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A Phonological Analysis of Arabic Tri-Consonantal Causative Verbs

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Abstract

This study analyses the derivation of causative verbs in Standard Arabic (SA). The study uses the auto-segmental rules to account for the analysis. In analysing the investigated collected data of different forms of verbs, the study presents the underlying representation (input) for each derived causative verb and the phonological rules and processes resulting in its surface form (output). The study attempts to detect and explain the discrepancy between these verbs' underlying form and surface form by finding out the phonological rules involved in their derivation. Four main groups of causative verbs are investigated: (1) initially weak verbs, (2) medially weak verbs, (3) finally weak verbs, and (4) doubly weak verbs. The results of the study have revealed that there is a systematic patterning in forming the causative verbs depending on different phonological processes such as glide elision, glide assimilation, vowel lengthening, and vowel shortening.

Keywords: causative verb formation; Standard Arabic; auto-segmental rules

1. Introduction

The multiplicity of the ways through which causative verbs are derived from a basic verbal root is one of the great interests in the study of Arabic phonology. One of the basic concepts in the derivational morphological system of Arabic is the trilateral or tri-consonantal verb root which is a "basic string of three consonants that denotes the general idea of a verb" (Ford, 2009: 1). This system is characterized by high regularity and productivity. By adding some specific consonantal affixes and inflections (through the use of short and long vowels) to the root, different verbal forms are derived (Scheindlin, 2007, cited in ibid). Among these forms, three forms can render causatives in Arabic. Before addressing the derivations of these forms, consider the semantic aspects of causatives. Causatives are those verbs that constitute a causative version of the verbal form /faʕala/ (to be/ to do) and give the meaning of (1) an agent

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causing a subject to perform an action or cause X to do or (2) a subject being involved in a non-volitional event that shows the changes of its state such as cause X to be happy (Payne, 1997: 181).

Unlike English causatives that are formed either syntactically or lexically, Arabic causatives are constructed only morphologically. The three forms of Arabic causatives are derived through three morphological processes. These are: (1) ablaut, (2) gemination and (3) prefixation of the glottal stop /ʔa/ (Hamza) to the root verb (Amer, 2015:3). In the ablaut form, causative verbs can be formed by changing the stem vowel in the base to /a/ like had**i**ma (to fall to ruin) to had**a**ma (ruin). Causative verbs may also be formed by the gemination of the middle radical of the root like hadima to hadd**a**ma. As for the last form, an /ʔa/ prefix is added to the verbal root and the short vowel of the first vowel is deleted as in nama (sleep) to ʔanama (to cause to sleep). This prefix imparts a causative meaning to the stem verb. This study focuses mainly on this form.
The verbs that are investigated are those derived from verbal roots that do not correspond to the standard triliteral root. These irregular roots are the weak verbs whose roots/radicals include high glide (semivowel), /w/ and /j/. Hence, four groups of Arabic causatives are considered. The classification of these groups is based on the type of verbal root from which they are derived. These are the ones derived from (1) initially weak verbs (2) medially weak verbs, (3) finally weak verbs, and (4) doubly weak verbs.

2. Objectives

The main purpose of the study is to examine the different derivative forms of causative verbs in Standard Arabic (SA). The study attempts to detect and identify all the paradigmatic irregularities among the surface forms of these verbs and explain them through the application of different phonological rules. Some of the verbs are presented in various person forms; however, the study focuses mainly in its analysis on the first-person singular form. All of the investigated causatives are presented in the first-person person singular form.

3. Analysis and Discussion

3.1. Initially Weak Verbs (Blind Verbs)

The causative verbs under investigation in this study are the weak verbs. As indicated earlier, weak verbs have a glide /j,w/ as one of their radicals. A glide can be in the initial, middle, or final position. Those verbs with a glide in the initial position are called lame verbs (Brame, 1970: 33). The verbs provided in the table below are lame verbs starting with the glide /w/ such as waṣal, waϴiq, and wajul. Each of these has an underlying form that differs from the surface form due to the application of some particular phonological processes.

