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Research Paper

The conceptualization of 'space' in Persian and English: A comparative study

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Abstract:

This article aims at contrasting the conceptualization of space in Persian and English. Using three semantic primes of 'space', namely 'below', 'side' and 'touch' proposed in Natural Semantic Metalanguage (NSM), as one of the cognitive semantics approaches to study language, this cross-linguistic design intends to uncover the similarities and differences of conceptualizations in the two languages. The data came from the *Hamshahri* corpus of Persian-written data and the *Corpus of Contemporary American English* (COCA). The data were compared to see whether or not the NSM theory is viable to explain the spatial conceptualization. The results indicated that the semantic primes have more than one exponent in Persian and English, with their particular function and conceptual range. Besides, the prime of 'touch' has not spatial correspondence in Persian language. This means that the NSM approach does not provide enough analytical toolkits to satisfactorily explain the similarities and differences in cross-cultural cognitive semantic comparisons and cannot exhaustively explain the conceptualization of 'space'. Nonetheless, this approach provides us with some insight into the cognitive properties in the minds of the speakers.

Keywords: Natural Semantic Metalanguage approach; semantic primes; space; conceptualization; cognitive linguistics

1 Introduction

Spatial memory lies at the bedrock of human brain's function in comprehending phenomena. Language as a medium of communication can be used extensively in different situations. When you ask someone an address of a location, you might be given detailed instructions on how to get there (Denis et al., 2014) if the interlocuter is familiar with the destination. The readers of a literary work are well aware of the influence of language in setting or imagining the location of an object, a person, or a sign within the 'space' or the degree a setting can change in certain linguistic contexts. As the Sapir-Whorf hypothesis indicates, language directly impacts the speakers' minds so that it can determine their perception of reality and the structure of a language influences the conceptualization processes of the mind. (Whorf, 1940).

In cognitive linguistics, the notion of 'concept' serves as the core of human thought. The ability to create a concept stands for a method for classifying the mind to simplify the environment. This is unlike the assumption that concepts are similar across languages. Rather, every language is endowed with a unique conceptualization structure. The concept of 'space' is one of the most important topics in cognitive linguistics, and scientists have extensively examined how spatial concepts are used across languages to determine what underlies human perception (Talmy, 1975). Spatial concepts in different languages (Levinson & Wilkins, 2006), as well as the variations in the representations of 'space' triggered by differences in cognitive awareness (Lee, 2001), suggests that language is a product of human cognition

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(Croft, 2004). Recent research on cognition has revealed that the concept of 'space' differs among languages and cultures. Language and culture significantly impact how concepts are shaped in speakers' minds (Jaszczolt, 2012), and according to Levinson (2003), concepts are formed differently in different languages.

One of the most findings in the area of cognitive linguistics regarding the analysis of interlinguistic concepts is 'semantic primes' or 'semantic primitives.' The first encounters with semantic primes can be seen in the works of Leibniz (1966, pp. 4-10) who believed that complex concepts are actually made up of simple concepts that can be used to describe all the other concepts due to the dependence of human understanding on these concepts. This term, was first introduced by Wierzbicka (1972) and served as one of the elements of the 'Natural Semantic Metalanguage approach' (NSM). It has then been defined as universal concept that is common to all natural languages of the world. Wierzbicka (1972) sought to create a system that could describe all the meanings in the world's languages using only a small number of semantic primes (Löbner, 2013, p. 242). This theory claims to be capable of representing any semantic relationship in detail by providing semantic descriptions for these concepts across various languages. In its comparative studies, the NSM approach uses component analysis to integrate cognitive and structural perspectives (Goddard, 2021). This is while its Semantic Primes (or Primitives) serve as building blocks in exploring the cognitive aspects of language. One of the critical features of the semantic primes in this approach is called the 'strong lexicalization hypothesis' which means that "every semantically primitive meaning can be expressed through a distinct word, morpheme or fixed phrase in every language" (Goddard 1994, p. 13). Furthermore, Wierzbicka (1972) believed in a phenomenon referred to as 'ethnosyntax', which refers to all connections between a community's complete cultural system and its morphosyntactic instruments as a whole. She believes that this topic can be adequately elaborated within the framework of semantic primes and the description of semantic (conceptual) differences based on the employment of NSM (Wierzbicka, 1979). Although it is one of the most remarkable steps taken to analyze the underlying cognitive aspects of spatial words in various languages (Geeraerts, 2010: 128), some objections have been made regarding its semantic analysis and the method of examining the data and related arguments. As an example, this approach claims that semantic primitives are common to all languages of the world and their meanings are clear (Wierzbicka, 1972; Goddard, 1994). However, when linguistic complexities are eliminated and basic concepts are categorized, it is impossible to maintain the claim that all elements of semantic primitives, however simple or universal, are equivalent in other languages. Bohmeyer (2003) demonstrates that the primes of 'before' and 'after' do not have lexical equivalents in Yucatec Maya¹. Similarly, Blumczyński (2013) objected to Wierzbicka's (1997) presupposition, explaining that this approach attempts to view meaning as if it were composed of boundaries and could be classified, whereas the zero- and one-structured conception of meaning is rejected within the field of cognition and translation.

