitan (La_OC) and the Southern French (La_SF) from Lacaune, a rural place where language contact is still present; the Southern French (To_SF) from Toulouse, an urban place where Occitan is only residual; and the Northern French (Li_NF)

from Lille, an urban place without any contact with Occitan. Speakers from Lacaune are at least in their late fifties, whereas most of the speakers from Toulouse and Lille are students (between 18 and 23).

Following the Autosegmental Metrical (AM) model [14], nuclear configurations, which convey semantico-pragmatic meaning, are defined as a combination of nuclear pitch accent plus boundary tone. First observations showed that different intonational patterns were associated with statements of the obvious in the linguistic varieties under study, some displaying rising and others rising-falling nuclear configurations.

In order to check whether these differences are variety-specific, we analyzed the alignment properties of the tonal targets and the scaling of the boundary tones, annotating syllables, segments and tonal targets in Praat [15]. Whereas the F0 maximum corresponding to the nuclear peak was detected automatically, we annotated manually the beginning of the nuclear rise and the final boundary tone. A script was designed to extract F0 values at tonal targets as well as time values at tonal targets and at the beginning and end of segments and syllables. One-way ANOVAs were performed in SPSS to examine the relationship between the linguistic variety and the alignment properties of the F0 peak with respect to segmental landmarks, as well as the difference in scaling between the peak and the boundary tone.

3. Results and discussion

3.1. Contour types and distribution by variety

The contours encountered in the French and Occitan statements of the obvious group into two main types: rising (R) vs. rising-falling (RF).

In all rising-falling contours, the beginning of the nuclear rise is associated with the onset of the preaccentual syllable and the peak aligns within the accented syllable where pitch starts falling. Differences in the scaling of the final boundary tone allow dividing the rising-falling patterns in two subtypes: rising-falling ending in a low (RFL, Fig. 2) vs. in a mid tone (RFM, Fig. 3).

In rising contours, the onset of the rise displays two different alignment patterns. In early rising (ER) contours, the beginning of the nuclear rise aligns with the onset of the preaccentual syllable (Fig. 4) as it does in the rising-falling patterns. In late rising (LR) contours, the rise aligns with the accented syllable (Fig. 5). In both cases, the F0 peak occurs within the accented syllable and is followed by a short (sometimes slightly falling) plateau.
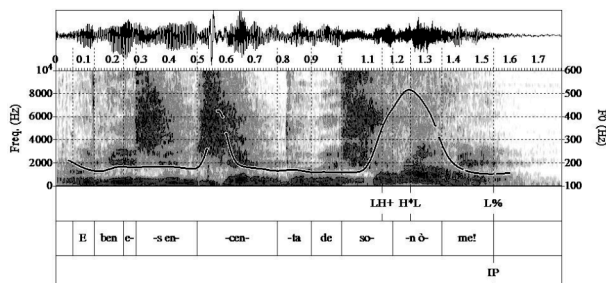
Figure 2: *Statement of the obvious in La_OC with a RFL contour (La_oc_YC01): "E ben es encenta de son òme!"*
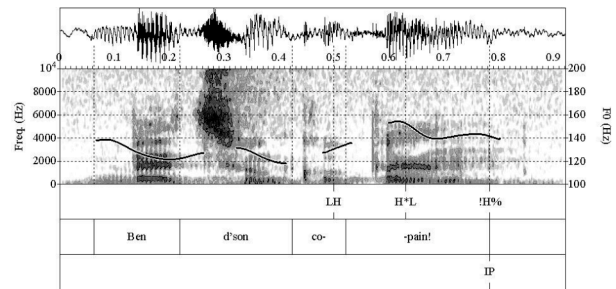
Figure 3: *Statement of the obvious in To_SF with a RFM contour (To_fm_Ni02): "Ben d'son copain !"*
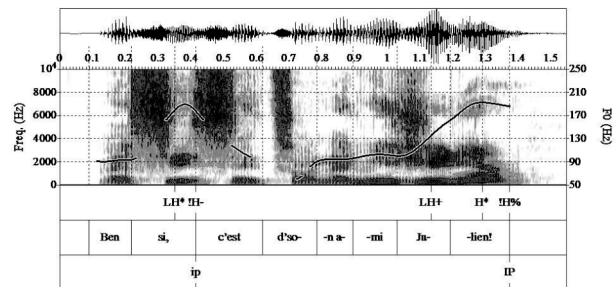
Figure 4: *Statement of the obvious in Li_NF with an ER contour (Li_fr_RL01): "Ben si, c'est d'son ami Julien !"*
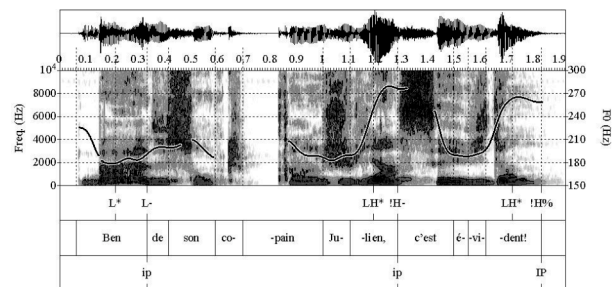
Figure 5: *Statement of the obvious in Li_NF with a LR contour (Li_fr_FV01): "Ben de son copain Julien, c'est évident !"*

