


RESEARCH NOTE

# An Argument for Phonological Stress in French: the syntagm over contrast<sup>1</sup>

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## Abstract

It is standardly assumed that French does not have word-stress, rather it has phrase-level prominence. I will advance a number of arguments, many of which have appeared already in the literature, that cumulatively suggest that French roots are characterized by phonological prominence, even if this is non-contrastive. By prominence, I mean a syntagmatically distributed strength that has all the phonological characteristics of stress in other Romance languages. I will remain agnostic about the nature of that stress, eschewing the lively debate about whether French has feet, and if so what type, and at what level. The structure of the argument is as follows. French demonstrably has phonological word-final strength but one wonders what the source of this strength is. Positionally, the initial position is strong and, independently of cases where it is reinforced by other factors, the final position is weak. I will argue, based on parallels with other Romance languages, that French word-final strength derives from root-final phonological stress. The broader significance of this conclusion is that syntagmatic properties are enough to motivate underlying forms, even in the absence of paradigmatic contrasts (minimal pairs).

## 1. Introduction

It is widely believed that there is no sub-phrasal stress in French,<sup>2</sup> at the ‘word’ ‘stem’ or ‘root’ (Posner, 1997).<sup>3</sup> Defined in standard terms, Latin and other Romance

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<sup>2</sup>In this article, I will be describing the Contemporary Parisian French of my middle class informants, I will refer to this as ‘French’ throughout. Most of these facts vary slightly (or considerably) across different dialects.

<sup>3</sup>The formal properties and concept of foot are far from clear (Newell et al. 2017), I occasionally use the term descriptively unless directly referring to the Prosodic Word (PwD) (Nespor and Vogel, 1986).

languages all show evidence for a right-aligned foot, quantity-sensitive in the case of Latin and Italian and more ambiguously so in Spanish (Hualde, 2005). French is typically described as non-quantity sensitive and it has been argued not to possess foot structure at all (Özçelik, 2016) (though see: Durand, 1976; 1980; 1986; Selkirk, 1978; Charette, 1991; Eychenne, 2006; Goad and Buckley, 2006; Durand and Eychenne, 2007). Whatever the case is regarding foot-structure, French certainly does not split its lexicon into oxytonic, paroxytonic, and proparoxytonic forms, that is to say that French has no contrastive stress.

## (1) Stress in Romance

	<b>Final stress</b>	<b>Penultimate</b>		<b>Antepenultimate</b>	
Italian	[karitá]	[sapó:ne]	‘soap’	[vípera]	‘viper’
	‘charity’				
Spanish	[xaβalí]	[palóma]	‘dove’	[lámpara]	‘lamp’
	‘wild boar’				
French	[ʃaríté]	–		–	
	‘charity’				

Key changes from Latin to French saw the loss of quantity-sensitivity in the third–fourth century, along with monophthongization and the attrition of stressless syllables (Vaissière, 1996).

## (2) Loss of material surrounding stress (French)

a.	*ásinus	>	*ásne	>	[an]	‘donkey’
b.	*pávo(nis)	>	*paon	>	[pã]	‘peacock’
c.	*súbtus	>	*sou	>	[su]	‘type of coin’

In Contemporary French, the domain of prominence in French is not assumed to be the word. Instead, French prominence is commonly described at the level of the phrase (Delattre, 1966; Dell, 1984; Jun and Fougeron, 2000; Hyman, 2014), in the form of a phrase-final boundary tone (Rossi, 1980; Vaissière, 1983; Martin, 1987; Féry, 2001), or an intonational pattern applied at the ‘accentual phrase’: LHiLH\* (Jun and Fougeron, 2000).

The synchronic lack of underlying word-level stress is confirmed experimentally by the effect of ‘stress deafness’ (Dupoux et al., 1997; Peperkamp and Dupoux, 2002). As a reviewer points out, Peperkamp and Dupoux (2002) do not preclude word-level prominence in French, even citing a phonetic study where due to its non-contrastivity, it can be used by speakers for lexical segmentation (Rietveld, 1980). However, the clear implication of their work is that this word-level stress is not a part of the underlying form.

Phonologically, tone and stress are often insightfully grouped together as ‘accent’. In some languages (e.g. Saramaccan (Eng. Creole)), a high pitch marks the correspondingly stressed position of English words: [bróð̃] > *baráda* > *baráda* > [baáa] (Aceto, 1996; Schumann [1778]). Likewise, in some tonal languages, such as Mandarin Chinese, function words or thematic prefixes do not carry a tone, analogous to the functional lexicon in English that does not bear stress.

If French has no underlying phonological word-stress at all, and its boundary tone is a phrasal tonal/intonational phenomenon, French might be argued to have neither phonological word-stress, nor word-level tonal prominence. Exceedingly few languages meet this description: Hungarian (Peperkamp and Dupoux, 2002), Ambonese Malay (Maskikit-Essed and Gussenhoven, 2016), Yowlumne (Newman, 1944; Archangeli, 1984–1985), Kuki-Thaadow (Hyman, 2010), and Rotokas (Firchow, 1974). There are also often poorly described and may be misanalysed. It is vital that the typological significance of French is properly understood.

