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Stress in a Jordanian Arabic Dialect: The Interaction of PARSE, LAPSE, and NONFINALITY Within Optimality Theory

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***Abstract*—This paper investigates assignment of stress in an Arabic dialect spoken in Jordan (JA). Data with words made up of one to five syllables is gathered from different sources in the literature with stress assigned. For a proper account of stress in JA, the discussion will show that in words with more than one heavy syllable, it is essential for a PARSE constraint to make reference to super-heavy syllables, and a different PARSE constraint to refer to all other syllables. These two constraints are ranked with a NONFINALITY constraint in between. The discussion will also show that JA allows two adjacent unparsed syllables at the left peripheral of a word but not at the right peripheral. Accordingly, we propose two LAPSE constraints; one refers to the right edge and the other to the left edge of a word.**

***Index Terms*—Jordanian Arabic, LAPSE, NONFINALITY, PARSE, stress**

I. Introduction

Syllable weight in weight-sensitive stress systems is crucial for a proper account of stress placement. Generally speaking, heavy syllables attract stress and are thus prominent in a foot. Stress assignment in Jordanian Arabic (JA) is a weight-sensitive (Abu-Abbas, 2003; Abu-Abbas & Al-Zoubi, 2025). Stress is assigned to a word final super heavy (SH) syllable which is made of either a long vowel followed by a single consonant in coda position, or a short vowel followed by two consonants in coda position (CVVC, CVCC). If no such syllable is at the right peripheral of a word, stress will fall on a heavy penult made up of either a long vowel with no coda consonants, or a short vowel followed by a consonant in coda position (CVV, CVC). Otherwise, stress will fall on the antepenultimate syllable by default (Abu-Abbas & Al-Zoubi, 2025).

This three-syllable stress window at the end of a word creates conflicting requirements of a LAPSE constraint when words are made up of more than three syllables. The language tolerates two unparsed syllables at the left edge of a word but not the right edge. This is consistent with the general preference of the right edge for stress assignment in the language.

In weight-sensitive stress systems, two major dynamics typically affect the process of stress assignment: syllable weight and proximity of the stressed syllable to a word edge. In a stress system with only primary stress designated per word, stress will typically fall on a heavy syllable that is calculated based on its proximity to a word edge. Prince and Smolensky (1993); McCarthy and Prince (1993 a, b), introduce two constraints in (1) and (2) to account for syllable-weight preference and edge orientation:

(1) Weight-to-Stress Principle (WSP)
Stressed syllables are Heavy

The basic function of this constraint is to guarantee stressing a heavy syllable in a (L)ight (H)eavy sequence; (L'H) rather than ('LH) and ('HL)L over H('LL), since in the latter three cases the heavy syllable is in nonhead position.

(2) EDGEMOST (PK; L/R; word)
Stressed syllable should be aligned at the left or the right edge of the word.

The EDGEMOST constraint in (2) is gradient in nature providing evaluation of candidates based on their proximity to the designated edge.

Trochaic and Iambic are two of the simplest foot types. In a trochaic foot, the leftmost syllable in the foot is the stress bearer, while in an iambic foot the rightmost syllable is the stress bearer (Ewen & Hulst, 2001). The r between WSP and EDGEMOST(PK; L/R; Word) is presented in tableaux (3-5)[1]. We consider a right-side, weight-sensitive stress system with trochaic feet. Constraint interaction seeks to stress the heavy syllable closest to the end of a word if available. Accordingly, a HHHLL string will have the stress on the heavy syllable closest to the right edge of the word HH('HL)L, ruling out *('H)HHLL and *HHH('LL). *('H)HHLL satisfies WSP but violates EDGEMOST(PK; R; Word). Candidate *HHH('LL) fares better as to the dictates of EDGEMOST (PK; R; Word), but loses due to a violation of higher-ranked WSP. This established a crucial domination hierarchy between WSP and EDGEMOST (PK; R; Word) as shown in tableau (3).

[1] For a detailed discussion of the EDGEMOST constraint in JA, see Abu-Abbas (2008).

