Phonological aspects of al-Issa Arabic, a Bedouin dialect in the north of Jordan

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Research article

1. Introduction

Arabic is the most widely spoken of the living Semitic languages, a group of languages belonging to the Afroasiatic family (Watt 2002). Arabic has two standard varieties: Classical Arabic (CA) and Modern Standard Arabic (MSA). CA, also referred to as fusha, is the standard language that was spoken in the pre-Islamic era by the Quraysh tribe. MSA, also referred to as contemporary fasîh, is a form of language used in formal contexts, such as academic lectures, media, religious ceremonies, and conferences. Additionally, Arabic comprises a large number of dialects spoken in around 60 countries that differ from one another (and from MSA and CA) phonologically, morphologically, syntactically and lexically. These dialects may not be comprehensible to speakers from other regions (Huneety 2015; Watson 2002; Mashaqba et al., 2020a). Arabic dialects are classified geographically into: the Levant, Mesopotamia, the Arabian Peninsula, Egypt, and the Maghreb (Behnstedt and Woidich 2013). Another broad typological classification of Arabic dialects is that of Palva (2006): Western dialects Mâgrîbi and Eastern dialects Mâṣrîqī. The former group covers the dialects spoken in North Africa, whereas the latter dialect group is spoken in the Middle Eastern countries. Sociologically, Arabic varieties are divided into sedentary haḍārī and Bedouin baḏawî based on the history of settlement and language change (Palva 2006; Rosenhouse 2006).

The Jordanian population is divided into nomadic and semi-nomadic tribes ‘Bedouins’, sedentary villagers fallâḥîn and town dwellers madâniyyûn (Dann 1984). Each of these groups has some distinguishing linguistic features, yet they are mutually recognized by speakers of Jordanian Arabic dialects (Suleiman 1985; Mashaqba et al., 2020b). Based on the realization of the imperfect prefix b- and CA realization of *q in the verb gal ‘to say’, Cleveland (1963) offers a typology of JA dialects in four groups: yiqûl, baqûl, baqul and baḥul dialects. Similar to Najdi and al-Ḥṣaî dialects spoken in the north-west and east peninsula respectively, Group I
yigul dialects refer to Bedouin varieties in the southern and eastern desert of Jordan. In this group the reflex of ‘q is /g/ and verbs lack the imperfect indicative marker. Group II bāgul dialects are spoken in sedentary trans-Jordanian dialects and in the West Bank and Jordan River; the reflex of ‘q in bāgul dialects is also the voiced velar stop /g/. Although Group II dialects share most of Group I’s features, they differ in the use of the imperfect bi- and the use of the negation morpheme -s. Group III bākūl refers to central Palestinian dialects which realize ‘q as /k/. Group IV bāhul dialects represent urban varieties, where ‘q is realized as a glottal stop /ʔ/, /t/ is realized as /t/ and ‘q is realized as /d/.

However, the linguistic situation in Jordan is more complicated, for many reasons. Jordan hosts many Palestinian skilled workers (Plasson 1981: 33), and many traders and academics moved from neighbouring countries in the 1920s and 1930s (Aruri 1972). More importantly, the annexation of the West Bank into Jordan in the aftermath of the 1948 Arab–Israel War led to an increase in the proportion of the urban variety and a decrease in the nomadic patterns (Aruri 1972); for details of the linguistic situation in Jordan, please refer to Mashaqa & Huneezy (2015).

Many researchers have addressed the linguistic features of the Bedouin dialects, e.g., Palva (1976) on Al-‘Ajamah dialect, Palva (1980) on the Bani Ṣafar dialect, Irshied (1984) and Irshied and Kenstowicz (1984) on the Bani Hassan dialect, Bani Yasin and Owens (1984) on the Bdul dialect, Sakarna (1999) on the ‘Abbādi dialect, Mashaqa (2015) on Mashaqa and Huneezy (2017) on Ahl Al-Jabal Bedouin.2 All these studies come to the conclusion that each Jordanian Arabic (JA) dialect exhibits some linguistic features that make it stand out from other Arabic dialects. However, to date, the linguistic features of al-Issa Arabic have not been described, although many of them differ from the other Bedouin JA dialects. More importantly, the dialect is as at risk of losing some of its undocumented features, for many reasons. The most prominent reason is the displacement of thousands of Syrians to Jordan following the Syrian civil war which began in 2010. Since that time, hundreds of cases of marriage between Syrians and members of the al-Issa tribe have been registered, affecting the linguistic features of all Bedouin dialects (Achilli 2015: 8; Berti 2015:47; p.c. with the head of al-Issa tribe). The present study, therefore, aims to fill a gap by examining selected phonological aspects of al-Issa Arabic.

The al-Issa tribe is one of the largest Bedouin tribes in the northeast of Jordan; it is descended from the Tay tribe in the north of Arabia3. The tribe settled in Jabal al-Druze in Syria before moving into Jordan in the Ottoman period. Members of the al-Issa tribe reside in three main villages in the Mafraq region of northern Jordan: Ad-Dafyana and Mansiyat al-Gublan, 40 kms from the centre of the al-Mafraq governorate, and Um As-srab which is 12 km away. The al-Issa tribe is named after the founding father, Isa Bin Muhanna Bin Manfal, and is divided into as-Waylim and al-‘Ali. As-Waylim comprises the following sub-tribes: al-Maţī, al-Ḥwīta, al-Waţā, al-Hariz and al-Tawān, living in ad-Dafyana and Mansiyat al-Gublan; al-‘Ali comprises al-Rīda, al-Gaţāša, and al-Rumīha, and they live in Um As-srab (p.c. with the head of al-Issa tribe).

