

The Investigation of Emphatics and Emphasis Spread Used In the Bible, As Recited By Jordanian Christians within the Framework of Optimality Theory

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Abstract: This study aims to investigate emphatics and emphasis spread in the Arabic Bible as recited by Jordanian Christians within the framework of Optimality Theory. It is the first linguistic study in English that analyzes the phonological patterns of emphatics and emphasis spread in the Arabic Bible. It investigates the phonological effect of the segments (ʃ, ɗ, ʈ, ʒ, ɾ) which are considered as the most common emphatic consonants in Arabic, and the directionality of the emphasis spread in words in 70 Arabic biblical verses that are taken from different Biblical chapters. The researcher found that emphasis spreads into three directions: Left to Right (LTR), Left and Right (L+R) and Right to Left (RTL). When accounting for the phonological process that involves the directionality of emphasis spread in the Arabic Bible within Optimality Theory (OT), the researcher found that this process is the result of the distribution of the emphatic consonant in the word. As this study is the first linguistic study in English that analyzes the phonological patterns of emphatics and emphasis spread in the Arabic Bible within the framework of the optimality theory, the researcher proposed constraints to account for the directionality of emphasis spread in the mentioned cases. She also proposed constraints for exclusion cases such as two adjacent or separated emphatics in a word and for blocking emphasis.

Keywords: Emphatic consonants, Emphasis Spread, Optimality Theory, Arabic Bible.

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I. INTRODUCTION AND LITERATURES REVIEW

Phonology is a linguistics field that is concerned with the systematic organization of sounds in languages. The phonological theories are set up to the notion of well-formedness of sounds. The essential aim of the phonological formulas is to keep the well-formed inputs and to reject the ill-formed ones. Phonology, in general, and Arabic phonology, in particular, has been a substantial subject of much research during the last decades. Much of such research has focused on the places of articulation, emphatics, emphasis spread and the directionality of emphasis spread ((Laufert & Baer, 1988), (Watson, 1999), (Thompson, 2006), (Al Khatib, 2008), and others).

Sibawayh, the founder of Arabic grammar and one of its important medieval linguists, had discussed several concepts related to Arabic phonetics and phonology. Some of such theories include the phenomenon of **ṭībaq (Emphatics)**¹ which is the curving form of the back of the tongue at the time of pronunciation of some consonants. The most frequently used emphatic consonants in Arabic are ʃ, ɗ, ʈ, ʒ, ɾ (hereafter, Emphatics). The mentioned consonants are still used in many Arabic varieties nowadays ((Watson, 2007), (Abudaljuh, 2011), (Sakarna, 2012), (AlDahri, 2013), and others).

The state of Emphasis Spread was described as the way of how secondary or primary sounds affect their neighboring segments by pulling them lower in the back of the mouth, but sometimes it is blocked by phonetically antagonistic sounds. In the Arabic language, as in other languages, it is known that when an emphatic occurs in a word it spreads emphasis (hereafter, ES) to adjacent segments (consonants and vowels).

¹ The following symbols with their Arabic equivalents are used throughout this research. (ء , d د , d ض , k ك , b ب , ɗ ڏ , ʈ ڨ , ʒ ڒ , l ل , t ت , ɾ ر , ʒ ظ , m م , ʈ ڨ , z ز , ʕ ع , n ن , ɡ ڄ , s س , ɟ ڄ , a ا , h ه , ʁ ح , ʃ ش , f ف , w و , ɣ خ , ʃ ص , q ق , y ي , ʊ ُو , ̣ َ , ̤ ِ , ̥ ِ , ̦ ِ , ̧ ِ)

Interestingly, the Arabic Bible¹ contains many examples of words with emphatic consonants. When Jordanian Christians recite the Arabic Bible², they apply ES. Table (1) contains examples that have emphatics and ES were taken from the Bible.

Table (1) Emphatics and ES in the Bible³

Emphatic Consonant	Verse	Reference	Word
(s) ص	وَأَمَّا مِنْ جِهَتِي، فَحَاشَا لِي أَنْ أَتَّخِزَ إِلَّا بِصَلِيبِ رَبَّنَا يَسُوعَ الْمَسِيحِ، الَّذِي بِهِ قَدْ صُلِبَ الْعَالَمُ لِي وَأَنَا لِلْعَالَمِ. May I never boast except in the cross of our Lord Jesus Christ, through which the world has been crucified to me, and I to the world.	غلاطيه 6:14 Galatians 6:14	ṣalībi
(d) ض	وَالنُّورُ يُضِيءُ فِي الظُّلْمَةِ، وَالظُّلْمَةُ لَمْ تُدْرِكْهُ. The light shines in the darkness, and the darkness has not overcome it.	يوحنا 1:5 John 1:5	yūḍī'u
(t) ط	وَهَذِهِ لَكُمْ الْعَلَامَةُ: تَجِدُونَ طِفْلاً مَقْتَطاً مُضْجَعاً فِي مَدْوَدٍ. This will be a sign to you: You will find a baby wrapped in cloths and lying in a manger.”	لوقا 2:12 Luke 2:12	ṭiflan
(z) ظ	وَأَمَّا الظَّالِمُ فَيَسْتِنَالُ مَا ظَلَمَ بِهِ، وَلَيْسَ مُحَابَاةً. Anyone who does wrong will be repaid for their wrongs , and there is no favoritism.	3:25 كولوسي Colossians 3:25	ḡalama
(r) ر	أَيُّهَا الأبُّ الْبَارُّ، إِنَّ الْعَالَمَ لَمْ يَعْرِفْكَ، أَمَّا أَنَا فَاعْرِفْتُكَ، وَهُوَ لَأَعْرِفُوا أَنَّكَ أَرْسَلْتَنِي. “ Righteous Father, though the world does not know you, I know you, and they know that you have sent me.	يوحنا 17:25 John 17:25	alḡarū

According to Davis (1995), the emphasis spreading in the Arabic language is the result of certain aspects of Grounded Phonology. His data focused on the emphasis spread in two dialects of Palestinian Arabic and their implications on the phonological theory. Most of his arguments were built on the assumption that Grounded Phonology can account for the behaviors of the leftward and rightward spreading of the emphasis in the Arabic dialects. In his conclusion, he argued against the Optimality Theory by providing the following two challenges: (1) pharyngealization within specific constraints (2) interaction between epenthesis and pharyngealization.

Watson (1999) stated that the emphasis spread in the “ṣan’anī” which is a dialect of Yemeni Arabic, employs both articulators (Pharyngealization and Labialization). The Labialization spreads rightward while the Pharyngealization spreads leftward which leads to the deduction that many ṣan’anī words such as buṣaṭ (he beat) and ṣufar (he whistled).

Watson (1999) went on to investigate an article by Davis on the Spreading Emphasis in modern dialects of Palestinian Arabic. She argued that despite Davis’ arguments, the blocking of the rightward emphasis spread in Palestinian Arabic is correct; however, it was a futile explanation in regards to the absence of target conditions on the leftward spread. She declared that the explanation of the asymmetrical behaviors of emphasis spread in the Arabic language is more than general. She believed they were specifically based on pharyngealization, the articulatory phonetics of a secondary articulation--all on the basis of physiological grounds.

Al-Masri & Jongman (2004) shed light further on this subject by investigating how acoustic correlates to the emphasis by studying Arabic dialects. They surmised the acoustic properties of both emphatic and plain consonants and vowels are adjacent to these syllables. The selected data from native speakers of the Northern dialect of Jordanian Arabic showed that females pronounced emphasis much more often than men.

Additionally, Al-Masri and Jongman (2004) went on to analyze the consonant duration, vowel duration, vowel f2 values and emphasis blocking. This study resulted in the argument that consonants and vowels that rank in different positions have the same duration measurements. Conversely, the emphatic vowels and consonants in the same syllable have a lowering F2 value which means that words do not employ opaque vowels include both right and left emphasis spread of the target syllable.

² The Bible has two Testaments, the New and the Old. All the above verses are used from the New Testament which is found at (https://st-takla.org/Holy-Bible_.html) for the Arabic version and at (<https://www.biblegateway.com/>) for the English version.

³ The other examples will be used in the discussion.

Btoosh (2006) presented an analysis of the constraints of Jordanian Arabic phonotactics within the Optimality Theory by conducting a controlled study of Karaki Arabic. The goal of the data that was studied was to discuss three major issues in this study. Btoosh (2006) worked under the belief that (1) the argument for the assignment on unlicensed segments to semi-syllables, (2) the representation of geminates and (3) the reduction of unlicensed segments in ultra-heavy syllables by Morphology. He stated that Karaki Arabic syllables are rich in onset constraint; however, he said constraints are sometimes double breached as a result of two processes (1) syncope and (2) epenthesis. He concluded by stating that Karaki Arabic favors preserving marginal unlicensed consonants as opposed to the consonants underpricing--even in the most proper of environments.

That being said, there is one exception Btoosh (2006) did provide which is evidence of the violation of universal constraints within different dialects. He compared and contrasted the findings of his paper with previous studies on other varieties.

Thompson (2006) argued that while blocking of the Emphasis spread is caused by repeated sounds as they are higher and at the forefront of the articulatory places, the blocking segments can differ among dialects. She went on to provide an explanation for these differences by using the hierarchy constraints of sounds within the Optimality Theory.

According to Al Khatib (2008) Emphasis spreads freely from right to left more than from left to right. This is because the factorial typology is designed based on the ranking in which leftward spread controlled rightward spread.

Moreover, he argued against the claims on Optimality Theory by Davis (1995) and McCarthy (1997), the restriction on constraint hierarchy ranking is due to the phonetic information availability on the phenomenon. This claim was opposed to McCarthy's claim on optimality theory that the asymmetry resulted from a stipulation added as a result of the phonetic findings and attested patterns.

