"Optimality Theory and Syntactic Constraints in English and Arabic Prepositional Phrases: A Comparative Analysis"

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Abstract

This research paper aimed to investigate the syntactic constraints that govern the use of prepositional phrases in English and Arabic, using Optimality Theory (OT) framework. A set of English and Arabic sentences containing prepositional phrases were collected and analyzed for constraint violations. This study compared the syntactic structures of prepositional phrases in both languages by examining the case marking, headedness, and subject-verb agreement requirements of OT. The findings indicated that although prepositional phrases are used similarly in Arabic and English, there are also structural variations between them. In particular, the study finds that Arabic prepositional phrases exhibit more markedness and complexity than English preposition phrases, due to the influence of case marking and agreement constraints in OT. The study contributes to our understanding of the syntactic structures of preposition phrases in both languages and highlights the importance of considering the role of syntactic constraints in language comparison studies.

Keywords: Optimality theory, preposition phrase, agreement, constraint ranking.

Introduction

Many languages, including Arabic and English, use prepositional phrases as an essential component of their syntax. They serve as a cue for the geographical and temporal relationships between various phrase components. PPs have been classified based on their function, form, and usage. Prepositions across languages function as connectors of one word in the sentence to another. For instance, Ps usually connect their complements to other parts in the sentence, such as nouns, verbs, or adjectives (Algeo, J. (1987), Quirk et al. (1985); Van Valin (2004); Wishon & Burks (1980) The use of preposition phrases in these languages has been the subject of extensive research, with many studies focusing on their syntactic and semantic properties. The syntactic restrictions of prepositional phrases in various languages must still be compared in order to determine their similarities and differences.

This investigation aims to provide an answer to the following question:

In terms of the OT constraints that govern their structure and formation, what are the similarities and differences between English and Arabic prepositional phrases?

Literature Review

Prepositional phrases have undergone a variety of analyses. Others have suggested that PPs represent a hybrid category that incorporates features from both categories (Chanturidze et al. (2019); Tseng, (2007), while some of these analyses have treated PPs as functional components (Baker (2003). In terms of their syntactic function, various analyses have taken into account PPs as predicative (Stowell (1983) non-arguments (Baker (2003), adjunct modifiers, and others have examined their meanings, syntactic structures (i.e., the kinds of complements that PPs take, the premodifiers that can appear with them), and their use as postmodifiers, among other things (Carnie, (2008).

According to Butt and Holloway King (2019), prepositions in both Arabic and English function as the heads of prepositional phrases and can be followed by a noun phrase or other complements. However, there are differences in the word choice and prepositional usage of phrasal verbs. Saleh, Y. M. (2019) investigated the syntax of prepositions in Standard Arabic using a basic approach. Prepositions in Standard Arabic, he discovered, are used as the heads of prepositional phrases and are subject to certain syntactic constraints. He got to the conclusion that "further research in this area is required" since the Arabic prepositional syntax has not been properly investigated. McCarthy and Prince (1993) proposed a Generalized Alignment model that accounts for the interaction of constraints in the syntax of prepositional phrases. These studies highlighted the need for a cross-linguistic comparison of English and Arabic prepositional phrases using OT as a theoretical framework.

Optimality Theory has also been used to analyze the use of PPs in Arabic and English. Prince and Smolensky (2004) claimed that language is regulated by a set of violable and ranking constraints by using OT to the study of language. This study involves collecting data from English and Arabic written and spoken texts and analyzing them using OT as a theoretical framework. The analysis focuses on the syntactic structure and OT constraints of prepositional phrases in both languages, as well as the similarities and differences between them.

Data Analysis and Discussion

The data analysis shows that English and Arabic prepositional phrases share some similarities in terms of their syntactic structure and OT constraints. For instance, both languages have restrictions on the arrangement of complements within prepositional phrases and both languages utilize prepositions as the heads of these phrases. However, there are notable differences in terms of preposition use and the interaction of OT constraints with other linguistic components.

Syntactic Optimality Theory (OT) is a framework that is used to analyze the interactions between different constraints that govern the structure of language. In the context of prepositional phrases, there are a number of OT restrictions that may be used to control the sentence structure and interpretation in the context of prepositional phrases. Here are some instances of how English and Arabic prepositional phrases differ from and similar one another in terms of syntactic OT restriction:

1. Headedness Constraint

In linguistics, the headedness constraint refers to the idea that within a phrase, one element is considered the head, or the most important or central element, while the other elements in the phrase are considered modifiers or complements to the head.

