

Typological Analysis of Vafsi Clitics Based on Aikhenvald's (2003) Parameters

Saeed Reza Yousefi¹, Mahinnaz Mirdehghan Farashah², Fatemeh Bahrami

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ABSTRACT

The present research aims at the identification and typology of clitics in Vafsi based on Aikhenvald's (2003) parameters. This study is analytical and library-based as the Vafsi examples in this study are mostly from the Vafsi corpus gathered by Stilo (2004b) in the form of 24 Vafsi folk tales and also from his other works on Vafsi (Stilo, 2004a, 2010). In other cases, Bögel et al. (2018) and Yousefi (2021) along with native speakers are consulted. The results of this study show that, first, compared to Zwicky and Pullum's (1983) and Sadock's (1991) criteria in the classification of clitics, Aikhenvald's (2003) parameters set, not only inclusive of all the criteria belonging to two other classifications but also, contrary to the binary approach of them, it has the advantage of investigating clitics on a multi-dimensional continuum of features from a completely bound morpheme to a completely free one. Next, based on Aikhenvald's (2003) parameters set, it has been shown that Vafsi has eight types of clitics, which only the characteristics of the eighth type, i.e. Vafsi oblique PAMs, are affected by phonological-prosodic factors. In the end, based on indelibility and locality features of agreement markers, it has been shown that Vafsi oblique PAMs are inflectional affixes, so they cannot be considered clitics.

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1. PhD in Linguistics, Faculty of Letters and Human Sciences, Shahid Beheshti University, Tehran, Iran. E-mail: sr_yousefi@sbu.ac.ir
2. (Corresponding author) Associate Professor in Linguistics Department, Faculty of Letters and Human Sciences, Shahid Beheshti University, Tehran, Iran. E-mail: m_mirdehghan@sbu.ac.ir
3. Assistant Professor in Linguistics Department, Faculty of Letters and Human Sciences, Shahid Beheshti University, Tehran, Iran. E-mail: f_bahrami@sbu.ac.ir

1. Introduction

Vafsi is an Iranian language, designated as an endangered language by UNESCO, as it is spoken by around 20000 people. Geographically, it is located in four villages in the Markazi province, and genetically it belongs to the Tati sub-branch of the Iranian language family (Stilo, 1981: 174; Dabir-Moghaddam, 2013: 541; Yousefi, 2021: 12).

Vafsi syntax represents some special phenomena such as ergativity and 13 morphological cases (Mirdehghan & Yousefi, 2012), Differential Object Marking (DOM), and Differential Adpositional Case Marking (DACM) (Mirdehghan & Yousefi, 2016). Therefore, it provides a prolific ground for linguistic excavations.

The elusive grammatical behavior of clitics has always been a source of interest for linguists. The behavior of Vafsi clitics is not excluded from this paradigm. Especially that, the realization of Vafsi clitics is affected by prosodic-phonological factors (Bögel et al., 2018). However, the identification and typology of Vafsi clitics based on comprehensive criteria have not been done yet. So, the main goal of this study is to fill this research gap. To address that, the main question to be targeted in this research is to show the advantage of Aikhenvald's (2003) parameters in identifying and providing an analytic typology of clitics compared to Zwicky and Pullum's (1983) and Sadock's (1991) criteria.

These advantages are: a) Aikhenvald's parameters include all the other two sets of criteria, and b) in contrast to the previous two sets of criteria which have a binary approach to the typology of clitics, Aikhenvald's parameters "suggest a scalar, or continuum-type, approach – that is, some morphemes turn out to be more affix-like and others to be more word-like." (Aikhenvald, 2003: 42)

Based on Aikhenvald's criteria, Vafsi clitics have been categorized in eight types, all of which will be analyzed in the analysis section of this paper. The analysis of the eighth type; i. e. «Vafsi oblique PAMs», because of complexities affected by prosodic-phonological factors, is the main discussion of this paper. In this study, noticing the limitations of the «Generative Transformational Grammar» in representing the type of clitics, it has been shown that the previous studies (e.g. Stilo, 2004a, 2004b, 2010; Dabir-Moghaddam, 2013), based on syntactic factors per se, have categorized Vafsi oblique PAMs into two types of «affixes» and «clitics». In contrast, the current research, by focusing on «syntactic-prosodic» factors, has shown that the Vafsi oblique clitics do not have «affixal» counterparts, hence; all the occurrences of the clitic forms can be justified based on «intonational constraints».

The linguistic corpus in this paper is based on Stilo (2004b) and Yousefi (2021) and also on native Vafsi speakers. Stilo (2004b) has investigated Vafsi grammar but he mentions only the pronominal clitics and there is no reference to other clitic types. Therefore, to identify and provide an analytic typology of clitics, Vafsi linguistic data has been analyzed using Zwicky and Pullum's (1983), Sadock's (1993), and Aikhenvald's (2003) typological parameters.

This research is analytical, based on library and field-collected linguistic corpus mainly from Stilo (2004b), in the form of the transcription of 24 Vafsi folk tales, and also from linguistic evidence registered in Stilo's other works (Stilo, 2010, 2004a)

and Bögel et al. (2018) and Yousefi (2021). These data have been tested using the intuition of native speakers who were born in Vafsi-speaking Chehreghan village (Cf. footnote 2).

2. A brief note on previous work

According to Spencer (1991: pp. 350-94), clitics cannot be easily placed into the binary categorization of «words» and «affixes». Because, on the one hand, they occur as bound morphemes in some linguistic contexts; in which sense, they are affix-like, and on the other hand, they occur as free morphemes in some other linguistic contexts; hence, independent words. Therefore, this dual behavior of clitics is not in compliance with the modular approach of generative grammar.

This promiscuous attribute of clitics has always been the subject of interest for linguists. The research literature on clitics done in diverse languages is innumerable. Therefore, to focus more on research literature relating to the present work, first to introduce the parameters to typify clitics, the research literature on the identification and typology of clitics and affixes in «non-Iranian languages» will be addressed. Later, to show the way these parameters are applied, the research literature on «typology of clitics and affixes in the Iranian languages» is introduced and finally, the research literature on «Vafsi clitics» will be investigated.

2.1. Research literature on the typology of clitics and affixes in non-Iranian languages

Zwicky (1977) investigates the properties of clitics by going through linguistic evidence from Madurese and consequently introduces six characteristics of clitics which in his later research; Zwicky and Pullum (1983), these characteristics are polished and turned into six criteria for determining clitic-hood. These six criteria are much referred to in the research literature on clitics. Besides, in the same paper, he is discriminating between «simple clitics» and «special clitics»; though this definition is somehow vague and does not seem practical.

