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Morphological Patterns in Persian First Grade Elementary School

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Abstract: The aim of this paper is to study the Morphological Patterns i.e. word-based model and morpheme-based model on complex words in 7-year-old Persian speaking children. The method of the research is descriptive- analytic and for collecting data, the documentary resources and the first grade course book of elementary students- "Farsi-Bekhanim" have been used. The comprehensive results of this research show that, statistically, the greatest number of words is allocated to simple words in this grade. Furthermore, in most cases, first grade complex words are according to morpheme-based model rather than word-based model.

Keywords: Morphological Patterns, Word-Based Model, Morpheme-Based Model, Complex Words, Simple Words

1. Introduction

"Morphology is the study of the internal structure of words [1]". The first linguists were primarily morphologists and until the nineteenth century, Western linguists often thought of grammar as consisting primarily of word structure. "Morphology is the study of word formation, including the ways new words are coined in the languages of the world, and the way forms of words are varied depending on how they're used in sentences [2]". "The sub discipline of linguistics that deals with such patterns is called morphology. The existence of such patterns also implies that words may have an internal constituent structure. For instance, walking can be divided into the constituents walk and "-ing". Therefore, morphology deals with the internal constituent structure of words as well [3]". "In linguistics, morphology is related to a mere intellectual system of making words or to a branch of linguistics that deals with the words, their internal structure and how they are formed [4]". "The study of internal structure of words is called morphology [5]". Accordingly, our initial definition of morphology, as the study of the internal structure of words, needs some qualification, because words have internal structure in two very different senses. On the one hand, "Morphology is the study of systematic covariation in the form and meaning of words [1]". This is a word-based definition. The word [ʃahr.hɑ] in Persian, "cities", has the plural morpheme [-hɑ], "-s", at the end of the simple word [ʃahr], "city". Opposing, [hɑ] at the end of the simple word [rahɑ] does not have any special meaning but it belongs to the base form of the word. So, [hɑ] at the end of these words are quite accidental and they are not the same in sense. On the other hand, as a morpheme-based definition, "Morphology is the study of the combination of morphemes to yield words [1]". This definition looks simpler and more concrete than first definition. It would make morphology quite similar to syntax, which is usually defined as 'the study of the combination of words to yield sentences'; for instance, the word [ʃahrhɑ] in Persian, "cities", contains two morphemes, [ʃahr] + [-hɑ]. The main motivation for doing this research is to study the morphological patterns of the words in above- mentioned book. In this manner, the main question of the research is whether first grade complex words are accorded with morpheme-based model or word-based model. The achievements of this research can be used in language acquiring for pre-school students and second language learning. It, also, makes word-formation easier in the process of leaning a language for children. Another use of the article

is to examine the comprehension, learning and even making more complex words easier in children.

2. Methodology

In the current paper, two different kinds of methodologies have been applied; documentary resources and field work. Here, the method of the research and the problems, weaknesses, and also the strengths of the paper have been discussed comprehensively and respectively.

2.1. Method of Research

The method of the research is descriptive- analytic and for collecting data, the documentary resources and first grade course book of elementary students- "Farsi-Bekhanim" [6] have been used. Thus, all four kinds of words, i.e. 467 unrepeated words, have been extracted from the first grade book and they have been studied. The Persian data have been transcribed based on IPA (International Phonetic Alphabet), according to Catford [7]. Also, according to this grade, a proper test, containing twenty two-choice questions has been prepared. The test has been taken from twenty-five boy students and twenty-five girl students, respectively, in the regions of two and nine in the city of Tehran. Due to the limited size of the research, just a brief amount of data has been presented in this article which is comprehensive.

2.2. Problems, Weaknesses and Strengths of the Paper

Certain problems and weaknesses, and also strengths of the current paper can be outlined as follows, respectively: firstly, the time of taking above- mentioned exams is really important. It means that they should be taken either at the beginning of an educational year, i. e. before learning the book, or at the end of an educational year, when they have finished the book completely. In this paper, the exams were taken at the end of an educational year, in Ordibehesht (or May); so some of the students may have forgot some parts or contents of the book because of Noruz holidays. And, of course, reminding them some points may affect the results of the tests. Moreover, getting permission from Ministry of Education took a long time, particularly for taking exam at boys school. Second, unfortunately, some of the school teachers intended to help the students in order to choose the correct answers. Because they thought that these tests may examine their own class and the way of their teaching. Thus, it can directly change the results of the tests. And third, the course books may change once in every few years. They are usually published based on the modern methodology and they have no fixed vocabularies. As some strength points, firstly, the course books are revised permanently and many new words are applied through each unit. Second, in each revision of these course books some relatively useless words- either simple or complex- have been removed and more useful words are applied through the units instead. Third, using both documentary resources and taking exam can make the results more logical and accurate than using just one of these methodologies.

