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The Status of the Derivative Adjective Forms in the Lexicon: Evidence on Pseudo Default Patterns

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Abstract

This paper investigates the applicability of the plural masculine suffix */-i:n/* as a default inflection marker to nouns having an irregular inflection plural form with */-i:n/* suffix marker. The data taken from Jordanian Arabic (JA) derivatives show that the notion canonical root has a substantial role in the emergence of such a default inflection. The findings also show that there is a tendency for the suffix */-i:n/* to be the marking default as an apparent form among other possible forms in JA despite the fact that they fall outside the ubiquitous regularity domain. These results provide strong evidence on the existence of multiple default systems 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. The findings also draw attention to the systematic suffixes that the derivative forms have */-a:n/* and thus motivate more predictions to the status of the inflected form bearing pseudo default features.

Keywords: Pseudo default, Default Patterns, JA, Canonical Root, Symbolic Mechanism, Single Mechanism.

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 the processing properties they display. There is a dire need for sufficient treatment for whether morphologically complex word forms are represented as full forms or as decomposed morphemes (Pinker 1991; Marslen-Wilson Tyler et al. 1994; Berent 2002). Different views on cognitive morphology (e.g. inflectional morphology) agree on the notion that only one regular (suffixation-based) default exists in the grammar of a language. The dual mechanism approaches (Pinker and Prince 1988; Marcus et al. 1992; Clahsen et al. 1995; Clahsen 1996; Pinker 1998) and associative accounts (Rumelhart and McClelland 1986; McWhinny and Leinbach 1991; Plunkett and Marchmann 1993; Stemberger 1994; and Bybee 1995) provide evidence that regular forms have similarity with the default forms. On the other hand, the difference between the associative accounts and the symbolic accounts is in their treatment of the default regular inflection. While the associative

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model assumes that both the default regular and irregular forms are processed in the associative memory. For example, in English, the tense bears the assumption that the regular past as in ‘‘*talk-talked*’’ is formed by a rule, whereas irregular patterns like ‘‘*run-ran*’’ are learned by rote (Berko 1958 and MacKay 1978). On the other hand, the symbolic account assumes that a rule-governed process inflects for all the regular forms while an associative memory inflects all the irregular forms. Thus, the associative memory identifies the irregular forms and blocks the default process from applying to them (Clahsen 1999; Marcus et al. 1995; Pinker 1991; Pinker and Prince 1988; Prasada and Pinker 1993). Moreover, the associative treatment assumes that language learning is better accounted for by using a single mechanism, namely a network of highly interconnected units (MacWhinney and Leinbach 1991; Rumelhart and McClelland 1986).

Both symbolic and associative mechanism accounts can treat an inflectional system like English past tense because of its distributional properties. So 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 (Pinker 1998). At the psychological level, on the other hand, speakers tend to generalize to this pattern as in ‘‘*fax-faxed*, *xerox-xeroxed*’’ (Marcus et al. 1995; Ullman 1999). An associative 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 (Rumelhart and McClelland 1986). 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/* (Marcus et al. 1995). This is because the rule-like behavior need not be dependent on the default pattern applying to most of the forms in the language (Clahsen 1999; Marcus et al. 1995). Conversely, an associative network was predicted to be unable to simulate people’s regularization of novel forms in languages which are described as having a minority-default. Furthermore, morphological processing of L2, for instance, within the framework of dual mechanism has been the focus of recent studies (Muftah 2016; Muftah and Rafik-Galea 2013).

2. The plural system in Jordanian Arabic (JA)

Jordanian Arabic (JA) shows two gender classes: feminine and masculine. The sound feminine plural is formed by attaching the suffix */-a:t/* to the end of some non-animate masculine singular nouns, (*masa:r / masa:r-a:t* 'a track /tracks' or feminine singular (animate and non-animate) nouns-ending with the feminine marker */-a/* (e.g.*bina:ya/binaya:t* ‘a building/buildings’). This productive concatenation has a broad application over different kinds of nouns regardless of gender (masculine/ feminine) or category (animate /non-animate) 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 (Ratcliffe 1998 and Ryding 2005). 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 in accordance with a strict template

(El-Yasin 1985). For example, the singular *maktab* ‘ an office’ of the root *k-t-b* has the iambic plural pattern *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*”). Finally, to form the sound masculine plural, the suffix */–i:n/* is attached to the end of both the singular animate masculine accusative or nominative noun forms, (e.g. *muhanids / muhandisi:n* ‘an engineer/engineers-acc.’) to the singular animate masculine nominative noun.

