

MAIN STRESS IN ITALIAN NONCE NOUNS*

MARTIN KRÄMER
University of Tromsø

In Italian, main stress can be found on any of the last three syllables of a word. There is general consent that this is due to lexical stress. Analyses of default stress assignment diverge: Authors disagree on whether the language is quantity-sensitive or not and on whether default stress falls on the second- or third-last syllable. In this paper, I present data from a nonce word test conducted with native speakers that show that speakers face the same dilemma as linguists do when analysing the system. They divide into three groups, speakers who consistently stress the third-last syllable, speakers who consistently stress the second-last syllable and those who show variation with an even split between the two options. All speakers consistently stress penultimate heavy syllables. Intra-speaker variation is analysed in the framework of Optimality Theory as ad hoc rankings of unranked constraints.

1. *Introduction*

Italian nouns display stress on any of the three final syllables, as illustrated in (1). In verbs, any of the last four syllables may be stressed, as shown in (2). If we include forms with clitics we find even stress on the fifth-last syllable (2)e.

(1) Unpredictable word stress

- a. ko.li.brí ‘colibri’ b. pa.ró:la ‘word’ c. stú.pi.do ‘stupid’

(2) Stress on verbs

- a. awguró ‘s/he wished’ b. awgurá:re ‘to wish’
c. áwguro ‘I wish’ d. áwgurano ‘they wish’
e. áwguraʎ:elo ‘Wish it to him/her!’

* This paper has benefited from discussions in the CASTL (Center for Advanced Study in Theoretical Linguistics. <http://uit.no/castl/>) phonology reading group and at Going Romance 2006 in Amsterdam. The comments of the two reviewers were much appreciated. Finally, I would like to thank the people who gave the most important input to this work – my test subjects: Grazie tanto! A more detailed discussion of the topics addressed in this paper can be found in Krämer (in prep.).

Default stress placement can be determined in verbs, as shown by Davis et al. (1987) and Krämer (in preparation). In this paper, I concentrate on nouns and will therefore ignore verbs from now on.

The lexical nature of stress is further shown by minimal pairs as those given in (3).

(3) Minimal pairs

- | | | | | | |
|----|-------|--------|----|----------|--------------|
| a. | mé:ta | ‘aim’ | b. | áŋ.ko.ra | ‘anchor’ |
| | me.tá | ‘half’ | | aŋ.kó:ra | ‘still, yet’ |

On the basis of the data shown so far one might conclude that stress is final and that heavy syllables attract stress if there is no lexical stress mark in a word. If two heavy syllables are in competition the one to the right succeeds. Such an analysis implies that vowel length is contrastive. However, long vowels occur in stressed open syllables only. The vowel length indicated in the transcriptions above is based on measurements by D’Imperio & Rosenthal (1999). According to their study vowels are fully lengthened only in open penultimate syllables. Ante-penultimate vowels show less lengthening and final vowels are never long. They conclude that ante-penultimate lengthening is a phonetic correlate of stress rather than that the syllable is stressed because it contains a long vowel. The full lengthening of penultimate vowels is explained by D’Imperio & Rosenthal as an effect of a minimal size restriction on feet. The final syllable is unfooted (or extrametrical) and the foot has to be at least bi-moraic. Thus, lengthening is induced to achieve bi-moraicity. Thus, since vowel length is not lexical the hypothetical analysis sketched at the beginning of this paragraph falls apart.

However, the existence of lexical stress does not imply the absence of a default mechanism for stress placement. D’Imperio & Rosenthal (1999) provide an analysis within OT (Prince & Smolensky 1993, McCarthy & Prince 1995, 1999, McCarthy 2002) that generates default stress on the penultimate syllable in words with light syllables only and no lexical stress mark. The (OT) analysis by Morén (2001) on the other hand predicts default stress in this type of word on the antepenult.

We find the same disagreement on the issue of weight sensitivity. Sluyters (1990), D’Imperio & Rosenthal (1999) and Morén (2001) regard Italian as quantity-sensitive. Syllables closed by a consonant attract stress, at least if they are penultimate. Os & Kager (1986) as well as Nespor (1993) regard the language as quantity-insensitive. They base their conclusion on examples like those in (4), in which a penultimate heavy syllable is unstressed.

(4) Weight sensitivity?

- | | | | |
|------------------------|----------------------|-------------|------------|
| a. pólits:a | ‘(insurance) policy’ | b. mándorla | ‘almond’ |
| ká'bernet ¹ | ‘cabernet’ | ínternet | ‘internet’ |

There is only a small set of such words and most of them are place names or borrowings.

A completely different approach to determine the default is to make generalisations based on lexical frequency. Counts of words with stress in different positions show that most Italian words are stressed on the penult (5).