Figure 6 shows the distribution of the nuclear configurations in statements of the obvious by variety: whereas rising-falling patterns were found only in southern varieties (Occitan and French from Lacaune La_OC, La_SF and in French from Toulouse To_SF), rising patterns were found both in French from Lille and from Toulouse (Li_NF and To_SF).

RFL corresponds to 100% of the cases in both languages in Lacaune (La_OC and La_SF), and to the 20% of the recordings from Toulouse (To_SF), uttered by the only two speakers whose first language is Occitan (aged 58 and 82). RFM was produced only in Southern French, namely by three students from Toulouse (30% of the To_SF data).

Rising contours were found in 100% of the cases in Lille (Li_NF) and in 50% in Toulouse (To_SF). While all the rising patterns in To_SF were consistently early rises (ER), the alignment of the onset of the rise showed a much bigger variability in Lille (Li_NF): though some cases showed values in between, 60% were classified as early (ER) and 40% as late rises (LR).
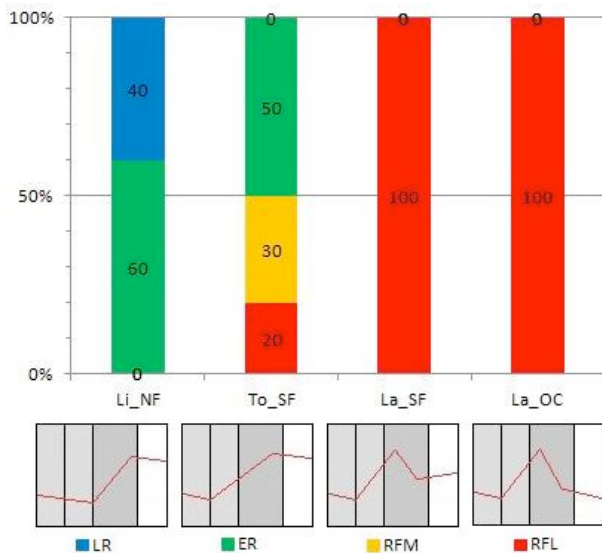
Figure 6: *Distribution of the nuclear configurations by variety.*

3.2 Alignment of the F0 peak

Rising-falling and rising patterns appear to differ in the shape of the contour within the accented syllable, corresponding to different pitch accent types: LH+H*L in rising-falling contours, LH+H* in early rises and LH* in late rises, according to the current French and Occitan ToBI labels [16,17]. This affects the alignment of the F0 peak, which must be late in the accented syllable in rising contours, but early in rising-falling contours since it is followed by a L trailing tone. To explore the use of different pitch accents according to the varieties, we investigated the alignment of the peak with respect to the edges of the accented syllable, calculating the following ratio:

$$tH\_\%Sdur = 100 * (tH - tSbeg) / (tSend - tSbeg)$$

where tH is the time at the F0 maximum, and tSbeg and tSend are the time at the beginning and at the end of the accented syllable, respectively.

Figure 7 shows the mean values of this peak alignment ratio tH_%Sdur for each variety.
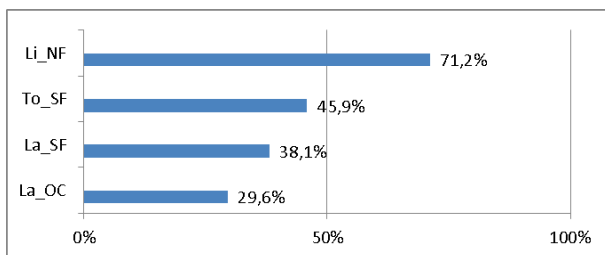

Figure 7: *Mean values of peak alignment in percentage of the accented syllable duration by variety.*

A one-way ANOVA showed that the variety did indeed have an effect on the alignment of the peak within the accented syllable ($F_{(3,36)} = 11.860$, $p<.001$). Post-hoc Tukey test revealed that the Northern French from Lille (Li_NF) behaves in a way that differs significantly from all the other varieties: To_SF ($p<.01$), La_SF ($p<.001$) and La_OC

($p<.001$). Yet there is no significant difference in the alignment of the peak between any of the southern varieties (La_OC, La_SF and To_SF). Since it was also possible that speech rate might affect tonal alignment, we tested for a possible correlation, but Pearson's correlation tests showed no noteworthy effect ($r = -.256$; and for the logarithms of the values: $r = -.266$) [18].