Al Khatib (2008) then went on to collect data from eight various dialects of Arabic and Aramaic with the purpose of analyzing their Emphasis spread. This study resulted in the not only the uncovering that the process is blocked if the spreading is from left to right but also the discovery that articulatory properties of Emphatic consonants can be assigned for the asymmetry.

According to Sakarna (2012), all the challenging problems in the broken plurals in Arabic can be solved through the emergence of Optimality Theory. He presented and discussed the model of McCarthy (1982). He argued that there are three major difficulties in McCarthy's model of Arabic broken plurals within Autosegmental Phonology and therefore provided the solutions within the Optimality Theory. He also explained the other types of Arabic plurals; masculine and feminine plurals. He then analyzed the rules in which the formation of broken plurals is used. He then concluded to that plural nouns can have more than one form, thus leading to his suggestion that a new model that follows the rules of Optimality Theory.

With the first study of its kind, AlDahri (2013) compared Modern Standard Arabic emphatic sounds [d̥] and [t̥] with their counterparts of non-emphatic sounds [d] and [t]. To achieve the aimed results, words with CV-CV structure syllable were established by AlDahri himself to serve as data. He computed and analyzed Voice Onset Time in both emphatic and non-emphatic sounds within Modern Standard Arabic as well as other Arabic dialects.

Furthermore, he evaluated the effects of many factors such as gender and the memorization which led to the conclusion. AlDahri found that the Voice Onset Time's values in Modern Standard Arabic of stops are positive which means the [d̥] and [d] are voiced and [t̥] and [t] are not.

According to Huneety & Mashaqba (2016) Juffin Arabic, a spoken dialect in the north of Jordan, has primary and secondary sets of emphatics. The emphatic sounds [d̥]; [s̥] and [t̥] belong to the primary set, whilst [ɾ], [l], and [m] belong to the secondary one. Furthermore, they investigated the directionality of emphasis spread in this dialect. They stated that the Emphasis spread leftward; it spreads maximally over the word and minimally over the syllable, whilst the rightward spreading is blocked.

In conclusion, it can be said that the previous studies talk about two Arabic linguistic phenomena Emphatics and Emphasis Spread in different Arabic dialects in general and Jordanian Arabic in specific. Other studies dealt with Optimality Theory and investigated Emphatics and Emphasis Spread within the framework of Optimality Theory. Consequently, all these studies and more have never discussed the topic that is mentioned in this research; as a result, the researcher felt that there is a need to conduct this study.

1.2. Optimality Theory

The term "Optimality" has been used since 1960's, but the theory did not see light until 1991. A direct result of the article of co-authors Alan Prince and Paul Smolensky published in 1993. Kager (1999) introduced the "Optimality-Theoretic Perspective" in relation to other ideas and explained the reason why an optimization over an infinite candidate set is feasible. By 2004, the theory was known as the "Optimality Theory: Constraint Interaction in Generative Grammar". The major reason for the others to evolve this theory was to properly mold it into the assignment of grammatical structure and the role of constraints in phonological grammar.

In his approach, McCarthy (2007) defined OT as a general model of how grammars are structured and stated that the motivation for it is the universality of constraint or lack thereof in both Phonology and Syntax.

As it progressed, the theory was introduced into phonology which led to other linguists incorporating it to other fields of linguistics including but not limited to “Syntax”, “Semantics”, “Sociolinguistics”, and “Historical Linguistics”. The theory was then structured to become more concentrated on “universal principles”, “linguistic typology”, and “language acquisition”. As a result of various linguists introducing the Optimality Theory into a countless number of other theories, the following of most notable theories have arisen: “Syllable Theory, Moraic Theory, and Feature Geometry”. Subsequently, they have also evolved into sub-theories such as “Positional Faithfulness Theory”, “Correspondence Theory” (McCarthy & Prince 1995), “Sympathy Theory” and a great number of variations of “Theories of Learnability”.

Optimality Theory (OT) is a development of Generative Grammar. Its main purpose is to concentrate on a formal description for universal principles based on empirical research of linguistic typology and first language acquisition. The main idea of OT is that the premier forms of a language clarify resolutions between constraints. A premier form is “optimal” as it grants the least serious violations of a set of violable constraints. These constraints are universal and encode markedness statements and principles compelling the conservation of constraints in a language, ranked in a language-specific hierarchy.

The theory has three essential components: (1) GEN which takes the input and generates the list of all possible outputs or candidates (2) CON which provides the criteria and the violable constraints that are used to choose between candidates and (3) EVAL which chooses the optimal candidate based on these constraints and their output. The OT assumes that these components are in a universal constraint set that is used in English--as provided in the following example in Figure (1).

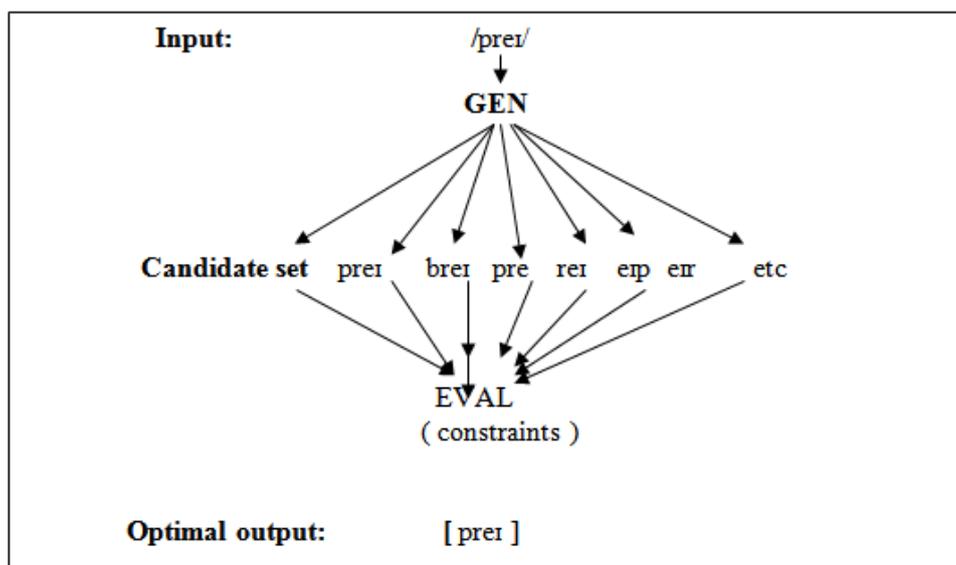


Figure (1) a Schematic Form of OT

In OT, the comparison between candidates is illustrated within a tableau. This tableau uses special concepts that are related to OT to examine the candidates. The pointing finger (☞) shows the optimal candidate (output), the strike (*) shows a violation for the constraints, whilst the exclamation mark and strike (*!) show a fatal violation and the shading (■) shows that the constraints are irrelevant. Table (2) shows an example of a violation tableau.

Table (2) a Violation Tableau

/input/	Constraint 1	Constraint 2	Constraint 3
a. ☞ Candidate A		*	*
b. Candidate B	*	*!	■
c. Candidate C	*!	*	*
d. Candidate D	*!	■	■

The constraints which are used in the tableau are ranked differently from left (the most important) to right (the less important). The optimal candidate is the one that violates the less essential constraints, whilst the fatal (not used candidate) is the one that violates the most important constraints.

The above tableau is divided into two dimensions, horizontal and vertical. In the horizontal one, there are constraints which are universal and in the mind of the speaker. In the vertical dimension, there are the candidates. The first box has what is called the input and under it, there are all the possible candidates for it. Each candidate is checked through the constraints to find the optimal output. After the examination, the candidate that has the least violations is considered as the optimal output, whilst the candidate that has the fatal violations is not used in the language. It is evident in the example in the tableau above that candidate A is the optimal output, whilst Candidates B, C and D are irrelevant.

To sum up, a lot of studies about the Arabic language were conducted within the framework of OT, for example ((De Vijver,1996), (Al-Jarrah, 2002), (Abu-Abbas, 2011), (Jarrah, 2013), (Al-Raba'a, 2015), and others). Interestingly, none of the conducted studies within OT has dealt with Emphatics and Emphasis Spread within the framework of OT in the Arabic Bible.

II. MATERIAL AND METHODOLOGY

2.1. The Data of the Study

The material which could serve as a basis for the present study is largely reliant on some authentic data that is extracted from verses from the Bible. The data of the study consist of (70) verses that are taken from different Biblical chapters that contain examples of Emphatics.

2.2. Data Collection Procedures

In order to collect the data for this study, the Arabic Bible is read twice. The first time using the hard copy version and the second time using the electronic site (https://st-takla.org/Holy-Bible_.html). It should be pointed out that the translation of the verses of the Bible throughout this study is taken from Bible Gateway at the link (<https://www.biblegateway.com/>).

All verses that contain Emphatics were marked using a yellow pen. The words within the verses that contain Emphatics were marked using a red pen. All verses were taken and put on a list. The list was read and classified in a table according to the Emphatic type. For example, all verses that contain (š) are listed in one part of the table and all verses that contain (ḍ) are put in another part of the same table and so on. The total number of the collected verses is (70), the number of words is (230) and the number of words that have Emphatics is shown in table (3).

Table (3) The Number of Words that Have Emphatic consonants

Emphatic Consonant	Number of Words
š	34 words
ḍ	21 words
ṭ	20 words
ẓ	14 words
ṛ	101 words
Two adjacent Emphatics	23 words
Two separated Emphatics	17 words

2.3. Validity of the Data

In order to check how Emphatics articulated and ES operates, five priests in Karak were asked to recite all the 70 verses. The priests recited the selected verses and words three times. The researcher listened to the recitations made by the priests several times to understand how ES operates.