(3) HH'HLL: WSP >> EDGEMOST (PK;R; Word)

Input: HHHLL	WSP	EDGEMOST (PK;R; Word)
a.☞HH('HL)L		σσ#
b. ('H)HHLL		σ!σσσ#
c. HHH('LL)	*!	σ#

Candidate (3a) is optimal since it better satisfies the requirements of EDGEMOST (PK;R; Word). Candidate (3a) is two syllables removed from the end of the word, while (3b) is separated from the right edge by four syllables. Both candidates have a heavy stressed syllable. Both (3a) and (3b) have two violations of WSP and (3c) has three violations of the same constraint. If we crossing out violation marks, (3c) will still violate WSP. We will follow this strategy as we calculate violation marks of WSP. Candidate (3c) is ruled out since a light syllable is prominent within the foot, and this solidifies the domination hierarchy established between WSP and EDGEMOST(PK;R; Word).

Within an LLLHH string, stress falls on the ultimate heavy syllable according to constraint ranking established so far. The final two syllables are equivalent in weight leaving EDGEMOST (PK;R; Word) as the active criterion as shown in tableau (4):

(4) LLLH'H: WSP >> EDGEMOST (PK;R; Word)

Input: LLLHH	WSP	EDGEMOST (PK;R; Word).
a.☞LLLH('H)		
b. LLL ('H)H		!σ#
c. LL('LH)H	*!	σσ#

Candidate (4a) is optimal according to the requirements of EDGEMOST(PK;R; Word). In (4a), the stressed heavy syllable is at the right peripheral of the word while in (4b), one syllable separates the stressed syllable from the right edge of the word. Candidate (4c) incurs a fatal violation WSP which is ranked higher than EDGEMOST(PK;R; Word).

If no heavy syllable is part of the structure, the EDGEMOST constraint will be responsible for deciding the optimal output as shown in tableau (5) for a hypothetical string LLLLL.

(5) LLL'LL: WSP >> EDGEMOST (PK;R; Word)

Input: LLLLL	WSP	EDGEMOST (PK;R; Word)
a.☞LLL('L L)		σ#
b. LL('LL)L		!σσ#
c. ('LL)LLL		σσ!σσ#

Since no heavy syllable is found in any of the competing outputs, there are no violations of WSP. EDGEMOST (PK;R; Word) will favor candidate (5a) since the stressed syllable is closest to the right edge separated by just one syllable. The other candidates are separated from the right edge by two or more syllables.

II. Stress in Jordanian Arabic

The following section will provide an overview of stress assignment principles in JA. This discussion will move gradually to introduce the two PARSE constraints and then the edge oriented LAPSE restriction is in focus.

This overview is based on the elaborate discussion of stress in JA in Alghazu (1989) and Abu-Abbas (2003, 2008). Various distinct dialects are spoken in Jordan. These are traditionally referred to as Urban dialects spoken in major urban centers, Rural dialects spoken in smaller villages and towns, and Bedouin dialects spoken in the far eastern and southern parts of the country (Abd-el-Jawad, 1986; Al-Khateeb, 1988; AlSughyer, 1990; Abu-Abbas, 2003; Sakarna, 2005; Abu-Abbas & Al-Zoubi, 2025). Each dialect may be further divided into distinct varieties the discussion of which is beyond the scope of this research (Zuraiq & Abu-Joudeh, 2013; Mohammad & Al-Harahsheh, 2014; Abu Ain, 2016; Omari & Herk, 2016; Alrabab'ah, 2018). Jordanian Arabic in this paper will be used to refer to a group of dialects spoken in an urban center in the northern part of the country (Abu-Abbas & Al-Zoubi, 2025).

A. Stress in Words With up to Three Syllables

In Arabic, CVVC and CVCC are super-heavy, CVV and CVC syllables are heavy, and a syllable with a short vowel and no coda, i.e., CV is light. In short, a superheavy syllable has three moras, a heavy syllable has two, and a light syllable is one that includes a single mora. A short vowel contributes one mora, a long vowel contributes two, a coda consonant contributes one mora, and onset consonants are weightless (Al-Jarrah, 2008; Bokhari, 2021; Abu-Abbas & Al-Zoubi, 2025).

