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Expanding the default forms in the lexicon: the sound masculine plural inflection

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Abstract

This paper investigates the applicability of the plural masculine suffix /-i:n/ as a default inflection marker to nouns that have an irregular inflection which is not the suffix /-i:n/. The data taken from Jordanian Arabic (JA) show that the notion canonical root has a substantial role in the emergence of such a default inflection. The findings show that there is a tendency for the suffix /-i:n/ to be the marking default as an apparent form among others in JA despite the fact that they fall outside the ubiquitous regularity domain. These results provide supporting evidence to the notion of multiple default system observed in JA in addition to the Sound Feminine Plural marker with /a:t/. Finally, these findings conform to the symbolic accounts that rely upon computational mechanisms for the emergence of the default patterns.

Key words: default patterns, JA, canonical root, symbolic mechanism, single mechanism.

Expandir las formas predeterminadas en el léxico: el sonido masculino inflexión plural

Resumen

Este artículo investiga la aplicabilidad del sufijo masculino plural / -i: n / como marcador de inflexión predeterminado a los sustantivos que tienen una inflexión irregular que no es el sufijo / -i: n /. Los datos tomados del árabe jordano (JA) muestran que la noción de raíz canónica tiene un papel sustancial en la aparición de una inflexión por defecto. Los resultados muestran que existe una tendencia para que el sufijo / -i: n / sea el valor predeterminado de marcado como una forma aparente entre otros en JA a pesar del hecho de que caen fuera del dominio de regularidad ubicuo. Estos resultados proporcionan evidencia de apoyo a la noción de sistema predeterminado múltiple observado en JA además del marcador Plural Femenino de Sonido con / a: t /. Finalmente, estos hallazgos se ajustan a las cuentas simbólicas

que se basan en mecanismos computacionales para la aparición de los patrones predeterminados.

Palabras clave: patrones predeterminados, JA, raíz canónica, mecanismo simbólico, mecanismo único.

1. INTRODUCTION

One of the major pursuits of cognitive accounts of morphology is to investigate the structural properties of regularly and irregularly inflected word forms that correspond to their representational and processing properties. In other words, it is necessary to provide a sufficient treatment for whether morphologically complex word forms are represented as full forms or as decomposed morphemes (Butterworth 1983; Pinker 1991; Marslen-Wilson Tyler et al 1994; Berent 2002). The lexicon of Jordanian Arabic (hence JA) will be investigated to see if it shows similar architecture conforming to the UG representational patterns regarding the distribution of the regularly and irregularly inflected forms. The notion 'defaultness' will be examined to see how the masculine plural would predict the regular inflection of the predicative adjectives. Predicative adjectives are derived forms falling outside the lexicon of JA and thus expected to have the default sound feminine plural with –a:t (computer-a;t) because they do not have analogical similarity with already available roots in the lexicon. Unlike this prediction, the sound masculine inflection appears to be the alternative candidate.

This paper consists of eight sections. Section (1) deals with the previous scholarship on the different approaches of inflectional morphology. Section (2) provides an overview of the plural system in JA. Section (3) deals with the derived adjectives observed in JA. Section (4) provides detailed discussion of the notions default inflection and canonical root. Section (5) provides a treatment for the 'elsewhere' inflection while section (6) includes the results and the discussion. Finally, section (7) includes the conclusion.

2. PREVIOUS SCHOLARSHIP

Different debates of cognitive morphology agree on the notion that only one regular default exists in the grammar of a language. The dual mechanism approaches and associative accounts (Rumelhart and McClelland 1986; McWhinny and Leinbach 1991; Plunkett and Marchmann 1993; Stemberger 1994; and Bybee 1995) provide evidence that no dissimilarity exists between the default and regular forms. Moreover, based on the associative accounts, defaultness is produced by associative memory. On the other hand, the difference between the associative accounts and the symbolic accounts is in their treatment of the default regular inflection. The associative model proposes that both the default regular and irregular forms are processed in the associative memory. For example, the English past tense provides at least three different models. One of the approaches bears the assumption that the regular past tense in English, as in “talk-

talked”, is formed by a rule, whereas irregular past tense patterns like “run-ran” are learned by rote. Another account claims that a rule-governed process inflects for all the regular forms while an associative memory inflects all the irregular forms. The associative memory identifies the irregular forms and blocks the default process from applying to them. Finally, the connectionists assume that language learning is better accounted for by using a single mechanism, namely a network of highly interconnected units.