2.4. The Procedures of Data Analysis

This part clarifies the procedures that are followed to analyze the selected data. These data include Biblical verses that contain examples of Emphatics and Emphasis Spread within the Framework of Optimality Theory. This link between the verses and phonology has been expected to best state the purpose of the study. After the verses were selected, they were put on a table that was divided into four columns. The first column is for the Emphatic Consonants, the second one is for the verses, the third one is for the verses' reference, and the fourth one is for the words that contain Emphatics. The verses were categorized according to the Emphatics as shown in the following table.

Table (4) an Example of the Categorized Verses According to The Emphatics

Emphatic Consonant	Verse	Reference	Word
(š) ص	1. وَكَانَ يُعَلِّمُ قَائِلًا لَهُمْ: «أَلَيْسَ مَكْتُوبًا: بَيْتِي بَيْتَ صَلَاةٍ يُدْعَى لِجَمِيعِ الْأُمَّمِ؟ وَأَنْتُمْ جَعَلْتُمُوهُ مَغَارَةً لُصُوفٍ.» And He taught, saying unto them, “Is it not written, ‘My house shall be called for all nations the house of prayer ’? But ye have made it a den of thieves.”	مرقس 11:17 Mark 11:17	šalatin
(d) ض	2. «نَحْنُ سَمِعْنَاهُ يَقُولُ: إِنِّي أَنْقِضُ هَذَا الْهَيْكَلَ الْمَصْنُوعَ بِالْأَيْدِي، وَفِي ثَلَاثَةِ أَيَّامٍ أُبْنِي آخَرَ غَيْرَ مَصْنُوعٍ بِأَيْدِي.» “We heard him say, ‘I will destroy this temple made with human hands and in three days will build another, not made with hands.’”	مرقس 14:58 Mark 14:58	anquðu
(t) ط	3. فَصَنَعَ سَوْطًا مِنْ حَبَالٍ وَطَرَدَ الْجَمِيعَ مِنَ الْهَيْكَلِ، أَلْعَنَمَ وَالْبَقَرِ، وَكَبَّ دَرَاهِمَ الصَّيَّارِفِ وَقَلَّبَ مَوَازِينَهُمْ. So he made a whip out of cords, and drove all from the temple courts, both sheep and cattle; he scattered the coins of the money changers and overturned their tables.	يوحنا 2:15 John 2:15	sawṭan
(z) ظ	4. وَفِي أَوَّلِ الْأُسْبُوعِ جَاءَتْ مَرْيَمُ الْمَجْدَلِيَّةُ إِلَى الْقَبْرِ بَاكِرًا، وَالظَّلَامُ بَاقٍ. فَظَهَرَ الْحَجَرُ مَرْفُوعًا عَنِ الْقَبْرِ. Early on the first day of the week, while it was still dark , Mary Magdalene went to the tomb and saw that the stone had been removed from the entrance.	يوحنا 20:1 John 20:1	azalamu
(r) ر	5. وَبَيْنَمَا هُوَ يَتَكَلَّمُ جَاءُوا مِنْ دَارِ رَيْسِ الْمَجْمَعِ قَائِلِينَ: «ابْنَتُكَ مَاتَتْ. لِمَاذَا تُتَعَبُ الْمُعَلِّمُ بَعْدُ؟» While Jesus was still speaking, some people came from the house of Jairus, the synagogue leader. “Your daughter is dead,” they said. “Why bother the teacher anymore?”	مرقس 5:35 Mark 5:35	dari
Two adjacent Emphatics	6. فَلَمَّا رَأَاهُ زَكَرِيَّا اضْطَرْبَ وَوَقَعَ عَلَيْهِ خَرْفٌ. When Zechariah saw him, he was startled and was gripped with fear.	لوقا 1:12 Luke 1:12	ʿdṭṭaba
Two separated Emphatics	7. لِذَلِكَ أَنَا أَيْضًا أُدْرِبُ نَفْسِي لِئَكُونَ لِي دَائِمًا ضَمِيرٌ بِلَا عَنَرَةٍ مِنْ نَحْوِ اللَّهِ وَالنَّاسِ. So I strive always to keep my conscience clear before God and man.	اعمال الرسل 24:16 Acts 24:16	damīru n

The verses are then organized as follows: 10 verses that have the Emphatic (š), 10 verses that have the Emphatic (d), 10 verses that have the Emphatic (t), 10 verses that have the Emphatic (z), 10 verses that have the Emphatic (r), 10 verses that have two adjacent Emphatics and 10 verses that have two separated Emphatics. Each Emphatic contains within a word will be investigated individually to find out how Emphasis spreads within a word.

In order to check and analyze Emphasis Spread in the words that have Emphatics, the verses and these certain words were recited by five priests and recorded. The researcher listened to the recordings several times, to conduct research and to answer the research questions.

III. DISCUSSION AND RESULTS

3.1. The Relation between Emphatic Consonants and Emphasis Spread

This section discusses the relation between the Emphatic consonants and Emphasis Spread in the Arabic Bible. After investigating the Emphatics and Emphasis spread in the Arabic Bible, the researcher noticed that there is a strong relation between them. In all the verses that contain Emphatics, Emphasis spreads to other segments (consonants and vowels) of the word. On the other hand, all the verses that have non-Emphatics,

Emphasis spread is blocked⁴. Table (5) presents examples of Emphatics, where ES is underlined, and non-Emphatics, where there is no ES at all.

Table (5) Examples on Emphatic and Non-Emphatic Consonants

Emphatics	Verse	Non-Emphatics	Verse
<u>salaba</u> "crucified"	وَبَعْدَ مَا اسْتَهْزَأُوا بِهِ، نَزَعُوا عَنْهُ الرِّدَاءَ وَالْبِسُوهُ ثِيَابَهُ، وَمَضَوْا بِهِ <u>لِلصَّلْبِ</u> . (متى (27:31) After they had mocked him, they took off the robe and put his own clothes on him. Then they led him away to crucify him. (Matthew 27:31)	<u>salaba</u> "robbed"	لَكِنْ أَنْتُمْ تَظْلِمُونَ وَتَسْتَلْبُونَ، وَذَلِكَ لِإِخْوَةِ ! (1 كورنثوس 6:8) Instead, you yourselves cheat and do wrong, and you do this to your brothers and sisters. (1Corinthians 6:8)
ba' d "some"	وَصِيَّةٌ جَدِيدَةٌ أَنَا أُعْطِيكُمْ: أَنْ تُحِبُّوا بَعْضُكُمْ بَعْضًا. كَمَا أَحْبَبْتُمْ أَنَا تُحِبُّونَ أَنْتُمْ أَيْضًا بَعْضُكُمْ بَعْضًا. (يوحنا 13:34) "A new command I give you: Love one another . As I have loved you, so you must love one another. (John 13:34)	ba' d "after"	فَبَعْدَ مَا صَامَ أَرْبَعِينَ نَهَارًا وَأَرْبَعِينَ لَيْلَةً، جَاعَ أَجِيرًا. (متى 4:2) After fasting forty days and forty nights, he was hungry. (Matthew 4:2)
<u>tabi'</u> "kind"	لِأَنَّ كُلَّ طَيْعٍ لِلْوَحُوشِ وَالطُّيُورِ وَالرَّخَفَاتِ وَالْبَحْرِيَّاتِ يُذَلَّلُ، وَقَدْ تَدَلَّلَ لِلطَّيْعِ الْبَشَرِيُّ (يعقوب 3:7). All kinds of animals, birds, reptiles and sea creatures are being tamed and have been tamed by mankind, (James 3:7)	<u>tabi'</u> "follow"	فَتَقَدَّمَ كَاتِبٌ وَقَالَ لَهُ: «يَا مُعَلِّمُ، أَتَتَّبِعُكَ- أَيْنَمَا تَمْضِي. (متى 19:18) Then a teacher of the law came to him and said, "Teacher, I will follow you wherever you go." (Matthew 8:19)
<u>zil</u> "shadow"	لِيُضِيءَ عَلَى الْجَالِسِينَ فِي الظَّلْمَةِ وَظِلِّ المَوْتِ، لِكَيْ يَهْدِيَ أقدامَنَا فِي طَرِيقِ السَّلَامِ . (لوقا 1:79) to shine on those living in darkness and in the shadow of death, to guide our feet into the path of peace." (Luke 1:79)	<u>dil</u> "humble"	أَنْ يَذَلَّنِي- إِلَهِي عِنْدَكُمْ، إِذَا جِئْتُ أَيْضًا وَأَتَوَخَّ عَلَى كَثِيرِينَ مِنَ الَّذِينَ أَخْطَأُوا مِنْ قَبْلُ وَلَمْ يَتُوبُوا عَنِ النِّجَاسَةِ وَالزُّنَا وَالْعَهْرَةِ الَّتِي فَعَلُوهَا. (2 كورنثوس 12:21) I am afraid that when I come again my God will humble me before you, and I will be grieved over many who have sinned earlier and have not repented of the impurity, sexual sin and debauchery in which they have indulged. (2 Corinthians 12:21)
<u>dar</u> "house"	نَمَا هُوَ يَتَكَلَّمُ جَاءُوا مِنْ دَارِ رَبِّيسِ المَجْمَعِ يَنْ: «إِنَّكَ مَاتَ. لِمَاذَا تَتَّعِبُ المَعَلِّمَ بَعْدَ؟» (نس 5:35) While Jesus was still speaking, some people came from the house of Jairus, the synagogue leader. "Your daughter is dead," they said. "Why bother the teacher anymore?" (Mark 5:35)	<u>dar</u> "turn or shift"	كُلُّ عَطِيَّةٍ صَالِحَةٍ وَكُلُّ مَوْهَبَةٍ تَامَّةٍ هِيَ مِنْ فَوْقَ، نَازِلَةٌ مِنْ عِنْدِ أَبِي الأَنْوَارِ، الَّذِي لَيْسَ عِنْدَهُ تَغْيِيرٌ وَلَا ظِلٌّ-دَوَارَانِ - (يعقوب 1:17). Every good and perfect gift is from above, coming down from the Father of the heavenly lights, who does not change like shifting shadows.(James 1:17)

It is noticed that each Emphatic sound has its counterpart of Non-emphatic sound. The above table presents examples of both Emphatic sounds where we have ES and Non-emphatic sounds where there is no ES. It should be pointed here that in the above table the word taslibün "you rob" in the first verse is derived from salaba "robbed". The word 'tb'ak "I will follow you" is derived from tabi' "follow". The word zilāl "shadows" is the plural of zil "shadow". The word yaḡulani "humble me" is derived from dil "humble". The word dawaran "shifting" is derived from dar "turn or shift".