Another important term that the theoreticians of this approach have put forward is the term 'allolexy'. Goddard (1994, p. 13) notes that words do not have a one-to-one correspondence with their meanings. He refers to some languages with various forms (allomorphs or allolexes of the same item) that serve as contextual alternatives to communicate the same underlying meaning. He explains that the same form may sometimes function as an exponent of many primitives, despite their separate syntactic frames that demonstrate polysemy.

With that being said, the NSM pioneers have not precisely clarified this phenomenon yet. Besides, for the NSM to be validated, it must therefore demonstrate that a diagnosis of polysemy is not simply hypothesized in response to disconfirmations of the 'strong lexicalization hypothesis' mentioned earlier since the primitives should be 'fixed'. Riemer (2006, p. 372) also point to this matter by explaining that for a word to be reasonably considered polysemous, there must be a clear and regulated way of understanding how its basic meanings combine to produce different interpretations. It would not be sufficient to label a word as polysemous just because it appears to merge different basic meanings; there needs to be a controlled or systematic way to understand these combinations.

In this research, we seek to provide justifiable answers to the following inquiries:

- 1) Based on the NSM theory, how have the concepts of 'space' been lexicalized in Persian and English?
- 2) What are the differences and similarities between the lexicalization of concepts in both languages?
- 3) Is the NSM theory a viable approach to explain the conceptualization of 'space' in both languages in particular and the cognitive linguistics in general?

Thus said, we aim to compare and contrast three semantic primes of 'below', 'side' and 'touch' in English and Persian within the NSM framework. The comparison and contrast will be carried out through finding example sentences for these primes. The finding of this paper can contribute to the research concerning bilingual cognition, language teaching, and intercultural studies.

2 A brief overview of the Natural Semantic Metalanguage

The Natural Semantic Metalanguage (NSM) was developed by Anna Wierzbicka and her colleague Cliff Goddard in 1972. It is based on the notion that natural languages are well suited to represent their semantics through language-internal paraphrases. In other words, it is founded on the idea that natural languages are effectively equipped to express

¹ . a branch of Mayan languages with over one million native speakers



their meanings through paraphrasing within the language itself. This concept is also known as the belief in the "meta-semantic adequacy" of natural languages.

Wierzbicka (1972) contributes to the development of this approach through introducing a group of inseparable elements called "semantic primes.". Importantly, the indefinable nature of these semantic primes is connected to their status as conceptual primes.

The categorization of semantic primes as such on the one hand serves to avoid the confinement in a concept loop and on the other hand, provide an unambiguous explanation of concepts. Therefore, this goal can be best achieved through the use of similar terms across all or most languages (Goddard, 2021). In essence, it holds that every language has a core of irreducible elements, comprising a mini-lexicon of indefinable expressions (semantic primes) and their syntaxes (Goddard, 2008, pp. 1-3). Wierzbicka (1972, p. 13) sought the standard encyclopedia of languages or, as Leibniz (1966, pp. 4-10) put it, "the alphabet of human thoughts." She aimed to "search for phrases in natural languages that are impossible to explain but can be used to describe other phrases".

There are 65 semantic primitives identified and classified into different semantic categories so far (Table 1). The essential feature of this approach with regard to semantic primes or universals is that they are intuitively understandable and explained and belong to "a set of indefinable elementary expressions available in all the natural languages" (Wierzbicka, 1972, pp. 2-3). They maintain that all languages are composed of a few simple concepts that may be used to explain larger and more complex concepts. There is, of course, no certainty regarding this claim, and theorists of this approach have suggested that this issue can only be proven untrue if conclusive evidence is obtained from semantic research (Durst, 2003, p. 162). As indicated in table 1, Wierzbicka (2021) provides the most recent list of the semantic primes and their exponents in English.

Table 1. Semantic primes, English exponents

I, you, someone, something~thing, people, body	substantives
Kinds, parts~have parts	relational substantives
This, the same, other~else	determiners
One, two, some, all, much~many, little~few	quantifiers
Good, bad	evaluators
Big, small	descriptors
Know, think, want, don't want, feel, see, hear	mental predicates
Say, words, true	speech
Do, happen, move	actions, events, movement
Be (somewhere), there is, be (someone/something)	location, existence, specification
(is) mine	possession
live, die	life and death
When~time, now, before, after, a long time, a short time, for some time, moment	time
Where~place, here, above, below, far, near, side, inside, touch	place
maybe, can, because, if	logical concepts
very, more	augmentor, intensifier
like	similarity

In order to explain the meaning of words, linguists often use basic, fundamental units of meaning (primes) to create simplified versions of those meanings (reductive paraphrases). These explanations are made up of sentences that are similar to everyday speech. Essentially, it's about breaking down complex words into simpler, more basic ideas that can be easily understood through ordinary language. (Durst, 2003, p. 125). The reductive nature of this method means that all speeches are explained simply and more understandably (Wierzbicka, 1980, p. 13). Also, Bogusławski (1970, p. 145), one of the first developers of this approach to language, emphasized the use of paraphrasing because he believed that single words could not convey the whole meaning of phrases. According to Bogusławski (1970, p. 145), words or phrases can only be understood as meaningful sentences if they can only be explained in a natural and comprehensible way; therefore, researchers can use this method to extract concepts in a way that does not rely on the exact words and phrases in subsequent semantic presentations. For example, Wierzbicka (1996, p. 220) illustrates the meaning of 'sun' in English by using the semantic primes in the NSM frame as follows:

Sun

Something

People can often see this something in the sky

When this something is in the sky

People can see other things because of this



When this something is in the sky
People often feel something because of this

From the above examples, it can be understood that semantic primitives represent a set of inherent and universal concepts with identical semantic nuclei of primitive concepts, ultimately leading to all other lexical concepts.