3. Theoretical Framework

In this paper, the structure of complex words is examined according with two different morphological patterns. For this purpose, in this section some of the key concepts about these patterns are presented which is introduced by Haspelmath and Sims [1]. In this framework, some of the morphological rules and patterns (those which are related to the current study), and also the properties of two morphological models on morphology, modern and traditional, have been raised.

3.1. Morphological Patterns

The lexicon is the linguist's term for the mental dictionary that language users must be equipped with, in addition to the grammatical rules of their language. When a linguist says that something is listed in the lexicon, this means that it must be stored in speakers' memories. If a complex word has its own lexical entry (i.e. listing in the lexicon), it does not need to be actively derived from a simpler form; it can simply be retrieved from memory when needed. The set of words in a language is never quite fixed. There must therefore be some processes by which new complex words are created. And even when a complex word is likely to be listed in the lexicon, it is useful to think of the relationship between it and its base in terms of these same processes. These processes, and how they can be formally described using morphological rules, are the topic of this chapter [1].

Morphological structure is much more various than simply affixes combining with bases. The term morphological patterns to cover both examples in which morphological meaning can be associated with a segmentable part of the word and examples where this is not possible (non-segmentable). We begin by examining a range of morphological patterns, both common and uncommon, from various languages. Linguists often distinguish two basic types of morphological patterns: concatenative, which is when two morphemes are ordered one after the other, and non-concatenative, which is everything else (ibid: [1]).

3.1.1. Concatenative Patterns

Most of the examples of morphologically complex words can be neatly segmented into roots and affixes, and are therefore concatenative patterns. In process terms, these can be described as derived by affixation (subtypes suffixation, prefixation, etc.) and compounding. Affixation involves more than just combining two morphemes. A rule of affixation is also a statement about which types of morphemes may combine. This is the combinatory potential of the affix. The suffix "–able" attaches only to verbs and "un-" can attach to adjectives, but does not generally attach to nouns; "ungrass" is also not a possible word of English (ibid: [1]). As with "un-", "non-" and "-able", the word class of the base (noun, verb, adjective, etc.) is an important factor for combinatory potential. Linguists thus sometimes say that affixes 'select' a particular word-class to attach to (ibid: [1]). As an example, the plural suffix [-ɑn] in Persian can only attach to some kinds of words such as nouns; like [deraχt] in Persian, "tree"

which can be used both [deraχtha] and [deraχtɑn], "trees". But a word like [cutʃe] in Persian, "alley", can only take the plural suffix [-hɑ] in order to make plural form of the word, [cutʃehɑ], "alleys". In concatenative patterns, the words are segmented into two meaningful units and these patterns indicate morpheme-based morphology.

3.1.2. Non-concatenative Patterns

At the same time, a range of morphological patterns exists that cannot be straightforwardly segmented into two meaningful parts (ibid: [1]). These patterns consist of base modification, reduplication and conversion. In non-concatenative patterns, words are not necessarily created by concatenation of morphemes but one morpheme may take an interfix (or transfix) or it may phonologically change. In these cases, it is not possible to segment a word into its meaningful units. For instance, in the verb "went" which is the past form of the verb "go", the base morpheme and past tense morpheme cannot be further analyzed. Certain alternations such as palatalization or fronting are considered two examples of non-concatenative patterns which make plural form of some nouns in a few languages like English (foot: feet). According to the above- mentioned morphological Patterns, there are two general approaches under the name morpheme- based morphology and word-based morphology. We can now turn our attention to analysis and ask what these morphological patterns indicate about morphological structure. The ultimate goal is to create a system of morphological rules that mimics speakers' linguistic knowledge, but this is not always a straightforward process. In addition to accurately representing morphological generalizations, rules should be elegant and cognitively realistic (ibid: [1]). These two approaches are comparable in some ways. One emphasizes commonalities between morphology and syntax and favors a restrictive architecture of description. The other tends to minimize the importance of parallels between syntax and morphology and invests in system-external explanations, which are called morpheme-based model and word- based model in order (ibid: [1]).