## 2. Final strength in French

It is a straightforward typological observation that stressed positions in words contains a greater number of vocalic contrasts than stressless positions (Crosswhite, 2001). Stress licensing a greater number of contrasts even forms an unchallenged implicational universal: no system has a greater number of vocalic contrasts in unstressed positions than it does in stressed positions.

(3)	Stress and vowel contrasts, Neapolitan (Harris, 2005)						
Stressed	i	e	ɛ	a	o	ɔ	u
Unstressed		ə		a		u	

- i. p[ɔ:]rta 'he brings' p[u]rtáte 'bring.IMP.PL'  
 ii. s[é]ccia 'cuttlefish' s[ə]cciatélla 'small cuttlefish'

French has essentially this same pattern of vowel contrasts in stressed positions (Tranel, 1987: 58–59), though this is not immediately obvious, it requires analysis. Though the ultimate explanation of the pattern is diachronic, the distribution forms a synchronic strength-based asymmetry available to the learner.

In French, open and close-mid vowels do not initially appear to be underlyingly contrastive. Traditional descriptions of French assume that mid vowels are regulated by a rule called the *loi de position* (Morin, 1986). Close-mid vowels [e, o, ø] are found in open syllables and the open-mid vowels [ɛ, ɔ, œ] are found in closed syllables. For a recent description of its phonetic characterization see Storme (2017).

### (4) *Loi de position* in French

- a. Closed syllables  
 [pɛktín] *pectine* \* [pɛktín] 'pectine'  
 [ʁɔkfɔʁ] *Roquefort* \* [ʁɔkfɔʁ] 'Roquefort'
- b. Open syllables  
 [lezé] *lésé* \* [lezé] 'cheated'  
 [polí] *poli* \* [polí] 'polite'

There are some systematic exceptions to the *loi de position*, such as open-mid vowels before non-final /ʁ/ (Tranel, 1987),<sup>4</sup> as well as other allophonies (assimilations and lengthening effects). However, what is of interest to us here is that the word-final position habitually hosts a contrast between open and close-mid vowels. This is the only context where there are minimal pairs for mid vowels.<sup>5</sup>

(5) Open-mid vowel contrasts in open syllables (many examples from Tranel, 1987: 51)<sup>6</sup>

a.	[le]	<i>lé</i>	‘wallpaper’
b.	[lɛ]	<i>lait</i>	‘milk’
c.	[epɛ]	<i>épée</i>	‘sword’
d.	[epɛ]	<i>épais</i>	‘thick’
e.	[sol]	<i>saule</i>	‘willow’
f.	[sol]	<i>sol</i>	‘floor’
g.	[avœgl]	<i>aveugle</i>	‘blind’
h.	[pɛ̃ntatøk]	<i>pentateuque</i>	‘pentateuch’

It is important to eliminate the confound of underlying consonants that are not pronounced on the surface. This is because many forms with the ‘unexpected’ open-mid vowels in open syllables come historically from consonant-final forms (still shown orthographically in (5)), moreover, in many of these forms, the consonant still alternates with zero in liaison contexts: /epɛ<s>/ > [epesi] *épaissi* ‘thicken’. The quality of this consonant is not only ‘t’, so it cannot be inserted by epenthesis, unlike: [kaju] *caillou* ‘stone’ vs. [kajutø] *caillou+eux* (stone + adj) ‘stony’ (Pagliano, 2003). Since the quality of these consonants is unpredictable, they must be root-final consonants.<sup>7</sup> One has to eliminate the possibility that these are allophonic products of the *loi de position* triggered by underlying final consonants that close the syllable.

Synchronically, a final floating consonant does *not* determine vowel quality.

Firstly, not all final-open vowels are synchronically followed by a floating consonant. Though items like [lɛ] *lait* ‘milk’ once had an etymological ‘t’, this final consonant has been entirely lost. It does not even surface in hiatus contexts: [lɔ.lɛ.ɛ.blã] *le lait est blanc* ‘the milk is white’ (cf. [pʁɛ] *prêt* ‘ready’ > [pʁɛ̃tapaʁtɪv] ‘ready to leave’).

Secondly, even when there is a final floating consonant, the floating consonant does *not* close a syllable. There are many words which end in final close-mid vowels and a floating consonant. One example would be ‘pot’ which has a close-mid vowel followed by a floating /t/. The floating consonant surfaces in liaison contexts: [po.to.fø] ‘pot-au-feu’, but in isolation the item is pronounced [po] \*[pɔ] ‘pot’.

<sup>4</sup>These are forms like: [pe.ʁo.ké] *perroquet* ‘parrot’. Though many well-educated Standard French speakers produce these forms in accordance with the *loi de position* anyway (using an open-mid vowel in final position): [pe.ʁo.kɛ].

<sup>5</sup>Diachronically these were closed syllables, but that is not the case synchronically.

<sup>6</sup>There are some asymmetries, for instance, there are no final back open-mid vowels \*[ko]. The asymmetry is best encoded in Underlying Forms.

<sup>7</sup>In representational analyses, these final consonants are floating segments (Charette, 1991; Scheer, 2016).