There are different attitudes regarding the possibility of studying the relationship between language and cognition and their universality. Levinson (2003), for example, asserts that the universality of space within other languages does not support the connection between mind and thought and that both cannot be examined in conjunction to see how they interact. Levinson (2003) came to this conclusion while researching Guugu Yimithirr, the language of indigenous peoples in northern Queensland. Levinson's study was not primarily focused on finding semantic worlds but merely to demonstrate the differences between different concepts in other languages. Additionally, he believed that linguists are primarily concerned with finding semantic universals. This concern began to rise when generative linguistics launched its idea of generative grammar in 1950 (Evans & Green, 2006). As a result, the Natural Semantic Metalanguage approach, as Safavi (2020, p. 183) puts it, may at first seem "unrealistic and idealistic." Studying these concepts in all world languages may seem like a fruitless and overwhelming effort. Still, for some linguists, such as Geeraerts (2006), this approach may be among the most prominent approaches to lexical semantics.

One of the main applications of the NSM approach is the translatability of concepts between languages. Based on table 1, nine semantic primes of 'space' have been introduced so far. Table 2 (Ansarian et al., 2020; Arab, 2016) includes the inventory primes of this domain in Persian and English. The authors added some exponents to the tables since some of them were missing.

Table 2. Concepts of 'space' exponents in English and Persian

	English	Persian
'Near'	Near Close to Next to adjacent Nearby Proximate In the vicinity of Neighboring	Nazdik Kenâr Pish Pahlu Janb Baghal Dar Javâr-e Mojâver Dar mojjâverat-e Havâli Lab Dam
'Far'	Far Distant remote	Dur
'Here'	Here	Injâ
'Above'	Above Over	Bâlâ Ru
'Below'	Below Under Down Underneath Beneath	Zir Pâyin
'Inside'	Inside Within	Dâkhel Tu Darun Miyân beyn
'Side'	Side	Samt Taraf Var Su Dast Baghal
'Where~place'	Where Place	Kojâ Jâ-yi Makân
'Touch'	Touch	Kenâr Tamâs

It should be noted that a primitive word such as 'small' or 'large' may appear multiple times in other sentences on this list, or some of them may have complex words containing more subtle terms, which should be corrected according to the cultural context (Goddard & Wierzbicka, 2017).

According to Ansarian et al. (2020), all semantic primitives of space (except touch) have been lexicalized in Persian. Nevertheless, we are uncertain whether the primitive of 'touch' exists in Persian. For this reason, we will examine our sources to determine whether or not such a primitive exists.

3 Methodology

In the latest table of semantic primes, Goddard (2021, p. 94) enumerates nine semantic primes identified for the concept of 'space,' including PLACE~WHERE, HERE, ABOVE, BELOW, FAR, NEAR, SIDE, INSIDE, and TOUCH. We first accumulated the actual data from two different corpora (the COCA (*Corpus of Contemporary American English*) and the *Hamshahri* corpus in Persian).

The *Hamshahri* corpus has two versions. The second version involves almost twice the volume and number of documents as the first version. For this study, we have used the second version, which is more recent, and there are 318 thousand documents related to the *Hamshahri* newspaper within the corpus, covering the period from 1375 [1996] to 1386 [2007]. All of these files are available as text files. Given this limited amount of Persian data in *Hamshahri's* corpus, we also used Google to access additional examples by searching the Persian semantic primes to find examples that will help us in analyzing the primes in our research.

Our English corpus, COCA, has more than one billion words (25+ million words each year from 1990-2019), including eight genres: spoken English, fiction, popular magazines, newspapers, academic texts, and (with an update in March 2020) TV and Movie subtitles, blogs, and other web sites and it gives us an extensive amount of data by a quick search.

To find the data consisted of the semantic primes of 'space' in our Persian corpus, we uploaded each of those files in the AntConc software and searched each Persian semantic prime (which was presented in table 2) to see how they appear in a sentence. For the English corpus, we simply searched the English semantic primes in the online corpus and found the data we were looking for. Following this, we checked the Persian dictionaries (*Dehkhoda Dictionary*, *Amid Dictionary*, and *Moin Encyclopedic Dictionary*) and the English dictionaries (*Collins*, *Merriam-Webster*, *Oxford*, and *Cambridge*) to determine the definitions as well as their applicability as a concept in everyday usage. Our objective was to identify the sentences that demonstrated concepts related to space and distinguish between the introduced primes in the NSM approach. Finally, we compared the finding sentences in both of these languages to examine to what extent these primes conform in applicability and meaning and whether the NSM approach can explain the differences between the conceptualization of 'space' in the minds of speakers of Persian and English.