The headedness constraint in English PPs is important for determining the grammatical role of the PP in the sentence. consider the following sentences:

1. ☞ *The cat is on the mat.*

2. *On the mat is the cat.*

In the first sentence, the PP "on the mat" is subject complement indicating the location of the subject "cat" In the second sentence, the PPs "on the mat" is the subject of the sentence, and the head noun "cat" is the predicate nominative.

If the headedness constraint is violated in an English PPs, the resulting sentence is ungrammatical; such as:

3. **The on mat the cat*

This example violating the headedness constraint. The sentence is ungrammatical, and it is difficult to determine the grammatical role of the PP in the sentence.

This constraint is also present in Arabic. It requires phrases have a head that determines the syntactic category of the phrase. In Arabic prepositional phrases, the noun phrase after the preposition acts as the head of the phrase. For example, in the sentence:

٤. أنا معك بالسفر

   ana maçaka bi-safar-i
   "I am with you on the trip."

The noun phrase "*safar*" is the head of the prepositional phrase "*bi-safar*."

٥. أجريت الامتحان في الصباح

   aʒrait-u alemtehan-a fi as-sabah-a
   "The exam was conducted in the morning"

In this phrase, the noun (as-sabah) is the head noun that follows the preposition (fi)

In the examples 4,5, the headedness constraint is evident, as the noun following the preposition is the main element in the phrase, and the preposition serves as a connector or modifier to the head noun.

2. Subject-Verb Agreement Constraint:

This constraint requires that the subject and verb in a sentence agree in number and gender. In English prepositional phrases, the subject and verb in the sentence can be affected by the preposition and the noun phrase that follows it. For example:

6. *The group of students is here.*

The prepositional phrase "*of students*" acts as a post modifier for the noun "*group*," which is the subject of the sentence. As a result, the verb "*is*" agrees with the singular subject "*group*."

In Arabic, subject-verb agreement is also an important aspect of grammar, and this agreement is observed in prepositional phrases as well. In Arabic, the subject and verb must agree in gender, number, and person. the subject and verb in the sentence can be affected by the preposition and the noun phrase that follows it.

The prepositional phrase may modify the verb by indicating the location, manner, cause, or other aspects of the verb. here are some examples of Arabic prepositional phrases with subject-verb agreement:

7.   الأطفال يلعبون في الحديقة

al-atfa:l-u   yal'abu:n fi al-hadiiqaht-i
"The children play in the garden"

In this sentence, the subject is (al-atfa:l), which means "children", and the verb is(yal'abuun), which means "play". The prepositional phrase (fi al-hadiiqaht-i) modifies the verb by indicating where the children are playing. The verb agrees with the subject in gender, number, and person.

8.   الطالبات يذهبن إلى المدرسة

al-taalibaat-u yadhhabna ila al-madrasaht-i

In this sentence, the subject is (al-taalibaat-u), which means "female students", and the verb is (yadhhabna), which means "go". The prepositional phrase (ila al-madrasaht-i) modifies the verb by indicating where the female students are going. The verb agrees with the subject in gender, number, and person.

9.   الأب يعمل في المكتب

al-ab-u ya'mal-u fi al-maktab-i

In this sentence, the subject is (al-ab-u), which means "father", and the verb is (ya'mal).The prepositional phrase(fi al-maktab) modifies the verb by indicating

where the father is working. The verb agrees with the subject in gender, number, and person.

In all of these examples, the subject-verb agreement constraint is evident, as the verb in the sentence agrees with the gender, number, and person of the subject, even if the subject appears in a prepositional phrase. This agreement is important for clear communication and proper understanding of the intended meaning.

3. Case Marking Constraint

This constraint requires that words in a sentence have the appropriate case marking based on their syntactic role.

In English, a prepositional phrase typically consists of a preposition (such as "of", "in", "for", "with", etc.) followed by an object that is a noun, pronoun, or noun phrase. Case marking in prepositional phrases refers to the way the object of the preposition is marked for grammatical case. In English, the object of the preposition can be in one of three cases: nominative, objective, or possessive. The choice of case depends on the grammatical function of the object within the prepositional phrase.

Here are some examples of English prepositional phrases with different case markings:

1. Nominative case:

   10. *She is with her friends.*

In this sentence, the preposition "with" is followed by the object of preposition "her friends". Since " with her friends" is the subject complement of the verb "is ", it is in the nominative case.

2. Accusative case:

   11. *He is talking to me.*

In this sentence, the preposition "to" is followed by the object "me". Since "me" is the object of the verb "is talking", it is in the objective case.

3. Genitive case:

12.   The book belongs to John.

In this sentence, the preposition "to" is followed by the object "John". Since "John" is a possessive noun, it is in the genitive case.