⁴ The - - indicates that the ES is blocked.

3.2. The Directionality of Emphasis Spread

This section sheds light on the direction of Emphasis spreads in the Arabic Bible. In order to investigate the directionality of ES, the study relies on the distribution of the Emphatics at the word level. In all the collected verses, the researcher noticed that Emphatics are distributed in three positions in a word: initial, middle and final. It is also found that Emphasis spreads into three directions based on the distribution of an Emphatic in a word. Emphasis spreads Left to Right (hereafter, LTR), if the Emphatic is in an initial position in a word; it spreads bidirectional (Left and Right) at the same time (hereafter, L+R), if the Emphatic is in a middle position in a word and the Emphasis spreads Right to Left (hereafter, RTL), if the Emphatic is in a final position in the word. Tables (6, 7 and 8), illustrate the direction of Emphasis spread based on the distribution of emphatics in a word.

Table (6) Examples of Initial Position Emphatics that Spread Emphasis Rightward

Distribution of Emphatics	Verse	Word with ES	The Direction of ES
Initial	1. <u>وَلَمَّا مَضَى زَمَانٌ طَوِيلٌ، وَصَارَ السَّفَرُ فِي الْبَحْرِ خَطِرًا، إِذْ كَانَ الصَّوْمُ أَيْضًا قَدْ مَضَى، جَعَلَ بُولَسُ يُنذِرُهُمْ (أعمال الرسل 27:9)</u> Much time had been lost, and sailing had already become dangerous because by now it was after the Day of Atonement . So Paul warned them,(Acts 27:9)	1. <u>ṣawm</u> “Fasting”	Left to right
	2. <u>وَلَكِنْ كَانَ يَنْبَغِي أَنْ نَفْرَحَ وَنُسِرَّ، لِأَنَّ أَخَاكَ هَذَا كَانَ مَيِّتًا فَعَاشَ، وَكَانَ ضَالًّا فَوُجِدَ. (لوقا 15:32)</u> “But we had to celebrate and be glad, because this brother of yours was dead and is alive again; he was lost and is found.”(Luke 15:32)	2. <u>dāl</u> “Lost”	
	3. <u>فَإِنَّا لَا نُرِيدُ أَنْ تَجْهَلُوا أَيُّهَا الْإِخْوَةُ مِنْ جِهَةِ ضَيْقَاتِنَا الَّتِي أَصَابَتْنَا فِي أَسِيَا، أَنَّنَا نَتَّقَلْنَا جِدًّا فَوْقَ الطَّاقَةِ، حَتَّى أَيْسَنَا مِنَ الْحَيَاةِ أَيْضًا. (2كورنثوس 1:8)</u> We do not want you to be uninformed, brothers and sisters, about the troubles we experienced in the province of Asia. We were under great pressure, far beyond our ability to endure, so that we despaired of life itself.(2Corinthians1:8)	3. <u>ṭaqah</u> “ability”	
	4. <u>وَفِي أَوَّلِ الْأَسْبُوعِ جَاءَتْ مَرْيَمُ الْمَجْدَلِيَّةُ إِلَى الْقَبْرِ بَاكِرًا، وَالظَّلَامُ بَاقٍ. فَنظَرَتْ الْحَجَرَ مَرْفُوعًا عَنِ الْقَبْرِ. (يوحنا 20:1)</u> Early on the first day of the week, while it was still dark , Mary Magdalene went to the tomb and saw that the stone had been removed from the entrance.(John 20:1)	4. <u>zalam</u> “Dark”	
	5. <u>فَلَمَّا اعْتَمَدَ يَسُوعُ صَعِدَ لِلْوَقْتِ مِنَ الْمَاءِ، وَإِذَا السَّمَاءُ قَدْ انْفَتَحَتْ لَهُ، فَرَأَى رُوحَ اللَّهِ نَازِلًا مِثْلَ حَمَامَةٍ وَأَتَيْهَا عَلَيْهِ، (متى 3:16)</u> As soon as Jesus was baptized, he went up out of the water. At that moment heaven was opened, and he saw the Spirit of God descending like a dove and alighting on him. (Matthew 3:16)	5. <u>rūh</u> “Spirit”	

Table (6) shows that when the Emphatic occurs in an initial position in a word like ṣawm “Fasting”, dāl “Lost”, ṭaqah “ability”, zalam “Dark” and rūh “Spirit”, Emphasis spreads rightward (to right).

Table (7) Examples of Middle Position Emphatics that Spread Emphasis Both Directions Left and Right

Distribution of Emphatics	Verse	Word with ES	The Direction of ES
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Middle	<p>1. <u>أَلِيصَابَاتُ</u> عَاقِرًا. وَكَانَا وَلَمْ يَكُنْ لَهُمَا وَلَدٌ، إِذْ كَانَتْ كِلَاهُمَا مُتَقَدِّمَيْنِ فِي أَيَّامِهِمَا. (لوقا 1:7)</p> <p>But they were childless because Elizabeth was not able to conceive, and they were both very old. (Luke 1:7)</p>	1. <u>alīṣabat</u> Left and right “Elizabeth”
	<p>2. <u>يُضِيءُ</u> فِي الظُّلْمَةِ، وَالظُّلْمَةُ لَمْ تُذَرِكُهُ. (يوحنا 1:5)</p> <p>The light shines in the darkness, and the darkness has not overcome it. (John 1:5)</p>	2. <u>yūḏī</u> “shine”
	<p>3. وَأَمَّا أَنَا فَأَقُولُ لَكُمْ: لَا تَقَاوِمُوا الشَّرَّ، بَلْ مَنْ خَدَّكَ الْإِيْمَنَ فَحَوِّلْ لَهُ الْآخَرَ أَيْضًا. (متى 5:39)</p> <p>But I say unto you, That ye resist not evil: but whosoever shall smite thee on thy right cheek, turn to him the other also. (Matthew 5:39)</p>	3. <u>laṭam</u> “slap”
	<p>4. وَأَنَا أَقُولُ لَكُمْ: اصْنَعُوا لَكُمْ أصدقاءَ بِمَالِ الظُّلْمِ، حَتَّى إِذَا فَنِيْتُمْ يَقْبَلُونَكُمْ فِي <u>المِظَالِ</u> الأبدية. (لوقا 16:9)</p> <p>I tell you, use worldly wealth to gain friends for yourselves, so that when it is gone, you will be welcomed into eternal dwellings. (Luke 16:9)</p>	4. <u>mazal</u> “dwelling”
	<p>5. فَاتَّبِعُوا إِذَا فِي <u>الْحُرِّيَّةِ</u> الَّتِي قَدْ حَرَّرَنَا الْمَسِيحُ بِهَا، وَلَا تُرْتَبِكُوا أَيْضًا بِنِيرِ عُبُودِيَّةٍ. (غلاطية 5:1)</p> <p>It is for freedom that Christ has set us free. Stand firm, then, and do not let yourselves be burdened again by a yoke of slavery. (Galatians 5:1)</p>	5. <u>huriyah</u> “freedom”

In Table (7) if the Emphatic occurs in a middle position in a word like alīṣabat “Elizabeth”, yūḏī “shine”, laṭam “slap”, mazal “dwelling” and huriyah “freedom”, Emphasis spreads to both directions left and right at the same time.

Table (8) Examples of Final Position Emphatics that Spread Emphasis Leftward

Distribution of Emphatics	Verse	Word with ES	The Direction of ES
Final	<p>1. لَأَنَّ فخرَنَا هُوَ هَذَا: شَهَادَةُ ضَمِيرِنَا أَنَّنَا فِي بَسَاطَةٍ وَ <u>إِخْلَاصٍ</u> لِلَّهِ، لَا فِي حِكْمَةٍ جَسَدِيَّةٍ بَلْ فِي نِعْمَةِ اللَّهِ، نَصَرَفْنَا فِي الْعَالَمِ، وَلَا سِيْمًا مِنْ نَحْوِكُمْ. (2 كورنثوس 1:12)</p> <p>Now this is our boast: Our conscience testifies that we have conducted ourselves in the world, and especially in our relations with you, with integrity and godly sincerity. We have done so, relying not on worldly wisdom but on God’s grace. (2 Corinthians 1:12)</p>	1. <u>hl</u> as “sincerity”	Right to Left
	<p>2. نَحْنُ سَمِعْنَاهُ يَقُولُ: إِنِّي <u>أَنْفُضُ</u> هَذَا الْهَيْكَلَ الْمَصْنُوعَ بِالْأَيْدِي، وَفِي ثَلَاثَةِ أَيَّامٍ أُبْنِي آخَرَ غَيْرَ مَصْنُوعٍ بِأَيْدِي. (مرقس 14:58)</p> <p>“We heard him say, ‘I will destroy this temple made with human hands and in three days will build another, not made with hands.’” (Mark 14:58)</p>	2. <u>anq</u> ud “destroy”	
	<p>3. فَصَنَعَ <u>سَوَاطِ</u> مِنْ حِجَالٍ وَطَرَدَ الْجَمِيعَ مِنَ الْهَيْكَلِ، أَلْعَنَ وَالْبَقَرِ،</p>		