4 Data Analysis

Throughout this section, we present our findings regarding the primes of 'space' among the Persian and English corpora separately. In the next step, we will analyze them within the framework of the NSM.

4.1 Concept of 'below' and its exponents

In Persian, the term 'below' can be denoted by the exponents 'zir' and 'pâyin'; however, according to the NSM website of Griffith University¹, the term 'zir' has been selected as a candidate. As outlined in the Persian dictionaries mentioned earlier, both 'zir' and 'pâyin' refers to a lower position, but 'pâyin' also conveys a sense of direction. Here are a few examples:

- (1) Vaghti puzkhand zad gowdi-ye bozorg-e **zir**-e cheshm-ash
when grin hit.PAST.3SG dimple-EZ big-EZ below-EZ eye-her
namâyân shod.
appear become.PAST.3SG
'When he grinned, the large dimple **below** his eye appeared.'
- (2) Az **zir**-e miz be pâ-ye u lagad zad.
from under-EZ table to foot-EZ he kick hit.PAST.3SG
'He kicked her leg from **under** the table.'
- (3) Âpârtêmân-e mâ **zir**-e âpârtêmân-e ânhâ ast.
apartment-EZ our underneath-EZ apartment-EZ their be.3SG
'Our apartment is **underneath** their apartment.'
- (4) Chand pelle **pâyin-tar** az hamâm mi-raft va bâ ân suxt-e heyvâni
few step down-? than bathroom ASP-went.3SG and with that fuel-EZ animal
Hamâm râ âtaş mi-kard.
Bathroom OM fire ASP-PAST-do.3SG
'She went a few steps **down** from the bathroom and set the bathroom on fire with that animal fuel.'
- (5) Dar **pâyin**-e kuh yek masjed vojûd dâsht.
in bottom-EZ mountain one mosque exist PAST.have.3SG
'At the **bottom** of the mountain there was a mosque.'

¹ https://intranet.secure.griffith.edu.au/_data/assets/pdf_file/0022/346018/Farsi_Table_of_Primes_07_11_2016.pdf



The translation of 'zir' in examples (1), (2), and (3) is different. Example (1) translates 'daghighan zir' or 'directly under' as 'below' and 'zir' in example (2) translates as 'under'. Example (3) illustrates a contact between two surfaces, where one thing is under another, and 'underneath' is the English equivalent. The translation of 'pâyin' is 'down' and 'bottom' in (4) and (5), which means this word does not translate the same in every situation.

The English exponents of the concept 'below' are 'below', 'under', and 'underneath'. The word 'below' refers to something located at a lower level. The following are some examples:

- (6) If you slip, you go tumbling over the roof into the expanse **below**.
 (7) The girls pretended to have lost a ring **under** the table, so he crawled under and looked for it.
 (8) The youth knocked on his passenger window and asked him to wind it **down**.
 (9) Most laminate flooring requires a separate layer **underneath** it.
 (10) The brick pillars supported the floor of the bathhouse and allowed the hot air to circulate **beneath**.

As mentioned earlier, we use 'underneath' when two things are in contact. As a more formal term, the term "beneath" is used in a literal sense. COCA corpus data indicate that the term 'under' is more frequently used in English sentences than the word 'below'. Nowhere, we examine this prime in terms of the NSM framework in more detail:

Below

A. There is somewhere below somewhere

- (11) *Persian*
 Vâhed-i ke u ejâre karde bud, daghighan zir-e vâhed-e ânhâ
 unit-IND COMP he rent do.pp be.PAST.3SG exactly below-EZ unit-EZ they
 gharâr dâsht.
 place have.PAST.3SG
 'The unit he rented was just below their unit.'

- (12) *English*
 In the long run, the New Orleans area has a particular challenge, because much of the city lies below sea level.

B. There is something below somewhere

- (13) *Persian*
 Talâ-hâ va noghre-ha-ye ziâdi zir-e zamin dafn shode ast.
 gold-PL and silver-PL-EZ many below-EZ earth bury become be.3SG
 'There are many golds and silvers buried underground.'

- (14) *English*
 look at how seeds grow below the ground with our seed jar.

C. There is someone below somewhere

- (15) *Persian*
 Barâye esterâhat zir-e derakht khâbid-im.
 for rest below-E tree sleep.past-1PL
 'We slept under the tree to rest.'

- (16) *English*
 The ship's captain went below the galley.

D. There is something below something

- (17) *Persian*
 Farsh-e mâshini-ash nazdik be dah ruz dar zir-e âb gharâr dâsht.
 carpet-EZ machine-her close to ten day in below-EZ water place have.PAST.3SG
 'His machine-made carpet was underwater for nearly 10 days.'

- (18) *English*
 Robb also had three stars and a pennant defining his rank painted below the windscreen.

E. There is someone below something

- (19) *Persian*
 Zir-e nur-e mostaghim-e aftâb mo'atal shode ast.
 below-EZ light-EZ direct-EZ sun delay become be.3SG
 'It kept waiting under the direct sunlight.'

- (20) *English*
 He hid under the bed.