Table 1. Blind Weak Verbs (w in Initial Position)

Stem	Underlying form	Surface form
	Imperfective	
waṣala (link)	ʔu.wṣil.u	ʔu: ṣilu
waqada (kindle fire)	ʔu.wqid.u	ʔu: qidu
walaja (enter)	ʔu.wlij.u	ʔu: liju
waṭaʔa (walk on)	ʔu. wṭiʔ.u	ʔu: ṭiʔ.u
wajada (find)	ʔu. wjid.u	ʔu: jid.u
wariϴa (inherit)	ʔu.wriϴ.u	ʔu:wriϴu

waliʕa (affection, obssession)	ʔu.wliʕ.u	ʔu:liʕ.u
wariʕa (religious devotion)	ʔu.wriʕ.u	ʔu:riʕ.u
waliha (grief)	ʔu.wlih.u	ʔu:lihu
wajula (be scared)	ʔu.wjil	ʔu:jilu
waxiʃa (become deserted, dreary, empty)	ʔu. wxiʃ.u	ʔu: wxiʃ.u

As it is apparent from the previous table, the glide /w/ does not appear in the surface form of these verbs. The deletion happens due to a particular phonological rule in Arabic (iltiqaa' al-saakinayn). According to this rule a glide is deleted when followed by a consonant (*sukūn* [no vowel]) and the deletion is compensated for by inserting before the consonant kasra /i/ if the deleted glide is /j/ and *damma* /u/ if the deleted glide is /w/. Applying this rule to the underlying verb forms illustrated in the above table results in the deletion of the glide /w/ and the insertion of the vowel /u/ in the derived form and thereby having two identical vowels that surface as a long vowel via a lengthening rule.
In fact, this is also captured by the Syllabicity Assimilation rule proposed by Brame (1970). This rule states that /w/ is switched to /u/ after /u/ and before C:

Syllabicity Assimilation w ⟶ u / u – C

Then the two resulting identical vowels become a long vowel by applying a lengthening rule:

Lengthening	Vi Vi ⟶ V:	
Underlying Form	ʔu.wqid. u	
Syllabicity Assimilation	ʔu.u qid.u	
Lengthening	ʔu: qid.u	(ana ʔu: qid.u alnnara/ I kindle a fire)

The following table confirms this result by providing the other forms for the causative verb derived from the stem root /waqada/:

Table 2. Different Derived Imperfective Causative Forms (Stem Verb /waqada/)

	Imperfective Causative (ʔu.fʕil)	
	Underlying form	**Surface form**
3rd person sing masc.	ju.wqid.u	ju:qidu
3rd person sing fem	tu.wqid.u	tu:qidu
3rd person dual	ju.wqid.an	ju:qidan
2nd sing. Masc	tu.wqid.u	tu:qidu
2nd sing. Fem	tu.wqidi:n	ju:qidi:n
2nd dual	tu.wqid.an	tu:qidan
2nd plu. Fem	ju.wqid.nna	ju:qidnna
1st sing	ʔu.wqid.u	ʔu:qidu
1st plur	nu.wqid.u	nu:qidu

The application of the Syllabicity Assimilation and Lengthening rules is evident in the paradigmatic irregularity displayed in these different derived causative forms.

It is important to note that these two rules are not applied when deriving the perfective causative form. An /ʔa/ prefix is added and the short vowel of the first consonant is deleted and the glide /w/ is kept unchanged and so the only rule that is applied is vowel deletion:

faʕala ⟶ ʔafʕala

Table 3. Perfective Weak Verbs (w in Initial Position)

Stem	Perfective	
	Underlying form	**Surface form**
waṣala (link)	ʔa.waṣal.tu	ʔa.wṣal.tu
Waqada (kindle fire)	ʔa.waqad.tu	ʔa.wqad.tu
walaja (enter)	ʔa.walaj.tu	ʔa.wlaj.tu
waṭaʔa (walk on)	ʔa. waṭaʔ.tu	ʔa. wṭaʔ.tu
wajada (find)	ʔa. wajad.tu	ʔa. wjad.tu
wariϴa (inherit)	ʔa.waraϴ.tu	ʔa.wraϴ.tu
waliʕa (affection, 2363bsession)	ʔa.walaʕ.tu	ʔa.wlaʕ.tu
wariʕa (religious devotion)	ʔa.waraʕ.tu	ʔa.wraʕ.tu
waliha (grief)	ʔa.walah.tu	ʔa.wlah.tu
wajula (be scared)	ʔa.wajal.tu	ʔa.wjal.tu
waxiʃa (become deserted, dreary, empty)	ʔa. waxaʃ.tu	ʔa. wxaʃ.tu