(5) Stress placement and estimated lexical frequency:

80% penultima	76.67% penultima
18% antepenultima	20.83% antepenultima
2% ultima	2.5% ultima
(Thornton, Iacobini, & Burani 1997)	(Borrelli 2002)

If we assume lexical frequency to reflect markedness, penultimate stress is the unmarked case. This might, however, turn out differently if we look for absolute frequency, i.e., frequency of occurrence of the different stress types in a big corpus. At the minute of writing I am not aware of any such study though.

In summary, the lexical nature of stress in Italian nouns poses a considerable obstacle to the task of figuring out the default stress placement. We find analyses in the literature that argue for penultimate stress as well as analyses that argue for antepenultimate stress. Lexical frequency counts show a numerical preference for penultimate stress. Quantity-sensitivity has been argued for and against.

To shed light on these two issues I have designed a nonce word test (or *wug* test, Gleason 1958). The results of this test will be reported in this paper.² The first nonce word experiment to elucidate aspects of Italian stress placement I am aware of was carried out by Davis et al. (1987). They tested for second conjugation verbs. Colombo (1992) conducted a similar experiment on nouns as the one reported on here, but did not produce any conclusive results. She was interested in lexical neighbourhood relations, i.e., she tested if segmental similarity causes stress placement by analogy.

Apart from this latter strategy we might expect the following results. Speakers mirror lexical frequency in their realisations of stress in nonce words. Alternatively, all speakers could show a clear preference for either penultimate

¹ Thanks to Stefano Canalis for directing my attention to the loanwords in the second line of (4). The realisation of stress on *cabernet* is subject to variation. According to the DiPI (Canepari 1999), the preferred form has stress on the last syllable (and no final *t*).

² Another potential methodology would have been to examine newly formed words, such as acronyms, as pursued by Wetzels (2006) in the analysis of Portuguese stress.

stress or antepenultimate stress. Furthermore, they could all show categorical quantity-sensitivity in items that contain closed syllables or uniformly ignore syllable weight. Likewise individual speakers could have opted for different strategies and implement differing grammars. Finally, all subjects could realise stress randomly on the penult or antepenult, showing that there is no ‘stress rule’ and that stress placement has to be learned for every lexical item.

In the next section I will describe the experiment design. Section 3 presents the results of the test, which are analysed in Optimality Theory in section 4. Section 5 concludes.

2. Method

Since one of the two tasks was to figure out if the penult or the antepenult is the most preferred site for stress in nouns a list of words was created that contained light syllables only, ranging from bi-syllabic words to words with four syllables. Furthermore, to test for quantity-sensitivity, tri-syllabic words with one or two heavy syllables and a final light syllable were included.

Each word was designed to conform to Italian phonotactics, or, said differently, the words had to be possible well-formed Italian words. Each item was checked in a dictionary and run in a www search engine to make sure it does not exist. A native speaker was consulted to check each word for phonotactic wellformedness and to find out if there were any striking similarities to existing words that would cause an analogy strategy to be applied by the subjects. Italian orthography, unlike French or English orthography, has a relatively straight-forward sign-sound correspondence. Thus, test words could be presented to subjects in written form and a uniform interpretation of the segmental content could be expected. The list of nonce words used in the experiment is presented in (6) ordered by syllable type combination.^{3,4}

(6) Nonce-words (ordered by syllable type combination)

LL	praco	LLL	frunaco	LLLL	picutopa
	gico		fiesova		rocapado
	smeco		frudalo		

³ In (6) L corresponds to ‘light syllable’, i.e., CV (a consonant followed by a vowel) and H corresponds to ‘heavy syllable’, i.e., CVC. Thus, for example, LHL corresponds to the structure C(C)VCCCV. To make sure that a ...VCCV sequence was syllabified as VC.CV by the participants the medial cluster had to be of falling sonority or a geminate.

⁴ The full set of nonce words used in the experiment also contained several items that could have been interpreted as morphologically complex words with predetermined stress, because they ended in *-ico*, *-ito* or *-ile*, which are common endings of adjectives, participles or adjectives, respectively. These have been removed here for the sake of brevity. For a full discussion see Krämer (in prep.).

HL	svappa	HLL	brombulo	LHL	chiateppo	HHL	gionsicco
			chiatteno		cruvacco		giompicco
			cincuco		grotulfo		
			frampeco		tapirco		

Subjects were first asked to read aloud each word from a list containing these words in a random order and indicate if they knew it. In a second round each subject was asked to produce each test word in the sentence given in (7). This provided the plural form, partly in the hope that this additional operation would distract attention from the actual focus of the test. Furthermore, this provided a second realisation of each word to be included in the results.

(7) Carrier sentence for plural form: “Ho visto due _____.”