3. Derived adjectives with suffix */–i:n/*

Two types of nouns can use the sound masculine 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'). On the other hand, only derivatives that refer to animates fulfill the agentive thematic role (e.g. *ka:tib/ka:tibu:n*‘a writer/writers’). Another type of derived forms that do not formally have the sound masculine plural pattern falls within the so-called derived adjectives which do not indicate the superlative or comparative forms. In this research, we try to shed light on the status of the so-called pseudodefault inflection with the suffix */-i:n/* that emerges from these derivatives systematically ending with the suffix */-a:n/* (e.g. *barda:n/ barda:n-i:n* 'cold-sg./cold-pl.') in the plural form. Our prediction is to provide evidence that the lexicon of JA inflects the derivatives that fall outside the lexicon to receive the default plural pattern with the */ -i:n/* affix.

4. Default inflection and the ‘canonical root’ account in Jordanian Arabic

It is significant to provide concrete arguments concerning the notion of a 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 (e.g., transitive or intransitive for verbs, count or mass for nouns); a semantic representation and phonological representations**”** (Marcus 1995). 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, canonical roots are marked by their inflection in the plural. For example, the two-syllable words ending with the feminine marker */–a/* take the sound feminine plural (e.g. the word *ta:wla/tawla:t* ‘a table/tables’ and *muhandis/muhandisu:n* ‘engineer/engineers’). On the other hand, JA presents instances

of noncanonical root words such as the loan words, diminutives, names and deverbal nouns that do not have the feminine marker */–a/*. The lack of access to their canonical root in the lexicon triggers the emergence of any plural form in the lexicon. In this case, no lexical access exists between the word and any mental representation.

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 (Kiparsky 1973). 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 Arabic plural system provides evidence for the minority default system (McCarthy and Prince 1990; Pinker and Prince 1994; Hare et al. 1995; Ravid and Farah 1999). One of the aims in the present study is to investigate the mechanism of having a multi default system using the sound masculine plural in JA with the suffix */-i:n/*. We will argue that this system exhibits a default pattern emerging from a supposedly non-productive level in the system of the language –the sound masculine plural in our case. This is highly associated with the consistently */-a:n/* ending derived forms that fall within the sound masculine default inflection. Arguments will be supported by linguistic analyses of data for plural forms taken from a variety of resources emerging from a set of lexical derivatives available in the lexicon. These sources of evidence 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 which indicates that both regular and irregular inflections are processed in two different systems in the lexicon and this default is represented through the discussion of the "multidefault" mechanism (Pinker 1998). We will conclude by showing why multidefault systems (e.g. Arabic and English) can be accounted for cross linguistically in terms of the architecture of the lexicon. 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 the associative and the symbolic mechanism models (cf. Pinker 1990; Rumelhart, D.E. and McClelland, J.L. 1986 and Bybee 1985). The current research relies upon the "openness" factor as a major determinant to define defaultness. Thus, we define the term '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 default.

This conclusion is based upon the fact that this inflection is extendible to new forms that are intrinsically illegal but they take the sound masculine plurals ending with /–i:n/ suffix as will be shown later in this paper.

5. The 'elsewhere' analysis

Derived adjectives in JA include attributives and predicative categories. The predicative adjectives investigated in this research end with the suffix */-a:n/* in the singular form (*e.g. zahga:n* 'bored')

representing adjectival derivation to the root in order to describe the subject noun. In addition, these categories of adjectives agree with their nouns in gender, and definiteness. These types of adjectives agree with the subjective nouns in number (*taʕbani:n* 'tired-we'). Due to the morphological and semantic features of these constructions as reflection of a dialect,i.e., JA, the process of plural agreement that these adjectives show with the subject is blocked unless they undergo internal morphological change (e.g.*mutʕabi:n* 'tired-we'') in addition to the legal form (*taʕban-i:n*) which formally occurs 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. Dissimilar to the previous scholarship supporting the suffix */-a:t/* as a plural default marker, this derived form ends with the masculine suffix */-i:n/* as a default marker. Based on the data 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. The fact that these forms end with the pseudodefault form */-i:n/* in the plural converges with 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 (e.g. *taʕba:n / taʕba:ni:n* 'tired (sg.)/tired (pl.)'), the inflection given to the masculine has the property that it is not applicable to the sound feminine inflection. This property makes the masculine inflectional more generalizable and productive to account for the inflection of the sound feminine. It is important to articulate the significance of the symbolic processes that deal with the sound masculine as a variable that is blind to the semantic and logical features. It is essential to indicate that the symbolic mechanism is unable to predict the sound feminine inflection. This scenario has the implication that the plural marker */-i:n/* is a part of some forms of the spoken JA; it is possible to extend the plural to them. This inflection falls within the default patterns that can take place as derived forms to the lexicon. It can be inferred from the data that new levels of the default patterns emerge to form more than one default in the language. The multi default output becomes apparent if we take into account that the lexicon of JA contains the sound feminine plural */-a:t/* as a default inflection 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 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 the suffix */-a:n/*	Plural form with the suffix */-i:n/*	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-w-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-ʈ-r	*ba ʈra:n*	*ba ʈra: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-ʈ-n	*fa ʈna:n*	*fa ʈna: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-ʈ-ʃ	*ʕa ʈsha:n*	*ʕa ʈsha:n-i:n*	thirsty
s-k-r	*sakra:n*	*sakra:n-i:n*	drunk

6. Results and Discussion

The data shows evidence that the symbolic account is expected to predict the representation of the predicative adjectives having the default form with the suffix */-i:n/* 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 lexicon. In the current research, predicative adjectives as new forms in the lexicon of spoken JA are proved to have no canonical root and thus have the pseudo 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 associative accounts of generalization and how these accounts embody different approaches to the cognitive processes. However, we provided evidence that JA plural is a minority default system consisting of the regular sound plural applying to fewer predicative plural forms than the idiosyncratic broken plural forms.