2 Refer to the maps in Appendix A to view the geographical distribution of the dialects mentioned in this study.
3 Zaαtaeri camp, the largest camp, is 20 km away from al-Issa villages; it houses over 80,000 Syrian refugees, while more than 520,000 are dispersed in host communities in Mafraq, Irbid and Amman. As a consequence of the civil war, Syrian families have forced their daughters into early marriage to Jordanians to ensure a better economic and a safer future for them (Achilli 2015: 8; Berti 2015: 47).

Data was recorded using a digital, multi-directional Olympus LS-11 voice recorder, at a distance of 15 cm from the speaker. Data were recorded indoors in a quiet room order to avoid outdoor noise.

3. The phonological aspects of al-Issa Arabic

The study aims to address the major phonological aspects of al-Issa Arabic. Below is an examination of the phoneme system, followed by syllable structure, the notable phonological processes, and then stress assignment rules.

3.1. The consonantal system

Applying the minimal pair test, we find that al-Issa Arabic has 26 main consonants plus four marginal ones. These phonemes belong to different places of articulation as follows: seven plosives (/b/,/d/,/ɡ/,/t/,/d/,/ɡ/,/t/ and/n/), one affricate/e/, thirteen fricatives (/f/,/s/,/ʃ/,/s/,/h/,/ξ/,/ξ/,/ʒ/,/ʒ/,/ʒ/,/θ/,/θ/,/θ/,/θ/ and/n/), three nasals (/m/,/n/ and/n/), two laterals (/l/ and/l/), two flaps (/ɾ/ and/ɾ/), and two glides (/j/ and/w/).4 Table 1 below presents the consonantal system of al-Issa Arabic in terms of phonation, place of articulation and manner of articulation.

Examining Table 1 reveals that the consonantal system differs in many respects from that of CA and of other neighbouring dialects. First, the reflex of the voiceless uvular stop /q/ is a voiced velar plosive /g/ in all word positions in al-Issa Arabic; thus, the words ‘qabr ‘grave’ and ‘baqar ‘cows’ are produced respectively as /ɡabir/ and /bigar/. The realization of /q/ as /ɡ/ is reported in all Bedouin JA dialects, e.g. Bani Hasan (Irshied 1984), Bani Ṣafar (Palva 1980), Wadi Ramm (Mashaqa 2015), as well as rural JA dialects (gāl dialects), e.g., the dialects of Hōran, which include dialects spoken twelve km south of Damascus as far as Ajloun Governorate in the north west of Jordan (Cantineau 1946); it distinguishes them from ‘Amānī Arabic (‘al dialects), where ‘q is realized as double-check the phonetic features of al-Issa Arabic. During the fieldworks, ethical issues of the research were considered, including assuring participants that all data would remain confidential and anonymous, and that they had the right to withdraw from the study at any time. They were also assured that recorded materials would be destroyed as soon as they were no longer needed. After being informed about the research aims and objectives, participants signed a consent form to show their acceptance to taking part in the study.

The selection of subjects was subject to the following criteria. The total number of participants was 60 adults (30 males and 30 females), taken from the different al-Issa sub-tribes. All participants are native speakers of al-Issa Arabic and have spent all their life in one of the three villages. All are over 60 years old (average age = 63.5) to ensure that they speak the dialect of al-Issa. Participants’ levels of education range from primary school to secondary school. All participants are healthy, free from any speech impediments, and are good storytellers. Four additional language consultants were recruited to record and double-check the phonological features of the dialect.

Two data collection methods were followed. The first involved recording general conversations among twenty participants to provide a rich and sufficient corpus. In the other, twenty participants were asked to converse spontaneously for 10 min on various topics, such as Bedouin food, way of life, traditions, animals, means of communication, jobs, and memorable events. All topics were carefully selected by the researchers in order to ensure familiarity of the participants with such topics. This was followed by raising some direct questions and picture identification of animals, colours and objects to elicit additional phonetic features. Data was double-checked by the four language consultants who helped understand some lexical items and explain some phonological aspects.

Data was recorded using a digital, multi-directional Olympus LS-11 voice recorder, at a distance of 15 cm from the speaker. Data were recorded indoors in a quiet room order to avoid outdoor noise.

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3 Zaαtaeri camp, the largest camp, is 20 km away from al-Issa villages; it houses over 80,000 Syrian refugees, while more than 520,000 are dispersed in host communities in Mafraq, Irbid and Amman. As a consequence of the civil war, Syrian families have forced their daughters into early marriage to Jordanians to ensure a better economic and a safer future for them (Achilli 2015: 8; Berti 2015: 47).
4 Personal communication with the head of the tribe.

5 /w/ is better characterized as labio-velar than as labial since the production of/w/ involves primary place feature [velar] and non-primary place feature [labial].
As /ʔ/ by female speakers, e.g. *qarya > ʔarya ‘village’, *ṭariq > ʔariʔ ‘street’ (Al-Wer 2007). This feature also distinguishes al-Issa Arabic from some regional dialects, e.g., the Druze in al-Azraq in Jordan (El-Zain 1981), Palmyra Arabic in Syria, and Swara Arabic spoken in southern Syria (Cantineau 1934), in which /q/ is retained (cf. the appendix to view the geographical distribution of the dialect).

Like many Bedouin and rural JA dialects, the emphatic interdental fricative /ṭ/ and the emphatic dental plosive /d/ have merged into /ṭ/ in all contexts, as shown in (1).

Additionally, the voiceless velar stop *k undergoes a historical process of affrication into /ṭ/. While such a process is conditioned in other Bedouin JA dialects, e.g., Bani Hasan (Irshied 1984) and ‘Ababdi Arabic (Sakarna, 1999), the affrication process is unconditioned in al-Issa Arabic, similar to some central dialects of Palestine (Naïm 2011), as shown in (2):

As the data in (2) shows, the historical *k is attested as /ṭ/ in all word positions: initially, medially and finally. Although *k has been retained totally in some rural JA dialects, e.g. Wadi Mousa Arabic (Huneety 2015), urban JA dialects, e.g., Ammani Arabic (Al-Wer 2007), and some Bedouin JA dialects, e.g., Wadi Ramun Arabic (Mashaqqa 2015), *k has been affricated into /ṭ/ under certain conditions in other dialects; for instance, in Bani Hasan Bedouin, the word “kabs ‘maple sheep’ is realized as cabī but the word “bank ‘bank’ is realized as banūk.