Zwicky and Pullum (1983) investigate the clitic-hood of English *n't* and they conclude that this morpheme is an inflectional affix. But, the importance of this paper is the introduction of «six criteria for distinguishing clitics from affixes». These criteria are binary variables which are included in later Aikhenvald's (2003) fifteen parameters in typology of clitics. In contrast to Zwicky and Pullum's criteria, Aikhenvald's parameters are scalar and continuum-type in approach, from more affix-like features to more word-like ones.

Sadock (1991) has classified fifteen characteristics of clitics under five modules morphology, syntax, semantics, phonology, and lexicon.

Aikhenvald (2003) introduces fifteen parameters for identifying and typifying clitics and by using them, he gives a typology of Tariana from the Arawak language family. The reason for choosing Tariana as the object language is its polysynthetic nature, indicating the fusion of different types of clitics together. Other than the inclusiveness of Aikhenvald's parameters, covering all the other previous criteria, the importance of Aikhenvald's typological parameters is its scalar, continuum-like

approach; i. e. any phonologically deficient morpheme will be designated a special placement on a multi-dimensional continuum from a completely bound morpheme to a completely free morpheme. Therefore, the simple binary approach to dichotomize morphemes into words and affixes is disposed of.

As the pronominal clitic system in Spanish is very similar to the Vafsi pronominal clitic system, in this study, Larrañaga & Guijarro-Fuentes (2012) is used comparatively. The approach of this study is based on a purely generative mindset and does not consider the prosodic-phonological factors in the explanation of the clitic placement.

Salvesen & Helland (2013), provide a brief history of different approaches to clitics, from Wackernagel's law to modern theories that link clitics to phrases. They show that while philologists in the late 19th century sought the placement of clitics, modern linguists aim to understand clitic behavior concerning syntax, phonetic requirements, morphosyntax, or grammaticalization. As the method of typology of Vafsi oblique PAMs in our study is based on prosodic-syntactic factors; therefore, we are sticking to the latest developments in clitic studies.

2.2. Research literature on the typology of clitics and affixes in Farsi

Sorahi and Alinezhad (2013), analyze the typology of Farsi clitics based on the typological patterns introduced by Aikhenvald (2003) and Bickel and Nichols (2007), and Klavans (1985). In this research, it has been shown that Aikhenvald's typological parameters can be used in identifying and typifying Farsi clitics.

Rasekh Mahand (2017) analyzes the properties of those clitics in Farsi which are adjacent to the verbal domain having argumental functions of subject and object. In this research, in psychological structures that indicate the physiological, mental or physical status of the experiencer, by utilizing the Blocking Principle, it has been shown that Farsi subject enclitics have been grammaticalized into verbal agreement markers. Also, it has been shown that in case, *pro* is realized as subject, with the presence of the subject enclitic and its co-indexed noun in a single clause, «clitic doubling» in Farsi occurs.

2.3. Research literature on Vafsi clitics

Based on Generative Grammar, Stilo (2004b: 227) categorizes Vafsi PAMs into two categories «clitics» and «affixes». Dabir-Moghaddam (2013), basically uses Stilo's (2004b) data on Vafsi to present a typology of Vafsi in terms of word order (2013: 541-561), agreement system (2013: 562-582), and case system (2013: 583-587). Therefore, he follows the same bifurcated category of Vafsi «clitics» and «affixes». On the same basis, in analyzing «ergative case marking» in some Iranian languages including Vafsi, Shafaei, and Dabir-Moghaddam (2019) use generative grammar's binary approach of «affix» vs. «clitic» towards Vafsi oblique PAMs. Benefiting strictly generative approaches in the study of clitics is not specific to the study of Vafsi clitics as most recent studies use the same recipe. For example, according to Larrañaga & Guijarro-Fuentes (2012), pronominal "clitics are monosyllabic in Spanish. They have no word stress and cannot receive contrastive stress, hence, they

attach to a host” (Ibid.: p. 18). They provide a table of the pronominal clitic system of Spanish which is very similar to Table 1, regarding the Vafsi pronominal clitics.

Haig (2020) has done a typological study on the grammaticalization of personal pronouns to person agreement markers in old Middle West Iranian and contemporary West Iranian languages of Vafsi, Hawrami, Sivand, and Sanandaj Kurdish. As Stilo, he follows the same generative modeling in the identification of Vafsi pronominal clitics which is not sufficient in the typology of Vafsi stress-affected PAMs.

As mentioned, the shortcoming of all generative approaches is neglecting phonological, prosodic, and semantic factors, while all these factors are taken into consideration, especially in LFG. Vafsi oblique PAMs morphologize differently in different placements, therefore they are not correctly justified based on the generative approaches. By noting this deficiency and based on LFG and by considering syntactic-prosodic factors, Bögel et al. (2018) and Yousefi et al. (2020), have shown that the oblique Vafsi PAMs do not have affixal counterparts, since all instances and forms of the clitics can be justified regarding prosodic constraints. In cases where the prosodically deficient oblique enclitic is left without a suitable host, prosodic inversion aims to place the clitic accordingly. The so-called ‘affixal form’ corresponds to the cases where the clitic is forced to carry stress itself and consequently assumes a ‘full form’ (Table 1). Therefore, the ‘affixal forms’ in Stilo’s classification are clitics carrying stress (Bögel et al., 2018).

Table 1. Vafsi oblique PAMs

person/number	enclitic (unstressed)	clitic-under-stress (proclitic/enclitic)
1sg	=om	-ím-
2sg	=i	-í-
3sg	=es	-ís-
1pl	=owan	-íwan-
2pl	=ian	-ían-
3pl	=esan	-ísan-

According to the above studies, the placements of Vafsi oblique PAMs, based on prosodic constraints, are as Table 2 shows:

Table 2. Placements of Vafsi oblique PAMs based on prosodic constraints (Yousefi et al., 2020)

prosodic constraint	prosodic inversion	clitic-under-stress	direction
sustained: coord	komæk=i kær-òm	-	enclitic
initial in IP	-	ìm=ær-góæ	proclitic
sustained: coord	-	ì=r-koš-ome	proclitic
initial in IP	* bæk= om -diæ	b= im -diæ	enclitic
sustained: subject	* væk= es -vattæ	v= is -vattæ	enclitic
possessive	= <i>poss</i> hár= es -da	-	enclitic
initial in CP	hár= esan -kærdæ	-	enclitic

The information in Tables 1 & 2 are used in the analysis section regarding the discussion about the typology of Vafsi oblique PAMs.

3. Theoretical framework

The theory of clitics in this section includes of discussions about the definition of clitics, and their properties such as dependency, phonological deficiency, and dual citizenship (promiscuity). Next, to identify and distinguish them from affixes, several criteria will be introduced and discussed.