Both symbolic and single mechanism accounts have the ability to treat an inflectional system like English past tense because of its distributional characteristics. For example, irregularly inflected forms are clustered in bundles that are grouped based on similarity patterns while regular forms are sporadically distributed as they are available in a rule and root relationship. The “default” inflection in English is regular both descriptively and psychologically. At the descriptive level, the lexicon consists of regular forms with about 95% of the verbs in the language taking the /-ed/ regular suffix. At the psychological level, on the other hand, speakers tend to generalize to this pattern as in “fax-faxed, xerox-xeroxed. The ubiquitous forms in the lexicon influence these two levels support the idea that, at the language acquisition period, the children's overgeneralization of inflected forms tends. A connectionist network is supposed to store information about all forms and the predominance of regular forms will motivate a regularization process, by virtue of the fact that any novel form is more likely to resemble a regular form than an irregular one.

On a similar footing, dual mechanism can also deal with linguistic systems where the default is a minority as is the case of the German participle /-t/ and the plural /-s/. This is due to the fact that the rule-like behavior need not be dependent on the default pattern applying to a majority of the forms in the language (Clahsen, 1999; Marcus et al. 1995). Conversely, a connectionist network was predicted to be unable to simulate people's regularization of novel forms in languages, which have a minority-default. Furthermore, morphological processing of L2 within the framework of dual mechanism has been the focus on the recent studies.

This paper attempts to answer the following questions. First: How can derived adjectives predict the sound masculine plural as a default form? Second, is it possible for the sound masculine plural to be another minority default inflection compared to the sound feminine plural form? We predict that the multidefault system (e.g. Arabic and English) can be displayed cross linguistically and can be accounted for in terms of the architecture of the lexicon. One of the aims in the present study is to investigate the mechanism of having a multi default system within the sound masculine plural in JA.

Jordanian Arabic shows two gender classes: feminine and masculine. The sound feminine plural is formed by attaching the suffix /-a:t/ to the end of some inanimate masculine singular nouns, (e.g. mada:r / mada:r a:t 'orbit/orbits' or feminine singular (animate and non-animate) nouns-ending with the feminine marker /-a/ (e.g. bina:ya/binaya:t 'a building/buildings' or loanwords. This productive concatenation has a relatively broad application over

different kinds of nouns regardless of gender or category in the singular form. JA also has the so-called ‘broken plural’ forms, which are highly similar to the broken plurals in other dialects of Arabic. This broken plural comprises a non-linear pattern shift where the consonantal root is retained as the singular form but vowel melody changes nonlinearly between the consonants according to a strict template. For example, the singular maktab ‘office’ of the root k-t-b has the iambic plural pattern like maka:tib offices CVCVVCV.

JA consists of up to four shape-defined prosodic categories: The Iambic Patterns CVCVV; the Trochaic patterns CVCVC Monosyllabic plural patterns and collectives (McCarthy and Prince 1990; Watson 2002). Collectives form a separate morphological category used to refer to uncountable entities or to living things like fruit, animals, etc. In JA, the collective plural form seems to be used less with the plural replacing it in collective contexts and there is a tendency towards the development of the analytic singular/ plural distinction by using free lexemes like “one, a piece of, a single item of, a single example of, etc (Sa’aida 2016). Another way of forming collectives in JA is the deletion of the singular feminine marker /-a/ (e.g.samaka / samak “one fish/ fish”) Alternatively, there is a singulative operation, where /-a/ is added. Finally, to form the sound masculine plural, the suffix /-i:n/ is attached to the end of both the singular animate masculine accusative and nominative noun forms, to the singular animate masculine noun.

Typically, two types of nouns can use this plural: primitives and derivatives. The primitives include the animate masculine reference proper nouns which do not have the feminine marker /-a/ in the suffix

position (e.g. *zaid/zaid-u:n* 'Zaid -a proper name'); such pluralized primitive forms can be available in Modern Standard Arabic not in JA. Derived forms, on the other hand, formally have the sound masculine plural pattern and they fall within the so-called adjectives, which do not indicate the superlative or comparative forms. For example, the form *fahma:n / fahma:n-i:n* 'smart' represents the sound masculine inflection that these forms take when pluralized. This research aims at providing evidence that the lexicon of JA inflects derivatives that fall outside its domain to receive the default plural pattern with the /-i:n/ suffix.