3.2. Morpheme-Based Model

In the morpheme-based model, morphological rules are thought of as combining morphemes in much the same way that syntactic rules combine words. We can use the syntactic phrase structure rules in (Figure 1) to create a sentence. Likewise; in order to describe the structure of English words like cheeseboard, bags, unhappier, eventfulness, and one could make use of the word structure rules in, which are analogous to the syntactic phrase structure rules above.
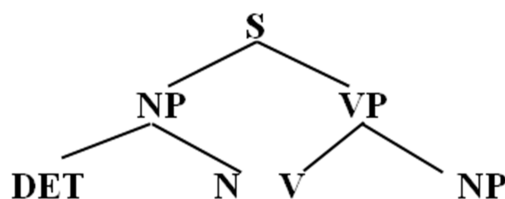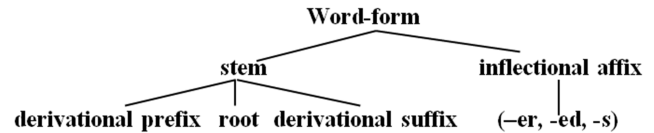

Figure 1. Phrase structure rules.
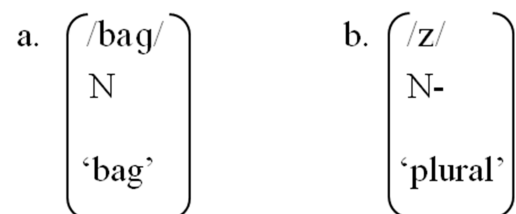

Figure 2. Word- structure rules.

We can use these word-structure rules to create complex words. In the following, we see the individual steps by which the words bags, unhappier and cheeseboard can be created using the rules in.

Table 1. Word-structure rules in complex words: "unhappier."

word-form= stem + inflectional suffix
Stem= derivational prefix + root
derivational prefix= un-
Root= happy
inflectional suffix= -er
Stem= un-happy
word-form= un-happi-er

There are several ways to modify this general approach. For example, many linguists argue that we should dispense with word-structure rules in "unhappier" and put all the relevant information, including combinatory potential, into lexical entries. This parallels an argument within syntactic theory. Many syntacticians have called into question the need for phrase-structure rules, on the grounds that the same information is already contained in words' lexical entries, making the general rules redundant. In line with this approach, an alternative formalism to (Figure 2) is illustrated in (1). These lexical entries contain information on the pronunciation, properties and meaning of the morpheme.

(1) Proposed lexical entries for some morphemes:

When lexical entries of roots and affixes are enriched in this way, morphological description seems to reduce largely to the description of the lexical entries of morphemes. Concatenation becomes a property of the lexical entry itself, all but removing the distinction between rules and morphemes. Despite this difference, the core principle is the same in both morpheme- based model and word- based model: morphology consists of one basic type of lexical entry (morphemes) and one type of process that operates on those entries (concatenation). And by doing so, the morpheme-based model maximizes the formal similarity between morphology and syntax (ibid: [1]).

3.3. Word-Based Model

In the word-based model, the fundamental significance of

the word is emphasized and the relationship between complex words is captured not by splitting them up into parts and positing a rule of concatenation, but by formulating word-schemas that represent the features common to morphologically related words. For instance, in Persian the plural form of all words which are noun is made by taking the plural suffixes "-hɑ" or "-ɑn". The similarities among the English words bags, keys, gods, ribs, bones, gems (and of course many others) can be expressed in the word- schema in as follows.

(2) Lexical entries for words and Word-schema

a. $\begin{bmatrix} /baɡz/_N \\ \text{'bags'} \end{bmatrix}$ $\begin{bmatrix} /k^hijz/_N \\ \text{'keys'} \end{bmatrix}$ $\begin{bmatrix} /ɡɑdz/_N \\ \text{'gods'} \end{bmatrix}$

b. $\begin{bmatrix} /Xz/_N \\ \text{'plurality of xs'} \end{bmatrix}$
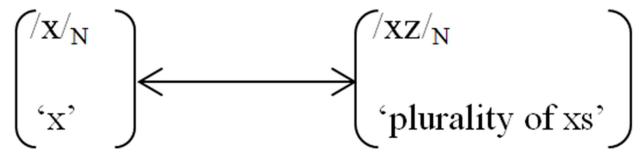
A word-schema is like the lexical entries in (2.a) in that it contains information on pronunciation, syntactic properties and meaning. But a word-schema may additionally contain variables. In this way, it abstracts away from the differences between the related words and just expresses the common features. The schema in (2.b) expresses the fact that all words in (2.a, b) end in /z/, that they all denote a plurality of things and that they are all nouns (indicated by subscript N after the phonological representation). Crucially, a word-schema stands for complete words, not for individual morphemes in the sense of the morpheme-based model. The word-schema in (2.b) is a generalization based on the lexical entries, which are themselves word-forms, not morphemes. When the word-schema contains both a segmentable piece of sound and a corresponding meaning, as is true in (2.b), it is called a 'morpheme'. However, it is important to remember that in a word-based model a morpheme is just a convenient term. It is simply one kind of schema among many, and has no special status. Now what makes word-schemas really significant for morphology is the fact that closely related schemas are connected to each other. A schema that subsumes the lexical entries "bag" "key" and "god" is given in (3.b).