Thus, the peak normally aligns within the first half of the accented syllable in southern varieties using rising-falling patterns, whereas it aligns within the second half in Lille (Li_NF) where strictly rising patterns are found. However, we pointed out above that in Toulouse (To_SF) both rising-falling and early rising patterns were found; though the difference is not significant, this explains why the mean value is higher in Toulouse (To_SF) than in both languages in Lacaune (La_OC and La_SF).

3.3 Scaling of the boundary tone

While rising contours all end in a short high plateau, rising-falling contours may display different patterns at the end of the utterance: F0 is much lower in RFL than in RFM, which indicates a difference in boundary tones (L% in RFL vs. !H% in RFM and in rising patterns). In order to examine whether the linguistic varieties under study used different boundary tones in the statements of the obvious, we calculated the F0 difference between the peak and the final point of the prosodic group.

The boundary tone is consistently more than 2.5 st lower than the peak in RFL patterns, sometimes showing falls of more than one octave. This is the case in both languages in Lacaune (La_OC and La_SF) and in the productions of the two speakers from Toulouse whose first language is Occitan. In Southern French from Toulouse (To_SF) a mid boundary tone !H% is used in the utterances of all younger speakers (rising patterns 50%, RFM 30%): final F0 is less than 2.5 st lower than the peak. This is also the case in 100% of the utterances from Lille (Li_NF).

Variety	F0 from peak to boundary tone	
Li_NF	**-0.88 st**	(SD: +/-0.63)
To_SF	**-3.88 st**	(SD: +/-6.23)
La_SF	**-10.81 st**	(SD: +/-4.53)
La_OC	**-12.74 st**	(SD: +/-5.02)

Table 1. *Mean values of F0 difference between peak and boundary tone by variety.*

Table 1 gives the mean values in semitones of the F0 difference between the peak and the boundary tone by variety (and their standard variation). A one-way ANOVA demonstrated that the variety has an effect on this value ($F_{(3,36)} = 14.836$, $p<.001$). Post-hoc Tukey tests revealed that La_OC and La_SF both behave in a significantly different way from Li_NF ($p<.001$), but also from To_SF ($p=.001$ for La_OC and $p=.01$ for La_SF). However there is no significant difference for this value between the two languages in Lacaune (La_OC and La_SF), and nor is there a significant difference between the varieties of French spoken in urban areas (To_SF and Li_NF).

4. Conclusions

The statements of the obvious display different nuclear configurations in Occitan and French varieties.

In the Occitan from Lacaune, the contour used is always rising-falling, ending in a low tone: LH+H*L L%. In this rural area where contact between Occitan and French is still present, the nuclear configuration used in the local French variety is exactly the same.

Differently, in the French variety spoken in Lille, a variety that has no contact with Occitan and is considered to be close to the standard, the contours found are all rising, ending in a short high plateau: 60% with an early rise (LH+H* !H%) and 40% with a late rise (LH* !H%).

In Toulouse, an urban area, contact with Northern French and the subsequent decline of Occitan started much earlier than in Lacaune. The two speakers from Toulouse whose first language is Occitan apply the Occitan LH+H*L L% contour in their French. Three of the younger speakers also use the typical southern rising-falling pitch accent LH+H*L. However, the final fall does not reach a low level but ends in a mid boundary tone !H%. The other five young speakers produced an early rising contour LH+H* !H% similar to that found in Lille.

Further research should include perception experiments to test the adequacy of these contours for the expression of obviousness as well as to determine to which extent they contribute to the identification of a regional accent. Our results show, however, that in situations where contact between French and Occitan is still intense, the Occitan contour for statements of the obvious is more likely to be chosen. In situations with less contact, speakers tend to use contours similar to those found in (close-to-)standard varieties. Thus, contact-induced prosodic interference does not seem to be stable: it may disappear when the source language – or substrate – is not present any more.

5. References

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