The subjects were 12 native speakers, aged 25-66, 2 male, 10 female, from Lombardy, Veneto, Umbria, Tuscany, Piedmont and Rome. The female-male asymmetry and choice of regions is a matter of subject availability rather than systematically motivated.

3. Results

I will first show the results by word types. This should give us an overall picture of the test population as a whole and already show some results. In the following I will look into the behaviour of individual speakers. There is no significant variation according to region or gender. Accordingly, I will ignore these variables.

In the chart below I give the realisations of (ante)penultimate stress in percent of realisations of the respective word type.⁵ Actual numbers of realisations will be discussed later on.

Column 1, corresponding to word type 1, bi-syllabic words with either a heavy or light first syllable and a light final syllable shows the trivial result that all speakers realised all bi-syllabic words with penultimate stress, i.e., no speaker ever stressed the final syllable (see footnote 5). We get the same clear result for word types 4 (LHL) and 5 (HHL). These two types, together with type 3 (HLL) tested quantity sensitivity. As we can see, both types (columns 4 and 5) exclusively show penultimate stress. This becomes interesting when we compare this with tri-syllabic words containing light syllables only (column 2) and tri-syllabic words with an antepenultimate heavy syllable (column 3). In LLL words we have a near 50/50 split between antepenultimate and penultimate stress. The heavy penult in the words in column 4 thus clearly

⁵ There were no realisations of any item with final stress. This is not surprising since speakers were presented the words in written form and final stress is marked by an accent in the Italian orthography, as in *città* ‘city’. Thus, a reader only realises stress on a final vowel if prompted by the spelling.

attracts stress to this position. The same is the case in column 5. Speakers had to choose between two heavy syllables and unanimously stressed the last heavy, i.e., penultimate position.

Words with a heavy syllable followed by two light syllables show a fascinating difference to tri-syllables with light syllables only. Given a naive understanding of quantity-sensitivity one would expect the heavy antepenult to increase the number of total realisations of stress on this syllable. However, this word type shows less realisations with antepenultimate stress than LLL words.

Looking at words with light syllables only we see a marked difference between tri-syllabic words (column 2) and words with four syllables (column 6). While the group as a whole did not show a clear strategy in tri-syllables, the presence of a fourth light syllable made the pendulum swing towards penultimate stress.

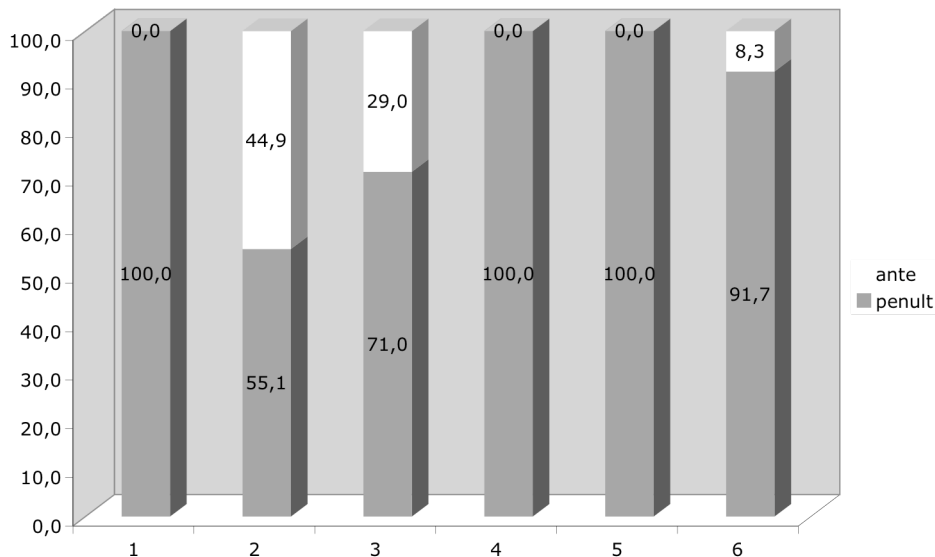


Table 1: Realisations of (ante)penultimate stress by syllable types in %
 1 = XL; 2 = LLL; 3 = HLL; 4 = LHL; 5 = HHL; 6 = LLLL

In summary, we can say about the group as a whole that, first, stress is never final (see footnote 5), second, the penult attracts stress if heavy, third, antepenultimate heavy syllables repel stress to some degree, fourth, there is no clear preference in words with three light syllables. Fifth, in quadri-syllables stress is attracted by the penult.

The vacillation in columns 2, 3 and 6 could either be due to intra-speaker variation or a matter of inter-speaker variation. For example, the 50/50 split in LLL words could result from each individual speaker showing vacillation here or from one group consistently stressing the penult and the other group consistently stressing the antepenult.