3.1. Definition of clitics

According to Spencer (1991: p. 350), clitics are linguistic elements that cannot be easily placed into the binary categorization of «words» and «affixes». Because, on the one hand, they occur as bound morphemes in some linguistic contexts; in this sense, they are like affixes, and on the other hand, they occur as free morphemes in some other linguistic contexts, meaning they are independent words. In the latter sense, they will have an independent identity, having specific and predictable denotation and connotation in language structures, and like independent words are affected by various morphological and syntactic processes. In other words, according to Kroeger (2005), phonologically speaking, clitic is dependent to a host, while it is affected by syntactic rules, therefore, syntactically speaking, it will be an independent word.

According to Matthews (1997: p. 56), a clitic is a morphological element that does not have all the characteristics of an independent (phonological) word and together with the previous or the next word, creates a phonological unit to designate an accent or prominence. Affixes and clitics are both considered bound morphemes, but affixes are grammatically bound morphemes as they neither have semantic content nor occur in linguistic content. A common belief on clitics among linguists is that clitics are deficient prosodically or show queer phonological behavior in some way. In the

research literature on clitics, some distinctive features of clitics are that “clitics have a weak phonological connection to a word”, or in a clause “occur in second position” or “are phonologically deficient” (Kalavans, 1985: p. 117). Like auxiliary verbs, pronominals, and conjunctions, clitics belong to the grammatical word class. Spencer (1991: pp. 350-94) considers cliticization as the intersection of morphology, syntax, and phonology. He continues that diachronically, usually through the phonological reduction process, clitics are created from full words and are sometimes converted into inflectional affixes (Ibid.: p. 350). According to Aikhenvald (2003: p. 57), although diachronically it seems that clitics are intermediary changing state between full words into full affixes, historical and comparative studies do not certify this process. According to Kalavans (1985: p. 117), in the research literature, “phonologically dependent to a word”, “second position”, and “phonologically deficient” are commonly accepted characteristics of clitics among linguists.

Because of a problematic cross-linguistic definition of clitics, Sadock (1991: p. 260) introduces the following “sociological” definition of clitics: “A clitic is an element whose distribution linguists cannot comfortably consign to a single grammatical component”; thus, arguing that there is no “natural class” of clitics defined in terms of grammatical properties.

Zwicky (1977: pp. 4-7) classifies clitics in terms of syntactic and phonological complexities into two classes of “simple clitics” and “special clitics”. A special clitic has syntactic and phonological rules specific to itself and the common syntactic rules cannot predict its realization. A simple clitic shares the same syntactic and phonological rules with its full form. Although this typology seems useful, as the author admits (Ibid.: p. 6), always a definite line cannot be drawn between simple and special clitics.

3.1.1. *Properties of clitics and affixes*

As clitics are grammatical-bound morphemes that are located on a continuum of properties between full words and affixes, they have always been specially treated in linguistics.

Haspelmath (2002: p. 149-54) considers free movement in a sentence or a clause, as the main distinguishing property of clitics from affixes. As clitics are not independent elements, the free movement property translates into the connection of clitics to different classes of words. However, affixes don't have such a free selection and are connected to morphological forms that are syntactically related to them. This property is called ‘dual citizenship’ by Klavans (1985) which considers it as the distinguishing factor of clitics from inflectional affixes. Dual citizenship means that a clitic is structurally a member of a constituent but phonologically a member of a different constituent.

According to Haspelmath (2002), another difference between clitics and affixes is that clitics have less prosodical connections to their hosts. Besides, there are lots of morphophonological rules that are active on the word level and are inactive out of the word level. For example, in German, final consonants are devoiced (*bund /bunt/*), unless followed by a suffix starting with a first vowel (*bundes /bundes/*). But, if this

connecting unit is a clitic instead of a suffix, devoicing will occur again: *ik brand* /igbrant/ but *brand=ik* /brantik/.

To acquire a comprehensive set of criteria for identifying clitics and distinguishing them from affixes and at the same time reach a typological classification of clitics, in the next sections, we will investigate and compare the criteria introduced by Zwicky and Pullum (1983), Sadock (1991), and Aikhenvald (2003).

3.2. Zwicky and Pullum's (1983) criteria for distinguishing clitics from affixes

To distinguish Vafsi clitics, seven criteria in three levels of phonology, morphology, and syntax are used (Zwicky and Pullum, 1983; Shaghaghi, 1994).

The following are the Zwicky-Pullum's criteria for distinguishing clitics from affixes (Zwicky & Pullum, 1983):

- i. Promiscuous attachment: clitics are less selective concerning their hosts while affixes behave more selectively for their stems.
- ii. Arbitrary gaps are more characteristics of inflectional paradigms than of clitic groups.
- iii. Morphological idiosyncrasies are more characteristics of the inflections than of cliticizations.
- iv. Semantic integrity is more characteristic of clitics than of affixes.
- v. Lexical integrity: syntactic rules cannot have access into clitic groups.
- vi. Clitic-affix ordering: the natural relative order is that the affix is closer to the stem than the clitic.

The seventh criterion, which is phonological, is not mentioned in Zwicky-Pullum research but is much discussed in the literature (Shaghaghi, 1994):

- vii. Clitics are often unstressed.

Number seven can only be a common property of clitics than a separate distinctive criterion, according to Bögel (2015: p. 98-99): "There is no distinction concerning stress: All clitic types are considered to be unaccented and prosodically deficient". As a counterexample, in Vafsi, proclitic /=(j)ə/ is always accented and contradicts the seven criteria. In the same tone, Klavans (1982) believes that this property is not always true for clitics and it cannot be considered a fixed criterion, though it can be a useful tool for distinguishing clitics from affixes. The phonological words involving clitics or «clitic groups» i. e. those phonological words involving only two or multiple clitics, show idiosyncratic phonological properties compared to phonological words devoid of clitics (Nespor & Vogel, 1986).

3.3. Sadock's (1991) criteria for distinguishing clitics

Sadock (1991: p. 52) classifies the following fifteen properties of clitics under five modules of morphology, syntax, semantics, phonology, and lexicon: **a)** In morphology: 1. clitics are bound morphemes; 2. they come after inflectional morphemes; 3. they are barriers to inflection; 4. they attach to any host; and 5. they are creative. **b)** In syntax: 1. clitics are syntactically independent, and 2. clitics are syntactically close to their hosts. **c)** In semantics: 1. clitics have a semantic function, and 2. clitics consider a phrase as an argument. **d)** In phonology: 1. clitics are phonologically dependent; 2. they are agglutinative; 3. they are unaccented; and 4. only follow automatic phonological rules. **e)** In lexicon: 1. host+clitic forms cannot be grammaticalized, and 2. clitics can be substituted by free words.