The same argument can be made for many other items with a range of different underlying consonants.<sup>8</sup> Take for instance, /mjø<z>/ *mieux* ‘better’. This undergoes ‘z’ liaison: [mjøzɛ̃tʃ] *mieux être* ‘better to be’, but in isolation it surfaces as close-mid: [mjø]. Or one could take /tʁo<p>/ *trop* ‘too much’, which undergoes ‘p’ liaison: [tʁopɛp] *trop épais* ‘too thick’, but in isolation also surfaces with a close-mid vowel: [tʁo] *trop* ‘too (much)’.

(6) No deterministic relation between floating C and vowel quality

a. Mid vowel contrast without floating C

[lé] <i>lé</i> ‘wallpaper’	[lɛ] <i>lait</i> ‘milk’
C                    V	C                    V
l                    e	l                    ɛ

b. Mid vowel contrast with floating C

[tʁó] <i>trop</i> ‘too (much)’	[pʁɛ] <i>prêt</i> ‘ready’
C                    V	C                    V
tʁ                    o	<p>                    pʁ                    ɛ                    <t>

(7)	French mid-vowel distribution									
	i	y	e	ɛ	ø	œ	a	o	ɔ	u
<b>Open Medial</b>	i	y	e	ɛ	ø	œ	a	o	ɔ	u
<b>Open Final</b>	i	y	e	ɛ	ø	œ	a	o	ɔ	u
<b>Closed Medial</b>	i	y	e	ɛ	ø	œ	a	o	ɔ	u
<b>Closed Final</b>	i	y	e	ɛ	ø	œ	a	o	ɔ	u

The final context always has the widest set of underlying contrasts.

Scheer (2004) distinguishes three different sources of phonological strength: (a) positional, (b) prosodic (Harris, 1994), (c) feature sharing (Honeybone, 2002, 2005).

Aspiration in English can be taken as an example of the inherent strength of the initial position. Usually seen as an expression of prosodic strength (Harris, 1994) due to its pretonic distribution (8a-b), however, aspiration is also found in initial unstressed position (8d).

(8) Initial strength (Current London English)

a.	[p <sup>h</sup> i:p]	‘peep’
b.	[əp <sup>h</sup> ɪnjən]	‘opinion’
c.	[p <sup>h</sup> ɔpi]	* [p <sup>h</sup> ɔp <sup>h</sup> i]                    ‘poppy’
d.	[p <sup>h</sup> .ɪəp <sup>h</sup> əʊzʊ]	‘proposal’

The inherent strength of the initial position has been shown experimentally (Becker et al., 2012), and there is a strong statistical universal where neutralization targets word-ends over word-beginnings (Wedel et al., to appear).

<sup>8</sup>Consonants in angle brackets (e.g. <z>) indicate their floating status.

The final position is inherently weak. Typologically, there are very few clearly positional phonological word-final strengthening effects.<sup>9</sup> Word-final edges when not protected by stress tend to delete diachronically (see 2). Moreover, all things being equal, we see contrast neutralization in final position, unless it is stressed. In Brazilian Portuguese, for instance, where the stressed position can hold 7 vowels, the pretonic position (medial or initial but unaccented) can hold 5, but word-finally it can have only 3.

## (9) Brazilian Portuguese (Nevins, 2012)

Tonic	a, i, o, e, ɔ, ε, u	(7/7)
Pretonic	a, i, o/ɔ, e/ε, u	(5/7)
Final	i, u, a	(3/7)

The final position is inherently weak, however, it can be made strong with stress. I suppose this is what happens in French. An example of stress conveying strength to final syllables comes from Standard Tuscan Italian.

As shown beneath, Italian has seven vowels in stressed position (10a). The internal (initial and medial) unstressed position can hold a five-way contrast (10b). The final unstressed position is inherently weaker with only a four-way contrast (10c). Unstressed positions cannot hold open-mid vowels. The final position can be strong as long it is stressed (10d).

## (10) Standard Tuscan Italian

a.	Tonic	a, i, o, e, ɔ, ε, u	(7/7)
b.	Internal unstressed	a, i, o, e, u	(5/7)
c.	Final unstressed	a, i, o, e	(4/7)
d.	Final stressed	a, i, (o, e) ɔ, ε, u	(5,7/7) <sup>10</sup>

The final position is inherently weaker than medial positions, but stress overcomes positional weakness. French is taken to be the same, and it makes it more coherent from a theoretical typological perspective (cf. Tranel (1987)). This implies that French has underlying stress in roots; underlying because its expression is in terms of underlying vowel contrasts; despite lacking lexical contrastivity.<sup>11</sup>

<sup>9</sup>One example is the occlusivization of final fricatives in Korean (Kim and Jongman, 1994).

<sup>10</sup>The presence of final stressed close-mid vowels is marginal.

<sup>11</sup>A reviewer points out that a clarification needs to be made here, since some readers will be thinking that in models such as Optimality Theory (Prince and Smolensky, 1993; McCarthy and Prince, 1995), these asymmetries would be handled by surface-oriented phonological constraints, not conditions on underlying forms. Assuming this, the reviewer is concerned that readers might take the conclusions of this argument to be framework specific.