Syllable weight plays an important role in stress assignment in various Arabic dialects including JA (Al-Jarrah, 2002; Abu-Abbas, 2003, 2008; Huneety, 2015). Stress falls on the rightmost superheavy (SH) syllable under the condition that it is separated from the right edge of the word by two syllables or less, i.e., stress in JA falls on one of the last three syllables within a word. In the absence of a (super)heavy syllable under the condition above, i.e., in the ultimate or penultimate syllable, the antepenultimate is stressed by default. Consider the examples in (6) below. These examples include different possible structures of JA words from monosyllabic words to words with three syllables:

(6) stress in JA

a- <u>Monosyllabic words</u> <u>Gloss</u>

ˈfaar	a mouse
ˈbeːt	a house
ˈbint/ˈbinit	a girl
ˈʃuft/ˈʃufit	I saw

b- <u>Disyllabic words</u> <u>Gloss</u>

initial stress in words ending with CVC	
ˈra.sim	drawing
ˈfi.him	he understood
ˈmak.tab	an office
ˈlaa.zim	necessary
ˈdaar.hum	their house
initial stress in words ending with CVV[2]	
ˈmaa.tuu	they died
ˈba.nuu	they built
ˈnaa.muu	they slept
ˈna.waa	decided
ˈra.waa	narrated/irrigated
final stress in words ending with CVVC	
ka.ˈriim	generous
sa. ˈ laam	peace
bar.ˈdaan	feeling cold
raa.ˈseːn	two heads
naaj.ˈmaat	asleep (fem. Pl.)
final stress in words ending with CVCC[3]	
ra.ˈsamt/ra.ˈsa.mit	I drew
ʔa.ˈkalt/ʔa.ˈka.lit	I ate

c- <u>Trisyllabic words</u> <u>Gloss</u>

initial stress in words ending with CV.CV(C)	
ˈsa.ma.ka	a fish
ˈma.li.ka	a queen
ˈʔa.ma.lak	your hope
ˈba.la.duh	his country
ˈmuħ.ta.ram	respectable (mas.)
initial stress in words ending with CV.CVV	
ˈra.ħa.luu	they moved (left)
ˈka.ta. buu	they wrote
ˈmak.ta.bii	my office
ˈwa.la.dii	my son
penultimate stress in words ending with CVV.CV(C)	
di.ˈraa.se	studying
bi.ˈdaa.je	a beginning
mu.ˈraa.sil	correspondent
ma.ˈdaa.ris	schools
mun.ˈʃaa.rah	a saw
za.ˈraa.fah	a giraffe
penultimate stress in words ending with CVC.CVV) or CVC	
mak.ˈtab.naa	our office
fi.ˈhim.na	he understood us
gaa.ˈwam.hum	he resisted them
mus.ˈtag.bal	future
final stress in words ending with CVV(C)	
midʒ.tam.ˈʕiin	gathered
ba.la.ˈdeːn	two countries
mix.tal.ˈfaat	different (fem.)
ma.saa.ˈdʒiin	prisoners
sa.ma.ˈkaat	fish (pl.)

The data in (6) confirm that in JA there is a three-syllable window from the right edge of a word beyond which a syllable is never stressed. A word final superheavy syllable is stressed. If one is not found, a penultimate heavy syllable

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[2] Final long vowels are shortened in JA and many other dialects (McCarthy, 2005).
[3] Most such structures involve and epenthetic vowel between the last two consonants that require further stipulations.

is stressed. Otherwise, the antepenultimate syllable receives stress by default (Abu-Abbas & Al-Zoubi, 2025). Final CV and CVC syllables are unstressed and unparsed into feet. This is a function of the interaction of two PARSE constraints; one referring to super heavy syllables (7) and the other to all other syllables (8) (Al-Jarrah, 2008) with a NONFINALITY constraint (9) as shown in (10).