The next three charts show the results for the word types displaying variation revealing individual speaker behaviour. Looking at the LLL words first,

we see that actually both hypothesis are confirmed (table 2). We have two speakers (1 and 12) who uniformly place stress in the same position in all words of this type, participant 1 goes for the antepenult and participant 12 goes for the penult. The other speakers all show variation. Two speakers (4 and 5) are actually very close to the average presented in the first chart.

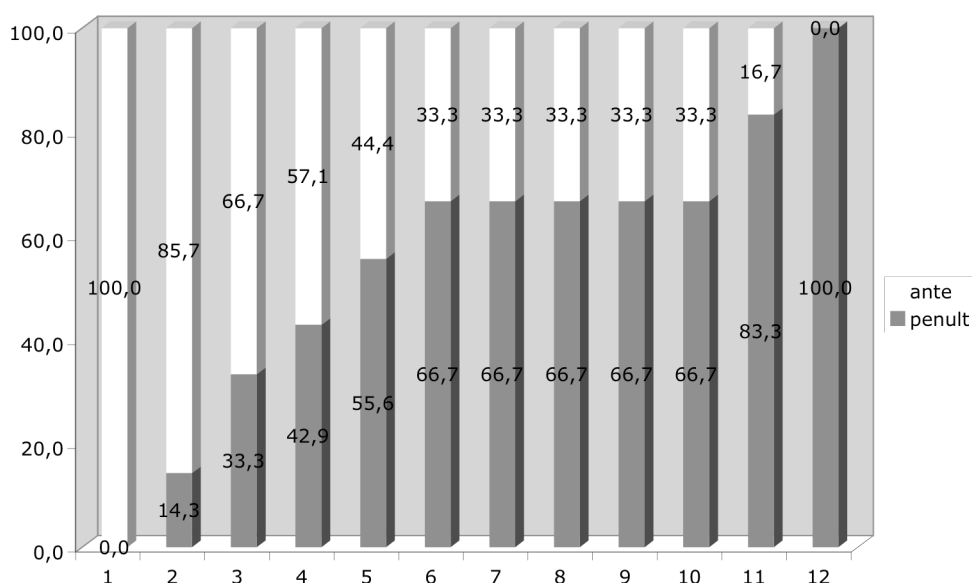


Table 2: LLL realisations by speaker in %

As far as lexical frequency in the existing Italian lexicon is concerned (5) one has to conclude already at this point that this does not play a significant role in speakers' decisions on stress placement. The average was between 70-80% of words having stress on the penultimate and 30-20% of words displaying stress on the antepenult. Likewise, a random search for LLL words on four non-consecutive pages in a dictionary (Canepari's *DiPI*) reveals 74% of LLL words with penultimate stress and 26% with antepenultimate stress. Neither the group as a whole nor the speakers show this distribution. There is, however, a considerable group (participants 6-11) that are somewhere close to 70-80% of realisations with penultimate stress and 30-20% of realisations with antepenultimate stress.

Next we turn to words with four light syllables. As can be seen in table 3, all speakers bar two have consistently stressed the penult. This indicates that the speakers who are uncertain regarding stress placement in LLL words have not much doubt on where to put the stress if an additional syllable is available. This might indicate the presence of an additional foot in the analysis of these words. The speakers who realise LLLL forms with antepenultimate stress also have a higher count of antepenultimate stress in LLL words.