The morphological properties are precarious for all phonologically deficient elements. For example, property a. 1) although common, in many languages, clitics can be substituted by their free-form counterparts based on factors such as style (*I'll* to *I will*). b. 1) is also problematic as it's not always true, and b. 2) is in contradiction with a. 4). c. 1) depends on the definition of semantic function while it's clear that clitics cannot make a separate semantic class. c. 2) makes problems in determining syntactic scope. Because of the above arguments, Sadock (1991: p. 54) accepts that these properties can be language-specific and cannot be true for all clitics in all languages.

3.4. Aikhenvald's (2003) typological parameters

To extract and test the parameters in identifying and typifying clitics, Aikhenvald (2003) uses Tariana (from the Arawak language family) as object language. Tariana is an incorporating language. According to Greenberg's (1966) morphological typology, in incorporating languages, a word generally consists of more than three morphemes, and sometimes a word includes all elements of a sentence. In this case, the subject and object are incorporated into the verb in the form of an affix or clitic.

Aikhenvald (2003) introduces the following fifteen parameters for a typology of clitics:

1. direction: the direction of attaching to a host. Proclitics come before a host while enclitics come after them. The placement of a clitic in a clitic group;
2. selectivity: what type of host they select syntactically;
3. type of host: in terms of position of the host (e. g. the first word in a clause, noun particle in a verbal complex, any noun, etc.);
4. relation to the phonological word: whether they form a phonological word. What's their relationship with stress?
5. segmental and phonotactic properties of clitics (in comparison with other morpheme types);
6. phonological cohesion;
7. relationship to pauses;

8. combinations of clitics and the properties of words involving clitics and clitic groups;
9. ordering in clitic strings;
10. position for affixes;
11. relation with grammatical words;
12. syntactic scope;
13. clitic lexicalization and semantic and morphological idiosyncrasies;
14. clitic-specific syntactic rules; and
15. relation with word classes.

The advantage of Aikhenvald's typological parameters is that these parameters investigate clitics on a multi-dimensional continuum of properties from a completely bound morpheme to a completely free morpheme. In other words, on the one extreme of the continuum, morphemes are more affix-like, and on the other side, morphemes are more word-like (Aikhenvald, 2003: 42).

1) Direction: this parameter provides a binary distinction of clitics; either a clitic comes before a host (proclitic) or it comes after it (enclitic). Philologists are of the view that in world languages generally, enclitics are more frequent than proclitics. This is in line with the fact that in most languages, the numbers of suffixes are more than prefixes. In Farsi, all clitics are enclitics (Sorahi & Alinejad, 2013). Vafsi has a more complex clitic system. The first seven clitic types are enclitics. But the eighth type, i.e. Vafsi oblique PAMs, because of being affected by phonological-prosodic factors, at some placements are realized as proclitics and at some others, are realized as enclitics. This dual behavior is evident in some other languages, too; as an example, in Italian, clitics precede the finite indicative verb (*me=lo=dici* 'you tell me it'), but follow imperatives (*dimme=lo* 'tell me it') (Ibid.: p. 44).

2. Selectivity: free selection of hosts is the most important property of clitics; therefore, they are promiscuous. A fully-fledged clitic can attach to any host. So, «relative selectivity» is a «scalar» property of cliticness in any specific language.

3. Type of host: clitics may have a fixed position within a clause or an NP or they may be floating depending on phonological factors or on grammatical properties of their host. In Vafsi, /=*iz*/ and /=*æm*/ are fixed position clitics which occupy Wackernagel's position (Salvesen & Helland, 2013, pp. 7-8), but Vafsi oblique PAMs are floating clitics as phonologically deficient Vafsi oblique enclitic PAM is left without a suitable host, to find a suitable host, prosodic inversion will change its position to a pre-verb position (Yousefi et al., 2013).

4. Relation to the phonological word: typically, clitics don't carry stress and can't form an independent phonological word. According to Zwicky (1977: p. 286): "if an element counts as belonging to a phonological word for accent, tone or length assignment, then it should be a clitic".

5. Segmental and phonotactic properties of clitics: all Vafsi clitics like their affixes are monosyllabic.

6. Phonological cohesion: phonological processes may differ on clitics than affixes. The more common the number of phonological processes among affixes and clitics, the more affix-like the clitics.

7. The relationship of clitics to pauses: usually pauses occur between two separate words and principally it should not occur in affixal or clitic boundaries. But as will be discussed, this phenomenon has some exceptions in Vafsi.

8. Combinations of clitics and the properties of words including clitics and clitic groups: a phonological word consisting only of clitics can behave differently from clitic-less words. Concerning the combination of Vafsi enclitics $/=iz/$ and $/=æm/$, in case the host is a subject or an object pronoun, the forming clitic cluster will be: $/=iz=æm/$.

9. Ordering in clitic strings: as is mentioned above, in clustering of Vafsi enclitics $/=iz/$ and $/=æm/$, in case the host is a subject or an object pronoun, the forming clitic cluster will be: $/=iz=æm/$, therefore as Aikhenvald (2003: p. 52) puts it “clitics attach to their host in an idiosyncratic order”.

10. Position concerning affixes: usually clitics occur outside all affixes. All Vafsi clitics occur outside affixes, except for the Vafsi oblique PAMs in their original placements in verbal complex (VC) while they have a suitable host and do not undergo prosodic inversion and clitic climbing processes.

11. Relation with grammatical words: in Vafsi only simple clitics constitute grammatical words.

12. Syntactic scope: according to Table 4 Vafsi clitics can have different syntactic scopes.

13. Clitic lexicalization and semantic and morphological idiosyncrasies: in Vafsi psychological constructions involving psychological verbs, subject enclitic will be lexicalized as affixal PAM in verbs. This issue will be discussed in the analysis section.

14. Clitic-specific syntactic rules: original placement of Vafsi oblique PAMs is right before verbal complex. If this clitic form is prosodically deficient, prosodic inversion will climb it to an enclitic position of a nonverbal host (clitic climbing). (Refer to the analysis section).

15. Relation with word classes: the word class of Vafsi clitics is according to Table 4.

By comparing Aikhenvald's parameters with Zwicky Pullum's and Sadock's criteria in identifying and typifying clitics, we find that not only Aikhenvald's fifteen typological parameters are inclusive of all two previous criteria, but also, gives more

classified version of typological parameters on a continuum-like scale rescinding previous binary approach to the clitic typology.

4. Results and discussion

As was shown in the previous section, the best model for identification and typology of clitics is Aikhenvald's (2003) parameters set. Thereon, in this section, by using this model, Vafsi clitics will be classified. The results show that Vafsi has eight types of clitics from which the characteristics of the eighth type called "Vafsi oblique PAMs" are affected by the prosodic-phonological factors. The typological analysis of Vafsi clitics is summarized in Table 4.