Table 4. Perfective and Imperfective Weak Verbs (j in Initial Position)

Stem	Imperfective		Perfective	
	Underlying form	**Surface form**	**Underlying form**	**Surface form**
jaqiða	ʔu.jqið.u	**ʔu:qiðu**	ʔa.jqað.tu	ʔa.jqað.tu
jabisa	ʔu.jbis.u	ʔu.jbis.u	ʔa.jbas.tu	ʔa.jbas.tu
jaʔisa	ʔu.jʔis.u	ʔu.jʔis.u	ʔa.jʔas.tu	ʔa.jʔas.tu

Causative verbs with the form (ʔufʕil) for some semantic considerations cannot be derived from all weak verbs with /j/ in the initial position (e.g., jamuna - * ʔu.jmi.nu, jatima- *ʔu.jtim.u). Only the three verbs presented in the above table can derive this form. A look at the surface form can show that the Syllabicity Assimilation rule is only applied to the underlying representation of the stem verb jaqiða. With the lack of enough data to analyze, no plausible explanation can be proposed to account for this result. Considering the perfective form, no irregularities are detected among the surface forms (jaqiða -ʔa.jqað.tu).

3.2. Medially Weak Verbs (Hollow Verbs)

Hollow verbs are those verbs that have /j/, /w/, or long /a/ in their middle radical position. The following tables present the underlying and surface forms of some causative verbs derived from this type of weak verb. Both imperfective and perfective aspects are considered.

3.2.1. The Derivation of Imperfective Causative

Table 5. Causatives Derived from Hollow Stem Verbs (Imperfective Form)

Stem	Imperfective (ʔufʕil) 1st sing	
	Underlying form	**Surface form**
nawama (sleep)	ʔu.nwim.u	ʔu.ni:m.u
qawama (stand)	ʔu.qwim.u	ʔu.qi:m.u
ʕawada (get back)	ʔu.wʕid.u	ʔu. ʕi:d.u
ʕawiða (seek protection)	ʔu.ʕwið.u	ʔu.ʕi:ð.u
ħawaza (get, gain)	ʔu. ħwiz.u	ʔu. ħi:z.u
ʕawiza (being in want)	ʔu. ʕwiz.u	ʔu. ʕi:z.u
Xawifa	ʔu. Xwif.u	ʔu. Xi:f.u
dajana (accuse)	ʔu.dji.nu	ʔu.di:n. u
sajara (walk)	ʔu.sijr.u	ʔu.si:r.u
majala (not straight, lean)	ʔu.mjil.u	ʔu.mi:l.u
bajaʕa	ʔu.bjiʕ.u	ʔu.bj:ʕ.u
ḍajaʕa (lost)	ʔu. ḍjiʕ.u	ʔu. ḍi:ʕ.u
dawama (last)	ʔu.dwim.u	ʔu.di:m.u
zajida	ʔu.zjid.u	ʔu.zji:d.u
sajara (walk)	ʔu.sjir.u	ʔu.si:r.u
ḍawaʔa (lighten)	ʔu. ḍwiʔ.u	ʔu. ḍi:ʔ.u
bajita	ʔu.bjit.u	ʔu.bi:t.u
lajana	ʔu.ljin.u	ʔu.li:n.u

Starting with the imperfective verbs, an analysis of the different given forms can show that the glides /w/ and /j/ do not surface in the output form, and their following vowel is lengthened. This suggests the involvement of some particular phonological processes that need to be discovered. However, before we proceed in our analysis to detect such processes, it is important to closely note the problem resulting from the construction of the causative form, which requires the application of such processes in turn.

It is apparent that the causative form is derived by adding the prefix ʔu- and deleting the first vowel of the verb stem /a/ and changing the second stem vowel form /a/ to /i/ via an ablaut rule.

faʕala ⟶ ʔufʕil

C1 a C2 V C3 ⟶ u C1 C2 i C3

to X ⟶ to cause to X

The resulting form has a complex onset cluster and when deriving a causative from a hollow verb stem, the glide occurs in a complex onset position (ʔu.nwim / ʔu-CGiC-). It seems that such a sequence where a glide occurs in a complex position is not permissible in Arabic. Therefore, some rule is needed to avoid such a complexity. Still, the question that arises at this point is whether the glide in the presented forms (Table 5) is deleted or switched or changed into a vowel that is being assimilated to the following vowel /i/. This leaves us with two proposals, each of which needs its validity to be checked.