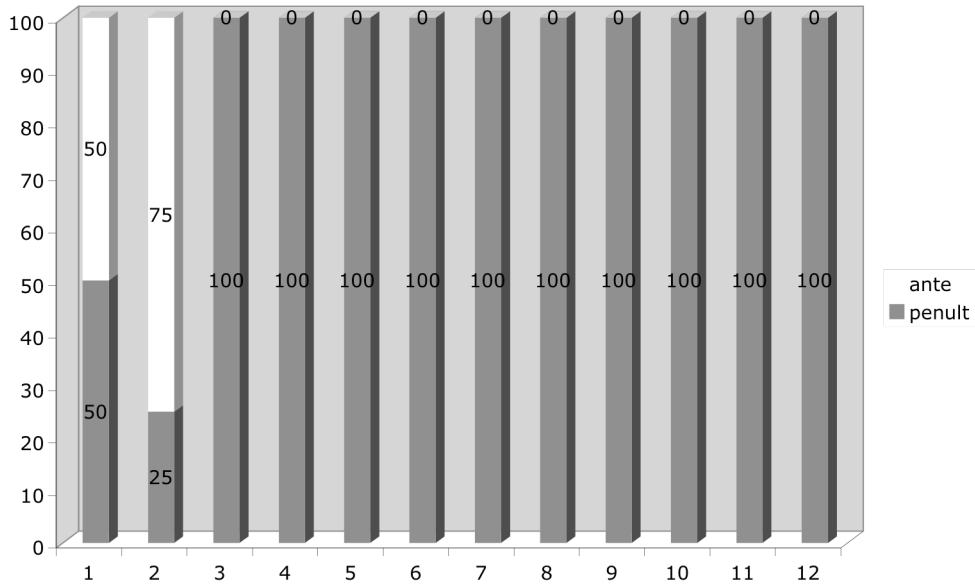


Table 3: Variation LLLL by speaker in %

The last word-type showing variation are HLL words. As table 4 shows most speakers conform to the observed group behaviour as regards this word type. Strikingly, the percentage of realisations of antepenultimate stress in HLL forms is observably lower than in LLL forms. Speaker 4 shows the same vacillation as for LLL. Even for this speaker the size of the antepenultimate syllable has no positive impact on stress placement.

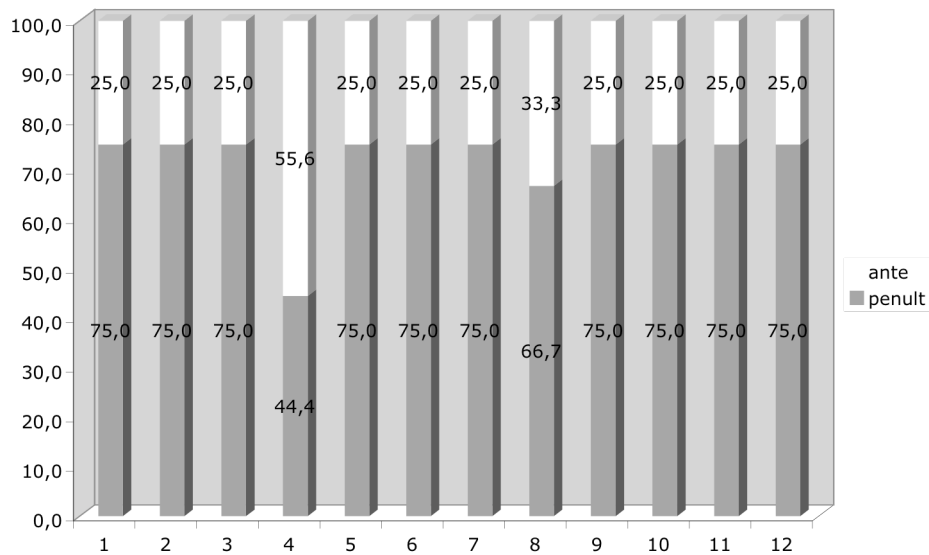


Table 4: HLL in % by speaker

We have seen now that we cannot necessarily generalise group behaviour in all cases. However, if we have an asymmetric distribution, as displayed to the extreme in LLLL words one has to wonder if, given a ratio of approximately 9:1 in favour of penultimate stress we can expect to get a realisation of the disfavoured form from each participant at all. In this context the total number of realisations of each word type in the corpus generated in this experiment is interesting. Since there are only two LLLL words, each produced twice by each of the 12 subjects, there are 48 realisations of LLLL nonce words. This amounts to four realisations by speaker. Thus, it is mathematically impossible to get the ratio we have observed and a realisation of antepenultimate stress by each speaker. It has to be admitted that this is a shortcoming of the experiment design (more LLLL words should have been included). However, given the data situation it seems to be most advisable to generalise the LLLL results over the whole group.

LLL words are more numerous (three different items) and the results are more straightforward. With a 50/50 distribution of the two stress patterns and six realisations by speaker we can acknowledge that speakers 1 and 12 behave differently from the rest, while speakers 2-11 can be regarded as a uniform group.

Of the word types showing variation HLL words (four items) have the highest number of realisations in total and accordingly the highest number of realisations by participant. Thus, here we can make a clear statement about each speaker. Here we have the highest chance to find intra-speaker variation, considering the quantity of data and we also find the highest degree of intra-speaker variation. This positive correlation between the number of realisations and the amount of variation supports the conclusion drawn on the other two word types, especially on LLLL words.

There are two conclusions to be drawn from the discussion of results. First, we can generalise over the whole population in the case of the LLLL words, because of the low numbers of realisations per participant and the asymmetric nature of vacillation observed. We can do the same with the HLL words, this time because of the high number of individual realisations and the relatively homogeneous behaviour of participants. Regarding LLL words, we can generalise over large parts of the population, keeping both speaker 1 and 12 separate from the rest, because of the relative uniformity of vacillation in relation to the amount of realisations. Finally, since nonce words cannot have lexically stored stress marks we can claim that an analysis of the observed nonce word stress patterns amounts to an analysis of Italian default stress.