(7) PARSE σ > μμ

a syllable with more than two moras is parsed into a foot

(8) PARSE σ ≤ μμ

a syllable with two moras or less is parsed into a foot

(9) NONFIN(ALITY)

No head of a Prosodic Word is final in a Prosodic Word *'F *'σ

(10) Ranking

PARSE σ > μμ >> NONFIN >> PARSE σ ≤ μμ

This in effect will allow word final unparsed CV and CVC syllables. Accordingly, LLL syllables will be parsed (LL)L and LHL syllables will be parsed L(H)L. The word ‘head’ refers to the stressed syllable in the foot or the stressed foot in the word.

McCarthy (1979a, b, 1981, 1990) claims that foot size is bound by the number of moras rather than by the number of syllables each foot has. According to McCarthy, a foot is made up of a maximum of three moras: the mora in the stressed syllable and up to two following moras. Hayes (1989, 1991) also argues that the final rhyme in an Arabic ternary foot should is extrametrical, and is thus not subject to stress or foot formation. The result of these two claims is that fact that ternary feet are eliminated. A word like /mal.ʕa.bii/ ‘my playing ground’ will have the foot structure in (11), where ( ) mark feet, and < > encapsulate extrametrical material:

(11) (mal.ʕa) <bii>

In OT, FOOT BINARITY (12) expresses the ban on unbounded feet. In JA, this constraint is ranked very high in the grammar.

(12) FOOT BINARITY (FTBIN)

Feet are binary at some level of analysis (μ, σ)

Feet in JA are left-dominated (trochaic).

(13) TROCHEE

Feet are left-headed

This constraint will be assumed to be undominated for all data. No candidate will be discussed that violates this constraint. JA is a weight-sensitive, right-side oriented language. Preference if for stressing heavy syllables (WSP) closer to the right edge of the word (EDGEMOST (PK;R; Word).

Interaction between the constraints introduced so far will account for stress in the data in (6). More constraints will be introduced as the discussion progresses. We will use 'F and 'σ to represent a head foot and a head syllable respectively in calculating violations of NONFIN. Tableau (14) accounts for stress in a disyllabic word with a final super heavy syllable like /sa.'laam/ ‘peace:

(14) L'SH

Input: /salaam/	FTBIN	WSP	PARSE σ >μμ	NONFIN('F, 'σ)	PARSE σ ≤ μμ
a. ☞sa('laam)				*'F and * 'σ	*
b. ('sa.laam)		*!		*'F	
c. ('sa)laam	*!	*	*		

Candidate (14a) has a stressed super heavy syllable in satisfaction of WSP and FTBIN since the syllable is minimally bimoraic. Violation of NONFIN does not affect the optimal output since WSP is ranked higher than NONFIN. Candidates (14b) violates higher-ranked WSP and (14c) violates higher-ranked FTBIN.

In a trisyllabic word with three heavy syllables HHH, as in /mix.tal.'faat/ ‘different, fem.’, stress will fall on the rightmost super heavy syllable as tableau (15) shows:

(15) HH'SH

Input:/mix.tal.faat/	FTBIN	WSP	PARSE σ >μμ	NONFIN	PARSE σ ≤ μμ
a. ☞ mix.tal.('faat)				*'F and *'σ	**
b. mix.('tal).faat			!*		**
c. ('mix).tal.faat			!*		*

All three candidates in (15) satisfy FTBIN and WSP. Candidate (15a) is optimal due to its satisfaction of PARSE σ >μμ since this is the only candidate where a syllable with more than two moras is parsed. Without PARSE σ >μμ, (15a) would be the least harmonic candidate unless EDGEMOST (PK;R; Word) is invoked and ranked higher than NONFIN. This is a wrong prediction as shown (16) below.

Stress in trisyllabic forms LLL like /'ma.li.ka/ ‘a queen requires NONFIN to be ranked higher than EDGEMOST as shown in (16):

(16) LLL

Input: /malika/	FTBIN	WSP	PARSE σ >μμ	NONFIN	PARSE σ ≤ μμ	EDGEMOST
a.☞ ('ma.li).ka					*	σσ#
b.ma.('li.ka)				*'F	*	σ#

If EDGEMOST is ranked higher than NONFIN, candidate (16b) would surface as optimal since both candidates are equally optimal as far as FTBIN, WSP, and PARSE σ >μμ are concerned and (16a) incurs two violations of DGEMOST while (16b) incurs one violation of the constraint. Ranking NONFIN higher than EDGEMOST is crucial to optimize (16a).