Following the assumption that the glide is deleted rather than assimilated, some particular Glide Elision rule needs to be derived. Applying the Glide Elision rule proposed by Brame (1970) in this respect is not possible unless some modifications are made.

Brame (1970) suggests that a glide is elided between two identical vowels:

$$G \longrightarrow Ø \;/\; Vi \_\_ Vj \text{ if } j= \sqsubset + lo \sqsupset, \text{ then } i= \sqsubset + lo \sqsupset$$

In the presented data, the glide occurs between a consonant and /i/ vowel, so a new Glide Elision rule can be proposed:

$$G \longrightarrow Ø \;/\; \#\ C1 \_\_\_\ i\ C\ 2$$

Therefore, the vowel is deleted in this environment: ʔu.CGiC__ .
A lengthening process then follows to compensate for the deletion. Accordingly, a new rule of vowel lengthening is proposed:

$$V \longrightarrow V: \;/\; \#\ C1 \_\_\_\ C\ 2\ V$$

Underlying Form	ʔu.nwim.u
Glide Elision	ʔu.nim.u
Lengthening	ʔu.ni:m.u

To summarize, the glide is deleted and its preceding vowel is lengthened as compensation for the deletion.

Following the other proposal of glide assimilation, the rule of glide-vowel assimilation proposed by Mahadin (1980) has to be considered. Mahadin (1980) suggests that a glide is assimilated to the following vowel rather than being deleted in the environment - CGiC-. He proposed the following rule of glide assimilation:

$$G \longrightarrow i/\ \#\ C1\ \_\ i$$

This rule (when followed by the lengthening rule), in fact, can explain the surface form of the imperfective causatives given in the previous table.

$$-\ CGiC \longrightarrow Ci\ iC \longrightarrow Ci:C$$

Underlying Form	ʔu.nwim. u
Glide- Vowel Assimilation	ʔu.ni im.u
Lengthening	ʔu.ni:m.u

The following table provides further evidence of the application of the glide-vowel assimilation process followed by vowel lengthening in deriving the imperfective causative forms. These two processes can explain all of the different derived output forms presented in this table. The apparent consistency displayed by these forms confirms this last result.

Table 6. Different Derived Imperfective Causative Forms (Stem Verb /nawama/)

	Imperfective Causative (ʔu.fʕil)	
	Underlying form	**Surface form**
3rd person sing masc.	ju.nwim.u	juni:mu
3rd person sing fem	tu. nwim.u	tuni:mu
3rd person dual	ju.nwim.an	juni:ma:n
2nd sing. masc	tu.nwim.u	tuni:mu
2nd sing. fem	tu.nwim.i:na	tuni:mi:na
2nd dual	tu.nwim.a:n	tuni:ma:n
2nd plu. fem	tu.nwim.nna	tuni:munna
1st sing	ʔu.nwim.u	ʔuni:mu
1st plur	nu.nwim.u	nuni:mu

This last proposal of glide-vowel elision seems more plausible for economy and simplicity considerations that govern the construction of a linguistic theory. The first proposal of glide elision appears to be characterized with more complexity as it adopts two new proposed rules with more specific complicated conditions. That is to say, they involve a more complex statement of Glide Elision.

3.2.2. The Derivations of Perfective Causative

Proceeding on our analysis of the formation of causatives derived from a hollow verb stem, now consider the causatives in the perfective form. Unlike those perfective causatives derived from initially weak verbs discussed earlier, the perfective forms derived from hollow verbs display a discrepancy between the surface and underlying forms. The provided forms in Table 7 and 8 below can illustrate this.