4.1. Typology of Vafsi clitics

Based on Aikhenvald's (2003) fifteen typological parameters, Vafsi clitics along with their contexts of occurrence are as follows:

1. The special enclitic /*=o/*: meaning *and*, is a coordinating conjunction (P¹.15), coordinating two words, phrases, or sentences. This means its syntactic scope can be a word, a phrase, or a sentence (P.12). Unlike its Farsi equivalent, this enclitic does not have a free counterpart; therefore, it is considered a special clitic (Zwicky, 1977; Spencer & Luís, 2012: p. 27).

Example 1:

- a) æz=o² tæ (Yousefi, 2021: p. 54)
 I.dir=and you.dir
 Me and you
- b) æ-č=0 -ta (Ibid.)
 durative-go.3sg=and come.3sg
 (He/She) goes and comes.
- c) æ-nnešine æsb-es=0 -č0æ (Stilo, 2004: p. 26)
 durative-sit.3sg horse-his=and go.3sg
 (He) sits on his horse and goes.
- d) merdæ pir=0 zelle mærdæ (Yousefi, 2021: p. 55)
 man.dir old=and woman.dir dead
 The old man and the dead wife.
- e) zer ^ aw-e zer=0 ba-ss-e (Ibid.: p. 54)
 down come.PUNC-3sg down=and PUNC.go -3sg
 (He) came down and went.

¹ parameter (from Aikhenvald's (2003) parameters set)

² The equal sign = is the indicator of the clitic boundary.

The above examples indicate this enclitic's promiscuous attachment to a pronoun (a), a verb (b), a noun (c), an adjective (d), and an adverb (d) (P.2). Although Vafsi phonology does not allow hiatus, as example 1.b shows, enclitic /=*o*/ which is including of a single vowel by attaching to a host ending in a vowel, won't be deleted. Also, the ending vowel of the host remains in situ (P.6), but with an inserting pause between them (P.7).

2. The simple enclitic /=*o*/: which means *to*, is a prepositional clitic (P.1&15).

Example 2:

a) hædæ=*o* tine (Yousefi, 2021: p. 56)
 give.2sg=*to* him
 Give (sth) to him.

b) dæ tine=*m* hæ-da (Ibid.)
 to.prep him=*me* PUNC-give
 I gave (it) to him.

As the example 2.b shows, this enclitic's free morpheme in complementary distribution is the preposition /*dæ*/ (Mirdehghan & Yousefi, 2017). So, it can be grammaticalized by using its free counterpart (P.11). Although Vafsi phonology does not allow hiatus, as example 2.a shows, enclitic /=*o*/ which is made of a single vowel by attaching to a host ending in a vowel, won't be deleted. Also, the ending vowel of the host remains in situ (P.6), but with an inserting pause between them (P.7).

3. The simple enclitic /=*iz*/: meaning *also*, is an emphatic adverb (P.15). Its free counterpart is /*hiz*/ (a grammatical word) (P.11). But its free counterpart is very rarely used.

Example 3: (Yousefi, 2021: 57)

a) in=*iz* voran
 this=*also* bring.2sg
 Bring this, too.

b) awe=*yz* æt-ta
 water=*also* durative-come.3sg
 Waters comes, too.

c) yey adui næč=*iz* ba-wate
 one man good.cl PUNC-say.3sg
 A good man said, too.

Although Vafsi phonology does not allow hiatus, as example 3.b shows, enclitic /=*iz*/ which begins with the vowel /*i*/ (front, close) by attaching to a host ending in vowel /*æ*/ (front, open) (/awæ/ = water), won't be deleted but the phonological

features of both vowels will be changed; i. e. /æ/ (front, open) will be changed to /e/ (front, half-open) which means vowel assimilation occurred. But as no pause will occur between them (P.7), the beginning vowel /i/ will be changed to /y/ in the enclitic (P.6). Example 3 shows the clitic's attachment to a pronoun (a), a noun (b), and an adjective (c).

4. The simple enclitic /=æm/: the same as /=iz/, it means *also*, and is an emphatic adverb, too (P.15). Its free counterpart is /hæm/ (a grammatical word) (P.11). But its free counterpart is very rarely used.

Example 4:

a) yey čizi-y=æm æz esdæ ha-gire (Stilo, 2004: p. 26)
 one thing=also from you.obl durative-get.3sg
 Takes one thing from you, too.

b) yey adui næč=æm he ke (Yousefi, 2021: p. 57)
 one man good.cl be.3sg that
 He is a good man.

Example 4 shows this enclitic's attachment to a noun (a), and an adjective (b) (P.2). And as example 4.a suggests, no pause will occur between the host and the enclitic (P.7), and in case of hiatus, the formative semivowel /-j-/ will occur between vowels (P.6).

Example 5: (Ibid.: p. 58)

in=iz=æm voran
 this=also bring.2sg
 Bring this, too.

As example 3.1 indicates, in case the host is a pronoun (here /in/), /=iz/ is used. And as the example 5 indicates, both enclitics /=iz/ and /=æm/ can be conjoined together to form the *clitic cluster* /=iz=æm/ with the same meaning.

5. The special enclitic Vafsi Ezafe /=e/: is a possessive marker and an indicator of the possessive relation between two nouns or a noun and an adjective (P.15), but the Ezafe construction in Vafsi as opposed to Persian, is generally not used with adjectives (P.2) (Mirdehghan & Yousefi, 2016: p. 229). Farsi Ezafe can connect a noun head to an N or an NP, to an Adj or an AP, an Adv or an AdvP, a PP or an infinitive, and also connect adjectives, PP heads, and adverbs to their compliments. Thus, Farsi Ezafe has a more functional domain.

Example 6: (Stilo, 2004b: p. 229)

a) taq=e hæmmam-i
 vault=EZ hammam-OBL
 The roof of the hammam (sic.)¹.

¹ hammam = bath

b) in hæmmam-i taq
 this hammam-OBL vault
 The roof of this hammam.

As example 6 shows, the Vafsi Ezafe construction sometimes is in complementary distribution with the genitive construction.

6. The special enclitic */=(j)a/*: which is added to N, Adj, Adv, Pron, and VP (P.2) and has the discourse function of being an emphatic indicator (P.15). It does not have a free form and its position is not determined by the common principles of the syntax, so it is considered a special clitic (Zwicky, 1977). This clitic is stressed, defying the much-mentioned property of unstressedness of clitics (P.5).

Example 7: (Yousefi, 2021: p. 60)

vuri=já
 come.2sg=ENCLITIC
 Come!