(3) Lexical entries and Word-schema

a. $\begin{bmatrix} /bag/_N \\ \text{'bag'} \end{bmatrix}$ $\begin{bmatrix} /k^hij/_N \\ \text{'key'} \end{bmatrix}$ $\begin{bmatrix} /ɡɑd/_N \\ \text{'god'} \end{bmatrix}$

b. $\begin{bmatrix} /X/_N \\ \text{'x'} \end{bmatrix}$

The morphological relationship between these sets of words can now be represented in the morphological correspondence in (4):

(4) Morphological correspondence

Example (4) thus shows what a morphological rule looks like in the word-based model. The rule in (4) is the word-based equivalent of (1.b). It says that plural nouns can be formed from singular nouns by suffixing /z/. Unlike the morpheme-based model, the word-based model has no way of dispensing with morphological rules; while the correspondence in (4) represents a rule of suffixation, there is nothing in the model that necessarily restricts morphological rules to concatenation (ibid: [1]).

In traditional studies on morphology, the words are analyzed in a concatenation manner. Item and arrangement (IA) is a model of description used in morphology for the analysis of words (and sometimes in syntax for larger grammatical units). In this approach, words are seen as linear sequences ('arrangements') of morphs ('items'), e.g. "The boys kicked the ball" will be analyzed as "the/ boy/ s/ kick/ ed/ the/ ball". Problem cases, where this notion of sequence would not easily apply, constituted a main part of discussion linguistics in the 1940s and 1950s, e.g. whether "mice" can be seen as "mouse" plural. The chief alternatives to this way of proceeding are the item-and-process, which is proposed by Hockett in the middle of 1950s, and word-and-paradigm models. Item and process (IP) is a model of description used in morphology for the analysis of words. In this approach, the relationships between words are seen as processes of derivation; e.g. the 'item' took is derived from the item take by a 'process' involving vowel change. For some linguists this label is applicable to any approach which makes use of derivational processes in its formulation, such as generative grammar; but its original use was in the context of morphology [8]. This model does not have a concatenation mechanism. In concatenation model of item and arrangement, any morpheme is considered one unit and morphology is the way in which these morphemes are arranged. Thus, the plural form of the words like "cat" and "man" in English is "cats" and "men" which are considered concatenative and non-concatenative, in order. But, according to Sapir (1921), American linguistics, morphology must be considered a set of processes which are used in order to make stems, words or word- forms on stems or words. In this way, on the basis of item and process, Hockett (1958) says that "men" is derived from the item "man" by a 'process' involving vowel change, while "cats" is derived from "cat" just by adding the plural suffix "-s" and this is a kind of derivation [9]. The two models, item and arrangement and item and process, and the two models, morpheme- based morphology and word- based morphology are parallel, respectively.

4. Data Representation and Discussion

In this section, a brief amount of data accompanied by the

related analysis based on first- grade children's comprehension of complex words have been presented. The innovation of this study is the way of analyzing the data with regards to morphological point of view in this theoretical framework. This research is discussed about two notions: at one hand, statistically, the greatest number of words is allocated to simple words in first grade of elementary school book, "Farsi- Bekhanim". On the other hand, in most cases, first grade complex words are according to morpheme-based model rather than word-based model.

4.1. Simple and Complex Words in "Farsi- Bekhanim

According to the first notion, that is the number of simple and complex words in first grade of elementary school book, "Farsi- Bekhanim", the following four strategies have been presented. In addition, some of the data are here based on the needs of the hypothesis.

4.1.1. First Strategy: The Number of Simple and Complex Words

The first strategy is to count the simple and complex words (containing derived, compound and derived- compound words) in this grade. They are arranged in separated groups, without counting repetitive words. Then they are displayed via tables and figures. According to the first grade of elementary school book, "Farsi- Bekhanim", out of 467 unrepeated words, there are 278 simple words which are the most among whole words rather than complex words (Table 2 and Figure 3). In other words, more than half of the whole not repeated words are simple words. So, the simple words are the first words at the beginning of learning and forming various words.

Table 2. Different Kinds of First Grade of Elementary School Book.

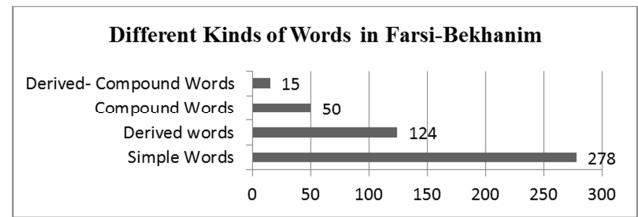| Simple Words	Derived words	Compound Words	Derived- Compound Words	Total
278	124	50	15	467

Figure 3. Different Kinds of First Grade of Elementary School Book.