An archaic feature of the dialect under investigation is the realization of the palatal-alveolar /j/ as /y/ in all word positions, e.g. *dajaj > dīyā ‘chicken’, *yāb > yāb ‘he brought’, *ṣajar ‘trees’ > ṣāyār, *daraj > diray ‘stairs’. The process is referred to as y2aʔ2ah, and differentiates al-Issa Arabic from all other JA dialects. This feature has been reported in the Tamim dialect spoken in the north of Najd, the Rashidi dialect in the Southern Sands (Southern Najdī) spoken in the Empty Quarter (Ingham 1986), and in the Bahraini dialect (Holes 1980).

3.2. Vocalic system

Similar to the vocalic system of CA and applying the minimal pair test, the vowel system in al-Issa Arabic comprises a set of eight vowel phonemes: the three short vowels /i/, /a/ and /u/, their long counterparts /iː/, /aː/ and /uː/, and the diphthongs /aw/ and /ay/ (for details on CA diphthongs, refer to Iwan (2006)). In the Jordanian dialect, the reflex of the diphthongs *ay and *aw are the two mid vowels /e/ and /e:/ (Hholes 1980), *aw are partially monophthongized in the Honaine dialect (spoken in Algeria by two tribes: Beni Abed and Beni Kallad) as /u/ and /ː/ respectively (Aid 2013). A salient feature of al-Issa dialect is the retention of historical diphthongs /aw/ and /ay/ in all contexts, as in (3). The third column includes examples that form minimal pairs to test the phonemic profile of /ay/ and /aw/ in al-Issa dialect.

In Wadi Ramun Arabic (Mashaqqa 2015), *ay and *aw are retained in some particular contexts, especially after gutturals (as in xayl ‘horses’, ḥaydar ‘Haidar, proper name’, ḥawas ‘fight’, wḥayma ‘we got up’, shayt ‘I forgot’) and emphatic consonants (as in sayd ‘hunting’ and ḥayr ‘bird’). Palva (1976) reported that in ‘Ajarmi Arabic, a Bedouin JA dialect spoken in the central part of Amman, *ay and *aw are partially monophthongized into [ey] and [ow] in the context of previous back and emphatic consonants, e.g. xayl ‘horses’, ḥawas ‘fight’, but fully monophthongized elsewhere into [e] and [o]. Abu Haider (1991) and Watson (2002) show that diphthongs are retained in the Rabi’a dialect in Iraq and San‘ani Arabic, respectively. Retention of CA diphthongs produces a resemblance to CA, which is not present in other Arabic dialects.

3.3. Syllable structure and syllable repair processes

The syllable is a complex phonological unit that is divided into two constituents: an onset and a rhyme, which comprises the nucleus, the

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**Table 1. Consonant system of al-Issa Arabic.**

| Place       | Labial | Labio-dental | Interdental | Apico-dental | Dental-Alveolar | Alveolar | Palato-Alveolar | Palatal | Velar | Pharyngeal | Glottal |
|-------------|--------|--------------|-------------|--------------|----------------|----------|----------------|---------|-------|------------|---------|
| Plosives    | b      | t            | d           |              |                |          |                |         |       |            |         |
| Emphatic Plosives | b      | t            |             |              |                |          |                |         |       |            |         |
| Fricatives  | f      | l            | d           |              |                |          |                |         |       |            |         |
| Emphatic Fricatives | d      | s            |             |              |                |          |                |         |       |            |         |
| Affricates  | c      |              |             |              |                |          |                |         |       |            |         |
| Nasal       | m      |              |             |              |                |          |                |         |       |            |         |
| Emphatic Nasal | m      |              |             |              |                |          |                |         |       |            |         |
| Lateral     | l      |              |             |              |                |          |                |         |       |            |         |
| Emphatic Lateral | l      |              |             |              |                |          |                |         |       |            |         |
| Flap        | r      |              |             |              |                |          |                |         |       |            |         |
| Emphatic Flap | f      |              |             |              |                |          |                |         |       |            |         |
| Glides      | w      |              |             |              |                |          |                |         |       |            |         |
|             | y      |              |             |              |                |          |                |         |       |            | w       |
most sonorant element, plus a coda. Onset is an obligatory component in Arabic syllable structure, and thus in the case of onsetless syllables the prosthetic glottal stop/ʔ/ surfaces before utterance-initial syllables (cf. Watson 2002; Huneefy 2015; Mashaqba et al., 2019).

Like many Arabic dialects, e.g. Palestinian Arabic (Abu Salim 1982), Jerusalem Arabic (Rosenhouse 2006) and Wadi Mousa Arabic (Huneefy 2015), the core syllables of al-Issa Arabic are: CV, CVVC, CVVCV, and less frequently C1C2VVC CVCV C1. In terms of weight, CV syllables are light, CVVC syllables are heavy and CVVCV, CVCV, and C1C2VVC are superheavy. The weight of a CV syllable depends on its position in the word; it is heavy in initial and medial positions, but light in the word-final position after the final C is deemed extrametrical (McCarthy 1979; Hayes 1979, 1980, 1995). Five of these types occur unconditionally, i.e. initially, medially and finally: CV, CVVC, CVVCV, C2C1VVC whereas CVCV C1 syllables occur finally, where the final coda cluster is a geminate, e.g. ḥaḍd ‘to retrieve’, and in monosyllabic words, e.g. ḥadd ‘border’. For details on geminate representation in JA, refer to Mashaqba et al. (2021).