As example 7 suggests, whereas clitics are generally assumed to be incapable of bearing accent or stress, this Vafsi enclitic, as attested in other languages by Klavans (1982), disproves that assumption.

7. Enclitic verbs¹: the bound morphemes of the copula */bæn/* and */hæn/* (to be) are considered enclitics (P.1). They have free inflectional forms (grammatical word) (P.11) and are always in agreement with their subjects in terms of person and number. They are in complementary distribution with their full forms and follow the same syntax i.e. their positioning is the same as their full forms; hence simple enclitics. Table 3 lists these enclitic verbs and their corresponding full forms.

Table 3. Vafsi enclitic verbs and their full forms

Person	singular				plural			
	clitic form	full form	clitic form	full form	clitic form	full form	clitic form	full form
1	=im(e)	æz=im(e) (I am)	him(e)	æz him(e) (I am)	=iam	awan=iam (we are)	hiam	awan hiam (we are)
2	=i	te=i (you are)	hi	te hi (you are)	=ia	soan=ia (you are)	hia	soan hia (you are)
3	=e	an=e (he/she is)	he	an he (he/she is)	=end(e)	an=end(e) (they are)	hend(e)	ane hend(e) (they are)

¹Enclitic verbs which are bound morphemes of the copula */bæn/* and */hæn/* (to be), should not be confused by the verbal enclitics, which attach to the ends of verbs, and add optional TAME (tense, aspect, mood/modality, evidentiality) information to the verb. The latter description belongs to the Vafsi oblique PAMs which are considered to be the 8th type of Vafsi clitics.

Example 8: (Yousefi, 2021: p. 61)

tæ	merdæ + =i ?	—————>	tæ	merde=i ?
you	man+ 2sg.CL		you	man=2sg.CL
Are you a man?				

Example 9:

merdæ + =e	—————>	merdæ	he
man+ 2sg.CL		man	be.3sg
Are you a man?			

As the above examples show, in case of hiatus, one of the following occurs: a) neither any of vowels is deleted nor any pause occurs between them ($t=ei$ in Table 3); b) vowel assimilation occurs (Example 8); or c) clitic full form occurs (Example 9).

8. Vafsi oblique PAMs: Vafsi pronominal clitics have a distinct syntax from their full-form counterparts, so they are regarded as special clitics. This pattern is common among Romance pronominal clitics, too (Spencer & Luís, 2012: p. 28).

As Table 2 suggests, the clitic PAMs (set 2) usually appear directly preceding the VC and must never occur directly following the verb (P.1). The clitic which is prosodically deficient follows a host which does not belong to a special word class (P.2). The effect of prosody on the placement of Vafsi oblique PAMs and activation of prosody inversion is related to the 6th parameter (phonological cohesion). As was explained in the previous section, the change in the placement of Vafsi oblique clitics under the effect of phonological factors is called ‘clitic climbing’ (P.14).

Example 10: (Stilo, 2004b: p. 26)

piazœ=s	bár	^	kœrdœ
onion=3.sg.cl	load		do.3sg
(He) loaded the onions			

Example 11:

b=ís-di
preverb-3sg.cl=see
(He) saw

Also related to parameter 6, as all Vafsi oblique PAMs begin with a vowel, in case the host ends in a vowel and a hiatus occurs, the fusion of vowels will occur, too. In this case, one of the vowels will be deleted (the beginning vowel of the enclitic in example 10 and the ending vowel of the host in example 11). Also in this example, oblique enclitic moves from VC and climbs to the enclitic position of the host noun preceding the VC (clitic climbing – P.14). In example 10, *piazæ* (onion) ends in a vowel and the enclitic *=es/* (Table 1) begins with a vowel, too. By appearing hiatus, the beginning vowel of the enclitic is eliminated.

In example 11, in the phonological context of hiatus /bâ=es/, the ending vowel of the accented host /bâ-/ is deleted and its stress is carried to the vowel of the enclitic /=es/ turning it into the enclitic-under-stree /=is/.

Example 12: (Ibid.)

a) œn'am=es	há-da	b) œn'am	há-r=es-da
tip=3sg.cl	preverb-give	tip	preverb-formant-3sg.cl=give
		(He) gave tip	

But sometimes insertion occurs. In example 12 above, prosodic inversion requires that unaccented enclitic /=es/ follows accented host /há-/. So, to avoid hiatus, an inter-vowel formative consonant /-r/ will be inserted.

It should be noted that post-lexical phonological processes such as vowel deletion and consonant insertion in case of hiatus in Vafsi, are not specific to clitic boundary and they occur in affix boundary too.

Rasekh Mahand (2017) shows that in Farsi, by using the Blocking Principle, in psychological constructions that are indicative of the physiological or mental or physical state of the experiencer, Farsi subject enclitics are lexicalized as verb-agreement markers. The same occurs in Vafsi (P.13). According to Mirdehghan & Yousefi (2017), in structures including psychological verbs such as /gowæn/ (to want), /xow ^ owiæn/ (to fall asleep) and /xoš ^ owiæn/ (to feel good), quirky subject appears; i. e. while Vafsi has nominative-accusative morphosyntactic alignment in the present tense, so the subject in both sentences including transitive and intransitive verbs in present tense occurs in nominative case, in clauses consisting of psychological verbs, subject in both sentences including transitive and intransitive verbs and past and present tenses occurs in dative case.

Example 13: (Mirdehghan & Yousefi, 2017)

tœmen	sivœ-m	œr-gó- ø.
1sg.set2.experiencer.dative	apple.dir-1sg	imp-want-3sg
	I want an apple.	

In example 13, the psychological verb /gowæn/ (to want) requires 1st person singular subject, but instead of the nominative pronoun /æz/ (I), the dative pronoun /tœmen/ (me) along with the fronted agreement marker /-m/ to the direct object appears. The direct object /sivœ/ (apple) is inanimate and indefinite, so it is realized in the direct case (Differential Object Marking (DOM)). Therefore, a sentence verb, by use of null morpheme, is in agreement with the direct object (Yousefi, 2012: p. 40). Based on Rasekh Mahand's argument, as subject clitic /=om/ which is realized as /=m/ in example 13, has been lexicalized into a verb-agreement suffix, this bound morpheme is not considered a clitic anymore and by the realization of its co-referenced NP (/tœmen/) in a single clause, Clitic Doubling will not occur.

According to the analysis done in this research, the typology of Vafsi clitics based on Aikhenvald's (2003) typological parameters can be summarized in Table 4 below.