The reviewer writes: 'the preservation of mid-vowel contrasts in stressed syllables can be derived with a positional faithfulness constraint requiring [...] if it bears stress on the surface'. This is true for the *preservation*, yes, but not the underlying distribution of those features. These are two separate things, even in Optimality Theory.

The relationship between OT's surface-oriented framework and the status of underlying forms is complicated, in fact, I would go as far as to say it is confused (cf. Faust et al., 2018). *Richness of the Base* (Smolensky and Prince, 1993) does not (and is not intended to) negate a language specific lexicon. Consequently, the way that lexical patterns are formed becomes slightly mysterious (and framework internal to OT).

### 3. [ə]-Adjustment

Final prominence in the underlying distribution of vowels is argued to be an expression of phonological stress. In addition to this static distribution, French also presents an allophonic alternation that I will claim, following Charette (1991: 172), is stress-conditioned. This process involves the strengthening of schwa in final position: [kʁəvé] *crever* ‘die.INF’ vs. [kʁév] *crève* ‘die.1P.PRES.IND’; so-called ə-adjustment.

Dell (1973; 1980) collapses ə-adjustment with another rule called e-adjustment: [netwajé] *nettoyer* ‘to clean’, [nét] *net* ‘neat’, into a larger rule: *Closed Syllable Adjustment* (CSA) (Dell, 1973; 1980).<sup>12</sup> Arguments against this conflation are presented in Tranel (1984) but they are not strictly relevant here, so I will only present the strictly necessary data for ə-adjustment.

#### (11) ə-adjustment<sup>13,14</sup>

a.	[otəlje]	<i>hôtelier</i>	‘hotelier’	[otəl]	<i>hotel</i>	‘hotel’
b.	[aʃ(ə)te]	<i>acheter</i>	‘to buy’	[aʃt]	<i>achète</i>	‘buy’
c.	[aksələ]	<i>arsole</i>	‘to harass’	[aksəl]	<i>harcèle</i>	‘harass’

In isolation these may seem to support phrasal stress: [(il + (aʃt))<sub>Pph</sub>] > [ilaʃt] *il achète* ‘he buys’. However, if [ə]-adjustment was conditioned by phrasal stress, it should not apply in non-phrase-final position, this prediction is categorically wrong.

#### (12) [ə] - [é] allophony has to be word-level

(a) Rule  $\alpha$  (to be [ə] → [é]/<sub>Pph</sub> rejected):

Input	/√apəl/ (apəl) <sub>V</sub>
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The original definition of positional faithfulness (mentioned by the reviewer) seems to conflate the input and the underlying form: “IDENT-Position(F) - Let  $\beta$  be an output segment in a privileged position P and  $\alpha$  the input correspondent of  $\beta$ . If  $\beta$  is [ $\gamma$ F], then  $\alpha$  must be [ $\gamma$ F]. Correspondent segments in a privileged position must have identical specifications for [F]” (Beckman, 1998:8).

Even in OT, the French lexicon would have the same featural distribution that I assume here. Therefore, even under these assumptions, there would be a syntagmatic contrast for strength/weakness within underlying forms. Then, the rest of the argument follows in the same way as I have it above. I call this strength *phonological stress* because the strength cannot come from the inherent strength of the final position (since it has none). Also, the underlying strength/weakness distributions cannot be derived by surface-stress considerations in Romance languages because the *surface* stress is mobile, but (even if there is neutralization) the featural content of vowels are unpredictable and underlying (this is also the case for *final* (but not medial mid vowels) in French). Then there are secondary mechanisms (the positional faithfulness constraint) which *preserve* those features (that characterize the lexicon’s featural strength/weakness asymmetries) in the surface form and later in the phonetic implementation.

<sup>12</sup>Arguments against this conflation are presented in Tranel (1984).

<sup>13</sup>Tranel (1984) presents this data with the more phonetically accurate [œ], while he presents the argument for not thinking about it as this vowel underlyingly, which is that ‘real’ front rounded vowels do not alternate.

<sup>14</sup>Whether one thinks of the process as synchronic or not depends largely on their other assumptions about derivations and the linguistic architecture. I do assume that such alternations are active in the phonology, though I will not defend the basis for that view here. For an excellent diachronic account of the process see Morin (1991).