وَكَبَّ دَرَاهِمَ الصَّيَّارِفِ وَقَلَّبَ مَوَائِدَهُمْ. (يوحنا 2:15)	3.	<u>sawt</u>
So he made a whip out of cords, and drove all from the temple courts, both sheep and cattle; he scattered the coins of the money changers and overturned their tables. (John 2:15)	“whip”	
بَلْ يَجْعَلُونَ خَمْرًا جَدِيدَةً فِي زَقَاقٍ جَدِيدَةٍ، فَتَ تُحْفَظُ جَمِيعًا. (لوقا 5:38)	4.	<u>tuhfa</u>
No, new wine must be poured into new wineskins. (Luke 5:38)	z “keep”	
فَمَدَحَ السَّيِّدُ وَكَيْلَ الظُّلْمِ إِذْ بِحِكْمَةٍ فَعَلَ، لِأَنَّ أُنْبَاءَ هَذَا الدَّهْرِ أَحْكَمُ مِنْ أُنْبَاءِ النُّورِ فِي جِبِلَّهُمْ. (لوقا 16:8)	5.	<u>nūr</u>
“The master commended the dishonest manager because he had acted shrewdly. For the people of this world are more shrewd in dealing with their own kind than are the people of the light . (Luke 16:8)	“light”	

Table (8) indicates that when the Emphatic occurs in a final position in a word like ḥlaṣ “sincerity”, anqud “destroy”, sawt “whip”, tuhfaz “keep” and nūr “light”, Emphasis spreads leftward (to the left).

3.3. The Phonological Account of Emphasis Spread Within the Framework of Optimality Theory

The previous sections in this study show that the common Emphatics in Arabic are (ṣ, ḍ, ṭ, ẓ and ṛ). These Emphatics spread Emphasis to the adjacent segments. The discussion continued in 4.3 shows that the directionality of Emphasis spread is based on the Emphatics’ position in the word as follows: (1) if the Emphatics occurs in an initial position Emphasis spreads LTR, (2) if the Emphatics occurs in a middle position the Emphasis spreads L+R at the same time and (3) if the Emphatics occurs in a final position the Emphasis spreads RTL. This section provides an analysis of these cases within OT.

In order to account for the directionality of ES in the mentioned cases in the Arabic Bible within OT, the researcher proposes the following constraints:

Table (9) Emphasis Spread Constraints

Constraint	Note
1. Constraint Left to Right (hereafter, LTR)	Anytime an Emphatic occurs in an initial position in a word Emphasis spreads left to right.
2. Constraint Left and Right (hereafter, L+R)	Anytime an Emphatic occurs in a middle position in a word Emphasis spreads left and right.
3. Constraint Right to Left (hereafter, RTL)	Anytime an Emphatic occurs in a final position in a word the Emphasis spreads right to left.

At this stage of the investigation, a tableau is needed to show the optimality of the possible candidates by examining the proposed constraints. The following sections provide analysis for the directionality of ES based on the distribution of Emphatics within OT. The optimal candidate is indicated by pointing finger (☞), the violation by a strike (*) and the fatal violation of the constraints by an exclamation mark and strike (*!).

The constraints which are used in the tableau are ranked differently from left (the most important) to right (the less important). The optimal candidate as recited by Jordanian Christians is the one that violates the less important constraints, whilst the fatal (not used candidate) is the one that violates the most important constraints. Consider tableau (1) which has an example for the ranking of the proposed constraints in this study.

Tableau (1) an Example of Constraints Ranking

/input/	LTR	L+R	RTL
a. ☞ Candidate A		*	*
b. Candidate B	*	*!	*!

In the above tableau, the constraints (LTR, L+R, and RTL) are ranked from LTR first on the left to RTL last on the right, based on the Emphatics position in the word.

Since the directionality of Emphasis spread in this study is based on the Emphatics' position in the word, the constraints' ranking in the analysis within OT is also reliant on the Emphatics position in the word as shown in the next sections.

3.3.1. Initial Position Emphatics

To account for ES in the following verses, in which each verse contains a word that has an Emphatic in an initial position, tableau (2) is used.

1. “وَلَمَّا مَضَى زَمَانٌ طَوِيلٌ، وَصَارَ السَّفَرُ فِي الْبَحْرِ خَطِرًا، إِذْ كَانَ الصَّوْمُ أَيْضًا قَدْ مَضَى، جَعَلَ يُؤَلِّسُ يَنْذِرُهُمْ” (أعمال الرسل 27:9)
 “Much time had been lost, and sailing had already become dangerous because by now it was after **the Day of Atonement**. So Paul warned them, “(Acts 27:9)

2. “وَأَمَّا مِنْ جِهَتِي، فَخَاشَا لِي أَنْ أَفْتَخِرَ إِلَّا بِصَلِيبِ رَبَّنَا يَسُوعَ الْمَسِيحِ، الَّذِي بِهِ قَدْ صَلِبَ الْعَالَمُ لِي وَأَنَا لِلْعَالَمِ.” (غلاطيه 6:14)
 “May I never boast except in **the cross** of our Lord Jesus Christ, through which the world has been crucified to me, and I to the world.”(Galatians 6:14)

3. “أَدْخُلُوا مِنَ الْبَابِ الضَّيِّقِ، لِأَنَّهُ وَاسِعُ الْبَابِ وَرَحْبُ الطَّرِيقِ الَّذِي يُؤَدِّي إِلَى الْهَلَاكِ، وَكَثِيرُونَ هُمْ الَّذِينَ يَدْخُلُونَ مِنْهُ” (متى 7:13)
 “Enter through **the narrow** gate. For wide is the gate and broad is the road that leads to destruction, and many enter through it.” (Matthew 7:13)

4. “لِأَنَّهُ يَكُونُ حِينئذٍ ضَيْقٌ عَظِيمٌ لَمْ يَكُنْ مِثْلَهُ مُنْذُ ابْتِدَاءِ الْعَالَمِ إِلَى الْآنَ وَلَنْ يَكُونَ.” (متى 24:21)
 “For then there will be great **distress**, unequalled from the beginning of the world until now—and never to be equaled again.” (Matthew 24:21)

5. “لِأَنَّ كُلَّ طَيْعٍ لِلْوُحُوشِ وَالطُّيُورِ وَالزَّخَّافَاتِ وَالْبَحْرِيَّاتِ يُدَلَّلُ، وَقَدْ تَدَلَّلَ لِلطَّبَعِ الْبَشَرِيِّ.” (يعقوب 3:7)
 “All **kinds** of animals, birds, reptiles and sea creatures are being tamed and have been tamed by mankind, “(James3:7)

Initial Emphatics spreads Emphasis LTR in words like /šawm/ “fasting”, /šalīb/ “cross”, /dīq/ “distress”, /dayq/ “narrow”, /ṭabaq/ “plate”, /ṭab/ “kind”. The word /šawm/ for example, that has the initial Emphatics (š) causes Emphasis to spread from left to right. Consider the tableau (2) that gives an answer to why [šawm] is the optimal output for /šawm/ within OT:

Tableau (2) The Optimal Output of /šawm/

	/šawm/	LTR	L+R	RTL
1.	☞ šawm		*!	*!
2.	šawm	*	*!	*!
3.	sawm	*!	*!	*!

After examining the above candidates and their associated constraints, the first candidate is considered as the optimal output and the second and third candidates are non-optimal. It is obvious that the second and third candidates violate the three constraints namely (LTR, L+R, and RTL) as shown above. Since the input /šawm/ contains the Emphatics (š) that occupies an initial position in the word and the violation occurs in L+R and RTL. For the reciter of the Arabic Bible, LTR is ranked first and there is no violation in it, that's why readers pronounce /šawm/ as [šawm].

3.3.2. Middle Position Emphatics

To account for ES in the following verses, in which each verse contains a word that has an Emphatic in a middle position, tableau (3) is used.

1. “وَلَمْ يَكُنْ لَهُمَا وُلْدٌ، إِذْ كَانَتْ أَلْيَصَابِيَاثُ عَاقِرًا. وَكَانَا كِلَاهُمَا مُتَقَدِّمِينَ فِي أَيَّامِهِمَا.” (لوقا 1:7)
 “But they were childless because **Elizabeth** was not able to conceive, and they were both very old.” (Luke 1:7)

2. “فَقَالَ يَسُوعُ: «مَنْ الَّذِي لَمَسَنِي؟» وَإِذْ كَانَ الْجَمِيعُ يُنْكِرُونَ، قَالَ بَطْرُسُ وَالَّذِينَ مَعَهُ: «يَا مُعَلِّمُ، الْجُمُوعُ يُضَيِّقُونَ عَلَيْكَ وَيَزْحَمُونَكَ، وَتَقُولُ: مَنْ الَّذِي لَمَسَنِي؟» (لوقا 8:45)

“Who touched me?” Jesus asked. When they all denied it, Peter said, “Master, the people are crowding and **pressing** against you.” (Luke 8:45)

3. “وَالنُّورُ يَضِيءُ فِي الظُّلْمَةِ، وَالظُّلْمَةُ لَمْ تُدْرِكْهُ.” (يوحنا 1:5)
 “The light **shines** in the darkness, and the darkness has not overcome it.” (John 1:5)

4. “وَالْعَدُوُّ الَّذِي زَرَعَهُ هُوَ ابليسُ. وَالْحَصَادُ هُوَ انْقِضَاءُ الْعَالَمِ. وَالْحَصَادُونَ هُمُ الْمَلَائِكَةُ.” (متى 13:39)
 “And the enemy who sows them is the devil. The harvest is **the end** of the age, and the harvesters are angels.” (Matthew 13:39)

5. “وَأَمَّا أَنَا فَأَقُولُ لَكُمْ: لَا تَقَاوِمُوا الشَّرَّ، بَلْ مَنْ لَطَمَكَ عَلَى خَدِّكَ الْأَيْمَنِ فَحَوِّلْ لَهُ الْآخَرَ أَيضًا.” (متى 5:39)
 “But I say unto you, that ye resist not evil: but whosoever shall **smite** thee on thy right cheek, turn to him the other also.” (Matthew 5:39)

Middle Emphatics spreads Emphasis L+R in words like /alīṣabat/ “Elizabeth”, /yḡḏāiq/ “crowding”, /nqīḏa/ “expiration”, /yūḏī/ “shine”, /laṭam/ “slap”. For example, the word /laṭam/ that has the initial Emphatics (t) causes Emphasis to spread both directions left and right at the same time. Consider the tableau (3) that gives an answer to why [laṭam] is the optimal output for /laṭam/ within OT:

Tableau (3) The Optimal Output of /laṭam/

/laṭam/	L+R	LTR	RTL
1. laṭam		*!	*!
2. laṭam	*	*!	*!
3. latam	*!	*!	*!