Table 4. Typological analysis of Vafsi clitics based on Aikhenvald's (2003) parameters

Aikhenvald (2003) typological parameters	Vafsi clitics								
	/=o/ (coord)	/=o/ (prep)	/=iz/	/=æm/	/=e/	/=(j)a/	enclitic verbs	pronominal clitics (oblique PAMs)	
1. direction	enclitic	enclitic	enclitic	enclitic	enclitic	enclitic	enclitic	proclitic	enclitic
2. selectivity	noun, verb, adjective, adverb, pronoun, clause, sentence	verb phrase	noun, adjective, pronoun	noun, adjective	noun	noun, verb, adjective, adverb, pronoun	noun, adjective, pronoun	verb, adjective, adverb, pronoun	noun, adjective, adverb, pronoun
3. type of host	fixed position, except final host	fixed position, except the final host	fixed position	fixed position	fixed position, post-head, except final host	fixed position, final host	fixed position	fluid clitic, free position	
4. relationship with phonological word	no	no	no	no	no but always stressed	no	no	no	no but always stressed
5. segmental and phonotactic properties	monosyllabic, non-stressed, end in V	monosyllabic, non-stressed, end in V	monosyllabic, non-stressed, end in C	monosyllabic, non-stressed, end in C	monosyllabic, non-stressed, end in V	monosyllabic, non-stressed, end in V	monosyllabic, non-stressed, end in V/C	monosyllabic, non-stressed, end in V/C	monosyllabic, non-stressed, end in V/C
6. phonological cohesion	non-deletion of V in hiatus	non-deletion of V in hiatus	non-deletion of V in hiatus, V assimilation, V to semi-V conversion	non-deletion of V in hiatus, semi-V insertion in hiatus	enclitic deletion in hiatus	non-deletion of V in hiatus, semi-V insertion in hiatus	non-deletion of V in hiatus, V assimilation	C insertion in hiatus, deletion of beginning V of host in hiatus	deletion of beginning V in hiatus, prosodic inversion
7. the relationship of clitics to pauses	pause	pause	no pause	no pause	no pause	pause	no pause	no pause	no pause
8. combinations of clitics	-	-	when the host is a subj/obj pron, clitic cluster	when the host is a subj/obj pron, clitic cluster	-	-	-	-	-

			/=iz=æm /	/=iz=æm /					
9. relative ordering in clitic strings	-	-	clitic cluster /=iz=æm /	clitic cluster /=iz=æm /	-	-	-	-	-
10. position with respect to affixes	after affix	after affix	after affix	after affix	after affix	after affix	after affix	before affix	after affix
11. the correlation of clitics with grammatical words	no	yes	yes	yes	no	no	yes	no	no
12. syntactic scope	word, phrase, sentence	NP	NP	NP	NP	NP, VP	sentence	VP	VP
13. lexicalization	-	-	-	-	-	-	-	-	lexicalization into verb-agreement marker in psychological verbs
14. clitic-specific syntactic rules	-	-	-	-	-	-	-	-	clitic climbing
15. morphological class	conjunction	preposition	emphatic adverb	emphatic adverb	possessive	interjection	copula	pron	pron

Analysis of Table 4 data: An analytic summary of this research is included in this final table in which based on it, the 1st parameter shows that all Vafsi clitics are enclitics except Vafsi oblique PAMs in special phonological-prosodic conditions which will be realized as proclitics.

In the 2nd parameter row, the grammatical function of the host is mentioned.

Based on the 3rd parameter, which is the type of the host, as the table shows, type 1 to type 7 clitics have fixed positions. All of these clitics except /=e/ have their fixed position based on phonological position and the grammatical class of the host does not have any effect of the positioning of the clitics. Enclitic /=e/ has a fixed position

too, but this position is conditioned by the grammatical class of the host, as according to the 2nd parameter, the host must be a noun. Also, this clitic is post-head and does not follow final hosts. This latter property is in common with /=o/ (Type 1= coordination) and /=o/ (Type 2= preposition). But the host for /=(j)a/ must be final. As it was explained in the literature review section, Vafsi oblique PAMs are floating clitics as phonologically deficient Vafsi oblique enclitic PAM is left without a suitable host, to find a suitable host, prosodic inversion will change its position to a pre-verb position. Therefore, this type of clitic has a free position.

About the 4th parameter, none of Vafsi's clitics make a phonological word but the oblique PAMs, while are clitics-under-stress and /=e/ and /=(j)a/ are accented.

About the 5th parameter, all Vafsi clitics are monosyllabic, and the oblique PAMs, while clitics-under-stress and /=e/ and /=(j)a/ are accented. Almost all Vafsi clitics end in a vowel.

About the 6th parameter, the enclitics /=o/ (Type 1= coordination) and /=o/ (Type 2= preposition) which consist only of one vowel, in case of hiatus, are not deleted (examples 1.a and 3). Vafsi oblique PAMs, in case of hiatus and prosodic inversion, the beginning vowel will be deleted (Table 1). In the unaccented Vafsi oblique PAMs, /=iz/, /=æm/ and /=(j)a/ the clitic vowel won't be deleted (3.b, 4.a). In case the vowel is not deleted in hiatus, vowel assimilation or consonant/semi-vowel insertion occurs.

About the 7th parameter, there is a pause between /=o/ (Type 1= coordination) and /=o/ (Type 2= preposition) and /=(j)a/ and their respective hosts but there is no pause between /=iz/, /=æm/, /=e/, enclitic verbs and Vafsi oblique PAMs and their respective hosts.

About the 8th parameter, there is no phonological word in Vafsi which consists only of clitics. The only Vafsi clitic cluster is /=iz=æm/ which only occurs in this ordering in case the host is a subject or object pronoun (example 5). This explanation also is related to the 9th parameter, which is the relative ordering in clitic strings.

About the 10th parameter, all Vafsi clitics occur after affixes except for the Vafsi oblique PAMs, in case they have a suitable host and don't undergo prosodic inversion (Table 4).

About the 11th parameter, according to Table 4 and as was discussed before, if a clitic is a simple one, its free equivalent is a grammatical word. In Vafsi, simple clitics which are /=o/ (Type 2: preposition), /=iz/, /=æm/, and enclitic verbs can turn into a grammatical word by using their free equivalent.

The syntactic scope of each Vafsi clitic is mentioned in the 12th parameter row in Table 4.

About the 13th parameter, as was discussed before and example 13 indicates, based on Rasekh Mahand's (2017) argument, in Vafsi constructions including psychological verbs, the subject oblique clitic is grammaticalized as a verb-agreement marker.

About the 14th parameter, regarding clitic-specific syntactic rules, 'clitic climbing' is the most important syntactic phenomenon. As was discussed in the literature review section, the original placement of Vafsi oblique PAMs is right

before verbal complex (VC). If this clitic form is prosodically deficient, prosodic inversion will climb it to an enclitic position of a nonverbal host (clitic climbing).