The analysis of words with a LHL structure as in /mak.'tab.naa/ ‘our office’ follows directly from the hierarchy established as tableau (17) exemplifies:

(17) L'HL

Input:/mak.tab.naa/	FTBIN	WSP	PARSE σ >μμ	NONFIN	PARSE σ ≤ μμ	EDGEMOST
a. ☞ mak.('tab).naa					**	σ#
b. mak.(tab.'naa)	!*			*'F and *'σ	*	
c. mak.('tab.naa)	!*			*'F	**	
d. ('mak).tab.naa					**	! σσ#

Candidate (17a) incurs two violations of PARSE σ ≤ μμ since there are two VC syllables unparsed. Never the less, it fares better than the closest rival (17d) as to the requirements of EDGEMOST.

The same argument holds for words with a final CVC syllable as in /ma.'ħaa.kim/ ‘courts’ and /xaa.'tim.hum/ ‘their ring’ as tableau (18) shows for /xaa.'tim.hum/:

(18) H'HH

Input: xaatimhum	FTBIN	WSP	PARSE σ >μμ	NONFIN	PARSE σ ≤ μμ	EDGEMOST
a.☞xaa('tim)hum					**	σ#
b.('xaa)tim.hum					**	! σσ#
c. xaa('tim. hum)				!*'F	*	

Candidates (18a, b) equally satisfy all constraints except EDGEMOST. (18a) is separated by one syllable from the right edge of the word while (18b) is separated by two.

Candidate (18b) may be seen as suboptimal due to a LAPSE constraint that penalizes successive unparsed syllables introduced by Green and Kenstowicz (1995):

(19) LAPSE

Two successive unparsed syllables are disfavored.

The analysis of HLL forms as in /'muħ.ta.ram/ ‘respectable’ is not problematic since it results from ranking of WSP higher than EDGEMOST and NONFIN as tableau (20) shows:

(20) 'HLL

Input:/ 'muħ.ta.ram/	FTBIN	WSP	NONFIN	EDGEMOST
a.☞('muħ.ta).ram				σσ#
b. muħ ('ta.ram)		*!	*F	σ#

Candidate (20a) is optimal since it satisfies the higher ranked WSP and NONFIN both of which are violated by (20b).

B. Stress in Words With Four or More Syllables

We finally take a look at structures with four or more syllables (21).

(21)

<u>Words with more than three syllables</u>	<u>Gloss</u>
muħ.'ta.ra.ma	respectable (fem.)
mad.'ra.sa.tu	his school
mu. 'baa.ra.zeh	sword play
mu.raa.sa.'laat	correspondences
maz.ra.'ʕat.hum	their farm
muʃ.ta.ra.'jaat	purchases
mu.baa.ra.'jaat	competitions
ma.kaa.'tib.hum	their offices
ʔis.tig.baa.'laat.hum	their receptions
mus.taʕ.'ma.ra.tii	my colony

An HLLL structure as in / muħ.'ta.ra.ma/ ‘respectable (fem.)’ is made up of four syllables. A light syllable receives stress in violation of WSP, which would have preferred stress to fall on the heavy syllable at the beginning of the word. Our constraint hierarchy will fail to predict the location of the stressed syllable correctly. In satisfaction of WSP, muħ.'ta.ra.ma should be parsed as ('muħ.ta).ra.ma. We need a constraint to rule out such parsing. Stress in JA can only fall on one of the last three syllables. This constraint will necessarily be in conflict with and ranked higher than WSP. The constraint is the LAPSE constraint introduced earlier in (19). In essence, this constraint penalizes the structure ('σσ)σσ since the final two syllables are not parsed by a foot. The effect of this constraint is exemplified in (22):

(22) H'LLL

Input: /muħtarama/	LAPSE	WSP	NONFIN	EDGEMOST
a.☞muħ('ta.ra)ma		*		σσ#
b. ('muħ.ta)rama	*!			σσσ#
c. muħ.ta('ra.ma)	*!	*	*'F	σ#

The optimal candidate is (22a) which wins over its two rivals despite a violation of WSP. The determining factor turns out to be LAPSE, which is violated by candidates (22b) and (22c).