Similar to rural JA dialects, e.g., Wadi Mousa Arabic spoken in the south (Huneefy 2015), and ‘Ajloun Arabic spoken in the north (Al-Sughayer 1990), the onset position can be filled by a maximum of two consonants, regardless of sonority which involves a gradual increase of sonority from the following peak (Clements 1990). Onset clusters are the result of some phonological processes such as syncope as in släh ‘weapon’, frāṣ ‘furniture’, ṣfāf ‘shelves’ (cf. [3.3.1], and trisyllabic elision, as in başı ga ra ‘cow’ > ｂṣʾɡʾra (cf. [3.3.2]).

C1C2C3 clusters are prohibited in al-Issa dialect regardless of their sonority hierarchy. The definite article l- assimilates to a following [-coronal] producing a geminate as in (4a), but it surfaces as l- before [-coronal] sounds as in (4b). When the definite article l- is attached to an onset cluster where C1 is [-coronal], this results in a C1C2C3 cluster. To repair this, l- of the definite article is deleted and the glottal stop surfaces in order to avoid the vowel-initial utters that are not permitted in Arabic dialects (cf. Watson 2002; Huneefy 2015), as in (4c). In case when l- attaches to a word-initial coronal cluster, the impermissible cluster of three consonants is broken by a process of degemination, as in (4d):

As seen in (6), the historical short high vowel is syncopated in an unstressed syllable in the context of a following bimoronic syllable. This syllabification repairs the structure of the phonological word in Arabic as it prefers maximizing bimoronicity (Watson 2002). It can be accounted for by assuming that the dialect avoids vulnerable monomoronic syllables which cannot construct a foot on their own and thus are left stranded because they would not be able to parse into the next prosodic level within the phonological word (cf. Broselow 1992; Broselow et al., 1997).

3.3.2. Epenthesis

Epenthesis is the process of inserting a vowel to break up a forbidden consonant cluster (Crowley 1997; Matthews 2007). The main function of adding this intervening vowel is to meet the syllable structure requirement and syllabify stray consonants (Hall 2006). Following Kiparsky (2003), Arabic dialects are typologically classified according to the position of the epenthetic vowels in C1C2C3 clusters into: VC-dialect (C1VC2C3) as in Iraqi Arabic (itu 1989), CV-dialect (C1C2VC3) as in Cairene Arabic (Kiparsky 2003), and C-dialect (C1C2C3), e.g. Moroccan Arabic (Kiparsky 2003). Thus, the word ḥabd-ha ‘her rope’ is produced as ḥabd-ha in VC-dialects, ḥabd-ha in CV-dialects and as ḥabd-ha in C-dialects. Al-Issa Arabic is classified as a VC-dialect because in medial C1C2C3 clusters the intervening vowel is inserted between C1 and C2, as in ‘sam-ḥum > sam-ḥum ‘their hearing’. The VC dialect group is attested in Levantine and Bedouin dialects, such as Bani Hassan Arabic (Irshied and Kenstowicz 1984) and Wadi Mousa Arabic (Huneefy 2015).

Al-Issa dialect has a strong ban against three consonant clusters, and thus the intervening vowel [i] is added when any of the imperfect markers, e.g. y-, t-, -n, concatenates to stems with an initial cluster, e.g. yarbal > y[ʔ]arbal ‘he decamps’, t-bar > t[ʔ]arab ‘she plays’, n-tib > n[ʔ]itib ‘we write’; in such cases, the epenthetic vowel forms the nucleus of the new syllable where C3 occupies the onset of the syllable, C2 the coda, and C1 the onset of the following syllable. At the phrasal level, an epenthetic vowel is required when a closed syllable is followed by a word-initial C1C2 cluster, as in wár [ʔ]kwaṭyis > wár [ʔ]kwāṭyis ‘a boy good boy’. Loanwords with complex C1C2C3 clusters are adapted in al-Issa by breaking up that cluster into C1CVC as fullaCVC > fullaCVCV ‘foulcap’ > and scrab > s[ʔ]iCVCV ‘scrap’. Based on Kiparsky (2003) typology, this lends more support to classifying al-Issa Arabic as a VC-dialect.

The epenthetic vowel is [i] in many JA dialects, e.g. ‘Abdabi Arabic (Sakarna, 1999), Wadi Ramh Arabic (Mashaqba 2015) and Wadi Mousa Arabic...
However, epenthesis in C1C2 clusters with a falling sonority is blocked, as jism the insertion of the short high vowel [i] in CVC1C2 nominal stems in initial utterances, the glottal stop [ʔ] is followed by another monomoraic light syllable, as in *ba.ga.ra (Trask 1996). Benkirane (2008) de

Another frequent type of epenthesis in al-Issa Arabic involves the low short vowel [a] in CaGC nominal stems whose C2 is a guttural (G = guttural), as in (8a). Interestingly, the short high vowel [i] shows up in al-Issa Arabic nominal stems whose C1 or C3 is a guttural, as in (8b). This is different from Zawyadeh Bedouin Arabic (Sakarna, 2002) and Wadi Ramm Bedouin Arabic (Mashaqba 2015), where epenthesis is blocked in complex clusters whose third C is a guttural, e.g., *dar ‘tear’, wax ‘dirty’, milh ‘salt’.