	((apəl) <sub>V</sub> + (anais) <sub>N</sub> ) <sub>VP</sub>
	((il) <sub>N</sub> + ((apəl) <sub>V</sub> (anais) <sub>N</sub> ) <sub>VP</sub> )
Rule α	–
Predicted output (☉)	*[il-apəl-anais] ‘he calls Anaïs’
(b) Rule β:	
	[ə] → [é]/_] <sub>wd</sub>
Input	/apəl/
Rule β	(apél) <sub>V</sub>
	((apél) <sub>V</sub> + (anais) <sub>N</sub> ) <sub>VP</sub>
	((il) <sub>N</sub> + ((apél) <sub>V</sub> (anais) <sub>N</sub> ) <sub>VP</sub> )
Predicted output (☺)	[il-apəl-anais] ‘he calls Anaïs’

The derivation in (12) shows that a grammar with only phrasal-stress mispredicts the output of forms such as these: \*[il-apəl-zã] ‘he calls Jean’. Conversely, the “word”-stress analysis (12b) generates the correct outcome: [ilapəlzã] ‘he calls Jean’.<sup>15</sup>

The pattern shown in (12b) cannot be explained by secondary stress. Following Özçelik (2016)’s insightful discussion, it is clear that secondary stress in French truly does apply at the phrasal level, specifically at phrasal margins: (a) *màrie-rose* \**marí-rose*, (b) *èléphant grís* \**elephánt grís* ‘grey elephant’, (c) *l’automobile véрте* ‘the green car’, (d) *l’automobile violétte* \**l’automobile violétte* ‘the purple car’.

A reviewer points out that there is a syllable structure-driven alternative account. They suggest that Dell (1973; 1980) analyses the process as a ban on schwa in closed syllables. If this was the case, it would undercut the stress-based explanation. However, Dell’s rule is actually not a purely syllable-structure one.

First off, the ə-adjustment in [i.la.pɛ.la.na.ïs] ‘he calls Anaïs’ is not a closed syllable, so the analysis clearly cannot be surface true. In fact, Dell’s analysis requires very specific extrinsic word ordering that applies at the word-level. Investigating the rule in relation to other rules, primarily schwa deletion, creates a sort of a paradox that is resolved by introducing morpheme-structure information to the rule.

Dell’s proposal is that /ə/ turns into [ɛ] in closed syllables. However, French has a rule that creates closed syllables: schwa deletion. Schwa deletion could logically feed the CSA but it does not. In fact, the CSA must crucially apply before schwa-deletion: aʃəvəmã \*[aʃvəmã] [aʃɛvmã] *achèvement* ‘finalisation’ (Durand, 1986: 321). Since the process must apply before schwa deletion, the CSA would seem to occur in *open* syllables: /aʃəvəmã/ > aʃɛvəmã > [aʃɛvmã] *achèvement* ‘finalisation’ (Durand,

<sup>15</sup>A reviewer points out that there is a further consideration. There is the interesting observation that ə-adjustment does not happen before vowel or glide-initial affixes: *app[ə]l-iez* ‘you.PL call.PRES’, *app[ə]l-iez* ‘you.PL call.IMP’ (Storme to appear). A more complete analysis is called for, but a sketch of it would be as follows. I analyse ə-adjustment as a product of ‘word-level’ or domain-level stress. I assume that ‘cohering’ suffixes are spelled out in the same domain as the root (Newell [submitted](#)). Consequently, in these forms, root-final vowels do not bear domain-level stress. The inherent connection between v-initial and ‘cohering’ affixes is explored by Newell ([submitted](#).) for English. Consonant-initial and other ‘non-cohering’ affixes would be expected to behave differently (like the juncture with words).



1986: 321). This is also the case for e-adjustment in forms that never have schwa deletion: [sɛdɔʁjɛ] *cèderiez* ‘would leave’ (Durand, 1986: 321).

One option, to retain this as a phenomenon of the closed syllable is to introduce an arbitrary and temporary coda-capture condition stage in the derivation (Anderson, 1982). A token such as /prɔtɛʒərə/ would therefore undergo resyllabification/‘codafication’: pro.tɛʒ.ə.ra then undergo CSA, before then deleting the schwa and finally resyllabifying the captive coda as an onset: [pro.tɛ.ʒra] ‘will protect’. As Durand (1986: 321) points out, however, this derivation suffers from the entirely arbitrary coda-capture stage. In fact, Dell’s original rule avoids this precisely by *not* being just a phonological closed-syllable readjustment. It introduces a strange (and non-modular) condition to the rule.

(13) CSA (Dell 1973)

$$/ə/ \rightarrow [ɛ] /_{-} \widehat{C}_1 \quad \left[ \begin{array}{c} \# \\ C \\ [-\text{seg}] \end{array} \right]$$

The object  $\widehat{C}_1$  stands for the condition whereby the alternating vowel and the C must belong to the same morpheme (shown greynshaded): [aʃəvəmã] *achèvement* ‘finalisation’. This morphological condition could be seen as a way of artificially introducing the notion of a strong word-final position (that, by hypothesis, is stressed).

In addition to this, the claim that French does not allow schwa in closed syllables is suspect at best. In fact, pre-theoretically there are straight counterexamples to the claim: [ʁəs.ty.k.ty.ʁe] *re + structurer* ‘restructure’ & [ʁəvniʁ] *re + venir* ‘come again’ (Noske, 1982: 295).

This evidence has even been taken as evidence for prefixes *not* being part of the PWD of French (assumed to be stem+suffix) (Hannahs, 1995: 34). However, this interpretation of the counterexample crucially requires one to accept: (a) the prosodic hierarchy (Nespor and Vogel, 1986) and/or (b) that prefixes are not part of the PWD in French.