Table 7. Causatives Derived from Hollow Stem Verbs (Perfective Form)

Perfective (ʔafʕala) 1st sing	
Underlying form	**Surface form**
ʔa.nwam.tu	ʔanamtu
ʔa.qwam.tu	**ʔaqamtu**

Table 8. Causatives Derived from Hollow Stem Verbs (Perfective Form)

	Perfective (nawama)	**Causative**
	Underlying form	**Surface form**
3rd person sing masc.	ʔa.nwam.a	ʔana:ma
3rd person sing fem	ʔa.nwam.at	ʔana:mat
3rdperson dual	ʔa.nwama:	ʔana:ma:

ʔa.ʕwadtu	**ʔaʕadtu**
ʔa.ʕwað.tu	**ʔaʕaðtu**
ʔa.ħwaz.tu	**ʔa. ħaztu**
ʔa. ʕwaz.tu	**ʔa. ʕaztu**
ʔa. Xwaf.tu	**ʔa. Xaf.tu**
ʔa.djan.tu	**ʔa.dan.tu**
ʔa.sjar.tu	**ʔa.sar.tu**
ʔa.mjal.tu	**ʔa.mal.tu**
ʔa.bjaʕ.tu	**ʔa.baʕ.tu**
ʔa. ḍjaʕ.tu	**ʔa. ḍa:ʕ.a**
ʔa.dwam.tu	**ʔa.da:m.a**
ʔa.zjad.tu	**ʔa.za:d.a**
ʔa.sjar.tu	**ʔa.sa:r.a**
ʔa. ḍwaʔ.tu	**ʔa. ḍaʔ.tu**

2nd sing. masc	ʔa.nwam.ta	ʔanamta
2nd sing. fem	ʔa.nwam.ti:	ʔanamti:
2nd dual	ʔa.nwam.tuma:	ʔanamtuma
2nd plu. fem	ʔa.nwam.tun	ʔanamtun
1st sing	ʔa.nwam.tu	ʔanamtu
1st plur	ʔa.nwam.na	ʔanamna

Starting with the perfective causative in the 1st person singular form, we can note that the glide does not surface in the output form. Going back to our earlier discussion on whether the glide is assimilated or elided in the formation of causatives, we are left with two solutions embodied in the two proposals mentioned before.
Consider these two solutions and see how they operate in deriving the given forms.

3.2.2.1 Glide Elision

Following the first proposal of Glide Elision, a modification has to be made to the new Glide Elision rule proposed earlier for the second stem vowel in the perfective form which is /a/ not /i/ as in the imperfective one (ʔufʕil vs ʔafʕala), a thing which indicates the occurrence of the glide in a different environment. Accordingly, the Glide Elision rule statement shows that the glide is deleted in the following environment ʔa.CG**a**C_ . Hence, the following new rule is formulated:

$$G \longrightarrow \emptyset \,/\, \#\ C1\_\_\_\ a\ C\ 2$$

In place of this rule and the previously proposed one on the formation of the imperfective causatives, we propose the following rule which encapsulates them both in one formalism:

$$G \longrightarrow \emptyset \,/\, \#\ C1\_\_\_ \begin{Bmatrix} a \\ i \end{Bmatrix} C\ 2$$

One important thing to note is that there is no lengthening of the vowel following the deleted glide in the surface form. The same thing applies to some other forms like the 2nd person sing. masc (ʔanamta), the 2nd person sing.fem (ʔanamti:), the 2nd dual (ʔanamtuma), and the 2nd plu. fem (ʔanamtunna). However, other forms like the 3rd person sing masc. (ʔana:ma), 3rd person sing fem (ʔana:mat), and the 2nd dual (ʔana:ma:) have a lengthened vowel in their surface form. This raises the question whether a process of vowel lengthening is applied to all underlying forms followed by another shortening process or vowel lengthening is suspended due to a blocking effect created by the person suffixes of the CV cluster attached to the stem root in these forms. Hence, we are left with two solutions that require the formulation of two different versions of this proposal (the proposal of glide elision).

Glide Elision: Version (1)

(a) Glide Elision: G ⟶ Ø / # C1___ _a C 2

(b) Vowel Lengthening: V ⟶ V: / # C1____ C 2 V

(c) Vowel Shortening: V: ⟶ V/ ___ C $\left\{ \begin{matrix} C \\ \# \end{matrix} \right\}$

Following this proposed theoretical possibility, three phonological processes apply cyclically in the underlying form to derive the output form. At first, the glide is deleted when it occurs between the first stem consonant and the stem vowel /a/. A vowel lengthening process then takes place as compensation for the glide deletion. The vowel surfaces with its lengthened form if it is not followed by a person suffix. However, a shortening of the vowel takes place if it is followed by a person suffix beginning with a consonant.