The same process applies to nominal stems of the pattern CaCaC, changing them into CiCaC, e.g., *samak > *sima‘ fish’, *bagar > *bigar ‘cows’. When the trisyllabic elision process is active, the raising process can affect the second vowel, changing the pattern from C1CaC into C2CaC, e.g. *sima‘ fish’ > *sim-a‘his fish’, *fit-a‘ they escaped’ (cf. data in 3.3.3 for the interaction between raising and trisyllabic elision). Evidence in support of/a/ as an underlying vowel in CaCaC patterns before it raises into [i] comes from the fact that raising of/a/ is blocked when C1 or C2 is a guttural or an emphatic, as in *za‘am ‘to invite’, *la‘zam ‘to hit’, *ga‘sal ‘to wash’, *ha‘sab ‘to calculate’, *ma‘ar ‘hair’. This is different from al-Zwaidah Arabic (Sakarna, 2002), where the raising process is blocked only when C2 is a guttural, but is active elsewhere. Thus where the words *ara‘ to walk’ and *al-i (proper name) are realized as *ara‘ and *al-i in al-Issa Arabic, they are produced as *ra‘ and *l-i in al-Zwaidah Arabic (Sakarna, 2002). A further supporting piece of evidence comes from the production of loanwords of the pattern CaCaC, e.g. *fa‘raz ‘to classify’, *ba‘laf, a Persian word meaning to ‘trick’, which underwent a raising process, producing *fi‘raz and *bi‘laf; yet it fails to affect the loan word *ha‘car ‘hacker’, since C1 is a guttural.

It is worth mentioning that the raising process does not exist in many rural JA dialects, e.g. Ma‘ani Arabic (Rakhieh 2009) and Wadi Mousa Arabic (Huneety Arabic); however, in Bd Arabic spoken by Bedouins in Petra (Bani Yassin and Owens 1984) the low short vowel/a/ is raised toward/u/ rather than/i/ in a few cases, e.g. *ra‘a ‘to throw’.

3.3.4. Trisyllabic elision

Trisyllabic elision refers to the process of deleting the short vowel in the context of a following non-final short open syllable (Iribh 1984). The low short vowel is elided in underlying *CaGC when followed by a vowel-initial suffix, e.g. *la‘ib-u > *lab-u ‘they (m.) played’ (cf. Iribh 1984 for Bani Hasan Bedouin; Mashaqba 2015 for Wadi Ramm Arabic). It also affects the short low vowel in an antepenultimate light syllable that is followed by another monomoraic light syllable, as in *ba,ga,ra > bgara

The data in (7) shows that al-Issa Arabic disallows final coda clusters. The epenthesis of [i] changes the canonical form CVC1C2 into CVCaVC2, where the epenthetic vowel functions as a nucleus for the added syllable, Cy as the onset and C2 as the coda. According to Kiparsky (2003), final –C2C2 clusters occur unlimitedly in CV and C dialects. However in CV dialects, –C1C2 clusters are either not allowed, or they are allowed with falling sonority. Given that breaking the final C1C2 clusters is a feature attributed to CV-dialects, then al-Issa Arabic is a CV-dialect type. Two pieces of evidence support treating the short high vowel [i] as an epenthetic rather than a lexical vowel. First, whenever CVC1C2 forms are concatenated to vowel-initial morphemes, the epenthesis process is blocked e.g. sam‘-ac ‘your hearing’, hab‘-at ‘your rope’, where C1 functions as the onset and C2 as the coda of the new syllable (sam‘-a‘ and hab‘-a‘). The second piece of evidence comes from the adaptation of loan words with a CVCaVC2 template produced by al-Issa Arabic members; in such forms, the coda cluster is broken by an epenthetic vowel, as in bani Arabic (Rakhieh 2009) and al-Issa Arabic is a VC-dialect type.

Another type of case of epenthesis is exhibited in imperative verbs that are morphologically derived from imperfective forms of C1C2VC, e.g. *fab ‘play (imp.)’, *dhan ‘paint (imp.).’ To repair such clusters in the dialect, the C2C2 cluster is broken by an epenthetic [i], e.g. *l‘ab ‘play (imp.),’ *irab ‘drink (imp.),’ *igra ‘study (imp.).’ Since Arabic permits no vowel-initial utterances, the glottal stop [ʔ] is inserted, resulting in *l‘ab ‘play (imp.),’ *irab ‘drink (imp.),’ *igra ‘study (imp.).’ When the imperative verb is preceded by a word-final consonant, the final coda of the previous word takes the position of the onset instead of the glottal stop, e.g. *ta‘al *l‘ab ‘come to play (imp.)’ > ta‘a.lili.‘ab.

### Table 8

| Underlying form | Surface form | Gloss |
|-----------------|--------------|-------|
| mas‘aḥ            | misaḥ        | to clean |
| katab            | ṭitab        | to write |
| saqa             | tisq          | to water |
| n-kasar          | ni‘sar        | to break |

### Table 7

|   | *sam‘ | *sam‘ | hearing |
|---|--------|--------|---------|
|   | *akl   | *akl   | eating  |
|   | *lim   | *lim   | knowledge |
|   | *bābil | *bābil | rope |

### Table 6

|   | *lāḥēm | lāḥēm | meat |
|---|--------|--------|------|
|   | *bāxt  | bāxt   | luck |
|   | *bāḥr  | bāḥr   | sea  |
|   | *māhār | māhār  | dowry |
|   | *war   | ḥar    | war  |
|   | *mikīl | xalīf  | mixing |
|   | *zār   | *zār   | crops |
'cow', *sa.ja.ra* > *ṣara* ‘tree’. The process has been attested in many Arabic dialects, including Najdi Arabic (Abdou 1979) and Banı Hasan Arabic (Irshid 1984).

Basically, trisyllabic elision in al-Issa Arabic affects Cv.CV.CV(C) stems which become C,Ca,Ca.CV(C), as in (9). Recall that the raising process targets the short low vowel/a/, as in *gahwa* > *gahwa* to ‘write’ which in turn undergoes a trisyllabic elision when the word becomes trisyllabic by concatenating to a vowel-initial morpheme (cf. 3.3.3). This process basically affects the low short vowel/a/, and/i/ which results from the raising process. Trisyllabic elision involving the raising process has also been observed in a few words affecting the short back vowel/u/ as in (9e). Further investigation should be carried out on the frequency of each vowel occurrence in JA dialects.