The defaultness inflection requires further investigation for the sake of explaining the emergence of a default pattern in JA that falls outside the sound feminine inflection. This inflection is dealt with as the 'elsewhere' inflection in its lexicon. This idea can be supported by Marcus (1998 & 1999) and Pinker and Prince (1988) who found that, according to the symbolic accounts of the lexicon architecture, the broad application of the default pattern is based on the idea that the regular inflection applies to 'mental variables' which are abstract labels 'VERB or NOUN'. Moreover, it is significant to provide concrete arguments concerning the notion canonical root in terms of the generality of the default inflection to words that have no access to the memory such as borrowings, denominals, names, etc. The canonical root is defined, according to the dual mechanism approach, as "address or distinct identity as a word in the language; a part-of-speech category, subcategory features; a semantic representation and phonological representations. A canonical root indicates that words

cannot be represented in the mental lexicon as random collections of information; one of the prominent features of the ‘canonical root’ is that it has a representation format for these words (McCarthy and Prince 1990). In JA, the canonical root format can be marked by its inflection in the plural. For example, the two-syllable words ending *rukun*/?arka:n’corner/corners/ would take such an irregular inflection due to the canonical root that triggers this form and thus block any other form. On the other hand, JA presents instances of noncanonical root words such as the loan words, diminutives, names and deverbal nouns that would take the –a:t inflection such as *kutayib/kutayiba:t* ‘booklet/booklets’.

It is important to indicate that the symbolic mechanism account confounded the notion of ‘regularity’ with the notion of ‘defaultness’. The regular inflection is viewed as the default as it applies to any target that fails to activate stored associations by the “elsewhere condition” which is defined as the application of a general linguistic process upon the failure to trigger a more specific process. The notion of confounded ‘regularity’ and ‘defaultness’ is replicated by Clahsen (1992) in his proposal that ‘regular’ and ‘default’ inflections could be the same based upon Kiparsky’s level-ordered phonology.

The JA plural system provides evidence on the minority default system. We will argue that this system exhibits a default pattern emerging from the supposedly a non-productive level in the system of the language –the sound masculine plural in our case. The data to be studies converge on the idea that the plural system in Jordanian Arabic has a variety of defaultness levels of the type learnable by a dual

mechanism model and this default is represented through the discussion of the "multidefault" mechanism. Research on JA offers an analysis having more than one default inflection. This is accomplished by showing that unlike the previous morphological accounts such as associative mechanism model, symbolic mechanism model; and the schema model, the current research relies upon the "openness" mechanism as a major determinant to define defaultness. Thus, we define 'openness' as the ability of the inflectional system to be extendible to accept new forms in the grammar of a language system. In our system, the sound masculine plural /-i:n/ system is open and thus it is the default. This openness is based upon the fact that it is extendible to new forms that are intrinsically illegal sound masculine plurals ending with /-i:n/ suffix as will be shown later in this research.

Adjectives in JA include attributives and predicative categories. Predicative adjectives to be investigated in this research end with the suffix /-a:n/ (e.g. *zahga:n* 'bored') representing adjectival derivation to the root in order to describe the subject noun which is also attributive. In addition, these categories of adjectives agree with their nouns in gender, case, and definiteness. Unlike the rest of the adjectival categories, these types of adjectives do not agree with the subjective nouns in number (**taʕbani:n* 'tired-we'). Put it differently, due to their morphological and semantic nature, the process of plural agreement that these adjectives show with the subject is blocked unless they undergo internal morphological change (e.g. *taʕbani:n* 'tired-we') instead of the illegal form (**taʕbani:n*) which does not formally occur in the lexicon of JA. In this paper, it is shown how these adjectival

forms are derived via the application of a plural form from a root that does not end with the suffix /-a:t/. Derived predicative adjectives ending with the suffix /-a:n/ in particular- have the property of having a default inflection in the plural. According to the data displayed in Table (1), our assumption is that the predicative adjective forms take the sound masculine plural (-i:n) due to the fact that these forms – when derived- have no canonical root; hence they have no access to the lexicon of JA and thus fall into the “elsewhere” category. Predicative adjectives ending with the suffix /-a:n/ provide converging evidence on the existence of the symbolic mechanism which calls for the default inflection if access to the lexical memory is blocked. Thus, this default inflection process works for these predicative adjectives.

In the data in Table (1), we notice that the predicative adjective forms take a sound masculine plural (for example taʕba:n/taʕba:ni:n ‘tired (sg.)/tired (pl.)’), despite the fact that these forms are grammatically ill-formed if having the suffix –a:t when pluralized. This scenario has the implication that the plural marker –i:n is formally an illegal suffix if added to these forms but when it is used in the spoken JA, it is possible to extend the plural to them. This inflection falls within the default patterns that are allowed to take place when certain forms are viewed as new derived forms to the lexicon and it is impossible that they would take the default inflection. It should be noticeable, based on the data that new levels of the default patterns emerge to form more than one default in the language. This becomes apparent if we take into account that the lexicon of JA contains the sound feminine plural –a:t as a default marking new derived forms

such as borrowings, diminutives, etc. It is important to indicate that the sound masculine plural has the capacity to be used as a default marker for the such forms like the predicative adjectives describing nouns and having agreement with them at all levels except for number.