	ʔanwama	ʔanwamta
Glide Elision	ʔanama	ʔanamta
Lengthening	ʔana:ma	ʔana:mta
Shortening	----------	ʔanamta

As it is clear from the previous representation, the vowel shortening process is blocked when the relevant underlying form ends with a CV cluster (a person suffix that begins with a consonant).

Following the other proposal only the Glide Elision and vowel lengthening process are at play (involved) in the derivation.

Glide Elision: Version (2)

(a) Glide Elision: G ⟶ Ø / # C1___ _a C 2

(b) Vowel Lengthening: V ⟶ V: / # C1____ C 2 V

	ʔanwama	ʔanwamta
Glide Elision	ʔanama	ʔanamta

Lengthening	ʔana:ma	----------

Following this version of glide elision process, one can note that unlike the case with the other previous version, only two phonological processes apply to the underlying form: the glide elision and vowel lengthening processes. However, the lengthening process is blocked when the underlying form in question has a person suffix, so it is the lengthening process that is blocked this time, not the shortening process, as it is not involved in the derivation in the first place. Put another way, the cyclical derivational operation stops in some particular cases with the process of glide elision and does not proceed to apply the vowel lengthening process to all underlying forms as is the case with the other version.

3.2.2.2 Glide-Vowel Assimilation

Applying the glide assimilation rule suggested by Mahadin (1980) to the perfective causative hollow verbs in Table 7 is not possible since as indicated earlier, the glide in the perfective form occurs in a different environment being followed by the stem vowel /a/ rather than /i/. Thus, we need to apply another rule suggested by Mahadin where the glide assimilates to the stem vowel /a/:

$$G \longrightarrow a/\ \#\ C1 \_\_\_\ a$$

The two rules proposed by Mahadin (1980) can be summarized in one rule which applies in the derivation of causatives both in the imperfective and perfective form:

$$G \longrightarrow \begin{Bmatrix} i \\ a \end{Bmatrix} \#\ C1 \_\_\_ \begin{Bmatrix} i \\ a \end{Bmatrix}$$

Unlike the case with the previous proposal of glide elision, we are left with only one solution embodied in this proposal to account for the irregularities among the surface forms of the causatives in Table 7 and 8.
Glide-Vowel Assimilation:

(a) Glide-Vowel Assimilation: $G \longrightarrow i/\ \#\ C1\ \_\ a$

(b) Vowel Lengthening: Vi Vi $\longrightarrow$ V:

(c) Vowel Shortening: V: $\longrightarrow$ V/ ___C $\begin{Bmatrix} \# \end{Bmatrix}$

	ʔanwama	ʔanwamta
Glide-Vowel Assimilation	ʔanaama	ʔanaamta
Lengthening	ʔana:ma	ʔana:mta
Shortening	----------	ʔanamta

As it is apparent from the previous representation, the glide-vowel assimilation rule assimilates the glide to the following vowel stem /a/, and then the lengthening rule must follow since the environment of this rule is created by the glide assimilation rule. A shortening rule then applies in the derivation if the underlying form ends with a person affix that begins with a consonant.

However, this rule is blocked when the underlying form does not end with a suffix or ends with an affixal vowel; that is to say, the derivational operation stops with the lengthening process. Unlike the case with the second version of the previous proposal of glide elision where the lengthening is blocked in some cases and only the glide elision rule is applied in the derivation, the lengthening rule must apply in all cases to lengthen the two identical vowels resulting from the glide assimilation process.

Now decide between the two solutions given by the two proposals. By testing these solutions against the presented data in Table 7 and 8, we can note that the second version of the first proposal of glide elision seems to gain more ground in explaining the output forms since it approaches the problem with more simplicity by adopting only two rules and in some cases only one rule.

3.3. Finally Weak Verbs (Lame Verbs)

The other group of causatives under investigation in this study includes those derived from finally weak verbs. Weak verbs are these verbs that have a glide in their final radical position. Tables 9 and 10 below present the underlying and surface forms of some causatives derived from finally weak verbs both in the imperfective and perfective form.