Furthermore, we have some generalisations on Italian stress now that go beyond what we could infer from existing data. Default stress can be on the second- or third-last syllable in tri-syllabic words with all light syllables. An additional syllable reduces the likelihood of antepenultimate stress immensely. The penultimate syllable attracts stress when heavy. The antepenultimate does not attract stress when heavy, since we would otherwise expect to see more

realisations of stressed heavy antepenultimate syllables than of stressed light antepenultimate syllables. Instead, antepenultimate stress emerges more often in LLL words than in HLL words.

4. *Analysis*

The core mechanism of Optimality Theory determines a single form as superior over an infinite set of competitors according to a hierarchy of wellformedness constraints. At first sight this extremely deterministic design (there can only be one winner) does not seem to be the best choice to model variation data. However, the key to the analysis of variation is the nature of constraint ranking. The usual relation between two conflicting constraints is one of strict dominance. In the literature on acquisition and learnability (see the volume by Kager, Pater & Zonneveld 2004, for example), the initial state of the grammar is usually defined as the absence of ranking relations among constraints. Anttila (1997, 2003) proposes ad hoc rankings of generally unranked constraints to model intra-speaker variation. A learner who does not get clear data for ranking arguments will leave constraints unranked. These constraints have to be ranked temporarily in each evaluation.

In the following, I will use most of the constraints on stress placement used for Italian stress by D'Imperio & Rosenthal (1999) and Morén (2001), though, build up a different less specified hierarchy and use temporary rankings of unranked constraints to explain variation. The basic set of relevant constraints is given in (8). We will add to this as we proceed.

(8) Constraints on stress

- a. NONFINAL: 'The final syllable is not footed.'
- b. EDGEMOST-R: 'The stressed syllable is final in the prosodic word.'
- c. PARSE- σ : 'Every syllable is part of a foot.'
- d. FOOT= $\mu\mu$: 'Every foot has exactly two moras.'

Given the large scale emergence of unpredictable stress in Italian we can assume that faithfulness to underlying stress dominates all or most of the constraints that determine stress placement. However, we know that the final syllable should not be footed and that feet in Italian should preferably be bimoraic trochees.⁶ Thus, we have reason to start with the ranking in (9).

(9) Ranking – take 1: NONFINAL \gg FOOT= $\mu\mu$ \gg PARSE- σ , EDGEMOST-R

⁶ We also know that a constraint banning long vowels at the right edge of words should outrank the constraint that demands bimoraic feet. Otherwise word-final stressed open syllables would have a long vowel. However, this is not relevant for the current discussion.

There is no way to figure out how the two lowest ranked constraints are ranked with respect to each other. This limbo situation has to be resolved by an ad hoc ranking every time a form is evaluated. For our LLL forms this has interesting consequences, as shown in tableau (10).

(10) Trisyllables: 'LLL or L'LL 50/50

	frudalo	NONFINAL	FOOT= $\mu\mu$	PARSE- σ	EDGEMOST-R
☞ a.	(frúda)lo			*	**
b.	(frú:)dalo			**	**!
c.	fru(dálo)	*!		*	*
☞ d.	fru(dá:)lo			**	*
e.	fru(dá)lo		*!	**	*
f.	(frùda)(ló)	*!			

If PARSE- σ dominates EDGEMOST-R the form with antepenultimate stress wins (candidate a). If the ranking between the two constraints is reversed the form with penultimate stress wins (d). Thus, the chances for each to win are 50/50, just as observed in the nonce word test. For the two speakers with 100% realisations of antepenultimate or penultimate stress, respectively, we can assume that they have ranked these two constraints once and for all.

Next, we turn to LLLL words. 91.7% penultimate vs. 8.3% antepenultimate stress cannot be modelled with the constraints we have so far.

(11) Quadrisyllables: LL'LL preferred

	rocapado	NONFINAL	FOOT= $\mu\mu$	PARSE- σ	EDGEMOST-R
☞ a.	(ròka)(pá:)do			*	*
b.	ro(kápa)do			**!	**
c.	(róka)pado			**!	***
d.	roka(pá:)do			**!*	*
e.	rokapa(dó)	*!		***	
f.	roka(pádo)	*!		**	*
g.	roka(pá)do		*!	***	*

If we were to model a 9/1 split by unranked constraints alone we would have to add an enormous amount of constraints. A dispute in the discussion of secondary stress helps here: while Vogel & Scalise (1982) provide an analysis of secondary stress in Italian, Bertinetto & Loporcaro (2005) deny its very existence. Thus, we do not only have to find the force that renders candidate (b) optimal. Candidate (d) is a potential winner, too and it is for our purposes

equivalent to (a).⁷ The constraint ALLFEET-Right (12), if ranked above the two unranked constraints, makes (d) superior to (a).

(12) ALLFEET-Right: ‘Every foot is at the right edge of the word.’