F. There is something below someone

- (21) *Persian*
 Ma'mur sandali râ az zir-e pâ-y-e piremard keshid.
 officer chair OM from below-EZ foot oldman pull.PAST.3SG
 'The officer pulled the chair from under the old man's feet.'

- (22) *English*
 I heard a massive explosion and the ground shuddered beneath me.

As a semantic prime of space, the word 'below' appears differently throughout the translation of Persian examples, depending on the context.

4.2 Concept of 'side' and its exponents

The semantic prime "side" is expressed in Persian through 'samt', 'taraf', 'var', 'su', 'dast' and 'baghal'. These equivalents are used when two things face each other or when they are positioned on the left or right of something. According to all three Persian dictionaries mentioned earlier, these words denote spatial concepts. In *Hamshahri*, we can find the following examples of the exponent 'samt':

- (23) Be mahz-e in-ke bârandegi dar **samt**-e shomâl surat gir-ad, az âb-e
to stark-EZ this-COMP rainfall in side-EZ north happen take-3SG from water-EZ
sad-e Mâzandarân kâste be âb-e Tehrân ezâfe mi-shav-ad.
dam-EZ Mazandaran reduced to water-EZ Tehran added ASP-become-3SG
'As soon as the rainfall starts on the **side** of the north, the dam's water is reduced from Mazandaran and added to the water of Tehran.'
- (24) Mesr barâye bardâshtan-e gâm-hâ-ye jeddi be **samt**-e Irân âmadegi-e khod
Egypt for raising-EZ step-PL-EZ serious to towards-EZ Irân readiness-EZ itself
râ e'elâm karde ast.
OM announce done be.3SG
'Egypt has announced its readiness to take serious steps **towards** Iran.'
- (25) Sâregh be **samt**-e u shelik kard.
robber to at-EZ she shot do.PAST.3SG
'The robber opened fire **at** her.'

In example (23), 'samt' means 'side,' while examples (24) and (25) translate it as 'towards' and 'at'. (24) uses the phrase 'take a step towards someone/something' in Persian, 'gâm bardâshtan be samt e kasi/çizi'. The translation of 'samt' to 'at' in (25) also shows its usage in another situation. As a result, the concept has different meanings in different contexts. Examples of other exponents include:

- (26) Har chand daghighe yek bâr sar-ash râ be **taraf**-e dar bar-mi-gardând.
every few minute one time head-her OM to side-EZ door SUBJ-ASP-PAST-turn-3SG
'She turns her head **towards** the door every few minutes.'
- (27) Agar sandali-hâ râ in **var**-e miz be-chin-id, behtar ast.
if chair-PL OM this side-EZ table SUBJ-arrange-2PL better be.3SG
'It is better if you arrange the chairs **around** the table.'
- (28) Mâdar be **su**-ye tanur raft.
mother to side-EZ oven go.PAST.3SG
'Mother went **to** the oven.'
- (29) Rânande mosâfer-ha râ ân **dast**-e digar-e jade piyâde kard.
driver passenger-PL OM that side-EZ other-EZ street dropped do.PAST.3SG
'The driver dropped off the passengers on the other **side** of the road.'
- (30) Dokhtar-e 4 sale-i **baghal**-am dar taxi neshaste bud.
Girl-EZ 4 year-IND side-my in taxi sat be.past.3SG
'A four year old girl was sitting by my **side** in a taxi.'

The examples above show different representations of Persian's concept of 'side'. Persian speakers usually use 'Var', whereas in formal situations, they use 'su'. 'Dast' in example (29) is frequently used when Persians refer to one of two sides of the road or when they want to give an address.

In English, however, *Collins dictionary* defines 'side' as a position to the left or right of something, rather than directly in front of, behind, or on it. We found the following samples in English as well:

- (31) Your arms should be directly in front of your body or slightly out to the **sides** in the start position.
(32) At my **side** was another sick kid, a little boy who was sort of the poster child for the hospital.

Generally speaking, Persian uses this concept to refer to something in front of or on either side of something, whereas English uses it to refer to something positioned on the left or right. There are fewer instances of 'var', 'su', and 'dast' than 'samt'. Furthermore, 'taraf' is used as often as 'samt'.

Side

A. There is somewhere (on the) side (of) somewhere

- (33) *Persian*
Sanandaj dar samt-e shargh-e Iran ast.
Sanandaj in side-EZ east-EZ Iran be.3SG
'Sanandaj is on the east side of Iran.'

- (34) *English*
Cultivated fields stretch for kilometres along both sides of the Thames river.

B. There is something (on the) side (of) somewhere

- (35) *Persian*
Hajm-e ziâd-i az âb-e sad-e Karaj be samt-e Tehrân jâri
amount-EZ much-IND from water-EZ dam-EZ Karaj to side-EZ Tehrân running
mi-gard-ad.



ASP-become-3SG

'A large amount of water from Karaj Dam flows towards Tehran.'

(36) *English*

Very heavy algae have been observed on the west *side* of the black sea.

C. There is someone (on the) side (of) somewhere

(37) *Persian*

Be dalil-e nârâhati-ye me'ede majbur bud har chand daghigh-e yekbâr be
to reason-EZ sadness-EZ stomach forced be.PAST.3SG each several minute once to
samt-e dastshuyi be-rav-ad.

side-EZ toilet SUBJ-go-3SG

'He had to go to the bathroom every few minutes due to stomach upset.'