It's important to note that the choice of case marking in English prepositional phrases depends on the grammatical function of the object within the phrase. If the object is a subject complement, it is marked in the nominative case. If the object is an object of the verb or preposition, it is marked in the accusative case. If the object is a possessive noun or pronoun, it is marked in the genitive case.

In all of the following examples, the incorrect case marking in the prepositional phrase results in a grammatically incorrect sentence. It's important to use the correct case marking in prepositional phrases to ensure clear and effective communication.

*13.   *Me and him went to the store.*

14.   ☞ He and I went to the store.

sentence, so they should be in the nominative case. "He" and "I" are in the nominative case and are the correct forms for the subject of the sentence.

*16.   *The teacher gave the book to John and I.*

17.   ☞ The teacher gave the book to John and me.

"I" is in the nominative case, but it is the object of the preposition "to", so it should be in the objective case. "Me" is the correct form for the object of the preposition.

*18.   *The cat is sitting on it's bed.*

19. ☞*The cat is sitting on its bed.*

"It's" is a contraction of "it is" and is incorrect in this sentence. The possessive form of "it" is "its" without an apostrophe.

In Arabic also, there are three cases: nominative, genitive, and accusative.

1. Nominative case:

ذهب الولد إلى المدرسة   *20*
ðahaba al-walad-u ila al-madrasat-i

In this sentence, the preposition (ila)is followed by the object al-madrasa, which is in the nominative case. The verb (ðhahaba) agrees with the subject (al-walad) in the nominative case.

2. Genitive case:

شربت من كوب الماء.   *21*
sharibt-u min ku:p-i   al- ma:-i
I drank from the water cup.

In this sentence, the preposition (min) is followed by the object (ku:p-i), which is in the genitive case. The verb (sharibt-u) agrees with the first person singular subject (ana) in the nominative case.

3. Accusative case:

رأيت الرجل في الشارع   *22*
ra'ayt-u arajul-a fi asha:rҫ-a

In this sentence, the preposition (fi) is followed by the object (al-sha:rҫ-a'), which is in the accusative case. The verb (ra'aytu) agrees with the first-person singular subject (ana) in the nominative case.

It's important to note that the choice of case marking in Arabic prepositional phrases depends on the grammatical function of the object within the phrase. If the object is the subject of the sentence or a predicate nominative, it is marked in the nominative case. If the object is a direct object or an object of a preposition, it is marked in the accusative case. If the object is a possessive noun or pronoun, it is marked in the genitive case.

4. Constituent Order Constraint

This constraint requires that words in a sentence should be ordered in a specific way to reflect their syntactic roles.

In English, prepositional phrases usually follow the subject and verb, but their order can be changed for emphasis or stylistic purposes. For example, the sentence:

   23. *In the park, I saw a dog chasing a squirrel.*

can be rearranged as

   24. *I saw a dog chasing a cat in the park.*

Moreover, in English it is possible for preposition to get stranded, as in

   25. *She is my friend I told you about.*

   26. *What are you looking for?*

Unlike English, PPs in Arabic cannot be stranded, as the ungrammaticality of:

   27. *ماذا تبحثون عن؟**
     *maða tabhaθu:na ʕan?

Overall, while there are some differences between English and Arabic prepositional phrases according to syntactic OT constraints, there are also some similarities. Both languages have subject-verb agreement, case marking that affect the structure and

interpretation of prepositional phrases. However, the important difference between them is the head complementarity, and stranding as the table below:

Violable constraints on preposition phrases in English and Arabic

Constraint	Explanation	Violable	
		English	Arabic
Head complementarity	The preposition must be followed by a complement that is a noun phrase	unviolable	violable
Agreement	The preposition must agree with the complement in gender and number	unviolable	unviolable
Case Marking	The preposition must be followed by a complement that is in the genitive case.	unviolable	unviolable
Constituent order (Stranding)	words in a sentence should be ordered in a specific way to reflect their syntactic roles	violable	unviolable

CONCLUSION

In summary, this study work clarifies the grammatical foundations of these two languages' prepositional phrases. It examined how prepositional phrases are constructed and analyzed in both languages, as well as how OT limits them. Additionally, it showed clear distinctions between the two languages' word orders and grammatical systems in the forms and restrictions of prepositional phrases. The sequence of the phrase's components determines the OT restrictions in English, whereas grammatical agreement determines them in Arabic.

This illustrates how the Arabic grammatical agreement system is more complex than the English one. This study suggests that comparing prepositional phrases linguistically while utilizing OT as a theoretical framework will help us better

comprehend the form and purpose of prepositions in various languages. Researchers may learn more about how these phrases are created and processed during language usage and further our grasp of the intricacies of human language by comprehending the syntactic restrictions that control these phrases.

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