The constraint furthermore opens the door for candidate (b), the one with antepenultimate stress.

(13) ALLFTR yields candidates (b) & (d) optimal under some rankings

rocapado	PARSE- σ	EDGEMOST-R	ALLFTR
☞ a. (ròka)(pá:)do	*		***
☞ b. ro(kápa)do	**	**	*
c. (róka)pado	**	***	**
☞ d. roka(pá:)do	***	*	*

Of the six possible rankings of these three constraints only one (ALLFTR \gg PARSE- σ \gg EDGEMOST-R) favours the candidate with antepenultimate stress (b). This amounts to 16.66% of realisations if all rankings are used randomly and with equal likelihood. Adding a fourth constraint that favours candidate (a) or (d) or both would bring us even closer to the actual percentage figures of the experiment. However, for reasons of space I leave this matter and proceed to the last variation pattern. Before we approach weight effects I would like to recapitulate a striking result. The relative variation here was not explained alone by the number of unranked constraints but as well by the number of available candidates, of which two had an equivalent main stress.

The last pattern showing variation were HLL words that have a stronger tendency towards penultimate stress than LLL words (71%). To account for quantity-sensitivity we have to include another constraint in the hierarchy, which punishes forms with unstressed heavy syllables, the Weight-to-Stress Principle (Prince 1983, Prince and Smolensky 1993) or WSP.

(14) WSP: ‘Heavy syllables are stressed.’

When looking at tableau (15) attention should first be directed to the last candidate under evaluation. Candidate (c) has antepenultimate stress, just like candidate (b). The fatal feature of candidate (c) is to have a too large foot. It spans over a heavy and a light syllable. I assume that all Italian coda consonants carry a mora due to an undominated Weight-by-Position constraint. The

⁷ Spectrographic analysis of the recordings of the nonce word test give support for optional secondary stress: Speakers with penultimate stress (candidates a/d) show a tendency to have a higher F1 during the first <o> of *rocapado* than in other non-main-stressed <o> (the difference is around 100Hz), i.e., they realize [ɔ]. Lax mid vowels are restricted to stressed position.

constraint demanding maximally and minimally bimoraic feet was ranked above the stratum with unranked constraints. Thus, this candidate is excluded and does not compete in the variation.

(15) HLL

chiatteno	NON FINAL	FOOT =μμ	PARSE- σ	EDGE MOST-R	WSP	ALLFTR
☞ a. kjat(té:)no			**	*	*	*
☞ b. (kját)teno			**	**		**
c. (kjátte)no		*!	*	**		*

This leaves us with two candidates and four unranked constraints. Of these four only three force a decision between the two candidates. The WSP picks candidate (b) as optimal, while EDGEMOST and ALLFTR choose candidate (a). Factorial typology gives us 24 rankings of these four constraints. Of these, 16 favour candidate (a) and 8 choose the weight-sensitive candidate (b) as the winner. This amounts to a 66 vs. 34% distribution which I consider sufficiently close to the 71 vs. 29% relation recorded above.

A last test that awaits the analysis developed so far concerns the word types which do not show variation. With the set of unranked constraints we have considered, LHL and HHL should invariably show penultimate stress, regardless of the temporary rankings. As we see in tableau (16), independently of the ranking of the involved unranked constraints there is only one winner for LHL words. Candidates (a) and (b) tie on PARSE-σ. On every other of the unranked constraints candidate (b) fares better than (a), because it has the stress further to the right, the foot further to the right and it does not have an unstressed heavy syllable.

(16) LHL (all candidates excluded by higher ranked constraints left out)

tapirco	FOOT=μμ	PARSE-σ	EDGEMOST-R	ALLFTR	WSP
a. (tá:)pirko		**	**!	**!	*!
☞ b. ta(pír)ko		**	*	*	

Tableau (17) shows that, in HHL words, the candidate with antepenultimate stress can not win – whatever ranking the mobile constraints assume.

(17) HHL

gionsicco	PARSE-σ	EDGEMOST-R	ALLFTR	WSP
a. (dʒón)sikko	**	**!	**!	*
☞ b. dʒon(sík)ko	**	*	*	*

This completes the analysis of the nonce word test data.

5. Conclusion

In this paper, I have examined default stress in Italian nouns. This part of Italian grammar escaped consistent analysis so far, because generalisations besides the one that stress is contrastive (as documented by the minimal pairs in 3) are difficult to make on the basis of existing forms. The nonce word test reported here supports the following generalisations. The Italian foot is a bi-moraic trochee. Penultimate position is weight-sensitive, while a heavy antepenultimate syllable does not attract stress. Heavy antepenultimas followed by light syllables are comparably less susceptible to be stressed than a light antepenultima followed by light syllables. In tri-syllabic words with all light syllables stress can be either antepenultimate or penultimate – most speakers produce either option. A fourth syllable increases the chances of penultimate stress but does not make it obligatory. In words of sufficient length secondary stress is optional.