(38) *English*

Adam parked on the other *side* of the driveway near the barn and shut off the engine.

D. There is something (on the) side (of) something

(39) *Persian*

Divâr-e samt-e râst-e âyne tarak khorde ast.
wall-EZ side-EZ right-EZ mirror crack eaten be.3SG

'The wall to the right of the mirror is cracked.'

(40) *English*

The gutters hung precariously on the side of the house.

E. There is someone (on the) side (of) something

(41) *Persian*

Bâ in hâl tasmim gereft-am be samt-e futbol bi-ay-am.
with this condition decision take.PAST-1SG to side-EZ football SUBJ-come-1SG
'Yet I decided to come to football.'

(42) *English*

The policemen had taken up battle positions on the other side of the gate.

F. There is something (on the) side (of) someone

(43) *Persian*

Khâne dar samt-e râst-e u gharâr dâst.
house in side-EZ right-EZ u place have.PAST.3SG
'The house was on her right.'

(44) *English*

Destiny followed her and Carmen pull the chair beside her out so she could crawl into it.

G. There is someone (on the) side (of) someone

(45) *Persian*

Mâdar dar samt-e râst-e pedar istâde bud.
mother in side-EZ right-EZ father stand be.PAST.3SG
'The mother was standing to the right of the father in the photo.'

(46) *English*

At my side was another sick kid, a little boy who was sort of the poster child for the hospital.

As you can see from the examples above, 'samt' is often translated to something other than 'side', as in example (37), and sometimes it does not translate at all, the same as examples (39) or (41). We were also unable to find a sentence with the word 'side' in the English example for the case (F).

4.3 Concept of 'touch' in Persian and its exponents

According to table 1, we need to note that 'touch' is considered as one of the semantic primes of 'space'. In contrast, in earlier versions of the table of semantic primes presented by Goddard and Wierzbicka (2014), 'touch' fell into the 'actions, events, motion, contacts' category. According to Goddard (2014), "this prime (roughly, physical contact) is very closely involved with "spatial relations", including the idea of "surfaces" and one thing is "on" another". Furthermore, according to the Griffith Website of NSM theory, the Persian equivalent of this prime is 'lams-kardan' (Arab, 2016). Therefore, in the authors' opinion, the literal translation of the 'touch' prime does not represent its true equivalent, since the words specific to this concept should be used while discussing space. 'Lams-kardan' does not represent the ideal candidate for this prime. This is because 'momâs boudan', stands for the state of two things in a maximal convergence to each other so much so that the edges of the two objects would be entirely met. This is a suitable equivalent to 'touch', indicating spatial movement and positioning.

The analysis of the COCA corpus revealed that this prime is only associated with the concept of 'space' when it appears as a verb in an English sentence. The following example is the only example found from the COCA corpus in English:

(47) She sat straight in her chair, the small of her back never **touching** the chair.

(48)

We will now turn to the analysis of this prime in the NSM approach. Our data are extremely limited:

Touch

- A. There is something (on the) touch (of) somewhere
(49) *English*
He leaned back so that only two legs of his chair touched the floor.
- B. There is something (on the) touch (of) something
(50) *English*
Her dress was so long that it was touching the ground.
- C. There is someone (on the) touch (of) something
(51) *English*
He fell asleep as soon as his head *touch*ed the pillow.
- D. There is something (on the) touch (of) someone
(52) *English*
Sparks flew when the wires touched the man's hand.

5 Results

As we saw in section 4, Persian primes have one or more exponents to demonstrate the concept of 'space', and the same was true for English primes. It was also shown that exponents, having the same meaning as primes, can be used to represent the concept of 'space' where primes are not necessarily seen since each exponent (and prime) has its own range of application.

In the case of 'below', the analysis indicates that if something is directly underneath another, the Persians use 'zir', which is translated as 'below' in English, but in another situation, the same word is translated as 'under'. When there is a physical contact between two surfaces, this word is translated as 'under'. The same also applies to English. A notable observation of this prime is that the word 'under' is more commonly used in the English corpus of COCA than the word 'below', which was mentioned earlier in section 4.1. This shows that the primes and their exponents are not always interchangeable, as each word conveys a different connotation. Therefore, each time, this concept appears differently.

For the prime 'side', we saw that the Persians use the equivalent of this prime, 'samt', and its exponents to refer to something situated to the left, right, or in front of something, whereas 'side' in English is used only when one thing is on the left or right of something else. Also, this prime emerges in Persian with many exponents depending on the situation.

The last prime discussed was 'touch'. This prime does not appear to exist in Persian with reference to 'space'. Additionally, there were very few English examples found on both the COCA corpus and the internet with this specific connotation, which indicates that this issue needs to be addressed.

6 Discussion

Due to [Goddard's and Wierzbicka \(2017\)](#) recognition of the Natural Semantic Metalanguage approach as a cognitive approach, it appears appropriate to use cognitive linguistics principles to analyze our results.

The cognitive principles state that the concept of 'space' cannot be considered as a predetermined semantic universal but rather as a set of patterns in the conceptualization process of 'space' in the minds of human beings, which is based on human experiences. Cognitive linguists generally believe that different linguistic communities encode a wide range of conceptual systems to create various languages ([Evans & Green, 2006](#)).