The grammatical class of each of the clitics is mentioned in the 15th parameter row of Table 4.

In this section, first Vafsi clitics are identified and linguistic evidence for each clitic is mentioned. Then, by using Aikhenvald's (2003) typological parameters, a typological analysis of these clitics is presented and at the end, the research results have been summarized in form of the Table 4.

5. Conclusion

This research aims to identify Vafsi clitics and typologically analyze them based on Aikhenvald's (2003) typological parameters. There are two research questions and hypotheses: one is proving the advantage of Aikhenvald's (2003) parameters in typifying clitics compared to Zwicky and Pullum's (1983) and Sadock's (1991) parameters and the other one is the way Aikhenvald's parameters are used in identifying and typifying Vafsi clitics.

In this research, to answer these two questions and to show the inclusiveness of Aikhenvald's parameters compared to the two other parameter sets, first Zwicky and Pullum's (1983) six criteria and Sadock's (1991) fifteen properties in clitic typology are introduced. Later by introducing Aikhenvald's (2003) fifteen parameters and comparing them with the previous criteria sets, it has been shown that first, Aikhenvald's parameters are inclusive of all previous criteria sets and second, the advantage of Aikhenvald's typological parameters is that, in contrast to the binary approach of the two other criteria sets, these parameters investigate clitics on a multi-dimensional continuum of properties from a completely bound morpheme to a completely free morpheme. In this research, because of the complex behavior of the 8th type of Vafsi clitics, i.e. Vafsi oblique PAMs, affected by phonological-prosodic factors, to determine their position, Bögel et al. (2018) and Yousefi et al. (2020) are consulted. In the meantime, some important syntactic and phonological processes related to clitic discussions have been introduced and examined. Some of the processes include clitic climbing (example 10), lexicalization (example 13), clitic cluster (example 5), quirky subject (example 13), prosodic inversion (Table 2; example 10 and 12), vowel assimilation (example 3 and 8) and hiatus (example 3, 8, 11). The results of this research have been summarized in Table 4.

5.1. Counter thesis: Vafsi oblique PAMs as inflectional affixes

According to Creissels (2001), there are three stages in the evolution of pronominal markers from cliticness to affixed. Therefore, there is no clear-cut border between clitics and affixes. But there are several critical features doubling down on the affixhood of the Vafsi oblique PAMs as well as Vafsi direct PAMs.

There's a key feature for agreement markers and that is *indelibility*. As Rasekh Mahand (2010: p. 80) puts it "[clitic] doubling is optional and is context-based; while the agreement is compulsory." Vafsi oblique PAMs are compulsory in the VP structure, so this feature is obvious in Vafsi. Also, according to Nichols (1986), an

important typological feature in identifying agreement markers is *head-marking in a clause*. In head-marking languages, the realization of co-indexed NP with the agreement marker is optional (Bahrami & Rezai, 2013: p. 88). Vafsi is a pro-drop language and as Table 3 and Vafsi examples show, there is no compulsion on the realization of the subject of the clause. According to Rasekh Mahand (2010), another critical feature in identifying agreement markers is *the locality of agreement markers*; which is the co-indexed NP with the agreement marker is required to occur in the same clause, otherwise it's the case of clitic doubling. As Vafsi examples show, pro-drop subject NPs are required to occur in the same clause with their co-indexed pronominal agreement markers.

As the above arguments suggest, neither the binary categorization of Vafsi oblique PAMs into affix/clitic categories by Stilo (2004b: 2010) is tenable, nor the unitary categorization of Vafsi oblique PAMs as clitics (as shown in Bögel et al. (2018) and Yousefi et al. (2020)). Therefore, Vafsi oblique PAMs, the same as their direct counterparts, will be considered as agreement inflectional affixes.

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Appendix A

List of Abbreviations

1	1 st person	Ø	null morpheme	DAT	dative case
2	2 nd person	PAM	person-agreement marker	POS	possessive pronoun
3	3 rd person	DOM	differential object marking	OBL	oblique case
sg.	singular	DACM	differential adpositional case marking	AM	agreement marker
pl.	plural			DIR	direct case
DU	durative marker				
PVB	preverb	EXP	experiencer	PER	perfect aspect marker
CV	compound verb	FEM	feminine		
VC	verbal complex	Set 1	dependent personal pronouns (direct case)	Set 2	dependent personal pronouns (oblique case)

(2003) تحلیل رده‌شناختی واژه‌بست‌های وفسی بر اساس پارامترهای آبخوالد

چکیده

پژوهش حاضر به هدف شناسایی و طبقه‌بندی واژه‌بست‌ها در زبان وفسی بر اساس پارامترهای آبخوالد (۲۰۰۳) انجام شده است. این مطالعه به صورت تحلیلی و بر اساس منابع کتابخانه‌ای انجام شده است، زیرا نمونه‌های وفسی در این تحقیق اغلب از پیکره وفسی استخراج شده توسط استیلو (۲۰۰۴ب) به شکل ۲۴ داستان عامیانه وفسی و همچنین از دیگر اثرات وی در زمینه وفسی (استیلو، ۲۰۰۴، آ، ۲۰۱۰) به کار گرفته شده است. در مواردی هم از پیکره بوگل و همکاران (۲۰۱۸) و یوسفی (۲۰۲۱) و نیز داده‌های گردآوری شده از گویشوران زبان استفاده شده است. نتایج این مطالعه نشان داد که اولاً نسبت به معیارهای زویکی و پولوم (۱۹۸۳) و سداک (۱۹۹۱) در دسته‌بندی واژه‌بست‌ها، پارامترهای آبخوالد (۲۰۰۳)، نه تنها همه معیارهای دو دسته دیگر را شامل می‌شود، بلکه بر خلاف رویکرد دوگانه آن‌ها، مزیت بررسی واژه‌بست‌ها را در یک طیف چندبعدی از ویژگی‌ها از یک تکواژ کاملاً مقید تا یک تکواژ کاملاً آزاد دارد. در ادامه، بر اساس مجموعه پارامترهای آبخوالد (۲۰۰۳) نشان داده شده است که وفسی هشت نوع واژه‌بست دارد که تنها ویژگی‌های نوع هشتم، یعنی واژه‌بست‌های oblique PAMs در وفسی، تحت تأثیر عوامل واج‌شناختی-نوایی قرار دارند. در پایان، بر اساس ویژگی‌های locality و indelibility نشان داده شد که واژه‌بست‌های oblique PAMs در واقع وندهای تصریفی هستند، از این رو، نمی‌توانند به عنوان واژه‌بست‌ها مطرح شوند.

کلیدواژه‌ها: پارامترهای رده‌شناختی؛ واژه‌بست؛ آبخوالد؛ وفسی؛ قلب نوایی