There are, however, reasons to think that proclitics in French are ‘internal (pro) clitics’ in the sense of Selkirk (1996) that is that they are “incorporated into the same PWD word as its host” (Anderson, 2005: 46). A number of factors give this impression. Firstly, in this context, there is voicing assimilation that we do not see across word-boundaries: /ʒ(ə) + pãns/ [ʃpãns] *je pense* ‘I think’ vs. [kɔʁiʒ pɔl] *corrige Paul* ‘correct Paul’.<sup>16</sup> Secondly, definite articles have also been taken to be internal clitics due to the fact that (a) they are subject to schwa deletion as they are PWD internally: /lə + bato/ [lbato] *le bateau* ‘the boat’, and (b) articles are syllabified as onsets of vowel-initial stems: /lə + o/ [lo] *l’eau* ‘the water’ (Tremblay and Demuth, 2007). Given that CSA is taken to be a word-level process, we should expect the schwa of procliticized definite articles to undergo CSA when they form closed syllables, but this is counter to the facts: /lə + ski/ [ləs.ki] \* [les.ki] *le ski* ‘the ski (sport)’.<sup>17</sup>

<sup>16</sup>There may be a gradient phonetic effect across words, but in Colloquial Modern Parisian French this process with the proclitics is categorical (within its register): [ʒiʁnɔʁ] *j’ignore* ‘I ignore’, [ʒviã] *je viens* ‘I come’.

<sup>17</sup>The rules for schwa deletion in prefixes are a little different to those within stems, see Laurentian French (White and Robillard, 2015), however, schwa is *not* especially optional in [ləs.ki], just as it is not word-medially.

Going back to the CSA, a clever departure from the unmotivated consonant-capture approaches and the morphemic condition was proposed by Durand (1976; 1980; 1986) and Selkirk (1978). This approach uses the metrical foot as the domain of application of the rule. However, given the examples such as /rə + vənir/ [vənɪɾ] *revenir* ‘come again’ mentioned above, the foot-analysis is obliged to have two types of feet: (a) Lexical and (b) Sentence (Durand, 1986: 325).

Durand’s account may indeed be correct and I think it is consistent with the simpler claims made in this article (it depends on how one views all the interconnected claims and predictions). However, in the account that I am presenting, based in locating stress in underlying forms (even if it is predictable), there would simply be no expectation of an [ə - ɛ] alternation in these exceptions to the ‘no schwa in closed syllables’ rule: /lə + ski/ [lɛs.ki] \* [lɛs.ki] *le ski* ‘the ski (sport)’, /rə + vənir/ [vənɪɾ] *revenir* ‘come again’ and [vɛs.tʁy.k.ty.ʁe] *restructurer* ‘restructure’ since none of them are stressed and, following Charette (1991), ə-adjustment is pegged to word-level stress.

For Standard French, theoretically and typologically, we would not expect to see fortition of a schwa in a final closed-syllable, unless it was stressed. So, echoing the conclusion of section 2, it seems more phonologically appropriate to assume that the strength in this position is conveyed by phonological stress rather than purely by its positionality.

#### 4. Further arguments for final prominence in French

The root-final position in French is strong and this strength should be interpreted as stress-based rather than positional. I will present some phenomena where final strength is taken as stress, even if stress is not interpreted as accent (Vaissière and Michaud, 2016: 49).

##### 4.1. Liaison mistakes L1

French children make many types of mistakes in their development of adult-like liaison (Grégoire, 1947; Chevrot and Fayol, 2001; Dugua, 2006; Chevrot et al., 2009; Wauquier, 2003; 2015). Some common mistakes include the selection of the wrong consonant: \**lenami*, lack of liaison: \**le.ami*, and misalignment: \**lez.ami* (cf. [le.za.mi]) ‘the friends’. One error-type, shown in (14) is highly relevant to the discussion of word-stress in French because it applies to the word not the phrase.

(14) Consonant harmony (Chevrot et al., 2009; Waquier, 2015)

- |    |            |                      |                 |                 |
|----|------------|----------------------|-----------------|-----------------|
| a. | [lefefefã] |                      |                 |                 |
| b. | [lefelefã] | <i>les éléphants</i> | (cf. [elefã])   | ‘the elephants’ |
|    |            |                      | <i>éléphant</i> |                 |

The consonant that harmonizes is often the onset of the final syllable.<sup>18</sup>

This raises the question of why the final syllable should be particularly ‘copy-able’. Locality conditions would ordinarily force copying of the closer consonant: [lelelefã] *les éléphants* ‘the elephant’. These forms, if attested would be immediately explicable due to locality, but the error-type [lefelefã] and [lefelefã] requires non-local special prominence of the final syllable to explain it.

Typologically, long distance harmony/ feature spreading is sensitive to stress in a number of ways (what is a trigger, what is a target, what bounds the spreading) (Hanson, 2001: 2000). Therefore, I would suggest, in light of the other arguments in sections (2) and (3), that this child-language consonant-harmony is caused by the phonological stress of the final syllable, rather than just its finality.

Undoubtedly, it is the strength of the final position that causes the harmony effect, however, the strength of this position is given by stress, rather than by being final since it is positionally weak.