We know from the earlier discussion that a final super heavy syllable always receives stress. This will result in a LAPSE violation if the word is made up of three or more syllables. This suggests that PARSE σ >μμ must outrank LAPSE to produce correct outputs in words with a final heavy syllable. Tableau (23) clarifies this argument:

(23) HH'H

Input: /miʤtamʕiin/	PARSE σ >μμ	LAPSE	WSP	NONFIN	PARSE σ ≤ μμ
a.☞miʤ.tam.('ʕiin)		*		*'F and *'σ	**
b. miʤ.('tam).ʕiin	!*				*
c. ('miʤ).tam.ʕiin	!*	*			*

The optimal candidate is (23a) since it satisfies high ranked PARSE σ >μμ at the expense of LAPSE. The other two candidates violate the higher ranked constraint and thus lose the competition.

Longer words like HHLLL in a word like /mus.taʕ.'ma.ra.tii/ 'my colony' seem to require more stipulations. Tableau (24) exemplifies:

(24) HH'LLL

Input: /mustaʕmaratii/	PARSE σ >μμ	LAPSE	WSP	NONFIN	PARSE σ ≤ μμ
a. mus.taʕ('ma.ra)tii		!*	*		***
b.☞mus.('taʕ.ma)ra.tii		!*			***
c. mus.taʕ.ma('ra.tii)		!*	*	!*'F	***

All three candidates satisfy PARSE σ >μμ and equally violate LAPSE. Candidates (24a) and (24c) have two unparsed syllables at the left edge of the word and candidate (23b) has two unparsed syllables at the right edge of the word. Candidate (24b) wins since it satisfies WSP. This is the wrong prediction since the actual optimal candidate is (24a).

It seems that the LAPSE constraint in JA is active only when the two successive unstressed syllables are at the right edge of the word, i.e., in a structure like σσ('σσ) On the other hand, ('σσ)σσ does not incur a violation of LAPSE. In other words, successive unparsed syllables at the left edge of the word are tolerated by the language. This should not come as a surprise since JA is a right-oriented language. Accordingly, LAPSE is violated only if two unparsed syllables are at the right edge of a word. This is formulated in (25) and exemplified in (26) for /mus.taʕ.'ma.ra.tii/ 'my colony':

(25) LAPSE-R

Two adjacent unparsed syllables are not allowed at the right peripheral

(26) LAPSE-R and /mus.taʕ.'ma.ra.ti/

Input: /mustaʕmaratii/	PARSE σ >μμ	LAPSE-R	WSP	NONFIN	PARSE σ ≤ μμ
a.☞mus.taʕ('ma.ra)tii			*		***
b. mus.('taʕ.ma)ra.tii		!*			***
c. mus.taʕ.ma('ra.tii)			*	!*'F	***

Without LAPSE-R, candidate (26b) would surface as optimal since it satisfies WSP while (26a) violates it.

III. Conclusion

Stress in JA is restricted to a three-syllables window at the right edge of a word. A final CVVC or CVCC syllable is stressed. If no such syllable is at the end of a word, a penultimate CVV or CVC syllable is stressed. Otherwise, an antepenultimate syllable is stressed by default. This state of affairs results from having two PARSE constraints. One targets syllables that have more than two moras and another that targets syllables with less than three moras. These two constraints are separated by a NONFINALITY constraint that seeks to avoid word final stressed syllables and final stressed feet. It was also essential to introduce a LAPSE-R constraint which penalizes two successive unparsed syllables at the right edge of the word. This constraint is dominated by PARSE σ >μμ as shown in (26):

(26) Crucial domination

TF >> PARSE σ >μμ >> LAPSE >> NONFIN >> PARSE σ ≤ μμ >> EDGEMOST

Our argument for LAPSE-R suggests there should be a LAPSE-L constraint that bans two successive unparsed syllables at the left edge of a word. This, we expect, might be a correct prediction in left-side oriented stress systems. This is a point worth investigating.

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