The defaultness mechanism requires investigation to account for the emergence of a default pattern that falls outside the sound feminine inflection. This property should be recalled to identify the basis for the emergence of the other default forms- the sound (regular) masculine. According to Marcus (1998 1999) and Pinker and Prince (1988), 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**'**. Such a

process of 'defaultness' can be defined as an operation which applies to any item and it is not relevant to specific clusters of stored items or to their frequent patterns as long as it is not listed in the lexical memory (Marcus 1995). Regular inflection as a default is assigned to borrowings, names, and denominals in some languages like English, as these new forms fail to trigger default irregular patterns as a stored association, because they lack a canonical root (Berent 1999, Kim et al. 1991, 1994 and Marcus et al. 1995). Moreover, it is important to indicate that the status of these derivatives inflected using */i:n/* in the plural form can be classified as close to the default patterns. This assumption is based on the idea that the inflected form with *i:n* does not vary in terms of the case inflection: nominative vs accusative alternation. On the contrary, it only takes the accusative form with the */i:n/* inflection (e.g. *malya:n/ malya:n-i:n* 'ful-sg./ful-pl') not the ill formed inflection *malya:n / malya:n u:n*. Based on these explanations, we can benefit from the symbolic account which suggests that the default inflection can apply to non-words that are dissimilar to English forms, and they are possibly to activate stored irregular tokens (Prasada and Pinker 1993).

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 Modern Standard Arabic (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' even though this form has low type frequency, i.e., 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. Eventually another challenge proposed by this research is how to account for the distribution asymmetry approach (Plunkett and Nakisa 2000) in that the irregular forms are tightly bounded, and thus new words take similar inflection to these clustered ones, and, if blocked, the default regular inflection is applied using such forms like the data in this research.

7. Conclusion

The data provided in this research provide further evidence that the mechanism can have a new default pattern with the */-i:n/* suffix derived from the adjective forms having the */-a:n/* marker in the singular form. Openness is indispensable for the emergence of defaultness and this openness is dissimilar to productivity which is of a peripheral role for defaultness. 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.

These findings are compatible with the symbolic view in terms of two perspectives. First, the default sound feminine inflection in MSA has the productivity to be extended to any word that does not have a canonical root by a computational mechanism of adding the suffix /–*a:t*/ to the diminutive form (Al-Shboul 2012). Second, no role of similarity effect is observed between the default sound feminine plural diminutives and their base non-feminine singulars.

حالة صيغ النعت المشتقة في المعجم الذهني كدليل على وجود صيغ شبه افتراضية

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الملخص

بحثت هذه الدراسة في إمكانية تطبيق لاحقة جمع المذكر السالم (- يـــن) كأداة فعالة للتصريف الافتراضي للأسماء ذات جمع التكسير. تم استخدام بيـانات مستمدة من صيغ النعت الموجودة في اللهجة الأردنية الدارجة التي أظهرت الدور البارز للنظير المرجعي في المعجم الذهني في وجود الصيغ الافتراضية في هذه اللهجة. أظهرت كذلك النتائج وجودة نزعة لاستخدام اللاحقة (- يـــن) لتكون الدالة الرئيسية على وجود الصيغة الافتراضية دون غيرها من اللواحق التي تشكل نموذجاً مثالياً للصيغ القياسية. علاوة على ذلك دلت نتائج الدراسة على وجود نموذج ذي صيغ افتراضية متعدد ومتنوع بحيث يتضمن اللاحقة المعروفة في أدبيات البحث (ـ ات) الدالة على جمع المؤنث السالم. ويمكن القول بأن هذه النتائج تنسجم وبشكل جلي مع نظريات المعالجة القياسية في المعجم الذهني التي تستند على عمليات معالجة محوسبة بشكل في منتهى الدقة. وتشكل نتائج هذه الدراسة نقطة مهمة للفت النظر إلى أهمية مثل هذه اللواحق في تكثيف مفهوم الصيغ الافتراضية وخلق صيغ جديدة لا سابق لها في تكوين المعجم الذهني.

الكلمات المفتاحية: صيغ شبه افتراضية، صيغ افتراضية، اللهجة الأردنية الدارجة، النظير المرجعي، نظرية المعجم المزدوج، نظرية المعجم المنفرد.

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