According to the Table 2 and Figure 3, simple words are the most words in number among the other kinds of the words in this grade. After that, the greatest number of words is allocated to derived words.

4.1.2. Second Strategy: The Precedence of Simple Words in "Farsi- Bekhanim"

The second strategy is to examine the precedence of simple words in first grade of elementary school book, "Farsi-Bekhanim". In fact, before making and using the derived, compound and derived- compound words in this book, simple words have been presented. Thus simple words are used as a base form in making complex words and new words, with the same root, are made by means of various derivational or inflectional processes. According to the Table 3, simple words are used at the beginning of the book, and they are taught before complex words which are appeared in final units of the book. Actually, each simple word is regarded as the base form in making the other kinds of words. Note that the number in parenthesis (e.g. (2)) is the page number of appearing the word in "Farsi-Bekhanim" book.

Table 3. The Precedence of Simple Words in "Farsi-Bekhanim".

	Simple form of word	English meaning	complex forms of word	English meaning
1	[χɑne](2)	"house"	[χɑne.hɑ](4), [rud.χɑne](16), [ʔaʃpaz.χɑne](107)	"houses", "river", "kitchen"
2	[ɹol](13)	"flower"	[ɹol.dɑn](13), [ɹol.hɑ](74), [ɹol.ʔɑb](83)	"vase", "flowers", "rose water"
3	[bɑd](14)	"wind"	[bɑd.con.ac](14), [bɑd.bɑd.ac](30)	"balloon", "kite"
4	[tʃaʃm](49)	"eye"	[tʃaʃm.e](71), [tʃaʃm.hɑ](50,111), [tʃaʃm.hɑ.j.aʃ](114)	"spring", "eyes", "his/her eyes"
5	[tʃɑdor](71)	"chador"	[tʃɑdor.namɑz](83)	"prayer veil"

4.1.3. Third Strategy: Using Theoretical Principles

The third strategy is to use theoretical and cross linguistically principles. In this way Anthony Arlotto [10], according to Jerzy Kuryłowicz, has presented certain rules in order to determine the concept of analogy. According to the second rule of Kuryłowicz, analogy is done from base form to derived form. It means that the first element in a proportion must be the base form and the second element must be derived form it in some way, but not vice versa. Thus, the following proportions are acceptable:

(5) Second rule of analogy
    stone: stones: word: x
    ring: rang: bring: x

In these cases, the singular form of nouns and the present tense of verbs are regarded as the base form, and the plural forms and the past tense are derived from them via taking various elements which contain additional information [10]. Also, in current article, the data are made from the base form or the simple form of a noun. In other words, the complex forms such as derived or compound forms are made up of simple form of the words. For instance, the simple word [ɹol] in Persian, "flower", is the base form for making derived word [ɹol.i], "rosy"; compound form [ɹol.χɑne], "greenhouse"; and derived- compound form [ɹol.foruʃ.i], "flower shop", but the opposite process is impossible. In fact, children consider a base form for certain words which absolutely is the simple form of each word and accordingly they make complex words or compounds [11], [12].

4.1.4. Fourth Strategy: Children's Morphological Knowledge

The fourth strategy is to estimate children's morphological knowledge of simple and complex words through standard tests. To this end, first grade students, both girls and boys, are examined based on their book, "Farsi-Bekhanim". According to Figure 4, first grade of elementary school students have gained an acceptable arithmetical mean in identifying simple words from complex words. This means that they can discriminate among the different structure of words well. As an example, they regard the simple words such as [irɑn], [tʃaʃm], [ɢajeɢ] and [ʃab] in Persian, which respectively mean "Iran", "eye", "boat" and "night" in English, as the base form for making derived, compound and derived-compound forms of them. Figure 4 is showing four questions (i.e. 10, 12, 13, and 15) out of twenty questions of the test which are related to identifying simple and complex words. In each question, the two first columns are peculiar to the girl students' answers (respectively, correct and incorrect answers), and the two last columns shows boy students' answers (respectively, correct and incorrect answers).
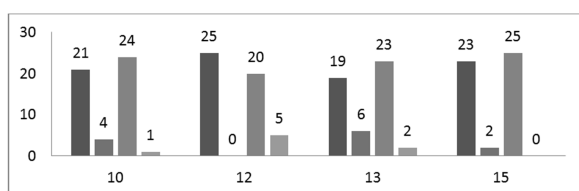

Figure 4. Responses to the questions of identifying simple and complex words.

In addition, Table 4 and Figure 5 display that first- grade girl students with the average 3.52 and first grade boy students with the average 3.68, out of four related questions, have no meaningful difference in identifying simple words from complex words.

Table 4. The Average of Identifying Simple and Complex Words out of 4 Questions.