Table 9. Causatives Derived from Finally Weak

Stem	Imperfective (ʔufʕil)		Perfective (ʔafʕala)	
	Underlying form	**Surface form**	**Underlying form**	**Surface form**
nasija (forget)	ʔu.nsij.u	ʔunsi:	ʔa.nsaj.tu	ʔansajtu
raḍija (satisfy)	ʔu.rḍij.u	ʔu.rḍi:	ʔa.rḍij.u	ʔa.rḍaj.tu
raqija (protect)	ʔu.rqij.u	ʔurqi:	ʔu.rqij.u	ʔa.rqaj.tu
baqija (stay)	ʔu.bqij.u	ʔubqi:	ʔa.bqaj.tu	ʔa.bqaj.tu
bahija (brightened)	ʔu.bhij.u	ʔu.bhi:	ʔa.bhaj.tu	ʔa.bhaj.tu
danaja (become near)	ʔu.dnij.u	ʔudni:	ʔa.dnajt.u	ʔa.dnajt.u
saqaja (water the plant)	ʔu.sqija	ʔusqi:	ʔu.sqaj.tu	ʔu.sqaj.tu
ʕafaja (forgive)	ʔu.ʕfij.u	ʔuʕfi:	ʔu.ʕfaw.tu	ʔu.ʕfaw.tu
ɣafaja (sleep)	ʔu. ɣfij.u	ʔuɣfi:	ʔa.rḍaj.tu	ʔa.rḍaj.tu
talawa (recite)	ʔa.tluw.a	ʔatlu:	ʔa.tlaj.tu	ʔa.tlaj.tu

Table 10. Other Different Forms of Causatives Derived from Finally Weak

	Imperfective (ʔufʕil)	Imperfective (ʔufʕil)	Perfective Causative (nasija)	
	Underlying form	**Surface form**	**Underlying form**	**Surface form**
3rd person sing masc.	ʔu.nsij.u	ʔunsi:	ʔa.nsaj.a	ʔansa:
3rd person sing fem	ju.nsij.u	junsi:	ʔa.nsaj.at	ʔa.nsat
3rd person dual	ju.nsij.an	ju.nsij.an	ʔa.nsaj.a	ʔa.nsaj.a
2nd sing. masc	tu.nsij.a	tu.nsi:	ʔa.nsaj.ta	ʔa.nsaj.ta
2nd sing. fem	tu.nsij.na	tu.nsi:.na	ʔa.nsaj.ti	ʔa.nsaj.ti

2nd dual	tu.nsij.a:n	ju.nsij.a:n	ʔa.nsaj.tuma	ʔa.nsaj.tuma
2nd plu. fem	tu.nsij.na	tun.si:.na	ʔa.nsaj.tunna	ʔa.nsaj.tunna
1st sing	ʔa.nsaj.tu	ʔansajtu	ʔa.nsaj.tu	ʔansajtu
1st plur	nu.nsij.a	nu.nsi:	ʔa.nsaj.na	ʔansajna

An analysis of the derived forms of the imperfective causatives can again reveal some differences between the underlying form and the surface form. Apparently, the syllabicity assimilation process is involved in deriving these forms. This process has the effect of turning the glide /j/ to /i/ after /i/ and before a consonant or a word boundary or /w/ to /u/ after /u/ and before either a consonant or a word boundary. This is represented as the following:

Syllabicity Assimilation: $\begin{Bmatrix} j \\ w \end{Bmatrix} \longrightarrow \begin{Bmatrix} i \\ u \end{Bmatrix} \quad \_\_ \quad \begin{Bmatrix} C \\ \# \end{Bmatrix}$

When applying this rule to the given forms in table 10, we can note that this has to be followed by some other rules like i-assimilation (suggested by Brame, 1970) and lengthening depending on the type of the underlying form in questions:

(a) Syllabicity Assimilation:

(b) i-Assimilation: $\begin{Bmatrix} u \end{Bmatrix} \longrightarrow i / i \_\_\_$

(c) Lengthening: Vi Vi $\longrightarrow$ V: i

Underlying form	ʔu.bqij.u
Syllabicity Assimilation	ʔu.bqii.u
i-Assimilation	ʔu.bqii.i
Lengthening	ʔu.bqi:

As far as the perfective form is concerned, the glide is kept in the surface form and these rules are not applied when deriving this form.