Another important issue that we need to address in this approach is the Gestalt theory. The Gestalt psychology emerged in the late 19th century and offered a means of analyzing the mechanisms of perception involved in recording human sensory experiences. Based on this view, the human perceptual system automatically converts each scene into a variable element by taking into account two reference points; one 'trajectory' and another 'landmark' (or 'figure' and 'ground'), and the human-centered characteristic serves as the criterion for categorizing differences between small and large distances in languages. The separation of these two plays a crucial role in the human understanding of concepts and is an integral feature of a vision-based perspective. As one of the principles of cognitive linguistics based on the angle of human vision, this view (Gestalt) is one of the principles for studying meaning in language ([Geeraerts, 2006](#)). Therefore, we will use Gestalt theory to investigate these patterns and analyze our data from the cognitive perspective.

First, in Gestalt psychology, the description of the position of each element from different perspectives is accompanied by different linguistic expressions. For example, suppose you are standing at the top of the stairs, and someone else is standing down the stairs. If you wish to describe the other person's position and direction of movement, you use the verb 'go up' for the person down the stairs, while he/she uses the verb 'come down' for you. The reference point varies according to the position and perspective of each individual and this shows how much determining the reference point matters.

Second, when discussing the relative position of the two elements and determining their distance from each other, the more prominent element is referred to as the 'figure', and the other is referred to as the 'ground'. In the sentence 'the glass is on the table', the 'table' is the 'ground', the 'glass' is the 'figure' ([Evans & Green, 2006](#)).

Third, things such as stability or the movement are also important in determining 'figure' and 'ground'. The following is a Persian example from one of the papers of [Golfam and Abdolkarimi \(2009\)](#) on the subject, according to which sentence (a) is acceptable in Persian, whereas sentence (b) is not:

- (a) Sar-am mohkam xord be divâr.
head-my hard hit.PAST to wall



- 'My head hit the wall hard.'
- (b) *Divâr mohkam xord be sar-am.
wall hard hit.PAST to head-my
'The wall hit my head hard.'

Sentence (b) is unacceptable because the 'wall' is a fixed element, while 'head' is a moving element; thus, the 'wall' cannot be used as a variable element and the 'head' as a reference point. We consider this matter as a fact because any speaker, from early childhood, uses these cognitive processing patterns in encoding the surrounding environment. Forth, another important criterion in the Gestalt view is the size of the elements or what [Evans and Green](#) calls 'the principle of smallness' (2006, p. 67). Consider the following examples:

- (c) Kelid râ bezâr **ru**-ye miz.
key OM put on-EZ table
'Put the key **on** the table'
- (d) *Miz râ bezâr **zir**-e Kelid.
Table OM put under key
'Put the table **under** the key.'

Based on these two examples, sentence (c) is more acceptable than sentence (d) since the 'table' is larger than the 'key'. Following the principle mentioned earlier, the human perception system treats more minor elements as variable elements compared to larger ones. As a result, the position of the 'table' is determined relative to the 'key' and not the other way around. Thus, if something is larger, it can serve as a reference point for measuring other things relative to them.

Unlike previous schools of linguistics, cognitive linguistics does not only emphasize abstract meanings of concepts and categories but also examines the actual examples of the usage of these concepts. That is why one must examine the factors involved in the spoken and verbal occurrences to ensure that the concepts (here the concept of 'space') are analyzed correctly and accurately. Thus, if one wishes to compare a concept in two different language communities, linguistic codes must be partially or entirely shared by the other linguistic community ([Jakobson, 1985](#)). Consider these examples:

- (e) Pedar-am bâ in kâr-a-sh **tu**-ye dardesar oftâd.
father-my with this work-PL-his in-EZ trouble fall.PAST.3SG
'My father got **in** trouble with this.'
- (f) Pedarbozorg-am dar hengâm-e navâkhtan-e târ **tu**-ye hâl-e khosh-i bud.
grandfather-my in while-EZ playing-EZ târ in-EZ mood-EZ good-IND be.PAST.3SG
'My grandfather was **in** a good mood while playing tar.'

In these two Persian examples, 'trouble' and 'good mood' are abstract concepts and are treated as containers within which a person can be placed. The above example illustrates how much our understanding of a language's concepts depends on our experiences in a specific language community. A concept may appear to be a somehow fixed meaning in general, but it is actually dynamic in this view. Thus, cognitive linguistics examines the practicalities and the linguistic functions of language in the external world based on cognitive and cultural resources ([Fauconnier & Turner, 2003](#)), as well as the structure of fundamental conceptual categories, such as 'space', which are analyzed as reflections of human cognitive and fundamental abilities. Here are some other examples:

- (g) Eyd-e Nowruz **nazdik** ast.
holiday-EZ Nowruz near be.3SG
'Nowruz is **near**.'
- (h) Sâl-hâ-st ke râbete-ye **duri** va dusti beyn-e ânhâ
year-PL-be-3SG COMP relationship-EZ remoteness and friendship between-EZ they
bargharâr ast.
settle be.3SG
'For years, there has been a **distant** friendship between them.'