### (9)

| a | C,Ca,Ca.CV(C) | gloss |
|---|---|---|
| a | *gahwa* | coffee |
| a | *ma.ja* | ewe |
| a | *ma.zim* | invited |
| a | *bagla* | female mule |
| a | *la.ha*ma | meat |

As seen above, syllable final gutturals are avoided in these dialects by a metathesis process, resulting in an onset cluster CG. For example, in the word *gahwa ‘coffee*, the glottal fricative/h/ occupies the coda position in the penultimate syllable; to repair this, /h/ shifts position with the short vowel/a/, resulting in a permissible onset cluster gh-.

### 3.4. Emphasis spread

Emphatic consonants in Arabic are characterized by pharyngealization, a secondary articulation associated with their primary articulation. Such consonants spread/amass this feature to neighbouring vowels and consonants, in what is known as emphasis spread (e.g., Kahn 1975; Watson 1999; Davis 1995). Two types of emphatics occur in Arabic dialects: primary and secondary emphatics. The former type defines the set of pharyngealized coronals (/ʃ/,/ˈʃ/,/ʒ/,/ˈʒ/), which spread emphasis bi-directionally to neighbouring consonants and vowels, minimally in the syllable domain and maximally in the phonological word (Watson 2002; Huneety 2015). This group of consonants contrasts with the set of plain consonants only in {+/−emphatic}:/t/,/ˈt/,/d/,/ˈd/ respectively. See data in (12) taken from al-Issa Arabic testing the minimal contrast of plain vs. primary emphatic consonants, and recalling that /ˈʃ/,/ˈʒ/ merged into/ʃ/,/ʒ/ in al-Issa Arabic (cf. [3.1]):

### (12)

| Arabic | English |
|---|---|
| *rabhat*ni | ‘he is delicious’ |
| *rabhat*ni | ‘she brought me up’ |
| *tab* | to recover |
| *sat* | to get angry |
| *bas-hum* | their bus |
| *sa.b* | to pour |
| *mas* | to suck |
| *garr* | to harm |
| *ra.ghwa* | acceptance |
| *la.gaf* | to kick |

Secondary emphatics (non-primary) define the set of consonants (e.g.,/ʃ/,/ˈʃ/,/ʒ/ which are emphatic next to the low vowels/a/ and/a/ (Davis 2009; Huneety and Mashaqba 2016a); refer to data in (14) for non-primary emphatics in al-Issa Arabic. The most evident effect of emphatics on the neighbouring segments is the lowering of F2 (cf. Al-Masri and Jongman 2004; Mashaqba 2015). Since emphasis spreads both regressively and progressively, some authors regard emphasis as a prosodic feature (Zemanek 2006: 205).

In this section, the study examines the domain and the directionality of emphasis in al-Issa Arabic. It also examines the influence of the...
emphatics on adjacent vowels and consonants. The primary source of emphasis in al-Issa Arabic is the set of pharyngealized segments /ʕ/ and /q/, which spread emphasis to other neighbouring segments, phonemically contrast respectively with their plain counterparts /t/ and /d/ and can occur in all word positions, as in (13):”

| (13) | Word-initially | Word-medially | Word-finally |
|------|----------------|---------------|--------------|
| 걢ḥ to recover | 걢مشار airport | 걢بئث thief |
| 걢ฏ to bring | 걢ḥس-hum he stays long | 걢ناфф to jump |
| 걢 guardar to shadow | 걢مخ past | 걢يود to hurt |
| 걢دییم oppression | 걢نآwil we take photos | 걢هفت wall |

Additionally, the dialect has a set of secondary emphatics: the lateral /l/, the voiced bilabial nasal /m/, the dental-alveolar flap /t/ and the bilabial plosive /b/. Such emphatics exhibit phonemic contrast in a few words in the contiguity of the short high vowels /a/ and /ā/, as in (14).

| (14) | Plain | Emphatic |
|------|-------|----------|
| 걢والی to appoint | 걢والی by God |
| 걢ب-الا to wet something | 걢ب-الا really! |
| 걢داخی to enter | 걢داخی to seek asylum |
| 걢سیل beauty spot | 걢سیل uncle |
| 걢شیب to love | 걢شیب to kiss |
| 걢باشی to wash dishes | 걢باشی nothing |
| 걢ماعy Male (proper name) | 걢ماعy water |
| 걢ᠰام to waive his right | 걢 سبحانه I smell |
| 걢ماعم non-word | 걢ماعم to grab |
| 걢بیارу to exonerate | 걢بیارу outside |

This contrasts with Juffén Arabic (Huneety and Mashaqba 2016a), where the set of secondary emphatics comprises the lateral emphatic /l/, which surfaces with the different lexemes of the word Allah or in the context of a following /a/ or /ā/ preceded by any of the back consonants /x/ or /ɣ/ and in some cases /j/ (Watson 2002; Mashaqba 2015). In other JA dialects, rightward emphasis may extend over the whole word but is blocked by the high front vocoids /i/ and /u/ in Jerusalem Arabic (Card 1983), /ʕ/ or /w/ in northern Palestinian Arabic (Davis 1995), /ʕ/ or /j/ and /s/ in southern Palestinian Arabic (Davis 1995) and /ʕ/ or /y/ in Wadi Ram Arabic (Mashaqba 2015). In ‘ABBadî Arabic (Sakarna, 1999), emphasis is absolute and is not blocked by any segments.