Table 1: The default inflection for the derived forms with the suffix /-i:n/

Triconsonantal Root	Predicative Adjective with – a:n	Plural form	Gloss
t-ʕ-b	taʕba:n	taʕba:n-i:n	tired
ħ-r-d	ħarda:n	ħarda:n-i:n	angry
b-r-d	barda:n	barda:n-i:n	cold
ʃ-b-ʕ	ʃabʕa:n	ʃabʕa:n-i:n	full
n-ʕ-s	naʕsa:n	naʕsa:n-i:n	sleepy
dʒ-uu-ʕ	dʒuuʕa:n	dʒouʕa:n-i:n	hungry
z-ʕ-l	zaʕla:n	zaʕla:n-i:n	angry
f-r-ħ	farħa:n	farħa:n-i:n	happy
h-y-m	hayma:n	hayma:n-i:n	feel in love with
s-h-r	sahra:n	sahra:n-i:n	think of something else
f-h-m	fahma:n	fahma:n-i:n	smart
S-g-ʕ	Sagʕa:n	Sagʕa:n-i:n	cold

g-r-f	garfa:n	garfa:n-i:n	fed up
z-h-g	zahga:n	zahga:n-i:n	bored
f-l-t	falta:n	falta:n-i:n	no control on him
d-f-y	dafya:n	dafya:n-i:n	warm
t-l-f	talfa:n	talfa:n-i:n	exhausted
ħ-r-d	ħarda:n	ħarda:n-i:n	sad
f-s-q	fasqa:n	fasqa:n-i:n	having a lot of fun
b-ṭ-r	ba ṭra:n	ba ṭra:n-i:n	Having a lot of money
m-l-y	malya:n	malya:n-i:n	full
h-r-b	harba:n	harba:n-i:n	away from
n-s-y	nasya:n	nasya:n-i:n	forgetting
f-ṭ-n	fa ṭna:n	fa ṭna:n-i:n	remembering
d-f-y	dafya:n	dafya:n-i:n	warm
ʃ-r-d	sharda:n	sharda:n-i:n	escaping
ʕ-ṭ-ʃ	ʕa ṭsha:n	ʕa ṭsha:n-i:n	thirsty
s-k-r	sakra:n	sakra:n-i:n	drunk

3. RESULTS AND DISCUSSION

The data in JA shows evidence that the symbolic account is expected to formulate the representation of the predicative adjectives

as having the default form when pluralized. Default forms are observed as an emergency inflection when lexical access is blocked due to the lack of the canonical root. In the present research, predicative adjectives as new forms in the lexicon of spoken JA are proved to have no canonical root and thus have the default inflection in the plural with the suffix /-i:n/ attached to the singular form of the predicative adjective. Accordingly, this paper provides accounts on the distinction between symbolic and connectionist accounts of generalization and how these embody different approaches to human cognition. However, we provided evidence that the spoken JA plural system is a minority default, with regular sound masculine plural applying to fewer predicative plural forms than the idiosyncratic broken plural represented in the establishment of the predicative adjective plural represented in the lexicon.

One of the most critical challenges that this research puts forth is the Openness/ Productivity dichotomy. While openness is related to the ability of the inflectional system to be extendible to accept new forms in the grammar of a language system, ‘productivity’-on the other hand- has a tight relation with type frequency, i.e. productive forms usually have high frequency across the language. Openness, on the other hand, refers to the extendibility of a process to accept forms from outside the phonological space of the grammar system. As presented in MSA, the definition of ‘openness’ can predict how the sound feminine plural is able to accept new forms in the grammar. The notion of ‘openness’, thus, is shown to explain why minority default languages,

like German and JA of course, would take that ‘minor default’ despite the fact that this form has low type frequency -productivity.

So, it would be reasonable for us to view the influence of ‘openness’ in any language as a component in the morphological module in the grammar without being confined to the specific features of any language like productivity which is not expected to explain the occurrence of the default inflection. Thus, openness is indispensable for the establishment of defaultness and openness is dissimilar to productivity which is of a peripheral role in the establishment of defaultness in the inflectional morphology in particular. The architecture of defaultness in JA was shown to have a more crosslinguistic dimension than a theory internal one. This conclusion is based upon the defaultness definition which refers to the application of the elsewhere rule pattern on non-canonical forms in an openness mechanism.

4. CONCLUSIONS

These findings are compatible with the symbolic view in terms of two perspectives: First, the default sound masculine inflection in JA has the productivity to be extended to any word that does not have a canonical root by a computational mechanism of adding the suffix /-i:n / to the predicative adjective form. Second, JA lexicon seems to maximize the domain of the default inflection to include other plural markers (e.g. predicative adjectives with /-i:n /) than the already

existing minority default marker with the /-a:t/ suffix. This supports the computational mechanism that the discrete roots with their derivational and inflectional properties display at the pluralization level.

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