The examination of the previous candidates and their associated constraints shows that the first candidate is considered as the optimal output whilst the second and third candidates are non-optimal. It is very clear that the second and third candidates violate the three constraints namely (L+R, LTR, and RTL) as shown above. Since the input /laṭam/ contains the Emphatics (t) that occupies a middle position in the word and the violation occurs in LTR and RTL. For the reciter of the Arabic Bible, L+R is ranked first and there is no violation in it, that’s why readers pronounce /laṭam/ as [laṭam].

3.3.3. Final Position Emphatics

To account for ES in the following verses, in which each verse contains a word that has an Emphatic in a final position, tableau (4) is used.

1. “لَأَنَّ فَخْرَنَا هُوَ هَذَا: شَهَادَةُ ضَمِيرِنَا أَنَّنَا فِي بَسَاطَةٍ وَ إِخْلَاصٍ لِلَّهِ، لَا فِي حِكْمَةٍ جَسَدِيَّةٍ بَلْ فِي نِعْمَةِ اللَّهِ، تَصَرَّفْنَا فِي الْعَالَمِ، وَلَا سِيَّامًا مِنْ نَحْوِكُمْ.” (2 كورنثوس 1:12)

“Now this is our boast: Our conscience testifies that we have conducted ourselves in the world, and especially in our relations with you, with integrity and godly **sincerity**. We have done so, relying not on worldly wisdom but on God’s grace.” (2 Corinthians 1:12)

2. “فَإِنَّ كَلِمَةَ الصَّلِيبِ عِنْدَ الْهَالِكِينَ جَهَالَةٌ، وَأَمَّا عِنْدَنَا نَحْنُ الْمُخْلِصِينَ فَهِيَ قُوَّةُ اللَّهِ،” (1 كورنثوس 1:18)

“For the message of the cross is foolishness to those who are perishing, but to us who are **being saved** it is the power of God.” (1 Corinthians 1:18)

3. “نَحْنُ سَمِعْنَاهُ يَقُولُ: إِنِّي أَنْقِضُ هَذَا الْهَيْكَلَ الْمَصْنُوعَ بِالْأَيْدِي، وَفِي ثَلَاثَةِ أَيَّامٍ أُبْنِي آخَرَ غَيْرَ مَصْنُوعٍ بِأَيْدِي.” (مرقس 14:58)
 “We heard him say, ‘I **will destroy** this temple made with human hands and in three days will build another, not made with hands.’” (Mark 14:58)

4. “وَصِيَّةٌ جَدِيدَةٌ أَنَا أُعْطِيكُمْ: أَنْ تُحِبُّوا بَعْضُكُمْ بَعْضًا. كَمَا أَحْبَبْتُمْ أَنَا نُحِبُّونَ أَنْتُمْ أَيضًا بَعْضُكُمْ بَعْضًا.” (يوحنا 13:34)
 “A new command I give you: Love **one another**. As I have loved you, so you must love one another.” (John 13:34)

5. “وَأَمَّا أَنَا فَأَقُولُ لَكُمْ: أُحِبُّوا أَعْدَاءَكُمْ. بَارِكُوا لَا عِنْيَكُمْ. أَحْسِنُوا إِلَى مُبْغِضِكُمْ، وَصَلُّوا لِأَجْلِ الَّذِينَ يُسَبِّحُونَ إِلَيْكُمْ وَيَطْرُدُونَكُمْ،” (متى 5:44)
 “But I tell you, love your enemies and pray for those who persecute you,” (Matthew 5:44)

Final Emphatics spreads Emphasis RTL in words like /ḥlas/ “sincerity”, /muḥals/ “saved”, /ba‘d/ “some”, /anquḏ/ “destroy”, /mubgīd/ “averse. For example, the word /anquḏ/ that has the initial Emphatics (d) cause Emphasis to spread from right to left. Consider the tableau (4) that gives an answer to why [anquḏ] is the optimal output for /anquḏ/ within OT:

Tableau (4) The Optimal Output of /anquḏ/

/anquḏ/	RTL	LTR	L+R
1. anquḏ		*!	*!
2. anquḏ	*	*!	*!
3. anquḏ	*!	*!	*!

The examination of the above candidates and their associated constraints indicates that the first candidate is considered as the optimal output and the second and third candidates are non-optimal. Apparently, the second and third candidates violate the three constraints namely (RTL, LTR, and L+R) as shown above. Since the input /**anqud**/ contains the Emphatics (d) that occupies a final position in the word and the violation occurs in LTR and L+R. For the reciter of the Arabic Bible, RTL is ranked first and there is no violation in it, that's why readers pronounce /**anqud**/ as [**anqud**].

When applying the previous constraints to words that have two or more adjacent Emphatics and two separate Emphatics in the same word, the researcher found that they do not apply. As a result, there was a necessity to propose other constraints that account for these exclusions, as follows:

Table (9) Exclusions constraints

Constraint	Note
1. Constraint (*LTR)	Anytime two Emphatics occur separately in a word the first (initial) rather than the second (final) Emphatics caused the Emphasis spread left to right.
2. Constraint (*L+R)	Anytime two Emphatics occur separately in a word the first (middle) rather than the second (final) Emphatics caused the Emphasis spread left and right.
3. Constraint (ASS)	Anytime two or more Emphatics are adjacent in a word the Emphasis is blocking by assimilation ⁵ .

3.3.4. Initial and Final Separated Emphatics

To account for ES in the following verses, in which each verse contains a word that has an Emphatic in initial and final positions, tableau (5) is used.

1. “لِذَلِكَ أَنَا أَيْضًا أُدْرِبُ نَفْسِي لِيَكُونَ لِي دَائِمًا **ضَمِيرٌ** بِلَا عَنَرَةٍ مِنْ نَحْوِ اللَّهِ وَالنَّاسِ.” (مال الرسل 24:16)
 “So I strive always to keep my **conscience** clear before God and man.” (Acts 24:16)

2. “فَمُرْ بِ**صُنُطِ** الْقَبْرِ إِلَى الْيَوْمِ الثَّالِثِ، لِئَلَّا يَأْتِيَ تَلَامِيذُهُ لَيْلًا وَيَسْرِقُوهُ، وَيَقُولُوا لِلشَّعْبِ: إِنَّهُ قَامَ مِنَ الْأَمْوَاتِ، فَتَكُونَ الضَّلَالَةُ الْأَخِيرَةَ أَشْرَ مِنَ الْأُولَى!” (متى 27:64)
 “So give the order for the tomb to be made **secure** until the third day. Otherwise, his disciples may come and steal the body and tell the people that he has been raised from the dead. This last deception will be worse than the first.” (Matthew 27:64)

3. “الَّذِي هُوَ **صُورَةُ** اللَّهِ غَيْرِ الْمَنْظُورِ، بِكُرِّ كُلِّ خَلِيقَةٍ.” (كولوسي 1:15)
 “The Son is **the image** of the invisible God, the firstborn over all creation.” (Colossians 1:15)

4. “وَأَمَّا هُوَ فَخَرَجَ وَابْتَدَأَ يُنَادِي كَثِيرًا وَيُذِيعُ الْخَبْرَ، حَتَّى لَمْ يَبْعُدْ يَقْدِرُ أَنْ يَدْخُلَ مَدِينَةَ **ظَاهِرًا**، بَلْ كَانَ خَارِجًا فِي مَوَاضِعَ خَالِيَةٍ، وَكَانُوا يَأْتُونَ إِلَيْهِ مِنْ كُلِّ نَاحِيَةٍ.” (مرقس 1:45)
 “Instead he went out and began to talk freely, spreading the news. As a result, Jesus could no longer enter a town **openly** but stayed outside in lonely places. Yet the people still came to him from everywhere.” (Mark 45:1)

5. “وَهِيَ أَصْغَرُ جَمِيعِ البُرُورِ. وَلَكِنْ مَتَى نَمَتْ فَهِيَ أَكْبَرُ البُفُولِ، وَتَصْبِرُ شَجَرَةً، حَتَّى إِنْ **طُيُورَ** السَّمَاءِ تَأْتِي وَتَنْتَوِي فِي أَغْصَانِهَا.” (متى 13:32)
 “Though it is the smallest of all seeds, yet when it grows, it is the largest of garden plants and becomes a tree, so that **the birds** come and perch in its branches.” (Matthew 13:32)

The separation of two Emphatics (the first initial and the second final) spreads Emphasis *LTR in words like /ṣūrah/ “image”, /ḍamīr/ “conscience”, /ṭuyūr/ “birds”, /zahīr/ “apparent” and /ḍabit/ “secure”. The word /ḍabt/ for example has the initial Emphatics (d) and the final Emphatics (t) which cause Emphasis to spread

⁵ Assimilation as defined by Wikipedia: is a common [phonological process](https://en.wikipedia.org/wiki/Assimilation_(linguistics)) by which one sound becomes more like a nearby sound. This can occur either within a word or between words. It occurs in normal speech, and it becomes more common in more rapid speech.

from left to right. Consider the tableau (5) that gives an answer to why [dabʔ] is the optimal output for /dabʔ/ within OT:

Tableau (5) The Optimal Output of /dabʔ/

/dabʔ/	*LTR	LTR	*L+R	L+R	RTL	ASS
1.  dabʔ		*	*!	*!	*!	*!
2. dabʔ	*	*!	*!	*!	*!	*!
3. dabʔ	*!	*!	*!	*!	*!	*!