Index	Girls	Boys
identifying simple words from complex words	3.52	3.68

Figure 5. The Average of Identifying Simple and Complex Words out of 4 Questions.

4.2. Morpheme-Based Model in Complex Words of "Farsi-Bekhanim"

According to the second notion, which depicts that in most cases, first grade elementary school complex words are according to morpheme-based model rather than word-based model, firstly the number and type of common affixes are discussed in "Farsi-Bekhanim". In first grade, in comparison with other grades of elementary school, there are 26 bound morphemes; i.e. affixes. Among these affixes, there are 3 kinds of prefixes- such as [em-], [bi-] and [bɑ-]; and 23 kinds of suffixes in related data. At this grade, there is no interfix (or transfix) and just one of Persian clitics is used in construction of the words. Out of 23 suffixes existing at this grade, 19 suffixes are derivational suffixes and four are inflectional suffixes. Thus, 88 percent of the whole number of affixes in first grade of elementary school is allocated to the suffixes and the remaining 12 percent to prefixes. These affixes accompanied by some examples are displayed in Table 5. The only clitic at this grade is pronominal proclitic [-aʃ].

Table 5. Bound Morphemes in First Grade Elementary School Book- "Farsi- Bekhanim".

	Prefixes	Derivational Suffixes	Inflectional Suffixes	Clitics
1	[ʔem-]: [ʔem.sɑl], "this year"	[-i]: [ʔeslɑm.i], "islamic"	[-hɑ]: [in.hɑ], "these"	[-aʃ]: [tʃaʃm.aʃ], "his/her eye"
2	[bi-]: [bi.cɑr], "jobless"	[-ɹar]: [ʔamuz.ɹar], "teacher"	[-ɑn](plural): [barɑdarɑn], "brothers"	
3	[bɑ-]: [bɑ.ʔadab], "impolite"	[-ande]: [ʔafarin.ande], "creator"	[-ɑt]: [ʔettelɑʔ.ɑt], "information"	
4		[-ɑ]: [bin.ɑ], "sighted"	[-tar]: [mehr.bɑn.tar], "kinder"	
5		[-eʃ]: [puʃ.eʃ], "cover"		
6		[-ɹɑh]: [tʃarɑ.ɹɑh], "grassland"		
7		[-e]: [tʃeʃm.e], "spring"		
8		[-ɑr]: [raft.ɑr], "behavior"		
9		[-in](adjectival): [ranɟ.in], "colorful"		
10		[-ɑn](adjectival): [χand.ɑn], "laughing"		
11		[-zɑr]: [ʃɑli.zɑr], "rice field"		
12		[-ɹin]: [ɢam.ɹin], "sad"		
13		[-estɑn]: [ɹol.estɑn], "garden"		
14		[-bɑn]: [mehr.bɑn], "kind"		
15		[-ac]: [bɑd.bɑd.ac], "kite"		
16		[-sɑr]: [cuh.sɑr.hɑ], "highlands"		
17		[-tʃi]: [post.tʃi], "postman"		
18		[-bar]: [dʒuj.bar.hɑ], "brooks"		
19		[-ʃan]: [ɹol.ʃan], "garden"		

Now, by considering the number and different types of existing bound morphemes in first grade of elementary

school book- "Farsi- Bekhanim", the data are examined based on the article's framework- morphological pattern, and

also based on traditional point of view.

According to concatenative patterns, complex words can be segmented into roots and affixes. These kinds of words are derived by the processes like affixation and compounding. Here, the significant notion is that the word class of the base form (noun, verb, adjective, etc.) is an important factor for combinatory potential. In other words, affixes 'select' a particular word-class to attach to. In concatenative patterns, the words are segmented into two meaningful units and these patterns indicate morpheme-based morphology. Table 6 illustrates some examples:

***Table 6.** Affixes and Word-classes.*

	affix	Word- class	Complex word	Incorrect form
1	[ʔem-]	noun	[ʔem.sɑl], "this year"	*[ʔem.mɑh(N)] *[ʔem.ʔɑrɑm(Adj)] *[ʔem.ɟu(Present Stem)] *[ʔem.ɟoft(Past Stem)]
2	[bi-]	noun	[bi.cɑr], "jobless"	*[bi.ʃenɑ(N)] *[bi.ʔavval (Adj)] *[bi.ɟu(Present Stem)] *[bi.ɟoft(Past Stem)]
3	[bɑ-]	noun	[bɑ.ʔadab], "impolite"	*[bɑ.pol(N)] *[bɑ.zerenɟ(Adj)] *[bɑ.ɟu(Present Stem)] *[bɑ.ɟoft(Past Stem)]
4	[-i]	Noun noun+ present stem adjective	[caffɑʃ.i], "shoe making" [rah.bar.i], "leadership" [ʃad.i], "happiness"	*[raft(Past Stem).i]
5	[-ɟɑr]	present stem past stem	[ʔɑmuz.ɟɑr], "teacher" [parvard.ɟɑr], "God"	*[sabad(N).ɟɑr] *[ʔavval(Adj).ɟɑr] *[ɟu(Present Stem).ɟɑr] *[ɟoft(Past Stem).ɟɑr]
6	[-ande]	present stem noun (rarely)	[ʔɑmuz.ande], "informative" [razm.ande], "combatant"	*[ʃab(Adv).ande] *[ʔɑrɑm(Adj).ande] *[ɟoft(Past Stem).ande]
7	[-ɑ]	present stem	[ʃenav.ɑ], "hearing"	*[dars(N).ɑ] *[mariz(Adj).ɑ] *[ɟoft(Past Stem).ɑ]
8	[-eʃ]	present stem	[dɑn.eʃ], "knowledge"	*[ʔasb(N).eʃ] *[raχʃan(Adj).eʃ] *[ɟoft(Past Stem).eʃ]
9	[-ɟɑh]	noun (rarely) present stem	[tʃarɑ.ɟɑh], "grassland" [foruʃ.ɟɑh], "store"	*[partʃam(N).ɟɑh] *[ʔavval(Adj).ɟɑh] *[ɟu(Present Stem).ɟɑh] *[ɟoft(Past Stem).ɟɑh]
10	[-e]	Noun present stem adjective past stem	[dast.e], "group" [χand.e], "laugh" [sabz.e], "greenery" [neʃast.e], "seated"	*[cudac(N).e] *[ʃirin(Adj).e]
11	[-ɑr]	past stem	[ɟoft.ɑr], "speech"	*[mihan(N).ɑr] *[bad(Adj).ɑr] *[ɟu(Present Stem).ɑr]
12	[-in](adjectival)	noun	[ranɟ.in], "colorful"	*[sɑl(N).in] *[zud(Adj).in] *[ɟu(Present Stem).in] *[ɟoft(Past Stem).in]
13	[-ɑn](adjectival)	present stem	[χand.ɑn], "laughing"	*[χɑne(N).ɑn] *[sɑcet(Adj).ɑn] *[ɟu(Present Stem).ɑn] *[ɟoft(Past Stem).ɑn]
14	[-zɑr]	noun	[ʃali.zɑr], "rice field"	*[bad(N).zɑr] *[ʔɑrɑm(Adj).zɑr] *[ɟu(Present Stem).zɑr] *[ɟoft(Past Stem).zɑr]
15	[-ɟin]	noun	[ʁam.ɟin], "sad"	*[Gosse(N).ɟin] *[bad(Adj).ɟin] *[ɟu(Present Stem).ɟin] *[ɟoft(Past Stem).ɟin]
16	[-estɑn]	noun	[cuh.estɑn], "mountain"	*[zijɑd(Adj).estɑn] *[ʔeslɑm(N).estɑn]

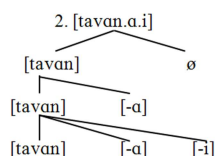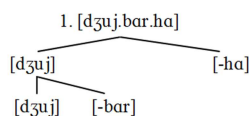|	affix	Word- class	Complex word	Incorrect form
17	[-bɑn]	noun	[mehr.bɑn], "kind"	*[ɹu(Present Stem).estɑn] *[ɹoft(Past Stem).estɑn] *[salem (Adj).bɑn] *[sedɑ(N).bɑn] *[ɹu(Present Stem).bɑn] *[ɹoft(Past Stem).bɑn]
18	[-ac]	noun+ noun noun+ present stem	[bɑd.bɑd.ac], "kite" [bɑd.con.ac], "balloon"	*[bɑd(N).ac] *[ɹu(Present Stem).ac] *[ɹoft(Past Stem).ac]
19	[-sɑr]	noun	[cuh.sɑr.hɑ], "highlands"	*[ʃirin (Adj).sɑr] *[sedɑ(N).sɑr] *[ɹu(Present Stem).sɑr] *[ɹoft(Past Stem).sɑr]
20	[-tʃi]	noun	[post.tʃi], "postman"	*[bad(Adj).tʃi] *[ʔab(N).tʃi] *[ɹu(Present Stem).tʃi] *[ɹoft(Past Stem).tʃi]
21	[-bɑr]	noun	[dʒuj.bɑr.hɑ], "brooks"	*[ʃad(Adj).bɑr] *[del(N).bɑr] *[ɹu(Present Stem).bɑr] *[ɹoft(Past Stem).bɑr]
22	[-ʃan]	noun	[ɹol.ʃan], "garden"	*[dur(Adj).ʃan] *[cuh (N).ʃan] *[ɹu(Present Stem).ʃan] *[ɹoft(Past Stem).ʃan]
23	[-hɑ]	noun adjective	[lab.hɑ], "lips" [sad.hɑ], "hundreds"	*[raft(Past Stem).hɑ] *[ʃirin (Adj).hɑ] *[ɹu(Present Stem).hɑ]
24	[-ɑn](plural)	noun adjective (rarely)	[deraχt.ɑn], "trees" [hezɑr.ɑn], "thousands"	*[cutʃe(N).ɑn] *[cam(Adj).ɑn] *[ɹu(Present Stem).ɑn] *[ɹoft(Past Stem).ɑn]
25	[-ɑt]	noun	[χater.ɑt], "memories"	*[χub(Adj).ɑt] *[sedɑ(N).ɑt] *[ɹu(Present Stem).ɑt] *[ɹoft(Past Stem).ɑt]
26	[-tar]	adjective	[mehrbɑn.tar], "kinder"	*[mehr(N).tar] *[ɹu(Present Stem).tar] *[ɹoft(Past Stem).tar]