In more technical terms, the lexical nature of the system causes the same problem for the learner as for the linguist: The learner has no data that support unambiguous ranking arguments. Hence, many of the markedness constraints that determine stress placement remain unranked. This underdetermined ranking explains the variation found in the participants' responses to the nonce word test if combined with a theory of ad hoc or temporary ranking. That is, in each evaluation these constraints have to be ranked anew and they are ranked in a random order.

Analogy might play a role where significant similarities between new and known words can be identified at the segmental level (see Colombo 1992). Lexical frequency, however, does not seem to determine the speakers' strategy in the face of new words.

References

- Anttila, Arto. 2003. "Variation and phonological theory". *The Handbook of Language Variation and Change* ed. by J. K. Chambers, Peter Trudgill & Natalie Schilling-Estes. 206-243. Oxford: Blackwell.
- Bertinetto, Pier Marco & Michele Loporcaro. 2005. "The sound pattern of Standard Italian, as compared with the varieties spoken in Florence, Milan and Rome". *Journal of the International Phonetic Association* 35.131-151.
- Borrelli, Doris. 2002. *Raddoppiamento Sintattico in Italian. A Synchronic and Diachronic Cross-Dialectal Study*. New York, London: Routledge.
- Canepari, Luciano. 1999. *Il DiPI. Dizionario di Pronuncia Italiana*. Bologna: Zanichelli.

- Colombo, Lucia. 1992. "Lexical stress effect and its interaction with frequency in word pronunciation". *Journal of Experimental Psychology: Human Perception and Performance* 18.987-1003.
- Davis, Stuart, Linda Manganaro & Donna Jo Napoli. 1987. "Stress on Second Conjugation Infinitives in Italian". *Italica* 64.477-498.
- D'Imperio, Mariapaola & Sam Rosenthal. 1999. "Phonetics and Phonology of Main Stress in Italian". *Phonology* 16.1-28.
- Gleason, Jean Berko. 1958. "The Child's Learning of English Morphology". *Word* 14.150-177.
- Jacobs, Haike. 1994. "How Optimal is Italian Stress?" *Linguistics in the Netherlands 1994* ed. by Reineke Bok-Bennema & Crit Cremers, 61-70. Amsterdam & New York: John Benjamins.
- Kager, René, Joe Pater & Wim Zonneveld, eds. 2004. *Constraints in Phonological Acquisition*. Cambridge: Cambridge University Press.
- Krämer, Martin. In preparation. *The Phonology of Italian*. Oxford: Oxford University Press.
- McCarthy, John, ed. 2004. *Optimality Theory in Phonology. A reader*. Malden, Mass.: Blackwell.
- McCarthy, John & Alan Prince. 1995. "Faithfulness and reduplicative identity". *UMOP* 18.249-384.
- 1999. "Faithfulness and Identity in Prosodic Morphology". *The Prosody-Morphology Interface* ed. by René Kager, Harry van der Hulst & Wim Zonneveld, 218-309. Cambridge: Cambridge University Press.
- Morén, Bruce. 2001. *Distinctiveness, Coercion and Sonority. A Unified Theory of Weight*. New York & London: Routledge.
- Nespor, Marina. 1993. *Fonologia*. Bologna: Il Mulino.
- Os, Els den & René Kager. 1986. "Extrametricity and Stress in Spanish and Italian". *Lingua* 69.23-48.
- Prince, Alan. 1983. "Relating to the grid". *Linguistic Inquiry* 14.19-100.
- Prince, Alan & Paul Smolensky. 1993. *Optimality Theory: Constraint interaction in generative grammar*. Ms. Rutgers University, New Brunswick and University of Colorado, Boulder.
- Saltarelli, Mario. 1983. "The Mora Unit in Italian Phonology". *Folia Linguistica* 17.7-24.
- Sluyters, Willebrord. 1990. "Length and stress revisited: A metrical account of diphthongization, vowel lengthening, consonant gemination and word-final vowel epenthesis in Modern Italian". *Probus* 2.65-102.
- Thornton A. M., C. Iacobini & C. Burani. 1997. *BDVDB Una base di dati sul vocabolario di base della lingua italiana*. (BDVDB: A database for the Italian basic dictionary). Roma: Bulzoni
- Vogel, Irene & Sergio Scalise. 1982. "Secondary stress in Italian". *Lingua* 58.213-242.
- Wetzels, W. Leo. 2006. "Primary Word Stress in Brazilian Portuguese and the Weight Parameter". *Journal of Portuguese Linguistics* 5.9-58.