The examined candidates and their associated constraints mentioned above show that the first candidate is considered as the optimal output whilst the second and third candidates are non-optimal. Obviously, the second and third candidates violate the six constraints namely (*LTR, LTR, L+R,*L+R, RTL, and ASS) as shown above. Since the input /dabʔ/ contains the Emphatics (d) that occupies an initial position and the Emphatics (ʔ) that occupies a final position in the word and the violation occurs in LTR, L+R,*L+R, RTL, and ASS. For the reciter of the Arabic Bible, *LTR is ranked first and there is no violation in it, that's why readers pronounce /dabʔ/ as [dabʔ].

3.3.5. Middle and Final Separated Emphatics

To account for ES in the following verses, in which each verse contains a word that has an Emphatic in middle and final positions, tableau (6) is used.

1. «ثُمَّ اقْتَرَبُوا إِلَى الْقَرْيَةِ الَّتِي كَانَا مُنْطَلِقِينَ إِلَيْهَا، وَهُوَ تَظَاهَرٌ كَأَنَّهُ مُنْطَلِقٌ إِلَى مَكَانٍ أَبْعَدَ.» (لوقا 28:24)
 “As they approached the village to which they were going, Jesus **continued on as if he** were going farther.” (Luke 28:24)

2. «وَكَانَ يُعَلِّمُ قَائِلًا لَهُمْ: «أَلَيْسَ مَكْتُوبًا: بَيْتِي بَيْتَ صَلَاةٍ يُدْعَى لِجَمِيعِ الْأُمَمِ؟ وَأَنْتُمْ جَعَلْتُمُوهُ مَعَارَةَ أُصُوصٍ.» (مرقس 11:17)
 “And He taught, saying unto them, “Is it not written, ‘My house shall be called for all nations the house of prayer’? But ye have made it a den of **thieves**.” (Mark 11:17)

3. «وَلِي رَجَاءٌ بِاللَّهِ فِي مَا هُمْ أَيْضًا يَنْتَظِرُونَهُ: أَنَّهُ سَوْفَ تَكُونُ قِيَامَةٌ لِلْأَمْوَاتِ، الْإِثْرَارِ وَالْأَثْمَةِ.» (اعمال الرسل 24:15)
 “and I have the same hope in God as these men themselves have, that there will be a resurrection of both **the righteous** and the wicked.” (Acts 24:15)

4. «وَهِيَ **أَصْغَرُ** جَمِيعِ الْبُرُورِ. وَلَكِنْ مَتَى نَمَتْ فَبِئْسَ أَكْبَرُ الْبُغُولِ، وَتَصِيرُ شَجَرَةً، حَتَّى إِنَّ طُيُورَ السَّمَاءِ تَأْتِي وَتَتَنَاوَى فِي أَغْصَانِهَا.» (متى 13:32)
 “Though it is **the smallest** of all seeds, yet when it grows, it is the largest of garden plants and becomes a tree, so that the birds come and perch in its branches.” (Matthew 13:32)

5. «الَّذِي هُوَ صُورَةُ اللَّهِ غَيْرِ الْمَنْظُورِ، بِكُرِّ كُلِّ خَلِيقَةٍ.» (كولوسي 1:15)
 “The Son is the image of **the invisible** God, the firstborn over all creation.” (Colossians 1:15)

The separation of two Emphatics (the first middle and the second final) spreads Emphasis *L+R in words like /tzahar/ “pretend”, /luʃuʃ/ “thieves”, /abrar/ “righteous”, /aʃgar/ “the smallest”, /manuzur/ “visible”. In the word /tzahar/ that has the middle Emphatics (z) and the final Emphatics (r), Emphasis spread left and right. Consider the tableau (6) that gives an answer to why [tzahar] is the optimal output for /tzahar/ within OT:

Tableau (6) The Optimal Output of /tzahar/

/tzahar/	*L+R	L+R	*LTR	LTR	RTL	ASS
1.  tzahar		*	*!	*!	*!	*!
2. tzahar	*	*!	*!	*!	*!	*!
3. tzahar	*!	*!	*!	*!	*!	*!

After examining the previously mentioned candidates and their associated constraints, the results show that the first candidate is the optimal output whilst the second and third candidates are non-optimal. It is obvious that the second and third candidates violate the six constraints namely (*L+R, L+R, LTR,*LTR, RTL, and ASS) as shown above. Since the input /tzahar/ contains the Emphatics (z) that occupies a middle position and the Emphatics (r) that occupies a final position in the word and the violation occurs in L+R, LTR, *LTR, RTL, and ASS. For the reciter of the Arabic Bible, *L+R is ranked first and there is no violation in it, that's why readers pronounce /tzahar/ as [tzahar].

3.3.6. Two or More Adjacent Emphatics

To account for ES in the following verses, in which each verse contains a word that has two or more adjacent emphatics, tableau (7) is used.

1. «وَلَكِنْ لَيْسَ لَهُ أَصْلٌ فِي ذَاتِهِ، بَلْ هُوَ إِلَى جِبِينِ. فَإِذَا حَدَّثَ صَبِيحًا أَوْ-اضْطَهَادًا- مِنْ أَجْلِ الْكَلِمَةِ فَحَالًا يَعْشُو.»

(متى 13:21)

“But since they have no root, they last only a short time. When trouble or **persecution** comes because of the word, they quickly fall away.” (Matthew 13:21)

2. “نَمَّ أَرْسَلُوا إِلَيْهِ قَوْمًا مِنَ الْفَرِيسِيِّينَ وَالْهَرُودِيِّينَ لِكَيْ يَصْطَادُوهُ- بِكَلِمَةٍ” (مرقس 12:13)

“Later they sent some of the Pharisees and Herodians to Jesus to **catch him** in his words.” (Mark 12:13)

3. “فَلَمَّا رَأَهُ زَكْرِيَّا-اضْطَرَبَ- وَوَقَعَ عَلَيْهِ خَوْفٌ” (لوقا 1:12)

“When Zechariah saw him, **he was startled** and was gripped with fear.” (Luke 1:12)

4. “جِئْتُ لِأَلْقِي نَارًا عَلَى الْأَرْضِ، فَمَاذَا أُرِيدُ لَوْ-اضْطَرَمْتُ؟” (لوقا 12:49)

“I have come to bring fire on the earth, and how I wish it were already **kindled!**”

(Luke 12:49)

5. “فَابْتَدَأَ الْجَمِيعُ بِرَأْيٍ وَاحِدٍ يَسْتَعْفُونَ . قَالَ لَهُ الْأَوَّلُ: إِنِّي اشْتَرَيْتُ حَقْلًا، وَأَنَا -مُضْطَرٌّ- أَنْ أَخْرُجَ وَأَنْظُرُهُ. أَسْأَلُكَ أَنْ تُعْفِنِي ” (لوقا 14:18)

“But they all alike began to make excuses. The first said, ‘I have just bought a field, and I **must** go and see it. Please excuse me.’”(Luke 14:18)

In the case of having two or more adjacent Emphatics in words like /muḏṭar/ “Forced”, /ḏṭarṭar/” compelled”, /ḏṭhad/ ” persecution”, /yaṣṭad/ “catch”, /ḏṭrab/ “simmer”, /ḏṭramat/ ” kindled” and the Emphasis spread is blocked by a phonological process called assimilationⁱⁱ. For example, the word /muḏṭar/ has the two adjacent Emphatics (ḏ, ṭ). An assimilation process operates between the two Emphatics ḏ and ṭ and the result is a blocking to the Emphasis spread. Consider the tableau (7) below that gives an answer why [muṭar] is the optimal output for /muḏṭar/ within OT:

Tableau (7) The Optimal Output of /muḏṭar/

/muḏṭar/	ASS	LTR	*LTR	L+R	*L+R	RTL
1. ḏmuṭar		*	*!	*!	*!	*!
2. muḏṭar	*	*!	*!	*!	*!	*!
3. muḏar	*!	*!	*!	*!	*!	*!
4. muḏṭar	*!	*!	*!	*!	*!	*!

The results for the examined candidates and their associated constraints in the previous tableau show that the first candidate is considered as the optimal output and the second, third and fourth candidates are non-optimal. It is very clear that the second, third and fourth candidates violate the six constraints namely (ASS, LTR, *LTR, L+R,*L+R, and RTL) as shown above. Since the input /muḏṭar/ contains the two adjacent Emphatics (ḏ, ṭ) an assimilation process operates between the two Emphatics ḏ and ṭ and the violation occur in LTR,*LTR, L+R,*L+R, and RTL. For the reciter of the Arabic Bible, ASS is ranked first and there is no violation in it, that’s why readers pronounce /muṭar/ as [muṭar].

Throughout the study, the researcher found that in some cases Emphasis Spread is blocked by the intervention of sounds like [i, j, ʒ, and ʃ], as these sounds are high or forward in the mouth. In order to account for the blocking Emphasis in the Arabic Bible within OT, the researcher proposes the following constraint:

Table (10) Blocking Constraint

Constraint	Note
Constraint Blocking (hereafter, BLC)	Anytime [i, j, ʒ, and ʃ] occurs before or after Emphatics Emphasis spread is blocked.