#### 4.2. Taboo-avoidance/Diminutive reduplication

Then there is CV reduplication. Morin (1972) called these forms ‘echo-words’, but I will refer to them as RED(CV)-forms to avoid possible confusion with *salad-salad* reduplication (Ghomeshi et al., 2004).

This reduplication has a diminutive function, as well as lessening the intensity of taboo words. The taboo-avoidance function is retained in adult-directed language, while its diminutive function is found almost exclusively in child-directed speech.

It should also be stated that not all speakers produce all forms listed beneath, however, all speakers can obtain the intended meaning when presented with these reduplicated forms. I take this to show that it is part of the competence of native speakers.

Naturally, these are not the only ways to form cutesy, diminutivizing forms of words, the language also has other strategies such as the example furnished by a reviewer: *pantalon pattes d’éléphant* → *pantalon pattes d’eph* ‘bellbottoms’. In fact, for some items it may not even be the most frequent strategy, crocodile: *crocro, croco, croc*, but amongst these there is also: *croc didile* (personal profile name Facebook, accessed 11/04/2020). Other possibilities are unthinkable: *crocodile* → \**co-co*.

These multiple options exist just as a language can have many ways of forming hypocoristics (Alber, 2010). However, I follow Morin (1972) in interpreting these as a distinct paradigm. I think all native speakers would agree that the starred forms do not fit in this paradigm: such as (15c): [fã-fã] \*[le-le] *éléphant* ‘elephant’.

<sup>18</sup>This is attested in the literature and corpora of French L1 acquisition, impressionistically this seems to be the most common consonant-harmony mistakes made by French children. Though this would need to be properly verified.

## (15) French CV reduplication

a.	Monosyllabic input				
	i.	CV			
		[ne-ne]	<i>nez</i>		‘nose’
		[ʃa-ʃa]	<i>chat</i>		‘cat’
	ii.	CVC(C)			
		[fe-fés]	<i>fesses</i>		‘buttocks’
		[bi-bít]	<i>bitte</i>		‘penis’
		[ba-bál]	<i>bal</i>		‘ball’
		[sa-sábl]	<i>sable</i>		‘sand’
		[gʁo-gʁot]	<i>grotte</i>		‘cave’
b.	Disyllabic input <sup>19</sup>				
	i.	C(C)VCV(C)			
		[ne-nɛt]	*[ly-ly]	<i>lunettes</i>	‘glasses’ <sup>20</sup>
		[pɛ̃-pɛ̃]	*[la-la]	<i>lapin</i>	‘rabbit’
c.	Trisyllabic input				
		[fã-fã]	*[le-le]	<i>éléphant</i>	‘elephant’
		[di-dil]	*[ko-ko]	<i>crocodile</i>	‘crocodile’

As shown in (15ai), the reduplication applies to monosyllabic stems producing CV-CV forms: [ne-ne] *ne* ‘nose’. The process also reduplicates the initial CV of CVC stems (15a ii): [bi-bít] *bitte* ‘penis’, [te-tét] *tête* ‘head’. This shows that this strategy really is CV reduplication, rather than syllable reduplication.

The fact that the *loi de position* applies to the output of RED(CV): [fe-fés] \*[fe-fés] *fesses* ‘buttocks’ strongly suggests that these forms come from a word-building operation applied to UR inputs. Then the constructed form is fed to the regular word-level phonology of the language.

The forms in (15b-c) show that only the final (stressed) syllable is reduplicated. In constructing these forms, shortenings or truncations based on any other syllable of the word are ‘inconceivable’ to native speakers: [fã-fã] \*[le-le] *éléphant* ‘elephant’. Importantly, \*[le-le] is not excluded as the RED(CV)-form of ‘elephant’ because it is somehow sub-minimal (cf. [ne-ne] *ne* ‘nose’).

The crucial aspect of this process as it applies to “word”-stress is that the reduplication is unambiguously word-based: le [pɛ̃-pɛ̃] *vert* vs. \*le [ve-lapɛ̃-vɛ̃] ‘the green rabbit’.

This pattern suggests that the final syllable is strong in French, this is not inherent positional strength, I claim it is phonological stress.

RED(CV)-reduplication in French can be analysed as: ‘reduplicate the first stressed CV of the word’, reminiscent of hypocoristic strategies (Alber, 2010).

<sup>19</sup>There are forms like: [kʁa-kʁa] from [kʁas-ó] *crasseaux*, *cradoque* ‘filthy’, but I do not think these are in the same paradigm. The principle difference is that here is an alternative form: [kʁa] ‘filthy’ and we know other diminutives like this: *Kronenbourg* [ɣn kʁo] ‘a beer (brand)’ or [mō kʁo-kʁo] ‘my wee beer (brand)’.

<sup>20</sup>A reviewer points out that *lunettes* might also be composed of *lune-* and *-ettes*, though I find this synchronically unlikely. In any case, not all suffixes will be equal in this word formation.

Indeed, from a typological perspective, this kind of truncation behaves very much like stress in the hypocoristic formation of other Romance languages.