Sentence (g) refers to the concept of 'time', and sentence (h) refers to a sense of 'friendship', as if Nowruz is moving and friendship is some kind of spatial concept. We can conclude from the examples provided above that concepts in a language are associated with a variety of words and that these words differ from language to language.

One other issue that should be addressed is the incompatibility of the primes of 'space' with their exponents. Although this theory is one of the most advanced attempts to analyze the underlying cognitive aspects of spatial words in various languages ([Geraerts, 2010](#), p. 128), some objections have been made regarding its semantic analysis and the method of examining the data and related arguments. As an example, it is claimed in this approach that semantic primitives are common to all languages of the world and their meanings are clear ([Wierzbicka, 1972](#), [Goddard, 1994](#)), but in section (3), we saw that each semantic prime has one or more exponents, and each exponent is used in a particular

circumstance. Generally speaking, we see the lack of matching between the obtained data due to the 'avoidance of reality and idealism' of this approach and the belief that linguistic knowledge should be separated from encyclopedic knowledge (Safavi, 2020). It is our encyclopedic knowledge that provides meaning to our linguistic and perceptual knowledge, and a critical component of cognitive linguistics is the consideration of linguistic applications. Considering that the objective of the NSM approach is to demonstrate the differences in the meaning of 'space' cross-culturally and between different languages with one specific prime, there will be a problem regarding its accuracy.

7 Conclusion

In our study of the concept of 'space' in Persian and English, we identified considerable variations in how these terms are conceived in the two languages. Both languages appear to categorize 'space' differently in their conceptualization. By showing the examples of using these primes in both languages, we established that languages possess a wide variety of semantic primes with different exponents, each of which has its own functional and semantic characteristics. Polysemy in cognitive linguistics is not restricted to the meaning of words and is acknowledged as a fundamental feature of the language. This feature provides a method for choosing one of the group members as a prototype to represent many common characteristics in cognitive linguistics (Evans & Green, 2006). Nevertheless, this would not work well since each exponent is used in a different context, and the meaning of each exponent would differ. Moreover, the NSM approach has not yet explained how to differentiate between the exponents and how to choose one over another. This matter of exponents has remained vague in this approach.

Also, one very crucial deduction from the last section is the explanation of the primes of 'space' from the Natural Semantic Metalanguage perspective. 'Space' was considered in relation to the concepts of 'something' and 'someone'. However, based on Gestalt theory principles mentioned earlier, the concept of 'space' is much larger, more static, and usually more prominent in most cases. It is because of this that we rarely see a place as the 'figure' while people or things as the 'ground'. For example, we do not see these cases in the NSM analysis of the primes:

- 1) There is somewhere next to someone.
- 2) There is somewhere beside something.
- 3) There is somewhere inside something.

And so on. Nevertheless, there are some exceptions. As an example, if a place is prominent, it can be considered a 'figure' such as in example (31). Therefore, it is significantly important to take each of these criteria of the Gestalt principle into consideration when analyzing the conceptualization of 'space' in different languages. This is an aspect of the NSM approach that was not addressed in its basis.

Regarding the prime for 'touch', Arab's (2016) literal translation of the word 'touch' in Persian, which was shown in the Persian table of semantic primes, was not accurate. We were unable to find a one-to-one instance of this prime, nor did we find any sentences illustrating this concept within our corpus or through a google search. Almost no Persian speaker uses this word to describe the concept of 'space'. Additionally, in some cases it was extremely difficult to locate sentences in both Persian and English for each of these instances in the NSM framework. Therefore, it would be challenging to explain the notion of 'space' using this prime.

The critical achievement of this study is that we demonstrated a practical mechanism for applying Natural Semantic Metalanguage theory to Persian and English. Our findings indicate unsatisfying agreement between the semantic primitives of 'space' in these two languages. Regarding the efficiency of this approach, we can also conclude that the NSM approach lacks the necessary means and is inadequate to analyze concepts such as the concept of 'space' cross-culturally. Although this approach has tackled on a challenging issue in the realm of conceptualization and cognitive science, based on all the reasons mentioned earlier, the NSM approach is not fully successful to conduct a comprehensive and accurate semantic analysis. There are some important subjects such as the stance of the exponents and prominent features of the Gestalt theory that needs to be more explained and utilized.

Overall, there are several theories based on component analysis, including the Natural Semantic Metalanguage by Wierzbicka (1972), the Two-Level Semantics by Bierwisch (1983) and the Generative Lexicon by Pustejovsky (1995), but the third one appears to be more promising since the first and second emphasize on the separation between the linguistic knowledge and the encyclopedic knowledge. Of course, there is no doubt that this theory needs to be tested in order to obtain a better understanding of its effectiveness regarding the analysis of the words related to "space" in cognitive semantics in general. Nonetheless, it would be a good idea to pursue this idea in another paper at some point.

Abbreviation

The abbreviations in this paper include: ASP, aspect; COMP: complementizer; EZ, ezafe; IND, indicative; NEG, negation; OM, object marker; PAST, past tense; PL, plural; SG, singular; SUBJ, subjunctive; 1/2/3, first/second/third persons.

Competing interests

The authors declare that they have no competing interests.



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