According to the Table 6, each affix- either prefix or suffix- attaches to one or more than one base form. The base form can be an adjective or a noun, or a kind of stems (present or past). As the date displays, the affixes select just one word class in some cases, and they may attach to more than one word class in some other cases; unless many ill formed or meaningless words are made which are not acceptable in Persian (like the forms in "incorrect forms" column, Table 6). In addition, certain affixes only attach to some of their selected word class, for instance the suffix [-e] can attach to the word class "Noun" but not all nouns; [dast(N).e], "group" and *[cudac(N).e]. The word "child" in English equals in meaning with the word [cud.ac] in Persian. Furthermore, some of affixes are attached to whether a combination of two nouns or a combination of a noun and a kind of stems. In other words, they do not select just one word class or only one stem, like the suffix [-ac] in Table 6 examples.

On the other hand, [-hɑ] among inflectional suffixes and [-i] among derivational suffixes have high frequency in attaching to their selected word class, i.e. Noun. Needless to say, in Table 6, the word classes such as Noun, Adjective, Adverb and different stems are shown, respectively, as (N), (Adj), (Adv), (Present Stem) and (Past Stem) by the word. Also, the asterisk sign, (*), next to a word shows that it is ill formed and meaningless.
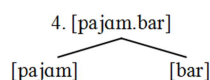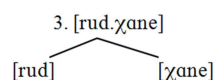
So far, it is crystal clear that the data in this research is more accorded with concatenative patterns and morpheme-based model rather than any other patterns and models. In this manner, according to morpheme- based model, morphological rules combine morphemes in much the same way that syntactic rules combine words (part 3.2 in this article). These rules, which are called Word-structure rules, create most of the complex words of first grade elementary school book, "Farsi-Bekhanim" in a concatenative manner. Now, some of the data- complex words- are examined in three various groups such as derived, compound and derived-compound (based on Figure 2) as follows:

1. [dʒuj.bɑr.hɑ]= stem+ derivational suffix [-bɑr]+ inflectional suffix [-hɑ], "brooks"
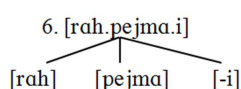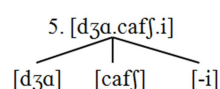2. [tavɑn.ɑ.i]= stem+ derivational suffix [-ɑ]+ derivational suffix [-i], "ability"

1. [dʒuj.bɑr.hɑ]

2. [tavɑn.ɑ.i]

3. [rud.χɑne]= stem+ stem, "river"
4. [pɑjɑm.bɑr]= stem+ stem, "prophet"

3. [rud.χɑne]

4. [pɑjɑm.bɑr]

5. [dʒɑ.cafʃ.i]= stem+ stem+ derivational suffix [-i], "a closet for shoes"
6. [rɑh.pejmɑ.i]= stem+ stem+ derivational suffix [-i], "march"

5. [dʒɑ.cafʃ.i]

6. [rɑh.pejmɑ.i]

5. Conclusion

In this article, morphological patterns have been studied through data gathered from first grade elementary school book, "Farsi- Bekhanim". Data analysis and evaluation of the results show that 7-year-old Persian speaking children learn simple words as the basis of derivation and compounding, i. e. complex words. The comprehensive results of this research show that, statistically, the greatest number of words is allocated to simple words in "Farsi-Bekhanim". After that the derived words have the greatest number and the fewest number of words is allocated to derived- compound words. Furthermore, in most cases, first grade complex words are more according to morpheme-based model rather than word-based model. It should be noted that it is not the case one approach is inherently superior to the other. Morphologists and morphology students must decide for themselves which goals of research are most important.

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