In leftward and rightward emphasis, an emphatic segment fails to spread emphasis into adjacent prefixes and suffixes unless they are tautosyllabic, as shown in (16) below:

| (16) | Gloss |
|------|-------|
| 걢ل-تریق | 걢م-لا.هم for Tariq |
| 걢ه-لا.هم | 걢م-لا.هم we put something for them |
| 걢م-لا.هم | 걢م-لا.هم to stay long |
| 걢لا-ساف | 걢لا-ساف they (m.) went outside |

As seen in the above examples, emphasis reaches the prefixes 걢l-, 걢n-, 걢w- and 걢y- (a-c) because they are tautosyllabic with the emphatic segments. However, it fails to affect suffixes 걢-لا.هم in (b) and 걢-اف in (d) because the suffixes are heterosyllabic with the emphatic segments. The spread of emphasis in al-Issa Arabic never reaches a previous or following word. This contrasts with Šan‘ani Arabic (Watson 2002), where in phrases invoking God, emphasis can reach a previous word, as in 걢س-لا.هم ‘God willing’, 걢س-لا.هم ‘by God’s name’, where in both cases the emphatic 걢I influences the previous words and make them emphatic.

3.5. Stress assignment

Stress is the suprasegmental feature of a syllable that is produced with a greater amount of energy than unstressed syllables. Three factors define a stressed syllable: a longer duration, greater intensity, and a higher pitch than other syllables within the word (De Jong and Zawaydeh, 1999; Zuraiq and Sereno 2007; Ladefoged and Johnson, 2011; Kager 2009; Mashaqba, 2015; Huneety and Mashaqba 2016b; Mashaqba and Huneety 2018; Huneety et al., 2020). Examining stress patterns in all-Issa Arabic shows that as in many Arabic dialects, e.g. ‘Ajarmâ Arabic (Palva 1976), northern JA (Bani-Yasin and Owens 1987). ‘Abbadi Arabic (Sakarna, 1999), ‘Ajloun Arabic (Abu Abbas 2003) and Bedouin JA in the north (Huneety and Mashaqba 2016b), we find that assignment of stress depends on the weight of the syllable (light, heavy or superheavy) and the distance of the syllable from the right edge of the word.

As seen from the above lists, leftward emphasis is absolute and affects the stem of the phonological word. This is similar to many Arabic dialects where leftward emphasis is unrestricted, e.g. ‘ABBadî Arabic (Sakarna, 1999), Wadi Mousa Arabic (Huneety 2015) and Wadi Ram Arabic (Mashaqba 2015). Interestingly, in rightward emphasis, an emphatic segment spreads emphasis within the tautosyllabic segments. In a case where 걢C1 of the geminate is tautosyllabic, it spreads emphasis to the adjacent syllable, e.g. 걢سلا to pray, 걢حت law they put’. In other JA dialects, rightward emphasis may extend over the whole word but is blocked by the high front vocoids /i/ and /u/ in Jerusalem Arabic (Card 1983), /ʕ/ or /w/ and /w/ in northern Palestinian Arabic (Davis 1995), /ʕ/ or /j/ and /s/ in southern Palestinian Arabic (Davis 1995) and /ʕ/ or /y/ in Wadi Ram Arabic (Mashaqba 2015). In ‘ABBadî Arabic (Sakarna, 1999), emphasis is absolute and is not blocked by any segments.

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1 A final superheavy syllable 걢CVc1 걢C2 걢C3 (where 걢C1 걢C2 are identical) or 걢CVc3 attracts stress, as in 걢س-سار ‘saw’, 걢ع-ک ‘bathrobe’, 걢م-س ‘offensive’, 걢ل-هد ‘the border’, and 걢ت-ان ‘business owner’.
2 If the word lacks an ultimate superheavy syllable, stress is assigned to the penultimate syllable if it is heavy, as in 걢لا.م ‘close cousins’, 걢ح-رب ‘law ‘tie me (imp.)’, 걢خا.فا ‘to exert the best endeavour’, 걢م-س ‘allowed’.
3 Stress goes to the antepenultimate syllable if the word lacks a final superheavy syllable and a penultimate heavy syllable, e.g. 걢لا.س-لا.هم ‘they ignored them’, 걢ت-ا.بت ‘I write’, 걢ح-لا.هم ‘put something to them’, and to the penultimate in dissyllabic words, e.g. 걢س- ‘wi.’ 걢ب- ‘boy’, 걢ت-ا ‘to write’. 걢م- ‘to throw’.

Examining the interaction of stress and epenthesis, we find that epenthetic vowels are visible for stress, i.e. they can bear stress like lexical vowels. In the examples given below, an epenthetic vowel is added to avoid an impermissible 걢C1 걢C2 걢C3 cluster; this epenthetic vowel forms a syllable that is visible to stress. According to the stress algorithms given above, examples (17a), (17b) and (17c) lack any superheavy...
syllable; since the penultimate syllable with the epenthetic vowel is heavy, it takes the main stress, as in data in (17):

|   |   |   |
|---|---|---|
| a. | yabl-hu | ya.b[i]l-ha |
| b. | sam-hum | ta.m[i]l-hum |
| c. | ci.tab-t-hu | ci.m. b[i]l-ha |

This is different from some Arabic dialects, e.g., Iraqi Arabic (Watson 1999) and Ma'ani Arabic (Rakhib 2009), where epenthetic vowels are always invisible to stress and therefore stress is assigned as if a syllable had no epenthetic vowels. Thus in the word ka.ta.b[i].l-ha ‘I wrote it’, stress is placed on the antepenultimate syllable; although the penultimate syllable is heavy, it fails to bear stress since it has an epenthetic vowel; this suggests that stress takes place before epenthesis.

In the case of gahawa syndrome, the inserted syllable that includes the guttural consonant attracts the main stress in the absence of an ultimate heavy syllable, as in ga.‘a.la.wa ‘coffee’, na.‘a.ya ‘ewe’. This contrasts with CV.CV.CV words, where stress falls on the antepenultimate syllable, as in ci.ta.bit ‘I wrote’ and mi.sa.bit ‘I erased’.