Hypocoristic formation is typically stress sensitive. Typically, it involves selecting, reduplicating or truncating up to the stressed syllable (see (16a)). Or it targets the initial position (even if unstressed): [i:..i:] from [iijánə] ‘Rhianna’ (see also 16a), thereby confirming its inherent strength.

(16) Truncations from Italian /francésco/

a.	Attested
[fra]	Initial syllable
[frantʃe]	Up to the stressed syllable
[frantʃi]	Up to the stressed syllable plus /-i/
[tʃék:o]	From first stressed syllable + other modifications
[kék:o]	
b.	Unattested or highly sporadic and unlikely <sup>21</sup>
[(s)kó]	Final unstressed syllable
[kók:o]	Reduplicated final syllable

The targeting of unstressed syllables both medial and final is unattested in systematic productive hypocoristic formation that produces paradigms in the language. Examples involving unstressed medial and final syllables are all sporadic examples: Eng.: *burbs* ‘suburbs’, *rents* ‘parents’, *Beth* ‘Elizabeth’, Hung. *Nika* from [véronika], Ita. *Beppe* & *Peppe*, *Peppino* from ‘Giuseppe’ and perhaps most strikingly: Northern Peninsular Spanish: *Jóse María* > *jó se ma rí a* > *sema* > *chema*), though the segmental changes accompanied with it show it is highly sporadic.<sup>22</sup> In European Portuguese, Lurdes Ferreira (p.c.) reports that out of her corpus of 600 hypocoristics there is a solitary example of a final unstressed syllable form: *Catarina* > *na*. All other monosyllabic hypocoristics are formed from the stress syllable: *José* > *Zé*. From this same corpus, Ferreira reports that 76.5% of forms preserve the stressed syllable of the original, and when they do not the rest preserve the initial syllable: *Diána* > *Di*. Accordingly, I propose the following as a sketch-derivation of the RED(CV) paradigm.

(17) RED(CV)-derivation

Step 1 – Truncate to stressed syllable

Step 2 – CV reduplication

Truncation	ly.nét	la.pē	e.le.fã
Reduplicant	CV+nétC- V+pē	CV+fã	
	[ne-nét]	[pē-pē]	[fã-fã]
	‘glasses’	‘rabbit’	‘elephant’

<sup>21</sup>I expect that there will be sporadic final unstressed syllable-based truncations and nicknames, but there is a very clear asymmetry between the productivity of initial unstressed syllables and final ones.

<sup>22</sup>Unstressed medial syllables seem to be even less possible in such word-formations: Ita. [dʒá.ko.mo] \*koko ‘Giacomo’.

In all of these forms, reduplication cannot wait for stress to be applied phrasally in order to apply; by then it would be too late (it would apply counter-cyclically): le [pɛ̃-pɛ̃] vert, \*le [ve-lapɛ̃-vɛ̃ʁ] ‘the green rabbit’. This has to imply sub-phrasal strength in French, most likely due to stress (given the typological considerations).

## 5. Conclusion

French word-final syllables are strong but this is not the result of positional strength, rather it is the prosodic strength of a phonologically stressed syllable. The implication is that stress is an underlying property of roots in French. However, since it is a purely syntagmatic relation, it does not generate minimal pairs. These findings suggest that syntagmatic evidence of prominence is enough to affect underlying forms without the need for contrastivity and minimal pairs. It is undisputed that the lexicon should contain *all* of a lexical item’s unpredictable information, but it is far from established that the lexicon should contain *only* a lexical item’s unpredictable/contrastive information (*pace* Dresher, 2009).<sup>23</sup> A structurally similar argument is made for Abkhaz where non-contrastive information is nonetheless shown to be present in abstract phonological underlying forms leading to considerable lexical redundancy (Vaux and Samuels, 2018).

This article makes no claim as to the way that this phonological stress is represented (whether there are feet or not (Durand, 1976; 1980; 1986; Selkirk, 1978; Charette, 1991; Eychenne, 2006; Goad and Buckley, 2006; Durand and Eychenne, 2007), and neither does it conflict with the findings of many recently influential studies that highlight the phrase as a domain of phonetic accent in French (Delattre, 1966; Rossi, 1980; Vaissière, 1983; Dell, 1984; Martin, 1987; Féry, 2001; Jun and Fougeron, 2000; Hyman, 2014), these do not negate or conflict with analyses of phonological word stress (Vaissière and Michaud, 2016: 49).

Conversely, the experimental findings of French ‘stress deafness’ (Dupoux et al., 1997; Peperkamp and Dupoux, 2002) might look like they are incompatible with finding stress beneath the phrase. But this is not so, my conclusions are fully compatible with the ‘stress deafness’ findings, except that one has to limit the explanation to the absence of contrastive stress, not the absence of underlying phonological syntagmatic strength distributions. As a reviewer points out, it is not clear that (Dupoux et al., 1997; Peperkamp and Dupoux, 2002) exclude this possibility. At the very least there is agreement that French speakers are ‘stress deaf’ because stress is not paradigmatically contrastive.

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<sup>23</sup>I do not endorse it, but this is foundational in Exemplar Theory (Skousen, 1989; Johnson, 1997; Coleman, 2003; Pierrehumbert, 2001).

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