3.3.7. Blocking Emphasis

To account for ES in the following verses, in which each verse contains a word that has a blocking Emphasis, tableau (8) is used.

1. “وَلَكِنْ أَنْظُرُوا لِلْبَلَاءِ-بِصِيرَةٍ- سُلْطَانُكُمْ هَذَا مَعْتَرَةٌ لِلضُّعْفَاءِ” (1كورنثوس 8:9)

“Be careful, however, that the exercise of your rights does not **become** a stumbling block to the weak.”

(1Corinthians 8:9)

2. “فَقَالَ لَهُمَا يَسُوعُ: «هَلُمَّ وَرَأَيْتِي فَأَجْعَلُكُمْ تَصِيرَانَ-صَيَادِي- النَّاسِ” (مرقس 1:17)

“Come, follow me,” Jesus said, “and I will send you out to **fish** for people.” (Mark 1:17)

3. “وَهَذِهِ لَكُمْ الْعَلَامَةُ: تَجِدُونَ طِفْلاً مُقَمَّطًا-مُضْجَعًا- فِي مِذْوَدٍ” (لوقا 12:2)

“This will be a sign to you: You will find a baby wrapped in cloths and **lying** in a manger.” (Luke 12:2)

4. “سَلَامًا أَتْرُكُ لَكُمْ. سَلَامِي أُعْطِيكُمْ. لَيْسَ كَمَا يُعْطِي- الْعَالَمُ أُعْطِيكُمْ أَنَا. لَا تَتَضَطَّرِبْ قُلُوبَكُمْ وَلَا تَرْهَبْ.” (يوحنا 14:27)
 “Peace I leave with you; my peace I give you. I do not **give** to you as the world gives. Do not let your hearts be troubled and do not be afraid.” (John 14:27)

5. “وَلَمَّا مَضَى زَمَانٌ طَوِيلٌ، وَصَارَ السَّفَرُ فِي الْبَحْرِ خَطِرًا، إِذْ كَانَ الصَّوْمُ أَيْضًا قَدْ مَضَى، جَعَلَ بُولُسُ يُنذِرُهُمْ.” (اعمال الرسل 27:9)
 “**Much** time had been lost, and sailing had already become dangerous because by now it was after the Day of Atonement. So Paul warned them,” (Acts 27:9)

Emphasis spread is blocked in words like /šayad/ “Fishermen”, /yašīr/ “become”, /yu‘tī/ “give”, /ṭawīl/ “long” and /muḍġa‘/ “lying”. For example, in the word /muḍġa‘/ that has the sound [ʒ] which occurs after the emphatics [d] blocks Emphasis spread. Consider the tableau (8) that gives an answer to why [muḍġa‘] is the optimal output for /muḍġa‘/ within OT:

Tableau (8) The Optimal Output of /muḍġa‘/

/ muḍġa‘/	BLC	LTR	L+R	RTL
1. <u>ḍ</u> muḍġa‘		*	*!	*!
2. muḍ <u>ḡ</u> a‘	*		*!	*!
3. muḍġa <u>‘</u>	*!	*!	*!	*!

After examining the previously mentioned candidates and their associated constraints, it appears that the first candidate can be considered as the optimal output and the second and third candidates are non-optimal. It is evident that the second candidate violates the three constraints namely (BLC, LTR, and RTL) and the third candidate violates the four constraints namely (BLC, LTR, L+R, and RTL) as shown above. Since the input /muḍġa‘/ contains the sound [ʒ] that occurs after the emphatics [d] in the word and the violation occurs in LTR, L+R, and RTL. For the reciter of the Arabic Bible, BLC is ranked first and there is no violation in it, that’s why readers pronounce /muḍġa‘/ as [muḍġa‘].

IV. CONCLUSION

The analysis of the previous data shows the following conclusions: in all the verses that contain Emphatics the Emphasis spreads to other segments (consonants and vowels) of the word. Emphasis spread into three directions left to right, left and right and right to left based on the Emphatics’ position in a word. In the case of an initial position Emphatics, Emphasis spreads left to right. In the case of a middle position Emphatics, Emphasis spreads left and right. In the case of a final position Emphatics, Emphasis spreads right to left. As this study is the first linguistic study in English that analyzes the phonological patterns of Emphatics and Emphasis Spread Arabic Bible within the framework of Optimality Theory. It proposes constraints to account for the Emphasis Spread, to the exclusion of some cases such as adjacent or separated Emphatics in a word and to the blocking emphasis.

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REFERENCES

- [1]. Abu-Abbas, K. a. (2011). Geminates and long consonants in Jordanian Arabic. *International Journal of Linguistics*, 1-17.
- [2]. Abudalbuh, M. (2011). Effects of Gender on the Production of Emphasis in Jordanian Arabic: A Sociophonetic Study. *University of Kansas: Kansas Working Papers in Linguistics*, Vol. 32 (2011), 20-47.
- [3]. Al Khatib, S. (2008). On the Directionality of Emphasis Spread. *Simon Fraser University. Proceedings of the 2008 annual conference of the Canadian Linguistic Association.*
- [4]. AlDahri, S. (2013). A Study for the Effect of the Emphaticness and Language and Dialect for Voice Onset Time (VOT) in Modern Standard Arabic (MSA). *King Abdulaziz City for Science and Technology, Riyadh, Saudi Arabia: May. DOI: 10.5121/sipij.2013.4202 • Source: arXiv.*

- [5]. Al-Jarrah, R. S. (2002). An optimality-theoretic analysis of stress in the English of native Arabic speakers. . Doctoral dissertation, Muncie, Indiana, Ball State University: Dissertation. .
- [6]. Al-Raba'a, B. I. (2015). The Manner of Articulation of the Emphatic /dʕ/ in Both Saudi and Palestinian Dialects. *International Journal of Language and Linguistics*. Vol. 3, No.1, pp.1-7.
- [7]. Btoosh, M... (2006). Constraint Interactions in Jordanian Arabic Phonotactics: An Optimality-Theoretic Approach. *Journal of Language and Linguistics*, Volume 5 Number 2, 2006.
- [8]. Davis, S. (1995). Emphasis Spread in Arabic and Grounded Phonology. *The MIT Press*, Vol. 26, No. 3 (Summer, 1995), pp. 465-498. Retrieved from <http://www.jstor.org/stable/4178907>
- [9]. De Vijver, R. v. (1996). Emphasis spread in two dialects of Palestinian. *Linguistics in the Netherlands 1996*, 245-255. DOI 10.1075/avt.13.23vij ISSN 0929-7332 / E-ISSN 1569-9919 © Algemene Vereniging voor Taalwetenschap.
- [10]. Hellmuth, S. (2013). Phonology. In J... In: Owens (Ed.). Oxford University Press. Retrieved from <http://eprints.whiterose.ac.uk/81053/>
- [11]. Huneety, A., & Mashaqba, B. (2016). Emphatic Segments and Emphasis Spread in Rural Jordanian Arabic. MCSER Publishing, Rome-Italy: *Mediterranean Journal of Social Sciences*.
- [12]. J., M. J. (2007). What is Optimality Theory? University of Massachusetts, Amherst, jmccarthy@linguist.umass.edu. Retrieved from http://scholarworks.umass.edu/linguist_faculty_pubs/93
- [13]. Jarrah, A. S. (2013). Syllables and Syllable Structure in Arabic in the Light of the Optimality Theory. . Open Science Repository Language and Linguistics, Online (open-access), e70081958. doi:10.7392/openaccess.70081958.
- [14]. Kager, R. (1999). Optimality Theory. In r. illustrated (Ed.). Cambridge University Press, 1999. Retrieved from https://books.google.jo/books?id=_B_7IYhEmGgC
- [15]. Laufer, A., & Baer, T. (1988). The Emphatic and Pharyngeal Sounds in Hebrew and in Arabic. *Haskins Laboratories, Status Report on Speech Research*, Volume: 31 issue: 2, page(s): 181-205. Retrieved from <https://doi.org/10.1177/002383098803100205>
- [16]. McCarthy, J... (2007). What is Optimality Theory? University of Massachusetts, Amherst, jmccarthy@linguist.umass.edu. Retrieved from http://scholarworks.umass.edu/linguist_faculty_pubs/93
- [17]. Optimality Theory. (n.d.). Retrieved July 1, 2017 , from Wikipedia: https://en.wikipedia.org/wiki/Optimality_Theory#Theory
- [18]. Prince, A., & Smolensky, P. (2008). *Optimality Theory: Constraint Interaction in Generative Grammar*. Wiley. Retrieved from <https://books.google.jo/books?id=JGBrYc-eJpMC>
- [19]. Sakarna, A. K. (2012). A Proposed Model of Optimality Theory for Jordanian Arabic Broken Plurals. . *Canadian Center of Science and Education, English Language Teaching*; Vol. 6, No. 1; 2013 ISSN 1916-4742 E-ISSN 1916-4750. 6 DOI:10.3968/j.css.1923669720120802.3377.
- [20]. Sibawayh, O. B. (1881). *Al Ketab*. General Printing Press.
- [21]. Thompson, B. B. (2006). The Pharyngeal Hierarchy. *SKY Journal of Linguistics* 19: 229–237.
- [22]. Watson, J. (2007). *The Phonology and Morphology of Arabic*. OUP Oxford. Retrieved from <https://books.google.jo/books?id=4RDIoDAF1e8C>
- [23]. Watson, J. C. (1999). The directionality of emphasis spread in Arabic. *Linguistic Inquiry*, Volume 30, Number 2, Spring 1999 289–300, by the Massachusetts Institute of Technology.
- [24]. Wikipedia. (n.d.). <https://en.wikipedia.org>
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