Interaction between syncope and stress confirms that the deletion process targets unstressed segments which reflects the ability of speakers to identify strong segments of the word and then preserve them. The syncopated syllable is never a stressed one; it fails to take place when the short high vowel is stressed, as in fi.him ‘to understand’, ci.sab ‘to earn’, as it fails to affect the short low vowel in the same context, i.e. in open, unstressed positions, as in ha.li.m ‘forbearing’, ‘a:ru.s ‘groom’. The melodic process of raising involves changing the short low vowel /a/ quality into the short high front vowel /i/ which does not affect the word prosody and does not trigger stress shift. For example, the underlying forms ci.tab ‘to write’ and masah ‘to erase’ surface as ‘ci.tab and masah where no stress shift is reported.

Thus, a penultimate (C)CV syllable attracts stress in disyllabic words in the absence of a final heavy or superheavy syllable, e.g. ‘rsa.law ‘they send’, and in polysyllabic words as a result of gahawa syndrome, e.g. la.‘a.ma ‘meat’. In the absence of an ultimate and penultimate heavy syllable, an antepenultimate CV syllable always attracts stress regardless of the weight of preceding syllables. Again, a CVC syllable takes its weight from its position in the word; where it is heavy in initial and medial positions, it is equal in weight to a CV syllable in final positions after the final C is deemed extrametrical (McCarthy 1979; Hayes 1995).

Drawing on the metrical model advanced by Hayes (1995), we find that similar to many Eastern Arabic dialects, e.g. ‘Ajloun Arabic (Abu Abbas 2003) and Wadi Moussa Arabic (Huneety 2015), the dialect under investigation follows a moraic trochaic system (µ µ), and therefore in words like li.fa ‘he came’ and ci.tab ‘he wrote’, stress goes to the leftmost syllable given that the last consonant in ci.tab is extrametrical. This contrasts with Zalabiah and Zawaideh dialects in the south of Jordan which have an iambic foot (µ µ); thus stress goes to the rightmost syllable in words like li.fa ‘he came’ and ki.tab ‘he wrote’. (For details, refer to Mashaqba and Huneety 2018).

Additionally, the direction of foot parsing works from left to right and there is a strong ban against the construction of single moras in the dialect at either edge of the word, and therefore they are left unfooted. For example, in the word 7a.wa.‘a.r ‘people’, foot parsing is done from left to right over the antepenultimate syllable 7a. This syllable is monomeric, and therefore it fails to construct a foot by itself not can it construct a foot with the following bimoraic syllable wa given that al Issa Arabic has a strong ban against degenerate foot. The penultimate syllable wa: is heavy after the long vowel contributes two moras and it constructs a foot that attracts the main stress. The ultimate CVC syllable dim is monomeric and therefore cannot construct a foot by itself; it is left unfooted as a result.

The End Right Rule (ERR) is in place to account for the selection of the rightmost visible foot. Thus, an ultimate superheavy syllable, i.e. CVCC or CVVC, receives the main stress following ERR. Following Watson (2002), a superheavy syllable is made up of a heavy canonical syllable (bimoraic) and an extrasyllabic consonant. For example, in the word bar.mil ‘barrel’, the ultimate CVVC syllable mil ‘barrel’ comprises a canonical syllable that constructs a foot that attracts the main stress in conformity with ERR, whereas the extrasyllabic syllable is left unsyllabified.

4. Conclusion

This study identifies the major phonological aspects of al-Issa Arabic, a Bedouin JA spoken in the north of the country that had not previously been investigated. Analyzing data from 60 participants shows that al-Issa Arabic exhibits some linguistic characteristics that make it stand out from fellow/neighbouring Jordanian and regional dialects. The major linguistic features of al-Issa-Arabic, which are not exhaustive, are summarized below:

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(1)
(2)
```

The following is a summary of the metrical parameters of stress in al Issa Arabic:

(a) Consonant Extrametricality: C → (C/___) word
(b) Foot Construction: Form moraic trochees from left to right.
(c) Degenerate feet: Forbidden absolutely.
(d) Foot Extrametricality: Foot → (Foot/___) word
(e) Word Layer Construction: End Rule Right

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● obligatory gahawa syndrome
● application of trisyllabic elision
● retention of /aw/ and /ay/
● unconditional affrication of */k* into */ç/.
● the realization of the palatal-alveolar */j* as */y* in all word positions
● syllabification phenomena include gahawa syndrome, */i* epenthesis regardless of sonority hierarchy, syncope, and trisyllabic elision.
● sound shift of */a*/ > */i* in an open syllable
● emphasis spreads bidirectionally within the phonological word; leftward emphasis is absolute, but rightward emphasis spreads within the tautosyllabic segments
● trochaic moraic stress ('Ca.CaC')
● /C15 sound shift of */a*/
● /C15 retention of */aw*/ and */ay*/
● /C15 application of trisyllabic elision
● obligatory ninjawa

In terms of Clevenald's typology of JA dialects, al-Issa Arabic belongs to the yigal group.

Further examination of the major morphological and syntactic aspects of al-Issa Arabic is recommended. A basic lexicon of this dialect should be taken into consideration, especially those that have not yet been investigated, e.g., Badarin Bedouin Arabic, North West Bedouin Arabic, Majarr Rural Arabic, and Rumtha Rural Arabic.

Declarations

Author contribution statement

Anas Al Huneety, Bassil Mashaqqa: Conceived and designed the analysis; Analyzed and interpreted the data; Contributed analysis tools or data; Wrote the paper.

Riyad Abu Hula, Baraah Khalid Thnaibat: Analyzed and interpreted the data; Contributed analysis tools or data; Wrote the paper.

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