3.4. Doubly Weak Verbs

One last group of causatives to be considered is that one of doubly weak verbs. They are those verbs that have two glides in their roots. Table 11 below presents different forms of these causatives.

Table 11. Causatives Derived from Doubly Weak Verbs

Stem	Imperfective (ʔufʕil)		Perfective (ʔafʕala)	
	Underlying form	**Surface form**	**Underlying form**	**Surface form**
walija (heir to a throne)	ʔu.wlij.u	ʔu:li:	ʔa.wlaj.tu	ʔa.wlaj.tu
warija (hide)	ʔu.wrij.u	ʔu:ri:	ʔa.wraj.tu	ʔa.wraj.tu
wafija (complete)	ʔu.wfij.u	ʔu:fi:	ʔa.wfaj.tu	ʔa.wfaj.tu
rawa (tell)	ʔu.rwij.u	ʔu.rwi:	ʔa.rwaj.tu	ʔa.rwaj.tu
ɣawa (seduce)	ʔu.ɣwij.u	ʔu.ɣwi:	ʔa.ɣwaj.tu	ʔa.ɣwaj.tu
waqa (protect)	ʔu.wqij.u	ʔu.wqi:	ʔa.wqaj.tu	ʔa.wqaj.tu
waṣija	ʔu.wṣij.u	ʔu.waṣi:	ʔa.wṣaj.tu	ʔa.wṣaj.tu
waħa (revelation)	ʔu.wħij.u	ʔu.waħi:	ʔa.wfaj.tu	ʔa.wfaj.tu

An analysis of the presented imperfective forms can show, as is the case with the formation of finally weak verbs, the processes of syllabicity assimilation, i-assimilation, and lengthening are all involved in deriving the surface forms of causatives derived from doubly weak verbs.

Underlying form	ʔu.wlij.u
Syllabicity Assimilation	ʔu.ulii.u
i-Assimilation	ʔu.ulii.i
Lengthening	ʔu:li:

It is important to note from the above-given representation that the syllabicity assimilation rule operates on both of the glide /w/ in the first C position and the glide /j/ in the final C position in the underlying form, and the same thing applies to the vowel lengthening rule. The derivation proceeds in the following order. At first, the syllabicity assimilation rule transforms the glides /w/ and /j/ to /u/ and /i/ respectively. Then the final affixal vowel /u/ assimilates to the /i/ resulting from the assimilation of the glide /j/ via the i-assimilation rule. Eventually, the lengthening rule applies to the resulting structure (ʔu.uCii.i) to end up with the surface form (ʔu:Ci:).

As far as the perfective causatives are concerned, there seems to be no irregularities among the surface form and hence no phonological processes are involved.

4. Conclusion

This study has investigated the derivations of causative verbs in Standard Arabic. An analysis of different groups of causatives has revealed some slight differences between the underlying form and the surface form of some of these verbs resulting from the application of some particular phonological processes in their formation. In its attempt to detect or identify the type of such processes, the study has found out that the formation of Arabic causatives involves the application of some rules like glide elision, glide assimilation, vowel lengthening, and vowel shortening. In the course of the given analysis, the study accounts for the reason why the glide does not surface in some output forms and whether it is elided or assimilated in such a case. The study approaches such questions or problems by suggesting solutions or formulating new rules embodied in different proposals. The study tests such solutions or rules against the data to check their validity and plausibility. Moreover, it develops the analysis by drawing parallel

comparisons between the formation of the perfective and imperfective forms of causatives to find out the different rules or processes involved in deriving each form.

References

Amer, Walid M. (2015). Causativity in English and Arabic: A contrastive study. Retrieved on 29th April, 2021 http://hdl.handle.net/20.500.12358/25581

Brame, M. (1970). Arabic phonology implications for phonological theory and historical semitic

Ford, D. C. (2009). The Three Forms of Arabic Causative. *OPAL*, 2 pp.1-8

Mahadin, R. S. (1982). The morphophonemics of the Standard Arabic tri-consonantal verbs.

Payne, T. E., & Payne, T. E. (1997). Describing morphosyntax: A guide for field linguists. Cambridge University Press.

Wright, W. (1898). A Grammar of the Arabic Language. Cambridge: Cambridge University Press.

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